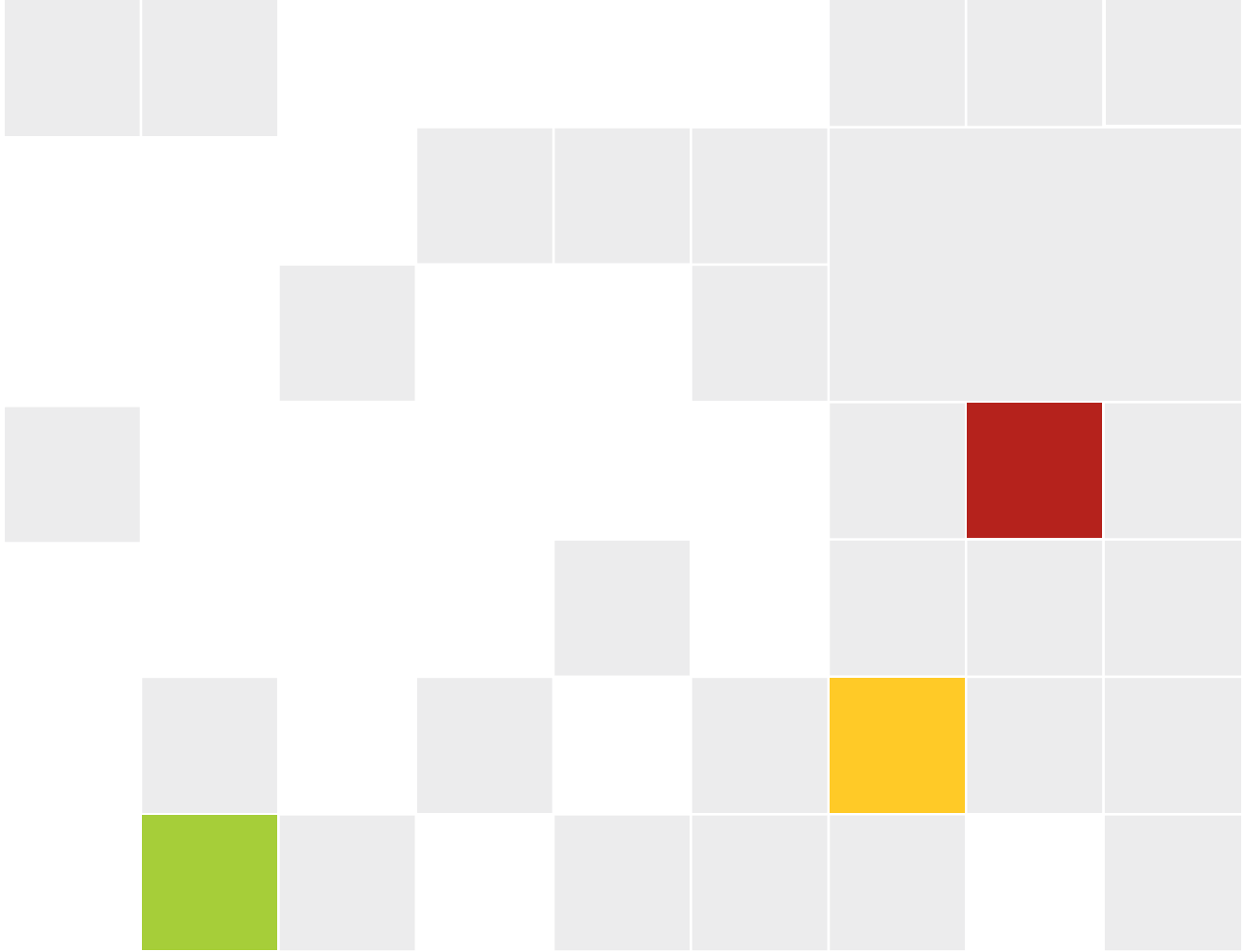
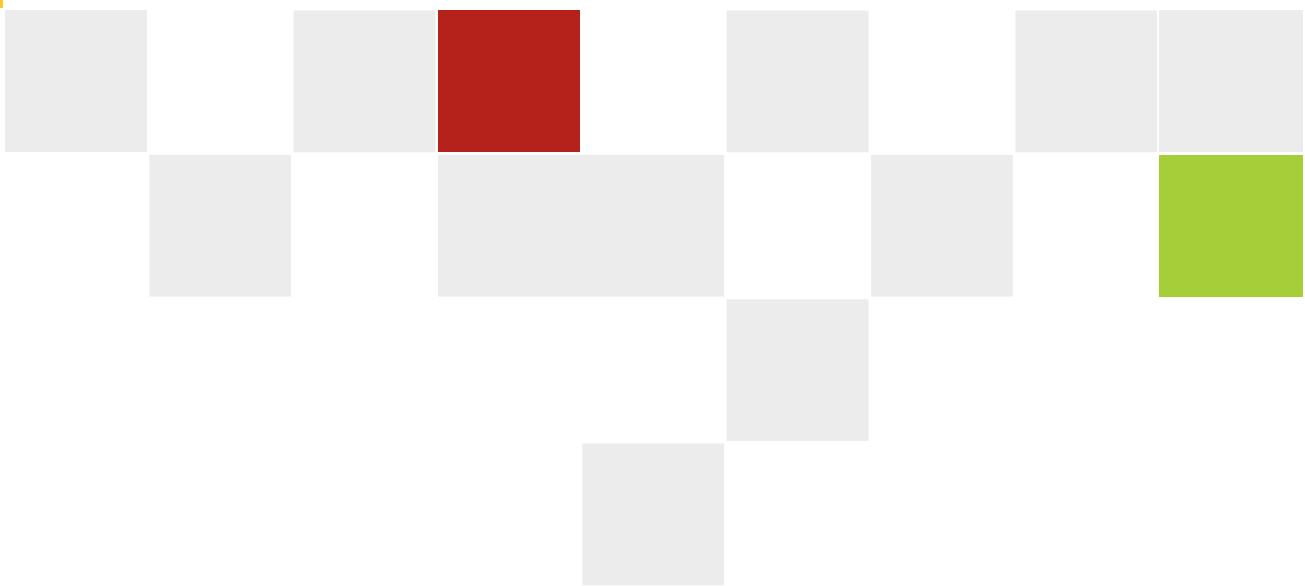




Land off Junction 38, M4, Margam

Environmental Statement
Volume 1: Main Text



Boyer

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1. INTRODUCTION

- 1.1. This Environmental Statement (ES) accompanies a Planning Application submitted on behalf of Sandvik Osprey (the developer) for an industrial development on Land off J38 of the M4, Margam, which will comprise:

“Full planning application of the development of a metal processing facility totalling 28,500sq.m of floorspace comprising a powder processing plant (17,377sq.m), warehouse and store (5,428 sq.m) office building (1,442 sq.m), amenity building (776 sq.m), laboratory (200 sq.m), services building (470 sq.m), substation (107 sq.m), phase 2 (2,700 sq.m), CCTV and parking on-site at J38, M4, Margam, Port Talbot..”

- 1.2. The Site lies within the administrative area of Neath Port Talbot County Borough Council (NPTCBC). A Site Location Plan is attached at **Appendix 1.1** of the Technical Appendices (Volume 2). A full description of the Site and the Proposed Development are set out in **Chapter 3**. All figures referred to within the respective Technical Chapters, can be found within the Chapter.

Need and Purpose of the Environmental Statement

- 1.3. An EIA is a means of drawing together, in a systematic way, an assessment of the likely significant environmental effects of a project. This helps to ensure that the importance of these effects, and the scope for reducing them, are properly understood by the public and the relevant Authority before a decision is taken on the planning application.
- 1.4. The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, referred to hereafter as the “EIA Regulations”, sets out types of development with Schedule 1 and Schedule 2 which will and may require EIA respectively. Further advice on the requirement for an EIA is also contained within Planning Practice Guidance, available as an online resource.
- 1.5. The procedures which govern the EIA process are set out in the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (‘2017 EIA Regulations’). These Regulations came into force on 16 May 2017 and transposed amendments to the European EIA Directive (2014/52/EU) into Welsh law.
- 1.6. Regulation 2(1) of the 2017 (Wales) Regulations (as amended) defines EIA development as development which is either:
- Schedule 1 development; or
 - Schedule 2 development that is likely to have a significant effect on the environment by virtue of its nature, size or location.
- 1.7. The EIA is being undertaken on the basis of the proposals being Schedule 2 development falling within category 4; Production and processing of metals. The proposals meet the criteria for this type of development project as the proposals area of new floor space exceeds 1,000 square metres.

- 1.8. The Environmental Statement (ES) for Land off J38 of the M4, Margam has been prepared in accordance with the requirements of the 2017 EIA Regulations (Wales).
- 1.9. The methodology employed in the preparation of the ES is summarised in **Chapter 2**.

Relevant Planning Policy

- 1.10. S.38 (6) of the Planning and Compulsory Purchase Act (2004) finds that development should be in accordance with the development plan unless material considerations indicate otherwise. The extant development plan relevant to the Proposed Development site comprises Neath Port Talbot LDP (2016) and Future Wales: The National Plan 2040 (2021).
- 1.11. **Table 1.1** provides a comprehensive list of policies within the local development plan which are applicable to the consideration of the Proposed Development. These are discussed in detail within each topic chapter, as appropriate.

Table 1.1 Relevant Local Development Plan

Policy	Topic
SP1	Climate Change
SC1	Settlement Limits
SP4	Infrastructure
SP11	Employment Growth
EC1	Employment Allocations
EN2	Special Landscape Areas
EN3	Green Wedges
SP17	Minerals
M1	Development in Mineral Safeguarding Areas
M2	Surface Coal Operations
SP19	Waste Management
W1	In-Building Waste Treatment Facilities

- 1.12. **Table 1.2** provides a list of policies within the Future Wales national plan which are applicable to the consideration of the Proposed Development. These are discussed in detail within each topic chapter, as appropriate.

Table 1.2 Relevant Future Wales National Plan Policies

Policy	Topic
1	Where Wales will grow
2	Shaping urban growth and regeneration

Other Material Conditions

Supplementary Planning Guidance (SPG)

- SPG: Planning Obligations (October 2016)

- SPG: Design (July 2017)

National Planning Policy

- Planning Policy Wales (PPW) Edition 11 (Adopted 2021)
- Technical Advice Notes (TANs)
- TAN 11: Noise (1997)
- TAN 12 Design (2016)
- TAN 23 Economic Development (2014)

- 1.13. The relevant planning policy is also discussed in detail in the submitted Planning Statement and referenced in the relevant Technical Chapters.

Screening

- 1.14. EIA screening is a procedure used to determine whether a proposed project is likely to have significant effects on the environment.
- 1.15. Due to the significant scale of the proposed development, a screening opinion has not been requested from NPTCBC as the proposal clearly constitutes EIA development under the thresholds set by Schedule 1 and Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 i.e., the development will be a metal processing plant over 1,000 square metres.

Scoping Opinion and Consultation

- 1.16. On the basis that the Proposed Development was deemed to be EIA, an EIA Scoping Report (see **Appendix 1.2** of the Technical Appendices (Volume 2)) was submitted to NPTCBC to seek a formal Scoping Opinion in accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. It sets out the extent and methodologies to be used for each of the environmental topics to be undertaken during the EIA process.
- 1.17. A Scoping Report was submitted to enable the development proposal and its implications for the local environment to be properly assessed and understood.
- 1.18. Boyer, in conjunction with a team of specialist consultants, conducted the scoping exercise, the findings of which are set out in the report.
- 1.19. The Scoping Opinion was based on a Proposed Development of a Metal Processing Facility, and was therefore considered to represent a worst-case scenario in terms of the maximum quantum of development that could be accommodated on the Site. Through discussions with Statutory Consultees and through the findings of detailed technical reports as explained further in the Alternatives section in **Chapter 4**.
- 1.20. The NPTCBC Scoping Opinion was issued on 24th August 2021 and can be found at **Appendix 1.3** of the Technical Appendices (Volume 2).

- 1.21. The EIA focusses on assessing the 'main' or 'significant' environmental effects of the Proposed Development. In this case, NPTCBC confirmed that the following Chapters should form part of a future ES:
- Air Quality;
 - Agricultural Land and Soils;
 - Non-residential Mining Report;
 - Archaeology and Cultural Heritage;
 - Transport;
 - Ecology;
 - Arboriculture;
 - LVIA; and
 - Noise.
- 1.22. These matters were considered to be required to be assessed within the Environmental Statement due to the Site's location in an area subject to coal and mineral safeguarding. The site also lies within close proximity to a Special Landscape Area.
- 1.23. As part of the Scoping process the following consultees were contacted by NPTCBC:
- CADW;
 - Health and Safety Executive (HSE);
 - Glamorgan Gwent Archaeological Trust (GGAT);
 - Natural Resources Wales (NRW);
 - Coal Authority;
 - Bridgend County Borough Council;
 - Welsh Government Transport;
 - Dwr Cymru Welsh Water;
 - National Grid;
 - South-Wales Police Crime Prevention;
 - Environmental Public Health;
 - NPTCBC Public Rights of Way;
 - NPTCBC Biodiversity;
 - NPTCBC Highway Authority;
 - NPTCBC Drainage Authority;
 - NPTCBC Environmental Health;
 - NPTCBC Arboriculturist.
- 1.24. In accordance with Schedule 4 and Regulation 18(4)(a) of TCP Regulations (EIA Regulations 2017 (as amended), this ES has been based on the NPTCBC Scoping Opinion, and the Proposed Development remains materially the same as the Proposed Development which was subject to the Scoping Opinion.
- 1.25. The methodology employed in the preparation of the ES is summarised in **Chapter 2**.

Matters scoped out of the Environmental Statement

- 1.26. The NPT Scoping Opinion also confirms that the Proposed Development will not result in significant environmental effects in relation to the technical matters identified below. A summary of the main comments received from statutory consultees is included below, and is also within the Scoping Opinion at **Appendix 1.4** of the Technical Appendices (Volume 2).
- 1.27. Details of the proposals that relate to each of these matters scoped out is also included within **Chapter 3**, under “Proposed Development”.

Arboriculture

- 1.28. The submitted Scoping Report states that there are no significant effects anticipated in respect of arboriculture, therefore arboriculture should be scoped out of the ES. The planning application will be supported by an Arboricultural Assessment in accordance with BS 5837:2012, Trees in Relation to Design, Demolition and Construction. The reasoning to scope out arboriculture was agreed with NPT, however reference to trees will be made in the Ecology and Nature Conservation section within **Chapter 10**.
- 1.29. In light of the above, no likely significant effects are anticipated and therefore this topic has been scoped out of the ES.
- 1.30. The Scoping Report submitted by Boyer, proposed a list of topics to be scoped out and to be omitted from the ES due to relevant detail being provided through other means. These topics were listed as:
 - Ecology;
 - Arboriculture;
 - Transport;
 - Waste;
 - Utilities;
 - Energy;
 - Health;
 - Socio-Economic;
 - Hydrology, Flood Risk and Drainage; and
 - Geotechnical.

- 1.31. The NPTCBC Scoping Opinion confirmed all topics listed above were to be scoped into the ES and so should not be omitted.

Accidents and Disasters

- 1.32. While not addressed as a separate matter in the formal Scoping Opinion, consideration has also been given to Accident and Disasters. Due to the Proposed Development being industrial development, it is not considered to be vulnerable to the risk of major accidents and/or disasters.
- 1.33. The Site is not in a location which is at risk of disasters such as flooding, land instability or earthquakes and no former use that would raise any such risk.

- 1.34. Appropriate construction methods will be adopted during the construction stages of development, to reduce the risks of accidents occurring. Further detail is provided in **Chapter 5**.
- 1.35. The operational phase of the development being a metal processing facility use would not increase the risk of major accidents and/or disasters.
- 1.36. In light of the above, no likely significant effects are anticipated and therefore this topic has been scoped out of the ES.

Consultation and Engagement

- 1.37. Community involvement in the planning process is strongly advocated by Government through the Planning Policy Wales (PPW). Various forms of consultation and engagement has been undertaken in respect of the application Site for a number of years, both through adopted and emerging Local Development Plans.
- 1.38. A summary of the consultation and engagement undertaken with both NPT, Statutory Bodies and the public is set out below in **Table 1.3**.

Table 1.3 Summary of Consultation

Date	Summary
2001	Site promotion through UDP (27.2ha) Representations were made promoting 27.ha of the Site for development.
2016	Site promotion through adopted LDP (6ha) Representations were made promoting 6ha of the Site for development.
03/09/2021	Pre-Application Engagement with LPA
05/11/2021	Pre-Application Consultation (PAC) commenced for 28 days

Pre-Application Consultation (PAC)

- 1.39. The Planning Application is supported by a PAC Report, which includes the wider consultation and engagement undertaken as part of this planning application.
- 1.40. The accompanying Design and Access Statement (DAS) also sets out the evolution of the proposals in response to the comments received from the consultation and engagement undertaken.
- 1.41. The key matters arising from the engagement process are considered in **Chapter 4** which sets out the Alternatives and Design Evolution.

Structure of the Environmental Statement

- 1.42. The ES documents the overall findings of the EIA for the Proposed Development.
- 1.43. The ES comprises the following:
- Volume 1 – Main ES Report;
 - Volume 2 – Technical Appendices; and
 - Volume 3 - Non-Technical Summary.
- 1.44. The ES has been prepared by a specialist consultant team with relevant qualifications and expertise in each topic area. Specialist consultants were commissioned to undertake the technical assessments required for the EIA process and to write the corresponding ES Technical Chapter. The overall co-ordination of the ES has been undertaken by Boyer.
- 1.45. Boyer are competent experts in EIAs and are corporate members of the Institute of Environmental Management & Assessment (IEMA). In addition, Boyer are also learning partners of the Royal Town Planning Institute (RTPI).
- 1.46. **Table 1.4** below summarises the structure of the ES and provides an overview of the scope of each Chapter. It also identifies the consultant responsible for each Chapter.

Table 1.4 Structure and Scope of Environmental Statement

Chapter Number	Chapter Title	Summary of Scope	Consultant
1	Introduction	Overview of planning policy, the requirement for an ES, scope of the ES and structure of the ES.	Boyer
2	Methodology	Outlines the general methodology used for each topic chapter within the ES unless specific legislation, policy or good practice guidance dictates otherwise.	Boyer
3	Site Description & Proposed Development	A description of the Site and Proposed Development comprising information about the design and scale of development.	Boyer
4	Alternatives and Design Evolution	A description of the alternatives (e.g. development design, technology, location, size and scale), design iterations and main reasons for the chosen option (including comparison with environmental effects)	Boyer
5	Construction Programme and Methods	Setting out construction methods, indicative construction programme and phasing.	Boyer

Chapter Number	Chapter Title	Summary of Scope	Consultant
6	Socio Economic Assessment	An assessment of the socio-economics impacts of the proposed development.	Boyer
7	Land and Soil Resources	This section will assess how much Agricultural land would potentially be affected and will provide information on the ground investigative work.	Reading Agricultural Consultants
8	Archaeology and Cultural Heritage	An assessment of archaeology and cultural heritage assets within the application site parameters are assessed and any relevant mitigation measures are provided.	Cotswolds Archaeology
9	Landscape and Visual Impact Assessment	An assessment which considers the landscape and visual effects and the key landscape and visual related aspects.	Soltys Brewster Consulting Ltd
10	Ecology and Nature Conservation	The impact on ecological receptors, including statutory and non-statutory designated Site's and legally protected habitats and species, and those of conservation importance	Soltys Brewster Consulting Ltd
11	Transport	An assessment of the likely significant effects of the Proposed Development in terms of vehicle trips, public transport, cycling and pedestrian movements.	Apex Transport Planning Ltd
12	Noise and Vibration	Provides an assessment of potential impacts in relation to the Proposed Development on noise and vibration.	Hunter Acoustics
13	Air Quality	Provides an assessment of potential impacts related of the Proposed Development on local air quality.	Air Quality Consultants Ltd
14	Hydrology, Flood Risk and Drainage	An assessment of the likely significant effects of the Proposed Development in terms of hydrology, hydrogeology and geology.	JBA

Chapter Number	Chapter Title	Summary of Scope	Consultant
15	Health and Safety and Risk to Human Health	An assessment of the likely significant effects of the Proposed Development in terms of health and safety and risk to human health.	Tetra Tech
16	Waste	An assessment of the likely significant effects of the Proposed Development in terms of waste.	Tetra Tech
17	Cumulative Effects Assessment	Consideration of cumulative effects between the application Site and other major developments in the study area (inter additive effects) i.e. noise and noise and; the combination of different effects i.e. noise and air quality either occurring within the project (intra synergistic effects) or due to different projects (inter synergistic effects).	Input from team – collated by Boyer
18	Summary of Mitigation Measures, Residual Effects & Monitoring	Provides a summary of the assessment of effects described in Chapters 6-9 during the construction and operation phases.	Boyer

2. METHODOLOGY

- 2.1. This Chapter outlines the general methodology used in the preparation of the ES. All topic Chapters are structured to explain the specific methodology used within that individual subject.

Content of the Environmental Statement

- 2.2. There is no statutory requirement as to the structure of an ES, but it must include at least the information specified in Regulation 17(3) and Schedule 4, as well as complying with the requirements of Regulation 17(4) of the 2017 EIA Regulations (as amended).
- 2.3. In addition, the ES must also include any additional information specified in Schedule 4 of the 2017 EIA Regulations (as amended) which are relevant to the specific characteristics of the development and to the environmental features likely to be significantly affected.
- 2.4. **Tables 2.1** and **2.2** summarise the requirements of Regulations 17(3) and 17(4) as well as Schedule 4 of the 2017 EIA Regulations and confirms how these requirements have been addressed within the ES.

Table 2.1 - Summary of Regulations 17(3) and 17(4) of the 2017 EIA Regulations

Regulation 17(3), 17(4) and 18(5) Requirements		Location within the ES
17(3)	A description of the Proposed Development comprising information on the Site, design, size and other relevant features of the development.	Chapter 3 provides a description of the Proposed Development
	A description of the likely significant effects of the Proposed Development on the environment.	The likely significant effects of the Proposed Development on the environment will be considered on an individual basis in each technical chapter
	A description of any features of the Proposed Development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.	An overview of the proposed mitigation measures and residual effects envisaged are provided in Chapter 17.
	A description of the reasonable alternatives studied by the developer, which are relevant to the Proposed Development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account	Chapter 4 provides a summary of the reasonable alternatives considered by the applicants

Regulation 17(3), 17(4) and 18(5) Requirements		Location within the ES
	the effects of the development on the environment.	
	A non-technical summary of the information referred to in sub-paragraphs (a) to (d).	Volume 3 consists of the Non-Technical Summary (NTS)
	Any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development and type of development and to the environmental features likely to be significantly affected.	The effects of the Proposed Development are considered on an individual basis in each topic chapter taking into account the information specified in Schedule 4.
17 (4)	Be prepared by persons who in the opinion of the relevant planning authority or the Welsh Ministers, as appropriate, have sufficient expertise to ensure the completeness and quality of the statement.	Specialist consultants have been appointed by the applicants to undertake the technical assessments required for the EIA process and to write the corresponding ES chapter.
	Contain a statement by or on behalf of the applicant or appellant describing the expertise of the person who prepared the environmental statement.	A statement prepared on behalf of the developer is provided in Appendix 2.1 outlining the qualifications of the consultant team. These qualifications are also set out at the beginning of each technical Chapter.
	Where a scoping opinion or direction has been issued in accordance with Regulation 14 or 15, be based on the most recent scoping opinion or direction issued (so far as the Proposed Development remains materially the same as the propose development which was subject to that opinion or direction).	The ES accords with NPT's Scoping Opinion, as set out in Appendix 1.3
	Include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment.	Each individual technical chapter summarises the information available which has informed the conclusions

Regulation 17(3), 17(4) and 18(5) Requirements		Location within the ES
		of that chapter and the overall ES.
	Take into account other relevant environmental assessments, required under Union legislation or any other provision of domestic legislation, with a view to avoiding duplication of assessment.	Each individual technical chapter summarises the information available which has informed the conclusions of that chapter and the overall ES.

Table 2.2 - Summary of the Schedule 4 Requirements of the 2017 EIA Regulations

Schedule 4 Requirements		Location within the ES
1.A description of the development, including in particular:		
1 (a)	A description of the location of the development.	Chapter 3 provides a description of the Proposed Development
1 (b)	A description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases.	Chapter 3 provides a description of the Proposed Development
1 (c)	A description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy use, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity).	Chapters 6 to 16 provide a summary of the operational phase of the Proposed Development
1 (d)	An estimate, by type and quantity, of expected residue and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operational phases).	Chapter 1 to 5 provide a summary of the expected residues and emissions. The precise details of the likely type and quantity of residue emissions will be confirmed at a detailed design stage.

Schedule 4 Requirements		Location within the ES
2.	A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Chapter 4 provides a summary of the reasonable alternatives considered
3.	A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Chapters 6 to 16 provide a summary of the baseline scenario where relevant to the assessment
4.	A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Chapters 6 to 16 provide a summary of the factors likely to be significantly affected by the Proposed Development
5. A description of the likely significant effects of the development on the environment from, inter alia:		
5(a)	The construction and existence of the development including, where relevant, demolition works.	Chapters 6 to 16 provide an assessment of the likely significant effects of the Proposed Development on the environment
5(b)	The use of natural resources, in particular land, soil, water and biodiversity, considering as far as	Chapters 6 to 16 provide an assessment of the likely significant effects of the

Schedule 4 Requirements		Location within the ES
	possible the suitable availability of these resources.	Proposed Development on the environment
5 (c)	The emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste.	Chapters 6 to 16 provide an assessment of the likely significant effects of the Proposed Development on the environment
5 (d)	The risks to human health, cultural heritage or the environment (for example due to accidents or disasters).	Chapters 6 to 16 provide an assessment of the likely significant effects of the Proposed Development on the environment.
5 (e)	The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.	As assessment of the cumulative effects and interactions are provided in Chapter 16.
5 (f)	The impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change.	Climate Change and the impact of the project on climate is addressed in Chapter 2 and 3 , the vulnerability of the project to Climate Change is addressed in Chapters 6 to 16 . Greenhouse gas emissions are also controlled through Building Regulations Part L.
5 (g)	The technologies and the substances used.	Chapters 6 to 16 provide an assessment of the likely significant effects of the Proposed Development on the environment
	The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent	Chapters 6 to 16 provide an assessment of the likely significant effects of the Proposed Development on the environment

Schedule 4 Requirements		Location within the ES
	and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC (1) and Directive 2009/147/EC (2).	
6.	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Chapter 2 provides a summary of the approach to the overall assessment. Chapters 6 to 16 provide details of any difficulties encountered.
7.	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	Proposed mitigation measures and residual effects are provided in Chapter 18 .

Schedule 4 Requirements		Location within the ES
8.	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(3) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(4) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Chapters 6 to 16 provide an assessment of the likely significant effects of the Proposed Development on the environment. Chapter 17 summarises the mitigation measures proposed.
9.	A non-technical summary of the information provided under paragraphs 1 to 8.	Volume 3 of the ES provides a Non- Technical Summary.
10.	A reference list detailing the sources used for the descriptions and assessments included in the Environmental Statement.	References are provided in Chapters 1 to 18 as appropriate.

Criteria to Assess Significance of Environmental Effects

- 2.5. The 2017 EIA Regulations (as amended) do not classify significance. For some of the topics within the ES, there are published guidelines on how to evaluate significance. This guidance will be outlined at the start of the subject chapter. However, in all other instances it is necessary to state how this will be defined for the Proposed Development.
- 2.6. Assessing the significance of effects relies upon the interaction between the magnitude of the change and the sensitivity or importance of the environmental receptor. Significance will vary depending on the sensitivity of the receptor being considered and therefore will need to be considered in each chapter on a topic by topic basis.

Magnitude

- 2.7. When assessing the magnitude of change the following considerations have been taken into account:
- Extent and magnitude of the impact (major, moderate, minor or negligible) (both beneficial and adverse);
 - Impact duration (short, medium or long term);
 - Impact type (direct, indirect, reversible or irreversible);
 - Whether the impact occurs in isolation, is cumulative or interactive; and
 - Performance against environmental quality standards.
- 2.8. **Table 2.3** defines the type of change and the associated magnitude.

Table 2.3: Magnitude of Change

Change	Magnitude
Major	Entire loss / gain or major variation to key elements / features of the baseline conditions so that the post-development character / configuration of the baseline condition would be fundamentally changed.
Moderate	Loss / gain or variation to one or more key elements / features of the baseline conditions so that the post-development character / configuration of the baseline condition would be materially changed.
Minor	Minor change from the baseline conditions. The changes are measurable, but not material in the sense that the changes are similar to those pre-development.
Negligible	Inconsequential when compared to the baseline conditions.

Sensitivity

- 2.9. The sensitivity of a receptor is based on the relative importance of the existing environmental features on or near the Proposed Development and by the sensitivity of the receptor which could be affected. **Table 2.4** defines the scale for determining sensitivity.
- 2.10. The sensitivity of the receptor should be determined using a combination of appropriate professional judgement, consideration of existing designations, and where possible, quantifiable data.

Table 2.4: Sensitivity of Receptor

Significance	Examples of Receptors
High	The receptor has little ability to absorb change without fundamentally altering its present character, or is of very high environmental value or of international or national importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value or is of high importance at regional level.
Low	The receptor is tolerant of change without detriment to its character or is of low environmental value or local importance.

Temporal Scope

- 2.11. The duration of effects is taken into account when determining the overall significance of effect. For the purposes of assessing the effects of the Proposed Development, the following timescales have been utilised, unless stated otherwise in accordance with applicable guidance to the technical assessment:
- Short Term – Impact is measurable for 0-5 years;
 - Medium Term – Impact is measurable between 5 and 15 years; and
 - Long Term – Impact is measurable greater than 15 years.

Significance

- 2.12. The ES has been completed on the basis that for an impact to be significant, it must be of sufficient scale or magnitude to:
- Lead to defined or widely recognised levels of acceptable change being exceeded; or
 - Threaten or enhance the viability or integrity of a receptor group of concern.
- 2.13. Significance will vary depending on the sensitivity of the receptor being considered and therefore will need to be considered in each chapter on a topic by topic basis.
- 2.14. **Table 2.5** comprises a matrix showing the interaction of magnitude of change and the sensitivity of the receptor, which provides a guide for technical specialists to assess impact significance.

Table 2.5: Methodology for Assessing Significance Matrix

Significance		Sensitivity of receptor		
		High	Medium	Low
Impact Magnitude	Major	Major	Major	Moderate
	Moderate	Major	Moderate	Minor
	Minor	Moderate	Minor	Minor
	Negligible	Negligible	Negligible	Negligible

- 2.15. Effects are considered to be 'significant' where the results of the magnitude equate to a 'moderate' or 'major' in this ES. However, in the event that discipline specific methodology has been applied that differs from the criteria, this has been clearly explained within the relevant technical chapter under the heading of ES Methodology.
- 2.16. Once the magnitude of the impact and the sensitivity of receptor have been determined using the matrix, then the 7 point scale of significance, as illustrated in **Table 2.6**, is applied to the nature of the impact.
- 2.17. This defines if the effect will be Adverse where it is negative, Beneficial where it is positive or Negligible where there is little or no effect.

Table 2.6: Significance Criteria – The 7 Point Scale

Major Beneficial
Moderate Beneficial
Minor Beneficial
Negligible
Minor Adverse
Moderate Adverse
Major Adverse

- 2.18. The Significance Matrix and Criteria reflects the approach taken within this ES. However, in the event that discipline specific methodology has been applied that differs from the criteria, this has been clearly explained within the relevant technical chapter under the heading of ES Methodology.

Environmental Statement Structure

- 2.19. All of the Chapters prepared for the ES have been undertaken using appropriate methodology and good practice guidance. In order to ensure consistency throughout the ES, all Chapters are structured as outlined in **Table 2.7**.

Table 2.7 – Summary of the Topic Chapter Structure of the ES

Heading	Content
Introduction	An introduction to the topic area to include a brief note on the purpose of the environmental assessment.
Legislation, Planning Policy and Guidance	A summary of the key directives / policies that are applicable to this chapter at an international, national, regional and local level.
Assessment Methodology	To include a scope of the assessment, including the study area, consultation sources, baseline surveys and the methodology of the assessment undertaken.
Significance Criteria	A description of the criteria that will be used to assess the significance of effects on the environment resulting from the Proposed Development during the construction and operational phases and confirmation of the thresholds/levels of significance which will be considered.
Baseline Conditions	The identification of existing conditions. i.e., the current situation and changes over time assuming the Site is not developed (future baseline).
Assessment of Effects	An evaluation of the effects resulting from the Proposed Development during both the construction and operational phases. To confirm, this is prior to the implementation of mitigation measures.
Mitigation	A description of any mitigation measures which are required as a result of the impact of the Proposed Development and any associated monitoring requirement.
Residual Effects and Monitoring	This section will assess the impact of the Proposed Development together with the fully implemented mitigation measures and any necessary monitoring required to ensure effective mitigation.
Cumulative Effects	Consideration of the cumulative (additive) and synergistic (combined) action of different environmental topic specific impacts upon a single resource/receptor and cumulative effects between the application Site and other relevant projects
Limitations and Assumptions	Any notable limitations or assumptions regarding the assessment are detailed in this section.
Summary of Impacts	Each technical chapter sets out a summary of the potential residual effects for the demolition and construction phase and operation phase of the Proposed Development.

- 2.20. All of the chapters prepared for the ES are based on technical assessments, which have been undertaken by specialist consultants appointed by the applicants. A summary of the chapter structure is set out below.

Legislation, Planning Policy and Guidance

- 2.21. The ES Chapter will identify those elements of legislation, planning policy and guidance of relevance to the specific area of assessment. The review, will identify relevant documents with a summary of the key directives / policies that are applicable to the relevant technical chapter at an international, national, regional and local level.

Assessment Methodology

- 2.22. The methodology will include a scope of the assessment, including the study area, consultation sources, baseline surveys and the methodology of the assessment undertaken.

Spatial Scope

- 2.23. The geographical or spatial scope of the EIA has had regard to both the physical extent of the Proposed Development (the application Site) and the nature of the baseline environment, which in certain instances extends beyond the Site. The spatial scope or zone of influence of each topic chapter is set out within the methodology section of that chapter. As such, some assessments are limited to the application Site or its immediate surroundings, whilst others extend across a wider area (where appropriate).
- 2.24. The geographical scale of each of the impacts are identified in accordance with the following scale:
- An impact of international importance would be one that affects an interest of international concern.
 - An impact of national importance would be one that affects the national interest identified by Government policies such as effects on a National Park, AONB, SSSI or a Grade I or II* Listed Building.
 - Impacts of regional-wide importance would be one that affects South Wales.
 - Impacts of a district-wide importance would be of relevance broadly within the context of NPTCBC's administrative boundary.
 - Impacts of local importance are those which affect a limited area, largely contained within or close to the development Site itself.

Consultation Sources and Baseline Surveys

- 2.25. Baseline environmental information sources are outlined in each technical chapter. The baseline information gathered from a variety of sources, including published data, desk studies, consultation, field surveys and monitoring. Unless otherwise stated, the surveys that are referred to in this ES are surveys specifically carried out as part of the EIA.
- 2.26. Details of the environmental baseline surveys, including survey methodology, any difficulties encountered in gathering survey information and where external organisations have been consulted are presented, principally in Technical Chapters 6 to 16.

Significance Criteria

- 2.27. Each technical chapter describes how the significance of effects has been identified and assessed, in line with the methodology set out above explaining how the magnitude of effect is measured; how the sensitivity of the identified receptor to that impact is measured; and how the significance of effect is derived.
- 2.28. As indicated above, unless otherwise stated within the Technical Chapter, effects are considered to be 'significant' where the results of the magnitude equate to a 'moderate' or 'major' in this ES.

Baseline Conditions (incorporating a Future Baseline)

- 2.29. Information and data has been collected by the relevant specialist consultants to determine the baseline conditions within the area, which might be affected by the Proposed Development, that is, the situation that would likely prevail in the absence of the construction and operation of the project.
- 2.30. The Baseline Conditions also consider a future baseline, which relates to likely changes over time, assuming the Site remains undeveloped, this includes any changes associated with climate change predictions.

Assessment of Effects

- 2.31. The baseline information allows future Site conditions to be assessed as indicated above and also enables the likely effects of this development to be assessed.
- 2.32. The 2017 EIA Regulations (as amended) recognise that development proposals affect different environmental elements to differing degrees and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process.
- 2.33. The 2017 EIA Regulations (as amended) identify those environmental resources that warrant investigation as those that are most likely to be significantly affected by the Proposed Development.
- 2.34. Potential significant environmental effects are considered for both the construction phase and the operation phase of the Proposed Development in each Technical Chapter.
- 2.35. It is currently anticipated that work on Site would commence in June 2022 for a period of 4 years with around 7,125m² floorspace completed per annum. The Proposed Development is expected to fully complete and be occupied by July 2026. Further details are provided in **Chapter 5 Construction and Phasing**.

Impact and Effects

- 2.36. In this ES assessment 'impact' will concern the change that arises whereas 'effect' is the consequences of that change.

Mitigation

- 2.37. Regulation 18(3) of the 2017 EIA Regulations requires an ES to include:

“A description of any features of the Proposed Development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.”

- 2.38. For each effect identified in the ES, potential mitigation measures will be identified within the topic chapter to offset, reduce or prevent adverse effects and enhance beneficial effects, with specific measures having been considered at the design stage where practicable.
- 2.39. Where the effectiveness of mitigation proposed has been considered uncertain, or where it depends upon assumptions of operating procedures, data and/or professional judgement has been introduced to support these assumptions.
- 2.40. Mitigation recommended during the demolition and construction phase would be set out in the CEMP or similar to be agreed with NPTCBC prior to the commencement of site work and implemented throughout the duration of the works. Further details are set out in **Chapter 5** Construction and Phasing.
- 2.41. An overview of the proposed mitigation measures are also provided in **Chapter 18** of the ES. These mitigation measures will be delivered through planning conditions, Community Infrastructure Levy or will be provided for within the S106 Agreement.

Residual Effects

- 2.42. The residual effects assessment provided in each topic chapter provides a description and assessment of the magnitude and significance of impacts that will remain after the proposed mitigation measures are implemented. These impacts may be adverse, beneficial or both. An overview of any residual effects envisaged is also provided in **Chapter 18**.

Monitoring

- 2.43. In accordance with Clause 7 of Schedule 4 of the 2017 EIA Regulations (as amended), where the Proposed Development will result in an identified significant adverse effect on the environment, proposed monitoring arrangements will be proposed, where suitable, to ensure that measures envisaged to avoid, prevent, reduce or offset the effects are undertaken as required through the construction and operational phases.
- 2.44. The description of the monitoring is set out, as required, within the Technical Chapters.

Cumulative Effects Assessment (CEA)

- 2.45. Clause 5e of Schedule 4 of the 2017 EIA Regulations requires an ES to include a description and assessment of:

“The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.”

- 2.46. The ES provides information on cumulative effects which can be either cumulative (additive) effects or combined (synergistic) effects.

Cumulative Additive Effects

- 2.47. Cumulative additive effects are those that result from changes caused by proposed or reasonably foreseeable projects within the locality of a Site or proposed project when assessed with the effects of the Proposed Development. Additive effects are the sum of the magnitudes of the effect (e.g. noise and noise) and the combined effect is assessed as if resulting from a single project.

Synergistic (Combined) Effects

- 2.48. Synergistic effects are more complex to assess (as they can arise from the combination of different effects e.g. noise and visual) and as the effects can be intra (occurring within one project) as well as inter (occurring due to different projects).
- 2.49. The spatial scope or zone of influence (ZOI) for inter-project cumulative effects for the Proposed Development will be limited to committed major development proposed within the Neath Port Talbot area.
- 2.50. The temporal scope considers the relative phases of other developments and potential for overlap and interaction including construction and operational phases of those developments.
- 2.51. **Table 2.8** sets out the ‘existing, approved and reasonably foreseeable’ projects to be considered within the cumulative assessment. The list includes those that have been agreed with NPTCBC through their Scoping Opinion Report.

Table 2.8: Site's considered for Cumulative Effects

Site Address	Site Status	Proposed Development	Reason for Inclusion
Tyn Y Caeau, Margam Road, Port Talbot, SA12 2NW	Appeal on hold pending preparation of revised ES.	Change of use from dwelling house and annex building into a mixed used development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces. The proposal includes the demolition of an existing single storey rear extension, and the	Located adjacent to the site.

Site Address	Site Status	Proposed Development	Reason for Inclusion
		erection of a single-storey rear extension, together with widened site access, additional internal access roads, parking areas and associated works. (Bat survey and mitigation submitted 18/09/2020)	

- 2.52. The Cumulative Effects Assessment methodology is set out in full in **Chapter 17** with the assessment.

Limitations and Assumptions

- 2.53. Clause 6 of Schedule 4 of the 2017 EIA Regulations requires an ES to include:
- “...details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.”*
- 2.54. A summary of difficulties encountered during the preparation of the ES are set out in each individual Technical Chapter (where relevant). This summary provides a description of the nature and type of difficulty experienced and if applicable a summary of uncertainties which have resulted from this difficulty.
- 2.55. None of the difficulties identified during the course of the preparation of the ES have prevented a full assessment of the likely significant environmental effects of the Proposed Development.

3. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

- 3.1. This Chapter describes the application Site and its surrounding context. It also sets out the Proposed Development.
- 3.2. A full description of the Proposed Development is provided in the Design and Access Statement (DAS) that accompanies the planning application.

The Application Site

- 3.3. The Site is located on the southern end of Neath, set off the western side of the A48 Margam Road, which runs between Junction 38 of the M4 motorway at Margam, and roundabout junction with the A4241 'Harbour Way' dual carriageway to Margam Steelworks. The site is within the administrative boundary of Neath Port Talbot Council.
- 3.4. The Site comprises an irregular parcel of land measuring approximately 7ha. It is bound by native hedgerow that wraps around the eastern and southern boundaries that border the A48, Heolcae'r-Bont (Longlands Lane) and the Wales Coastal Path (WCP). To the north and west of the site lies the access road to the adjacent Western Wood Energy Plant and Margam Green Energy Plant that feeds into the A4241 and A48. Beyond this areas of wet woodland are located with the BOC Plant and the Port Talbot Steel Work located approximately 1.13km away. The currently vacant small holding of Tyn-y-Caeau is located to the immediate north-east and contains an established woodland within its' grounds along the eastern site boundary that is protected by a Tree Preservation Order (Ref. T364).
- 3.5. The Site currently comprises arable farmland. There are no Public Rights of Ways (PROWs) on or immediately abutting the Site, however the Wales Coastal Path wraps the eastern and southern boundaries that provides a recreational route footpath across the Margam Moors, crossing the main Swansea/Paddington railway and Kenfig River into the Kenfig National Nature Reserve.
- 3.6. The Site is predominantly located in Flood Zone A. Meanwhile parts of the highway and a small catchment to north of the site are identified within Zone B and Zone C2 with the attached Low Flood Risk from rivers, and surface water & small watercourses.
- 3.7. There are no listed buildings within the Site boundary.
- 3.8. The Site is located 0.09km from the designated Special Landscape Area (SLA) and Landscape of Historic Interest that contains the Margam Park Historic Park and Garden and Conservation Area within which numerous Grade I and Grade II Listed Buildings and Scheduled Ancient Monuments lie. Moreover, to the south of the site a Site of Special Scientific Interest (SSSI) is located at the Eglwys Nunydd Reservoir.

- 3.9. The Site includes trees that do not benefit from Tree Preservation Orders, and these trees will be retained where possible as part of the Proposed Development. The application is supported by an Arboricultural Impact Assessment, which confirms that these trees will be protected.
- 3.10. The topography of the site is relatively level ranging from 460m above sea-level to the east and 557m above sea-level in the west.

The Surrounding Area

- 3.11. The Site is located on the southern edge of Neath which is situated within the administrative boundary of Neath Port Talbot County Borough Council and, as such is surrounded by areas of both built up development to the north and east and countryside land to the south.
- 3.12. The Site is contained by clear boundaries. It is bound by native hedgerow that wraps around the eastern and southern boundaries that border the A48, Heolcae'r-Bont (Longlands Lane) and the Wales Coastal Path (WCP). To the north and west of the site lies the access road to the adjacent Western Wood Energy Plant and Margam Green Energy Plant that feeds into the A4241 and A48. Beyond this areas of wet woodland are located with the BOC Plant and the Port Talbot Steel Work located approximately 1.13km away. The currently vacant small holding of Tyn-y-Caeau is located to the immediate north-west and contains an established woodland within its' grounds along the eastern site boundary that is protected by a Tree Preservation Order (Ref. T364).
- 3.13. Although no Listed buildings are located within the Site boundary, the Grade II Listed Margam Crematorium and Longlands House are found to the south of the site.
- 3.14. The Site is located adjacent to the Tyn Y Caeau site, an application for the formation of a truck stop, change of use of existing dwelling to guest accommodation with café and spa facilities, together with HGV parking area and associated infrastructure, was refused in October 2020 and is currently pending decision at appeal.

NPTCBC Local Plan - Site Allocation EC1/2

- 3.15. The Site has been included as an allocation for employment use within the adopted Local Development Plan, identified as allocation EC1/2. The relevant policy states that the Site lies to the south of Harbour Way and adjacent to the A48 and M4 and thus benefits from excellent road transport links. Allocation EC1/2 is expected to meet the following criteria:
 - Contain B1,B2 and B8 uses;
 - Ancillary facilities or services which support and complement the wider role and function of the primary employment use;
 - Commercial services unrelated to class B.
- 3.16. The Proposed Development has been directed by the policy requirements set out within this policy.

The Proposed Development

- 3.17. This section sets out the Proposed Development. A full description is provided in the DAS that accompanies the Planning Application.
- 3.18. Full planning permission is sought for the following Proposed Development:

“The development of a metal processing facility totalling 28,500sq.m of floorspace comprising a powder processing plant (17,377sq.m), warehouse and store (5,428 sq.m) office building (1,442 sq.m), amenity building (776 sq.m), laboratory (200 sq.m), services building (470 sq.m), substation (107 sq.m), phase 2 (2,700 sq.m), CCTV and parking on-site at J38, M4, Margam, Port Talbot.”

EIA and the Planning Application

- 3.19. Details relating to the components of the Proposed Development are set out in full in the DAS which accompanies the planning application.
- 3.20. Each technical chapter within the ES assesses the Development Parameters including the Site Masterplan (**Technical Appendix 3.1**) and specifically, the potential development within the parameters that would lead to the “worst case” effects for that discipline. This will ensure that any future detailed proposals coming forward within the parameters of a future outline permission would not lead to greater (more adverse) effects on the environment than have been assessed at the outline stage.
- 3.21. The application is submitted in full for subsequent approval.

Land Use Components

- 3.22. The application Site is a greenfield Site, and the Proposed Development does not include demolition works. Given the likely phasing (set out in detail in **Chapter 5**) and the extent of the application Site, it is not anticipated that any further land take will be required for construction purposes.
- 3.23. The proposed Land Uses of the Site are demarcated on the accompanying Masterplan.
- 3.24. Set out below in **Table 3.1** is a summary of the land use components of the scheme these may not always be exclusive of one another (see Masterplan).

Table 3.1 Land Use Components

Land Use	Use Class and Quantum
Office	B1 (a) – 1,442 sq.m
Powder Processing Plant / Laboratory/Phase 2	B2 – 20,277 sq.m
Warehouse and store / Services / Amenity / Substation	B8 – 6,781 sq.m
Total	28,500 sq.m

Building Heights

- 3.25. As illustrated on the accompanying plans the building heights will comprise the following:

Table 3.2 Building Heights

Building	No. of Storeys	Max. Building Height (metres)
Powder Processing Plant		
Section 1	2	16.5m
Section 2	3	16.5m
Section 3	1	16.5m
Warehouse and Store	1	16.5m
Office	2	9m
Amenity	1/2	6m
Lab	1/2	4/6m
Services Building	1	6/7 m

- 3.26. The DAS and accompanying plans provide further detail.

Green Infrastructure and Landscaping

- 3.27. The Masterplan and Green Infrastructure Plan have incorporated a number of landscape features in order to improve the green infrastructure throughout the Site. Where possible, existing landscape assets have been retained, including hedgerows and mature trees. In addition, the landscape strategy for the Site will seek to supplement these existing trees and hedgerows by adding new planting within the development boundary and areas of public open space to add to the placemaking aspects. Further information has been provided in the accompanying DAS.

Key Movement Corridors

- 3.28. In terms of pedestrian and cycle access, the site is well connected to existing walking and cycling routes and active travel network along the shared footway/cycleway of the A48 which connects the site to the surrounding Margam and Port Talbot residential areas. The site benefits from the adjacent good quality National Cycle Network Route 4 that links to the site access road and services London to Fishguard, therefore demonstrating the site's suitability to support and enhance Neath Port Talbot's walking and cycling network (SP20).

Lighting

- 3.29. The lighting proposals will be designed to take account of the relevant technical guidance and advice. Further details are provided within the DAS and other supporting documents submitted in support of the planning application, as well as where relevant to specific environmental topics, including in **Chapter 10**.

Waste

- 3.30. At operational phase the detailed design of the scheme will ensure that the Site is able to accommodate a suitable waste strategy that accords with the NPTCBC waste requirements and managed in accordance with all applicable legislation. This shall include appropriate locations for the storage of recycling facilities for household waste, and ensuring that the road widths are suitable for waste collection vehicles.

Flood Risk, drainage and water resources

- 3.31. The application is supported by a Flood Consequence Assessment (FCA) as well as a Preliminary Drainage Strategy.
- 3.32. The proposed development site falls within Flood Zone 2 and Flood Zone 3 of NRW's Flood Map for Planning- Sea, Rivers and Surface Water and Small Watercourses. No built development is proposed within the Rivers or Surface Water and Small Watercourses Flood Zones 2 or 3. Part of the car park is proposed within Flood Zones 2 and 3 of the Flood Map for Planning for the Sea. In Flood Zones 2 and 3, development can take place subject to the application of the Justification Tests, and the acceptability of flood consequences.
- 3.33. The Flood Map for Planning classification is not based upon best available data. Therefore weight should be given to the evidence presented in this assessment. A small part of the site is shown to be at risk of flooding from fluvial and surface water and small watercourses flood risk sources according to the National Resources Wales Flood Risk Assessment Wales Maps.
- 3.34. Due to the topography of the site, it is not possible to connect directly to the existing combined adopted sewer. Therefore, foul drainage is proposed to drain into a wet well and pumping station adjacent to the western boundary and pump the effluent from the tank via rising main prior to discharge via a connection to the combined adopted sewer. The development proposal would ensure the drainage system would have no detrimental effects on the water environment or on flood risk and would utilise various SuDS technique to do so.

Energy, Climate Change, CO2 and Renewables (Residues and Emissions)

- 3.35. The planning application will be supported by an Energy Statement which will detail the applicant's aim to achieve a BREEAM rating.

Climate Change

- 3.36. The role and likely effects of climate change over time have been considered as part of this predicted baseline by applying the Met Office Predictions (UKCP18; **Appendix 3.2**).

- 3.37. The Met Office Guidance (**Appendix 3.2**) states that these are the projections that should be used when undertaking risk assessments and adaption decisions and the “*Government will make use of UKCP18 to inform its adaptation and mitigation planning and decision-making*”.
- 3.38. The development proposal strives to meet each of the criteria set out within this policy to minimise its’ effects on climate change and recognises the fundamental importance of the policy to the LDP. In terms of causes of climate change, the development proposal would enhance the efficiency and sustainability of the County borough’s settlements through the co-location of industrial development within a key strategic site that follows NPTCBC’s sustainable development principles. Consequently, this will introduce more sustainable travel patterns through increased accessibility and enable a reduction in greenhouse gas emissions from operational transport as detailed in the submitted transport assessment. The site already benefits from a good level of sustainable travel which will be enhanced further through the proposed travel plan that will encourage sustainable travel behaviour. This in turn will help reduce the dependence on the private car through promoting alternative means of transport in line with policy SP1. Moreover, the development will seek to enhance efficiency and sustainability through the site’s BREEAM outstanding ambitions in line with SP1 and the environmental considerations of PPW 11 in terms of location, design, build and operation.
- 3.39. In regard to the consequences of climate change listed in SP1, the proposal has taken into account and accords with recent national guidance TAN15: Development and Flood Risk, as detailed in the submitted FCA. The proposed drainage scheme would also enhance the development site’s resilience from future risk of flooding by accounting for +40% capacity due to climate change and ensure there would be no increased risk of flooding elsewhere due to the development. Furthermore, the proposal would seek to minimise the fragmentation of habitats through the proposed green infrastructure plan that would retain and enhance the existing green corridor and where possible retain established tree coverage and strengthen existing native hedgerow.

Utilities and Services

- 3.40. A main gas line is located to the east of the site which has been zoned as a no build zone. The landscape proposals have also accommodated this area with a 6m buffer zone either side of the pipe being enforced.

4. ALTERNATIVES AND DESIGN EVOLUTION

Introduction

- 4.1. Part 2 of Schedule 4 of the 2017 EIA Regulations (as amended) state that an Environmental Statement should include:

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

- 4.2. The alternatives proposed in this section relates to those associated with design, location, size and scale. Due to the Proposed Development representing industrial development with office use, it was not considered that there were appropriate technological alternatives to the Proposed Development and therefore these have not been discussed below.
- 4.3. In this instance, the potential alternative scenarios comprise firstly, ‘do nothing’, secondly, consideration of alternative development site’s; and thirdly, consideration of alternative design configurations for the Proposed Development within the application site.

1. Do Nothing / No Action Alternative

- 4.4. Whilst the site is allocated within the Local Development Plan EC1/2 for employment use (B1, B2 and B8) there are a number of challenges with Sandvik’s existing site in terms of safety, productivity and limited space for expansion, electricity and inert gas capacity issues which restrict the ability for an expansion of the existing site.
- 4.5. Given the sites allocation, the site has been considered as an acceptable location for the proposed development as the intended use is in accordance with national and local policy. Notwithstanding, the proposed site provides a long-term solution for the safety and productivity issues currently experienced at the existing site.
- 4.6. The site has a dedicated biomass electricity supply and inert gas connection which will enable them to extend their services through creation of space and dedicated facilities to market high purity variants (such as cooper powder) and expand production of Metal Injection Moulding (MIM) and Additive Manufacturing (AM – also known as 3D printing). The location of the proposed site results in improved transport links, efficient building design and indoor logistics which significantly improves the environmental effects of the business. The proposed site does provide a spacious site layout, with separated site entrances with the ability to separate HGV and cars to enhance safety on site.
- 4.7. The Do-Nothing scenario would also limit the economic performance of the company and restrict the opportunity for additional jobs and training opportunities within Neath Port Talbot. There are no other sites within Neath Port Talbot that can provide the dedicated biomass and inert gas connection required by Sandvik. A worst case scenario could be the loss of Sandvik, a major employer within Neath Port Talbot, which in turn would result in a significant impact to the economic performance of the region.

- 4.8. In light of the above, a Do Nothing scenario is not considered appropriate to sustain the long term growth of Sandvik, a global engineering group in mining, rock excavation, metal cutting and materials technology sector. Specifically, the Do Nothing scenario would also restrict the long term economic growth of Sandvik and economic performance of Neath Port Talbot.

2. Consideration of Alternative Development Site's

- 4.9. The Site has been included as a strategic allocation for an employment-led development in the adopted Local Development Plan.
- 4.10. This allocation has therefore been subject to a Sustainability Appraisal undertaken by NPTCBC in accordance with the Strategic Environmental Assessment (SEA) Regulations. The Sustainability Appraisals assessed the Site against alternative Site's to determine the most suitable and sustainable locations for development. The process to date has concluded that the Site is a suitable location for development of the scale proposed and, moreover, integral to the ability for the Local Plan to deliver the required amount of employment land to meet local need.
- 4.11. The Site was also assessed through NPT's Economic Land Study (2012) which re-identified the site as a suitable site for employment land. As outlined earlier in the ES the Site is a historic allocation which was previously allocation for 27ha of employment land, however as a result of the 2012 Economic Land Study, it was found the quantum of land allocated was greater than the requirement. Subsequently, the Site was re-allocated within the adopted LDP to include a reduced area of 6ha.
- 4.12. As a result of this process, it is not considered necessary to repeat the assessment of alternative Site's through this ES.

3. Design Configurations for the Proposed Development within the Application Site

- 4.13. The Proposed Development has been informed through the policy requirements set out within the Policy Section confirming the allocation, as set out in the preceding Chapter, and the Site's design configuration process which has been developed through the Site's constraints and opportunities
- 4.14. The Proposed Development has resulted from technical appraisals and understanding of Site constraints, together with extensive early engagement with officers and relevant stakeholders including the local community. This engagement has continued through the application preparation with meetings/discussions held with NPTCBC and statutory consultees, Parish Councils and Ward Members in the form of Pre-Application discussions and Pre-Application Consultation (PAC).
- 4.15. The engagement has included a detailed programme ensuring consistent engagement with the Council, stakeholders and statutory consultees throughout the evolution of the proposals and the application process.

- 4.16. Throughout the engagement and consultation process the design has evolved in response to Site characteristics, policy requirements of the Local Plan, and discussions with officers and stakeholders. This engagement has informed the preferred proposed layout, in consideration of reasonable alternatives.
- 4.17. A summary of the consultation undertaken is detailed in Chapter 1. The full detail of the consultation and engagement undertaken is also set out within the accompanying Planning Statement, PAC Report and Design and Access Statement.
- 4.18. An alternative configuration was presented to NPTBC with 3x office buildings which have now been combined into one and moved to the northern field outside of the health and safety high pressure zone. This relocation further strengthens the 'placemaking' of the development to provide a stronger street frontage, creating a sense of place and identity for the site whilst providing natural surveillance and security. The previously presented scheme also included a total of 300 parking spaces, which have now been reduced to 170 and include EV charging points.
- 4.19. The reduction of car parking provision from 300 to 170 appropriately addresses NPTBC's concerns raised and are spread across two key areas for officer workers in the northern field and factory workers to the east. Additional visitor parking is provided along the northern frontage adjacent to the northern access route. In total 11 accessible parking spaces and 18 EV charging points are distributed across the site. Further amendments have been made to accommodate various high value trees that surround the eastern car park and reconfigure the proposed parking layout design.
- 4.20. In addition to the office building relocation, the proposed amenity building has been altered to fit the scheme with the addition of a canteen extension to the northern elevation, having been reduced in size and orientation altered. An extra storey is also proposed to the amenity block to accommodate additional offices and breakout spaces for the work force.
- 4.21. The vehicular and pedestrian access to the site was also revised to enable an additional pedestrian route along the southern boundary to Heolcae'r-Bont and provide a secondary emergency route to the service area. Widening of the main vehicle access to the factory has also taken place to improve operational accessibility. As a result of extensive discussions with NPT highways the once proposed secondary HGV entrance on the western boundary was relocated to the northern boundary, adjacent the predominant site entrance.
- 4.22. The alternative options were not considered appropriate as outlined above.

Summary

- 4.23. Overall design options have evolved in response to Site opportunities and constraints and consultation with key stakeholders and members of public. The Parameters now sought are considered to result in a lower magnitude of effect in Environmental terms when compared with the alternatives discussed, particularly in respect of landscape and heritage.
- 4.24. Further detail of design evolution and alternatives considered is provided within Design and Access Statement included in the Planning Application submission.

- 4.25. The above have led to the Masterplan as set out in **Technical Appendix 3.1** of Volume 2.
- 4.26. Accordingly, the alternatives have been assessed and the proposed development is considered to be the most reasonable form of development, in light of consultation, planning policy context and technical evidence available and is not considered to result in any significant environmental effects to reasonable alternatives, as the development has been designed to minimise and mitigate potential impacts.

5. CONSTRUCTION PROGRAMME AND METHODS

Introduction

- 5.1. This Chapter details the proposed Construction Programme and Methods of Construction. Consideration of the likely significant effects of the Construction Phase on the environment has been assessed within each of the respective Technical Chapters.

Indicative Construction Programme

- 5.2. The indicative construction programme, which has formed the assessment of the ES assumes that development would commence in June 2022, over a period of four years and completed in July 2026. The construction programme assumes around 7,125m² floorspace is completed each year.
- 5.3. The Planning Application is supported by an indicative Phasing Plan as detailed in Chapter 1 above, which proposes the phasing of the Site's delivery. This has been prepared in discussions with the technical consultants and is broken down into five key stages:

Phase	Timescale
Planning Consent	June 2022
Construction Phase	August 2022 – December 2023
Equipment Phase 1 Install	December 2023 – May 2024
Phase 2 Equipment transfer from Neath	June 2024 – May 2026
Decommission and Sale of Neath	July 2026

- 5.4. As detailed at the end of this Chapter, appropriate construction methods will be adopted to ensure that construction does not result in a significant effect on the environment. A future full CEMP will also include appropriate construction hours (to be agreed with NPTCBC) and the implementation of Site hoarding, where necessary and justified, to mitigate noise and visual impacts from the construction.

Construction Trip Generation

- 5.5. The number of construction workers entering the Site is unknown at this time because the planning application for the Proposed Development is in outline. An assumption has been made with regards to the construction phase traffic movements, and this has been assessed as part of the EIA. The detail of the traffic movements associated with the construction phase is included in the Traffic and Transport Chapter of this ES. This is also shown in the table below.

Sustainable Modes of Construction and Nature and Quantity of Materials

- 5.6. The Proposed Development will adopt usual sustainable methods of construction for industrial development.
- 5.7. The scheme will be built in accordance with the latest iteration of the Building Regulations. A range of sustainable design and construction measures will be used, including:
- Improved energy efficiency through siting, design and orientation;
 - A fabric first approach to carbon emission reduction;
 - Low water use sanitary features; and
 - Where appropriate, the use of recycled materials / or materials capable of being recycled.
- 5.8. Construction materials will be responsibly sourced, durable and healthy, locally sourced materials will be used where possible. The buildings will also adhere to the National Development Space Standards (NDSS).

Materials

- 5.9. The DAS provides information with respect to the indicative materials palette which include horizontally spanning cladding, micro ribbed horizontal insulated cladding, glazed powdered coated aluminium windows, glazed coated aluminium panels and polyester powdered coated aluminium double glazed commercial grade door.

Construction Environmental Management Plan (CEMP)

- 5.10. This application is accompanied by a draft CEMP (contained in **Technical Appendix 5.1** of Volume 2 of the ES). The CEMP identifies a range of proposed mitigation measures for the predicted construction impacts of the development, and will include:
- Work activities will be restricted to the permitted site working hours. It is not anticipated there will be any activity on Sundays or Bank Holidays. Deliveries to and removal of plant, equipment, machinery and waste from site will take place within these permitted hours.
 - Machines and vehicles in intermittent use will be shut down or throttled down to a minimum during periods between work;
 - Start-up plant and vehicles sequentially rather than all together;
 - There will be a 15mph speed limit within site boundaries;
 - Careful selection of quiet plant and machinery to undertake the required work where available;
 - All major compressors should be sound reduced models fitted with properly lined and sealed acoustic covers which should be kept closed whenever the machines are in use;
 - Any ancillary pneumatic percussive tools should be fitted with mufflers or silencers of the type recommended by the manufacturers;
 - Machines in intermittent use should be shut down in the intervening periods between work;

- Ancillary plant such as generators, compressors and pumps should be placed behind physical barriers and the direction of noise emissions from plant including exhausts or engineers should be placed away from sensitive locations, in order to cause minimum noise disturbance. Where possible, in potentially sensitive areas, acoustic barriers or enclosures should be utilised around noisy plant and equipment;
- Handling of all materials should take place in a manner which minimises noise emissions;
- Audible warning systems should be switched to the minimum setting required by the Health & Safety Executive.

6. SOCIO-ECONOMICS

Introduction

- 6.1. This Chapter has been prepared by Boyer who are competent experts in EIAs and are corporate members of the (Institute of Environmental Management & Assessment (IEMA). In addition, Boyer are also corporate members of the Institute of Economic Development (IED) and learning partners of the Royal Town Planning Institute (RTPI).
- 6.2. The Chapter presents the findings of the assessment of potential impacts on the Population and socio-economic effects from the Proposed Development – namely the impact of the development on: local population; local economy; local employment opportunities; local amenity; and safety and security of the Site.
- 6.3. Having set out the proposed assessment methodology and policy/legislative context in relation to socio-economic issues, the Chapter considers the prevailing socio-economic conditions for the Site and its locality. The potential effects of the Proposed Development on those baseline conditions are then examined and presented qualitatively and wherever possible, quantitatively; any necessary mitigation measures to prevent, reduce, or off-set those effects are then outlined. The resulting residual effects (factoring in mitigation measures where required) are also assessed.
- 6.4. This Chapter is intended to be read as part of the wider ES with particular reference to the introductory chapters of this ES (Chapters 1- 5), as well as Chapter 17: Cumulative Effects Assessment.

Legislative Planning Policy Framework

- 6.5. This section outlines the legislative context and planning policy relevant to population and socio-economic effects. It sets out the relevant national and local planning policy obtained from Planning Policy Wales (PPW) Edition 11 (2021); Future Wales: The National Plan 2040 (2021) and the Neath Port Talbot County Borough Council Local Development Plan (LDP) (2012).
- 6.6. Planning Policy Wales (11th Edition) (PPW11) was published in the context of the Wellbeing of Future Generations Act (2015), which places a duty on public bodies to carry out sustainable development. There is a requirement to improve the delivery of four identified aspects of wellbeing, which are: social, economic, environmental and cultural.
- 6.7. Chapter 5 of PPW addresses the productive and enterprising placemaking and well-being that is provided through well-connected employment and sustainable economic development that create and renew hubs of economic activity around sustainable transport nodes which capitalise on their location and the opportunities which this presents.
- 6.8. Section 5.4 details the importance of strategic economic development that seeks to maximise opportunities to strengthen a foundational economy and steer economic development in the most appropriate locations. The development of land for activities that

generate sustainable long term prosperity, jobs and income is encouraged through the management of allocated strategic employment sites and uses. Support is given to innovative, emerging technology and high value added sectors such as advanced engineering in their role they play in terms of investment and job creation.

- 6.9. Paragraph 5.13.4 establishes the Welsh Government's Towards Zero Waste policy that supports facilities that align with the priority order of their waste hierarchy. 5.13.13 sets out the need to support a transition towards circularity of materials through the provision of facilities that provide high efficiency and high quality reuse and recycling. All of which is set in the context of promoting a circular economy, to reduce unnecessary waste and encourage high quality manufacturing.

Future Wales: The National Plan 2040 (February 2021)

- 6.10. Reflecting sentiments in PPW, Future Wales notes the importance of an integrated approach to strategic land-use in South West Wales through key locational decisions for high quality employment centres that focus on the most sustainable and accessible locations. Moreover, the Economic Action Plan identifies high value manufacturing as a national thematic sector and supports the development of advanced manufacturing in each region.
- 6.11. The Strategic development plan also recognises the need to consider the region's connections with the Mid Wales and South East regions in addition to Ireland to promote accessibility and inter-linkages to operate as a cohesive whole. Neath Port Talbot is identified within the primary growth area for the region with the main existing centre of population, employment and services that is served by the main connectivity infrastructure.

Swansea Bay City Region City Deal

- 6.12. The Swansea Bay City Region seeks to 'unlock significant economic growth', support and further build upon the region's energy, health and manufacturing sectors to widen the economic base and provide high value employment opportunities. The City Deal cites the critical importance of the manufacturing sector supported by world class industrial innovators through the promotion of Smart Manufacturing and Factory of the Future initiative.

Neath and Port Talbot Local Development Plan (January 2016)

- 6.13. The LDP strategy highlights the fundamental importance of high quality employment sites that can support emerging business and employment needs to deliver economic success and widen the skill pool for prospective employers. The Strategy for the LDP is based on a projected economic-led growth scenario of 3,850 jobs for the area to 2026. In order to meet this requirement the LDP has identified two strategic employment sites at Baglan Bay and of particular relevant is Junction 38 (M4) Margam. Both these sites are located in the coastal corridor which is the highest market demand.
- 6.14. To ensure the projected level of employment can be delivered within the Plan period, 96 hectares of land has been allocated for employment, 32 of which is dedicated for conventional B Class classes and ancillary facilities.

6.15. The following policies of the LDP are relevant in considering the population and socio-economic effects of the Proposed Development:

- SP2: Health – Seeks to ensure the development of sustainable, safe and confident communities through the co-location of jobs and facilities. Exposure to elements that can adversely impact people's health (social, economic and physical environment) will be reduced through consideration of the environmental and safety impacts of new development. This policy also aims to promote new employment opportunities to reduce unemployment and economic inactivity rates.
- SP3: Sustainable Communities - Promotes the delivery of sustainable, healthy and cohesive communities and the conservation of the countryside.
- SP5: Development in the Costal Corridor Strategy Area – Ensures sustainable growth and development through allocating strategic employment sites, including Junction 38 (M4), Margam, safeguarding existing employment uses and sites for employment purposes in order to facilitate growth within Neath Port Talbot.
- SP11: Employment Growth – Sets out the promotion of a sustainable economy that encourages new and expanding employment developments through various measures and allocations such as the Costal Corridor Strategy Area that meet the economic development and employment needs.
- EC1: Employment Allocations – includes Junction 38 (M4), Margam as an allocation for employment use (mix of Use Class B1,B2 and B8) under policy reference EC1/2+. The policy identifies that the site is near to numerous existing employment and industrial operations and benefits from excellent road transport links located adjacent to the Harbour Way PDR, A48 and M4.

6.16. A full review of compliance with national and local planning policy is provided in the Planning Statement.

Assessment Methodology

6.17. The assessment has been based on the proposed land use as defined in Chapter 3: Site Description and Proposed Development.

6.18. There is currently no Government guidance on the preferred method of assessing population and socio-economic effects associated with major development. Given this, the assessment takes into account wider guidelines where they exist, together with professional judgement.

6.19. Baseline population and socio-economic conditions have been established through the interpretation of nationally recognised research and survey information such as the Office for National Statistics (ONS) and StatsWales, Welsh Government.

6.20. The potential socio-economic impacts have then been assessed against the prevailing baseline conditions using known details of the Proposed Development.

6.21. Specific data on local statistics such as economy and employment have been obtained from a combination of Welsh Government's documents, Local Planning Authority's (LPA) documents and websites and other relevant sources such as ONS and Census data.

- 6.22. Other specific documents which have been utilised to provide an overview of facilities within the area are referenced throughout this Chapter. A full list of references can be found at the end of the Chapter.

Consultation

- 6.23. In terms of consultation, NPTCBC and other key stakeholders and members of the public have been consulted throughout the evolution of the development proposals. In addition, the scope of the population and socio-economic assessment was set out in the EIA Scoping Report. The EIA Scoping Opinion issued by NPTCBC on 24th August 2021 set out the consultation scope and requirements.
- 6.24. The proposed development has been subject to the Pre-Application Consultation (PAC) process due to commence in November 2021.

Study Area

- 6.25. The Proposed Development will affect the resident population of Margam and the surrounding administrative area of Neath and Port Talbot in which it is located, and accordingly the study area is Neath and Port Talbot County Borough. It is also noted that the existing Sandvik facilities are sited within Neath and therefore fall within the Study Area. The study also considers the Site within its regional and national context, with data include from South Wales, Swansea Bay City Region and Wales where relevant.

Table 6.1: Geographical area of effect and rationale for effect area

Effect	Geographical area of effect	Rationale/ evidence base for effect area
Employment opportunities	Local (Margam and Port Talbot) Level	Census 2011, Nomis labour market and employment density statistics, Welsh Government Stats Wales, Business Register and Employment Survey (2019)
Employment generation during construction phase	District (NPTCBC) Level	Census 2011, ONS, Nomis labour market and employment density statistics, HCA (2015), and The Construction Industry Training Board

Assessment of Process and Criteria

- 6.26. In terms of the assessment process and criteria, the approach is consistent with the methodology outlined in **Chapter 2** of the ES.

Sources of Information

- 6.27. Information relating to local socio-economic patterns and trend has been collated from a variety of sources. Demographic information has been obtained from Office of National Statistics (ONS) Nomis official labour market statistics service, Wales Census data, the Welsh Government's Stats Wales and Welsh Index of Multiple Deprivation 2019 (WIMD) services, alongside various documents published by Neath Port Talbot Council.
- 6.28. Other specific documents which have been utilised to provide an overview of facilities within the area are referenced throughout this Chapter.

Significance Criteria

- 6.29. The significance of the potential population or socio-economic effects associated with the Proposed Development have been assessed using professional judgement and taking into consideration the existing facility located within the same Study Area. This process aims to be objective and to quantify effects. However, given the nature of the assessment, some of the effects of the Proposed Development can only be evaluated on a qualitative basis.
- 6.30. The significance of effect has been determined by:
1. First considering the characteristics of the effect i.e.:
 - Type of effect (direct, indirect, reversible or irreversible)
 - Extent and magnitude
 - Duration
 - Whether in isolation, cumulative or interactive
 - Performance against environmental quality standards
 - Compliance with environmental policies
 2. Identifying and then considering the sensitivity of each receptor within the relevant topic Area.

- 6.31. The effect of the Proposed Development is then classified using the definitions outlined in **Chapter 2** of the ES.

Receptors

- 6.32. The following topics are identified as sensitive receptors and are considered in the remainder of this Chapter:
- Population; and
 - Economy (employment, local businesses, S106)
- 6.33. Effects on agriculture are considered in Chapter 7 Land and Ground Conditions.
- 6.34. The Construction Environmental Management Plan (CEMP) provides details of how the Proposed Development would avoid, minimise or mitigate against adverse effects on the

environment. How the CEMP relates to socio-economics receptors and effects is discussed in the construction effects section of this chapter.

- 6.35. The sensitivity of the identified receptors is considered further throughout the baseline section of this Chapter.

Baseline Conditions

- 6.36. This section summarises the existing population and socio-economic conditions of the Site and its surroundings. It provides the baseline against which the population and socio-economic effects of the Proposed Development have been assessed. Consideration has also been given to the existing facility located within the identified Study Area.

Population

- 6.37. The current population of NPTCBC local authority is 144,400 people (source: ONS Population estimates 2020) (3,169,600 Wales) and the ward Margam, where the Site is located, has a population of 1,967 people ¹.
- 6.38. **Table 6.2** below sets out the Welsh Government statistics based population projections for NPT as well as South West Wales area between 2018 and 2040. As demonstrated, a population increase of 5.28% is projected in NPT, whilst a population increase of 3.69% is projected for the wider Mid and South West Wales region. NPT is projected to remain the third largest population within the wide Mid and South West Wales region behind Swansea and Carmarthenshire.
- 6.39. It is noted that these population projections are based on demographic trends and do not account for any planned developments.

Table 6 2: Actual and Projected Population for the Local Authority and Region

Source: StatsWales, Welsh Government (2018) Source: <https://gov.wales/subnational-population-projections>

	2018 (Actual)	2025 (Projected)	2035 (Projected)	2035 (Projected)	2040 (Projected)	% population growth 2018-2040
Neath Port Talbot	142,906	145,703	147,555	149,219	150,874	+ 5.28%
Mid and South West Wales	907,434	918,744	927,876	935,505	942,247	+ 3.69%

1.1. ¹ Source: ONS, Mid-year Population Estimates (2019) Available at: [Local Area Report for areas in England and Wales - Nomis \(nomisweb.co.uk\)](https://www.nomisweb.co.uk/)

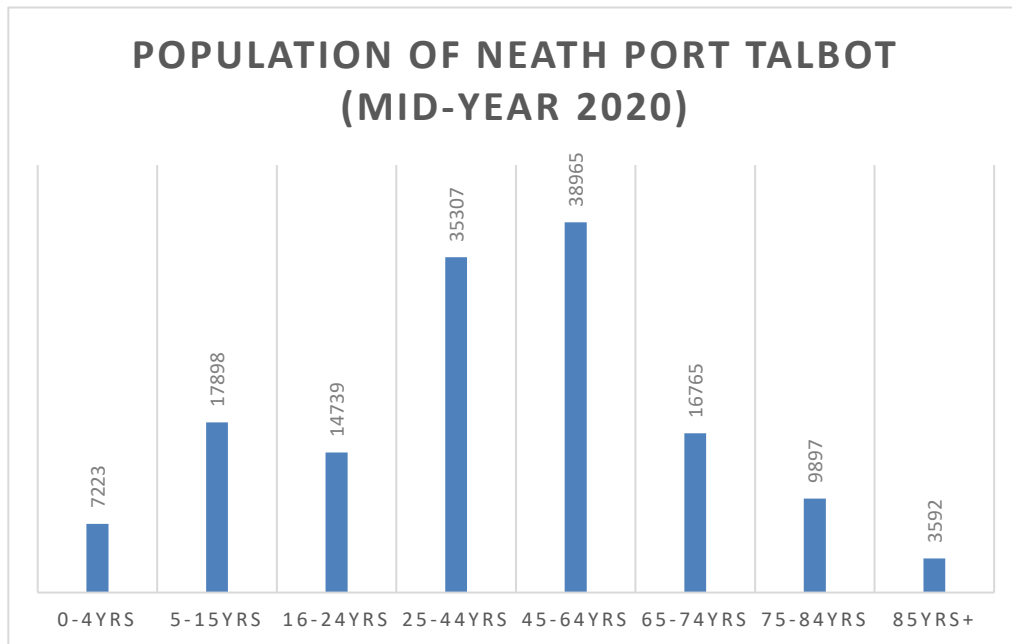


Figure 6.1: Age distribution of Local Authority population

Source: Stats Wales, Welsh Government (2021) Source: [Age distribution of population by gender and local authority \(gov.wales\)](#)

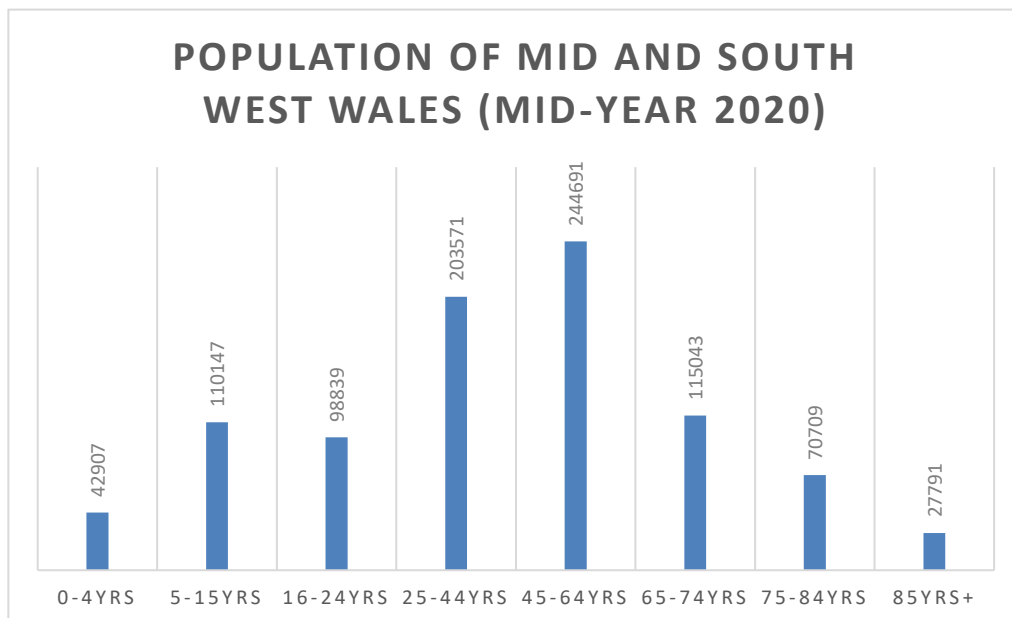


Figure 6.2: Age distribution of regional population

Source: Stats Wales, Welsh Government (2021) Source: [Population estimates by local authority, region and age \(gov.wales\)](#)

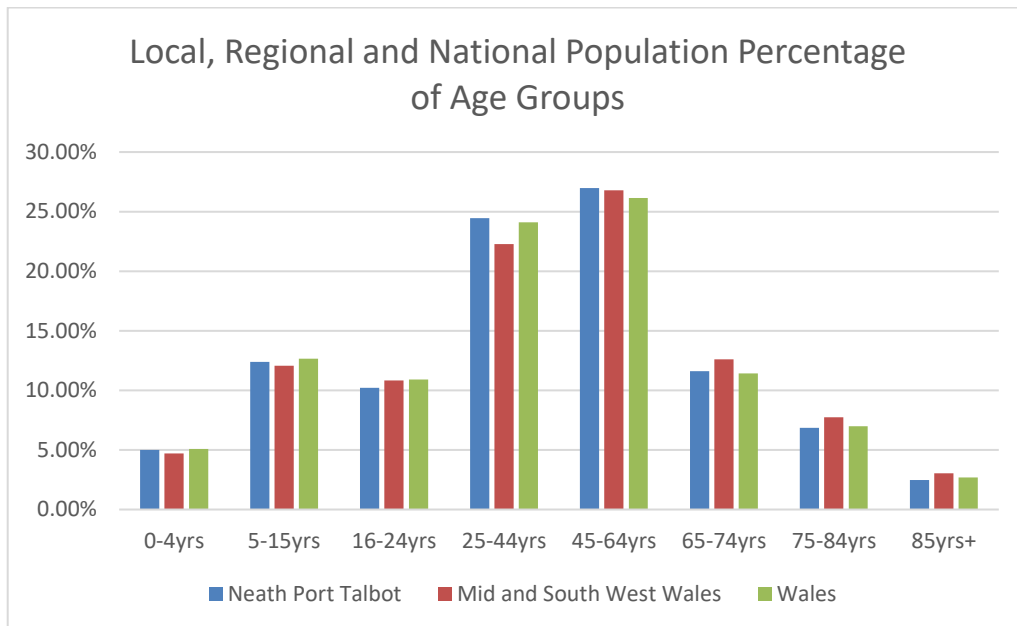


Figure 6.3: Local, regional and national population percentages by age groups

Source: Stats Wales, Welsh Government (2021) Source: Population estimates by local authority, region and age (gov.wales)

Economy

- 6.40. According to 2019 ONS data, the jobs density (jobs to working age residents) in NPT is 0.64. This is significantly lower than the national (Wales) average of 0.77, indicating signs of a weaker jobs economy in NPT.

Table 6.3: Job density and total jobs

	Jobs density	Total jobs
Neath Port Talbot	0.64	56,000
Wales	0.77	1,491,000

Source: NOMIS, ONS (2019) Sources: Labour Market Profile - Nomis - Official Labour Market Statistics (nomisweb.co.uk)

- 6.41. The most recent data published by the Welsh Government for NPT reported that in March 2020, NPT had the third highest unemployment rate (4.8%) of the 22 local authorities in Wales with the top five highest rates falling within West Wales and the South Wales Valleys. This figure sits 1.1% below the national rate for Wales that measures 3.7%. Although NPT's employment rates have seen a steady increase over the past decade of just over 10%, labour

market figures indicate a recent decrease from March 2020 – March 2021 from 73.1% to 70.0% (StatsWales, Welsh Government²).

- 6.42. The proportion of working age people in NPT is broadly aligned but slightly higher than the national level. The economic activity rates are slightly lower compared to the national average, as set out in Tables 4 and 5 below.

Table 6.4: Local and national work age population and economically active population

	Neath Port Talbot (%)	Wales (%)
Working Age Population (16-64) (2020)	61.6	61.2
Economically Active Population (April 2020 – March 2021)	72.3	75.2

Source: NOMIS, ONS, Annual Population Survey (2021) Sources: Labour Market Profile - Nomis - Official Labour Market Statistics (nomisweb.co.uk)

Table 6.5: Economically active population % for Local Authority and Wales

Economically Active (April 2020 – March 2021)	Neath Port Talbot (%)	Wales (%)
Economically Active	72.3 %	75.2%
In Employment	70.0%	72.2%
Employees	65.1%	63.1%
Self-employed	4.3%	8.7%
Unemployed	3.7%	4.0%

Source: NOMIS, ONS, Annual Population Survey (2021) Source: Labour Market Profile - Nomis - Official Labour Market Statistics (nomisweb.co.uk)

² Sources: Stats Wales, Welsh Government (2021) Available at: <https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/People-and-Work/Employment/Persons-Employed/statusofemployedpersons-by-welshlocalauthority-measure>

- 6.43. Table 6 below demonstrates an above average gross weekly wage by place of work in NPT for full-time workers (£566.40) compared to Wales (£537.80).

Table 6.6: Gross Weekly Wage by place of work for Local Authority and Wales

	Neath Port Talbot	Wales
Gross Weekly Pay Full-time Workers (2020)	£566.40	£537.80
Hourly Pay for Full-time workers – Excluding over time (2020)	£14.19	£13.73

Source: NOMIS, ONS, Annual Population Survey (2021) Source: Labour Market Profile - Nomis - Official Labour Market Statistics (nomisweb.co.uk)

- 6.44. Economic diversification is an important issue and challenge identified within NPT's Local Development Plan to ensure an appropriate supply, mix and range of high quality employment sites can be supported, following stagnant local economic growth over the last 10 years (Paragraph 2.4.15³).
- 6.45. Hence creation of jobs was a key focus for the Plan period. Similar sentiments are reflected in the Preferred Strategy (July 2020) as part of the Local Development Plan Review, which identifies job creation within the local economy as a critical element of the LDP strategy in achieving the overall vision. The review continues to identify the short falls of the existing plan in terms of limited job growth and employment development.

Existing Businesses at the Site and Surrounding Area

- 6.46. The Proposed Site comprises open grazing land, as such no existing businesses are present on the Site, apart from the surrounding Western Wood Energy Biomass Plant, Margam Green Energy Plant and BOC Gas and Gear store who operate from sites directly to the north and west of the site boundary.
- 6.47. In the surrounding area of Margam and Port Talbot, existing business is dominated by the Tata Steel Works and related industries situated to the west of the site off of Harbour Way. Additionally, the Tata recreational club facilities and playing fields are located 0.31km to the north of harbour way. Within the wider area to the east lies the Margam Country Park Estate with Margam Castle and Orangery that provide recreational facilities and local tourist attractions.

³ LDP plan, NPTCBC (2016)

- 6.48. It is also noted that the existing Sandvik facility operates within Neath, approximately 11.6km north-east of the site, and therefore is an existing employer located within the administrative area of NPTCBC.
- 6.49. The site is situated approximately 4.30km south-east of Port Talbot and 11.50km south of Neath. Baglan Bay and Energy Park lies approximately 9.12km north-west of the site and is situated between Port Talbot and Neath and adjacent to the M4 junction 42.

Qualification and Education

- 6.50. In terms of qualifications, NPT's population follows the broad trend similar to Wales, however falls below the national average on all levels of qualifications other with the exception of 'Other Qualifications' that is 0.5% higher. However, there remains a notable proportion of the population with no qualifications that is higher in NPT (11.2%) than in Wales (7.7%) – as shown in Table 7 below.

Table 6.7: Qualifications attained by local and national population

Qualifications (January 2020- December 2020)	Neath Port Talbot (%)	Wales (%)	% difference
NVQ4 and Above	27.5	38.5	- 11.5
NVQ3 and Above	49.6	58.3	- 8.7
NVQ2 and Above	72.7	76.5	- 3.5
NVQ1 and Above	82.2	86.7	- 3.8
Other Qualifications	6.6	5.6	+ 0.5
No Qualifications	11.2	7.7	+ 3.4

Source: NOMIS, ONS, Annual Population Survey (2021) Source: [Labour Market Profile - Nomis - Official Labour Market Statistics \(nomisweb.co.uk\)](#)

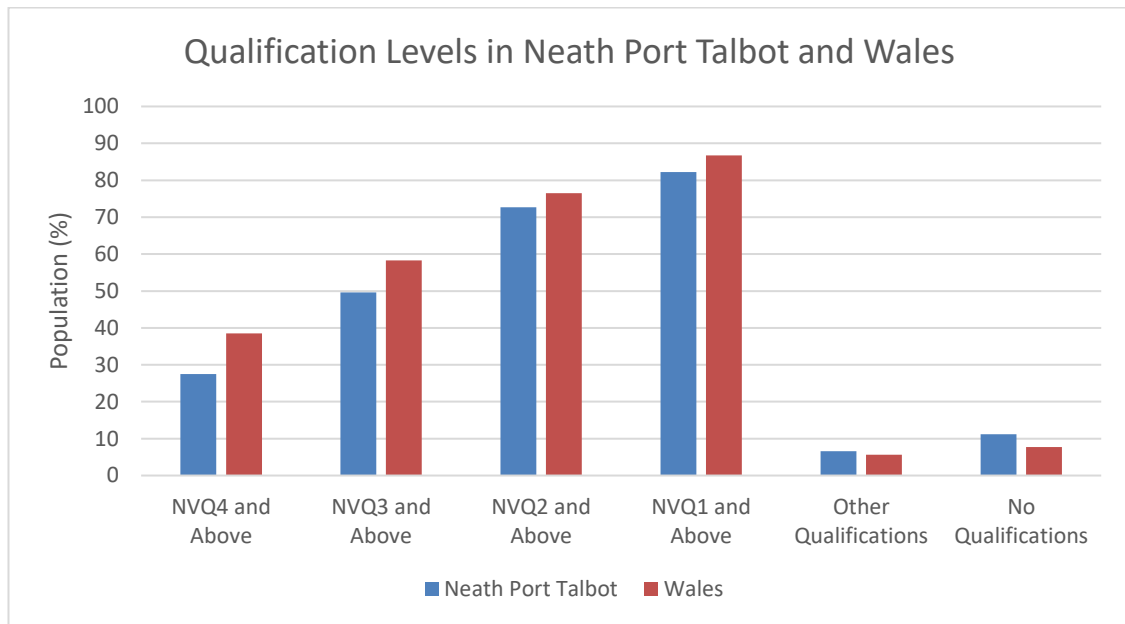


Figure 6.4: Qualifications attained by local and national population

Source: NOMIS, ONS, Annual Population Survey (2021) Source: [Labour Market Profile - Nomis - Official Labour Market Statistics \(nomisweb.co.uk\)](#)

Occupational Profile

- 6.51. Overall, the occupational profile of NPT is generally fairly spread across 5 different groups that range from 10.5% to 12.6% of the workforce: 'Professional Occupations' (12.6%), Skilled Trades Occupations (11.1%), Caring, Leisure & Other Service Occupations (11.2%), Sales & Customer Service Occupations (11.0%) and Elementary Occupations (10.5%). Four of the five groups sit above the National average with NPT's percentage of Professional Occupations falling substantially below the National level at 20.3% as illustrated in Figure 5.

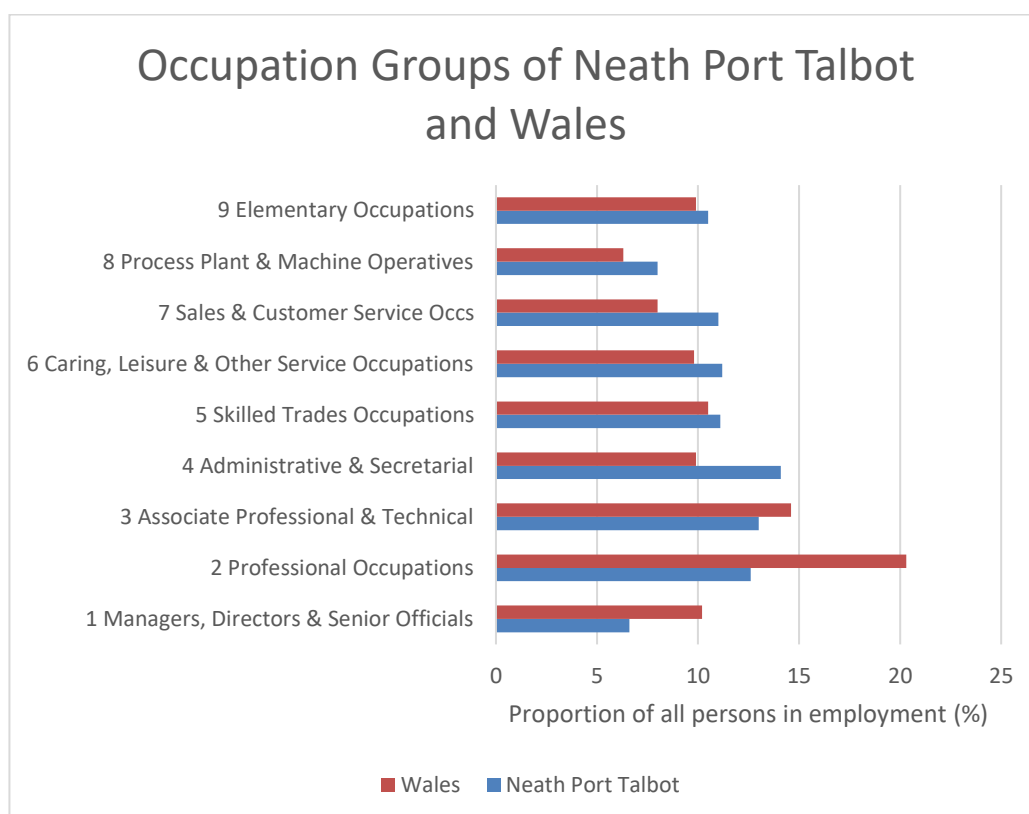


Figure 6.5: Occupation groups for the Local Authority and Wales (%)

Source: NOMIS, ONS, Annual Population Survey (2021) Source: [Labour Market Profile - Nomis - Official Labour Market Statistics \(nomisweb.co.uk\)](https://nomisweb.co.uk/Labour-Market-Profile-Nomis-Official-Labour-Market-Statistics)

- 6.52. Furthermore, Figure 5 displays the following trends: The largest occupation groups for the local NPT area are Administrative & Secretarial (14.1%) and Associate Professional & Technical (13%). NPT's smallest occupational group is Managers, Directors & Senior Officials (6.6%). Process Plant and Machine Operatives forms the second smallest occupation group for NPT (8.0%), however sits above the Welsh average (6.3%) which reflects NPT's strong industrial economy. Therefore, more people work within occupation groups 4-9 in NPT when compared to the Welsh average, and fewer within groups 1-3.
- 6.53. This trend is supported by the ONS Census data of 2011 for the Margam Ward, which highlights the manufacturing industry as the largest employer, providing employment to 252 people (17.1%).
- 6.54. NPTCBC's LDP builds upon this context in paragraphs 1.1.7-1.1.8, citing the high proportion of jobs in manufacturing centring on the employment base along the costal corridor.

- 6.55. Economic productivity generated (measured as Gross Value Added per FTE job) within the local area of Neath Port Talbot has relatively low levels of Gross Value Added⁴ (GVA) compared to that of the wider Swansea Bay City Region and Wales.

Table 6.8: Gross Value Added per relevant industry

Industry	Neath Port Talbot GVA (CVM Index)	Neath Port Talbot GVA in current prices (£million)	Swansea Bay City Region GVA in current prices (£million)	Wales GVA in current prices (£million)
Production sector	127.6	824	2528	14,776
Service sector	110.5	1,728	10,265	
Manufacturing	136.5	680	1,661	11,248
Manufacture of metals, electrical products and machinery	93.8	399	621	1,1435
Construction	105.9	180	848	4,279
Construction of buildings	80.4	22	251	1,305
Administrative and support service activities	91.7	52	390	2,473
Office administration and business support activities	20.4	2	74	681

Source: ONS (2018) Available at: [Regional gross value added \(balanced\) by industry: city and enterprise regions - Office for National Statistics](https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossvalueaddedbalancedbyindustrylocalauthoritiesbyitl1region)
<https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossvalueaddedbalancedbyindustrylocalauthoritiesbyitl1region>

⁴ Gross Value Added (GVA) can be defined as a measure of the contribution made to an economy by one individual producer, industry, sector or region. This figure is then used in the calculation of gross domestic product (GDP). [What is Gross Value Added \(GVA\)? – City REDI Blog \(bham.ac.uk\)](https://www.bham.ac.uk/cityrediblog/what-is-gross-value-added-gva/)

⁵ Figure for basic and fabricated metals

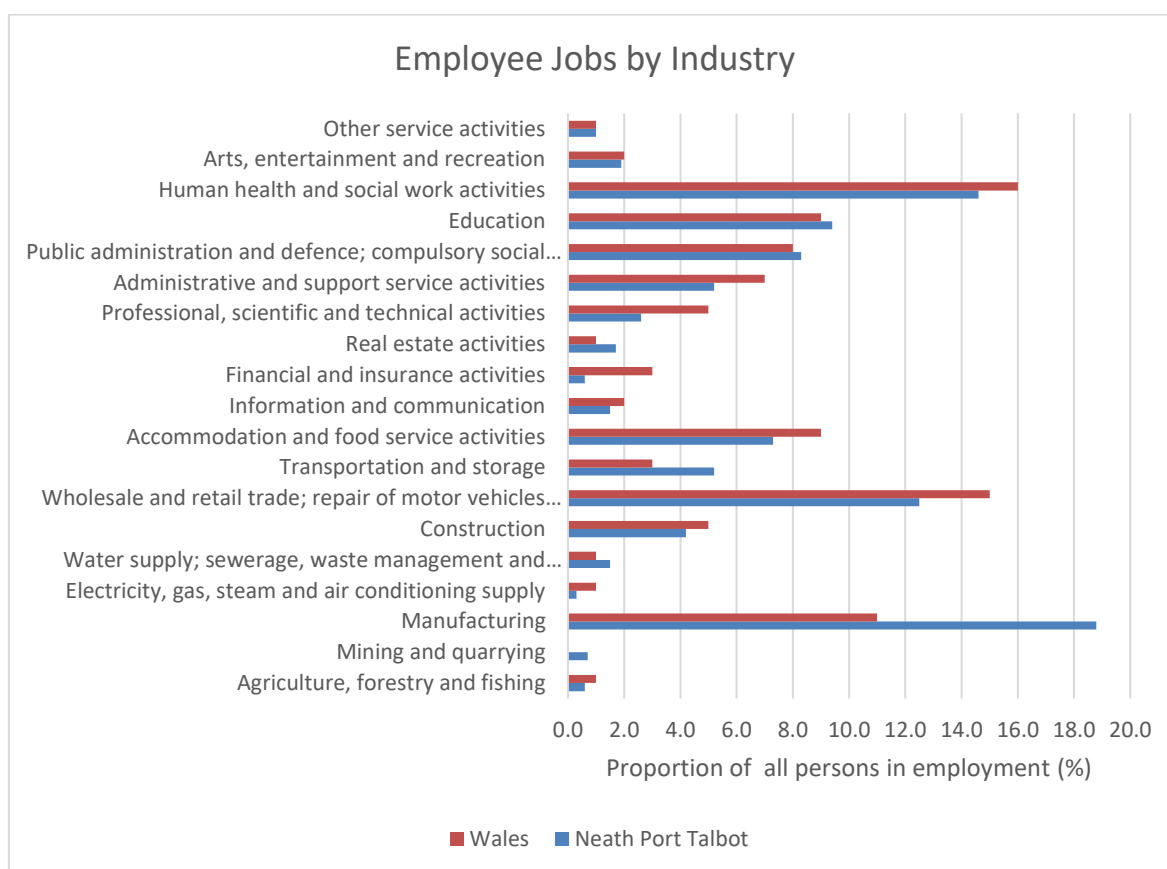


Figure 6.6: Employee jobs by industry (%)

Source: NOMIS, ONS, Business Register and Employment Survey (2019) Source: [Business Register and Employment Survey - Nomis - Official Labour Market Statistics \(nomisweb.co.uk\)](https://businessregisterandemploymentsurvey-nomis-official-labour-market-statistics-nomisweb.co.uk/)

Welsh Index of Multiple Deprivation (WIMD)

- 6.56. Generally, areas within the South Wales and the South Wales Valleys experience greater multiple deprivation compared to the rest of the country. The 2019 WIMD identifies NPT as having the 5th highest percentage of its areas in the most deprived 10% in Wales, totalling 15.4% (14 areas)⁶ and identifying NPT within one of the most deprived areas of Wales. Notably, NPT places 4th in the greatest percentage of LSOAs that fall within the most-deprived 50% at a figure just below 70%, indicating a concentration of deprivation within the local authority. It is also recognised that NPT contributes a significant level of deprivation across the local authorities of Mid and South West Wales and also contains concentrated areas of deep-rooted deprivation.

⁶ Welsh Index of Multiple Deprivation 2019: Results Report <https://gov.wales/sites/default/files/statistics-and-research/2020-06/welsh-index-multiple-deprivation-2019-results-report.pdf>

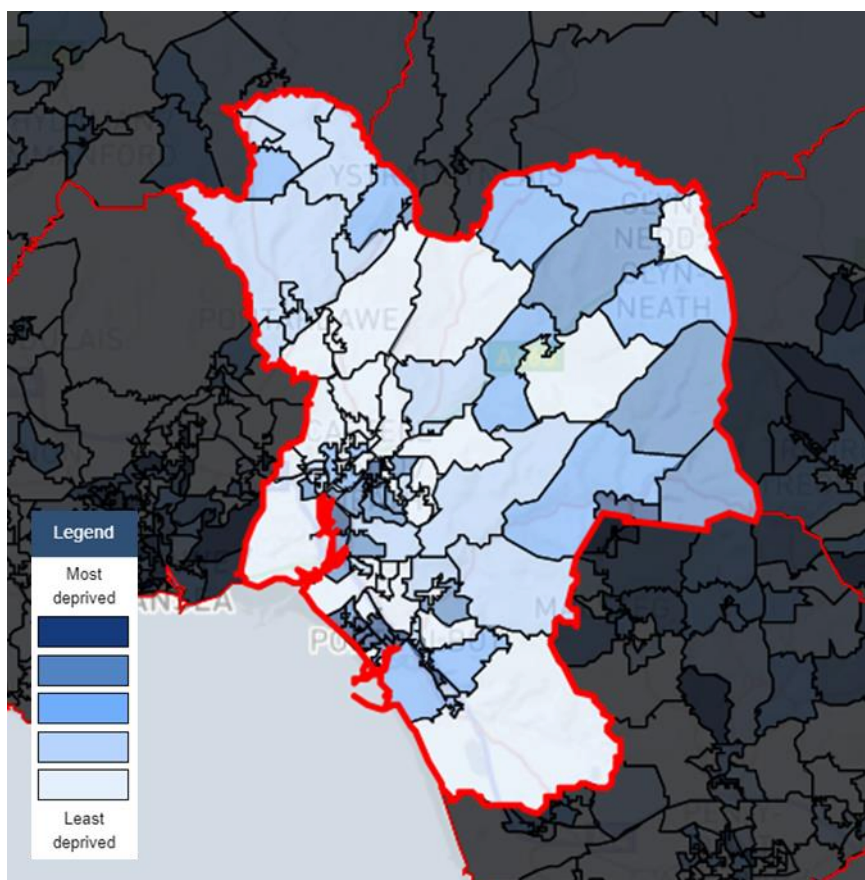


Figure 6.7: Choropleth map showing the overall levels of deprivation in Neath Port Talbot

Source: Welsh Index of Multiple Deprivation, Welsh Government (2019) Source: [WIMD - Neath Port Talbot \(gov.wales\)](#)

Table 6.9: % of most deprived Lower Super Output Areas within Local Authority, City Region, Region and Wales

	Number of LSOAs	% LSOAs in most-deprived 10%	% LSOAs in most-deprived 20%	% LSOAs in most-deprived 30%	% LSOAs in most-deprived 50%
Neath Port Talbot	91	15.4	33.0	45.1	69.2
Swansea Bay City Region	422	9.5	20.1	30.3	52.6
Mid and South West Wales	547	7.7	16.8	25.6	47.9
Wales	1909	10	20	30	50

Source: Welsh Index of Multiple Deprivation, Welsh Government (2019) Source: [WIMD - Explore \(gov.wales\)](#)

- 6.57. In terms of employment deprivation, NPT has the 4th highest percentage of LSOAs in the most-deprived 10% and the third highest percentage of areas within the 50% most deprived for employment, totalling a figure of 74.7%.
- 6.58. Zero LSOAs within the NPT Local Authority fall within the most deprived 10% in Wales for access to services. Similarly, only 5 LSOAs within NPT fall within the 10% most deprived of Wales with regards to community safety, which increases by 7.9% to 63 LSOAs that fall within the 50% most deprived.
- 6.59. When looking at a local level, the Margam 2 Lower Super Output Area (LSOA) in which the site is located places within the 50% least deprived wards within Wales. Moreover, the Margam 2 ward ranked 90th out of the 91 LSOAs in NPT for employment deprivation, supporting the strong industrial nature and indicating high employment levels within the ward.
- 6.60. At a national scale Margam 2 places as one of eight LSOAs located within the 40-50% most deprived in Wales for community safety.
- 6.61. However, it is noted that the site is located adjacent to the boundary of the Margam 1 ward which encompasses the built up area of Margam and the steel works, as opposed to the predominantly rural countryside and mountainous landscape of Margam Country Park. Furthermore, the size of the Margam 2 ward reflects the expansive rural landscape of Margam which conflicts with the concentrated industrial land use along the western coastal corridor.

Health and Safety

- 6.62. In terms of community safety, the Welsh Index of Multiple Deprivation indicates that NPT has 37.4% of its areas within the most deprived 50% areas. The Margam 2 Lower Super Output Area (LSOA), where the Site is located, is in the 50% most deprived areas for community safety. The 'community safety' domain considers actual experience of crime as well as perceptions of safety within the area.
- 6.63. A comprehensive study of the impacts regarding health and safety are address within the Health and Safety and Risk to Human Health Assessment completed by Tetra Tech and submitted with this application.

Summary of Baseline

- 6.64. Neath and Port Talbot is made up of both rural open valleys and more built-up centres along the costal corridor, within which Margam falls just outside of the town of Port Talbot. The baseline conditions detailed above already account for the employment of the existing facility located Milland Road, Neath. The population of Neath Port Talbot has experienced a minor increase in recent years of approximately +1,000 since 2018 and has a projected increase of 5.28% by 2040, which is significantly higher than the projection for Mid and South West Wales.

- 6.65. Unemployment and economic activity are identified issues within the area, as well as levels of multiple deprivation in particular overall, employment and education determinants.
- 6.66. Of the 0-10% most deprived LSOAs in Wales for the overall deprivation, 14 are within the NPT local authority. Employment and education deprivation score the highest for number of LSOAs within the 0-10% most deprived with health and income following shortly behind.
- 6.67. Although the trend for NPT indicates only 8.8% of the LSOAs are within the 0-10% most deprived for the physical environment, this more than trebles to over a quarter (26.4%) of the LSOAs in NPT that fall within the top 20% most deprived. Notably, the Margam 2 ward places within the 10-20% most deprived in terms of physical environment. Margam's access to services also places the ward among the 20-30% most deprived.
- 6.68. Compared with Wales as a whole, on average Neath Port Talbot has a weaker economy in terms of jobs density, with a greater proportion of the working population employed in occupation groups 4-9. Most notably, NPT has a significantly smaller proportion of the working population employed within professional occupations, indicating a smaller professional and corporate workforce.

Future Baseline Conditions

- 6.69. It can be difficult to determine a future baseline for population and socio-economic impact. In general most of the baseline is unlikely to change significantly within the next 10 years and the general population, employment, health and community safety levels are likely to be broadly similar to the current baseline.

Assessment of Effects

- 6.70. This section describes the predicted effects of the Proposed Development. In many instances the potential effects of the new metal processing plant are already known i.e. increased demand for construction jobs and future employment opportunities given the knowledge of the existing facility and how the Proposed Development will result in an increase of jobs and training opportunities within the Study Area.

Construction Effects

- 6.71. A development of this scale is expected to have a construction period, of circa 4 years which will bring about both beneficial effects in terms of construction work, potential for apprenticeship trades and local economy spin offs within the short term. Construction is due to commence Summer 2022 to Winter 2023 with completion in Summer 2026. Whilst there will be the construction of the new Metal Processing Facility there will also be the decommissioning of the existing facility which will also create local job opportunities within the short term. Any such effects would be short term, local, and Minor Adverse.

Construction Employment and Gross Value Added

- 6.72. The Proposed Development will require the employment of construction workers to undertake the initial construction of the Metal Processing Plant, associated offices and amenity block. The construction process as a whole is anticipated to take approximately 1 year and 4 months to complete. The construction process will involve a workforce comprised of a project manager, site manager, site health, environment and safety officer, environmental manager and site personnel (including sub-contractors). The construction jobs generated by the project are inherently transitional and therefore unlikely to have long term effects on the study area.
- 6.73. The construction phase of the development proposal will generate a significant increase in Gross Value Added (GVA)⁷, which can then be used to provide a measure of economic productivity when dividing the GVA output by a unit of input.
- 6.74. In accordance with the UK Government's 2015 Homes and Communities Agency Calculating Cost per Job Best Practice Note⁸, an estimation of the number of construction jobs can be made based on the total project construction capital cost. Utilising the direct jobs co-efficient by category of activity for private industrial productivity, 10.0 direct jobs/number of workers are required over one year to deliver £1million of construction investment⁹. An estimation of Full Time Equivalent construction jobs generated from the proposed development can then be made.
- 6.75. With an estimated project cost for buildings and infrastructure of £25.7million, the private industrial coefficient predicts a sum of 257 construction worker years would be required to construct the proposed development. Applying the standard industry benchmark that 10 years of construction employment equates to one full-time equivalent (FTE) construction job, an estimated 25.7 gross FTE jobs per year would be supported. Therefore, an estimation can be made for the proposed construction period of 1 year and 4 months that 34.27 jobs would be generated for gross direct construction employment.
- 6.76. In terms of net additional construction employment, the economic processes of leakage, displacement and multipliers must be considered within the development's impact and where appropriate adjust employment effects accordingly. The Green Book¹⁰ provides additional information on this and sets out a calculation methodology to establish their construction effects.

⁷ GVA is defined by the ONS as 'the value generated by any unit engaged in the production of goods and services. GVA per head is a useful way of comparing regions of different sizes.' Available at: <https://www.ons.gov.uk/economy/grossvalueaddedgva>

⁸ HCA (2015), Agency Calculating Cost Per Job Best Practice Note 3rd Edition. [Microsoft Word - CPJ BPN 2015 3rd Edition - Final \(nwueu.ac.uk\)](#)

⁹ As this focuses on output as opposed to spend, the resulting labour requirements of using spend will be an approximation. Based at 2011 prices.

¹⁰ The Green Book (2020), HM Treasury, UK Government. Available at: [The Green Book \(2020\) - GOV.UK \(www.gov.uk\)](#)

- 6.77. This methodology defines leakage as *‘the extent to which effects “leak out” of a target area into others’*¹¹. In this instance leakage takes the form of increased employment in a particular area, outside of Neath Port Talbot and within neighbouring areas that in turn reduce the employment effects in the target area. This can be affected by factors such as increase employment in neighbouring areas due to local labour market conditions or ease of access. Research into workforce mobility in the construction sector by the Construction Industry Training Board (CITB) identified the average distance travelled by a construction worker in the UK was 18 miles for the year 2018/19, a decrease of 4 miles from 2015¹². Further research evidences that the Wales construction workforce is less mobile with regard to inter-regional mobility, however the average distance travelled between site and home is similar to the UK average¹³.
- 6.78. An 18-mile radius from the site has been identified and show below in Figure 8. This radius would extend across various local authorities within south-west and mid Wales, and parts of the south Wales valleys. However, the site’s strategic location at Junction 38 of the M4 therefore aids connectivity and accessibility along the coastal corridor, most notably with the nearby city of Swansea. It is therefore considered that several areas within the wider region and along the M4 would offer some capacity in the local labour market, providing a good prospect of construction jobs being filled by those living in Neath Port Talbot or the areas surrounding Margam.

¹¹ Paragraph 10.4 of The Green Book (2020), HM Treasury, UK Government. Available at: [The Green Book \(2020\) - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/432222/The-Green-Book-2020.pdf)

¹² Workforce Mobility and Skills in the UK Construction Sector 2018-2019 UK-Wide, CITB (2019). Available at: [Workforce Mobility and Skills in the UK Construction Sector 2018-2019 UK-wide - CITB](https://www.citb.co.uk/media/1024221/workforce-mobility-and-skills-in-the-uk-construction-sector-2018-2019-uk-wide.pdf)

¹³ Workforce Mobility and Skills in the UK Construction Sector 2018-2019 Wales, CITB (2019). Available at: [Workforce Mobility and Skills in the UK Construction Sector 2018-2019 Wales - CITB](https://www.citb.co.uk/media/1024221/workforce-mobility-and-skills-in-the-uk-construction-sector-2018-2019-wales.pdf)

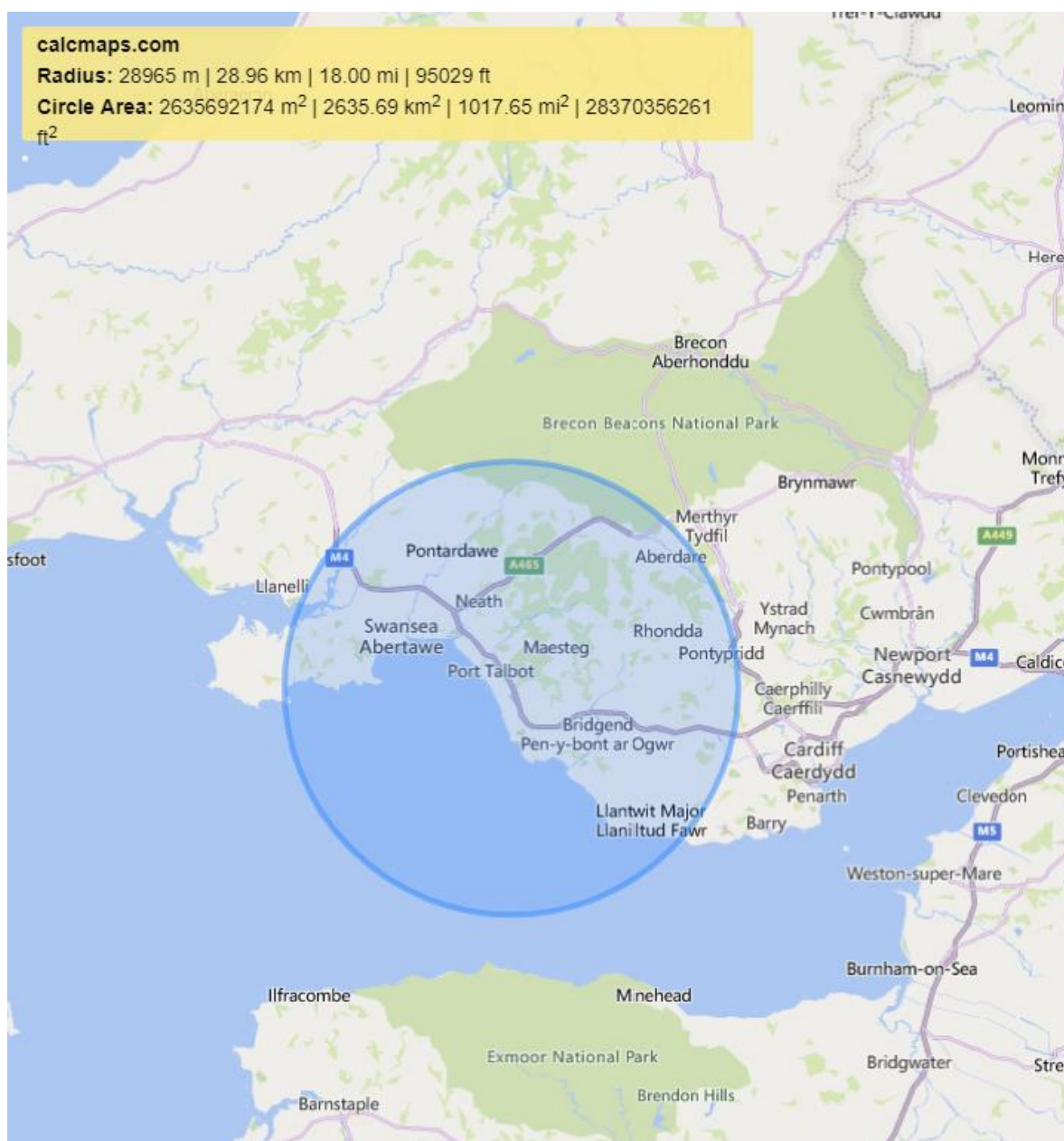


Figure 6.8: Radius for construction workers

Source: Calcmeps.com available at: Map Radius Calculator (calcmeps.com)

- 6.79. In consideration of the unemployment rates and suitability of skill sets of the borough, a low leakage rate of 10% has been applied to provide a total of circa 23 net FTE jobs to be retained. Furthermore, as it is considered that there will be capacity within the wider region

a low displacement rate of 25% has therefore been applied, providing the estimate of over 16FTE jobs that would be retained within NPT and the surrounding areas.

Training and apprenticeships

- 6.80. In addition to the above, construction employment opportunities are likely to be provided from the proposed development through training and apprenticeship programmes to promote skill development. As set out in the baseline conditions, NPT has a baseline of relatively low skilled population and the largest proportion of working age population with no qualifications in South West Wales (9.8%)¹⁴. The potential for apprenticeship schemes to be offer through the construction process would therefore provide important upskilling opportunities for the young working population in NPT to develop skills within the local economy.
- 6.81. Sandvik Osprey are willing to engage with local stakeholders and partners in NPTCBC, local colleges, job centres and Career Wales to develop work opportunities through apprenticeships and work placements. At this stage the contractor is yet to be agreed, however it is anticipated that they will be fulfilling their own skill development programmes in terms of training and apprenticeships. Therefore, it is likely that through the construction of the proposed development, further opportunities for collaboration between Sandvik Osprey, local partners and training centres will arise and deliver additional apprenticeships and work placements.
- 6.82. Currently, the sensitivity of the local labour market of NPT and regional economy of South-West and Mid-Wales is considered to be medium given the local importance of employment generation. Due to the overall construction employment numbers the magnitude of the effect is likely to be **low**.

Summary of Construction Effects

- 6.83. The duration of the construction period is considered to be short term given the relatively short construction period proposed from Summer 2022 to Summer 2026. The economic impact arising from construction activities will be positive, temporary (during construction phase only) and relatively local in scale but with a positive widespread multiplier effect and of slight magnitude resulting in Minor Beneficial effects on the economy at a County level in terms of the construction employment, GVA added and opportunities for training and apprenticeships.

¹⁴ Levels of highest qualifications held by working age adults by area and gender, Annual Population Survey, ONS (April 2021). Available at: <https://stats.wales.gov.wales/Catalogue/Education-and-Skills/Post-16-Education-and-Training/Lifelong-Learning/Qualification-Levels/highestqualificationlevelsofworkingageadults-by-regionsofwales-qualification>

Operational Effects

Economy

- 6.84. As noted within the baseline the existing Sandvik site includes a maximum of 170 FTE employees at the site. These jobs will be transitioned across to the new facility once in operation.
- 6.85. Gross operational employment associated with the development have been projected by data provided by Sandvik Osprey for the employment type and jobs provided on site when in operation.
- 6.86. Once the new metal processing plant is in operation it is anticipated that a maximum of 200 FTE employees will be employed across the site, working in shift patterns. This totals an increase of 30 FTE employees compared to the existing scenario.
- 6.87. In addition, heavy goods vehicle drivers will continue to be required to transport the raw materials and export the additive manufacturing products. It is anticipated that the net additional direct employment generated by the proposal would be retained within the local labour market. The proposed development will create long term permanent roles to the benefit of the local economy. In line with the HCA Additional Guide, consideration has been given to the effects of leakage and displacement on the estimated net additional employment.

Table 6.10: Operational employment

	Employment
Employment at existing site	170
Estimated gross operational direct employment	30
Minus leakage (10%)	-3
Minus displacement (25%)	-8
Estimated net additional employment	19
Retention of employment plus net additional	189

- 6.88. The same leakage and displacement assumptions have been applied to the net additional employment as those to the construction phase. This results in a total of circa 19 net additional FTE jobs from the operation of the proposed development that would be retained within the local labour market. This will sit alongside the retention of the existing workforce of 170 and total 189 operational jobs to be provided on site.

- 6.89. The potential for future expansion of services to include customised and optimised materials to application and process provides the possibility of additional jobs at a later stage. This would further bolster the operational benefits for the local area of NPT.

Training and apprenticeships

- 6.90. In addition to this, the development proposal presents the opportunity to provide further training and skills development through work placements and apprenticeships whilst in operation. There will be future technologies within the new site and therefore require additional training and upskilling through employment programs to provide additional services for these technologies.
- 6.91. Additional graduate opportunities, work placements and apprenticeships may arise in the future expansion of the site.
- 6.92. Given the existing conditions shown in the baseline data, the proposed training and apprenticeship opportunities may provide young people with better opportunities within the local area to develop their skills and contribute to the local economy through skill retention. As stated previously in the case of construction apprenticeships and training, Sandvik Osprey are also committed to engage with local colleges, partners and the local authority in addition to national career services to generate and develop opportunities for apprenticeships and work placements once operational.
- 6.93. Similarly to construction effects, the local labour market is therefore considered to have medium sensitivity with a magnitude of effect likely to be low to negligible due to overall employment figures. As such Minor Beneficial effects on the local level scale are anticipated.

Summary of Operational Effects

- 6.94. The operational impact of the Proposed Development in relation to the economy is considered to be positive, permanent, and local in scale and of slight magnitude resulting in a Minor Beneficial effect on the economy of the area.

Cumulative Effects

- 6.95. In undertaking the EIA, consideration must be given to the cumulative effect that the proposals would have along with any other development proposal. It is appropriate to consider developments that are under construction, have planning permission and/or are subject to policy allocation in the adopted Local Plan within the immediate vicinity that may have a cumulative effect with the development proposals in relation to socio-economics.
- 6.96. Table 12 below details the nearby Tyn Y Caeau site which is currently at appeal stage awaiting further details on the submitted Environmental Statement. It is assumed that the available construction workforce could enable the cumulative projects to be built using labour from the study area without creating any minor labour market distortions.

Table 6.11: Adjacent developments to be considered in cumulative effect

Site (and planning application No. if available)	Site Status	Proposed Development	Reason for inclusion
Tyn Y Caeau P2020/0601	Planning permission refused (15 October 2020). Site subject to appeal under reference: APP/Y6930/A/20/3263 628 which is currently undetermined.	Change of use from dwelling house and annex building into a mixed used development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces. The proposal includes the demolition of an existing single storey rear extension, and the erection of a single-storey rear extension, together with widened site access, additional internal access roads, parking areas and associated works.	Development adjoining the eastern boundary of the site, located to the north-east.

- 6.97. Given the assessment above, it is estimated that there will be no adverse cumulative impacts on the wider labour market area, as both projects are anticipated to constitute a small percentage of the total construction labour in the study area. As combined, the cumulative projects will provide beneficial stimulus to the study area's economy through the provision of construction related training and employment opportunities and supply chain linkages.
- 6.98. The impact of the Proposed Development in relation to the economy is considered to be positive, permanent, local in scale and of minor magnitude, resulting in a Minor Beneficial effect of the economy of the area.

Proposed Mitigation

- 6.99. No significant adverse effects have been identified that would require mitigation for either the construction or operational phase of the proposed development.
- 6.100. The beneficial effects that will result from the development, predominantly is the retention of jobs within the local area and the creation of additional jobs and further training and upskilling opportunities for existing the workforce.

- 6.101. Any requirement for mitigation will be discussed with the relevant authorities and addressed through the appropriate tests planning obligations under S106 of the Act.

Residual Effects

- 6.102. The magnitude and significance of any effects that will remain after the proposed mitigation measures are applied as part of the Proposed Development, termed residual effects. These effects may be positive, negative or both.
- 6.103. The residual effects have been assessed based on the information provided in the Baseline Conditions section and the assessment of Potential Effects section. The assessment also relies on professional judgement based on the Significance Criteria outlined in Table 2.7 along with consideration of the study area's labour market and scale of effect.
- 6.104. There are no significant adverse effects identified which require further mitigation, beyond that already included within the design of the Proposed Development. As such, the residual socio-economic effects are the same as the significance of effects set out in Table 11 below.
- 6.105. The construction phase will provide minor beneficial employment effects for the proposed development. The operational phase will also provide minor beneficial employment effects. As shown above, the majority of the residual effects identified from the Proposed Development are either negligible or beneficial, which means that the change will either be too small to be noticed or will be a positive.

Limitations and Assumptions

- 6.106. This assessment has been undertaken on a desk-top basis using the information available at the point of assessment from a number of sources, as referenced throughout the chapter. While they are all credible and reliable data sources, we have not conducted any primary research and are therefore reliant on their accuracy.
- 6.107. In absence of published advice and guidance for the undertaking of a socio-economic assessment, this assessment employs an established methodology utilised for similar schemes, and somewhat relies on professional judgement in drawing conclusions.
- 6.108. The baseline data and information collated is based on the most up to date information publicly available from third parties. However, it is noted that the available data is constantly being updated and reviewed.

Monitoring

- 6.109. Given that the construction and operational phases do not result in the adverse residual effects, there is no requirement for monitoring with respect to socio-economics impacts.

Summary of Socio-Economic Effects

- 6.110. Table 11 below summarises the significance of Socio-Economic effects of the Proposed Development.

Table 6.12: Summary of Socio-Economic Effects

Receptor	Geographical Level of Importance	Sensitivity	Magnitude of Effect	Significance of Effect	Duration
Construction Effects					
Construction jobs	County	Low	Medium	Minor Beneficial	Short term
Construction training and apprenticeships	County	Low	Low	Minor Beneficial	Short term
Operation Effects					
Economy: Jobs	County	Low	Low	Minor Beneficial	Long term
Economy: training and apprenticeships	Local	Low	Low	Minor Beneficial	Long term

REFERENCES:

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HCA, UK Government, 2015, 'Agency Calculating Cost Per Job Best Practice Note 3rd Edition'

HM Treasury, UK Government 2020, The Green Book

NOMIS, 2021, 'Economic Profile'

NOMIS, 2021, 'Population Estimates'

NOMIS, 2021, 'Population Projections'

NOMIS, 2019, 'Labour Market Profile'

NPTCBC, 2016, Local Development Plan

ONS, 2011, Census

ONS, 2021, Annual Population Survey

ONS, 2019, Business Register and Employment Survey

Stats Wales, Welsh Government, 2018 'Subnational Population Projections'

Stats Wales, Welsh Government, 2021, 'Age Distribution of Population by Gender and Local Authority'

Stats Wales, Welsh Government, 2021, 'Population Estimates by Local Authority, Region and Age'

WIMD, Welsh Government, 2019, Welsh Index of Multiple Deprivation

7. LAND AND SOIL RESOURCES

Introduction

- 7.1. This Chapter of the ES assesses the likely significant effects of the Proposed Development with respect to Land and Ground Conditions, particularly the effects on agricultural land and soil resources. This Chapter also describes the legislative and policy framework; the methods used to assess the effects; the baseline conditions currently existing at the Application Site; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.

Legislation, Planning Policy and Guidance

Planning Policy Wales

- 7.2. Paragraph 3.58 of Planning Policy Wales (Ref. 7.1) indicates that the best and most versatile (BMV) agricultural land is defined as Grades 1, 2 and 3a of the Agricultural Land Classification (ALC) system, and should be conserved as a finite resource for the future.
- 7.3. Paragraph 3.59 says that in development plan policies and development management decisions:

“considerable weight should be given to protecting such land from development, because of its special importance. Land in Grades 1, 2 and 3a should only be developed if there is an overriding need for the development, and either previously developed land or land in lower agricultural grades is unavailable, or available lower grade land has an environmental value recognized by a landscape, wildlife, historic or archaeological designation which outweighs the agricultural considerations. If land in grades 1,2 or 3a does need to be developed, and there is a choice between sites of different grades, development should be directed to land of the lowest grade”.

Neath Port Talbot Development Plan

- 7.4. There is no reference to policies involving the development of agricultural land in the Neath Port Talbot Local Development Plan (Ref 7.2).

Relevant Elements of the Proposed Development

- 7.5. Activities undertaken during the construction phase of the Proposed Development that will involve the progressive change of use of the land from agricultural use; the movement, storage and re-use of soil material; and excavation work are relevant to Land and Ground Conditions.

Assessment Methodology

Scope of the Assessment

- 7.6. The assessment of the effects on Land and Soil Resources defines the study area as the Site boundary.
- 7.7. There is a well-established methodology for classifying the quality of agricultural land, contained in 'Agricultural Land Classification of England and Wales, revised guidelines and criteria for grading the quality of agricultural land' (Ref. 7.3).
- 7.8. Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use. Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting. Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields. Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing.
- 7.9. Initial assessment has been carried out through desk study and has drawn upon a range of published information, including:
 - Predictive ALC mapping (Ref. 7.4);
 - British Geological Survey mapping of bedrock and superficial geology (Ref. 7.5);
 - the Soil Survey of England and Wales soil association bulletin (Ref. 7.6) and maps (1:250,000 scale) (Ref. 7.7); and
 - climatic data from the Meteorological Office's standard 5km grid point data set (Ref. 7.8).
- 7.10. Soil and ALC surveys of the Site were undertaken in 2021 at a detailed level (i.e. at an overall observation density of one soil profile per hectare) across most of the land. The north-western field parcel was not surveyed due to the presence of cattle. The surveys were carried out in accordance with the ALC guidelines.

Consultation

- 7.11. Natural Resources Wales (NRW) has been consulted. In the EIA Scoping Opinion, there were no comments made in relation to the soil and ALC surveys, although it was stated that "*it is good practice to develop a Construction Environment Management Plan (CEMP) to be included in the ES*" and that the CEMP should include "*Soil Management: details of topsoil strip, storage and amelioration for re-use*".

- 7.12. Comments relating to ground conditions acknowledge that the risk to controlled waters is minimal but “if the proposed development scheme requires the use of piling then potential impacts of cross contamination should be considered within the submitted ES”.

Significance Criteria

Agricultural Land and Soil

- 7.13. Effects on agricultural land and soil will occur in the construction phase of the Proposed Development. The significance of the effects will not alter over the lifetime of the development.
- 7.14. The sensitivity of agricultural land is assessed according to its grade within the ALC, whilst the sensitivity of soil resources reflects the textural characteristics and its susceptibility to the effects of handling during construction and the reinstatement of land, as set out in **Table 7.1**.

Table 7.1: Sensitivity of agricultural land and soil resources

Significance Criteria	Description of Criteria	
High	Grade 1, excellent quality agricultural land	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams)
Medium	Grade 2 and Subgrade 3a, very good to good quality agricultural land	Silty loams, medium silty clay loams, medium clay loams and sandy clay loams
Low	Subgrade 3b and Grade 4, moderate to poor quality agricultural land	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams)
Negligible	Grade 5, very poor quality agricultural land	N/A

- 7.15. The magnitude of change to agricultural land and soils is assessed according to the criteria set out in **Table 7.2**. The effect on soils considers the ability of soils to continue to fulfil their primary functions.

Table 7.2: Magnitude of change to agricultural land and soil resources

Significance Criteria	Description of Criteria	
High	Development would directly lead to the loss of over 50ha of agricultural land	The soil displaced from development is unable to fulfil one or more of the primary soils functions
Medium	Development would directly lead to the loss of between 20ha and 50ha of agricultural land	The soil displaced from development mostly fulfils the primary soil functions off-site or has a reduced capacity to fulfil the primary functions on site
Low	Development would directly lead to the loss of between 5ha and 20ha of agricultural land	The soil displaced from development mostly fulfils the primary soil functions on-site.
Negligible	Development would directly lead to the loss of less than 5ha of agricultural land	The soil retains its existing functions on-site.

Significance Threshold

- 7.16. Effects that are moderate or major are considered to be significant in EIA terms.
- 7.17. The significance of effect is determined according to **Table 7.3**.

Table 7.3: Matrix for determining the significance of effects

		Sensitivity of Receptor/Receiving Environment to Change/Effect			
		High	Medium	Low	Negligible
Magnitude of change	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible

Baseline Conditions

- 7.18. The Site extends to approximately 6.1ha of agricultural grassland used for grazing cattle. The climate is warm and very wet with a relatively long Field Capacity Day regime.
- 7.19. The underlying geology comprises coal-bearing mudstones and siltstones, with seatearths (sedimentary rock beneath a coal seam) and minor sandstones. Superficial deposits of glaciofluvial sand and gravel overlie the bedrock across most of the site. In the north-west, tidal flat deposits are mapped, containing mainly unconsolidated mud and sand.
- 7.20. The mapped soil information shows the Site to have soils of the Tanvats association, comprising stoneless, silty and/or clayey soils developed in marine alluvium. Soil profiles are usually seasonally waterlogged.
- 7.21. The survey undertaken in 2021 identified one main soil type. The topsoil and upper subsoil is slightly stony, sandy clay loam. The subsoil becomes stonier and coarser textured with depth. The profiles are of Wetness Class (WC) I or occasionally WC III and are limited by wetness and workability to Subgrade 3a.
- 7.22. Vegetation in the north-western field parcel, which was not surveyed, is characterised by coarse reeds and rushes which thrive in wetter conditions. This parcel is likely to be wetter than the majority of the Site and is assessed as Subgrade 3b.

Future Baseline

- 7.23. The baseline conditions are not anticipated to change if the Proposed Development does not proceed.

Sensitive Receptors

- 7.24. Of the agricultural land at the Site, 4.7ha (77%) is classified as Subgrade 3a and 1.4ha (23%) as Subgrade 3b. Subgrade 3a is within the BMV category and is a sensitive receptor.
- 7.25. The soils are predominantly medium textured and are a medium sensitivity receptor.

Assessment of Effects

- 7.26. The anticipated effects comprise the loss of agricultural land and the potential damage to and loss of the soil resource. These effects occur in the construction phase of the Proposed Development.
- 7.27. This assessment is made on the basis that all of the agricultural land within the Site will be removed from agricultural production during the construction period and will remain permanently unavailable to agricultural use thereafter.

Agricultural Land

- 7.28. The Proposed Development will require 4.7ha of land of Subgrade 3a quality. This is a receptor of medium sensitivity. The magnitude of change during construction is negligible,

such that the Proposed Development will have a direct, permanent negligible adverse effect on agricultural land, which is not significant.

Soil Resources

- 7.29. As soil is a finite resource that fulfils many important functions and services for society in addition to the production of food and fibre, it is important that soil resources are protected and used sustainably. Carbon and water storage, and support for ecological habitats and biodiversity, are considered particularly important functions of the soils present within the Site.
- 7.30. The principal direct effect of the Proposed Development on soil will be loss of the ecosystem functions if it were handled or stored inappropriately (for example, handled or trafficked when wet; and by the mixing of topsoil and subsoil on stripping).
- 7.31. The topsoil and upper subsoil resources across the Site comprise sandy clay loam which is of medium sensitivity and could be susceptible to damage when being handled and stored. Biodegradation of topsoil could occur if it is compacted in storage or stockpiled when wet.
- 7.32. Prior to mitigation, the magnitude of impact on the soil resource is assessed as medium in that the displaced soils would be expected to fulfil primary soil functions off-site or they would be likely to have a reduced capacity to fulfil these functions if retained on site. The Proposed Development will have a direct, long-term moderate adverse effect on soil resources, which is significant.

Mitigation

- 7.33. Mitigation measures to minimise potentially significant adverse effects on soils relate to recording (within a Soil Resources Plan) the existing soil resources of the Site and ensuring that they are handled, stored and re-used according to good practice. In this way, soils will be re-used on the Site for their most suitable purposes in the detailed design and will be able to continue to fulfil their various ecosystem functions.
- 7.34. The Soil Resources Plan will be based on the soil survey undertaken at the Site in 2021. The Plan will aim to re-use as much of the displaced topsoil on site as is possible in the detailed design of the Proposed Development.
- 7.35. The Soil Resources Plan will also aim to ensure that the quality of topsoils retained on site and exported off site (if this should become a future requirement) is maintained by following good practice guidance on soil handling and storage, particularly to avoid compaction and biodegradation of soils that are to be retained on site in storage.

Residual Effects

- 7.36. The residual effect on agricultural land continues to be negligible.
- 7.37. The magnitude of change on soil resources following mitigation is low, resulting in a direct, long-term minor effect, which is not significant.

Summary of Impacts

- 7.38. There are no significant effects on agricultural land anticipated to arise as a result of the Proposed Development.
- 7.39. Prior to mitigation measures, the Proposed Development would have a moderate adverse effect on soil resources. The residual effect following mitigation would be minor and not significant.

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8. ARCHAEOLOGY AND CULTURAL HERITAGE

Introduction

- 8.1 This chapter of the Environmental Statement assesses the likely significant effects of the Proposed Development with respect to archaeology and cultural heritage. This includes: below-ground archaeological remains; built heritage; the 'setting' of historic assets; and the historic landscape. This chapter also describes the legislative and policy framework; the methods used to assess the effects; the baseline conditions currently existing at the Application Site; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 8.2 The chapter assesses both potential physical effects and non-physical effects upon historic assets within the historic environment.
- 8.3 The chapter is informed by a range of archaeological and heritage work which is held in the following Technical Appendices: -
- Appendix 8.1: Historic Environment Desk-Based Assessment (HEDBA)
 - Appendix 8.2: HEDBA Written Scheme of Investigation (WSI)
- 8.4 In summary, the Proposed Development is not expected to result in any effects (significant or otherwise) on the cultural heritage resource. This Chapter summarises the key cultural heritage matters that were considered to inform this conclusion.

Legislation, Policy and Guidance

- 8.5 The following legislation and policies have been adhered to within the cultural heritage chapter.

National Legislation and Policy

- 8.6 The assessment has been written within the following legislative, planning policy and guidance context:
1. Ancient Monuments and Archaeological Areas Act (1979)
 2. Planning (Listed Buildings and Conservation Areas) Act (1990)
 3. Historic Environment (Wales) Act 2016
 4. Technical Advice Note (TAN) 24: The Historic Environment
 5. Planning Policy Wales (Edition 11, February 2021)
- 8.7 Planning Policy Wales states that it is important that the historic environment (encompassing archaeology and scheduled monuments, listed buildings, conservation areas and historic parks, gardens and landscapes) is protected. The Welsh Government's objectives in this field are to:

1. conserve and enhance the historic environment, which is a finite and non-renewable resource and a vital and integral part of the historical and cultural identity of Wales;
2. recognise its contribution to economic vitality and culture, civic pride, local distinctiveness and the quality of Welsh life, and its importance as a resource to be maintained for future generations;
3. base decisions on an understanding of the significance of Wales' historic assets;
4. contribute to the knowledge and understanding of the past by making an appropriate record when parts of a historic asset are affected by a proposed change, and ensuring that this record or the results of any investigation are securely archived and made publicly available;

8.8 And specifically to:

1. protect the Outstanding Universal Value of the World Heritage Sites in Wales
2. conserve archaeological remains, both for their own sake and for their role in education, leisure and the economy
3. safeguard the character of historic buildings and manage change so that their special architectural and historic interest is preserved
4. preserve or enhance the character or appearance of conservation areas, while at the same time helping them remain vibrant and prosperous
5. preserve the special interest of sites on the register of historic parks and gardens in Wales
6. conserve areas on the register of historic landscapes in Wales

8.9 Further advice has been published by Cadw, including:

1. Conservation Principles (2011)
2. Setting of Historic Assets in Wales (2017)
3. Heritage Impact Assessment in Wales (2017)

Local Development Plan

8.10 The Site is located in the local authority of Neath Port Talbot Borough Council. The Local Development Plan (2011-2026) was adopted in January 2016 and covers local legislation for the period up to 2026. The strategic policy SP21: Built Environment and Historic Heritage is relevant to this assessment. This policy states that:

8.11 'The built environment and historic heritage will, where appropriate, be conserved and enhanced through the following measures:

1. Encouraging high quality design standards in all development proposals;
2. Protecting arterial gateways from intrusive and inappropriate development;

3. Safeguarding features of historic and cultural importance;
 4. The identification of the following designated sites to enable their protection and where appropriate enhancement:
 - a) Landscapes of Historic Interest;
 - b) Historic Parks and Gardens;
 - c) Conservation Areas;
 - d) Scheduled Ancient Monuments; and
 - e) Listed Buildings and their curtilage'.
- 8.12 The policies discussed above can be seen in further detail in Appendix 8.1.

Proposed Development

- 8.13 The proposed development will comprise the construction of a metal producing industrial development totalling 25,899 sq. m of floorspace which comprises a Powder processing Plant, a warehouse and storage facility, an office building, an amenity building, an argon tank, a laboratory, a services building, landscaping and car parking spaces on site. Vehicular access will be from the north-western entrance, constructed from a private road which links to the A48/A4241 roundabout.

Assessment Methodology and Significance Criteria

- 8.14 The detailed methodologies of the different elements of heritage work are set out in the relevant Appendices (8.1 and 8.2). A brief summary of the key elements is provided here.

Historic Environment Desk-Based Assessment (HEDBA)

- 8.15 The Historic Environment Desk-Based Assessment (HEDBA) was carried out in accordance with the Standard and Guidance for Historic Environment Desk-Based Assessment provided by the Chartered Institute for Archaeologists (CIfA 2014). Cotswold Archaeology is a Registered Organisation with the CIfA. Full detail on the methodology is set out in Appendix 8.1.
- 8.16 The documentary research included the key sources including Historic Environment Records (HER), Cadw datasets, and the National Monument Record of Wales. A full list of all sources consulted can be found within the HEDBA in Appendix 8.1. The Scope of the HEDBA, as summarised below, was approved through a WSI by the Planning Officer for Glamorgan and Gwent Archaeological Trust (GGAT) and Cadw. This WSI is provided in Appendix 8.2.
- 8.17 A site visit was also undertaken as part of this assessment on 24th August 2021. The primary objectives of the site visit were to assess the Site's historic landscape context, including its association with any known or potential historic assets, and to identify any evidence for previous truncation of the on-site stratigraphy. The site visit also allowed for the identification of any previously unknown historic assets within the Site, and an assessment of their nature,

condition, significance and potential susceptibility to impact. The wider landscape was examined, as relevant, from accessible public rights of way.

Consultation and Response to Scoping Opinion

- 8.18 Prior to the commencement of the HEDBA, consultation was undertaken with the Planning Officer for GGAT and with Cadw in regard to the scope of the assessment. This consultation involved the production of a Written Scheme of Investigation (WSI) which detailed the scope of the assessment (Appendix 8.2). The WSI was amended to reflect policy changes, as requested by the GGAT Planning Officer on 13th August, and to include a 3km study area for the settings assessment, as requested by Cadw on 24th August.
- 8.19 A Scoping Report was submitted in June 2021 as part of the application (Planning Ref: P2021/0625). The Scoping Opinion was received on 24th August 2021 which required a full EIA. The comments received the GGAT and Cadw are identified in Table 8.1.

Body/Organisation	Contact	Date and Form on Consultation	Summary	Response
GGAT	Rob Dunning	Scoping Opinion – 17/06/21	Acknowledged that the intended HEDBA was appropriate and requested that a WSI be submitted to GGAT for approval. It is noted that depending on the results of the HEDBA, further archaeological work may be required.	A WSI was produced and approved by GGAT prior to the commencement of the DBA. The WSI forms Appendix 8.2. The requirement for further archaeological work is discussed in the HEDBA (Appendix 8.1) and in Section 8.7. It is acknowledged that the scope of this work will need to be agreed with GGAT.
GGAT	Rob Dunning	Email consultation on the WSI – 23/08/2021	The scope presented within the WSI was acceptable. Changes to policy were identified.	The required changes to the policy were made as shown in Appendix 8.2.
Cadw	Denise Harris	Scoping Opinion – 29/06/21	A 3km study area was recommended for the assessment of designated historic assets. An ASIDOHL assessment of the Margam Mountain Landscape was not required.	A 3km study area was included for the settings assessment as detailed in Appendix 8.1 and 8.2.

Cadw	Neil Maylan	Email consultation on the WSI – 24/08/21	The request for a 3km study area was the settings assessment was reiterated.	A 3km study area was included for the settings assessment as detailed in Appendix 8.1 and 8.2.
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Table 8.1: Scoping Opinion, Heritage Responses

Criteria for the value of historic assets

- 8.20 The assessment of the value of historic assets has been guided primarily by the policies and guidance contained in 'Conservation Principles' (Cadw, 2011). The value of a historic asset has been identified to the following four key forms of value set out in Table 8.2 below.

Value	Description
Evidential	Derives from those elements of an historic asset that can provide evidence about past human activity, including its physical remains or historic fabric.
Historical	Derives from aspects of past ways of life, or association with notable families, persons, events, or movements – it embodies the connection between past events and society with the present
Aesthetic	Derives from the sensory and intellectual stimulation drawn from an historic asset. It may include its physical form, and how it lies within its setting. It may also be the result of design, or an unplanned outcome of a process of events.
Communal	Derives from the meanings that an historic asset has for the people who relate to it, or for whom it figures in their collective experience or memory. It may be commemorative or symbolic and relate to issues of identity or collective memory.

Table 8.2: The component values of historic assets

- 8.21 Criteria for assessing the importance of these historic assets are set out in Table 8.3 below. Consideration was given to guidance issued by Cadw, 'Setting of Historic Assets in Wales' and 'Heritage Impact Assessment in Wales' (2017). The terms expressed in Paragraph 6.1.3 of the PPW (Edition 11, 2021) were used. This defines the 'most important historic assets', namely World Heritage Sites, Scheduled Monuments, Protected Wreck Sites, Registered Battlefields, Grade I and II* Listed Buildings, and Grade I and II* Registered Parks and Gardens.

Importance of the asset	Description
High	World Heritage Sites and historic assets of acknowledged international importance, or that can contribute significantly to acknowledged international research objectives. Historic landscapes of international sensitivity (designated or not) and extremely well-preserved historic landscapes with exceptional coherence, time depth, or other critical factor(s). Scheduled Monuments and undesignated assets of Schedulable quality and importance, according to the non-statutory criteria for scheduling ancient monuments utilised by the Secretary of State. Historic assets or groups of assets that can contribute substantially to acknowledged national research objectives. Historic landscapes exhibiting considerable coherence, time depth or other critical factors and displaying considerable evidential, historic, aesthetic, and communal value as identified by Conservation Principles. Grade I and II* Registered Parks/Gardens. Grade I and II* Listed Buildings or other Listed Buildings that can be shown to have exceptional qualities in their fabric or associations not adequately reflected in their Listing grade, or undesignated structures of clear national importance. Conservation Areas containing very important buildings.
Medium	Historic assets, or groups of assets or landscapes, that contribute to regional research objectives. Historic landscapes exhibiting reasonable coherence, time

	depth or other critical factors (including degree of preservation) and displaying evidential, historic, aesthetic, and communal value as identified by Conservation Principles. Grade II Registered Parks/Gardens. Grade II Listed Buildings or historic buildings which can be shown to be of comparable significance. Conservation Areas containing important buildings which contribute significantly to their historic character, or historic townscapes with important historic integrity.
Low	Historic assets displaying limited evidential, historic, aesthetic, or communal value as identified by Conservation Principles. Historic assets, or groups of assets, that contribute to a limited degree to regional research objectives. Historic landscapes exhibiting limited coherence, time depth or other critical factors. Historic landscapes whose sensitivity is limited by poor preservation and/or poor survival of contextual associations. Locally Listed buildings and unlisted buildings of modest quality in their fabric or historical association.
Negligible	Historic assets with very little or no surviving archaeological interest. Historic assets or groups of assets that cannot appreciably contribute to acknowledged regional research objectives. Historic landscapes exhibiting little or no coherence, time depth or other critical factors and displaying evidential, historic, aesthetic, and communal value as identified by Conservation Principles. Buildings of no architectural or historical note.

Table 8.3: The assignment of importance categories to historic assets

Criteria for Magnitude of Impact

- 8.22 The magnitude of impact on each individual historic asset is assessed using the criteria in Table 8.4 below. Impacts may be adverse or beneficial.

Magnitude Criteria	Impact	Description
High	Adverse	A considerable change from the baseline conditions which results in the total loss or reduction of the values and importance of the historic asset, so that it can no longer be appreciated.
	Beneficial	A considerable change from the baseline conditions which results in the enhancement or better revealing of the significance of a historic asset.
Medium	Adverse	A change from the baseline conditions of a historic asset which results in some degree of loss or alteration of the value and significance of the historic asset.
	Beneficial	A change from the baseline conditions which results in the enhancement or better revealing of the significance of a historic asset.
Low	Adverse	A small, but noticeable change from the baseline conditions on a receptor which results in minor degree of loss or alteration of the value and significance of a historic asset.
	Beneficial	A small, but noticeable change from the baseline conditions which results in a small enhancement of the significance of a historic asset.
Negligible	n/a	Very little change from the baseline condition which is barely discernible. This will result in no change to the heritage value or significance of the asset.

Table 8.4: Magnitude of impact criteria

Criteria for Significance of Effect

- 8.23 The significance of the effect of development upon any historic asset is a product of the importance of the asset, and the magnitude of impact upon its values. This is summarised in Table 8.5 below. Where two alternatives are given in the table, professional judgement is used to decide which best reflects the significance of effect upon the historic asset.
- 8.24 Effects are only considered to be 'significant', as per the EIA regulations, whereby they fall into the 'major' or 'moderate' category, as shown as shaded in the table below.

Magnitude of Impact	Historic Asset Importance			
	<i>High</i>	<i>Medium</i>	<i>Low</i>	<i>Negligible</i>
<i>High</i>	Major	Major/Moderate	Moderate/Minor	Negligible
<i>Medium</i>	Major/Moderate	Moderate	Minor	Negligible
<i>Low</i>	Moderate/Minor	Minor	Minor/Negligible	Negligible
<i>Negligible</i>	Negligible	Negligible	Negligible	Negligible

Table 8.5: Criteria for the significance of effect

Baseline Conditions

- 8.25 The below-ground archaeological baseline for the Site is summarised below for the purposes of this EIA Chapter. A full assessment of the baseline conditions can be found within the HEDBA presented in Appendix 8.1.
- 8.26 In the situation whereby the proposed development is not consented, the Site will remain as agricultural land. This scenario will result in no specific change to any currently unrecorded archaeological remains within the Site, although any remains in upper horizons may potentially be impacted by any ploughing carried out in the field.. However, and as discussed below, any currently unrecorded remains would be anticipated to be at lower levels, beneath an accumulation of alluvium, and thus not subject to ongoing effects (a neutral ongoing effect under current conditions).
- 8.27 The future baseline will incorporate the effects of climate change. The UK Climate Projections 2018 (UKCP19) project likely future outcomes as a result of climate change. The data used to predict the impact of climate change on the future baseline is identified in Chapter 2. This data suggests that there will be more extreme weather patterns, period of intense heat, rain, cold, and dryness which could lead to the increased erosion of surface remains. This change in weather patterns will correspond to changes in soil saturation and shrinkage, and soil chemistry which can have an effect on any surviving below ground archaeological remains, particularly those remain which are reliant of an anaerobic waterlogged environment for their survival.

Known Historic Assets

- 8.28 No designated historic assets are located within the Site.

- 8.29 Remains of a post-medieval storage structure have been identified within the woodland to the south of Ty'n-y-caeau Farmhouse. These remains have some limited evidential and historical value and comprise a 'non-designated historic asset' of low importance. The proposed development is retaining this element and thus there will be no affect, as identified in Appendix 8.1. Therefore, effects on this asset are not considered further.
- 8.30 Hedgerows within and along the northern and southern borders of the Site have been identified as 'important' under the criteria for archaeology and history of the Hedgerows Regulations 1997. 'Important' hedgerows are not designated historic assets but comprise 'non-designated historic assets' of low importance. The proposed development is retaining these hedgerows and thus there will be no affect, as identified in Appendix 8.1. Therefore, effects on these assets are not considered further.
- 8.31 Faint linear features in a north/south orientation have been identified on airphotos, in the western part of the Site (Appendix 8.1; Fig. 9), and may indicate the remains of ploughed-out post-medieval ridge and furrow. Any below-ground remnants of these features would be of insufficient values to constitute historic assets. Therefore, effects on these assets are not considered further.
- 8.32 The non-designated Ty'n-y-Caeau Farmhouse is located to the immediate north and east of the Site. This comprises a historic asset of low importance. The development has the potential to adversely affect this historic asset through change to its setting, and thus was subject to further assessment.

Potential Historic Assets

- 8.33 There is some limited general potential for previously unrecorded Roman settlement on roadside locations in the area, but this potential is relatively low.
- 8.34 There is potential for previously unrecorded medieval remains to survive within the Site. Such remains may include buried agricultural features such as ditches or furrows.
- 8.35 At present the importance of potential assets cannot be ascertained and mitigation is proposed (see below) to identify any values and thus their importance. It is however, considered likely that any such assets would be of no more than low importance, as discussed in Appendix 8.1..

Designated Assets

- 8.36 No designated assets are located within the Site. However, a number of designated assets are located within the study area, as detailed in Appendix 8.1.
- 8.37 The settings assessment reported within the HEDBA (Appendix 8.1) identified that there would be no effect to any of the designated historic assets within the 3km study area. As such these assets will not be subject to a significant effect as per EIA regulations. Therefore, effects on these assets are not considered further.

Sensitive Receptors

- 8.38 The following receptors have been considered as having potential for a significant effect from the proposed development:
- a) Unknown archaeological remains within the Site of prehistoric, Roman and medieval date; and
 - b) Tyn-y-Caeau Farmhouse
- 8.39 All other historic assets, both within the Site and in the wider environs of the Site, are not subject to any effect as a result of the proposed development. This is further detailed within the HEDBA that forms Appendix 8.1.

Assessment of Effects, Mitigation and Residual Effects

- 8.40 The development effects may potentially include:
- i. Physical effects – these may arise from construction phase works such as demolition works, foundation excavation for buildings; trenches for services; and certain forms of landscaping works requiring reduction in ground levels (e.g. ponds)
 - ii. Non-physical effects – these may occur within the construction phases due to the presence of machinery, and following completion of construction, and may include harm or benefit to historic assets through alteration of their ‘setting’

Construction Effects

- 8.41 The assessment of construction effects includes consideration of all groundworks required for the proposed development as detailed in full in Chapter 2: Approach to the Assessment, prior to mitigation.

Physical Effects

- 8.42 During the construction phase, archaeological mitigation (see below) will have taken place to ascertain the nature and importance of any currently unrecorded archaeological remains. The impacts of construction works on these potential remains would be adverse, direct, permanent, and irreversible in nature, and would likely result in the complete loss of any archaeological deposits. This equates to a high adverse magnitude of impact. However, as archaeological remains of low importance are anticipated this would result in no more than a minor adverse effect (which is not a significant effect).

Non-Physical Effects

- 8.43 The construction work has the potential to affect the ‘setting’ of the non-designated historic asset of Ty’n-y-Caeau Farmhouse. The construction work will be temporary and is not judged to result in any appreciable harm upon the values of the building. The effects on the Farmhouse are discussed further within the ‘Operational Effects’, below.

Operational Effects

Physical Effects

- 8.44 There will be no additional physical effects within the operation stage of the proposed development.

Non-physical Effects

- 8.45 Ty'n-y-Caeau Farmhouse is a non-designated historic asset of low importance. The settings assessment (as detailed within Appendix 8.1) identified that the proposed development will result in a low adverse impact which equates to a low adverse effect. This effect will last the duration of the developments operational cycle and thus should be considered a long-term effect. However, in theory, this effect is irreversible in nature.
- 8.46 Therefore, the proposals will result in a low adverse impact to a historic asset of low importance which equates to an overall minor effect (which is not a significant effect).

Cumulative Effects

- 8.47 The cumulative assessment includes the following site, as set out in Chapter 16 of the ES:
- i. Tyn-y-Caeau, Margam Road, Port Talbot (Application re: P2020/0601, Appeal Re: 3263628)
- 8.48 The cumulative assessment is presented in full in Appendix 8.1. In summary, with regard to the proposed development (as set out above) a low adverse impact to the undesignated Farmhouse has been identified, due to a change to a part of its 'setting' which contributes (to a limited degree) to its value; a resultant minor effect. It is not considered that this effect, when considered in-combination with conversion of the Farmhouse to a new function, would result in different or greater impact to the values of the Farmhouse.

Mitigation Measures and Residual Effects

It is proposed that a trial trench evaluation is undertaken at pre-commencement stage to gather further information on the below-ground archaeological resource of the Site. The scope and methodology of this will be agreed in a Written Scheme of Investigation to be approved by GGAT prior to commencement.

- 8.49 The results of the trial trenching will inform implementation of any additional construction stage mitigation measures. The scope and method of any such additional mitigation techniques will be agreed with GGAT.
- 8.50 Following implementation of the mitigation measures no significant effects upon any potential (i.e. currently unrecorded) archaeological remains are anticipated.

Limitations and Assumptions

- 8.51 Specific assumptions and limitations of the assessment can be found in the Technical Appendices of the Chapter. In summary, there are no assumptions or limitations that overtly affect the quality or robustness of the assessment presented here. The analysis of potential buried archaeological remains includes an inherent degree of predictive modelling, as is an

industry accepted approach. However, to reiterate, these assumptions do not undermine the quality or robustness of the proportionate assessment.

Summary

- 8.52 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the proposed development in relation to heritage (historic assets).
- 8.53 A staged programme of work has taken place, in accordance with the Scoping Report for the ES. This has included a HEDBA as included within Appendix 8.1. All elements of the historic environment have been considered, including below-ground archaeological remains, the historic landscape, and the 'setting' of historic assets. Consultation has taken place through the EIA process with statutory heritage consultees, including GGAT and Cadw.
- 8.54 No significant adverse effects upon historic assets are anticipated to result from the proposals.
- 8.55 A programme of archaeological survey and mitigation will be agreed with GGAT and implemented prior to the commencement of works. This will include additional trial trench evaluation at pre-commencement stage, which will inform the implementation of any additional mitigation techniques at construction stage.

References

Cadw 2011 Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment in Wales

Chartered Institute for Archaeologists 2020 Standard and Guidance for Historic Environment Desk-Based Assessment

Welsh Government 2017a *Technical Advice Note 24: The Historic Environment (TAN24)*

Welsh Government 2017b *Setting of Historic Assets in Wales*

Welsh Government 2021 *Planning Policy Wales Edition 11*

Non-Technical Summary

- 8.56 This chapter of the ES considers the likely significant effects of the proposed development on the historic environment, namely below-ground archaeology, built heritage and historic landscape, assessing both potential physical effects and non-physical effects, and any cumulative effects. The proposed development would not lead to any significant effects upon historic assets.

9. LANDSCAPE AND VISUAL

Introduction

- 9.1. This Landscape and Visual Impact Assessment (LVIA) has been prepared by Soltys Brewster Consulting to assess the likely effects of the Proposed Development on the landscape and visual resources within the study area.
- 9.2. The Proposed Development is around 6ha in extent and is located on land off Junction 38 of the M4, Margam. It is within Neath Port Talbot CBC administrative area and is allocated under Policy EC1/2 of the Neath Port Talbot LDP as a Strategic Employment Site. The Proposed Development includes a new metal processing facility (Use Classes B1, B2 and B8) that will provide for the melting and atomizing of raw materials to manufacture metal powder for use in other industry. The site would be operational for 24 hours a day between 6 and 7 days a week with around 2-10 HGV vehicle movements per day. There would be no external emissions or effluent.
- 9.3. The maximum floor space of all buildings for the development would be ca. 20,100m²; the operations buildings would be 18,250m², while there would be an additional 1,848m² of administration, HR and support buildings. Maximum building heights would be approximately 19m. There would be up to 170 parking spaces on-site.
- 9.4. The LVIA Chapter describes and evaluates the existing baseline conditions, including landscape character and visual amenity and assesses the potential effects of the Proposed Development on these. This includes consideration of the site and its context within the confines of the study area and the extent of potential visibility of the Proposed Development. Effects are considered during the construction and operational phases.

Potential Landscape and Visual Receptors

- 9.5. Landscape and visual assessments are separate, although linked, procedures.
- 9.6. Landscape effects derive from changes to the pattern of physical and perceptual aspects that are distinctive to a landscape and help define its particular landscape character. Landscape effects include direct effects upon landscape elements within the development site and indirect effects upon landscape character and landscape designations.
- 9.7. Visual effects relate to changes that arise in the composition of available views as a result of changes to the landscape, to people's responses to the changes and to overall effects on visual amenity.
- 9.8. Assessment of landscape impacts requires consideration of three categories:
 - Direct impacts within the Application Site. These comprise changes to the physical baseline landscape resulting directly from the imposition of the Proposed Development itself. These will likely arise as a consequence of changes to the existing pattern of landform, vegetation, habitats and other features.

- Indirect impacts on the wider landscape character. These result from consequential change resulting from the Proposed Development and are often produced away from the Proposed Development Site. They are usually the result of a complex pathway or secondary association and will include changes to the landscape character within the study area. Baseline landscape character will be assessed using LANDMAP and Landscape Character Assessments, where these are available.
 - Impacts on the character and settings of any areas designated specifically for their landscape value.
- 9.9. Assessment of visual impacts requires consideration of people's views and constituent factors within the available views. Viewers, known as visual receptors, will include people with views from their residential properties, local communities, transportation routes, along with people undertaking outdoor recreational activities or employment. Visual effects will arise from changes to the constituent factors within views, which for this assessment will mainly be concerned with the introduction of the Proposed Development.
- 9.10. Views may be panoramic, obscured/glimpsed, filtered or open, direct or oblique and short, medium or long-range. Impacts on the visual amenity of a particular receptor may arise where elements of the Proposed Development intrude into or obstruct views, or where there is some other qualitative change to the view.
- 9.11. Viewpoint selection may be:
- Representative. These represent the experience of more than one and often different types of visual receptor.
 - Specific. These are selected to illustrate a key, promoted viewpoint within the landscape.
 - Illustrative. These are selected to illustrate or demonstrate a specific visual issue.
- 9.12. Viewpoints 1 to 4 included within this assessment are representative, with receptors including, for example, users of the highways, residents in nearby properties and people visiting and using heritage and recreational assets.

Legislation and Policy Context

- 9.13. The European Landscape Convention (ELC) is a Council of Europe initiative that provides a broad framework for landscape planning and management across all member states, including the UK, which ratified the ELC in 2007.
- 9.14. The ELC defines landscape as *“an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors,”* and is committed to several core principles and aims. These commitments are implemented through existing domestic policy and legislation rather than through any ELC-specific framework. Whilst ‘Brexit’ ensured the departure of the United Kingdom from the European Union (EU) on the 31st January 2020, the status of this convention was unaffected. The ELC is a convention of the Council of Europe, not the EU and the UK remains a signatory.

- 9.15. The recognition that Government has given to landscape matters raises the profile of this important area and emphasises the role that landscape can play as an integrating framework for many areas of policy. The ELC is designed to achieve improved approaches to the planning, management and protection of landscapes throughout Europe and to put people at the heart of this process.
- 9.16. In line with the statutory requirements legislated by the Environmental Impact Assessment (Wales) Regulations 2017, a review of national and local landscape planning designations and policy has been undertaken.
- 9.17. Relevant policy is detailed below:

National Planning Policy

- 9.18. *Planning Policy Wales (PPW) Edition 11, (February 2021)*. This document sets out land use planning policies of the Welsh Government and is the foundation of all national, regional and local planning policy. It is supplemented by a series of Technical Advice Notes (TANs) and Guidance Notes (GNs), Welsh Government Circulars, and policy clarification letters, which together with PPW, provide the national planning policy framework for Wales. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, PPW also recognises the rich and varied landscapes of Wales, covered by a hierarchy of statutory and non-statutory designations, including National Parks and AONB's. PPW also supports the use of the National Resources Wales (NRW) LANDMAP Information System as an important information resource to inform baseline landscape character assessment within Wales.
- 9.19. *Future Wales - The National Plan 2040 (February 2021)*. Future Wales builds on Planning Policy Wales and provides a national spatial strategy setting out where Wales should focus development to address key national priorities through the planning system until 2040. It provides the national tier and sets the direction for strategic and local development plans as well as complementing Planning Policy Wales (PPW) with a shared commitment to placemaking and towards national ambitions and well-being goals. Together, PPW and Future Wales set out how the planning system should respond to and address national challenges and opportunities.

Local Planning Policy - Neath Port Talbot County Borough Council (NPTCBC) Local Development Plan (Adopted January 2016).

- 9.20. The following Policy is applicable within the Study Area:
- **Strategic Employment Site (Policy EC1)**. The site is allocated for employment uses and has been assessed and identified as a preferred location for in-building waste treatment.

- **Strategic Policy SP5 Development in the Coastal Corridor Strategy Area.** 'In the Coastal Corridor Strategy Area, sustainable growth and development will be promoted to benefit the County Borough as a whole, while protecting and enhancing the area's character and environment. This includes the area specific allocation for employment within the J38/M4 Margam site, (as Policy EC1 above).
- **Policy TO4 Walking and Cycling Routes.** The Wales Coast Path extends around the southern and western edge of the Proposed Development site. To the east, the Great Dragon Ride route extends north to south through the Study Area. Both routes are covered by this policy which resists 'any proposal that would prevent or have any adverse impact on their implementation.'
- **Strategic Policy SP14 The Countryside and the Undeveloped Coast.** This policy seeks to protect and where feasible, enhance 'the countryside and undeveloped coast, including landscapes, seascapes and agricultural land.' The following measures and policies will be used to achieve the objectives of Policy SP14
 - The protection of the open countryside through the control of inappropriate development outside settlement limits.
 - **Policy EN1: The Undeveloped Coast.** This Policy protects the undeveloped coast through the control of inappropriate development.
 - **Policy EN2: Special Landscape Areas.** Development within Special Landscape Areas (SLA) will only be permitted where it is demonstrated that there will be no significant adverse impacts on the features and characteristics for which the SLA has been designated. Margam SLA extends across the study area to the east of the Proposed Development site
 - **Policy EN3: Green Wedges.** This Policy seeks to prevent the coalescence of settlements and to protect the setting of urban areas. A broad area extends across the study area to the east of the Proposed Development site.
- **Strategic Policy SP21 Built Environment and Historic Heritage.** This Policy seeks to conserve and enhance the built environment and historic heritage, where appropriate. The following measures will be used:
 - Encouraging high quality design standards in all development proposals.
 - Protecting arterial gateways from intrusive and inappropriate development.
 - Safeguarding features of historic and cultural importance.
 - The identification of the following designated sites to enable their protection and where appropriate enhancement.

Assessment Methodology and Significance Criteria

- 9.21. Landscape and visual assessments require consideration of aspects including topography, land-use, landscape condition, quality, visibility and aesthetics. Together these help in defining the sensitivity and robustness of the baseline resources within the study area, and its capacity to accommodate changes of a given development scale, form and appearance. These aspects have been examined through both desk and field-based studies. The site assessment was undertaken in September 2021.

- 9.22. The assessment will adopt a methodology compliant with the following current guidance:
- Guidelines for Landscape and Visual Impact Assessment (GLVIA). The Landscape Institute/ IEMA. Third Edition, 2013.
 - NRW Guidance Note 46, 'Using LANDMAP in Landscape and Visual Impact Assessments, (LVIA), January 2021.
 - Visual Representation of Development Proposals – Technical Advice Note 06/19, Landscape Institute (September 2019), including supporting Technical Information Notes 07/19, 08/19 and 09/19.
- 9.23. In accordance with the GLVIA, a less prescriptive approach will be adopted by the assessment. The emphasis will be on creating a narrative approach to describing landscape and visual effects and the judgements made on their significance.
- 9.24. Criteria for establishing significance of effects are provided in **Appendix 9.1**. Evaluations for receptor sensitivity will be established through consideration of receptor value and susceptibility to change. Broadly, significance of effects, in turn, will be established as a function of the magnitude of the impact and the sensitivity of receptors.
- 9.25. In accordance with EIA guidance, 'impact' is defined as the change resulting from an action, (i.e. the Proposed Development), and 'effect' is defined as the consequence of an impact.
- 9.26. Effects identified will be classified into one or more of the following:
- Beneficial effects that have a positive influence, adverse effects that have a negative influence.
 - Temporary effects that persist for a limited period only, such as construction activities.
 - Permanent effects that result from an irreversible change to baseline landscape and visual receptors or which persist for the foreseeable future.
 - Direct effects that arise from activities that form an integral part of the Proposed Development.
 - Indirect/secondary effects that arise from activities not explicitly forming part of the Proposed Development.
- 9.27. Cumulative effects will arise from the interaction of impacts arising from the Proposed Development in conjunction with other separate development projects. They may include a combination of different impacts at a specific location, the recurrence of impacts of the same type at different locations or the interaction of different impacts over time.
- 9.28. The LVIA comprised the following stages:
- A description of the existing baseline condition, including consideration of the overall value and susceptibility, for each receptor to be assessed.
 - An assessment of the overall sensitivity to change for each receptor, reflecting judgements reached on value and susceptibility.
 - For each receptor, the magnitude of the change arising from the Proposed Development was assessed.

- The evaluations reached for receptor sensitivity and the magnitude of change were combined to provide an evaluation of the significance of effects.
- The assessment results, including evaluations of receptor sensitivity, magnitude of change and significance were tabulated and described.
- Following identification of potential significant adverse effects, secondary mitigation measures were incorporated where necessary and feasible. A final assessment of the residual effects was then carried out incorporating the agreed established secondary mitigation measures.
- The assessment determines the level or degree of effect that is likely to occur. A judgement was then made as to whether that effect should be considered as significant and a material factor in determining the planning application.
- Evaluations of significance identified as greater than moderate were considered to be significant. Effects less than moderate were considered to be not significant. Where effects are determined to be of moderate significance, whether these effects are significant or not significant will depend on the individual and specific circumstances relating to each viewpoint and the professional opinion of the landscape specialist will determine this.

Photography

- 9.29. Photography used to illustrate Viewpoints 1 to 4 was carried out in accordance with Technical Advice Note 06/19 - Visual Representation of Development Proposals, Landscape Institute (September 2019), including supporting Technical Information Notes 07/19, 08/19 and 09/19.
- 9.30. Photographic surveys were undertaken in September 2021. Climatic conditions were dry, sunny with intermittent cloud cover and seasonally typical. Deciduous trees were in leaf during the photographic survey.
- 9.31. Photographs illustrating views from each viewpoint were taken with a full frame Canon Eos 5D MKII digital camera using a fixed lens with a 50 mm focal length. Each frame was taken in landscape format, and individual frames have been stitched together using appropriate software to illustrate a maximum field of view of ninety degrees. This provides a panoramic image stitched in planar projection and should be viewed flat.
- 9.32. Panoramic views are intended to give an understanding of the visual context. Theoretically, when printed at the correct size on an A1 page and viewed at a comfortable arms-length, the photographs closely represent the view experienced from each viewpoint by the viewer's naked eye. The photographs, therefore, provide a tool for the reader that can be compared with an actual view in the field. However, they should never be considered as a substitute to visiting a viewpoint.

Study Area and viewpoints

- 9.33. A 3km radius study area from the centre of the site is considered appropriate for the scale and nature of the development. Visual impacts beyond 3km were not considered to be

significant, given the distance, nature of the Proposed Development and the broad character of the landscape observed during an initial site-based appraisal.

- 9.34. Four viewpoints are proposed within this study area as indicated on *Figure 12.2 Indicative Visual Envelope Plan* at a range of locations identified for their potential sensitivity to change.

Temporal Scope

- 9.35. This assessment considers the construction stage affects that will persist for a limited period (to be defined) and are considered temporary.
- 9.36. The operational stages of the Proposed Development are considered to be irreversible and likely to persist for the foreseeable future, (i.e. permanent).

Baseline Conditions

Study Area overview

- 9.37. The proposed development site is located on pastoral agricultural land, situated between the M4 motorway and heavy industry, including the Western Wood Energy and Margam Green Energy and BOC Gas and Gear facilities and Margam Steelworks beyond. The coastal plain extending west of the M4 corridor is flat and much dissected by railway lines and pylons, with some irregular fields lined with drainage ditches and scrub. To the south of the site, recreational sports pitches, the Crematorium and the Eglwys Nynydd Reservoir beyond further dilute the coherence of this landscape.
- 9.38. Beyond the M4 motorway to the north-east and round to the south-east, the landform rises to highpoints at Mynydd Brombil and Mynydd Margam. Below these upland areas Margam Country Park, is an area of designed parkland, mosaic grazed land and mixed woodland. The area is focussed on Margam Castle and Margam Abbey, set in wooded parkland below the sharply incised scarp slope forming the edge of the Mynydd Margam uplands. The country park is a significant tourist attraction offering a range of recreational and cultural activities. Beyond Margam Country Park, rolling mixed farmland with small-scale development and recreational uses extends to the south-east. This landscape contains mature hedges and small blocks of woodland and copses that combine with the rolling landform to restrict views, adding to a feeling of intimacy. The area contains scattered dwellings and small settlements such as Eglwys Nynydd and Coed Hirwaun, but is predominantly well-managed farmland with limited access.

Topography, drainage and water bodies

- 9.39. The Proposed Development site is located on the coastal plain and landform extending to the north, west and south is typically low-lying and flat. To the north-east, east and south-east, beyond the M4 Corridor, the landscape rises through an undulating pattern around Coedhirwaun to the dramatic, sharply defined scarp slopes rising to the Mynydd Margam and Brombil uplands.

- 9.40. Low-lying areas, typically on Margam Marsh and Moors and generally towards the coast contain regular drainage ditches to the edges of pasture fields, draining principally to Upper and Middle Mother Ditch. To the east, small streams such as Coal Brook within drain off upland areas through the undulating Coedhirwaun landscape and into the Afon Cynffig to the south.
- 9.41. A number of large water bodies are located in the study area, most notably the Eglwys Nunydd reservoir to the south, along with smaller lakes within Margam Country Park to the east.

Significant Vegetation

- 9.42. Within and enclosing the Proposed Development site are:
- Areas of broad-leaved, semi-natural woodland and scattered areas of regenerating scrub.
 - Hedgerows within and surrounding the eastern and southern boundaries. These are gappy in places, with occasional trees.
- 9.43. The following significant vegetation is evident within the wider study area.
- Areas of plantation forestry, particularly on upland plateaux to the east, such as Mynydd Brombil and Mynydd Margam.
 - Areas of native woodland, including ancient woodland as included on the Ancient Woodland Inventory (NRW).
 - Roadside and planted scrub and woodland, such as along the M4 corridor or surrounding the nearby BOC plant.
 - Parkland vegetation including designed areas of woodland and veteran parkland trees in Margam Country Park, (Registered Historic Park and Garden) to east.
 - Willow dominated scrub to the south-west on Margam Moors, typically regenerating along fields boundaries and brownfield land.
 - Small copses and well-treed, managed hedgerows, typically to the south-east around Coedhirwaun.

Land-use and settlement pattern

- 9.44. Land-use in the study area is dominated to the west of the M4 by large-scale industry interspersed with brownfield land and low-lying pasture fields. To the south-east, beyond the M4 corridor, land-use is predominantly rural with fields defined by a strong rural fabric of hedges and trees. Margam Country Park sits amongst this area as a significant recreational, cultural and historic attraction.
- 9.45. To the north, land-use is dominated by the urban area of Margam, before merging with Port Talbot. This is the main settlement. Some smaller settlements, including the village of Margam, and Coedhirwaun and more recent infill developments to the south-east are also of note.

Movement and circulation

- 9.46. The study area is bisected by the following key transport routes:
- The M4 Motorway. This extends north to south through the study area around 50m from the eastern edge of the Proposed Development site.
 - The A48 Trunk Road/Margam Road. This extends along the eastern edge of the site, connecting with the Junction 38 interchange.
 - A4241 Harbour Way. This extends to the north-west, connecting to the A48 at an interchange/roundabout to the immediate north of the Proposed Development site
 - Swansea to London Paddington Railway. This is aligned north to south around 500m to the east of the Proposed Development site.
- 9.47. Long distance promoted footpaths extending through the Study Area include:
- The Wales Coast Path. This is a 1400km continuous walking route around the entire coast of Wales and runs as near to the coast as legally and practically possible. The route extends north to south through the study area and follows the eastern and southern edges of the Proposed Development site, on the A48m Margam Road and Heolcaer Bont respectively.
 - Ogwr Ridgeway Walk. This 21km route extends through Margam Country Park, finishing at Mynydd Maendy to the west in Rhondda Cynon Taf.
 - St Illtyds Way. This route also extends through Margam Country Park, merging with the Ogwr Ridgeway Walk for a small section.
- 9.48. NCN 4 National Cycle Routes (NCRs) are traffic free lanes and quiet roads that form a network of cycle routes throughout the UK. The NCN4 (Celtic Trail – East) extends along the A48 M forming the eastern edge of the site, before heading north through Margam Country Park.

Future Baseline

- 9.49. The landscape within and to the west of the M4 corridor, (i.e. the Margam Marsh LCA01), is likely to face continued pressure for development. The coherence of this area is diluted by existing large scale industry and other land-uses and this is likely to continue. Areas outside the Proposed Development site, particularly to the east of the M4 corridor are protected by a raft of policy and landscape designations that will restrict significant change.
- 9.50. Climate Change, in line with the Met Office Predictions (UKCP18), offers potential to impact on baseline condition of landscape receptors in the study area, including vegetation and drainage patterns for example. The exact nature of future change is uncertain, but it is likely that periods of unseasonably wet or dry weather may result in periods of stress for existing established vegetation, including hedgerows, trees and woodland.

Landscape Designations

- 9.51. Key statutory and non-statutory landscape designations provide an indication regarding the value that national and local government, plus other agencies, attach to particular landscapes.
- 9.52. Designations of relevance within the study area are outlined below and are illustrated on *Figure 12.1 Landscape Designations*.

- **Mynydd Margam Special Landscape Area (SLA).** The SLA designation lies to the east of the Proposed Development site and is described as *‘a broad, low-lying plateau of NE dipping Productive Coal Formation mudstones and coals between South Wales Pennant Formation escarpment and E-W Millstone Grit ridge to the South, dissected by shallow, alluvium filled valleys of tributaries and the main Cynfig valley. It includes mine workings and the proposed deep mine. The SLA, which contains Margam Park, with its exceptional examples of architecture; its history as a major Cistercian Abbey and the wider monastic landholdings, provides a combination of high-grade historic visitor attraction and a variety of multi-period pleasure grounds. It contains cultural elements dating from pre-history through every period up to the 21st century. The scenic quality of the area is enhanced by the historic buildings of the Park and the backdrop of scarp creating a sheltered setting which link visually and provide the integrity of the whole. The sense of place for the park is initially prompted with boundary walls and entrance gates. The historic core and deer park make this area unique within the County.’*
- **Mynydd Margam Landscape of Special Historic Interest.** This designation identifies the most important and significant historic landscapes in Wales, (scheduled in Part 2.2 of The Register of Landscapes of Special Historic Interest in Wales). Mynydd Margam extends to the east, beyond the edge of the M4 corridor. The well wooded western flank of the mountain rises steeply above the town of Port Talbot and the adjacent M4 motorway, to a series of more gentle slopes and plateaux that are typically between 200m - 300m AOD, reaching a maximum height of 344m AOD. Coniferous forestry is a dominant feature of the landscape, although a series of small, wooded valleys and ravines that typically contain small streams, rising to a peat bog, is also a common feature of the mountain. The mountain contains a number of Bronze Age ritual and funerary monuments, early Christian monuments and medieval defensive works. However, it is the remains of Margam Abbey, plus the Tudor Gothic mansion of Margam Castle and the Orangery, within Margam Country Park, which are the most prominent historical features.
- **Registered Parks and Gardens of Special Historic Interest.** The Grade I listed Margam Park is located to the east, below the southern slopes of Margam Mountain. The Park is scheduled within the Register of Parks and Gardens of Special Historic Interest in Wales, established by Cadw/ICOMOS UK to identify sites that can be considered of importance within Wales. Covering an area of approximately 400ha of parkland, it is located at its closest point, around 180m from the Proposed Development site. Predominantly, the park is open grassland, including a walled deer park that covers approximately half of the estate. Mature trees are scattered throughout along with larger

blocks of woodland. A strong sense of enclosure is provided by the wooded slopes of Mynydd Margam to the north. A number of structures of historic and cultural significance are located within the grounds, including the large Grade II* listed Margam Castle that is situated in the northern part of the park. This nineteenth-century Tudor Gothic mansion is a dominant feature and offers commanding views south across the southern extents of the park, towards the Bristol Channel. Other structures include the Orangery, the ruins of Chapter House and the ruins of Infirmary, which are all Grade I listed buildings, plus the Grade II listed Citrus House. The ruins of Hen Eglwys, a Grade II listed building, are located on the southern slopes of Mynydd Margam. This ruin overlooks the park and again offers panoramic views across the surrounding landscape.

- **Margam Country Park.** The Park is also designated under the Countryside Act 1968 as a Country Park. These are areas for people to visit and enjoy recreation in a countryside environment. Facilities provided to enable this include footpaths, parking, seating, cafes and attractions such as a high wire adventure centre and a miniature railway.
- **Margam Park Conservation Areas.** These are designated by the Local Authority and are defined as areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance. Margam Park Conservation Area comprises the central part of the park, including the main buildings (Margam Castle, the Orangery, the Abbey church and ruins) and formal gardens.

Landscape Character & LANDMAP

- 9.53. The *NPT LANDMAP Assessment (2004)* provides detailed descriptions and evaluations for Landscape Character Areas within the County, with a basis on LANDMAP datasets and contextual landscape analysis. Although there have been some changes affecting areas since the Assessment was completed, these have had a relatively minor impact on the overall landscape character within the Borough and the study area adopted for this assessment. The NPT LANDMAP Assessment, therefore, remains a useful resource to help inform the evaluation of landscape impacts of development proposals.
- 9.54. Descriptions and evaluations are derived from a combination of areas defined by the five LANDMAP aspects. They are, however, led by the visual and sensory aspects, informed and refined as appropriate by the other layers. For the purposes of this assessment, visual and sensory will provide the basis of the evaluation for value.
- 9.55. Landscape Character Areas and supporting figures identifying evaluations and classifications of LANDMAP aspect areas (moderate and high values only) are indicated on Figures 12.3 to 12.12.
- 9.56. The Proposed Development site is located within **Landscape Character Area 1 Margam Marsh**. This LCA lies in the coastal plain and largely comprises flat, predominantly cattle grazed land. It is heavily veined with drainage ditches. The land, crossed by the London to Swansea rail-line and including Eglwys Nunydd Reservoir, is situated between Margam Burrows to the south and west, and the heavy industry and M4 motorway to the north and

east respectively. It is low-lying and is comprised of reclaimed salt marshes at heights of between 4.5m and 5m AOD, and the reservoir raised at 10m AOD. It sits on part of the northwest to southeast coastal strip of alluvium, which fringes the coast.

9.57. Key characteristics identified in the NPT Landscape Assessment include:

- 'Flat wetland pasture, veined with drainage ditches and with significant wetland vegetation. Willows are prominent through the area especially lining ditches, but also encroaching into fields forming scrubby clumps.
- Strong visual influence of surrounding heavy industry.
- Eglwys Nunydd Reservoir forms the largest area of inland still water within the County Borough.
- Significant areas of marsh, eutrophic water and wetland habitats, with SSSI designation.
- Historically and culturally linked to Margam Abbey.
- The skyline to the south is dominated by numerous electric pylons and to the west by the steelworks.
- Eglwys Nunydd reservoir is a significant leisure facility for sailing.'

9.58. Landscape Character Areas within the wider Study Area that fall within the Indicative Visual Envelope shown on *Figure 12.2*, but are outside the Proposed Development site are described below.

9.59. **LCA 03 Margam Country Park** lies to the east of the Proposed Development site. It is described in the NPT Landscape Assessment as a *'roughly triangular character area that lies below and along the scarp slope to the south of the County Borough. Its boundary is defined to the south, south-east and south-west by the estate wall, and by the scarp slope and extent of the deer park to the north and east. Although the area lies close to both the M4 and Port Talbot, the surrounding areas are predominantly rural; lowland to the south and upland to the north and east.*

9.60. The park can be divided into three main areas; a low-lying area to the south, a wooded valley, lake and hillfort to the west of the park and an upland plateau to the north and east. Three deer parks are contained within the overall park.

9.61. Much of the land ranges from between approximately 30m to 90m AOD, overlaying a geology of glacial sand and gravel to the south-west and the tip of the low lying plateau of northeast dipping productive coal to the east. The scarp slope, where the area reaches over 200m AOD is characterised by the upland plateau of South Wales pennant formation. Landslips dominate this area.'

9.62. Key characteristics described include:

- 'Mature parkland designated Grade 1 in the Register of Landscape, Parks and Gardens of Special Historic Interest in Wales, owned and managed as a public park.
- Remains of Margam Abbey, dating from 12th century, emphasising Cistercian influence.
- Parish church of St Mary's, 18th century Orangery and 19th century, Tudor – Gothic, Margam Castle, set in picturesque and sheltered location.

- Breast plantations are a dominant feature on the scarp slope above the park.
 - Significant tourist / visitor attraction.'
- 9.63. **LCA 04 Coedhirwaun** lies to the southeast of the Proposed Development site. It is described as a 'large area of rolling, low-lying land...sitting below the scarp slope, the areas extent is defined by the County Borough boundary to the south and east while the M4 defines its western limits.
- 9.64. The area lies chiefly on the broad low lying plain of glacial sand and gravel except the southeast which lies on a low-lying plateau of productive coal formation. The elevation of the area, approximately 10m AOD at its lowest, is mainly below 70m AOD.'
- 9.65. This low-lying area of mixed agriculture is dominated by grazed land and has a distinctly rural quality. There are many blocks of woodland and hedges which restrict wide views out and add to a feeling of intimacy.
- 9.66. Key characteristics described for this area include:
- 9.67. 'Mature, managed pastoral landscape, significantly wooded with deciduous cover and containing significant mature hedgerows.
- 9.68. Suburbanisation close to the M4 in the west, with development and golf course.
- 9.69. Mosaic of lowland, agricultural and riparian habitats.
- 9.70. Medieval character of the landscape, with significant earlier elements, often linked to Margam Abbey.'
- 9.71. **LCA 06 Mynydd Brombil, Mynydd Emroch and Mynydd Dinas** overlooks the Proposed Development site to the north-east. The LCA 'takes in the scarp slope and open scarp tops rising to the east of Port Talbot and sitting above the M4 motorway. It forms the edge between the South Wales pennant formation to the east and the coastal plain to the west.
- 9.72. The landform provides a solid backcloth for the coastal plain creating an important and prominent feature. The steep slopes are primarily covered with bracken and scrub, with areas of coniferous plantation and occasional deciduous woodland on lower ground. There are also areas of rock exposure on steep, high ground enhancing its upland character.'
- 9.73. Key Characteristics described for this area include:
- Steep slopes with rounded plateau tops.
 - Unenclosed slopes are dominant by bracken cover.
 - Plateau tops comprise of sheep grazed pasture, enclosed by broken down walls and post & wire fences.
 - Provides a solid backcloth and prominent landform adjacent to the coastal plain.
 - Upland character contrasts with settlements and industry of the coastal plain.
 - Wide views and sense of exposure from higher elevations.
 - A wealth of multi-period activity, evident from the sites present – Bronze Age cairns, Pillow mounds.

- The area is untrammelled by industrial exploitation.
- 9.74. **LCA 49 Port Talbot, Sandfields, Baglan and Margam** is located to the north of the Proposed Development site. These settlements sit on the coastal plain below the scarp slope, stretching from Margam Works in the south to Baglan Works to the north. It is contained to the west by the intertidal Aberavon Sands and to the east by the adjacent scarp slope.
- 9.75. The older terraced town centre of Port Talbot extends into Margam with a civic and commercial centre easily distinguishable from the surrounding two-storey housing. The M4 cuts through the settlement, primarily running along the edge of the coastal plain/scarp. The road is elevated above the surrounding settlement, affords rooftop views of the town and facilitating distant views out. Noise, light and visual disruption from vehicles adds to the impact of the motorway as a structure.
- 9.76. Key Characteristics described for this area include:
- Industrial settlements lying predominantly on the coastal plain.
 - Dominance of M4 through the area.
 - The River Afan runs through the town in a highly canalised course.
 - Waterfront along Swansea Bay contains leisure related facilities.
- 9.77. **LCA 50 Port Talbot Docks and Margam Works** is an 'entirely industrial and port area is situated on the coastal margin of the Margam Moors in the south of the County Borough.'
- 9.78. The LCA is located to the west of the Proposed Development site and comprises 'large-scale, heavy industry and Port Talbot docks, a deep water port. The skyline is dominated by the steel works which acts as a significant landmark in the flat landscape. Smaller industrial units lie around the docks and next to the town centre. A network of railways, both passenger and industrial, cross the area including the main London to Swansea line, although there is no public access.'
- 9.79. Key Characteristics described for this area are:
- 'Industrial area sited on coastal plain
 - Dominance of steel works.
 - Development of smaller commercial units.
 - Docks constitute large expanse of water'
- 9.80. *Figure 12.2 Indicative Visual Envelope* illustrates the extent of potential visibility, without taking into account visually significant vegetation and buildings. The following LCA's will be entirely outside the visual envelope and these areas will not experience any change from the Proposed Development. They will, therefore, be excluded from any further consideration within this assessment.
- LCA 02 Margam Burrow.
 - LCA 05 Coedhirwaun Scarp and Open Scarp Tops.
 - LCA 07 Mynydd Margam.

- LCA 52 Margam Sands/Aberavon Sands.

- 9.81. The methodology and criteria for establishing evaluations of value, susceptibility and sensitivity of landscape receptors is provided in **Appendix 9.1**. Each of the receptors described above, has been considered against the criteria and evaluations reached to provide a basis on which to assess impacts.
- 9.82. Evaluations of value, susceptibility and sensitivity reached for landscape designations and LCA's are summarised in the Table 9.1 below.

Table 9.1 Evaluations of value, susceptibility and sensitivity reached for landscape designations and LCA's

Landscape Receptor	Value and Susceptibility	Sensitivity
Landscape Designations		
Mynydd Margam SLA	<i>Value: High</i>	Medium-high
	<i>Susceptibility: Some intrusion of existing industrial development and M4 corridor is notable. Well vegetated and robust landscape structure. Medium.</i>	
Mynydd Margam LSHI	<i>Value: High</i>	Medium
	<i>Susceptibility: Extensive area, a large proportion of which is outside the study area. Some intrusion of existing industrial development and M4 corridor is notable within a small section in the study area. Well vegetated and robust landscape structure in this area, more open or plantation forestry on uplands. Low.</i>	
Margam Park RPG	<i>Value: High</i>	Medium-high
	<i>Susceptibility: Some intrusion of existing industrial development and M4 corridor is notable. Well vegetated and robust landscape structure. Medium</i>	
Margam Country Park	<i>Value: High</i>	Medium-high
	<i>Susceptibility: Some intrusion of existing industrial development and M4 corridor is notable. Well vegetated and robust landscape structure. Medium</i>	

Landscape Receptor	Value and Susceptibility	Sensitivity
Margam Park Conservation Area	Value: Medium	Medium
	Susceptibility: Some intrusion of existing industrial development notable. Well vegetated and robust landscape structure. Medium.	
Landscape Character Areas, (LCA's)		
LCA 01 Margam Marsh	Value: High values for landscape habitats and cultural aspects. Low for remaining aspects. Low overall.	Very Low.
	Susceptibility: LCA lacks coherence with large industrial uses and transport corridors dominant. Low	
LCA 03 Margam Country Park	Value: Outstanding values for historic and cultural aspects. High values for visual and sensory and landscape habitats and geological. High overall.	Medium High.
	Susceptibility: Some intrusion of existing industrial development and M4 corridor is notable. Well vegetated and robust landscape structure. Medium.	
LCA 04 Coedhirwaun	Value: Outstanding values for historic and cultural aspects. Moderate and low values for remaining aspects. Medium overall.	Medium-low.
	Susceptibility: Robust structure of hedges and copses and rolling landform, restricted visibility/enclosed/intimate. Suburbanisation. Low.	
LCA 06 Mynydd Brombil, Emroch and Dinas	Value: Outstanding values for historic and cultural aspects. High values for visual and sensory, low elsewhere. High overall.	Medium.
	Susceptibility: Intrusion of large-scale industry and built form evident in open views west. Low.	

Landscape Receptor	Value and Susceptibility	Sensitivity
LCA 49 Port Talbot, Sandfields, Baglan and Margam.	<i>Value:</i> Outstanding values for historic and cultural aspects. Low elsewhere. Low overall.	Very low.
	<i>Susceptibility:</i> Robust urban area with intrusion of existing large-scale industry, built form and M4 corridor evident. Low.	
LCA 50 Port Talbot Docks and Margam Works	<i>Value:</i> High and outstanding values for historic and cultural aspects. Low elsewhere. Low overall.	Very low.
	<i>Susceptibility:</i> Robust area of large-scale industry, attributes unlikely to be sensitive to change. Low.	

Baseline Visual Assessment

- 9.83. *Figure 12.2 Indicative Visual Envelope Plan* indicates broad areas where all or part of the Proposed Development may theoretically be visible from within the study area. It is based primarily on landform and significant surface features such as large-scale built-form but excludes the screening effects of vegetation.
- 9.84. The visual envelope indicates that the extent of the visibility is contained by:
- Elevated topography and steep scarp slopes of the upland areas, particularly Mynydd Brombil and Mynydd Margam to the east and north-east.
 - Housing forming the southern tip of Margam to the north.
 - Large-scale buildings of Margam Steelworks to the west.
- 9.85. To the south-west, around Margam Moor, the low lying more open landscape offers greater potential for wider intervisibility with the Proposed Development site. However, the extent of intervening vegetation and limited public access restrict viewing opportunities in this area. To the south-east, beyond the M4 corridor, potential extends across land rising gently to the east, including areas of Margam Country Park. Again, the extent of intervening vegetation restricts views from this area.
- 9.86. The locations of Viewpoint 1 to 4 are indicated on *Figure 12.2* and the existing views are illustrated on *Figures 12.4 A to D*.

- 9.87. The existing views from each viewpoint and the likely receptors represented are described below.

Viewpoint Descriptions – Existing Views.

- 9.88. **Viewpoint 1 Abbots Close, Margam** is located around 700m to the north of the Proposed Development site, (OS grid reference 279012, 186955).
- 9.89. The viewpoint is adjacent to the southern edge of the settlement and a local public open space fronting onto the A48m Margam Road. The Wales Coast Path and the Strategic Cycleway Route NCN 04 are also both aligned near to the position of the viewpoint.
- 9.90. The viewpoint is representative of the views that the following receptor groups may receive towards the Proposed Development site:
- Residents in this part of Margam, where housing alignment and intervening vegetation allow views south.
 - Users of the Wales Coast Path.
 - Cyclists traversing the Strategic Cycleway NCN04.
 - Road-users, primarily using the A48m, but also adjacent residential access roads.
 - Users of the public open space.
- 9.91. The view south from this viewpoint extends along the A48m trunk road and an adjacent unmanaged area of land. Tall scrub and hedgerow planting restricting medium and longer-range visibility to glimpses where gaps in the vegetation allows. The glimpse views are interrupted by a variety of vertical elements including electricity poles and pylons, lighting columns and road signage. In the middle distance the taller upper façade of the Green Energy Plant, located adjacent to the Proposed Development site, is visible above the foreground vegetation. More distant views from the upper storeys of adjacent housing on Abbots Close will be available where the intervening scrub is below the viewing level.
- 9.92. **Viewpoint 2 Longlands Lane Recreation Ground** is located around 200m to the south of the Proposed Development site, (OS grid reference 279012, 186955).
- 9.93. The viewpoint is located on an area of public open space, potentially used for recreational purposes, although restricted for Covid -19 purposes at the time of writing. Informal uses, including dog walking, were noted during the site visit. Adjacent to the viewpoint, beyond roadside vegetation, the Wales Coast Path extends along Heolcaer Bont, a minor road.
- 9.94. The viewpoint is representative of the views that the following receptor groups may receive towards the Proposed Development site:
- Recreational users of Longlands Lane Recreation Ground.
 - Users of the adjacent Wales Coast Path. Views from this route will be filtered by intervening vegetation.
 - Road users on the minor road, Heolcaer Bont.

- 9.95. The view north from this viewpoint extends across the lower lying land typical of the Margam Marshlands Landscape Character Area, (LCA 01). Views across the area are dominated by the large-scale industrial buildings and venting towers of the Western Wood Energy facility and the Margam Green Energy Plant beyond. The white facades of these built forms strongly contrast the attractive and dramatic backcloth provided by the wooded scarp slopes of Mynydd Brombil and Mynydd Margam. Also prominent on the skyline are the Mynydd Brombil Wind Turbines. Beyond the enclosing roadside vegetation, more obliquely to the viewpoint position, the BOC Gas and Gear Plant is partially visible and much filtered by intervening roadside vegetation. The foreground of the view is open and extends around to the crematorium, located on land rising gently to the east. The M4 corridor is also partially visible, but again enclosed in a corridor of roadside vegetation so that views are filtered glimpses only. Tree and hedgerow planting enclosing the Proposed Development site is visible in the middle ground, denoting the route of the Wales Coast Path to the south of the site along Heolcaer Bont.
- 9.96. **Viewpoint 3 Margam Park House and Garden** is located around 1000m to the east within Margam Country Park, (OS Grid Reference 280446,186284). The viewpoint is located on the formal terrace to the west of the Grade II* listed Margam Castle that is situated in the northern part of the park and illustrates a key view west, aligned with formal steps and a path to the orangery and abbey and other features. The view is representative of users of the Country Park and those enjoying the setting of the Registered Historic Park and Garden and Listed Building.
- 9.97. The view extends west along a corridor defined by mature tree and woodland planting to lower ground enclosed by a belt of woodland. To the front of this, the abbey ruins and the orangery are visible focal points. To the north, the landform rises sharply to Mynydd Brombil, again clothed in coniferous forestry and woodland. The focus of the view is along the corridor to the west and extending above the tree line across Swansea Bay and terminating at Mumbles Head. Taller venting towers and structures relating to the Western Wood Energy and the BOC Gas and Gear Plants are partially visible above the tree line and beyond this some limited views of Margam Steelworks.
- 9.98. **Viewpoint 4 Margam Park (Deer Park)** is located around 1900m to the east of the Proposed Development site, on the Ogwr Ridgeway Walk and St Illtyds Way (OS Grid Reference 281374, 186401). The view is representative of recreational users traversing the long-distance footpaths.
- 9.99. The viewpoint offers spectacular elevated panoramic views south-west across the coastal plain from the upper edge of the scarp slope to Mynydd Margam. To the rear of the viewpoint, looking north and east, the landscape is characterised by a series of open undulating upland plateaux with a mix of upland grass and plantation forestry. This simple large-scale landscape contrasts markedly with panoramic views from the scarp edge through the variety of features evident in the extensive views west. These include large scale industry, intimate wooded fields, water bodies, transport corridors, coastal habitat and the Bristol Channel.

Within this broad panorama, the Proposed Development site is partially visible beyond the wooded M4 Motorway corridor and tree planting in around the site.

Visual Receptor Groups

- 9.100. The key visual receptor groups, or range of viewers, within the study area and visual envelope are discussed below:
- 9.101. **Residents of key settlements.** This group is considered to be amongst the high sensitivity groups within the study area because they are static receptors that will potentially experience views for long periods of time. However, sensitivity is often limited in that views in large settlements will often be heavily influenced by man-made, urban elements. Of the key settlements within the study area only a very small proportion of Margam will fall within the indicative visual envelope. Viewpoint 1 illustrates typical views from this area.
- 9.102. **Residents of small settlements and individual dwellings.** This group is judged to have a high sensitivity because they are static receptors that will experience views for long periods of time. There are a number of scattered farmsteads and individual dwellings within the landscape surrounding the Proposed Development site, including some dwellings adjacent to the southern boundary on Heolcaer Bont and to the east at Tyn-y-caea. Small settlements will include Brombil and Margam to the east of the M4 corridor. However, both areas are heavily vegetated and intervisibility with the Proposed Development site is limited.
- 9.103. Recreational users include walkers on the network of surrounding footpaths and walkers along the long-distance trails that cut through the study area. Viewpoints 1 and 2 illustrate views from the Wales Coast path and Viewpoint 4 illustrates a view from the Ogwr Ridgeway Walk/St Illtyds Way, where these routes fall within the visual envelope. Users of these routes will have a high sensitivity to change.
- 9.104. **Visitors undertaking active outdoor recreation activities that are not directly associated with the enjoyment of scenery.** This group is judged to have medium sensitivity because their primary reason for being in the landscape is unlikely to be connected with an appreciation of its character and appearance. Users of Longlands Lane recreation ground, (currently unused due to Covid-19) and National Cycle Network 04, extending along the A48m to the east of the Proposed Development site will fall within the visual envelope, Viewpoints 1 and 2 illustrate typical views towards the Proposed Development site from these receptor groups.
- 9.105. **Outdoor workers.** This group of users is considered to be of low sensitivity because they are mobile and will engage in active work. The quality of landscape and visual character will not influence their presence or length of stay but they are likely to spend prolonged periods of time outdoors and this time may be enhanced by scenic quality. They are most likely to include agricultural, forestry or maintenance operatives who will be located throughout the study area.
- 9.106. **Users of indoor workplaces and community facilities.** This group is judged to be of low sensitivity because they will spend only short periods of time in the landscape for reasons

that are not related to or affected by landscape and visual quality. They will experience temporary or transitory views whilst engaged in other activities. This group of users may include workers and customers at shops, offices, commercial/industrial facilities, petrol stations and garages, public houses, leisure centres and other community facilities. Within the visual envelope, this will include workers at the adjacent Western Wood Energy, BOC Gas and Gear and Green Energy Plants.

- 9.107. Evaluations of value, susceptibility and sensitivity for viewpoint/receptors are summarised in the Table 9.2 below.

Table 9.2 Evaluations of value, susceptibility and sensitivity for viewpoint/receptors

Visual Receptor	Value and Susceptibility	Sensitivity
Viewpoint 1 Abbots Close, Margam		
Residents.	<i>Value: Low</i>	Medium
	<i>Susceptibility: High</i>	
Users of Wales Coast Path.	<i>Value: Low</i>	Medium
	<i>Susceptibility: High.</i>	
Cyclists, (NCN04)	<i>Value: Low</i>	Very low
	<i>Susceptibility: Low</i>	
Road users	<i>Value: Low</i>	Very low

Visual Receptor	Value and Susceptibility	Sensitivity
	<i>Susceptibility: Low</i>	
Public open space users	<i>Value: Low</i>	Low
	<i>Susceptibility: Medium</i>	
Viewpoint 2 Longlands Lane Recreation Ground		
Recreational users.	<i>Value: Low.</i>	Very Low.
	<i>Susceptibility: Low</i>	
Wales Coast Path users	<i>Value: Low</i>	Medium.
	<i>Susceptibility: High.</i>	
Road users	<i>Value: Low</i>	Very low.
	<i>Susceptibility: Low.</i>	
Viewpoint 3 Margam Park House and Garden		
Recreational users/enjoying setting of park and listed building	<i>Value: High.</i>	Very high.

Visual Receptor	Value and Susceptibility	Sensitivity
	<i>Susceptibility: High.</i>	
Viewpoint 4 Margam Park (Deer Park)		
Recreational users of long-distance footpath.	<i>Value: High</i>	Very high.
	<i>Susceptibility: High.</i>	

Assessment of Effects

Inherent Design Mitigation

- 9.108. Mitigation measures are required in order to avoid, reduce, remedy or compensate for any potential adverse effects of the development. The principle of mitigation commences in the initial design stages and the layout, scale, massing and other aspects reflect decisions made to avoid or minimise adverse environmental effects, including landscape and visual. These inherent mitigation measures are illustrated on the Masterplan.
- 9.109. Standard construction mitigation measures are included within the CEMP. This will include Tree and Hedgerow Protection measures as identified within the Arboricultural Impact Assessment and Management plan.

Construction Stage Effects

- 9.110. This section considers potential effects likely to occur during the construction phases of the development. These will generally be of lower magnitude overall than those of the operational phase, predominantly due to the temporary nature of the construction phases. However, as outlined taller elements such as cranes or piling rigs may be more visually prominent than the operational Proposed Development, but will be likely to occur over a very limited duration. In all cases construction effects will be considered to be adverse in nature.
- 9.111. The following activities are likely to occur:

- Ground remediation and ground excavation works, including clearance works, topsoil stripping, levelling and cut and fill activities,
- Establishment of site compounds and facilities,
- Movement and storage of plant, equipment and construction materials both within and to the site,
- Erection of construction infrastructure (e.g., mobile cranes), and,
- Installation of site services and utilities.
- Construction of roads, car parks and buildings, involving the use of taller more visible cranes, piling operations and other machinery.

Construction Stage Landscape Effects – Direct.

- 9.112. The direct impact of the construction phase of the development will be the temporary imposition of a construction site and operations within the Proposed Development site. The existing pasture grassland and topsoil will be removed and the construction area defined with temporary fencing. Existing trees and hedges to be retained will be enclosed by temporary protective fencing during these operations and will be largely unaffected. Topsoil and pasture will be stripped and stored in temporary mounds for reuse within the site where possible.
- 9.113. The value and susceptibility attributed to the site-based pasture areas will be low. The sensitivity of this receptor will be very low.
- 9.114. The magnitude of impact will relate to the loss of pasture grassland and is evaluated as low and the significance will be negligible.

Construction Stage Effects – Landscape Designations.

- 9.115. Key statutory and non-statutory landscape designations indicating value attach to particular landscapes national and local government, plus other agencies, are illustrated on *Figure 12.1 Landscape Designations*.
- 9.116. There are no landscape designations extending across the Proposed Development site. To the east of the site and beyond the M4 corridor, multiple designations relating to the landscape, historic and cultural and recreational value of Margam Park and the wider Mynydd Margam landscape exist. Indirect changes within views and visual amenity that contribute to the value and setting of these designations is considered further below.
- 9.117. **Mynydd Margam Special Landscape Area (SLA)** extends east beyond the study area, across the broad upland plateaux of Mynydd Margam, to the south of Neath CBC area. The edge of the SLA is around 130m to the east of the Proposed Development site.
- 9.118. *Figure 12.2 Indicative Visual Envelope Plan* illustrates potential visibility into areas covered by the designation within the study area. This is limited to some low-lying areas on the western fringes of the designation rising across some of the scarp slopes to the edge of the Mynydd Margam and Mynydd Brombil upland plateau. The envelope forms a very small part of the overall designation and when considered with the screening effect vegetation,

intervisibility with the Proposed Development site from the SLA is of very limited extent. Some open and panoramic views south and west from the upland edges of the scarp slopes will extend across the site in particular. Within these the construction operations will be visible and will add to the varied mass of existing industrial development visible on the coastal plain. Within this context, construction operations may be perceived as bringing industrial development nearer to the edge of the SLA designation.

- 9.119. Taller construction elements such as cranes or piling rigs may also be occasionally visible from some lower lying areas of the designation, where intervening mature tree and woodland planting allow. In such instances, the visibility of the temporary operations will be restricted to very occasional glimpses and may also include taller existing industrial structures and buildings, such as the steel works, BoC Gas and Gear and the Green Energy Plant.
- 9.120. The sensitivity of the SLA is medium-high. The magnitude of impact will, on balance be negligible. The significance will be negligible.
- 9.121. Mynydd Margam Landscape of Special Historic Interest (LSHI) extends east across a broad upland area much of which is beyond the study area limits. The western edge of the designation is around 130m to the east of the Proposed Development site. Although, the designation is concerned with protection of historic landscapes and historic features within them, it's extent is broadly similar to the SLA, as above and any effects on its setting due to views of the construction operations will be comparable.
- 9.122. The sensitivity of the LSHI designation is medium. The magnitude of impact will be negligible. The significance will be negligible.
- 9.123. **Margam Park Registered Parks and Gardens of Special Historic Interest (RPG)** is located, at its nearest point, 180m to the east of the Proposed Development site, beyond the wooded M4 corridor. *Figure 12.2 Indicative Visual Envelope Plan* illustrates potential visibility extending through the lower sections of the park to the enclosing the scarp slopes of the upland deer park to the east. However, these areas are well vegetated with mature trees and woodland blocks and intervisibility with the Proposed Development site is restricted to the more upland edge of the scarp slopes.
- 9.124. Taller construction elements such as cranes or piling rigs may be occasionally visible from lower lying areas of the Park where intervening mature tree and woodland planting allow. In such instances, the visibility of the temporary operations will be of very limited duration and the extent of visibility restricted to very occasional glimpses. Existing views out in these rare instances would also include taller structures and buildings associated with industrial development on the coastal plain.
- 9.125. Construction operations will be more clearly visible within the open panoramic views west across the coastal plain from the upper edge of the scarp slope. The operations will add to the varied mass of existing industrial development visible immediately around and beyond the Proposed Development site. Within this context, construction operations may be

perceived as bringing development nearer to the edge of the Park. However, any perceptible change will be seen within a wide and highly varied panorama.

- 9.126. The sensitivity of the *Margam Park Registered Parks and Gardens of Special Historic Interest designation* is medium-high. The magnitude of impact will be low. The significance will be minor-moderate adverse and not significant.
- 9.127. **Margam Country Park** provides an area for people to visit and enjoy recreation in a countryside environment. The extent of the designation and the nature of any change or impact will be as outlined above for the RPG. The Sensitivity will be medium-high. The magnitude of impact will be low. The significance will be minor-moderate adverse and not significant.
- 9.128. **Margam Park Conservation Area** is located, at its nearest point, 180m to the east of the Proposed Development site, beyond the wooded M4 corridor. It covers the lower lying central part of the park, including the main buildings (Margam Castle, the Orangery, the Abbey church and ruins) and formal gardens. The area is enclosed throughout by mature trees and woodland and there are no views available into the Proposed Development site. Taller construction elements such as cranes or piling rigs may be visible however where intervening mature tree and woodland planting allow. In such instances, the visibility of the temporary operations will be of very limited duration and the extent of visibility restricted to very occasional glimpses. Existing views out in these rare instances would also likely include taller structures and buildings associated with industrial development on the coastal plain. The sensitivity of the Conservation Area designation is medium. The magnitude of impact will be negligible. The significance will be negligible and not significant.

Construction Stage Effects – Landscape Character and LANDMAP

- 9.129. **Landscape Character Area 01 Margam Marsh.** The Proposed Development site is located entirely within this LCA, forming a small part of the eastern parcel, to the north. Key characteristics identified for this LCA, relating to the strong visual influence of surrounding heavy industry, domination of the skyline with pylons and the steel works and influence of transport corridors, (i.e. M4 Motorway), are particularly appropriate to this part of the LCA. The coherence of the landscape area, particularly in the eastern portion is poor, with a mix of large scale, contrasting land-uses, including the Eglwys Nynydd Reservoir, the crematorium and Longlands recreation ground. The more sensitive key characteristics identified, particularly relating to the open landscape of the marshland, including the ditches and associated wetland vegetation are located within the western portion.
- 9.130. *Figure 12.2 Indicative Visual Envelope Plan* indicates that the majority of this LCA will fall within the envelope. However, existing vegetation reduces intervisibility across the two portions of the LCA to the extent that any likely views of the Construction operations will be very local only.
- 9.131. The sensitivity of *LCA 03 Margam Marsh* is very low. Construction operations will directly extend across a small portion of the LCA for a limited duration and there will be limited

intervisibility/views elsewhere in the LCA due to intervening vegetation. Furthermore, existing trees and hedges in and around the site will be retained and this will assist with integrating the construction operations locally. Overall, the magnitude of the impact will be Low. The significance will be minor adverse.

- 9.132. **LCA 03 Margam Country Park.** This area lies beyond the M4 corridor to the east. *Figure 12.2 Indicative Visual Envelope Plan* illustrates potential visibility through this LCA, extending through the low-lying area to the south and rising across the scarp slopes to the edge of the upland plateau to the east. However, the Park is well vegetated and intervisibility to the Proposed Development site from this LCA is restricted to the more open and upland sections of the deer park immediately above the scarp slopes.
- 9.133. Taller construction elements such as cranes or piling rigs may be occasionally visible from lower lying areas where intervening mature tree and woodland planting allow. In such instances, the visibility of the temporary operations will be of very limited duration and the extent of visibility restricted to very occasional glimpses. Existing views out in the direction of the Proposed Development site also include taller industrial structure and buildings, such as the steel works, BoC Gas and Gear and the Green Energy Plant.
- 9.134. Open panoramic views south-west across the coastal plain are available from the upper edge of the scarp slope to Mynydd Margam, to the east of this LCA. Within these views, the Proposed Development site is partially visible in the middle distance beyond the wooded M4 Motorway corridor and tree planting in and around the site. Construction operations will be visible and will add to the varied mass of existing industrial development visible around and beyond the Proposed Development site. Within this context, construction operations may be perceived as bringing industrial development nearer to the LCA. However, any perceptible change will be seen within a wide and highly varied panorama.
- 9.135. The sensitivity of LCA 03 Margam Country Park is medium-high. Construction operations will marginally intrude into some views, although these will occur for a limited duration. Overall, the magnitude of the impact will be negligible. The significance will be minor adverse.
- 9.136. **LCA 06 Mynydd Brombil, Mynydd Emroch and Mynydd Dinas** encloses the Proposed Development site to the north-east. The LCA provides a solid backcloth for the coastal plain more generally creating an important and prominent feature to urban development extending up to its base. *Figure 12.2 Indicative Visual Envelope Plan* indicates that the enclosing, west facing slopes of this LCA will receive visibility. Construction operations within the Proposed Development site will add to the sense of suburbanisation on the fringes of the LCA. Some views out from accessible locations may also extend across the site, with construction activities visible in a context dominated by large scale industry. However, the slopes nearer the site are extensively wooded with limited access.
- 9.137. The sensitivity of this LCA is medium. Key characteristics for this area including its value as a backcloth and prominent landform adjacent to the coastal plain are largely unaffected. The magnitude for construction stage impacts will be negligible. Significance will also be negligible.

- 9.138. Visibility across remaining Landscape Character Areas within the Study Area will be limited, as indicated on Figure 12.2 Indicative Visual Envelope Plan. To the south-east, **LCA 04 Coedhirwaun** is a large area of rolling, low-lying land with many blocks of woodland and hedges and views out are rare. To the north, within **LCA49 Port Talbot, Sandfields, Baglan and Margam**, views south from developed areas are contained to the fringes by vegetation and buildings. To the west, within **LCA50 Port Talbot Docks and Margam Works** the steel works provides both a landmark and a visual edge to visibility. Construction stage operations will have negligible impacts on these LCA's and there will be no overall change to the character.

Summary of Construction Stage Landscape Effects

- 9.139. A summary of evaluations reached for sensitivity, magnitude and significance of construction stage landscape effects is outlined below in **Table 9.3**.

Table 9.3 Summary of evaluations reached for sensitivity, magnitude and significance of construction stage landscape effects

Landscape Receptor	Sensitivity and Magnitude	Significance
Landscape Designations		
Mynydd Margam SLA	<i>Sensitivity: Medium-High</i>	Negligible.
	<i>Magnitude: Negligible.</i>	
Mynydd Margam LSHI	<i>Sensitivity: Medium.</i>	Negligible.
	<i>Magnitude: Negligible.</i>	
Margam Park RPG	<i>Sensitivity: Medium-High.</i>	Minor-moderate.
	<i>Magnitude: Low.</i>	

Landscape Receptor	Sensitivity and Magnitude	Significance
Margam Country Park	<i>Sensitivity: Medium-high.</i>	Minor-moderate.
	<i>Magnitude: Low.</i>	
Margam Park Conservation Area	<i>Sensitivity: Medium.</i>	Negligible.
	<i>Magnitude: Negligible.</i>	
Landscape Character Areas, (LCA's)		
LCA 01 Margam Marsh	<i>Sensitivity: Very low.</i>	Minor
	<i>Magnitude: Low</i>	
LCA 03 Margam Country Park	<i>Sensitivity: Medium-high.</i>	Minor
	<i>Magnitude: Negligible.</i>	
LCA 04 Coedhirwaun	<i>Sensitivity: Medium-low.</i>	Negligible.
	<i>Magnitude: Negligible.</i>	
LCA 06 Mynydd Brombil, Emroch and Dinas	<i>Sensitivity: Medium</i>	Negligible.

Landscape Receptor	Sensitivity and Magnitude	Significance
	<i>Magnitude: Negligible.</i>	
LCA 49 Port Talbot, Sandfields, Baglan and Margam.	<i>Sensitivity: Very low</i>	Negligible.
	<i>Magnitude: Negligible</i>	
LCA 50 Port Talbot Docks and Margam Works	<i>Sensitivity: Very Low.</i>	Negligible.
	<i>Magnitude: Negligible.</i>	

Construction Stage Visual Effects – Viewpoint Effects

- 9.140. **Viewpoint 1 Abbots Close, Margam** is located around 700m to the north of the Proposed Development site. Taller construction operations including cranes and piling rigs may be visible above and where intervening scrub and hedgerow planting allows. However, the view is also interrupted in the foreground and middle ground by a multitude of existing vertical elements, including electricity poles, pylons and lighting columns. Any intrusion by the taller construction activities are unlikely to be perceived as having a marked effect on the overall quality of the view. Nearby residents viewing construction operations from upper storey windows will receive slightly increased visibility, with views available above intervening vegetation. However, any change in the views will be seen in a context of adjacent industrial development, including the Margam Green Energy Plant. The magnitude of any impact will be low to negligible.
- 9.141. **Viewpoint 2 Longlands Lane Recreation Ground** is located around 200m to the south of the Proposed Development site. Construction operations will be visible in the middle distance of this view. Beyond the roadside tree and hedgerow planting along Heolcaer Bont, site hoarding/fencing will be visible and all operations likely to extend vertically above this will be seen. Cranes and piling rigs and other taller operations will be prominent, visually contrasting the wooded backcloth provided by Mynydd Brombil to the rear of the view. Construction operations will be seen in combination with the large-scale industrial structures and buildings of the Western Wood Energy facility and the Margam Green Energy Plant and will likely occupy a significant proportion of the overall field of view. The magnitude of impact will be high.
- 9.142. **Viewpoint 3 Margam Park House and Garden** is located around 1000m to the east within Margam Country Park. The Proposed Development site and construction operations of lower

height will be entirely obscured by a belt of woodland and mature trees. It is possible that taller operations, such as cranes or piling rigs may be partially visible above tree line and these elements would add to the existing visibility of venting towers and structures relating to the Western Wood Energy and the BOC Gas and Gear Plants. The magnitude of impact will be low.

- 9.143. **Viewpoint 4 Margam Park (Deer Park)** is located around 1900m to the east of the Proposed Development site, on the Ogwr Ridgeway Walk and St Illtyds Way, and offers open panoramic views across the coastal plain. Construction operations will be partially visible, below the viewpoint in the middle distance, with some local screening provided by planting within and immediately around the Proposed Development site. The operations will add to the varied mass of existing industrial development visible immediately around and beyond the Proposed Development site elsewhere on the coastal plain. However, at this distance the operations will form a small part of a much wider and highly varied panorama. The magnitude will be low.

Construction Effects on Visual Receptor Groups

- 9.144. Construction stage effects on key receptor groups within the study area are discussed below.
- 9.145. **Residents of key settlements.** This group will have a high sensitivity to change. Of the key settlements within the study area only a very small proportion of Margam will fall within the indicative visual envelope. Viewpoint 1 illustrates typical views from this area. Nearby residents from a small number of outward facing properties will receive upper storey views of construction operations where visible above intervening vegetation. However, any change in the views will be seen in a context of adjacent industrial development, including the Margam Green Energy Plant. The magnitude of impacts for residents in key settlements will be low. The significance of effects will be minor to moderate adverse and not significant
- 9.146. **Residents of small settlements and individual dwellings.** This group will have a high sensitivity to change and will primarily include dwellings adjacent to the southern boundary on Heolcaer Bont and to the east at Tyn-y-caea. Both will receive short range views into the Proposed Development site. Within these the temporary fencing and all operations likely to be seen above this will be visible. The magnitude for these particular receptors will be very high. Combined with the sensitivity, effects will be major and significant.
- 9.147. Recreational users include walkers on the network of surrounding footpaths and walkers along the long-distance trails that cut through the study area. Sections of the Wales Coast Path and the Ogwr Ridgeway Walk/St Illtyds Way extend through the indicative visual envelope. Site based assessment establishes that the following stretches will offer views into the Proposed Development site:

- Wales Coast Path. Short range views into the site will be available from this path as it extends around the eastern and southern boundary of the Proposed Development site. Site hoarding/fencing and some construction operations likely to be visible above the fence will be seen at close range. The magnitude of this impact will be very high. The significance of effects, when combined with the high sensitivity, will be major adverse and significant
- Ogwr Ridgeway Walk/St Illtyds Way. A small section of this path along the scarp slope through Margam Park (Deer Park) will offer medium range open panoramic views across the coastal plain. Construction operations will be partially visible, with some local screening provided by planting within and immediately around the Proposed Development site. However, at this distance any change will form a small part of a much wider and highly varied panorama. The magnitude will be low. The significance of effects will be moderate to slight adverse and not significant.

9.148. **Visitors undertaking active outdoor recreation activities that are not directly associated with the enjoyment of scenery.** Users of Longlands Lane recreation ground, (currently unused due to Covid-19) and National Cycle Network 04, extending along the A48m to the north of the Proposed Development site will receive short range views into the site. Site hoarding/fencing and some construction operations likely to be visible above the fence will be seen at close range. The magnitude of this impact will be high reducing to medium for users of Longlands Lane Recreation ground. The significance of effects will be moderate to major for NCN04 and significant and moderate and not significant for Longlands Lane.

9.149. **Outdoor workers.** Some views of construction activities will be obtained by the group of receptors, depending on location and intervening vegetation, buildings and landform. On balance, impacts will range from high through to negligible. When combined with the low sensitivity, significance will range from moderate to negligible and not significant.

9.150. **Users of indoor workplaces and community facilities.** Some views of construction activities will be obtained by this group of receptors, depending on location and intervening vegetation, buildings and landform. On balance, impacts will range from high through to negligible. When combined with the low sensitivity, significance will range from moderate to negligible and not significant.

Summary of Construction Stage Visual Effects

9.151. A summary of evaluations reached for the sensitivity, magnitude and significance of construction stage visual effects are outlined in Table 9.4 below.

Table 9.4 Summary of evaluations reached for the sensitivity, magnitude and significance of construction stage visual effects

Visual Receptor	Sensitivity and Magnitude	Significance
Viewpoint 1 Abbots Close, Margam		
Residents.	<i>Sensitivity: Medium</i>	Moderate - minor, adverse.
	<i>Magnitude: Low</i>	
Users of Wales Coast Path.	<i>Sensitivity: Medium</i>	Negligible
	<i>Magnitude: Negligible</i>	
Cyclists, (NCN04)	<i>Sensitivity: Very Low</i>	Negligible
	<i>Magnitude: Negligible</i>	
Road users	<i>Sensitivity: Very Low</i>	Negligible
	<i>Magnitude: Negligible</i>	
Public open space users	<i>Sensitivity: Low</i>	Negligible
	<i>Magnitude: Negligible</i>	

Visual Receptor	Sensitivity and Magnitude	Significance
Viewpoint 2 Longlands Lane Recreation Ground		
Recreational users.	Sensitivity: Medium.	Moderate adverse
	Magnitude: High	
Wales Coast Path users	Sensitivity: Medium	Moderate-minor adverse.
	Magnitude: Low , (view filtered by trees)	
Road users	Sensitivity: Very Low	Negligible.
	Magnitude: Low , (view filtered by trees)	
Viewpoint 3 Margam Park House and Garden		
Recreational users/enjoying setting of park and listed building	Sensitivity: Very High.	Moderate adverse.
	Magnitude: Low.	
Viewpoint 4 Margam Park (Deer Park)		
Recreational users of long-distance footpath.	Sensitivity: Very High	Moderate, adverse.

Visual Receptor	Sensitivity and Magnitude	Significance
	<i>Magnitude: Low.</i>	

Operational Effects

- 9.152. This section considers operational stage effects likely to occur on landscape and visual resources.

Operational Stage Landscape Effects - Direct

- 9.153. The direct impact of the operational stage will be the permanent imposition of the Proposed Development within the site. The existing pasture fields will be replaced with a substantial operations building facilitating metal processing and a smaller administration and support building. Car parking areas allow for around 170 spaces accessed via two distinct access roads.
- 9.154. Retained existing trees and hedges will be supplemented with landscaped external spaces, including balancing ponds and tree and shrub planting. It is likely that topsoil stripped during the construction will be reused in these areas.
- 9.155. The sensitivity of areas of the site subject to change, comprising areas of pasture grassland, will be very low.
- 9.156. The magnitude of impact will relate to the replacement of the grassland with the Proposed Development. The magnitude of this direct, site-based impact will be high. The significance will be moderate and not significant.

Operational Stage Effects – Landscape Designations.

- 9.157. Key statutory and non-statutory landscape designations indicating value attach to particular landscapes national and local government, plus other agencies, are illustrated on *Figure 12.1 Landscape Designations*.
- 9.158. There are no landscape designations extending across the Proposed Development site. To the east of the site and beyond the M4 corridor, multiple designations relating to the landscape, historic and cultural and recreational value of Margam Park and the wider Mynydd Margam landscape exist. Indirect changes within views and visual amenity that contribute to the value and setting of these designations is considered further below.

- 9.159. **Mynydd Margam Special Landscape Area (SLA)** extends east beyond the study area, across the broad upland plateaux of Mynydd Margam, to the south of Neath CBC area. The edge of the SLA is around 130m to the east of the Proposed Development site.
- 9.160. *Figure 12.2 Indicative Visual Envelope Plan* illustrates potential visibility into areas covered by the designation within the study area. This is limited to some low-lying areas on the western fringes of the designation rising across some of the scarp slopes to the edge of the Mynydd Margam and Mynydd Brombil upland plateau. The visual envelope forms a very small part of the overall designation area and when considered with the screening effect of vegetation, intervisibility with the Proposed Development site from the SLA is of very limited extent. Some open and panoramic views south and west from the upland edges of the scarp slopes will extend across the site in particular. Within these the Operational Production Unit Building will be most visible and will add to the varied mass of existing large-scale industrial development visible elsewhere on the coastal plain. Some visibility of car parking areas and the smaller administration building may also occur, softened by the retained site-based tree and hedgerow planting. Within this context, the operational development may be perceived as bringing industrial development nearer to the edge of the SLA designation.
- 9.161. The sensitivity of the SLA is medium-high. The magnitude of impact will, on balance be low. The significance will be minor adverse.
- 9.162. **Mynydd Margam Landscape of Special Historic Interest (LSHI)** extends east across a broad upland area much of which is beyond the study area limits. The western edge of the designation is around 130m to the east of the Proposed Development site. Although, the designation is concerned with protection of historic landscapes and historic features within them, its extent is broadly similar to the SLA, as above and any effects on its setting due to views of the operational development will be comparable.
- 9.163. The sensitivity of the LSHI designation is medium. The magnitude of impact will be low. The significance will be minor adverse.
- 9.164. **Margam Park Registered Parks and Gardens of Special Historic Interest (RPG)** is located, at its nearest point, 180m to the east of the Proposed Development site, beyond the wooded M4 corridor. *Figure 12.2 Indicative Visual Envelope Plan* illustrates potential visibility extending through the lower sections of the park to the enclosing scarp slopes of the upland deer park to the east. However, these areas are well-vegetated with mature trees and woodland blocks and intervisibility with the Proposed Development site is restricted to the more upland edge of the scarp slopes.
- 9.165. The larger-scale production unit building, at around 16m in height, will not be visible from lower-lying areas of the Park due to the intervening mature tree and woodland planting.
- 9.166. The operational development will, however, be more clearly visible within the open panoramic views west across the coastal plain from the upper edge of the scarp slope. The production unit building and associated car parking and hardstanding areas will add to the varied mass of existing industrial development visible immediately around and beyond the

Proposed Development site. Within this context, the operational development may be perceived as bringing development nearer to the edge of the Park. However, any perceptible change will be seen within a wide and highly varied panorama.

- 9.167. The sensitivity of the Margam Park Registered Parks and Gardens of Special Historic Interest designation is medium-high. The magnitude of impact will be medium-low. The significance will be moderate adverse and not significant.
- 9.168. **Margam Country Park** provides an area for people to visit and enjoy recreation in a countryside environment. The extent of the designation and the nature of any change or impact will be as outlined above for the RPG. The Sensitivity will be medium-high. The magnitude of impact will be medium-low. The significance will be moderate adverse and not significant.
- 9.169. **Margam Park Conservation Area** is located, at its nearest point, 180m to the east of the Proposed Development site, beyond the wooded M4 corridor. It covers the lower lying central part of the park, including the main buildings (Margam Castle, the Orangery, the Abbey church and ruins) and formal gardens. The area is enclosed throughout by mature trees and woodland and there are no views available into the Proposed Development site. The larger-scale production unit building, at around 16.m in height, will not be visible from lower-lying areas of the Park due to the intervening mature tree and woodland planting. There will be no impact on the Conservation Area designation from the operational stage of the development.

Operational Stage Effects – Landscape Character and LANDMAP

- 9.170. **Landscape Character Area 01 Margam Marsh.** The Proposed Development site is located entirely within this LCA, forming a small part of the eastern parcel, to the north. Key characteristics identified for this LCA, relating to the strong visual influence of surrounding heavy industry, domination of the skyline with pylons and the steel works and influence of transport corridors, (i.e. M4 Motorway), are particularly appropriate to this part of the LCA. The coherence of the landscape area, particularly in the eastern portion is poor, with a mix of large scale, contrasting land-uses, including the Eglwys Nynydd Reservoir, the crematorium and Longlands recreation ground. The more sensitive key characteristics identified, particularly relating to the open landscape of the marshland, including the ditches and associated wetland vegetation are located within the western portion.
- 9.171. *Figure 12.2 Indicative Visual Envelope Plan* indicates that the majority of this LCA will fall within the envelope. However, existing vegetation reduces intervisibility across the two portions of the LCA to the extent that any likely views of the operational development will be very local only.
- 9.172. The sensitivity of LCA 03 Margam Marsh is very low. The operational development will directly extend across a small portion of the LCA but there will be limited intervisibility/views elsewhere in the LCA due to intervening vegetation. Furthermore, existing trees and hedges in and around the site will be retained and these will assist with integration of the operational

development locally within the existing landscape fabric. Overall, the magnitude of the impact will be medium. The significance will be minor-moderate adverse and not significant.

- 9.173. **LCA 03 Margam Country Park.** This area lies beyond the M4 corridor to the east. *Figure 12.2 Indicative Visual Envelope Plan* illustrates potential visibility through this LCA, extending through the low-lying area to the south and rising across the scarp slopes to the edge of the upland plateau to the east. However, the Park is well vegetated and intervisibility to the Proposed Development site from this LCA is restricted to the more open and upland sections of the deer park immediately above the scarp slopes.
- 9.174. The larger-scale production unit building, at around 16.m in height, will not be visible from lower-lying areas of the Park due to the intervening mature tree and woodland planting.
- 9.175. Open panoramic views south-west across the coastal plain are available from the upper edge of the scarp slope to Mynydd Margam, to the east of this LCA. Within these views, the Proposed Development site is partially visible in the middle distance beyond the wooded M4 Motorway corridor and tree planting in and around the site. The operational development, particularly the production unit and associated car parking and hardstanding, will be visible and will add to the varied mass of existing industrial development visible around and beyond the Proposed Development site. Within this context, the operational development may be perceived as bringing industrial development nearer to the LCA. However, any perceptible change will be seen within a wide and highly varied panorama.
- 9.176. The sensitivity of LCA 03 Margam Country Park is medium-high. The operational development will intrude into the open panoramic views from elevated areas but will be obscured by vegetation from lower areas of the LCA. Overall, the magnitude of the impact will be low. The significance will be minor-moderate adverse.
- 9.177. **LCA 06 Mynydd Brombil, Mynydd Emroch and Mynydd Dinas** encloses the Proposed Development site to the north-east. The LCA provides a solid backcloth for the coastal plain more generally creating an important and prominent feature to urban development extending up to its base. *Figure 12.2 Indicative Visual Envelope Plan* indicates that the enclosing, west facing slopes of this LCA will receive visibility. The operational development within the Proposed Development site will add to the sense of suburbanisation on the fringes of the LCA. Some views out from accessible locations may also extend across the site, with the operational development visible in a context dominated by large scale industry. However, the slopes nearer the site are extensively wooded with limited access.
- 9.178. The sensitivity of this LCA is medium. Key characteristics for this area including its value as a backcloth and prominent landform adjacent to the coastal plain are largely unaffected. The magnitude for operational stage impacts will be minor. Significance will also be slight.
- 9.179. Visibility across remaining Landscape Character Areas within the Study Area will be limited, as indicated on *Figure 12.2 Indicative Visual Envelope Plan*. To the south-east, **LCA 04 Coedhirwaun** is a large area of rolling, low-lying land with many blocks of woodland and hedges and views out are rare. To the north, within **LCA49 Port Talbot, Sandfields, Baglan**

and Margam, views south from developed areas are contained to the fringes by vegetation and buildings. To the west, within **LCA50 Port Talbot Docks and Margam Works** the steel works provides both a landmark and a visual edge to visibility. The operational stage will have negligible impacts on these LCA's and there will be no overall change to the character.

Summary of Operational Stage Landscape Effects

- 9.180. A summary of evaluations reached for sensitivity, magnitude and significance of operational stage landscape effects is outlined in Table 9.5 below.

Table 9.5 Summary of evaluations reached for sensitivity, magnitude and significance of operational stage landscape effects

Landscape Receptor	Sensitivity and Magnitude	Significance
Landscape Designations		
Mynydd Margam SLA	<i>Sensitivity: Medium-High</i>	Minor adverse.
	<i>Magnitude: Low.</i>	
Mynydd Margam LSHI	<i>Sensitivity: Medium.</i>	Minor adverse.
	<i>Magnitude: Low.</i>	
Margam Park RPG	<i>Sensitivity: Medium-High.</i>	Moderate adverse.
	<i>Magnitude: Medium-low.</i>	
Margam Country Park	<i>Sensitivity: Medium-high.</i>	Moderate adverse.

Landscape Receptor	Sensitivity and Magnitude	Significance
	Magnitude: Medium-low.	
Margam Park Conservation Area	Sensitivity: Medium.	Negligible/None.
	Magnitude: Negligible/None.	
Landscape Character Areas, (LCA's)		
LCA 01 Margam Marsh	Sensitivity: Very low.	Minor-moderate adverse.
	Magnitude: Medium.	
LCA 03 Margam Country Park	Sensitivity: Medium-high.	Minor-moderate, adverse.
	Magnitude: Low.	
LCA 04 Coedhirwaun	Sensitivity: Medium-low.	Negligible.
	Magnitude: Negligible.	
LCA 06 Mynydd Brombil, Emroch and Dinas	Sensitivity: Medium.	Minor adverse.
	Magnitude: Low.	

Landscape Receptor	Sensitivity and Magnitude	Significance
LCA 49 Port Talbot, Sandfields, Baglan and Margam.	<i>Sensitivity: Very low</i>	Negligible.
	<i>Magnitude: Negligible.</i>	
LCA 50 Port Talbot Docks and Margam Works	<i>Sensitivity: Very Low.</i>	Negligible.
	<i>Magnitude: Negligible.</i>	

Operational Stage Visual Effects – Viewpoint Effects

- 9.181. **Viewpoint 1 Abbots Close, Margam** is located around 700m to the north of the Proposed Development site. The production unit building may be partially visible as a glimpse of the upper edges of the facade, where intervening scrub and hedgerow planting allows. However, the view is also interrupted in the foreground and middle ground by a multitude of existing vertical elements, including electricity poles, pylons and lighting columns. Any intrusion by the operational development is unlikely to be perceived as having a marked effect on the overall quality of the view. Nearby residents viewing the operational development from upper storey windows will receive slightly increased visibility, with views available above intervening vegetation. However, any change in the views will be seen in a context of adjacent industrial development, including the Margam Green Energy Plant. The magnitude of any impact will be medium (residents) to low (Wales Coast Path).
- 9.182. **Viewpoint 2 Longlands Lane Recreation Ground** is located around 200m to the south of the Proposed Development site. The operational development, comprising the production unit building and the storage tanks, and substation elements to the rear, will be dominant in the middle distance of this view. The roadside tree and hedgerow planting along Heolcaer Bont will soften and filter views of the lower façade of the production building, but the remainder of the operational development will be dominant, visually contrasting and partially obscuring the wooded backcloth provided by Mynydd Brombil to the rear of the view. The operational development will be seen in combination with the large-scale industrial structures and buildings of the Western Wood Energy facility and the Margam Green Energy Plant and will likely occupy a significant proportion of the overall field of view. The magnitude of impact will be very high.
- 9.183. **Viewpoint 3 Margam Park House and Garden** is located around 1000m to the east within Margam Country Park. The larger-scale production unit building, at around 16.m in height,

will not be visible from lower-lying areas of the Park represented by this viewpoint due to the intervening mature tree and woodland planting. There will be no change to the view.

- 9.184. **Viewpoint 4 Margam Park (Deer Park)** is located around 1900m to the east of the Proposed Development site, on the Ogwr Ridgeway Walk and St Illtyds Way, and offers open panoramic views across the coastal plain. The operational development, principally comprising the production unit and associated hardstanding and car parking, will be partially visible, below the viewpoint in the middle distance, with some local screening and integration provided by planting within and immediately around the Proposed Development site. The operational development will add to the varied mass of existing industrial development visible immediately around and beyond the Proposed Development site elsewhere on the coastal plain. However, at this distance any change will form a small part of a much wider and highly varied panorama. The magnitude will be medium.

Operational Effects on Visual Receptor Groups

- 9.185. Operational stage effects on key receptor groups within the study area are discussed below.
- 9.186. **Residents of key settlements.** This group will have a high sensitivity to change. Of the key settlements within the study area only a very small proportion of Margam will fall within the indicative visual envelope. Viewpoint 1 illustrates typical views from this area. Nearby residents from a small number of outward facing properties will receive upper storey views of the operational development, particularly the production unit building, where visible above intervening vegetation. However, any change in the views will be seen in a context of adjacent industrial development, including the Margam Green Energy Plant. The magnitude of impacts for residents in key settlements will be medium-low. The significance of effects will be moderate adverse and not significant
- 9.187. **Residents of small settlements and individual dwellings.** This group will have a high sensitivity to change and will primarily include dwellings adjacent to the southern boundary on Heolcaer Bont and to the east at Tyn-y-caea. Both will receive short range views into the Proposed Development site. Within these to the south at Heolcaer Bont, the façade of the production unit will be immediately apparent as a very-large scale feature that will occupy a wide proportion of the view. Views from Tyn-y-caea west and southwest offer short range visibility of the Proposed Development. Although some filtering and screening of the lower levels of the Proposed Development will be achieved by the existing retained hedgerow and trees within and around the site, the magnitude for these particular receptors will be very high. Combined with the sensitivity, effects will major adverse and significant.
- 9.188. Recreational users include walkers on the network of surrounding footpaths and walkers along the long-distance trails that cut through the study area. Sections of the Wales Coast Path and the Ogwr Ridgeway Walk/St Illtyds Way extend through the indicative visual envelope. Site based assessment establishes that the following stretches will offer views into the Proposed Development site:

- 9.189. Wales Coast Path. Short range views into the site will be available from this path as it extends around the eastern and southern boundary of the Proposed Development site. Views through the hedgerow planting will be available into the site along Heolcaer Bont and north along eastern edge of the site as far as Tyn-y-caea. The production building and car park areas will be seen from short range and will be dominant in available views. The magnitude of this impact will be very high. The significance of effects, when combined with the high sensitivity, will be major adverse and significant
- 9.190. Ogwr Ridgeway Walk/St Iltyds Way. A small section of this path along the scarp slope through Margam Park (Deer Park) will offer medium range open panoramic views across the coastal plain. The Proposed Development will be partially visible, with some local screening provided by planting within and immediately around the site. However, at this distance any change will form a small part of a much wider and highly varied panorama. The magnitude will be medium-low. The significance of effects will be moderate adverse and not significant.
- 9.191. **Visitors undertaking active outdoor recreation activities that are not directly associated with the enjoyment of scenery.** Users of Longlands Lane recreation ground, (currently unused due to Covid-19) and National Cycle Network 04, extending along the A48m to the north of the Proposed Development site will receive short range views into the site. The production building and car park areas will be seen in short range views west from the cycle way and will be dominant in available views. The proposed production unit building will also dominate in views north from the recreation ground and will extend across a wide extent of the view. The magnitude of impacts will be high for these receptors. The significance of effects, when combined with the medium sensitivity, will be moderate to major adverse and significant for this receptor group.
- 9.192. **Outdoor workers.** Some views of the operational development will be obtained by this group of receptors, depending on location and intervening vegetation, buildings and landform. On balance, impacts will range from high through to negligible. When combined with the low sensitivity, significance will range from moderate to negligible and not significant.
- 9.193. **Users of indoor workplaces and community facilities.** Some views of the operational development will be obtained by this group of receptors, depending on location and intervening vegetation, buildings and landform. On balance, impacts will range from high through to negligible. When combined with the low sensitivity, significance will range from moderate to negligible and not significant.

Summary of Operational Stage Visual Effects

- 9.194. A summary of evaluations reached for the sensitivity, magnitude and significance of operational stage visual effects are outlined in Table 9.6 below.

Table 9.6 Summary of evaluations reached for the sensitivity, magnitude and significance of operational stage visual effects

Visual Receptor	Sensitivity and Magnitude	Significance
Viewpoint 1 Abbots Close, Margam		
Residents.	<i>Sensitivity: Medium</i>	Moderate adverse
	<i>Magnitude: Medium-low</i>	
Users of Wales Coast Path.	<i>Sensitivity: Medium</i>	Minor adverse
	<i>Magnitude: Low</i>	
Cyclists, (NCN04)	<i>Sensitivity: Very Low</i>	Negligible
	<i>Magnitude: Low</i>	
Road users	<i>Sensitivity: Very Low</i>	Negligible
	<i>Magnitude: Negligible</i>	
Public open space users	<i>Sensitivity: Low</i>	Negligible
	<i>Magnitude: Low</i>	

Visual Receptor	Sensitivity and Magnitude	Significance
Viewpoint 2 Longlands Lane Recreation Ground		
Recreational users.	Sensitivity: Medium.	Moderate-major adverse
	Magnitude: Very High	
Wales Coast Path users	Sensitivity: Medium	Moderate adverse.
	Magnitude: Medium , (view filtered by trees)	
Road users	Sensitivity: Very Low	Minor adverse.
	Magnitude: Medium , (view filtered by trees)	
Viewpoint 3 Margam Park House and Garden		
Recreational users/enjoying setting of park and listed building	Sensitivity: Very High.	Negligible/none.
	Magnitude: None.	
Viewpoint 4 Margam Park (Deer Park)		
Recreational users of long-distance footpath.	Sensitivity: Very High	Moderate adverse.

Visual Receptor	Sensitivity and Magnitude	Significance
	<i>Magnitude: Medium-low.</i>	

Mitigation

Construction

- 9.195. The assessment has taken into consideration the implementation of the measures detailed within the outline CEMP as embedded mitigation. Therefore, no further construction mitigation measures are considered necessary or proposed.

Operation

- 9.196. An iterative design process has been applied through the design development stages of the project. Interventions have been made and integrated into the Proposed Development with the primary purpose of avoiding or reducing adverse effects at source.
- 9.197. The following green infrastructure soft landscape measures will be embedded as integral in the Proposed Development to reduce adverse effects identified through this assessment.
- Proposed native woodland planting to the eastern edge of the site.
 - Structural tree planting in groups within soft landscape areas.
 - Hedgerow reinforcement and gapping up with native tree and hedgerow shrub planting.

Residual Impacts

Construction

- 9.198. With the implementation of the Outline CEMP, the residual effects during construction on landscape and visual receptors remain as reported.

Operation

- 9.199. There are no mitigation measures considered necessary or included. The operational residual effects remain as reported.

Cumulative Effects

- 9.200. This assessment is required to consider cumulative effects relating to the Proposed Development in combination with development on land at Tyn-y-Caeau. This land abuts the eastern edge of the Proposed Development site.

- 9.201. The neighbouring development is described as a 'Change of use from dwelling house and annex building into a mixed-use development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, café and spa facilities, and truck stop with 21 HGV parking spaces. The proposal includes the demolition of an existing single-storey rear extension, together with widened site access, additional internal access roads, parking areas and associated works.'
- 9.202. The Tyn-y-Caeau Development allows for the retention of existing trees and boundary vegetation. The scale of change for the building is small and allows in main for the reuse of existing buildings.
- 9.203. The Tyn-y-Caeau Planning application does not include a landscape and visual impact assessment. However, it is considered unlikely that, when considered in isolation, this development will have any significant effects on landscape and visual receptors.
- 9.204. When considered in combination, the cumulative developments (i.e. the Proposed Development and Tyn-y-Caeau) will be located entirely within **Landscape Character Area 01 Margam Marsh**. The Proposed Development site is located entirely within this LCA, forming a small part of the eastern parcel, to the north. Tyn-y-Caeau Proposed Development will increase the development area to the northeast.
- 9.205. Key characteristics identified for this LCA, relate to the strong visual influence of surrounding heavy industry, domination of the skyline with pylons and the steel works and influence of transport corridors, (i.e. M4 Motorway), are particularly appropriate to this part of the LCA. The coherence of the landscape area, particularly in the eastern portion is poor, with a mix of large scale, contrasting land-uses, including the Eglwys Nynydd Reservoir, the crematorium and Longlands recreation ground. The more sensitive key characteristics identified, particularly relating to the open landscape of the marshland, including the ditches and associated wetland vegetation are located within the western portion.
- 9.206. The Tyn-y-Caeau development will not be visible beyond the Proposed Development and there will be no added intervisibility with sections of the LCA possessing more sensitive characteristics to the south-east.
- 9.207. The sensitivity of LCA 03 Margam Marsh is very low. The cumulative operational development will directly extend across a small portion of the LCA but there will be limited intervisibility/views elsewhere in the LCA due to intervening vegetation. Furthermore, existing trees and hedges in and around the site will be retained and these will assist with integration of the operational development locally within the existing landscape fabric. Overall, the magnitude of the cumulative impact will be medium. The significance will be slight-moderate and not significant.
- 9.208. Cumulative effects relating to Tyn-y-Caeau in combination with the Proposed Development on remaining landscape character areas within the study area will be as assessed for the Proposed Development. Tyn-y-Caeau will be of a smaller scale and will be enclosed to an extent by the Proposed Development and there will no added intervisibility.

- 9.209. There will be no change within views from viewpoints 1 to 3. Tyn-y-Caeau will not be visible in combination with the Proposed Development. In viewpoint 4, Tyn-y-Caeau will be partially visible and will add to the effects recorded for the Proposed Development in isolation. However, it is unlikely to increase the magnitude recorded for the Proposed Development in isolation and will remain as medium.
- 9.210. There will be an increase in effects on key receptor groups likely to experience near visibility of the Proposed Development in combination with Tyn-y-Caeau. This will be recreational users of the Wales Coast path and users of the NCN 04 cycleway extending along the eastern boundary. However, the effects will be broadly similar to evaluated for the Proposed Development in isolation.
- 9.211. In summary, Tyn-y-Caeau will add to the extent of development in this area. However, the Proposed Development will enclose the Tyn-y-Caeau development and effects outside the cumulative site boundaries are unlikely to be significantly increased beyond those recorded for the Proposed Development in isolation.

Summary and Statement of Significance

- 9.212. Effects assessed as having a level of moderate or greater are considered to be significant. These effects for the construction and operational landscape and visual assessments are outlined in the Tables xx below
- 9.213. There will be no significant construction stage landscape effects.
- Significant construction stage visual effects will comprise:
 - Residents of dwellings adjacent to the southern boundary on Heolcaer Bont. These will receive short range views into the Proposed Development site. Within these the temporary fencing and all operations likely to be seen above this will be visible. The magnitude for these particular receptors will be very high. Combined with the sensitivity, effects will be major adverse and significant.
 - Users of the Wales Coast Path. Short range views into the site will be available from this path as it extends around the eastern and southern boundary of the Proposed Development site. Site hoarding/fencing and some construction operations likely to be visible above the fence will be seen at close range. The magnitude of this impact will be very high. The significance of effects, when combined with the high sensitivity, will be major and significant.
 - Recreational users of National Cycle Network 04, extending along the A48m to the north of the Proposed Development site. These will receive short range views into the site. Site hoarding/fencing and some construction operations likely to be visible above the fence will be seen at close range. The magnitude of this impact will be high. The significance of effects will be major adverse.
- 9.214. There will be no significant operational stage landscape effects.
- 9.215. Significant operational stage visual effects will comprise:

- Residents of dwellings to the southern boundary on Heolcaer Bont. These will receive short range views into the Proposed Development site. Within these the façade of the production unit will be immediately apparent as a very-large scale feature that will occupy a wide proportion of the view. Although some filtering and screening of the lower levels of the Proposed Development will be achieved by the existing retained hedgerow and trees within and around the site, the magnitude for these particular receptors will be very high. Combined with the sensitivity, effects will be major adverse and significant.
- Users of the Wales Coast Path. Short range views into the site will be available from this path as it extends around the eastern and southern boundary of the Proposed Development site. The production building and car park areas will be seen from short range and will be dominant in available views. The magnitude of this impact will be very high. The significance of effects, when combined with the high sensitivity, will be major adverse and significant.
- Recreational users of National Cycle Network 04, extending along the A48m to the north of the Proposed Development site. These will receive short range views into the site. The production building and car park areas will be seen in short range views west from the cycle way and will be dominant in available filtered short range views. The magnitude of this impact will be high. The significance of effects will be major adverse and significant.

References

9.216. The following references are applicable to the LVIA Chapter:

- Guidelines for Landscape and Visual Impact Assessment (GLVIA). The Landscape Institute/ IEMA. Third Edition, 2013.
- NRW Guidance Note 46, 'Using LANDMAP in Landscape and Visual Impact Assessments, (LVIA), January 2021.
- Visual Representation of Development Proposals – Technical Advice Note 06/19, Landscape Institute (September 2019), including supporting Technical Information Notes 07/19, 08/19 and 09/19.

10. ECOLOGY AND NATURE CONSERVATION

Introduction

- 10.1. This chapter of the ES assesses the likely significant effects of the Proposed Development with respect to ecology and nature conservation, particularly the effects on designated sites, habitats and species considered of local, county and national importance. This Chapter also describes the legislative and policy framework; the methods used to assess the effects; the baseline conditions currently existing at the Application Site; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 10.2. The Proposed Development is as summarised: Full planning application of the development of a metal processing facility totalling 28,500sq.m of floorspace comprising a powder processing plant (17,377sq.m), warehouse and store (5,428 sq.m) office building (1,442 sq.m), amenity building (776 sq.m), laboratory (200 sq.m), services building (470 sq.m), substation (107 sq.m), phase 2 (2,700 sq.m), CCTV and parking on-site at J38, M4, Margam, Port Talbot.

Legislation, Policy and Guidance

- 10.3. The following national and local planning policy relating to ecology and nature conservation considered of relevance to Proposed Development and this chapter of the ES.

Planning policy for Wales (PPW) 2021

- 10.4. This document set out the land use planning policies of the Welsh Assembly Government with Chapter 6 (Distinctive and Natural Places) dealing with Biodiversity and Ecological Networks. The advice contained within PPW is supplemented for some subjects by Technical Advice Notes (TAN's), with TAN 5 addressing Nature Conservation.

Technical Advice Notes (TAN)

- 10.5. TAN 5 identifies a number of key principles, which the town and country planning system in Wales should incorporate those relevant are detailed below:
- a) Work to achieve nature conservation objectives through a partnership between local planning authorities, Natural Resources Wales (NRW), voluntary organisations, developers, landowners and other key stakeholders;
 - b) Integrate nature conservation into all planning decisions looking for development to deliver social, economic and environmental objectives together over time;
 - c) Ensure that the UK's international obligations for site, species and habitat protection are fully met in all planning decisions;
 - d) Look for development to provide a net benefit for biodiversity conservation with no significant loss of habitats or populations of species, locally or nationally;

- e) Promoting approaches to development which create new opportunities to enhance biodiversity, prevent biodiversity losses, or compensate for losses where damage is unavoidable. Minimising or reversing the fragmentation of habitats and improving habitat connectivity through the promotion of wildlife corridors;
- f) Local planning authorities should seek to protect trees, groups of trees and areas of woodland where they have natural heritage value or contribute to the character or amenity of a particular locality;
- g) The presence of a species protected under European or UK legislation is a material consideration when a local planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat.

Environment Act (Wales) 2016

Section 6 – Biodiversity and resilience of ecosystem duty

- 10.6. Part 1 of the Environment Act Wales came into force in May 2016 and sets out the approach to planning and managing natural resources at a national and local level with a general purpose linked to statutory 'principles of sustainable management of natural resources' defined within the Act.

Section 7 – Biodiversity and resilience of ecosystems duty

- 10.7. This section lists living organisms and types of habitat in Wales which are considered of key significance to maintaining and enhancing biodiversity in relation to Wales. The Welsh Ministers are required to take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and encourage others to take such steps.

Neath Port Talbot County Borough Council – Local Development Plan (2011 – 2026)

- 10.8. The Neath Port Talbot County Borough Council (NPT) Local Development Plan (LDP) was adopted in January 2016. It is the most up to date Development Plan covering the authority's administrative area and is used in the determination of planning applications. The LDP sets out a range of policies and proposals relating to future development, and deals with the use and conservation of land and buildings within the City & County up to 2026. A number of policies within the LDP are considered of relevance to the site and these are detailed below:

Policy SP15 – Biodiversity and Geodiversity

- 10.9. Important habitats, species and sites of geological interest will be protected, conserved, enhanced and managed through the following measures:
- 1) The identification of the following Internationally and Nationally designated sites within the County Borough to enable their protection:
 - a) Special Areas of Conservation (SACs) and Ramsar Sites;
 - b) Sites of Special Scientific Interest (SSSIs);

- c) National Nature Reserves (NNRs).
- 2) The identification and protection of sites of regional and local importance;
- 3) The protection of important natural heritage features.

Policy EN6 – Important Biodiversity and Geodiversity Sites

- 10.10. Development proposals that would affect Regionally Important Geodiversity Sites (RIGS), Local Nature Reserves (LNRs), Sites of Interest for Nature Conservation (SINCs), sites meeting SINC criteria or sites supporting Local Biodiversity Action Plan (LBAP) or S42 habitats or species will only be permitted where:
- 1. They conserve and where possible enhance the natural heritage importance of the site; or
 - 2. The development could not reasonably be located elsewhere, and the benefits of the development outweigh the natural heritage importance of the site.
- 10.11. Mitigation and/or compensation measures will need to be agreed where adverse effects are unavoidable.

Policy EN7 – Important Natural Features

- 10.12. Development proposals that would adversely affect ecologically or visually important natural features such as trees, woodlands, hedgerows / field boundaries, watercourses or ponds will only be permitted where:
- 1. Full account has been taken of the relevant features in the design of the development, with measures put in place to ensure that they are retained and protected wherever possible; or
 - 2. The biodiversity value and role of the relevant feature has been taken into account and where removal is unavoidable, mitigation measures are agreed.

Policy EN8 – Pollution and Land Stability

- 10.13. 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 the following will not be permitted:
- i. Air pollution;
 - ii. Noise pollution;
 - iii. Light pollution;
 - iv. Contamination;
 - v. Land instability;
 - vi. Water (including groundwater) pollution.
- 10.14. Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation measures are included to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level.

Supplementary Planning Guidance (SPG)

Biodiversity and Geodiversity Supplementary Planning Guidance (SPG) – May 2018

- 10.15. This Supplementary Planning Guidance (SPG) document sets out Neath Port Talbot County Borough Council's approach to the consideration of biodiversity and geodiversity and green infrastructure in relation to new developments. It provides further guidance to Policies SP15, EN6 and EN7 of the Local Development Plan (as above).

Relevant Elements of the Proposed Development

- 10.16. All elements of the Proposed Development as described in section 10.1.2 are considered of relevance to this chapter of the ES.

Assessment Methodology and Significance Criteria

Scope

- 10.17. The scope of the Ecological Impact Assessment (EclA) has been developed based on:
- i. Consideration of any ecological resources, focusing on those for which there is legal or planning policy in favour of protection or enhancement;
 - ii. Data on sites of national, county and local importance within 1km of the Proposed Development boundary; and
 - iii. Data on notable flora and fauna; for example, legally protected, nationally rare/scarc, county rare/scarc, species listed in Section 7 of the Environment Act (Wales) 2016 and Local (Neath Port Talbot Biodiversity Action Plan, and other species of conservation concern within 1km of the Proposed Development boundary.

Data sources

- 10.18. In order to provide an ecological context for the site, ecological records were requested from the South East Wales Biodiversity Records Centre (SEWBReC) in May 2021. Records were requested in relation to sites designated for their nature conservation interest (both statutory and non-statutory), as well as records of protected or otherwise notable flora and fauna.
- 10.19. Records of habitats and species listed under Section 7 of the Environment Act (Wales) 2016 and Local Biodiversity Action Plan (BAP) were also reviewed with regards to species or habitats that are potentially present on the site or in the surrounding study area. Other sources of information were also utilised as appropriate to identify protected or notable nature conservation sites in the wider area.
- 10.20. Surveys to inform the baseline conditions have been undertaken at the Application Site between May – September 2021. This approach was agreed with Neath Port Talbot Council and Natural Resources Wales (NRW) as part of the Scoping exercise. The assessment in this chapter has been based upon the findings of these surveys. The initial ecological survey

report undertaken at the Application Site to inform the Scoping exercise has been included in Appendix 10.1

Assessment approach

- 10.21. Where an ecological feature (habitat or species) is identified as likely to be subject to an impact, both the importance of the feature/ resource and the likelihood of a significant effect occurring are considered, as described within the EcIA Guidelines¹ (CIEEM, 2018). These guidelines represent current best practice for EcIA in the UK.
- 10.22. Although there are any number of possible ways in which a development project can potentially effect ecological features, it is only necessary to describe in detail the impacts that are likely to be significant. Where a potential effect is identified, its significance is determined and the effect on the particular feature is evaluated as adverse or beneficial at the relevant geographical scale (local, national etc.).
- 10.23. The potential impacts during construction and operation of the Proposed Development on identified ecological receptors comprise:
 - i. Direct loss of habitats;
 - ii. Isolation and fragmentation of habitats;
 - iii. Changes in artificial light levels;
 - iv. Increased disturbance from construction, traffic and people;
 - v. Increased risk of injury or mortality from construction and traffic; and
 - vi. Spread of invasive species.
- 10.24. Potentially sensitive ecological features are identified through the collation of baseline data from surveys and existing records. Once the features are identified, information on their legal and policy, conservation and distribution status, plus any known trends (i.e. population or migratory) are considered to measure their value.
- 10.25. All ecological features are described (including conservation status, status on site, sensitivity, planning and legal protection etc.) and assigned a value. The scale of value for ecological resources used in the present assessment is as follows:
 - i. International and European;
 - ii. National (Wales);
 - iii. Regional (South Wales);
 - iv. County/District (Neath Port Talbot);
 - v. Local (Margam);
 - vi. Within the immediate zone of influence/the Application Site; and
 - vii. Negligible.

¹ CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

- 10.26. All resources valued at above a given threshold of value (in this case 'within the immediate zone of influence' is the lowest level) are considered in terms of whether any effects are likely to be ecologically significant or not. Activities associated with the development are likely to cause significant ecological effects and it is therefore necessary to identify associated changes and their implications in terms of extent, magnitude, duration, timing, frequency and reversibility for valued ecological features.
- 10.27. The value of habitats as foraging and community resources for bats was assessed using an objective scoring system (Wray *et al.*, 2010)². The scores for each bat species present at the Site are determined from **Tables 10.1 and 10.2**. The score is then used to determine how important (Regional, County, Local etc.) the feature is for each bat species with the highest value obtained used to inform the impact assessment.

Table 10.1: Valuing commuting routes for bats.

Species	Number of bats	Potential roosts nearby	Type of complexity of
Common (2)	Individual (3)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large
Rarer (5)	Small number of bats (5)	Moderate number/Not known (4)	Walls, gappy or flailed hedgerows, isolated well-grown hedgerows, and
-	-	Large number of roosts, or close to a SSSI	Well-grown and well-connected hedgerows, small
Rarest (10)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small

Table 10.2: Valuing commuting and foraging habitats for bats.

Species	Number of bats	Potential roosts nearby	Foraging habitat characteristics
Common (2)	Individual (3)	None (1)	Industrial or other site without

² Wray S., Wells D., Long E., & Mitchell-Jones T. (2010) *Valuing Bats in Ecological Impact Assessment*. CIEEM InPractice. Issue 70. December 2010.

Species	Number of bats	Potential roosts nearby	Foraging habitat characteristics
			established vegetation (1)
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (5)	Moderate number/Not known (4)	Isolated woodland patches, less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Larger or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)
Rarest (10)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

Significance criteria

- 10.28. For the purpose of this EclA, 'significant effect' is an effect that either supports or undermines (positive or negative impact/effect) biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local. In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution) (CIEEM, 2018). Where development impacts are identified which could have significant effects on a given ecological feature, the 'mitigation hierarchy' of avoidance, mitigation and compensation is applied. In the current assessment the impacts are presented in the absence of and following mitigation. The assessment of impact on a given ecological feature

following mitigation (the residual impact) is presented as the overall assessment for that feature.

- 10.29. The assessment of an ecological impact as 'significant' should not be confused with any other definitions of the term significant used elsewhere in this ES and it is recognised that the assessment criteria may be subject to variation between topic chapters. The assessment within the Ecology and Biodiversity Conservation chapter has been undertaken using best practice guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).
- 10.30. The CIEEM guidelines (2018) for Ecological Impact Assessment (EcIA) represent current best practice and their use as part of this Environmental Statement is considered appropriate. Terms used to assign importance to a given ecological feature and to assess the impact of the proposed development within these guidelines may differ from those used within other chapters of this Environmental Statement.
- 10.31. The CIEEM guidelines for EcIA are not compatible with the 'matrix' type approach summarised in **Table 10.4** which may have been used elsewhere within this ES. However, for ease of comparison across topic chapters, the impact assessed using the CIEEM guidelines has been correlated to the sensitivity matrix summarised in **Table 10.4** using professional judgement. For example, a significant adverse impact on a particular feature derived using the CIEEM criteria would be considered as a Major adverse impact. Characterisation of the impacts on each ecological feature broadly follows the descriptions displayed in **Table 10.3**, which are consistent with the approach described by the CIEEM guidelines (CIEEM, 2018).

Table 10.3: Using characteristics of potential impacts to ascertain significance

Characteristics of Impacts	Definition
Extent	This is the spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions.
Magnitude	Size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
Duration	Should be defined in relation to ecological characteristics (such as species' lifecycle). The duration of an activity may differ from the duration of the resulting effect caused by the activity. For example, if short-term construction activities cause disturbance to birds during their breeding period, there may be long-term implications from failure to reproduce that season. Impacts and

Characteristics of Impacts	Definition
	effects may be described as short, medium or long-term and permanent or temporary.
Timing	The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g., bird nesting season.
Frequency	The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success.
Reversibility	An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible affect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.

Table 10.4: Matrix for Determining the Significance of Effects

Magnitude of change	Sensitivity of Receptor			
	High	Medium	Low	Negligible
Large	Major	Major	Moderate	Minor
Moderate	Major	Moderate	Minor	Negligible
Small	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Sensitive Receptors

- 10.32. Sensitive ecological receptors located at The Application Site and of relevance to the Proposed Development are identified within the baseline conditions (section 10.6) below and summarised in **Table 10.10**.

Baseline Conditions

Establishing baseline conditions

- 10.33. The ecological baseline conditions at the Application Site were established by identifying important and sensitive ecological features (habitats & species) within the Proposed

Development boundary and adjoining areas by a combination of desk study and field surveys as described in following section. The results of the desk study and Extended Phase I Habitat survey (including Phase I habitat mapping) are provided as a complete report in Appendix 10.1, with summary descriptions included in Section 10.6 of the main chapter text. The desk study consultation with the South East Wales Biodiversity Records Centre (SEWBReC) included the extent of the Application Site and surrounding 1km area. The results of this desk study are illustrated within the Ecology Note EIA Scoping Report included in Appendix 10.1. The field surveys were confined to the habitats within and immediately adjacent to the Application Site boundary.

- 10.34. The following ecological features were identified as being present within or in close proximity to the site and to have the potential to be impacted by the Proposed Development. They were assigned importance based on their status in policy, conservation status, distribution, trends, rarity, potential value and professional judgement/interpretation.

Statutory and non-statutory designated sites

- 10.35. The desk study consultation confirmed that the Application Site does not hold any designation for nature conservation. However, the Site is located within 500m of Eglwys Nunydd Reservoir Site of Special Scientific Interest (SSSI). The reservoir is designated for its reedbed and standing water habitats which are known to support a large number of wintering and migrant waterfowl. The site (Eglwys Nunydd) is also locally designated as a Site of Importance for Nature Conservation (SINC). The Site is also located within 100m of Junction 38 Wetland Complex SINC, which supports priority habitats such as wet woodland, fen and purple-moor grass and rush pasture habitats. The site has potential hydrological links to both Eglwys Nunydd Reservoir SSSI and Junction 38 Wetland Complexes SINC via a small number of ditches within the Proposed Development boundary and surrounding area. A summary of statutory and non-statutory designated sites within 1km of the Site and their importance at a geographical scale are shown in **Table 10.5**.

Table 10.5: Statutory and non-statutory designated sites located within 1km of the Application Site.

Designated site	Reasons for designation/Priority habitats and species	Distance to The Site	Importance at geographical scale
Junction 38 Wetland Complex SINC	Habitats: Native woodland - A semi-natural woodland with a wet woodland component, Lowland Fen, Purple moor-grass and rush pastures Species recorded: Water vole, Otter, Grass snake, Common lizard, Reed bunting, Cetti's warbler	<50m west	County

Designated site	Reasons for designation/Priority habitats and species	Distance to The Site	Importance at geographical scale
Eglwys Nunydd Reservoir SINC	Habitats: Native woodland, Scrub communities, Lowland Fen, Reedbed, Eutrophic standing waters, Open mosaic habitats on previously developed land Species recorded: Barn owl, Cetti's warbler	275m south	County
Margam Country Park SINC	Habitats: Wood pasture and parkland, Ponds H16 Mosaic habitats (Marshy grassland, Woodland, Scrub, Neutral grassland), Mosaic of Habitats and buildings. Species recorded: Lesser horseshoe, Greater horseshoe, Barbastelle, Brown hare, Adder. The site is important for bats with 14 of the UKs 18 resident species having been recorded here.	300m west	County
Eglwys Nunydd Reservoir SSSI	"The largest sheet of fresh water in the county. On the site of Margam Moors which, before being reclaimed for the Abbey Steel Works, were a notable site for wildfowl. The reservoir attracts large numbers of wintering waterfowl and passage migrants. Notable species including Great Crested and Little Grebes, Mallard, Gadwall and Coot now breed."	425m south	National

Extended Phase 1 Habitat Survey

- 10.36. Habitat and protected species surveys were undertaken between May – September 2021 in order to establish a robust ecological baseline across the Application Site.

- 10.37. Soltys Brewster Ecology carried out an initial Extended Phase 1 Habitat Survey at the site in May 2021. Subsequent bat activity surveys were undertaken at the site between July – September 2021. This included a series of activity transects, automated monitoring periods and separate dusk emergence and dawn re-entry survey. The Ecology Note EIA Scoping Report which details the findings of the Extended Phase 1 Habitat Survey is included in full in Appendix 10.1.
- 10.38. Reference in the following sections to target notes refer to those listed within the Extended Phase 1 Habitat report in Appendix 10.1.

Desk study

- 10.39. The desk study consultation identified four designated sites for nature conservation within 1km of The Site, as summarised in **Table 10.5**. Summary plans illustrating the SEWBRc records for sites and species are included in Appendix 10.1, with summary text included in the following sections (10.6.9 – 10.6.48).

Improved grassland

- 10.40. The site contains two field parcels comprising of grazed improved grassland. The grassland is characterised by a very short sward height and low floral diversity. Perennial Rye Grass *Lolium perenne* is dominant with Common Daisy *Bellis perennis*, White Clover *Trifolium repens* and Dandelion *Taraxacum officinale* agg. present as well as occasional taller patches of Thistle *Cirsium* sp. and Nettle *Urtica dioica*. The improved grassland across the site was generally considered of Negligible importance.

Semi-improved neutral grassland

- 10.41. The field parcel at the north-east corner of the Application Site boundary (verge of A48 roundabout) contains an area of semi-improved neutral grassland. Species present include Meadow Foxtail *Alopecurus pratensis*, Cock's Foot *Dactylis glomerata*, Red Fescue *Festuca rubra*, Common Bent *Agrostis capillaris*, Sedge (indicative of False Fox Sedge *Carex otrubae*), Hard Rush *Juncus inflexus*, Field Wood-Rush *Luzula campestris*, Common Vetch *Vicia sativa*, Ground Ivy *Glechoma hederacea*, Ragged Robin *Silene flos-cuculi*, Bugle *Ajuga reptans*, Dandelion, Colt's Foot *Tussilago farfara*, Red Campion *Silene dioica*, Field Forget-Me-Not *Myosotis arvensis*, Field Speedwell *Veronica persica*, Ox-Eye Daisy *Leucanthemum vulgare*, Ribwort Plantain *Plantago lanceolata*, Common Knapweed *Centaurea nigra*, Cuckoo Flower *Cardamine pratensis*, Yarrow *Achillea millefolium*, Herb Robert *Geranium robertianum*, Cinquefoil *Potentilla* sp., Thistle, Nettle, Hogweed *Heracleum sphondylium* and low-lying Bramble *Rubus fruticosus* agg. The areas of semi-improved neutral grassland were considered to be of Local importance.

Poor semi-improved grassland

- 10.42. The larger southern field parcel at the site comprises of poor semi-improved (SI) grassland and is currently used for hay cutting and grazing livestock. The sward resembles a species-

poor neutral grassland where Yorkshire Fog *Holcus lanatus*, Meadow Foxtail and Sweet Vernal Grass *Anthoxanthum odoratum* are the dominant grass species – although Perennial Rye Grass *Lolium perenne* is still frequent. Other plant species present include Cock's Foot, Annual Meadow Grass *Poa annua*, Hairy Sedge *Carex hirta*, Field Woodrush, Soft Rush *Juncus effusus*, Thistle, Dandelion, Creeping Buttercup *Ranunculus repens*, Cuckoo Flower, Red Clover *Trifolium pratense*, Common Daisy, Common Mouse-Ear *Cerastium fontanum*, Field Speedwell, Ribwort Plantain, Common Sorrel *Rumex acetosa* and Silverweed *Potentilla anserina*. This habitat was considered of to be of importance within the immediate zone of influence.

Marshy grassland

- 10.43. Small areas of marshy grassland are located along a ditch at the eastern site boundary. The vegetation here has not been grazed and contains Soft and Hard Rush as well as Water Cress *Nasturtium officinale* and Brooklime *Veronica beccabunga*.
- 10.44. There is also a small pocket of marshy grassland vegetation located towards the northern extent of the Application Site, within the SI neutral grassland. This section of grassland shares characteristics with swamp habitats and contains small pools of standing water containing Reed Canary Grass *Phalaris arundinacea*, Yellow Flag Iris *Iris pseudacorus*, Water Dropwort *Oenanthe sp.*, Hard Rush and unidentified Sedges. Marshy grassland habitats are considered to be of Local importance.

Broad-leaved semi-natural woodland

- 10.45. A woodland copse/parkland is located towards the centre of the site. The pasture-woodland primarily consists of Sycamore *Acer pseudoplatanus* trees of mixed age (including over-mature and veteran trees) and several older Beech *Fagus sylvatica* trees. There are also stands of Hawthorn *Crataegus monogyna* and Willow *Salix sp.* scrub and standing deadwood.
- 10.46. A woodland corridor runs also along the eastern boundary of the site boundary to the Tyn-Y-Caeau farmhouse. The woodland block contains mature Sycamore, Beech, Lime *Tilia sp.* and Ash *Fraxinus excelsior* trees. All examples of woodland at the Application Site are considered to be of Local importance.

Dense/continuous scrub

- 10.47. The site contains some areas of dense Bramble, Willow and Hawthorn scrub. Given the small extent of scrub habitat present they were considered to be of importance within the immediate zone of influence.

Defunct species-rich hedgerow

- 10.48. A defunct species-rich hedgerow margin is located towards the centre of the Application Site, separating the northern and southern field parcels. The hedge contains a number of woody species within a 30m section including Hawthorn, Blackthorn *Prunus spinosa*, Holly *Ilex*

aquifolium, Hazel *Corylus avellana*, Willow and the occasional Sycamore tree. The hedgerow is 'gappy' and much of the ground flora has been heavily grazed. A post and wire fence runs parallel to the hedgerow.

Species-rich hedgerow with trees

- 10.49. A species-rich hedgerow with trees is located along the majority of the length of The site's southern and eastern boundaries. This hedgerow contains several woody species within a 30m section including Sycamore, Hazel, Hawthorn, Blackthorn and Rose *Rosa sp.*. The ground flora is also more diverse containing Ivy *Hedera helix*, Bluebell *Hyacinthoides non-scripta*, Red Campion, Lords-and-Ladies *Arum alpinum*, Ground Ivy, Cleavers *Galium aparine* and Nettle. All hedgerows at the site were considered to be of Local importance.
- 10.50. Of the habitat features identified at the Application Site; hedgerows, woodland, marshy grassland and semi-improved neutral grassland are listed as Priority Habitats under Section 7 of the Environment Act (2016) Wales. In assigning the ecological importance to these features – each of which was considered of Local importance – the extent, condition and connectivity to other habitat features has been considered and the valuation is considered appropriate for the purpose of the EcIA.

Invasive species

- 10.51. The survey identified several stands of Japanese Knotweed at the north-east corner of the site, at the edge of the field of neutral grassland. The species is prevalent within the hedgerow adjacent to the A48 carriageway near the entrance to the Tyn Y Caeau grounds. In addition, several more stands of Japanese Knotweed were recorded immediately off-site to the north of the small woodland copse. For the purposes of EcIA, invasive species would be considered of Negligible importance although do need to be considered in terms of control/eradication methods as part of the development.

Fauna

- 10.52. During the course of the habitat surveys, a search of field signs for protected or notable species were undertaken and the potential of the habitats to support these species considered. In the context of this report, these species meet any of the following criteria:
- Species protected by British or International law;
 - Section 7 Environment Act (Wales) 2016 species or LBAP species;
 - Nationally rare or scarce species; and
 - Species of conservation concern (e.g., JNCC red list, RSPB/BTO red or amber lists).

Amphibians

- 10.53. The desk study identified records of Great Crested, approx. 1.1km west of the Application Site, associated with freshwater habitats at the steelworks. The Site does contain some suitable terrestrial habitats to support common amphibians, with the hedgerow boundaries, woodland and dry-stone wall providing foraging resources and potential hibernaculum.

However, no ponds are located within a 500m radius that could support a breeding population of GCN, and the main railway line (which separates the nearest GCN record from the Site) and the A48/M4 carriageway are likely to act as dispersal barriers for the species. As such, the presence of GCN at the proposed site was considered unlikely, but the habitats at the site were still considered to be of importance within the immediate zone of influence for other common amphibian species.

Badgers

- 10.54. The survey found no evidence to suggest the current use of the site by Badger (e.g., setts, latrines or footprints). In addition, no obvious mammal pathways were noted along the hedgerow and fence line boundaries. Despite this, the site does offer suitable foraging habitats for badgers (e.g., areas of woodland and semi-improved grassland) and the desk study search returned multiple records of the species within 1km of the site. As such, the occasional use of habitats on site by individual badgers cannot be precluded and the habitats at the site were considered to be of importance within the immediate zone of influence.

Bats

Methodology

- 10.55. Surveys to establish general levels of bat activity at the Application Site and targeted emergence checks of trees were completed between July – September 2021.
- 10.56. Bat activity surveys involved walked transects and fixed ‘spot count’ observations by a team of 2 surveyors. In addition to the walked transects, automated recording of bat activity was undertaken using Anabat Express or Swift units; two of which were deployed for 5-7 consecutive nights *in situ* at strategic locations across the site in July, August and September 2021.
- 10.57. Transect routes and Anabat locations are included in Appendix 10.2. Surveys were undertaken using best practice guidelines described by the Bat Conservation Trust (BCT, 2016). Survey dates for the three survey periods are summarised in **Table 10.6**.

Table 10.6: Summary of bat activity survey dates.

	Survey Dates
July 2021	Activity transect: 8 th July Automated monitoring: 8 th – 13 th July
August 2021	Activity transect: 9 th August Automated monitoring: 9 th – 15 th August

September 2021	Activity transect: 7 th September Automated monitoring: 7 th – 14 th September
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- 10.58. In addition to the activity surveys, targeted emergence checks of trees with Moderate and High bat potential (as described within BCT 2016 Guidelines) likely to be affected by the Proposed Development were subject to a series of separate dusk and dawn surveys. Trees at Target Note 5 (T422) and 7 (T409) (see Appendix 10.1 for target note locations) were included in the survey work. Dusk emergence surveys were undertaken on the 14th July and 27th July 2021 with a dawn re-entry survey undertaken on the 19th August 2021.

Results

- 10.59. In combination, the surveys undertaken between July – September 2021 identified the use of the Application Site for foraging/commuting purposes by at least 7no. different bat species. The list of positively identified species includes Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Nathusius Pipistrelle *Pipistrellus nathusii*, Noctule *Nyctalus noctula*, Serotine *Eptesicus serotinus*, Lesser Horseshoe bat *Rhinolophus hipposideros* and unidentified *Myotis* species. A summary of results can be found in Table 10.7.
- 10.60. For the purposes of this report a bat pass is defined by any bat call recorded within a single 15 second sound file. The number of bat passes does not necessarily correlate with numbers of individual bats.

Activity surveys

- 10.61. Plans illustrating the recorded bat activity across the site during the walked activity transects and automated monitoring periods are attached in Appendix 10.2. In general, bat activity recorded during the survey was mostly attributed to Pipistrelle species.
- 10.62. The activity transects recorded low levels of bat activity across the site. The majority of bat activity recorded by the surveyors was attributed to Common and Soprano Pipistrelle and associated with the hedgerows, eastern boundary and woodland copse. On all three survey visits Surveyor 1 (Transect Route 1) recorded a number of commuting and foraging Pipistrelle bats using the hedgerow separating the northern and southern field parcels (connecting to the adjacent woodland at the Jn 38 Wetland Complex SINC). The surveyor also noted Pipistrelle bats foraging within the woodland copse canopy. In comparison, Surveyor 2 (Transect Route 2) recorded lower levels of bat activity on each survey visit. The majority of bat activity was associated with the southern hedgerow with trees and the narrow woodland corridor along the Tyn Y Caeae grounds boundary. Some bats were also seen flying across the A48 carriageway and the private road leading to Margam Green Energy Plant.

Automated monitoring surveys

- 10.63. Anabat Express and Swift units were deployed at The Site as described in section 10.6.25. See Plans included in Appendix 10.2 for Anabat locations. The locations of which were based on areas of the site likely to be impacted by the Proposed Development. In summary, at least 7no. different bat species were positively identified during the automated monitoring periods and a total of 9722 bat passes were recorded. A summary of the results is included in Table 10.7.
- 10.64. The automated surveys recorded high levels of Pipistrelle activity during the July 2021 monitoring period with 4377 passes of both Common Pipistrelle and Soprano Pipistrelle rerecorded from the two detectors combined. Lower levels of activity were recorded during the August 2021 monitoring period at both detector locations. During the September 2021 monitoring period higher levels of bat activity were recorded again (4128 passes) as well as a greater diversity of bat species with at least 7no. different species recorded at detector location 2. The September monitoring period also recorded a higher level of Myotis activity at detector location 2 as well as increased levels of Pipistrelle social activity.
- 10.65. In total, across all three monitoring periods Common Pipistrelle accounted for 55% of all passes recorded, Soprano Pipistrelle 35% of passes whilst Myotis species and Noctule were attributed to 2.5% and 1.8% of total passes, respectively. A small number of passes (<10) were recorded for each Nathusius Pipistrelle, Serotine and Lesser Horseshoe bat.
- 10.66. The maximum number of bat passes recorded in a single location was 3311 passes recorded by static detector 1, located at the western edge of the woodland copse, between 8th – 13th July 2021 (Appendix 10.2). The greatest diversity of bat activity (7no. species identified) was recorded at static detector location 2, located along the narrow woodland corridor towards the northern extent of the site, between 7-14th September 2021.
- 10.67. The monitoring surveys recorded a number of passes identified as Myotis species. Due to the similarities of call characteristics between different Myotis species and the cluttered nature of some calls no positive identification to species level could be made. However, some calls were considered to be characteristic of Daubenton's bat and Natterer's bat. In addition, several 'large bat' passes were also labelled as NSL (Noctule, Serotine or Leisler's bat) where a positive identification to species level could not be made either due to the short duration or cluttered nature of the bat pass recorded.
- 10.68. Overall, general activity levels and species diversity recorded both manually and automatically, was considered typical for the types and extents of habitats located at the site. Overall, the Application Site was considered to be of County importance for foraging and commuting bats based on the results of the automated surveys (peak count) and the principles described by Wray et al., 2010, as summarised in Tables 10.8 and 10.9. Scores for each species were calculated using the peak count of bat calls recorded in one night over the entire automated survey period. County importance is the higher of the two valuations summarised in Table 10.9 (Local Importance assigned to Soprano Pipistrelle, Nathusius

Pipistrelle, Lesser Horseshoe and Noctule) and has been used for the EclA as described in Section 10.4.11.

Table 10.7: Summary of automated bat surveys.

Detector	Common Pipistrelle	Soprano Pipistrelle	Nathusius Pipistrelle	Pipistrelle social call	Noctule	Serotine	NSL	Myotis	LHS	Total
	July 2021									
1	2255	1028	0	0	26	0	0	2	0	3311
2	710	384	0	0	69	0	0	3	0	1166
	August 2021									
1	496	395	0	9	30	1	4	6	0	891
2	119	80	0	3	12	1	4	6	1	226
	September 2021									
1	755	665	0	77	25	0	1	7	3	1533
2	1021	836	8	490	11	1	0	226	2	2595

Roost presence/absence surveys

- 10.69. The initial Extended Phase 1 Habitat survey assessed two trees at the site, likely to be impacted by the Proposed Development, to have a high and moderate potential to support roosting bats, full details of which can be found in Appendix 10.1. As described in 10.6.28 a number of dusk emergence and re-entry bat surveys were undertaken at these trees.
- 10.70. During the first dusk emergence survey on 14th July the surveyor at tree 1 (high potential) observed a single Pipistrelle bat leave and immediately re-enter a tree cavity at 21:42 (15 minutes following sunset), before observing a single bat leave the same tree cavity at 21:53 (21 minutes following sunset). No other bats were seen to emerge from the tree or at Tree 2. During the second dusk survey on 27th July the surveyor at Tree 1 saw two unidentified bats emerge from the same tree cavity shortly before and on sunset (21:12) at 21:08 and 21:12. No bats were seen to emerge at Tree 2. On the final survey visit on 19th August no bats were seen to re-enter the tree cavity at Tree 1. The observed emergence at Tree 1 was attributed to Pipistrelle bats based on the size/flight characteristic of the bats and relatively early emergence times – no echo-location calls were heard due to the distance between the tree and surveyor. The surveyor at Tree 2 noted a single unidentified bat circling the tree canopy at 05:35 (31 minutes before sunrise) although no positive re-entry was confirmed. Overall, the presence/absence surveys recorded low levels of bat activity on each survey visit with a small number of bat passes recorded. Most bat activity was attributed to Common

Pipistrelle (88 passes) and Soprano Pipistrelle (54 passes) but there were also passes by Noctule (7 passes) and an unidentified Myotis species (1 pass). In summary the surveys confirmed the presence of a small/individual Pipistrelle day roost within Tree 1, which would be considered of Low conservation importance (based on Bat Mitigation Guidelines, 2004³) and was assessed to be of Local importance for the EcIA.

Table 10.8: Determining importance of the Application Site for foraging/commuting bats.

Species	Species score	Number of bats score**	Roosts/potential roosts nearby score***	Type and complexity of nearby linear features and foraging habitats score	Total score
Common Pipistrelle	Common (2)	Large number of bats (20) <i>Peak count: 681 calls</i>	Small number (3)	Walls, gappy or flailed hedgerows, isolated well-grown hedgerows, and moderate field sizes (3)	28
Soprano Pipistrelle	Common (2)	Small number of bats (10) <i>Peak count: 250 calls</i>	Small number (3)		18
Nathusius Pipistrelle*	Rarer (5)	Individual bats (5) <i>Peak count: 3 calls</i>	Moderate number/Not known (4)	Isolated woodland patches, less intensive arable and/or small towns and villages (3)	17
Noctule*	Common (2)	Small number of bats (10) <i>Peak count: 32 calls</i>	Moderate number/Not known (4)		19
Serotine	Rarest (10)	Individual bats (5) <i>Peak count: 1 call</i>	Moderate number/Not known (4)		22
Myotis	Rarer (5)	Small number of bats (10) <i>Peak count: 105 calls</i>	Moderate number/Not known (4)		22
Lesser Horseshoe Bat	Rarer (5)	Individual bats (5) <i>Peak count: 2 calls</i>	Small number (3)		16

* Species score for Noctule and Nathusius Pipistrelle lowered to Common (2) and Rarer (5) based on local records.

³ Mitchell-Jones, T. (2004). *Bat mitigation guidelines*, English Nature.

****Number of bats score based on the peak count of calls recorded in one single night over the automated bat survey period and professional judgement. Peak count: 1-25 calls (individual bats), 26-500 calls (small number of bats), >500 calls (large number of bats).**

*****Nearby roosts (<500m) based on SEWBrEC roost records, presence/absence survey work undertaken at the Application Site and other nearby planning applications.**

Table 10.9: Scoring system for valuing foraging and commuting bats.

Geographic frame of reference	Score	Species value category
International	>50	
National	41-50	
Regional	31-40	
County	21-30	Common Pipistrelle, Serotine, Myotis
Local	11-20	Soprano Pipistrelle, Nathusius Pipistrelle, Noctule, Lesser Horseshoe Bat
Not important	1-10	

Birds

- 10.71. A number of birds were seen/heard at the site during the Extended Phase 1 Habitat Survey including Blackbird *Turdus merula*, Jackdaw *Corvus monedula*, Blackcap *Sylvia atricapilla*, Robin *Erithacus rubecula*, Goldfinch *Carduelis carduelis*, Pied Wagtail *Motacilla alba*, Barn Swallow *Hirundo rustica* and Woodpigeon *Columba palumbus*. An unidentified owl was also observed during the bat activity surveys.
- 10.72. Although none of the bird species noted are of conservation concern the habitats at the site were considered suitable to support a number of foraging and tree/scrub nesting bird species, and were assessed as being of importance within the immediate zone of influence.

Hazel Dormouse

- 10.73. The data search did not return any recent records of Hazel Dormouse *Muscardinus avellanarius* within 1km of the Application Site. Whilst the hedgerows and woodland at the

site contain some suitable foraging resources for Dormouse such as Hazel, Hawthorn and Bramble, on a structural level they were considered poor with much of the understorey growth heavily grazed – in particular the defunct hedgerow and small woodland copse lack any continuous understorey growth. In addition, the road corridors east of the site are also likely to limit the potential for dispersal/movement of any Dormice which may be present in woodland/hedgerow habitats to the west of the M4/A48 corridor. The presence of the species at the site was considered unlikely and the site was assessed to be of Negligible importance.

Reptiles

- 10.74. The desk study results included multiple records of common reptiles within 1km of the site. The majority of these records were associated with the Junction 38 Wetland Complex SINC to the west of Proposed Development boundary. The majority of the habitats at The Site (i.e. grazed improved grassland and poor SI grassland) were considered unsuitable to support common reptiles, and are likely lacking appropriate shelter and prey resources. However, the smaller areas of more species-rich grassland to the north, as well as the hedgerow and woodland margins, were considered to have greater suitability to support a small number of common reptiles such as Slow-Worm *Anguis fragilis*. These habitats are likely to contain suitable invertebrate prey resources and also contain shelter and hibernation opportunities (e.g. dry stone wall). The site was assessed to be of importance at a level within the immediate zone of influence only regarding common reptiles.

Terrestrial invertebrates

- 10.75. During the survey Brown-Banded Carder Bee was recorded within the grassland field located at the northern section of the Application Site. The species is listed as priority species under Section 7 of the Environment Act (2016) Wales. The habitat here contains a more diverse range of herbaceous species and as well as a mixture of wet and dry grassland and was considered likely to support a range of other terrestrial invertebrate species. Habitats elsewhere within the Proposed Development boundary, i.e., grazed improved grassland, were considered unsuitable to support a range of invertebrates. However, given the presence of priority species, the site was assessed to be of Local importance with regards to terrestrial invertebrates.

Future baseline

- 10.76. As the Proposed Development boundary is allocated as Strategic Employment Site under the current NPTC Local Development Plan proposals, it is likely that an alternative development would take place should the current application not proceed. In a situation without such strategic designations, it is unlikely baseline conditions would change significantly due to current land use practices. Without any development land use would remain much the same i.e., agricultural farmland.

Summary of important ecological features

- 10.77. A summary of the ecological features described as part of the baseline and their value at a geographical scale are summarised in **Table 10.10**.
- 10.78. Only those features identified as of importance within the immediate zone of influence level or above have been included and are considered further in this assessment.

Table 10.10: Summary of ecological features and their importance at the geographical scale.

Ecological feature	Importance at geographical scale
Designated sites	
Eglwys Nunydd Reservoir SSSI	National
Eglwys Nunydd Reservoir SINC	County
Junction 38 Wetland Complex SINC	County
Margam Country Park SINC	County
Habitats	
Poor semi-improved grassland	Within immediate zone of influence
Semi-improved neutral grassland	Local
Marshy grassland	Local
Broad-leaved semi-natural woodland	Local
Dense/continuous scrub	Within immediate zone of influence
Defunct species-poor hedgerow	Local
Species-rich hedgerow with trees	Local
Species	
Amphibians	Within immediate zone of influence
Badgers	Within immediate zone of influence
Bats – foraging/commuting	County
Bats – roosting	Local
Birds	Within immediate zone of influence
Reptiles	Within immediate zone of influence
Terrestrial invertebrates	Local

Assessment of Effects, Mitigation and Residual Effects

- 10.79. This section of the ES chapter will evaluate the direct and indirect, short, medium and long-term, permanent and temporary, beneficial and adverse effects, resulting from the implementation of the Proposed Development during both the construction and operational phases to sensitive ecological features at the Application Site.
- 10.80. This section will also set out what mitigation measures are required as result of the impact from the development, and will assess the residual effects of the Proposed Development together with the fully implemented mitigation measures and enhancements.

Construction phase

Eglwys Nunydd Reservoir SSSI and SINC

- 10.81. Eglwys Nunydd Reservoir SINC is located approx. 275m south of the Application Site, with the designated SSSI section of the reservoir located approx. 425m south of the site. Based on the development proposals there are unlikely to be any direct impacts (e.g., habitat loss) to the designated features of the SSSI and SINC. However, potential indirect impacts during the construction phase of the Proposed Development include water pollution/changes to water quality through surface water run-off associated with construction activities. The Application site contains a small ditch (located within the area of marshy grassland) which may share hydrological links with the wetland habitats at the SSSI and SINC, currently drains into the Margam Moors drainage system. Whilst a significant impact is unlikely, in the absence of mitigation measures, a minor adverse impact is probable.

Junction 38 Wetland Complex SINC

- 10.82. As above, the Application Site may share hydrological links to the wetland habitats located at the Junction 38 Wetland Complex SINC (located approx. 50m west of the site). Whilst no direct impacts to the features of the SINC are likely to occur, in the absence of mitigation measures with regards to water pollution/run-off, a minor adverse impact is probable during the construction phase.

Margam Country Park SINC

- 10.83. Margam County Park SINC is located approx. 300m west of the Application Site and are separated by both the M4 and A48 carriageway. Based on the physical separation and barriers between the sites there are unlikely to be any significant impacts to the SINC features during the construction phase and a neutral impact is probable.

Poor semi-improved grassland

- 10.84. The layout plan indicates that the majority of species-poor semi-improved grassland, considered to be of importance within the context of the site only and of limited ecological value, will be lost as part of the Proposed Development. As such a significant adverse impact on this habitat is certain during the construction phase (Moderate Impact certain).

Semi-improved neutral grassland

- 10.85. The site contains areas of semi-improved neutral grassland, assessed to be of Local importance. The area of grassland is located within an enclosed field parcel at the northern extent of the Proposed Development boundary and no adverse impacts are expected to occur to this habitat as a result of the development during the construction phase (Neutral impact probable).

Marshy grassland

- 10.86. A small area of marshy grassland in the north-west will be lost (approx. 390m²) during the construction phase of the Proposed Development to accommodate the proposed Office Building, car parking spaces and access road. The other area of marshy grassland identified within the northern field parcel (within the SI Neutral grassland), considered to be of greater ecological importance, will be retained (approx. 1200m² retained). Marshy grassland habitats at the site were assessed to be of Local Importance. A significant impact is unlikely given that the larger area will be retained in the north and the loss in the north west considered to be a minor adverse impact locally.

Broad-leaved semi-natural woodland

- 10.87. The layout plan indicates the Proposed Development will result in the direct loss of a number of trees within the small woodland parcel/copse at the centre of the site to accommodate an access road. This will result in the loss of trees (T1, T403, T404, T407, T408, T409, T412 and G5) including a woodland area of approx. 325m², equating to 10% of the existing woodland copse cover. A selection of trees will also be lost along the narrow woodland corridor located along the boundary to grounds at Tyn Y Caeau (including trees; T427 – T431 and G17). Overall, an area of approx. 645m² of woodland cover will be lost during the construction phase, equating to 10% of the existing woodland cover across the entire Application Site (approx. 6500m²). Woodland habitats at the site were assessed to be of Local importance. The direct loss of trees, in the absence of mitigation, is unlikely to result in a significant adverse impact (i.e. 10% loss) although will result in a minor adverse short-term impact at the local scale. Other potential impacts include the spread of invasive species (i.e., Japanese Knotweed) in the absence of appropriate control measures/mitigation.

Dense/continuous scrub

- 10.88. The site contains some sparsely distributed areas of dense scrub, which were considered to be of importance within the context of the Site only. The construction phase of the Proposed Development is likely to result in the direct loss of most of the scrub habitat and a significant adverse impact is certain, which in the absence of mitigation, will result in a Moderate adverse impact locally.

Defunct species-rich hedgerow

- 10.89. A defunct species-rich hedgerow separates the northern and southern field parcels at the site. The construction phase of the Proposed Development will require the removal (direct loss) of a short section of this hedgerow at separate points at the eastern and western extents to accommodate the site access roads (approx. 35 linear metres). The retention of the majority of the hedgerow in a continuous length (existing length approx. 120m so loss of approximately 29%) is such that a significant impact is unlikely although, in the absence of mitigation, a minor adverse impact is likely at the local scale.

Species-rich hedgerow with trees

- 10.90. Access to the Proposed Development will utilise pre-existing gaps within the species-rich hedgerow with trees along the southern boundary. It is unlikely that there will be any direct loss of these hedgerow habitats both here and along the eastern boundary. On this basis, a significant impact is unlikely with a Neutral impact probable resulting from the construction phase.

Amphibians

- 10.91. The habitats at the site were considered to be of importance for amphibians at a scale within the immediate zone of influence. Potential impacts to amphibians during the construction phase of the Proposed Development include an increased risk of injury or mortality from construction activity and the direct loss of foraging habitats and resting places which were primarily associated with hedgerow, woodland and grassland habitats (in the north and north west). The majority of the grazed grassland at the site was considered generally unsuitable for amphibians and consequently, a significant adverse impact is unlikely. However, in the absence of mitigation, a short-term minor adverse impact at the local level is certain.

Badger

- 10.92. The use of the site by foraging and commuting badgers cannot be precluded and was assessed to be of importance at a scale within the immediate zone of influence. Potential impacts to badgers during the construction phase include an increased risk of injury or mortality from construction activity and the direct loss of foraging habitats (i.e., grassland and woodland). Given that no evidence of use by Badgers was noted during the surveys and use is likely to be occasional/irregular, a significant adverse impact is unlikely. However, loss of foraging areas and risk of injury/mortality is such that short-term minor adverse impact at the local level is probable.

Bats – foraging/commuting

- 10.93. The habitats at the site were assessed to be of importance at the County level for foraging and commuting bats. The majority of foraging habitats and linear features at the site will be retained, however, the construction phase of the Proposed Development will result in the direct loss of trees located within the woodland copse and along the boundary to the grounds

at Tyn Y Caeau. The survey work established the use of these sections of the site by at least 7no. different bats species including small/individual numbers of light sensitive species such as Lesser Horseshoe bat and Myotis bats. Potential impacts to foraging/commuting bats during the construction stage will include the direct loss of habitats and fragmentation of habitats. Retention of the majority of commuting/foraging areas is such that a significant adverse impact is unlikely although in the absence of mitigation, a short-term adverse impact at the local scale is certain based on an overall loss of resources and potential fragmentation of habitats for species such as Myotis and Lesser Horseshoe.

Bats – roosting

- 10.94. The survey work identified the presence of a small/individual Pipistrelle day roost within one of the trees located within the woodland copse, assessed to be of Local importance. This tree is to be retained as part of the Proposed Development. However, tree T409 (assessed to have moderate potential to support roosting bats) will be removed. Potential impacts will include a risk of injury or mortality to roosting bats, disturbance to roosting bats (from works in close proximity and the direct loss of habitats (roosting resources). On the basis that tree roosts will be retained a significant impact is unlikely although a short-term minor adverse impact is still considered probable in the absence of mitigation.

Birds

- 10.95. Potential impacts to birds during the construction phase of the Proposed Development include an increased risk of injury or mortality from construction activity and direct loss of habitats. As described for bats, the retention of the majority of existing hedgerow and woodland habitats is such that a significant adverse impact on the bird assemblage is unlikely. In the absence of mitigation, a short-term minor adverse impact is certain at the local level based on an overall loss of resource.

Reptiles

- 10.96. The habitats at the site were considered to be of importance for reptiles at a scale within the immediate zone of influence. Potential impacts to reptiles during the construction phase of the Proposed Development include an increased risk of injury or mortality from construction activity and the direct loss of foraging habitats. Habitat features for reptiles were primarily associated with hedgerow, woodland and grassland habitats (in the north and north west). The majority of the grazed grassland at the site was considered generally unsuitable for reptiles and consequently, a significant adverse impact is unlikely. However, in the absence of mitigation, a short-term adverse minor impact at the local level is certain.

Terrestrial invertebrates

- 10.97. Habitats considered of importance for priority terrestrial invertebrate species (areas of semi-improved neutral grassland to north) will be retained. Other habitat features such as part of the east/west hedgerow in the centre of the site and the woodland copse would be affected by construction of the access road. Retention of the majority of hedgerow, northern

grassland and copse is such that a significant adverse impact on the invertebrate assemblage is unlikely although a minor adverse impact locally is certain due to an overall loss of resource.

Operational phase

- 10.98. The operational phase assumes that all buildings and infrastructure are constructed and functional (including landscape planting as part of the Green Infrastructure (GI) Strategy). As with the consideration of construction impacts, the assessment in this section does not include for specific mitigation measures.

Eglwys Nunydd Reservoir SSSI and SINC

- 10.99. During the operational phase of the Proposed Development no further impacts to the Eglwys Nunydd Reservoir SSSI and SINC are expected. The surface water drainage design⁴ will aim to control the quality of run-off from the site via infiltration and attenuation measures. As such, a neutral impact in the long-term is probable.

Junction 38 Wetland Complex SINC

- 10.100. Similarly to above, based on the drainage design for the Proposed Development no further impacts to the Junction 38 Wetland Complex SINC are expected to occur during the operational phase. A neutral impact in the long-term is probable.

Margam Country Park SINC

- 10.101. Based on the physical separation and barriers between the Application Site and Margam Country Park SINC no adverse impacts on the features of the SINC are considered likely during the operational phase. A neutral impact in the long-term is probable.

Semi-improved neutral grassland

- 10.102. No direct habitat loss is likely during the operational phase of the Proposed Development. However, potential indirect impacts to this habitat could occur via disturbance from increased levels of traffic and people (e.g., dust, litter, trampling), and via a lack of appropriate management (e.g., spread of invasive species and loss of habitat to scrub encroachment). In the absence of appropriate management or mitigation measures, a significant adverse impact is unlikely although a long-term minor adverse impact locally is probable.

Marshy grassland

- 10.103. No further habitat loss is expected during the operational phase of the Proposed Development and there would be no change to hydrology/drainage in the northern part of the site. As above indirect impacts/disturbance to these habitats could occur as a result of increased levels of traffic and people and via a lack of appropriate management. In the

⁴ James & Nicholas LLP (2021) *Margam, Port Talbot – Preliminary Drainage Strategy Report*. Document Ref: 20.62. Dated: 01/10/21

absence of appropriate management or mitigation measures, a significant impact is unlikely although long-term minor adverse impact locally is probable. The masterplan illustrates that 2no. attenuation features are to be provided as part of the scheme and these could mitigate for the loss of existing marshy grassland dependent on the final design – for example if the banks of the attenuation features were to be seeded with a wet grassland mix or left to colonise naturally and managed as marshy grassland.

Broad-leaved semi-natural woodland

- 10.104. No further habitat loss is likely during the operational phase of the Proposed Development and a significant impact is unlikely. Potential indirect impacts to broad-leaved woodland habitats at the Application Site during the operational phase include disturbance associated with increased levels of use by traffic and people (in the absence of dedicated footpaths) such as litter, trampling etc. as well as increased levels of artificial light levels and indirect impacts resulting from a lack of appropriate management (e.g., spread of invasive species). In the absence of mitigation measures, a short-term minor adverse impact is likely at the local level. Once new tree and woodland planting (632m² new woodland mix and 257no. new tree planting), as per the development proposals, becomes established in the medium to long-term this is likely to offset short-term loss of trees and provide a minor/moderate beneficial impact.

Dense/continuous scrub

- 10.105. No further loss of scrub habitats are expected during the operational phase of the Proposed Development. Once new tree and woodland planting becomes established in the medium to long-term (see 10.7.25 above), this is likely to offset any short-term loss of habitats during the initial construction phase resulting in a minor to moderate beneficial impact.

Defunct species-rich hedgerow & Species-rich hedgerow with trees

- 10.106. No further loss of hedgerows habitats are expected during the operational phase with most impacts from resulting from short-term loss during construction. Any short-term loss of hedgerow habitats is likely to be off-set by new hedgerow (approx. 1,273m²/ 305 linear metres) and supplementary planting (approx. 80 linear metres) included in the landscape proposals. As new planting becomes established in the long-term a minor to moderate beneficial impact is probable at the local scale.

Amphibians

- 10.107. In the short-term there will be a direct loss of foraging habitats for amphibians onsite. In the medium to long-term this loss will be offset by new woodland and tree planting and the provision of attenuation features, as per the development proposals, which when established could provide temporary or seasonal habitats for amphibians within the local vicinity. However, in the absence of detailed design and planting mixes, a Neutral impact on amphibians is likely.

Badger

- 10.108. Impacts to badgers during the operational phase of the Proposed Development include an increased risk of injury and mortality associated with traffic levels at the site. However, no setts or evidence to suggest the current use of The Site by badger was found during the survey so this risk is generally considered to be a low. As such although a long-term minor adverse impact is likely, this is not considered to be significant.

Bats – foraging/commuting

- 10.109. Impacts to foraging and commuting bats associated with the operational phase of the Proposed Development include the long-term loss of foraging and linear habitats at the site and habitat fragmentation resulting from an increase in artificial light levels. The surveys identified that the majority of bat activity associated with the site was from Pipistrelle species, which are known to be relatively tolerant of artificial lights. However, Myotis species and Lesser Horseshoe bat were also recorded foraging and commuting across the site, all of which are notably light intolerant species. Any inappropriate site lighting of the currently unlit hedgerows and woodland is likely to have a significant adverse long-term impact on the use of the site by these species. Whilst the direct short-term loss of foraging and commuting habitats are likely to be offset by new tree and shrub planting in the long-term, in the absence of mitigation measures (in particular site lighting) a long-term significant adverse impact is likely at the local scale.

Bats – roosting

- 10.110. Impacts to roosting bats at the site are largely associated with the direct loss of potential roosting resources within trees removed during the construction phase. However, during the operational phase potential impacts include disturbance to roosting bats (known roost in retained tree T422) from increased levels of people and traffic at the site (e.g., artificial light, noise etc.). In the absence of mitigation, a significant adverse impact is unlikely although a long-term minor adverse impact is probable based on an overall loss of resources.

Birds

- 10.111. No further habitat loss for nesting and foraging birds is likely during the operational phase of the development and in the long-term replacement landscape planting will provide a net-gain in resources for the assemblage of scrub and woodland nesting birds identified at the site. A significant adverse impact is unlikely although impacts during the operational phase include an increased risk of injury and mortality associated with increased levels of traffic at the site. Overall, a short-term minor adverse impact is probable until new planting matures, reducing towards minor beneficial in the long-term.

Reptiles

- 10.112. In the short-term there will be a direct loss of foraging habitats for reptiles onsite. In the medium to long-term this loss will be offset by new woodland and tree planting and the

provision of attenuation features, as per the development proposals, which when established could provide new foraging habitats for reptiles within the local vicinity. However, in the absence of detailed design and planting mixes, a Neutral impact on reptiles is likely.

Terrestrial invertebrates

- 10.113. No further habitats loss for terrestrial invertebrates is likely during the operational phase of the development and in the long-term replacement landscape planting and attenuation features will provide resources for the assemblage of invertebrates identified at the site. A significant adverse impact is unlikely although impacts during the operational phase include disturbance to habitats from increased levels of use by people and traffic (see 10.7.23). Overall, a short-term minor adverse impact is probable until new planting matures, reducing towards a minor beneficial impact in the long-term.

Mitigation measures

- 10.114. The Proposed Development has been designed with the existing ecological features of the Application Site in mind and has retained the majority of linear habitat features (hedgerows) and other features of ecological interest (woodland, marshy grassland and semi-improved grassland). In addition to retention of these habitats, the following mitigation and enhancement measures will be implemented as part of the development to minimise the impacts of the development to protected/priority species and via habitat loss or fragmentation.
- 10.115. Mitigation measures for the Proposed Development incorporate the following key features:

Construction Phase

- Vegetation clearance within the site boundary (trees and scrub) to be undertaken outside of the bird nesting season (i.e., clearance possible between September – February);
- Habitats of suitability for common reptiles and amphibians (e.g., fringe grassland) to be cleared via a phased directional process. Works to be undertaken during the active reptile season (between April – September);
- Any large excavations will be covered overnight or a means of escape provided (e.g., rough sawn timber board of 300mm width placed at an angle of $\leq 45^\circ$) to minimise the risk that Badger or any other small mammals that may become trapped;
- Retention of known bat roost (T422) and provision of replacement roosting opportunities onto retained trees;
- Soft felling approach to removal of trees with Moderate and Low potential to support roosting bats (e.g., T409);
- Provision of bird boxes onto retained trees to provide replacement for loss of nesting resource at the site;
- Clear demarcation and/or treatment/removal of invasive species (e.g., Japanese Knotweed);

- Protective measures to safeguard retained habitats and trees to be detailed within a Construction Environmental Impact Plan (CEMP);
- The design of site lighting to minimise artificial light spill onto retained hedgerows and other linear habitat features at the site (in particular the site's eastern boundary to Tyn Y Caeau). These features are to be maintained as 'dark corridors' for bats and other nocturnal wildlife. A guidance note on the impacts of artificial lighting on bats is included in Appendix 10.3; and
- Drainage strategy (Pollution prevention strategy) to minimise potential run-off from the site during construction and operation phases to prevent adverse impacts to designated sites with hydrological connections (i.e., Egwlys Nunydd Reservoir SSSI & SINC). To ensure the delivery of appropriate mitigation measures during the construction phase a CEMP will be prepared by the appointed contractor. The CEMP would be agreed with the Local Planning Authority prior to the commencement of construction works.

Operational Phase

- New hedgerow, tree and woodland planting across the site, to include native species or those with a known biodiversity benefit (approx. 632m² of new woodland, 257no. new tree planting and 1,256m²/ 305 linear metres new hedgerow planting);
- Native wetland planting within attenuation features (approx. 1,228m² wet grassland mix);
- Landscape plan to include approx. 1,022m² new meadow grass mix;
- Management of retained and created woodland as appropriate through selective thinning, coppicing and supplementary planting as well as restricted access via dedicated footpaths, signs and fencing;
- Bird boxes for species such as House Sparrow and Swallow positioned on new office building;
- Management of retained and created hedgerows as appropriate through trimming, hedge laying, coppicing and supplementary planting (approx. 80 linear metres) to improve structural integrity and species diversity;
- Management of retained and created grassland (marshy and neutral grassland and meadow grass mix) as appropriate to maintain structural integrity and species diversity – e.g., grassland to be cut twice on an annual basis (in early spring and once in late summer) with all arisings removed after each cut; and
- Sensitive timings of site lighting during operational phase to minimise artificial light spill onto retained habitats e.g., timing restrictions during summer months when bats are active.
- Surface water quality for site runoff will be managed via infiltration and attenuation measures, through the construction of new SuDS features.

10.116. The measures described above have been devised to retain and protect ecological features of interest at the Application Site, safeguard protected and priority species and habitats and to provide localised biodiversity enhancements (including a net-gain in woodland, hedgerow and tree resources). Delivery of the mitigation & enhancement measures would be

incorporated into a Landscape & Ecological Management Plan (LEMP) for the site to cover both the construction and operational phases of the Proposed Development, the details of which could be secured via a planning condition.

Residual effects

- 10.117. The following section assesses the residual impacts of the Proposed Development on ecological features with mitigation & enhancement measures now taken into account.

Eglwys Nunydd Reservoir SSSI and SINC

- 10.118. A CEMP will be prepared prior the construction phase of the Proposed Development which will include a pollution prevention strategy to minimise indirect impacts to the designated site (i.e. changes to water quality) from potential run-off associated with construction and operational activities. Provided these measures are implemented a significant impact to the SSSI and SINC is considered unlikely with a neutral impact probable during both the construction and operational phase.

Junction 38 Wetland Complex SINC

- 10.119. As above, mitigation measures will be implemented during the construction and operational phase of the Proposed Development to minimise any indirect impacts (i.e., changes to water quality) to the adjacent Junction 38 Wetland Complex SINC from potential run-off. No significant impact is considered likely with a neutral impact probable in both the short and long-term.

Margam Country Park SINC

- 10.120. Given the physical separation (300m west) and barriers (e.g., A48 and M4 carriageway) between the designated site and Application Site. No significant direct or indirect impacts are considered likely to occur to the site and no mitigation measures have been included within the EcIA. A neutral impact is probable is long-term.

Semi-improved neutral grassland

- 10.121. No direct impacts are expected to occur to the areas of semi-improved (SI) neutral grassland during the construction phase. During the operational phase retained areas of SI neutral grassland and created areas of meadow grassland mix (1,022m²) will be managed as to maintain and promote botanical diversity, with limited landscape buffer planting within these areas. Cutting would be undertaken twice a year, once in early spring and once in late summer (with all arisings removed after each cut). Cutting in late summer/ autumn would allow the majority of grass and herb species to flower and set seed and would provide a foraging resource for invertebrate, birds and other wildlife. Access to these areas will also be limited through the provision of dedicated pathways, fencing and signage. Following these measures, a significant (positive) impact is unlikely although in the medium to long-term a localised minor beneficial impact is probable.

Marshy grassland

- 10.122. The larger parcel of existing marshy grassland in the north of the site will be retained and managed to ensure its long-term biodiversity function. The localised loss of marshy grassland in the north west of the site (approx. 390m²) will be offset by the creation of new wetland and marshy grassland habitat within the attenuation features (1,228m²). To promote botanical diversity, cutting (within the retained areas of marshy grassland and along the attenuation basin banks) would be undertaken twice a year, once in early spring and once in late summer (with all arisings removed after each cut). Cutting in late summer/ autumn would allow the majority of grass and herb species to flower and set seed and would provide a foraging resource for invertebrate, birds and other wildlife. Access to the marshy grassland resources at the site will be limited through the provision of dedicated pathways, fencing and signage. Whilst the direct loss of habitats during the construction phase will result in short-term minor adverse impact, following the implementation of mitigation measures (i.e., management of retained and created marshy grassland habitats) this impact will change to a localised minor beneficial impact in the medium to long-term.

Semi-natural broad-leaved woodland

- 10.123. In the short-term the direct loss of woodland and trees during the construction phase of the Proposed Development will result in a minor adverse impact locally on woodland habitats at the site (loss of 10% of woodland cover). Appropriate mitigation measures will be employed during this phase to protect retained trees from construction works, which would be detailed within a CEMP. In the medium to long-term, mitigation measures (appropriate management and dedicated paths) and new woodland and tree planting as part of the landscape proposals (approx. 632m² new woodland and 257no. new tree planting), is likely to reduce this from an adverse impact to a neutral to minor beneficial impact in the long-term as new planting mature.

Dense/continuous scrub

- 10.124. The construction phase of the Proposed Development will likely involve the localised loss of small areas of dense scrub, resulting in a short-term significant moderate adverse impact. New tree and shrub planting as part of the landscape proposals will provide a net-gain in scrub resources and change this to a localised minor to moderate beneficial in the medium to long-term as new planting becomes established.

Hedgerows

- 10.125. The main impacts to hedgerow habitats at the site are associated with the construction phase of the Proposed Development. Two small sections (approx. 35m) of the defunct species-rich hedgerow, separating the northern and southern field parcels, will be lost to accommodate the development design. However, the majority of hedgerow habitats will be retained, with existing gaps used for access (such as along the southern and western boundary). Protection measures in the CEMP will be implemented during construction and other impacts during the operational phase will be mitigated for via new hedgerow (approx. 1,273m² / 305

linear metres) and supplementary planting (approx. 80 linear metres), providing a net-gain in hedgerow resources, and through an appropriate management schedule set out in the LEMP, including trimming, and coppicing. As such, a minor to moderate beneficial impact in the long-term is probable as new hedgerow planting becomes established.

Amphibians

- 10.126. The landscape proposals (woodland, hedgerow and tree planting) in addition to the design of attenuation features for biodiversity benefits (wet grassland mix) will off-set any short-term habitat losses, providing a net-gain in viable habitat resources for amphibians in the long-term resulting in a minor beneficial impact at the local scale.

Badgers

- 10.127. The implementation of appropriate site practice would be adopted as part of the CEMP to minimise risks to Badgers and other wildlife during the construction phase such as covering excavations overnight (or providing means of escape) and the appropriate storage of all chemicals and materials. With adoption of protective measures although there would be an increased risk of injury and mortality associated with traffic during the operational phase. New woodland, hedgerow, grassland and tree planting as part of the landscape proposals are likely to provide replacement foraging resources for Badgers in the long-term. On this basis, whilst a minor adverse impact is considered probable in the short-term, this is likely to change to a Neutral impact in the long-term as new planting becomes established.

Bats – foraging/commuting

- 10.128. The majority of linear habitat features at the Application Site will be retained and incorporated as part of a Green Infrastructure (GI) network. Vegetation clearance works will be undertaken outside of the nesting bird season which will also coincide with a time when bats are less active. As such a minor adverse impact in the short-term is likely.
- 10.129. Any short-term loss of foraging and commuting habitats at the site is will be off-set in the medium to long-term by new woodland, hedgerow and tree as part of the landscape proposals, which will provide a net-gain in foraging and commuting resources for bats. However, the main impact to bats during the operational phase of the Proposed Development will be associated with the design of site lighting. Although the survey work established that the majority of bat activity associated with Application Site was from Pipistrelle species (known to be relatively tolerant of artificial lights) a small number of Myotis species and Lesser Horseshoe bats were also recorded, all of which are notably light intolerant species. Any inappropriate site lighting of the currently unlit linear habitat features is likely to have a significant adverse long-term impact on the use of the site by these species. This impact will be mitigated for via sensitive lighting design where artificial light spill onto retained habitats will be minimised as far as practicable. This will include the appropriate positioning of lightning columns, the use of directional or cowled lanterns, buffer hedgerow planting and other control measures such as dimming, motion controlled or switching off lights at sensitive times for bats (e.g., summer months). On the basis that there will be a net-

gain in foraging/commuting resources and the measures described above are implemented a significant impact is not considered likely, reducing to a neutral or minor beneficial impact in the long-term.

Bats – roosting

- 10.130. A small/individual Pipistrelle day roost was identified within T422 within the woodland copse, assessed to be of Local importance. This tree will be retained as part of the Proposed Development. However, there is potential for disturbance from increased levels of noise, traffic etc. associated with construction activities. The Proposed Development will also result in the loss of a small number of trees within the woodland copse, one of which (T409) was assessed to be of moderate potential to support roosting bats (no positive emergence or re-entry confirmed during survey work). A soft felling approach (or pre-works potential roost inspection PRF survey) will be undertaken for the removal of this tree to minimise any risks to roosting bats that may be present. A short-term minor adverse impact is likely, not considered to be significant. In the medium to long-term the loss of these resources are not considered to have a significant impact on the availability of roosting locations for local bat populations – there are several other mature trees within the woodland copse (not impacted the development) with potential roost features for crevice dwelling bats and replacement bat boxes will be installed on retained trees as part of the mitigation proposals. As such a neutral long-term impact is likely.

Birds

- 10.131. The habitats at the site were considered likely to support a small range of foraging and nesting bird species, none of which were considered likely to be of conservation significance, with habitats assessed of being of importance in the context of the site only. The construction phase of the Proposed Development will result in localised direct loss of foraging and nesting habitats. Mitigation measures (vegetation clearance to avoid the nesting bird season) will be implemented to safeguard nesting birds during this phase. As such a minor adverse impact is likely, not considered to be significant. New woodland, hedgerow and tree planting as part of the landscape proposals (net-gain in habitats) and the provision of replacement nesting resources (nest boxes on retained trees and on non-industrial buildings such as the offices) will offset this loss in the medium to long-term reducing this impact to minor beneficial.

Reptiles

- 10.132. Mitigation measures (including a sensitive approach to vegetation clearance) will be undertaken to safeguard reptiles that may be present during the construction phase as part of the CEMP. The landscape proposals (woodland, hedgerow and tree planting) in addition to the design of attenuation features for biodiversity benefits (wet grassland mix) will off-set any short-term habitat losses, providing a net-gain in viable habitat resources for reptiles in the long-term resulting in a minor beneficial impact at the local scale.

Terrestrial invertebrates

10.133. The majority of habitats considered of importance for priority terrestrial invertebrate species will be retained during the construction phase of the Proposed Development (e.g., semi-improved neutral grassland and marshy grassland), resulting in a minor adverse impact. The development proposals include new woodland, hedgerow and tree planting as well as the design of attenuation features to include native wet grassland seeding, which will provide more foraging resources for invertebrates post-development. During the operational phase retained and created areas of semi-improved neutral grassland, marshy grassland and meadow grass seeding will also be managed as to maintain and improve botanical diversity. As such, a localised minor beneficial impact is likely in the medium to long-term.

Cumulative effects

10.134. This section of the ES will consider the combined and cumulative effects of the Proposed Development with the effects of other committed developments on important ecological features identified above. Cumulative effects are those effects that result from changes caused by proposed or reasonably foreseeable projects within the locality of a site or proposed project when assessed with the effects of the Proposed Development. For the cumulative effects assessment, the following application/site is considered of relevance:

Table 10.11: Applications/considered for the cumulative effects assessment.

Site Name/ Application Reference	Proposal
Tyn Y Caeau, Margam Road, Port Talbot, SA12 2NW – Appeal Ref. 3263628 Application Ref. P2020/0601	Change of use from dwelling house and annex building into a mixed used development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces. The proposal includes the demolition of an existing single storey rear extension, and the erection of a single-storey rear extension, together with widened site access, additional internal access roads, parking areas and associated works. (Bat survey and mitigation submitted 18/09/2020)

10.135. The proposal described above is unlikely to have any adverse impacts on the ecological features identified at the Application Site. Mature trees located along the on the boundary of

the Application Site to Tyn Y Caeau are to be retained under the proposals above with potential impacts to foraging and commuting bats to be mitigated for via sensitive site lightning.

- 10.136. The bat roost mitigation proposals include the provision of a replacement bat house/roost, located along the boundary of Tyn Y Caeau and the Application Site. The bat mitigation house has designed with both crevice dwelling bat species and Lesser Horseshoe Bat (known to be light intolerant) in mind. The Proposed Development has the potential to significantly adversely impact this feature and roosting bats within the local area in the absence of mitigation. The Overall Site Masterplan indicates that an access road will be located in close proximity to the bat mitigation house. Inappropriate design of site lighting along this access road may result in habitat fragmentation and disturbance from artificial light spill onto the structure, leading to a significant adverse impact on roosting bat species using the structure. Mitigation measures as part of the Proposed Development (see 10.7.49) will include the sensitive design of site lighting, in particular along this section of the access road, to ensure artificial light spill is minimised (<0.5 lux) onto sensitive ecological receptors. This will be achieved by a combination of control measures including appropriate positioning of lighting columns, use of hoods or cowls, buffer hedgerow planting and controlled timings of lights (e.g., switching off or dimming lights at sensitive times of the year for bats). With the implementation of these measures, it is unlikely there will be a significant adverse impact on this ecological feature (i.e., roosting bats within the local area).

Limitations and Assumptions

- 10.137. Assessments of impacts made within this chapter are based on the current Overall Site Masterplan (20.62 C02 Rev D) and Green Infrastructure Strategy⁵ which is assumed to be comparable to the final development layout. Where uncertainties arise, in particular with identifying future potential impacts on ecological features, professional judgement was used to draw conclusions and make informed assessments. No particular limitations were identified with the ecology assessment and survey work was undertaken without any significant hindrance.

Summary

- 10.138. **Table 10.12** summarises the impacts to important ecological features during the construction and operation phases of the Proposed Development and relevant mitigation measures. Impacts are reported in the table to both align with the significance criteria as per the CIEEM guidelines (**Table 10.3**) as well as the significance matrix described in **Table 10.4** to fit with assessments included in other chapters of the ES.

⁵ Soltys Brewster Consulting (2022) Land off Junction 38, M4, Margam – GI and Strategic Landscape Plan. Drawing Ref: 2181102-SBC-00-XX-DR-L-001 [PL02]

Ecosystem resilience

- 10.139. An assessment of the Ecosystem Resilience, based on the framework included in The State of Natural Resources Report (SoNaRR, 2020⁶), has been undertaken for the Proposed Development and is intended to supplement the EclA. The 2020 SoNaRR report defines ecosystem resilience as *'the capacity of ecosystems to deal with disturbances, either by resisting them, recovering from them, or adapting to them, whilst retaining their ability to deliver services and benefits now and in the future'*. The assessment of ecosystem resilience is based on four attributes: Diversity, Extent, Condition and Connectivity. Each attribute is assigned a value of Good, Moderate or Poor for the purposes of assessing resilience or adaptability. The SoNaRR framework also identifies measures for improving each of these attributes e.g., management of woodland or grassland to improve structural and species diversity.
- 10.140. The SoNaRR framework includes a broad range of ecosystem types (not specific habitat types) with those of relevance to the Application Site including Semi-natural grassland (i.e., areas of marshy grassland and semi-improved neutral grassland at the site), enclosed farmland (including improved grassland and hedgerows) and Woodlands (both planted and semi-natural broad-leaved woodland).
- 10.141. The assessment of ecosystem resilience has been based on assessment of the development impacts and mitigation measures described above and the information included in the Overall Site Layout Masterplan and GI and Strategic Landscape Plan.

Semi-natural grassland

- 10.142. The semi-natural grassland ecosystem includes a combination of separate habitat features identified at the site including marshy grassland and semi-improved neutral grassland. The Proposed Development will initially involve the direct loss of semi-natural grassland ecosystem, with a small reduction in the extent of marshy grassland at the site (approx. 390m²). Mitigation and landscape proposals will include the creation of new areas of grassland including approx. 1,228m² of wetland grass seeding (within attenuation features) and 1,022m² of meadow grass seeding, which will provide a net-gain in the extent of semi-natural grassland in the long-term. Other measures include an appropriate management strategy (e.g., cutting regime) for retained and created areas of grassland with the aim of improving the existing habitat diversity and condition.

Enclosed farmland

- 10.143. As above, the enclosed farmland ecosystem encompasses several different habitat features at the Application Site which have been assessed separately within the EclA. Habitat features of relevance include improved grassland, poor semi-improved grassland (included in this category due to main land use i.e., grazing livestock) and hedgerows. The areas of

⁶ Natural Resources Wales (2020) State of Natural Resources Report (SoNaRR): Assessment of the Achievement of SMNR Aim 2: Ecosystems are Resilient to Expected and Unforeseen Change. Natural Resources Wales.

improved grassland and species-poor semi-improved grassland were considered of limited ecological value (poor diversity and condition) and assessed to be of negligible importance and importance within the immediate zone of influence, respectively. These habitats will form the majority of the development area, meaning a significant reduction in their extent locally. Given the wide extent of improved grassland habitats at a broader geographical scale the overall resilience of this habitat is unlikely to be influenced by the development proposals.

- 10.144. The hedgerow habitats at the Application Site will form the basis of the green-infrastructure corridor. Short-term reductions in hedgerow extent (approx. 35m) will offset by the creation of new native hedgerows (approx. 1,273m² / 305 linear metres) and supplementary planting within defunct hedges (approx. 80 linear metres) as part of the GI strategy, which will provide a net-gain in habitat resources and improve the extent and connectivity of the ecosystem at the Application Site. In addition, an appropriate habitat management schedule (e.g., trimming, coppicing) will be implemented to improve the diversity and condition of existing and created hedgerows.

Woodland

- 10.145. The Application Site supports semi-natural broad-leaved woodland (and scattered trees) assessed to be of local importance. Whilst a small extent of woodland cover (645m²) will be lost to accommodate the development design, the GI strategy will feature 632m² of new woodland and 257no. new tree planting (including mixture of native tree species) which will improve the extent and connectivity of woodland cover at the Application Site. In addition, a habitat management schedule will be implemented to improve the diversity and condition of retained and created woodland habitats.
- 10.146. Overall, the GI Strategy and other mitigation measures included in the EcIA are considered to be appropriate in terms of improving the attributes of the relevant ecosystems identified at the Application Site, and in combination with an appropriate habitat management schedule for existing (retained) grassland, woodland and hedgerow and new meadow/wet grassland seeding would aim to maintain and improve the Diversity, Extent, Condition and Connectivity, and overall Resilience, of these ecosystems in the long-term.

Table 10.12: Summary of impacts, mitigation measures and residual impacts during the construction and operational phase of the Proposed Development.

Potential effect	Significance (pre-mitigation)	Mitigation measures	Significance (residual effect)
Construction phase			
Eglwys Nunydd Reservoir SSSI and SINC	Minor adverse impact likely in the short term. Significant impact unlikely. [Minor adverse]	Measures implemented under the CEMP to minimise potential surface water run-off from construction activities into designated site via hydrological inks.	Neutral impact. No significant impact. [Negligible]

Potential effect	Significance (pre-mitigation)	Mitigation measures	Significance (residual effect)
Junction 38 Wetland Complex SINC	Minor adverse impact likely in the short term. Significant impact unlikely. [Minor adverse]	Measures implemented under the CEMP to minimise potential surface water run-off from construction activities into designated site via hydrological inks.	Neutral impact. No significant impact. [Negligible]
Margam Country Park SINC	Neutral impact. No significant impact. [Negligible]	-	Neutral impact. No significant impact. [Negligible]
Poor semi-improved grassland	Major adverse impact likely in the short-term. Significant impact certain. [Major adverse]	Retention of grassland areas of greater ecological importance.	Major adverse impact likely in the short-term, to persist in long-term. Significant impact certain. [Major adverse]
Semi-improved neutral grassland	No adverse impact during construction phase. Neutral impact. [Negligible]	Retention of grassland. Measures implemented under the CEMP to limit dust and other pollutant spill to retained areas of neutral grassland habitats.	No adverse impact during construction phase. Neutral impact. [Negligible]
Marshy grassland	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Retention of majority of marshy grassland. Measures implemented under the CEMP to limit dust and other pollutant spill to retained areas of marshy grassland habitats.	Minor adverse impacts likely locally in the short-term. Significant impact unlikely [Minor adverse]
Broad-leaved semi-natural woodland	Minor adverse impact likely locally in the short-term. Significant impact unlikely. [Major adverse]	Retention of majority of woodland habitats. Measures implemented under the CEMP to protect retained trees.	Minor adverse impact probable in the short-term. Significant impact unlikely. [Minor adverse]
Dense/continuous scrub	Moderate adverse impact likely locally in the short-term. Significant impact probable. [Moderate adverse]	-	Moderate adverse impact likely locally in the short-term. Significant impact probable. [Moderate adverse]

Potential effect	Significance (pre-mitigation)	Mitigation measures	Significance (residual effect)
Hedgerows	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Retention of majority of hedgerow habitats. Measures implemented under the CEMP to protect retained sections of hedgerow.	Minor adverse impacts likely locally in the short-term. Significant impact unlikely [Minor adverse]
Amphibians	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Phased directional vegetation clearance.	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]
Badgers	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Good practice construction site rules (e.g., covering open excavations overnight)	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]
Bats – foraging and commuting	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Vegetation clearance (tree and scrub removal) to be undertaken during winter period when bats are less active	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]
Bats - roosting	Minor adverse impact likely in the short-term. Significant impact unlikely. [Minor adverse]	Retention of known bats roosts. Provision of new bat boxes onto retained trees. Soft felling approach to removal of trees with potential to support roosting bats	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]
Birds	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Vegetation clearance to be undertaken outside of the nesting bird season. Provision of replacement nest boxes onto retained trees.	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]
Reptiles	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Phased directional vegetation clearance.	Adverse impact probable locally in the short term. Significant impact unlikely [Minor adverse]
Terrestrial Invertebrates	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Habitats of importance for priority invertebrate species to be retained.	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]

Potential effect	Significance (pre-mitigation)	Mitigation measures	Significance (residual effect)
Operational phase			
Eglwys Nunydd Reservoir SSSI	Neutral impact in the long-term. No significant impact. [Negligible]	Surface water quality for site runoff will be managed through the construction of new SuDS features.	Neutral impact in the long-term. No significant impact. [Negligible]
Junction 38 Wetland Complex SINC	Neutral impact in the long-term. No significant impact. [Negligible]	Surface water quality for site runoff will be managed through the construction of new SuDS features.	Neutral impact in the long-term. No significant impact. [Negligible]
Margam Country Park SINC	Neutral impact. No significant impact. [Negligible]	-	Neutral impact. No significant impact. [Negligible]
Poor semi-improved grassland	[Negligible]	No habitat remaining.	[Negligible]
Semi-improved neutral grassland	Minor adverse impact likely locally in the long-term. Significant impact unlikely [Minor adverse]	Creation of new grassland areas (1,022m ² meadow grass mix). Appropriate long-term management of retained neutral grassland habitats	Minor beneficial impact locally in the long-term [Minor beneficial]
Marshy grassland	Minor adverse impact likely locally in the long-term. Significant impact unlikely [Minor adverse]	Creation of new habitats within attenuation basins (approx. 1,228m ² wet grassland mix). Appropriate long-term management of retained and created marshy grassland habitats	Minor beneficial impact probably locally in the long-term. Significant impact unlikely [Minor beneficial]
Broad-leaved semi-natural woodland	Minor adverse impacts likely in the long-term. Significant impact unlikely [Minor adverse]	New woodland (632m ²) and tree planting (257no.). Appropriate long-term management of retained and created woodland and tree/shrub habitats. Dedicated footpaths.	Minor beneficial impact probable locally in the long-term. Significant impact probable. [Minor beneficial]
Dense/continuous scrub	Neutral impact (no habitat remaining). No significant impact. [Negligible]	New woodland and tree planting to provide net-gain in scrub resources post-development.	Moderate beneficial impact probable locally in the long-term. Significant impact probable. [Moderate beneficial]

Potential effect	Significance (pre-mitigation)	Mitigation measures	Significance (residual effect)
Hedgerows	Minor adverse impact likely locally in the long-term. Significant impact unlikely [Minor adverse]	New hedgerow planting (1,273m ² / 305 linear metres) and supplementary tree planting (80 linear metres). Appropriate long-term management of created and retained hedgerows.	Moderate beneficial impact probable locally in the long-term. Significant impact probable. [Moderate beneficial]
Amphibians	Minor adverse impact likely locally in the long-term. Significant impact unlikely [Minor adverse]	New foraging/breeding habitats including woodland, hedgerow and tree planting with meadow grass seeding and wet grass seeding within attenuation basins.	Minor beneficial impact probably locally in the long-term. Significant impact unlikely [Minor beneficial]
Badgers	Minor adverse impact likely locally in the long-term. Significant impact unlikely [Minor adverse]	Replacement foraging habitats including native woodland, hedgerow, tree and grassland planting.	Neutral impact. No significant impact. [Negligible]
Bats – foraging and commuting	Major adverse impact likely in the long-term. Significant impact likely [Major adverse]	New woodland, hedgerow and tree planting to replace short-term loss of habitats and provide net-gain in foraging/commuting resources. Sensitive design of site lighting to minimise artificial light spill onto retained and created 'dark corridors' and linear habitat features.	Minor beneficial impact likely in the long-term. Significant impact unlikely [Minor beneficial]
Bats - roosting	Minor adverse impact likely locally in the long-term. Significant impact unlikely [Minor adverse]	Provision of replacement bat boxes onto retained trees.	Negligible impact in long-term. [Negligible]
Birds	Minor adverse impact likely locally in the long-term. Significant impact unlikely [Minor adverse]	New woodland, hedgerow, tree and grassland planting. Provision of replacement bird nest boxes	Minor beneficial impact likely in the long-term. Significant impact unlikely [Minor beneficial]

Potential effect	Significance (pre-mitigation)	Mitigation measures	Significance (residual effect)
Reptiles	Minor adverse impact likely locally in the long-term. Significant impact unlikely [Minor adverse]	New foraging habitats including woodland, hedgerow and tree planting with meadow grass seeding and wet grass seeding within attenuation basins.	Minor beneficial impact probably locally in the long-term. Significant impact unlikely [Minor beneficial]
Terrestrial Invertebrates	Minor adverse impact likely locally in the short-term. Significant impact unlikely [Minor adverse]	Appropriate management of retained habitats (areas of neutral and marshy grassland) of importance for priority invertebrate species. Creation of new habitats in form of meadow and wet grass seeding, woodland, hedgerow and trees	Minor beneficial impact probably locally in the long-term. Significant impact unlikely [Minor beneficial]

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11. TRANSPORT

Introduction

- 11.1 This chapter has considered the potential significance of environmental effects of the Proposed Development with respect to traffic and transport on the highway network. This is in relation to traffic generated during the construction and operation of the Proposed Development.
- 11.2 Full details of the Proposed Development are presented in Chapter 4 of this ES, which sets the basis against which this assessment has been conducted.
- 11.3 In summary, the Proposed Development would be accessed from two locations onto an unnamed unadopted highway from its northern boundary. Both accesses would be suitable for accommodating all vehicle movements. Four car parking areas would be provided which can accommodate 170 parking spaces. The Proposed Development would employ 150 full-time equivalent (FTE) staff on both shift and standard working patterns. It is also forecast that there would be between c.2-10 HGV vehicle movements per day.
- 11.4 This chapter includes an overview of the methodology for the description of baseline conditions, consideration of the traffic and transport construction and operational effects and the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual environmental effects which remain after these measures have been employed.
- 11.5 This assessment has been undertaken by Apex Transport Planning Ltd.
- 11.6 A Transport Assessment (TA) has been completed as part of the planning application which presents an assessment of the impact of the Proposed Development on the network in relation to highway capacity and operation, road safety and sustainable connectivity. A Travel Plan (TP) has also been produced for the planning submission to promote and encourage sustainable transport to and from the site. The TA should be read in conjunction with this chapter and is provided in **Appendix 11.1**.
- 11.7 This assessment and the TA have been prepared in liaison with NPTCBC and Welsh Government (WG).

Legislation and Policy Context

Context

- 11.8 New development should accord with national and local transport policies and government advice. Therefore, this section identifies the transport and highway Development Plan policies that are relevant in this case.

National Policy Context

- The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (the 'EIA Regulations')

11.9 These Regulations impose procedural requirements in relation to the granting of planning permission under the Town and Country Planning Act 1990.

- Planning Policy Wales 11 (PPW11)

11.10 PPW11 provides overarching Welsh Government policies with transport policies set out in Section 4.1.

11.11 This states that the planning system must ensure it enables integration:

- within and between different types of transport;
- between transport measures and land use planning;
- between transport measures and policies to protect and improve the environment; and
- between transport measures and policies for education, health, social inclusion and wealth creation.

11.12 This also states in paragraph 4.1.10 “The planning system has a key role to play in reducing the need to travel, particularly by private car, and supporting sustainable transport, by facilitating developments which:

** are sited in the right locations, where they can be easily accessed by sustainable modes of travel and without the need for a car*

** make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.”*

11.13 At paragraph 4.1.56, PPW11 advises that Transport Assessments are an important mechanism for setting out the scale of anticipated impacts that a proposed development is likely to have. They assist in helping to anticipate the impacts of development so that they can be understood and catered for appropriately.

- Technical Advice Note 18: Transport (TAN18)

11.14 This sets out how land use and transport planning should be integrated and how transport impacts should be assessed and mitigated. *TAN 18* states that Transport Assessments should be incorporated into Environmental Statements where the transport impacts of an application are ‘significant’ within the scope of the *Town and Country Planning (Environmental Impact Assessment (England and Wales) Regulations (SI 1999 no.293)* (Ref 10-3), ‘the EIA Regulations’.

Local Policy Context

- Neath Port Talbot County Borough Council – Local Development Plan 2011-2016 (LDP)

11.15 The LDP was adopted in January 2016 and guides future development and land use in NPTCBC until 2026. The LDP strategy aims to reduce greenhouse gas emissions, encourage healthy, active and safer lifestyles, deliver sustainable communities and maximise accessibility. The following objectives are included for achieving sustainable accessibility;

- OB 21: Increase accessibility, promote active travel and encourage a shift to more sustainable modes of transport for people and freight; and
- OB 22: Reduce impacts of traffic growth and congestion and promote the efficient and effective use of the transport network.

11.16 Policy TR2 relates to the Design and Access of New Development, it states that development proposals will only be permitted where all of the following criteria, where relevant, are satisfied;

1. The development does not compromise the safe, effective and efficient use of the highway network and does not have an adverse impact on highway safety or create unacceptable levels of traffic generation;
2. Appropriate levels of parking and cycling facilities are provided and the access arrangements for the site allow for the safe manoeuvring of any service vehicles associated with the planned use;
3. The development is accessible by a range of travel means, including public transport and safe cycle and pedestrian routes; and
4. Transport Assessments and Travel Plans are provided for developments that are likely to create significant traffic generation.

Assessment Methodology

Consultation

11.17 The identification of the baseline conditions and assessment of significant effects on transport and access have been based on the findings of the TA. The assessment has been undertaken consistent with pre-application consultation discussions with NPTCBC as the local highway authority and WG. These discussions have been set out in the TA.

Sources of Information

11.18 Alongside the consultation and scoping discussions with NPTCBC and WG, the assessment undertaken within the TA has informed this Chapter. The TA has used additional sources of information and best practice guidance including: WG Active Travel (Wales) Act 2013, Manual for Streets 1 and 2, the NPTCBC Parking Standards SPG, Chartered Institution of Highways and Transportation (CIHT) Planning for Walking, CIHT Guidelines for Providing for Journeys on Foot and the Department for Transport (DfT) LTN1/20 Cycle Infrastructure Design.

11.19 Table 1 summarises the sources of baseline information and the nature of the baseline information obtained.

Source	Baseline Information Requested / Obtained
First Group	Public transport timetable and route information
NPTCBC	Public transport, cycling and active travel information
PCC Traffic Information Consultancy Limited	Turning count traffic data for two junctions
DfT	Traffic link flow data and road safety statistics (accessed through Crashmap)
TRICS	Trip Rate Information
Office for National Statistics	2011 Census Journey to Work information
DfT	Trip End Model Presentation Programme (TEMPRO) – Growth Rates

Table 1 - Transport and Access Assessment - Baseline Information

Best Practice Guidance

- 11.20 An assessment of environmental effects has been carried out in accordance with the 'Guidelines for the Environmental Assessment of Road Traffic' (1993) published by the Institute of Environmental Assessment (IEA, now IEMA). It has also considered, where appropriate, the DMRB, in particular LA104. These documents provide accepted methodologies for the appraisal of the environmental effects of transport.
- 11.21 The IEMA guidelines have been used to gauge the significance of the changes in environmental conditions caused by an increase in road traffic. These set out an initial screening test for determining whether a development would have a potential significant effect (or not). If so, they then suggest factors to be considered when determining the magnitude and significance of the environmental effects of development proposals.
- 11.22 The IEMA Guidelines make it clear that a "critical feature of Environmental Assessment is determining whether a given impact is significant." Further, "for many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor backed up by data or quantified information whenever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact".
- 11.23 DMRB LA104 provides guidance for determining the significance of environmental effects. It provides guidance for the significance of the effect which is formulated as a function of the receptor or resource environmental value (or sensitivity) and the magnitude of project impact (change).

Assessment Process

- 11.24 The Chapter includes a study of effects on existing junctions, links and vehicular access points within the defined study area as agreed for the TA with NPTCBC. The effects would arise from an increased travel demand on routes leading to and from the Site. Consideration is given to the effects on public transport, pedestrians, cyclists and equestrians where appropriate.
- 11.25 The approach outlined as follows has been followed within this chapter to establish the likely significant effects, identify outline mitigation measures and assess likely residual effects:
- Consideration of best practice / guidance

- Professional judgement
 - Consideration of baseline information
 - Consideration of the Proposed Development
 - Prediction of potential effects considering baseline information and Proposed Development details
 - Identification of likely significant effects based on best practice, guidance and professional judgement;
 - Identification of appropriate mitigation measures; and
 - Prediction of residual effects based on baseline information, the Scheme details and mitigation measures.
 - Identification of any cumulative effects.
- 11.26 The IEMA guidelines have been used to gauge the significance of the changes in environmental conditions caused by an increase in road traffic. These set out an initial screening test for determining whether a development would have a potential significant effect (or not). If so, they then suggest factors to be considered when determining the magnitude and significance of the environmental effects of development proposals.
- 11.27 An assessment of the significance of environmental effects would consider the following.
- 11.28 **Magnitude:** The expected traffic generation would be quantified and assessed against anticipated background traffic flows to forecast the anticipated percentage increases in total vehicles and HGVs on each key link in the study area.
- 11.29 **Duration** of increased traffic volumes associated with the Development – for example, the timescales involved for the construction programme;
- 11.30 **Reversibility** of the effect of traffic associated with the Development;
- 11.31 **Highway characteristics** including road classification, existing traffic flows and road geometries of the highway sections; and
- 11.32 **Sensitive receptors:** Areas along the highway routes that could be sensitive to changes in traffic/HGV volumes would be identified. Sensitive areas are defined by the presence of sensitive receptors, such as hospitals, community centres, conservation areas, schools or colleges or public rights of way or areas that accommodate high levels of walking and cycling movements.

Screening Process

- 11.33 In order to limit the scale and extent of an assessment, the IEMA Guidelines suggest a screening process. The guidelines recommend two thresholds that would normally apply before the environmental effects of increases in traffic need to be looked at in more detail.
- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of Heavy Goods Vehicles (HGVs) will increase by more than 30%); and
 - Rule 2: Include any other specifically sensitive areas where traffic flows will increase by 10% or more.

- 11.34 Sensitive areas are defined by the presence of sensitive receptors, such as congested junctions, hospitals, community centres, conservation areas, schools or colleges, accident blackspots, areas of high pedestrian activity or where there are no or narrow footways. The parameters are set out in more detail in Table 3.
- 11.35 The rules are based upon knowledge and experience of environmental effects of traffic and also acknowledge that traffic forecasting is not an exact science. The 30% threshold is based upon research and experience of the environmental effects of traffic, with less than a 30% increase generally resulting in imperceptible changes in the environmental effects of traffic. At a simple level, the guidance considers that projected changes in total traffic flow of less than 10% create no discernible environmental effect, hence the second threshold as set out in Rule 2.
- 11.36 Normally it would not be appropriate to consider links where traffic flows have changed by less than 10% unless there are significant changes in the composition of traffic, such as a large increase in the number of HGVs.
- 11.37 Where increases in traffic flows above the screening levels are predicted, the significance of these effects have been considered against a number of environmental criteria.

Environmental Criteria

- 11.38 The IEMA Guidelines identify a number of traffic related environmental effects that may arise from a Proposed Development. The guidelines acknowledge that not all of the effects listed would be applicable to every development.
- 11.39 If the screening levels are exceeded, the effects which would be considered, are as follows:
- 11.40 **Severance** is the perceived division that can occur within a community when it becomes separated by a major traffic artery. Severance is difficult to measure, and by its subjective nature, is likely to vary between different groups within a single community. In addition to the volume, composition and speed of traffic, severance is also likely to be influenced by the geometric characteristics of a road, the demand for movement across a road, and the variety of land uses and extent of community located on either side of a road. All these factors are considered when determining the likely severance effect.
- 11.41 In general terms, according to the IEMA guidelines, a 30% change in traffic flow is likely to produce a 'slight' change in severance, with 'moderate' and 'substantial' changes occurring at 60% and 90% respectively.
- 11.42 **Driver Delay:** This generally occurs at junctions where vehicle manoeuvres are undertaken and which result in vehicles having to give or receive priority depending upon the junction arrangement. Driver delay could also occur on narrow rural roads if flows are increased (particularly those where it is difficult for vehicles to pass). The site is well positioned to benefit from access to the strategic road network and key links which should assist in relation to minimising driver delay.

- 11.43 Extensive traffic modelling work has been undertaken as part of the TA to understand the impact on delay, queuing and capacity at key junctions and on key links on the surrounding highway network.
- 11.44 **Pedestrian delay:** The delay incurred by pedestrians is generally a direct consequence of their ability to cross roads. Thus the provision of crossing facilities, the geometric characteristics of the road, and the traffic volume, composition and speed are all factors that can affect pedestrian delay and have been considered when assessing this effect. The IEMA guidelines advise that in assessing levels of, and changes in, pedestrian delay, assessors do not attempt to use quantitative thresholds given the range of local factors and conditions which can influence pedestrian delay. Instead, the Guidelines recommend the use of professional judgement to determine whether pedestrian delay is a significant effect. Pedestrian delay has been considered in the context of the change in travel demand generated by the Proposed Development for existing movements as well as the vehicle trip generation resulting from the Proposed Development itself.
- 11.45 Studies quoted within the IEMA guidance have shown (HFA et al, Assessment Methodology Report, The West London Assessment Studies, 1990), that pedestrian delay is perceptible or considered significant beyond a lower delay threshold of 10 seconds for a link with no crossing facilities. A 10 second pedestrian delay in crossing a road broadly equates to a two-way link flow of approximately 1,400 vehicles per hour.
- 11.46 **Pedestrian amenity:** The term pedestrian amenity is broadly defined as the relative pleasantness of a journey. It is considered to be affected by traffic flow, speed and composition, as well as footway width, lighting and quality and the separation/protection from traffic. It encompasses the overall relationship between pedestrians and traffic, including fear and intimidation which is the most emotive and difficult effect to quantify and assess.
- 11.47 The IEMA guidance references the DfT Manual of Environmental Appraisal (1983) which suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its HGV component) is halved or doubled.
- 11.48 **Fear and Intimidation:** Potential effects on pedestrians associated with fear and intimidation caused by increase in volume of traffic and its HGV composition, and the lack of protection caused by factors such as narrow footway widths. There are no commonly agreed thresholds for estimating levels of danger or fear and intimidation, however the IEMA guidelines also suggest the adoption of values from Pedestrian Delay, Annoyance and Risk - Imperial College, Crompton (1981) when considering any effect on pedestrian fear and intimidation. These thresholds are replicated in Table 2. These thresholds can be used as a first approximation of the likelihood of pedestrian fear and intimidation, although other factors need to be considered such as proximity to traffic and footpath widths.

Degree of hazard to pedestrians	Average traffic flow over 18 hour day (vehicles per hour)	Total 18 hour heavy goods vehicle flow	Average speed over 18 hour day (miles per hour)
Extreme	1,800 +	3,000 +	20 +
Great	1,200–1,800	2,000–3,000	15-20
Moderate	600–1,200	1,000–2,000	10-15

Table 2: Pedestrian fear and intimidation thresholds

Source: Pedestrian Delay, Annoyance and Risk - Imperial College, Crompton (1981)

11.49 **Accidents and Safety:** Potential effects on road safety which may occur from potential increases in road traffic accidents. Consideration has been given to the local circumstances, in particular traffic speed, flow and composition, as well as vehicle conflict and pedestrian activity and the potential increases in accidents which could result from the Proposed Development. These factors enable a professional judgement to be made regarding the significance of the effect.

11.50 **Hazardous loads** will not need to be transported during the construction or the operational phases of the Proposed Development and as such these would not be considered further.

Receptor Value / Sensitivity

11.51 Areas along the highway routes that could be sensitive to changes in traffic / HGV volumes have been identified. Sensitive areas are defined by the presence of sensitive receptors, such as hospitals, residential properties, community centres, conservation areas, schools, equestrian facilities or accident black spots. A summary of the receptors to consider is set out in Table 3 based on Paragraph 2.5 of the IEMA Guidelines.

Receptor Sensitivity	Receptor Type
Major	Receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, accident blackspots, retirement homes, urban/residential roads without footways that are used by pedestrians
Moderate	Traffic flow sensitive receptors including: doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities
Minor	Receptors with some sensitivity to traffic flow: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions

Table 3: Transport and Access Assessment - Receptor Sensitivity

11.52 Where a link is considered to be of a major or moderate receptor sensitivity, the 'specifically sensitive' IEMA Rule 2 threshold of a 10% increase in traffic flows has been applied. Otherwise the 30% increase has been applied.

11.53 Where Proposed Development traffic would increase baseline flows at percentages below these thresholds, these links would be below the screening levels at which detailed assessments of significance would be required against the environmental criteria. The effects would therefore be negligible to minor and not significant.

Magnitude of Effect

- 11.54 If the screening thresholds are exceeded, to determine the significance of effect, the magnitude of increase has been determined and compared against the sensitivity of the link. The magnitude of impact has been broadly based upon the following scale for non-sensitive road links (those that fall within Rule 1 of the IEMA Guidance):
- Less than 30% increase in traffic equates to a negligible magnitude of impact
 - Between 30% and 60% increase in traffic equates to a minor magnitude of impact
 - Between 60% and 90% increase in traffic equates to a moderate magnitude of impact
 - Above a 90% increase in traffic equates to a major magnitude of impact
- 11.55 The magnitude of impact has been broadly based upon the following scale for sensitive road links (those that fall within Rule 2 of the IEMA Guidance):
- Less than 10% increase in traffic equates to a negligible magnitude of impact
 - Between 10% and 30% increase in traffic equates to a minor magnitude of impact
 - Between 30% and 60% increase in traffic equates to a moderate magnitude of impact
 - Above 60% increase in traffic equates to a major magnitude of impact
- 11.56 These qualitative percentages provide a broad guide as to the magnitude of impact of traffic flow changes, although professional judgement has also been used considering local factors such as low background traffic flows on links with significant spare capacity.
- 11.57 The definitions of magnitude have been summarised within Table 4.

Magnitude Criteria	Description of Criteria
Negligible	Not noteworthy or material – increases are of low magnitude and frequency. Percentage increase in traffic flows less than 30% and less than 10% in sensitive locations. Average 18 hour traffic flows would increase by less than 600 vehs per hour.
Minor	Noteworthy, material – increases are of minor magnitude and frequency. Percentage increase in traffic flows is between 30% and 60% and between 10% and 30% in sensitive locations. Average 18 hour traffic flows would increase by 600 to 1,200 vehs per hour.
Moderate	Increases are likely to be of a moderate magnitude and frequency with quality standards being exceeded, at times considerably. Percentage increase in traffic flows is between 60% and 90% and between 30% and 60% in sensitive locations. Average 18 hour traffic flows would increase by 1,200 to 1,800 vehs per hour.
Major	Effects will be of a consistently high magnitude and frequency. Percentage increase in traffic flows in excess of 90% and above 60% in sensitive locations. Average 18 hour traffic flows would increase by 1,800 + vehs per hour.

Table 4: Magnitude of Change Criteria

Significance of Effects

- 11.58 As a guide to the potential significance and to establish whether a detailed assessment is required of environmental criteria on a specific link, the magnitude of the traffic flow increase, and the sensitivity of the receptor have been compared to determine the potential overall significance of the effect of an increase in traffic flows. The overall significance has been summarised in Table 5.

- 11.59 Where a potential overall effect is considered of moderate significance or above (or in excess of the screening thresholds), a detailed environmental assessment has been undertaken on that link against each of the environmental assessment criteria. This has established whether or not the Proposed Development has a potential significant adverse effect on any of the assessment criteria.

Magnitude	Major	Minor	Moderate	Major	Major
	Moderate	Negligible	Minor	Moderate	Major
	Minor	Negligible	Negligible	Minor	Moderate
	Negligible	Negligible	Negligible	Negligible	Minor
		Negligible	Minor	Moderate	Major
Sensitivity					

Table 5: Determining the potential overall significance of traffic effect

- 11.60 The determination of the significance of the effects is a judgement as to whether the magnitude and duration of impacts, when combined with the characteristics of the road network and the sensitivity of receptors, would impact at a regional or district scale or are important at the local scale but cumulatively lead to an overall increase in the effects of traffic.
- 11.61 If this is the case, then the effects are considered to be significant with regard to the EIA Regulations. If the effect is likely to be only a local issue or beneath levels of perception, it is considered to be not significant with regard to the EIA Regulations.

Baseline Conditions

Site Location, Use and Access

- 11.62 The site is located approximately 4.5km to the south of Port Talbot centre. It is situated to the northwest of Junction 38 of the M4 and is accessed from an unadopted road which links to the A48 / A4241 roundabout at its northern end.
- 11.63 The site is currently used for agricultural purposes and has a gated access from its southern side onto Heol Cae'r Bont as well as a spur access from the north via the unadopted road. To the immediate west of the site are Margam Green Energy Plant and Western Wood Energy Plant and to the southwest is a further large industrial unit. As such, there are existing industrial units situated within the immediate vicinity of the site.
- 11.64 The site is allocated for employment use in the NPTCBC LDP within Policy EC1/2. This states that the site is allocated for 6 hectares of employment use for B1, B2 and B8 uses. It specifically states that "*The strategic employment allocation at J38 lies to the south of Harbour Way and adjacent to the A48 and M4 and thus benefits from excellent road transport links.*" These links are therefore considered to be a benefit of the Proposed Development, as this will minimise the level of operational traffic through residential or sensitive areas.
- 11.65 As such, movements associated with an employment use have been accepted by NTPCBC through the strategic planning process.

Highway Network

- 11.66 The site is situated to the northwest of Junction 38 of the M4 and is accessed from an unadopted road which links to the A48 / A4241 roundabout. These junctions and roads accommodate a significant level of traffic, including a high level of industrial traffic and HGVs.
- 11.67 The access road linking to the site is an unadopted road which forms the southern arm of a four armed roundabout with the A48 and the A4241 Harbour Way (henceforth known as the 'site access road'). This also provides access to the Margam Green Energy Plant situated to the west of the site. The site access road is a single carriageway with footways on each side. It is 11m wide and designed to accommodate HGVs and incorporates a ghost island right turn lane to each of the spur access provided along its length. Based on the receptor sensitivity within Table 3 it is considered that the site access road is of minor sensitivity.
- 11.68 The A4241 Harbour Way and the A48 are both dual carriageway roads with two lanes in each direction and the A48 provides a direct route linking to the M4 J38. Both of these roads carry high levels of traffic, including HGVs. On the key operational routes from the site to the M4, there are minimal sensitive receptors with a single property access from the A48 to the south of the site access road, however this is set well back from the highway. To the north of the site access road, the A48 passes within 25m of properties on Abbots Close and Tygroes Drive. There is also a footway/cycleway to the west of the carriageway although this is separated from the carriageway with a barrier.
- 11.69 Based on the receptor sensitivity within Table 3 it is considered that the A48 and A4241 are of minor sensitivity.
- 11.70 The section of road adjacent to Tygroes Drive is the northbound on-slip onto the M4 and therefore does not have any pedestrian and cyclist provision. The key routes to and from the M4 are therefore considered to be appropriate for accommodating operational traffic associated with the site.
- 11.71 The majority of traffic generated by the site is likely to use the key strategic routes to and from the M4 and there would be a lower impact on the other local routes.
- 11.72 The A4241 Harbour Way forms a key dual carriageway link which routes to the south of Margam and Port Talbot connecting to industrial areas and Baglan. It also connects to Junction 41 of the M4. This accommodates a high level of traffic, including HGVs.
- 11.73 Other routes to and from the site would accommodate traffic generated by employees to and from the site and would be more residential in nature, such as the A48 Margam Road. The A48 Margam Road is also a wide single carriageway road which is a key route linking Margam to Port Talbot. Based on the receptor sensitivity within Table 3, it is considered that Margam Road is of minor sensitivity.
- 11.74 The M4 and all slip roads onto the M4 are considered to be of negligible sensitivity.

Road Safety

- 11.75 Personal Injury Accident (PIA) data has been obtained from road safety data published annually by the DfT. The statistics provide PIA data which has been recorded using the

STATS19 accident reporting form. The annual dataset is typically released in June each year. As such, the most recently available five-year dataset covers between 1st January 2015 and 31st December 2019. Provisional data from 2020 has also been reviewed.

- 11.76 The study area considered within the analysis covers the local highway network within the vicinity of the site and the M4 Junction 38 and slip roads. Full details of the analysis are set out in the TA.
- 11.77 Over the five-year period there were a total of 21 PIAs within the entire study area. Two of these were fatal, two were classified as serious and 17 were classified as slight injury accidents. One fatal, one serious and one slight incident occurred on the M4 mainline away from the slip roads at J38 and these are not included in the analysis as this section of the M4 would not be utilised by site traffic.
- 11.78 No PIA's occurred adjacent to the site boundary or along the site access road linking to the A48 roundabout.
- 11.79 Four of the incidents involved HGVs, in different locations and all resulted in slight injuries. As such, based on all the analysis and the data available, this does not suggest there is a specific safety issue for HGV routing within the vicinity of the site.
- 11.80 None of the PIA's involved a pedestrian or a cyclist. As such, there is no evidence to suggest there is a safety issue relating to vulnerable road users, at pedestrian crossings or in relation to HGVs.
- 11.81 There were no clusters of four or more PIAs occurring in the same location, therefore no evidence to suggest a re-occurring road safety issue.
- 11.82 Although all incidents are regrettable, the PIAs that occurred do not indicate a specific pattern of issue with the geometry of the highway, particularly for vulnerable road users, that would be exacerbated by the proposals.
- 11.83 The relatively low number of collisions across the five year period, combined with a low severity rating overall, indicates that this large area of Margam and associated junctions and links do not have an inherent road safety issue, that would classify a link with a higher sensitivity.

Traffic Flows

- 11.84 To establish a baseline traffic position on the network against which the Proposed Development can be assessed in terms of junction modelling, surveys were undertaken at the key junctions, as agreed with NPTCBC and WG during scoping discussions.
- 11.85 The two junctions which were considered to require assessment were the site access road / A48 / A4241 Harbour Way roundabout and the M4 J38. Turning count and queue length surveys were commissioned to be undertaken at these two junctions by independent traffic survey specialists (PCC Traffic Information Consultancy).
- 11.86 To establish a baseline traffic position the surveys were carried out at the junctions on Thursday 9th September 2021 between the hours of 0700 – 1000 and 1600 – 1900.

- 11.87 To obtain daily traffic flow link flow data specifically for the assessments in this ES Chapter, two-way flow data has been obtained from the DfT Road Traffic Statistics database. The data has been obtained for the following key links:
1. A48 between J38 and Site Access Road
 2. A48 between Site Access and M4 N Slip Road
 3. M4 N Slip Road
 4. A48 north of M4 N Slip Road (Margam Road)
 5. Harbour Way
 6. Site Access
- 11.88 AADT flow data has been obtained for these links and is considered acceptable when assessing the percentage impact from the Proposed Development, as the flows will be lower than weekday daily flows and therefore the impacts from the Proposed Development would be higher.
- 11.89 The peak hour and 12 hour flows have utilised the DfT Count data using the actual count data between 0800-0900 and 1700-1800 and 0700-1900 which was undertaken in 2015 or 2016. These flows were then factored to 2019 baseline levels using the change in AADT flows between 2015/2016 and 2019 (as AADT data is the only flow data available in all years).
- 11.90 The 2019 flows have then been factored to 2021 levels using TEMPRO growth rates for an average day on all roads for the entire of the NPTCBC area. The growth rate for 2019-2021 is 1.019961. This is considered extremely robust due to the effects of the pandemic, which mean that growth may not have occurred during this period.
- 11.91 The resultant 2021 baseline has been ascertained and used to assess the potential percentage change in flows resulting from the Proposed Development.
- 11.92 The traffic flows on the site access road and the M4 slip roads at J38 have been considered using the obtained turning count data for the AM and PM peak hours and then growthed based on the average factor between combined peak hours and 12 hour / AADT across all the other counts. The site access road has an extremely low baseline flow but has been designed to accommodate significantly higher levels of traffic.
- 11.93 The key links surrounding the site and a summary of the baseline traffic flows is shown in Table 6.

Link No	Highway Link Description	Two-Way Total Vehicles				Two-Way HGVs			
		AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT	AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT
1	A48 between site access road and M4 J38	1695	2429	14689	16663	90	49	1112	1023
2	A48 between the site access road and Margam Road	835	1017	7465	8519	35	17	356	338
3	M4 Nb on-slip	405	361	3257	3979	13	4	149	151
4	Margam Road	746	1029	8194	8969	6	0	195	182
5	Harbour Way	1400	1277	9029	10026	68	28	833	707
6	Site Access Road	17	18	87	97	0	0	8	10
7	M4 Sb on-slip	313	448	2218	2640	44	13	158	159
8	M4 Nb off-slip	554	449	2463	2886	39	17	188	190
9	M4 Sb off-slip	448	289	1677	1949	12	4	47	48

Table 6: 2021 Base Traffic Flows

Connectivity of the site by sustainable modes

- 11.94 A full analysis of the sustainable connectivity of the site is set out in the TA. The key points have been summarised as follows.

Walking and Cycling

- 11.95 At the top of the PPW11 hierarchy is the consideration of active travel (walking and cycling). Walking is the most important mode of travel at a local level and offers the greatest potential to replace short car journeys.
- 11.96 The site is connected by footways which run adjacent to the site access road connecting to the A48 roundabout. These connect to a shared footway / cycleway which routes adjacent to the A48 and this forms part of the Wales Coastal Path. The route crosses the site access road and the A4241 Harbour Way at dropped kerbs with central refuges provided at each crossing. Tactile paving is provided at each crossing to aid movements by people with visual impairments. This crossing is considered suitable and safe to accommodate all movements. The review of road safety data does not show a safety issue in relation to pedestrians and cyclists and as such, there is no evidence that these crossings are unsafe.
- 11.97 The shared footway / cycleway provides a link into Margam and then onto Port Talbot, where footways are provided adjacent to most residential roads. The NPTCBC cycle routes map shows that National Cycle Network Route 4 runs adjacent to the A48 past the site access road, utilising the off-carriageway shared footway / cycleway. This connects with other routes to the north and south of the site on the A48, including connecting to Port Talbot Parkway Rail Station, providing a key cycling link for movements to and from the site.
- 11.98 NPTCBC have produced active travel maps to identify existing suitable routes for walkers and cyclists. The NPTCBC active travel online map shows the active travel routes within the vicinity of the site, as well as cycle routes. This shows the shared footway / cycleway route past the site access road, which links to other cycle routes and active travel routes to the north within Margam, which continue into Port Talbot. The mapping shows that the site has continuous active travel routes connecting to the key local residential areas.

- 11.99 There are no public rights of way which cross any of the key routes within the vicinity of the site.
- 11.100 The active travel routes have been considered appropriate by NPTCBC for walking and cycling. The site is therefore well positioned to benefit from existing and proposed good quality links, which connect to further routes, as well as key local areas. This will encourage potential future employees to walk and cycle to and from the site and reduce the reliance on travelling by car.

Distances

- 11.101 To enable an assessment of the viability of walking between the site and residential areas, it is appropriate to establish the maximum distance that people are generally prepared to walk or cycle for work purposes.
- 11.102 There are a number of publications which suggest guidance for appropriate and acceptable walking and cycling distances. For reference, these have been summarised as follows.
- Welsh Government - Active Travel (Wales) Act 2013: Within the ATADG it is stated within paragraph 4.1.4 that “walking as a mode of travel predominates for journeys of less than two miles whilst cycling is more convenient for longer journeys, typically of up to five miles for regular journeys”. This equates to distances for walking of up to 3.2km and cycling of up to 8km.
 - Department for Transport (DfT) – Manual for Streets (2007): MfS states that ‘walkable neighbourhoods’ are typically characterised by having a range of facilities within 10 minutes walking distance (c. 800 metres) – i.e. this would include employment uses. MfS also acknowledges that this is not an upper limit and references previous planning policy guidance in that it is generally acknowledged that walking offers the greatest potential to replace short car trips, particularly under 2km.
 - CIHT (2015) – Planning for Walking: In relation to shorter trips in particular, (section 2.1) states that across Britain about ‘80% of journeys shorter than 1 mile (1.6km) are made wholly on foot’.
 - CIHT - Guidelines for Providing for Journeys on Foot (2000): suggests preferred maximum distances for commuting journeys are up to 2km.
 - DfT – LTN1/20 Cycle Infrastructure Design (paragraph 2.2.2) – states that “Two out of every three personal trips are less than five miles in length, an achievable distance to cycle for most people” (c.8km).
- 11.103 Based on guidance, it is considered that suitable walking distances could be up to 3.2km. This equates to around a 40-minute walk travelling at 3mph. However, distances of 2km are considered more likely for walking journeys and residential areas within 800 metres are considered to be within ‘walkable neighbourhood’ distances.
- 11.104 A significant proportion of Margam is accessible within a 25 minute walk from the site (c. 2km). This includes Margam Village, the southern half of Margam and Margam Country Park. This shows that there is a potential for employees to be situated within potential walking distance of the site. As such, some employees (and visitors) could travel to the site on foot.

- 11.105 As such, travelling to the site by walking is considered a feasible and realistic option for employees of the site and visitors. There are also already journeys made by walking for work purposes in this area.
- 11.106 It has been assumed that journeys of up to 8km are within an acceptable cycling distance. A cycling journey of 8km would equate to approximately a 25 minute trip.
- 11.107 The entire of Margam is accessible within an appropriate cycling distance in addition to Port Talbot, Sanfields, Baglan Moors, Goytre, Cornelly, Cwmafan and Kenfig. Most of the areas within and around Port Talbot can be accessed by suitable and recommended cycling routes. As such, travelling to the site by cycle is considered a feasible and realistic option for employees of the site.

Public Transport

- 11.108 The closest bus stops to the site are situated within an 800m walk on the A48 to the southeast of the site, adjacent to J38 of the M4. Further stops are available on the A48 Margam Road approximately 1.2km to the northwest of the site. The closest stops are served by the X1 with the stops on Margam Road also served by the 87. Bus shelters, seating and lighting are provided at all stops closest to the site.
- 11.109 The services provide a link into Port Talbot centre within approximately 8-10 minutes. Both of the bus services connect to Port Talbot bus station as well as Port Talbot Parkway Rail Station, both of which offer interchange opportunities to a significant number of other services to wider destinations.
- 11.110 The site is served by buses which connect to Bridgend, Port Talbot and Swansea throughout the day, which provide start and finish times suitable for commuting. As such, travelling by bus would be suitable option for some commuting journeys to and from the site as well as for journeys by visitors.
- 11.111 Port Talbot Parkway Rail Station is situated approximately 4.2km to the northwest of the site. It can be accessed via the cycle routes connecting to the site access road, as well as by bus services 87 and X1. The station provides cycle parking which enables access to and from the station by cycle for employees who wish to leave a cycle at the station.
- 11.112 Port Talbot Rail Station provides services to local and regional destinations. These services include trains routing to/from London Paddington, Manchester Piccadilly, Carmarthen, Milford Haven, Cardiff Central and Swansea. It is a c. 30 minute journey to Cardiff Central from Port Talbot Rail Station.
- 11.113 There are four rail services per hour throughout the day provided within two in each direction from the station.
- 11.114 As such, travelling by rail and cycle (or bus) to the site provides a reasonable alternative for some employees, particularly those travelling longer journeys to the site.

Future Baseline

Growth Rates

- 11.115 In addition to a base year assessment, a future year of 2026 has been assessed, which is five years after the date of the registration of the planning application and in accordance with the end date of the LDP.
- 11.116 To take account of background traffic growth on the local highway network within the vicinity of the site between 2021 and 2026, growth factors have been applied to the obtained 2021 base flow data. These growth factors have been calculated using the TEMPRO computer programme which consider growth in population, employment, and car ownership based on information derived from the National Trip Ends Model (NTEM).
- 11.117 Growth rates within the entire area of NPTCBC have been considered based on all road types. The growth rates have been applied using the same 'average day' factor which is 1.064557.
- 11.118 TEMPRO guidance specifies that the growth factors for individual areas are derived from forecasts at a local authority level which are informed by allocated housing and employment sites within the associated local development plans. As the site is allocated for employment use itself, there would be an element of double counting in the factored background traffic flows through the application of growth rates in addition to the distribution of Proposed Development traffic. For robustness the growth rates within TEMPRO have not been adjusted for the jobs created by the Proposed Development.
- 11.119 In addition, the long term effects of the pandemic on travel behaviour, particularly for commuting are not yet known. There is likely to be an increase in homeworking and reduction in peak hour vehicle movements into the future, particularly with technological and infrastructure improvements and efficiencies. A significant increase in homeworking would also be in accordance with the aspirations of Welsh Government.
- 11.120 As such, the application of unfettered growth rates based on traffic projections, is considered a robust method of obtaining future year traffic flows.

Committed Development

- 11.121 An application was submitted on the adjacent Tyn-Y-Caeau site in July 2020 for a "Change of use from a dwelling house and annex building into a mixed used development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces" (App Ref: P2020/0601).
- 11.122 The application was refused in October 2020 and is the subject of an ongoing appeal. There was a highways objection to the proposals on the basis of highway safety. As the application is proposing lorry parking and a small guest house type development, the level of additional vehicle movements on the network would be minimal and this is not currently a 'committed' development.
- 11.123 There was minimal information provided in the application in relation to transport movements on the network, however it would likely be generating c.50 movements a day from the 16

bedroom accommodation (only around 5 to 6 movements in the peak hours) and the lorry movements would likely be pass-by or diverted trips already on the network.

- 11.124 As such, although the application has been considered within this assessment, the level of trips would be minimal and any increase in background traffic on the network from this scheme (which currently does not have a planning consent) has been assumed to be included within growth rates, as set out in more detail above, particularly given these are considered to be extremely robust.

Future Year Baseline Flows

- 11.125 The 2021 base flows in Table 6 have been growthed to a future year level using the calculated TEMPRO growth rates. The future year 2026 baseline flows can be seen in Table 7.

Link No	Highway Link Description	Two-Way Total Vehicles				Two-Way HGVs			
		AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT	AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT
1	A48 between site access road and M4 J38	1769	2535	15332	17392	94	51	1160	1068
2	A48 between the site access road and Margam Road	872	1061	7791	8891	36	18	372	352
3	M4 Nb on-slip	423	377	3399	4153	14	4	155	158
4	Margam Road	778	1074	8553	9361	6	0	203	189
5	Harbour Way	1462	1333	9423	10465	71	29	870	738
6	Site Access Road	17	18	87	97	0	0	8	10
7	M4 Sb on-slip	313	448	2216	2639	44	13	156	158
8	M4 Nb off-slip	554	449	2462	2885	39	17	185	188
9	M4 Sb off-slip	448	289	1676	1948	12	4	46	47

Table 7: 2026 Baseline Traffic Flows

Potential Effects

- 11.126 This section assesses the potential effects on the individual links within the study area, in the absence of mitigation measures. Measures that have been incorporated into the design of the Proposed Development to minimise any potentially significant effects (the 'embedded design mitigation measures') are outlined in Chapter 4: Project Description and have been considered within this section.

Operational Phase

- 11.127 The Trip Rate Information Computer System (TRICS) version 7.8.1 has been used to derive the predicted trip generation for the Proposed Development. Full details of the trip rates, trip generation and distribution are set out within the TA.
- 11.128 The AM and PM peak flows have been assigned to the network within the appended TA. The 12 hour and daily flows have also been distributed onto the network for this ES Chapter based on the same distribution percentages for light vehicles and HGVs.

11.129 The resultant operational traffic flows, generated by the Proposed Development on the network are shown in Table 8.

Link No	Highway Link Description	Two-Way Total Vehicles				Two-Way HGVs			
		AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT	AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT
1	A48 between site access road and M4 J38	95	85	580	654	1	1	14	14
2	A48 between the site access road and Margam Road	18	61	301	340	1	1	4	4
3	M4 Nb on-slip	13	55	259	292	0	0	4	4
4	Margam Road	5	6	43	48	0	0	0	0
5	Harbour Way	14	16	127	143	0	0	2	2
6	Site Access Road	118	127	1008	1137	2	2	20	20
7	M4 Sb on-slip	9	35	162	183	1	1	5	5
8	M4 Nb off-slip	30	6	160	181	1	1	5	5
9	M4 Sb off-slip	47	9	257	290	0	0	4	4

Table 8: Proposed Development Operational Flows

11.130 The 2021 and 2026 baseline plus Proposed Development traffic flows, are shown in Table 9 and Table 10.

Link No	Highway Link Description	Two-Way Total Vehicles				Two-Way HGVs			
		AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT	AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT
1	A48 between site access road and M4 J38	1790	2514	15269	17317	91	50	1126	1037
2	A48 between the site access road and Margam Road	853	1078	7766	8859	36	18	360	342
3	M4 Nb on-slip	418	416	3516	4271	13	4	153	155
4	Margam Road	751	1035	8237	9017	6	0	195	182
5	Harbour Way	1414	1293	9156	10169	68	28	835	709
6	Site Access Road	135	145	1095	1234	2	2	28	30
7	M4 Sb on-slip	322	483	2380	2823	45	14	163	164
8	M4 Nb off-slip	584	455	2623	3067	40	18	193	195
9	M4 Sb off-slip	495	298	1934	2239	12	4	51	52

Table 9: 2021 Base plus Proposed Development Flows

Link No	Highway Link Description	Two-Way Total Vehicles				Two-Way HGVs			
		AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT	AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT
1	A48 between site access road and M4 J38	1864	2620	15912	18046	95	52	1174	1082
2	A48 between the site access road and Margam Road	890	1122	8092	9231	37	19	376	356
3	M4 Nb on-slip	436	432	3658	4445	14	4	159	162
4	Margam Road	783	1080	8596	9409	6	0	203	189
5	Harbour Way	1476	1349	9550	10608	71	29	872	740
6	Site Access Road	135	145	1095	1234	2	2	28	30
7	M4 Sb on-slip	322	483	2378	2822	45	14	161	163
8	M4 Nb off-slip	584	455	2622	3066	40	18	190	193
9	M4 Sb off-slip	495	298	1933	2238	12	4	50	51

Table 10: 2026 Base plus Proposed Development Flows

11.131 The resultant percentage change of the Proposed Development operational phase vehicle generation against the 2021 'without development' traffic flows are set out within Table 11. The 2026 flows have not been considered, as the 2021 percentage changes would demonstrate a worst case. The results of the percentage changes have been used to screen which links, if any, require further and more detailed assessment against specific environmental criteria.

Link No	Highway Link Description	Two-Way Total Vehicles				Two-Way HGVs			
		AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT	AM Peak Hour	PM Peak Hour	12 Hour AAWT	AADT
1	A48 between site access road and M4 J38	5.6%	3.5%	3.9%	3.9%	1.1%	2.0%	1.3%	1.4%
2	A48 between the site access road and Margam Road	2.2%	6.0%	4.0%	4.0%	2.9%	5.9%	1.1%	1.2%
3	M4 Nb on-slip	3.2%	15.2%	8.0%	7.3%	0.0%	0.0%	2.7%	2.6%
4	Margam Road	0.7%	0.6%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%
5	Harbour Way	1.0%	1.3%	1.4%	1.4%	0.0%	0.0%	0.2%	0.3%
6	Site Access Road	694.1%	705.6%	1158%	1172%	0.0%	0.0%	250.0%	200.0%
7	M4 Sb on-slip	2.9%	7.8%	7.3%	6.9%	2.3%	7.7%	3.2%	3.1%
8	M4 Nb off-slip	5.4%	1.3%	6.5%	6.3%	2.6%	5.9%	2.7%	2.6%
9	M4 Sb off-slip	10.5%	3.1%	15.3%	14.9%	0.0%	0.0%	8.5%	8.3%

Table 11: 2021 Percentage Changes Resulting from the Proposed Development

11.132 Table 2 demonstrates that (excluding the site access road) the only links to experience increases in flows in excess of 10% are the southbound off-slip and the northbound on-slip onto the M4 (i.e. flows to and from the northwest). These links are of negligible sensitivity and as such, the 30% threshold would apply. On this basis this level of increase is considered of negligible magnitude in accordance with Table 5 and as such no further detailed assessments of any of these links are required.

11.133 As all other links (excluding the site access road) fall below the 10% threshold, the effects on these links would be of negligible significance in accordance with Table 5. With regard to the EIA Regulations, the effects are considered to be **Not Significant**.

- 11.134 The site access road increases are a direct result of the extremely low baseline flows. This link is designed to accommodate a significantly higher level of traffic flow and accommodate new developments on either side, as shown by the access spurs which have been constructed along its length (including into the Proposed Development site). There are no sensitive receptors along its length, and it has footways on both sides which separate vehicles from pedestrians. In addition, there is a suitable dropped kerb crossing, using the central island at the A48 / Harbour Way roundabout to the north which separates vehicles and pedestrians appropriately.
- 11.135 The link flow inclusive of Proposed Development traffic would have a maximum of 145 movements in the peak hour with just two HGV movements. This is significantly below the capacity for a link road such as this, with 3.65m wide lanes in each direction and separated pedestrian routes. The junction modelling within the TA shows that there would be no material change in queuing or delay on this arm at the A48 / Harbour Way roundabout.
- 11.136 There would also be no significant change to the composition of traffic as there are forecast to be a minimal level of HGVs.
- 11.137 As such, although there is a large percentage increase, this would have a minor effect in significance in accordance with Table 5. With regard to the EIA Regulations, the effects are considered to be **Not Significant**.
- 11.138 The assessment of traffic flows on the network identifies the routes where the changes in traffic flows are significant from an environmental perspective and the junction effects have been assessed separately. Further, more detailed, junction assessments in terms of capacity are included within the TA. This shows that there is spare capacity at the key junctions and the Proposed Development would not have a material impact on capacity. As such, there is not significant effect on driver delay as a result of the Proposed Development.

Construction Phase

- 11.139 At this current time, the frequency and type of construction vehicles are unknown as this is dependent upon a detailed method statement being developed by the chosen contractor. Furthermore, construction vehicle numbers can vary on a day to day basis throughout the construction period dependent upon the contractors, construction techniques and method statement.
- 11.140 It is therefore difficult at this stage to estimate with any certainty the numbers of vehicle movements likely to be generated and their likely effect upon the road network.
- 11.141 However, in any event, the number of daily vehicles associated with the construction will be lower than the number of operational vehicles and it is therefore considered that the assessment of operational vehicles, as above, represents an overestimate of the likely effect of construction vehicles. The construction traffic would also be temporary in nature. As such, the operational traffic flows are considered to provide a robust worst case of the significance of the transport effects.

- 11.142 As is usual with developments of this type, a Construction Traffic Management Plan will be entered into with NPTCBC prior to commencement of construction, and this will include working times, vehicle routing and site management of vehicles and workers.
- 11.143 The site is well connected by the A48 directly onto the trunk road network on the M4. These are appropriate routes for accommodating construction vehicles and have spare capacity for accommodating these vehicle movements.
- 11.144 There are already HGVs which use these routes on a daily basis and as assessed with the operational phase, no significant environmental effects are predicted.
- 11.145 It is thus considered that the effects of generated traffic during the construction phase would be negligible and not significant.

Proposed Mitigation

- 11.146 A Travel Plan has been produced and has been submitted with the application. This encourages travel by sustainable modes and provides measures to reduce vehicle generation on the network and further minimise the impact of the Proposed Development on the network.
- 11.147 Reductions in vehicle generation as a result of the targets set out within the Travel Plan have not been considered within this ES Chapter as the assessment without any reductions demonstrates that the Proposed Development is forecast to have a negligible and not significant environmental effect.

Cumulative Impacts

- 11.148 The adjacent Tyn Y Caeau application was refused and is currently subject to appeal. As the application is proposing lorry parking and a small guest house type development, the level of additional vehicle movements would be minimal, particularly during the peak hours and no transport analysis was provided in support of the application. As such, the application of growth rates to the base data is considered to allow for the minimal increase in movements which may result from this Proposed Development, if it is approved on appeal. On this basis, separate additional vehicle movements specifically from this proposed scheme have not been considered within the analysis.
- 11.149 The assessments above provide an allowance for robust traffic growth which incorporates development growth as well as background traffic growth. The traffic growth in this context also allows for cumulative and strategic development, much of which would not yet be consented.
- 11.150 Therefore, cumulative assessment has been undertaken and this demonstrates that the Proposed Development is forecast to have a negligible and not significant environmental effect.

Residual Effects

- 11.151 Residual effects are those that remain after mitigation has been put in place. No transport or highway mitigation is required to accommodate the Proposed Development as it would not have a significant environmental effect or a material impact on the operation of the highway.
- 11.152 The assessments have demonstrated that the Proposed Development is forecast to have negligible and not significant environmental effects in relation to transport, in accordance with the IEMA guidelines. As such, the residual effects would remain unchanged from those set out above.

Summary

- 11.153 Assessments have been undertaken of the effect of traffic associated with the Proposed Development on the network considering environmental criteria as set out within the IEMA Guidelines.
- 11.154 The Proposed Development was shown to increase traffic flows by less than the significance thresholds on all links within the study area. On the site access road flows would remain well within the capacity of the road, as base flows are extremely low, and would not have a significant effect in environmental terms.
- 11.155 Based on the IEMA guidance, the Proposed Development would have a negligible and not significant environmental effect in relation to transport.

12. NOISE AND VIBRATION

Introduction

- 12.1. This chapter of the ES assess the likely impact of the Development on the environment in terms of Noise and Vibration.
- 12.2. As full details of the construction phase are not currently available, only the legislative background for construction noise and vibration, as well as proposed criteria are included in this report.
- 12.3. It is anticipated that the construction phase noise and vibration impacts are to be fully evaluated when construction details are finalised and will be subject to the legislative framework, particularly “The Control of Pollution Act (CoPA)”, as described in Section 0. Details of construction are to be submitted to the Local Authority prior to the development commencing.
- 12.4. This chapter has been prepared by Hunter Acoustics Ltd, an independent acoustic consultancy established in 1994 and a member organisation of the Association of Noise Consultants (ANC). The author of the assessment, Paul McGrath, is a corporate member of the Institute of Acoustics (MIOA) and has over 17 years’ experience in acoustic consultancy.
- 12.5. The assessment considers the potential for the operational use of the development to affect existing noise levels at the nearest noise sensitive receptors.
- 12.6. This chapter should be read in conjunction with the full Noise Impact Assessment report 6160/NIA1 dated TBC. This is included in full in **Appendix 12.1** Noise Impact Assessment Report.

Legislation, Policy and Guidance

Control of Pollution Act [CoPA]

- 12.7. Section 60, Part III of Chapter 40 of the CoPA [1] – Control of noise on construction sites. This provides legislation by which Local Authorities (LA) can control noise from construction sites to prevent disturbance occurring.
- 12.8. Section 61, Part III of Chapter 40 of the CoPA – Prior consent for work on construction sites. This provides a method by which a contractor can seek consent to undertake construction works in advance of their commencement. If consent is given, and the stated method and hours of work complied with, then the LA cannot take action under Section 60.

Planning Policy Wales [February 2021] Edition 11

- 12.9. Published in December 2018, Planning Policy Wales Edition 11 [Feb 2021] sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters which together with PPW provide the national planning policy framework for Wales.

- 12.10. Reference to noise is made in Paragraph 6.74: Framework for Addressing Air Quality and Soundscape, which states that:

“The planning system should maximise its contribution to achieving the well – being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution. In doing so, it should consider the long – term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution”.

- 12.11. Reference to noise is also made in Paragraphs 6.7.15 - 17:

“Location of Commercial, Industrial and other Potentially Polluting Development

- *6.7.15 For the purposes of this section, potentially polluting development includes commercial, industrial, energy and agricultural or transport infrastructure. Such development should be located in areas where there is low potential for public exposure, or where its impact can be minimised. Novel or new development types may potentially cause pollution and should be carefully considered, and where appropriate, decisions should be based on the precautionary principle.*
- *6.7.16 Relevant considerations in making planning decisions for potentially polluting development are likely to include:*
 - *location, including the reasons for selecting the chosen site itself;*
 - *impact on health and amenity;*
 - *effect of pollution on the natural and built environment and the enjoyment of areas of landscape and historic and cultural value;*
 - *impact on groundwater and surface water quality;*
 - *effect on biodiversity and ecosystem resilience, including where there may be cumulative impacts on air or water quality which may have adverse consequences for biodiversity and ecosystem resilience;*
 - *the risk and impact of potential pollution from the development, insofar as this might lead to the creation of, or worsen the situation in, an air quality management area, a noise action planning priority area or an area where there are sensitive receptors; and*
 - *impact on the road and other transport networks, and in particular on traffic generation, particularly where the proposed development is not transport infrastructure itself.*
- *6.7.17 The location of potentially polluting development adjacent to sensitive receptors will be unacceptable where health and amenity impacts cannot be*

minimised through appropriate design and mitigation measures. It is the overall expectation that levels of pollution should be reduced as far as possible and for this reason the location of potentially polluting development should be taken into account as part of overall strategies in development plans to ensure it can be appropriately located and maximum environmental benefits can be gained through measures such as green infrastructure.

Technical Advice Note 11 [TAN11] Wales, (1997)

12.12. TAN11 states:

“3. This note provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business. It outlines some of the main considerations which local planning authorities should take into account in drawing-up development plan policies and when determining planning applications for development which will either generate noise or be exposed to existing noise sources.

4. Local authorities should adopt a corporate approach and ensure close co-operation between planning and environmental health departments when considering noise and noise generating developments.

12.13. TAN11 provides further guidance on Development Control when assessing Noise Generating Development:

“Development Control

Noise Generating Development

8. Local planning authorities must ensure that noise generating development does not cause an unacceptable degree of disturbance. They should also bear in mind that if subsequent intensification or change of use results in greater intrusion, consideration should be given to the use of appropriate conditions.

9. Noise characteristics and levels can vary substantially according to their source and the type of activity involved. In the case of industrial development, for example, the character of the noise should be taken into account as well as its level. Sudden impulses, irregular noise or noise which contains a distinguishable continuous tone will require special consideration. In addition to noise from aircraft landing and taking off, noise from aerodromes is likely to result from engine testing as well as ground movements. The impact of noise from sport, recreation and entertainment will depend to a large extent on frequency of use and the design of facilities. Advice on assessing noise and on factors to consider in relation to the major noise sources including roads, railways, airports, industrial and recreational noise and their measurement is given in Annex B”

12.14. Annex B of TAN11 advises:

“Noise from industrial and commercial developments

B17. The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that, 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance'. Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233: 1987.”

*Note TAN11 refers to BS4142:1997 and BS8233:1987. These have been superseded by BS4142:2014+A1:2019 and BS8233:2014.

12.15. The following guidance is included on Noise from Construction Sites:

“B20. Detailed guidance on assessing noise from construction sites can be found in BS 5228 parts 1-4. In particular, Part 1:1984, ‘Code of Practice for basic information and procedures for noise control’ describes a method for predicting noise from construction sites as well as giving general advice.”

*Note: BS5288 Part 1: 1984 has been superseded by BS5288-1:2009+A1:2014

12.16. Annex D of TAN11 contains advice on Specifying Noise Limits as follows:

“D1. If a local planning authority wishes to impose a planning condition which will specify an acceptable noise limit from a new source, the following points should be considered

D2. Depending on circumstances, it may be appropriate to set either:

an absolute limit based on the average level of noise which should not be exceeded in a specified time period;

a relative limit based on the permitted increase in noise level with respect to the background level.

D3. Generally, relative limits are not appropriate where the permitted increase in noise over background is substantial - e.g. 15 dB or more. Because background noise varies during the day, the background noise level determined should be representative of a typical quiet period during the working day.

D4. Either type of limit may be a single value over the relevant period, or different values for, say day and night. It may be appropriate to set an evening value as well where the noise source lends itself to fine control.

D5. A noise limit which is close to the background level will be difficult to monitor and the advice given in BS 4142 should be followed. This is particularly important at quiet sites where the LAeq,T may be 10dB or more above the LA90,T - even when the noise source is not operating.

12.17. This is the approach used in BS 4142:2014+A1:2019.

Neath Port Talbot Local Development Plan (2011-2026) [adopted Jan 2016]

12.18. The proposed development falls within the administrative area of Neath Port Talbot, and the land has been allocated under Policy EC1/2 as a "Strategic Employment Site".

12.19. The following discusses the relevant aspects of NPT's policies

Climate Change:

12.20. OB1 states:

"Minimise the causes and consequences of climate change through reduced greenhouse gas emissions and adapt to climate change through consideration of its effects in the design and location of new development."

Health:

12.21. OB2 states:

"Reduce people's exposure to the determinants of poor health and provide an environment that encourages healthy, active and safer lifestyles."

12.22. OB 16 states:

"Address air quality issues and minimise the adverse impacts from noise generating and polluting activities."

12.23. Policy EN8 Pollution and Land Stability States:

"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 the following will not be permitted:

- Air pollution;*
- Noise pollution;*
- Light pollution;*

- Contamination;
- Land instability;
- Water (including groundwater) pollution.

Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation measures are included to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level.”

12.24. Policy EN8 continues:

“5.3.46 In relation to noise, potentially noisy proposals should not be located close to sensitive uses (such as hospitals, schools and housing) and new noise-sensitive developments should not be located near to existing noisy uses (including industry and existing or proposed transport infrastructure) unless it can be shown that adverse effects can be dealt with through mitigation measures incorporated into the design. Where noise levels are likely to be a significant issue, developers may be required to provide information to show that no nuisance is likely to be caused through increased noise levels at sensitive locations if the development proceeds. Policy EN10 sets out policy relating to designated Quiet Areas”

BREEAM UK New Construction (2018)

12.25. It is understood that the development is to be assessed under BREEAM UK New Construction 2018 (2.0) - Non-domestic Buildings (Wales).

12.26. Pol05 Reduction of Noise Pollution sets out the requirements to reduce the likelihood of noise arising from fixed installations on the new development affecting nearby noise-sensitive buildings.

12.27. One Credit is available under the assessment, as follows:

1 There are no noise-sensitive areas within the assessed building or within 800 m radius of the assessed site.

OR

2 Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800 m radius of the assessed site, a noise impact assessment compliant with BS 4142:2014(218) is commissioned. Noise levels must be measured or determined for:

2.a Existing background noise levels:

2.a.i at the nearest or most exposed noise-sensitive development to the proposed assessed site

2.a.ii including existing plant on a building, where the assessed development is an extension to the building

2.b Noise rating level from the assessed building.

3 The noise impact assessment must be carried out by a suitably qualified acoustic consultant.

4 The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise sensitive development, must be at least 5dB lower than the background noise throughout the day and night.

5 If the noise sources from the assessed building are greater than the levels described in criterion 4, measures have been installed to attenuate the noise at its source to a level where it will comply with the criterion.”

Relevant Elements of the Proposed Development

12.28. The relevant noise (and vibration) impact assessments covers two distinct elements of the proposed development

1. Construction
2. Operation

Construction Noise & Vibration

12.29. As full details of the construction phase are not currently available, this part of the Chapter is limited in terms of the construction noise impact. This may not be known until the Contractor is employed and specific Section 61 Application / Consent or Construction Environmental Management Plans are in place.

12.30. The following constraints might be imposed by the planning authority and/or decision maker through the planning process, via the following:

- Local authority guidance – Local authority CoCP or Development Plans, etc.;
- Planning conditions;
- Development Consent Orders; and/or,
- Acts of Parliament.

Operational Noise

12.31. The following main elements of operational noise have been identified, which are to be covered under the noise impact assessment.

- Main Process Building
- External Plant
- HGV Movements
- Car Park

- 12.32. Operational activities from main processes and external plant have been observed and measured at the applicants existing facility in Neath. Details and results of the survey are included in the appendices.

Assessment Methodology & Significance Criteria

Construction Noise

- 12.33. BS5228-1:2009 + A1:2014 'Code of Practice for noise and vibration control on construction and open sites – Part 1: Noise' gives guidance on neighbourhood noise nuisance (Section 6) and significance of noise effects from construction projects (Annex E).
- 12.34. BS5228 states that a construction noise assessment for this kind of development would normally be undertaken for an application under the Control of Pollution Act (CoPA) 1974 [9], Section 61, "Applications for prior consent for work on construction sites". Applications under this section of the CoPA are often found to be desirable and useful by both the local authority and the contractor. The applications would usually include (as identified in the CoPA):
1. details of the works and the method by which they are to be carried out; and,
 2. the steps proposed to be taken to minimize noise resulting from the works.
- 12.35. However, it is good practice to carry out construction noise predictions to provide additional information and to determine, for projects of significant size, any eligibility for noise insulation or temporary re-housing. By gaining consent under Section 61, the contractor gains protection from action under Section 60 of the CoPA, whereby a stop or enforcement notice cannot be served on the contractor, as long as the works are carried out in accordance with the details in the application.
- 12.36. BS5228-1:2009 outlines methods of determining significance of construction noise based on the change in ambient noise levels. The following 'ABC' method sets threshold values of significant effects based on the existing ambient noise climate.

Table 12.1 Table E.1 of BS 5228-1:2019

Table E.1 Example threshold of significant effect at dwellings			
Assessment category and threshold value period	Threshold value, in decibels (dB)		
(L_{Aeq})	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23.00–07.00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07.00–19.00) and Saturdays (07.00–13.00)	65	70	75

NOTE 1 A significant effect has been deemed to occur if the total LAeq noise level, including construction, exceeds the threshold level for the Category appropriate to the ambient noise level.

NOTE 2 If the ambient noise level exceeds the threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a significant effect is deemed to occur if the total LAeq noise level for the period increases by more than 3 dB due to construction activity.

NOTE 3 Applied to residential receptors only.

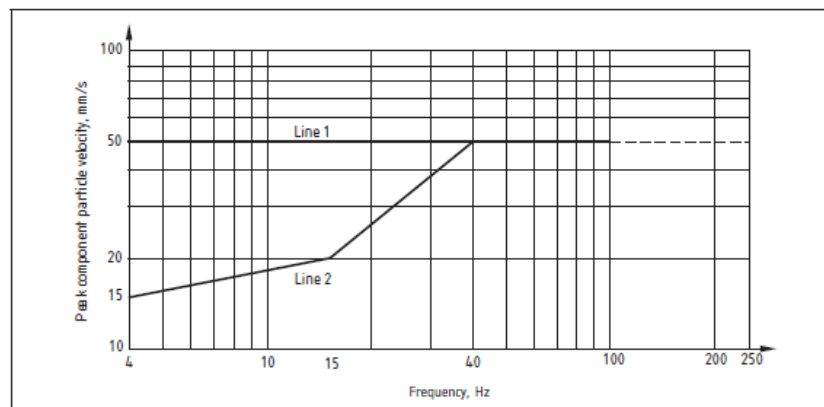
-
- A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
- B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
- C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.
- D) 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.
-

Construction Vibration

- 12.37. BS5228-2:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites – Part 2: Vibration gives recommendations for basic methods of vibration control relating to construction and open sites where work activities/operations can generate significant vibration levels.
- 12.38. Figure B.1 from BS5228-2 shows Threshold Transient Vibration Guidance Values for Cosmetic Damage, in Peak Particle Velocity (mm/s) across the frequency spectrum:

Figure 12.1 BS5228-2009:2 Threshold Transient Vibration Guidance Values for Cosmetic Damage

Figure B.1 Transient vibration guide values for cosmetic damage



- 12.39. The above vibration criteria from construction activities should apply at closest residences in order to reduce the likelihood of 'cosmetic' damage to residential buildings; a 50% reduction should be allowed for a continuous vibration source. At frequencies below 4Hz a maximum displacement of 0.6mm (zero to peak) should also not be exceeded.

12.40. It should be noted that recommended vibration limits (for cosmetic damage) are above the threshold of perception; i.e. vibration levels below this could be felt by residents and may therefore generate comment/complaint. BS5228-2:2009 advises:

12.41. *“the threshold of perception being typically in the PPV range of 0.14mm/s to 0.3mm/s. Vibrations above these values can disturb, startle, cause annoyance or interfere with work activities. At higher levels they can be described as unpleasant or even painful. In residential accommodation, vibrations can promote anxiety lest some structural mishap might occur.*

12.42. *Vibrations, even of very low magnitude, can be perceptible to people and can interfere with the satisfactory conduct of certain activities... Vibration nuisance is frequently associated with the assumption that if vibrations can be felt, then damage is inevitable: however, considerably greater levels of vibration are required to cause damage to buildings and structures [See Proposed Criteria]... Vibrations transmitted from site activities to the neighbourhood can, therefore, cause anxiety as well as annoyance, and can disturb sleep, work or leisure activities. ...some individuals will be more sensitive to vibration than others.”*

Operational Noise Impact – Production Building, External Plant & HGVs

12.43. British Standard 4142:2014+A1:2019 “Methods for rating and assessing industrial and commercial sound”, provides current guidance for the assessment of industrial noise affecting residential receivers.

12.44. This standard describes a rating method comparing L_{Aeq} noise levels from the industrial source with pre-existing background L_{A90} levels at the residential receiver. It advises at a difference (industrial noise - background) of:

- +10dB or higher, likely to be an indication of a significant adverse impact, depending on the context.
- A difference of + 5dB, likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

12.45. A sliding scale of penalties can be applied under a subjective assessment to industrial/commercial sound levels which have acoustically distinguishing characteristics, including tonality, impulsivity and intermittency.

- **Tonality** – A penalty of 2dB for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible, and 6dB where it is highly perceptible.
- **Impulsivity** – A penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it clearly perceptible, and 9dB where it is highly perceptible.

- **Other sound characteristics** – Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied
- **Intermittency** – If intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied.

12.46. BS 4142:2014 states under section 11;

"Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following.

The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.

Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse."

12.47. When assessing new plant and predicting noise levels to distant residential receivers, it is normally not possible to fully assess tonal or impulsive characteristics as manufacturers typically present only octave-band sound data. It is also not possible to predict likely tonal/impulsive content from plant noise breaking out through a main building. Large losses due to screening and distance in the noise prediction model also cannot account for tonal or impulsive content. Subjective opinions on likely tonal content can be suggested based on experience of different types of plant (e.g. tones in fans, or impulses on presses).

12.48. It is therefore not considered unreasonable to apply a 3dB penalty for "other sound characteristic", unless it is can be clearly demonstrated that tonal or impulsive content can be "clearly perceptible" at the receivers.

Car Park Noise Impact

12.49. There is no specific recognised methodology for assessing noise emissions from car parks, although it is a known source of potential disturbance and concern for neighbouring residents.

12.50. Design Manuals for Roads and Bridges methodology is therefore referred to for assessing the impact of car parks. DMRB quotes the following impact ranges for changes in road traffic noise;

Table 12.2 DMRB – Magnitude of Change

Magnitude of Change	Short-Term Noise Change
	$L_{A10,18hr}$ or L_{night}
Major	≥ 5.0
Moderate	3.0 – 4.9
Minor	1.0 – 2.9
Negligible	< 1.0

- 12.51. A DMRB assessment compares (L_{Aeq}) noise levels from anticipated traffic flows with the existing measured (L_{Aeq}) noise levels. The majority of movements are likely to occur at defined periods as staff are likely to arrive and leave at defined times in line with shift patterns.
- 12.52. The scale or severity of any noise change, positive or negative, requires description to indicate the degree of impact where possible. Significance criteria are then applied to categories of change. A change threshold of 3dB(A) has commonly been used in traffic noise assessments in the UK to approximate the threshold of significance.
- 12.53. Significance criteria shown in the table below have been developed, based upon DMRB guidance, to assess noise effects arising from the operation of the proposed Car Park.

Table 12.3 Proposed Significance Criteria

Noise Change L_{Aeq,T^*}	Magnitude Criteria	Significance
> 5.0	Major Adverse	Significant
3.0 to 4.9	Moderate adverse	
1.0 to 2.9	Minor Adverse	Insignificant
0.1 to 0.9	Negligible	
0	No Change	
-0.9 to -0.1	Negligible	
-2.9 to -0.1	Minor Beneficial	
-4.9 to -3.0	Moderate Beneficial	Significant
< -5.0	Major Beneficial	

*1-hour daytime (0700-2300hrs); 15min night-time (2300-0700hrs)

Sensitive Receptors

12.54. The following table lists the nearest Sound Sensitive Receptors (SSRs)

Table 12.4 Sound Sensitive Receptors (SSRs)

SSR Description	Approx Location / Distance
Tyn y Caeau, 2-Storey Residential Dwelling to the North-east	Adjacent to site boundary Approx. 20m
Longlands House (1 Heolcae'r Bont) 2-Storey Residential Dwelling to the South	Adjacent to site boundary Approx. 10m
Greenacres (2 Heolcae'r Bont) 2-Storey Residential Dwelling to the South	Approx. 70m from site boundary

12.55. Figure 2.1 of Appendix 12.1 – Noise Impact Assessment Report shows the site plan with the SSRs highlighted.

Baseline Conditions

Noise Context of the Application Site

12.56. The uses of the adjacent land to the west include industrial operations:

- BOC Gas & Gear Margam (well-established)
- Western Bio Energy Power Station (operational from 2008)
- Margam Green Energy Power Station (constructed 2018, operational 2019)
- Tata Steel Works, 700m in the distance (well-established)

Results of Noise Survey at Application Site

12.57. Week-long continuous background sound monitoring at the nearest residential receivers in May 2021. Appendix 12.1 – Noise Impact Assessment Report details full survey methodology and results.

12.58. Results of $L_{Aeq,15min}$ ambient sound levels measured are summarised below:

Table 12.5 $L_{Aeq,15min}$ summary of values

Period	Date	Location	
		Longlands House/ Greenacres	Tyn y Caeau
Daytime (0700-2300hrs)	19/5 – 26/5/2021	58	56
Night-time (2300-0700hrs)	19/5 – 26/5/2021	56	56

*average value of week-long monitoring

12.59. Results of $L_{A90,15min}$ background sound levels measured are summarised below:

Table 12.6 $L_{A90,15min}$ summary of values

Period	Date	Position	
		Longlands House/ Greenacres	Tyn y Caeau
Daytime (0700-2300hrs)	19/5 – 26/5/2021	50	51
Night-time (2300-0700hrs)	19/5 – 26/5/2021	46	48

*consistent minimum value over week-long monitoring

Soundscape of the Application Site

12.60. Ambient and background sound levels at the SSRs are controlled by continuous industrial sources. Subjectively, the dominant sources appear to emanate from processes on the BOC site, with some contributions from chiller plant and other plant at Western Wood both during the day and night, keeping night-time noise levels elevated. Both ambient and background sound levels are generally consistent during the day and night.

Proposed Noise Criteria

12.61. Project noise criteria have been proposed based on the Assessment Methodology & Significance Criteria set out in 12.4, and the measured ambient and background sound levels as follows:

Construction Noise & Vibration

Table 12.7 Construction Noise Criteria:

Period	BS5228-1 Threshold, dB L_{Aeq}
Daytime (0700-1900hrs) Saturday (0700-1300hrs)	65
Evenings (1900-2300hrs Weekdays) Weekends (1300-2300hrs Saturdays, 0700-2300hrs Sundays)	55
Night-time (2300-0700hrs)	50

12.62. Construction Vibration Criteria – refer to Construction Vibration in 0

Operational Noise

12.63. A noise rating level ($L_{A,Tf}$) 5dB below the pre-existing background L_{A90} sound climate, at the SSRs is proposed in line with the requirements of Pol05 of BREEAM2018. This should

ensure that the operational noise impact is unlikely to have an adverse impact, based on BS4142:2014+A1:2019 guidance.

- 12.64. This should also mean that absolute L_{Aeq} noise levels are not increased – it is understood that on the neighbouring Margam Green Energy Power Station development the Local Authority specified no increase in existing noise levels.
- 12.65. Based on measured background sound levels, the following operational noise criteria are therefore indicated, to be applied at the nearest residential SSRs:

Table 12.8 Proposed Operational Noise Criteria

Period	Noise Rating Level, dB $L_{A,Tt}$	
	Longlands House/ Greenacres	Tyn y Caeau
Daytime (0700-2300hrs)	45	46
Night-time (2300-0700hrs)	41	43

*Rating Level $L_{A,Tt}$ to be determined in accordance with British Standard 4142:2014+A1:2019.

- 12.66. A 45dB $L_{Amax,F}$ criterion is also proposed to minimise the noise impact from the Atomising Pouring

Car Park Noise

- 12.67. Referring to Car Park Noise Impact in 0 it is proposed that the noise impact from the Car Parks should achieve no change / negligible magnitude of impact.
- 12.68. Noise from the Car Parks would also need to be considered as part of the whole development against the proposed overall operational noise criteria.

Assessment of Effects

Construction Noise & Vibration

- 12.69. As full details of the construction phase are not currently available, only the legislative background for construction noise and vibration, as well as proposed criteria are included in this report.
- 12.70. It is anticipated that the construction phase noise and vibration impacts are to be fully evaluated when construction details are finalised and will be subject to the legislative framework, particularly “The Control of Pollution Act (CoPA)”, as described in Section 0. Details of construction are to be submitted to the Local Authority prior to the development commencing.

Operational Noise

- 12.71. Section 5 of the Appendix 12.1 – Noise Impact Assessment Report sets out the full methodology of the noise prediction and assessment methodology. This is summarised below.
- 12.72. A noise survey was undertaken at the applicant's existing operations at their Neath premises, including internal process and external plant and yard activity which are proposed at the development.
- 12.73. Results of the Neath activity source noise survey are used as the basis for an acoustic modelling.
- 12.74. Operational noise predictions cover:
 1. Main Production Building – Atomising & Sizing
 2. External Plant – Ventilation & Dust Extract Plant
 3. HGV Movements - HGVs to access from the north-western HGV-only entrance, away from SSRs.
- 12.75. Minimum sound reduction performance specifications have been issued for the main production building wall and roof cladding, and external roller doors:

R_w 34dB wall/roof cladding, with min *R_w* 30dB Roller Shutter Door system – refer to Appendix 12.1 – Noise Impact Assessment Report for full octave band sound reduction performance.
- 12.76. 18no external Service Filters (ventilation units) have been modelled, located along the western elevation away from SSRs
- 12.77. 13no Transformers have been modelled – 9no along western building elevation, 2no in the Substation Compound, 1no on the southern boundary and 1no near the office building.
- 12.78. Cooling tower – located in Services Area.
- 12.79. 10no HGVs per day between 0800-1800hrs, maximum of 2no HGVs in any one hour. 2no HGVs per week are advised between 1800-0800hrs.
- 12.80. 4no HGV movements along access road in 1-hour daytime period; 1no HGV movement in 15-minute night-time period are included in the model. (Daytime and night-time HGV assessments are therefore the same.)
- 12.81. HGV source noise levels are based on database / BS5228 figures.
- 12.82. Predicted Operational *L_{Aeq,T}* Noise Levels

Table 12.9 Predicted Operational Noise Levels (dB $L_{Aeq,T}$)

SSR	Main Building & Fixed Plant	HGVs	Overall Level
Tyn y Caeau,	35	43	44
Longlands House	39	16	39
Greenacres	34	10	34

- 12.83. Main Building and Fixed plant noise sources are indicated to be at or well below the proposed criteria with a margin.
- 12.84. There is a 2dB margin at Longlands House – contributing noise sources are indicated to be: Phase 2 South wall – 35dB(A); Transformer T12 – 32dB(A).
- 12.85. These sound sources are well below measured ambient and background sound levels [ref Table 3.1 & Table 3.2], and any tonal content (e.g. low-frequency hum from transformer) is therefore considered unlikely to be perceptible. No additional penalties are included and the proposed night-time criteria is indicated to be met at Longlands House.
- 12.86. Allowing for a minimum 3dB BS4142 penalty for HGV sound source, daytime limit of 46dB $L_{Ar,1hr}$ is just met, based on a worst case 2 HGVs an hour.
- 12.87. The night-time criteria is indicated to be exceeded with the proposed HGV movements. However, we would argue that as these are limited to only two night-time HGV visits per week and absolute levels of 43dB $L_{Aeq,15min}$ are well below prevailing ambient noise climate of 56dB $L_{Aeq,15min}$ at night, that these occasional HGV movements should be easily accommodated within the existing soundscape.
- 12.88. Predicted Operational $L_{Amax,F}$ Noise Levels

Table 12.10 Predicted Operational Noise Levels (dB $L_{Amax,F}$)

SSR	Atomising (Pouring) Main Building
Tyn y Caeau	43
Longlands House	42
Greenacres	39

- 12.89. Noise levels from Atomising pouring are indicated to fall below 45dB $L_{Amax,F}$, indicating a low noise impact.

Car Park

- 12.90. Car Parks: 65-space Office Staff car park, and a 130-space Shop Floor Staff car park.
- 12.91. Car parks to be accessed from northern Work Staff, Contractors and Visitors entrance, with access road running past Tyn y Caeau, which is the critical SSR for the Car Park Noise Impact Assessment.
- Office Car Park: 50 cars entering 0730-0900hrs, leaving 1530-1700hrs
 - Shop Floor Car Park: Shift change at 0600hrs, 1400hrs, and 2200hrs
 - 50 cars per shift (changeover 100cars): 0515-0630hrs; 1315-1430hrs; 2115-2230hrs
- 12.92. Car Parking activities have been modelled based on Hunter Acoustics database figures.
- 12.93. Office Car Park model allows for scenario of all 50 Cars arriving / leaving within the hour assessment period – a robust assessment.

Table 12.11 Predicted Office Car Park $L_{Aeq,1hr}$ Noise Levels

SSR	Cars Arriving (dBA)	Cars Leaving (dBA)
Tyn y Caeau,	43	46

- 12.94. Shop Floor Staff Car Park model allows for scenario of all 50 Cars arriving / leaving within a 30minute period; i.e. 25 cars in a 15-minute assessment period. We have also modelled the 25 cars across the northern section of the car park for a robust assessment.

Table 12.12 Predicted Shop Floor Car Park $L_{Aeq,15min}$ Noise Levels

SSR	Cars Arriving (dBA)	Cars Leaving (dBA)
Tyn y Caeau,	44	46

- 12.95. Car park noise levels predicted at up to 46dB $L_{Aeq,T}$ are 10dB below the existing prevailing ambient noise level of 56dB $L_{Aeq,T}$, and therefore a 0dB change is indicated. Noise impact of car parks is assessed as insignificant, based on DMRB methodology and existing ambient noise levels.
- 12.96. In the overall context of the development, for the periods of car park use, particularly the early morning shift changeover, noise levels are at least 10dB higher than factory noise break-out levels, and also exceed the proposed 43dB L_{Ar} , overall noise criteria based on measured background sound levels.
- 12.97. Including screening which removes line of sight from Tyn y Caeau first floor level to the car park access road, as well as along the boundary of Shop Floor Staff Car Park should be considered to mitigate the overall noise impact. Possible location & details of screening have been included our report.

Limitations and Assumptions

Baseline Conditions

- 12.98. Baseline conditions were monitored over a week-long period to allow for any variation in noise conditions to be assessed. This also allowed periods where adverse weather may have affected the noise levels to be disregarded.
- 12.99. Ambient and background sound conditions over the long-term monitoring are indicated consistent. Minimum consistent background L_{A90} values have been used to set criteria – this is considered a robust approach.
- 12.100. Uncertainties and limitations in the baseline noise survey are therefore considered very low.

Operational Noise Model & Prediction

- 12.101. Proposed Noise sources have been measured at the Applicant's existing site. Uncertainties in data gathered assessed as minimal.
- 12.102. Noise predictions have been carried out using full measured data in octave-band frequencies.
- 12.103. Production Building noise emissions have been estimated using BS12354-4:2000. Sound reduction figures for external wall, roof and doors has been based on manufacturer's published data and/or INSUL software analysis.
- 12.104. Noise model uses Noise Map Five software following the methodology of BS5228-1:2009 +A1:2014, with any losses minimised as follows:
- Atmospheric absorption: not taken; SSRs are relatively close, these are likely to be minimal.
 - Ground absorption – minimal; reflective ground conditions modelled.
 - No screening – line of sight from SSRs to critical building façades and HGV routes.
- 12.105. HGV and Car Park assessment has been based on Hunter Acoustics database figures and projected flows.
- 12.106. Uncertainties and limitations in the operational noise model are therefore considered low.

Construction Noise & Vibration

- 12.107. As full details of the construction phase are not currently available, a detailed construction noise and vibration impact assessment has not been carried out.
- 12.108. Mitigation if required for the construction phases to be agreed in conjunction with Neath Port Talbot CBC before the development commences when detailed construction plans are available.
- 12.109. Construction Noise and Vibration should follow best practical means control measures as outlined in BS5228:2009 parts 1 & 2.

12.110. Key construction activities where noisy plant / machinery and processes may need to be used should be identified, along with details of generic or specific noise mitigation measures or noise management practices could be promoted.

12.111. Key construction activities where significant vibration may be generated close to SSRs (piling, vibratory compaction or rolling, pneumatic hammers) should be identified.

Cumulative Effects

Surrounding Existing Noise Generating Development

12.112. The noise impact criteria of the proposed development have been established so that the cumulative operational noise levels from the development and existing surrounding industrial sources (including Margam Green Energy Power Station, Western Bio Energy Power Station, BOC Gases and Tata Steel) are not increased at the SSRs.

Neighbouring Committed Schemes

Table 12.13 List of Cumulative Schemes

Scheme Name & Application No	Scheme Details	Planning Status	Approximate Distance from development Site
Land At Tyn-Y-Caeau Margam Road Margam Port Talbot SA13 2NW P2020/0601	Change of use from dwelling house and annex building into a mixed used development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces. The proposal includes the demolition of an existing single storey rear extension, and the erection of a single-storey rear extension, together with widened site access, additional internal access roads, parking areas and associated works.	Planning Permission Refused 15/10/2020 Appeal ongoing	Adjacent North-east

12.113. The Appeal proposal has been assessed with regards to noise. Noise Impact Assessment or Noise Chapter are currently unavailable for the revised environmental statement.

12.114. The Planning Inspector has advised:

Having regard to the factors specified in regulation 4(2) of the Regulations, the nature and scale of the development has the potential to result in significant effects resulting from emissions during construction and operation. For example, noise, vibration and air pollutants from the additional traffic movements at the access, the stopping and starting of engines and manoeuvring of HGVs in and out of parking spaces. However, this aspect of the environment has not been identified or described in the ES, and neither is there any satisfactory explanation as to why it has not been considered.

12.115. It is understood that plans for the redevelopment of the Tyn y Caeau site (SSR) are proposed to include a truck stop with B&B accommodation.

12.116. We would advise that Tyn y Caeau would still be assessed as a Sound Sensitive Receptor (SSR)

12.117. The development noise impact assessment therefore does not need to be modified.

Climate Change and Noise

12.118. UK Climate Projections states:

“5.4 UKCP Local (2.2km) provides enhanced detail that can help inform future risk assessments and local decision-making on future climate change. For example, it can be used as a tool to explore change in urban climate, where projected increases in the frequency and intensity of hot summer days and duration of hot spells in the future, along with urban development and increasing population density will exacerbate the risks of heat exposure to the most vulnerable members of society.”

12.119. Acoustics Ventilation and Overheating Residential Design Guide has recently been developed and published by the Association of Noise Consultants and the Institute of Acoustics, to consider an integrated approach to the cumulative effects and assessment of internal noise conditions, air quality, and thermal comfort.

12.120. The AVO Guide states:

“1.6 Previously, the provision of façade sound insulation to protect against outdoor sound has been considered separately from the ventilation strategy and any strategy for mitigating overheating. A review [2] of recent planning applications for major developments in London reveals the problem. Of the applications reviewed, 122 had both noise and overheating assessments; 85% of these developments required closed windows for reasonable noise conditions, while the overheating assessment relied on open windows for reasonable thermal conditions. The result is residential accommodation in which the occupants may choose either acoustic comfort or indoor air quality and thermal comfort, but not achieve both simultaneously.

12.121. Adding:

“When there is an increased capacity to retain heat, dissipation of excessive heat gains can become more problematic, with the consequential increase in overheating risk. Other factors currently contributing to overheating risk include global heating (climate change) and the urban heat island effect.”

12.122. Assessing the likely cumulative effects of climate change and noise impact should therefore consider:

1. Increased risk of overheating to existing SSRs
2. Leading to increased period of opening windows to provide thermal comfort
3. Increasing the risk of noise intrusion through open windows
4. Resulting in potential adverse health and wellbeing effects due to;
 - a. Increased noise levels, under overheating conditions, or
 - b. Thermal discomfort, as windows are chosen to remain closed due to external noise levels

12.123. The noise impact criteria of the proposed development have been established so that the operational noise impact is unlikely to have an adverse impact, and that absolute noise levels from existing surrounding sources are not increased.

Summary

12.124. A noise impact assessment has been undertaken of the Proposed Development. The assessment methodology and results are detailed in full in Hunter Acoustics Noise Impact Assessment report 6160/NIA1 January 2022. This is included in Appendix 12.1 – Noise Impact Assessment Report.

12.125. Criteria at the nearest Sound Sensitive Receptors (SSRs) have been established based on results of long-term environmental noise monitoring, and in accordance with current guidance.

12.126. Noise Map modelling of the proposed development has been carried out to predict operational noise levels at the nearest SSRs.

12.127. Appendix 12.1 – Noise Impact Assessment Report and Table 12. summarise the predicted assessment of the effects. A low noise impact is indicated.

12.128. Cumulative effects have been considered and the cumulative impact of the proposed development is not indicated to be significant.

12.129. Construction noise and vibration will be controlled by prior agreement with Neath Port Talbot CBC before the development commences.

References

- i. UK GOVERNMENT *Control of Pollution Act, 1974* London: HMSO
- ii. WELSH GOVERNMENT *Planning Policy Wales (Edition 11) 2021*
- iii. WELSH GOVERNMENT *Planning Guidance (Wales) Technical Advice Note (Wales) 11 Noise 1997*
- iv. NEATH PORT TALBOT COUNTY BOROUGH COUNCIL *Local Development Plan (2011-2026) – Adopted January 2016*
- v. BRE GLOBAL LTD *BREEAM UK New Construction Non-domestic Buildings (Wales) Technical Manual SD5078 BREEAM UK New Construction 2018 2.0*
- vi. BSI STANDARDS LTD *BS5228-1:2009 + A1:2014 Code of practice for noise and vibration control on construction and open site – Part 1: Noise*
- vii. BSI STANDARDS LTD *BS5228-2:2009 + A1:2014 Code of practice for noise and vibration control on construction and open site – Part 2: Vibration*
- viii. BSI STANDARDS LTD *BS4142:2014 +A1:2019 Methods for rating and assessing industrial and commercial sound*
- ix. HIGHWAYS ENGLAND *Design Manual for Roads and Bridges – LA111 Noise & Vibration, Revision 2 (2020)*
- x. BSI STANDARDS LTD *BS EN 1235404:2000 Building acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 4: Transmission of indoor sound to the outside*
- xi. MET OFFICE *UK Climate Projections: Headline Findings, Version 3 (2021)*
- xii. ASSOCIATION OF NOISE CONSULTANTS *Acoustics, Ventilation and Overheating Residential Design Guide, Version 1.1 (2020)*

13. AIR QUALITY

Introduction

- 13.1. This chapter of the ES assesses the likely significant effects of the Proposed Development with respect to air quality, particularly the effects on human health. It also presents the impacts on air quality at designated ecological sites but the significance of effects on designated ecological sites is assessed in Chapter 10 - Ecology. This Chapter describes the legislative and policy framework; the methods used to assess the effects; the baseline conditions currently existing at the Application Site; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.

Legislation, Policy and Guidance

Air Quality Strategy

- 13.2. The Air Quality Strategy¹ published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA), and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Clean Air Strategy 2019

- 13.3. The Clean Air Strategy² sets out a wide range of actions by which the UK Government, in partnership with the Governments of Scotland, Wales and Northern Ireland, will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

¹ Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Defra.

² Defra (2019) Clean Air Strategy 2019, Available: <https://www.gov.uk/government/publications/clean-air-strategy-2019>.

The Clean Air Plan for Wales

- 13.4. In August 2020, the Welsh Government published the Clean Air Plan for Wales³, which aims to “improve air quality and reduce the impacts of air pollution on human health, biodiversity, the natural environment and our economy”. The Plan sets out the following four themes, around which the plan is structured, with actions in order to enable collaborative approaches to reducing air pollution:
- People: Protecting the health and well-being of current and future generations;
 - Environment: Taking action to support our natural environment, ecosystems and biodiversity;
 - Prosperity: Working with industry to reduce emissions, supporting a cleaner and more prosperous Wales; and
 - Place: Creating sustainable places through better planning, infrastructure and transport.
- 13.5. The Plan details intentions to publish a Clean Air Zone Framework in Spring 2021, stating an expectation “to see Clean Air Zones established in towns and cities throughout Wales to reduce the impact of transport emissions on health. Some of these may be supported by a charging element. Clean Air Zones, where appropriate, would enable a range of co-ordinated actions to deliver significant reductions in public and environmental exposure to harmful airborne pollutants from all sources”.
- 13.6. The Plan also includes plans to “introduce LAQM policy changes by 2023 to ensure the regime is public health focused and proactively finding and tackling areas of pollution”. These changes include a focus on the human health impacts of PM_{2.5}, stating “In the current regime, monitoring of PM_{2.5} is encouraged but not mandatory. In the context of the known health impacts associated with PM_{2.5}, we propose to investigate the extent to which Local Authorities can support monitoring, reporting and action on PM_{2.5} as part of their existing LAQM functions”.
- 13.7. The Plan states that the Welsh Government will “publish and consult on a White Paper on a Clean Air Act for Wales before the end of this Senedd Term”, which will include:
- *“New powers for smoke control linked to tackling air pollution from domestic burning (PM_{2.5})*
 - *A requirement for a Clean Air Plan / Strategy to be published / reviewed every 5 years*

³ Welsh Government (2020) The Clean Air Plan for Wales, Available: <https://gov.wales/sites/default/files/publications/2020-08/clean-air-plan-for-wales-healthy-air-healthy-wales.pdf>.

- *Potential new air quality targets (for example, taking account of WHO guidelines for air quality)*
- *Clarified and strengthened local air quality management legislation*
- *Strengthened powers to address road vehicle idling*
- *Consolidated powers to implement Clean Air Zones / Low Emission Zones*
- *Focused powers to protect vulnerable groups from the effects of air pollution*
- *Enhanced air quality monitoring and modelling*
- *A potential new duty on public bodies to adhere to guidance encouraging different ways of working and actions to reduce air pollution and support decarbonisation.”*

Reducing Emissions from Road Transport: Road to Zero Strategy

- 13.8. The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper⁴ in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government's pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.
- 13.9. The paper sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and consumer led. The Government has since announced that the phase-out date for the sale of new petrol and diesel cars and vans will be brought forward to 2030 and that all new cars and vans must be fully zero emission at the tailpipe from 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades, likely beyond the scale of reductions forecast in the tools utilised in carrying out this air quality assessment.

Environmental Permitting (England and Wales) Regulations 2016, as amended

- 13.10. The Environmental Permitting (England and Wales) Regulations 2016, as amended (EPR), transpose the requirements of Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control), also known as the Industrial Emissions Directive (IED), into domestic legislation.

⁴ DfT (2018) The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy.

- 13.11. Under the EPR, Operators of installations covered by Schedule 1 are required to apply for, and hold, an Environmental Permit to operate the installation. In Wales, Natural Resources Wales acts as the Competent Authority for Environmental Permits for the most complex industrial sites, known as Part A(1) installations, whilst local authorities act as the Competent Authority for activities taking place at Part A(2) or Part B installations.
- 13.12. Environmental Permits impose conditions on Operators that help to control the impact of their activities and emissions to all environmental media in the case of Part A(1) and Part A(2) installations, and emissions to air for Part B installations. This requires emissions to meet emission limit values (ELVs) and that Best Available Techniques (BAT) are incorporated into the design, operation, management and closure of the installation.
- 13.13. The operations at the Proposed Development constitute a Schedule 1, Section 2.2, Part B activity under the EPR and, consequently, an Environmental Permit will be required from the local authority. The Environmental Permit will require the Operator to meet the emission limits and BAT requirements established in Defra's Process Guidance Note PG 6/35 (13).

Planning Policy

National Policies

- 13.14. Land-use planning policy in Wales is established within the policy document Planning Policy Wales (PPW)⁵, which provides the strategic policy framework for the effective preparation of local planning authority development plans. With regard to pollution and health effects, it states:
- 13.15. "Planning authorities have a role to play in the prevention of physical and mental illnesses caused, or exacerbated, by pollution, disconnection of people from social activities (which contributes to loneliness) as well as the promotion of travel patterns which facilitate active lifestyles. The planning system must consider the impacts of new development on existing communities and maximise health protection and well-being and safeguard amenity. This will include considering the provision of, and access to, community and health assets, such as community halls, libraries, doctor's surgeries and hospitals. Health impacts should be minimised in all instances, and particularly where new development could have an adverse impact on health, amenity and well-being. In such circumstances, where health or amenity impacts cannot be overcome satisfactorily, development should be refused".
- 13.16. "Planning authorities should develop and maintain places that support healthy, active lifestyles across all age and socio-economic groups, recognising that investment in walking and cycling infrastructure can be an effective preventative measure which reduces financial pressures on public services in the longer term. The way a development is laid out and arranged can influence people's behaviours and decisions and can provide effective

⁵ Welsh Government (2021) Planning Policy Wales Edition 11, Available:
https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf.

mitigation against air and noise pollution. Effective planning can provide calming, tranquil surroundings as well as stimulating and sensory environments, both of these make an important contribution to successful places”

- 13.17. “Green infrastructure can be an effective means of enhancing health and well-being, through linking dwellings, workplaces and community facilities and providing high quality, accessible green spaces. In all development and in public spaces especially, there should be sensitive management of light, and exposure to airborne pollution should be kept as low as reasonably practicable. The compatibility of land uses will be a key factor in addressing air quality and creating appropriate soundscapes which are conducive to, and reflective of, particular social and cultural activities and experiences, particularly in busy central areas of towns and cities. Equally, the provision of quiet, tranquil areas which provide peaceful sanctuaries in otherwise noisy environments can help to reduce general levels of pollution and promote both mental and physical well-being”.
- 13.18. PPW places a general presumption in favour of sustainable development, stressing the importance of local development plans, and states that the planning system should perform an environmental role to minimise pollution. Local development plans should enable consideration of the effects that the proposed development may have on air quality, as well as the effect that air quality may have on the proposed development. To prevent unacceptable risks from air pollution, planning decisions should ensure that new development is appropriate for its location.
- 13.19. PPW also places considerable emphasis on the Well-being of Future Generations Act⁶ with the intention to improve the social, economic, environmental and cultural well-being of Wales, and outlines how this can be achieved through the concept of ‘Placemaking’.
- 13.20. PPW is supported by a series of Technical Advice Notes (TANs) and National Assembly for Wales Circulars. Local planning authorities have to take PPW, TANs and Circulars into account when preparing Development Plans.
- 13.21. With respect to planning policy guidance, TAN 18 on transport⁷ makes reference to local air quality and the need for Air Quality Action Plans to be prepared for any Air Quality Management Areas declared.
- 13.22. The need for compliance with any statutory air quality limit values and objectives is stressed, and the presence of AQMAs must be accounted for in terms of the cumulative impacts on air quality from individual sites in local areas. New developments in AQMAs should be consistent with local air quality action plans.

⁶ Welsh Government (2015) Well-being of Future Generations (Wales) Act 2015, Available: <http://futuregenerations.wales/about-us/future-generations-act/>.

⁷ Welsh Government (2007) Technical Advice Note (TAN) 18: Transport, Available: <http://gov.wales/topics/planning/policy/tans/tan18/?lang=en>.

Local Policies

- 13.23. The Neath Port Talbot County Borough Council Local Development Plan⁸ was adopted in January 2016, and within this document there are two policies which refer to air quality. Policy EN 9 refers to development within Port Talbot and states that:
- 13.24. “Developments in the central Port Talbot area that could result in breaches of air quality objectives during their construction phase, will be required to be undertaken in accordance with a Construction Management Plan submitted as part of the planning process and agreed by the Council.”
- 13.25. Policy Sp16 of the Local Plan refers specifically to air quality and states that:
- “Air, water and ground quality and the environment generally will be protected and where feasible improved through the following measures:
1. Ensuring that proposals have no significant adverse effects on water, ground or air quality and do not significantly increase pollution level....
 3. Ensuring that developments do not increase the number of people exposed to significant levels of pollution.”
- 13.26. NPTBC have also published a Supplementary Planning Guidance (SPG) document on ‘Pollution’⁹, which includes the following policies relevant to air quality in the study area.
- 13.27. Policy EN8 Pollution and Land Stability:
- “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 the following will not be permitted:
- Air Pollution...”
- 13.28. Policy EN9 Developments in the Central Port Talbot Area:
- “Developments in the central Port Talbot area that could result in breaches of air quality objectives during their construction phase, will be required to be undertaken in accordance with a Construction Management Plan submitted as part of the planning process and agreed by the Council.”

⁸ Neath Port Talbot County Borough Council. (2016). Local Development Plan (2011-2026).

⁹ Neath Port Talbot County Borough Council (2016) Pollution Supplementary Planning Guidance.

Building Standards

- 13.29. Part F of the Building Regulations¹⁰ sets legal requirements related to ventilation for buildings. It identifies performance criteria for ventilation systems for dwellings and offices, stating that nitrogen dioxide concentrations of 288 µg/m³ as a 1-hour average and 40 µg/m³ as a long-term average should not be exceeded. While these are building control requirements rather than planning requirements, they highlight that where ambient (outdoor) air exceeds the annual mean nitrogen dioxide objective, it is expected that an appropriate ventilation system will be installed to ensure that indoor concentrations are below the performance criterion.

Air Quality Action Plans*National Air Quality Action Plan*

- 13.30. Defra has produced an Air Quality Plan to tackle roadside nitrogen dioxide concentrations in the UK¹¹; a supplement to the 2017 Plan¹² was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. Alongside a package of national measures, the 2017 Plan and the 2018 Supplement require those identified English Local Authorities (or the GLA in the case of London Authorities) to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include the implementation of a CAZ. There is currently no straightforward way to take account of the effects of the 2017 Plan or 2018 Supplement in the modelling undertaken for this assessment; however, consideration has been given to whether there is currently, or is likely to be in the future, a limit value exceedance in the vicinity of the proposed development. This assessment has principally been carried out in relation to the air quality objectives, rather than the limit values that are the focus of the Air Quality Plan.

¹⁰ Ministry of Housing, Communities & Local Government (2020) The Building Regulations 2010 The Merged Approved Documents, Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/899279/Single_stitched_together_pdf_of_all_ADs_Jun20_.pdf.

¹¹ Defra (2017) Air quality plan for nitrogen dioxide (NO₂) in the UK, Available:

<https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017>.

¹² Defra (2018) Supplement to the UK plan for tackling roadside nitrogen dioxide concentrations, Available:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746100/air-quality-no2-plan-supplement.pdf.

Welsh Government Supplemental Air Quality Plan

- 13.31. The Welsh Government has produced a supplemental plan to the 2017 UK plan for tackling roadside nitrogen dioxide concentrations¹³. The document sets out the work done to date to identify how the Welsh Government will reduce concentrations of nitrogen dioxide around roads where levels are above legal limits. The plan expands on Section 7.6 (Additional Actions in Wales) of the 2017 UK plan for tackling roadside nitrogen dioxide concentrations, and sets out how the Welsh Government will comply within the shortest possible time with the limit values for nitrogen dioxide.

Local Air Quality Action Plan

- 13.32. The Neath Port Talbot County Borough Council Air Quality Action Plan¹⁴ sets out a series of measures by which the Council will seek to achieve the air quality objectives in their AQMA. None of the policies are especially relevant to this assessment, being focussed on locations outside of the assessment study area.

Policy for the Protection of Sensitive Ecosystems*European Policies*

- 13.33. The “Habitats Directive”¹⁵ requires member states to introduce a range of measures for the protection of habitats and species. The Conservation of Habitats and Species Regulations¹⁶ transpose the Directive into UK law. They require the Secretary of State to provide the European Commission with a list of sites which are important for the habitats or species listed in the Directive. The Commission then designates worthy sites as Special Areas of Conservation (SACs). The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs), with the latter classified under the “Birds Directive”¹⁷, which is implemented in UK law through the Conservation of Habitats and Species Regulations¹⁸. These sites form a network termed “Natura 2000”.

¹³ Welsh Government (2018) Tackling roadside nitrogen dioxide concentrations in Wales, Available: <https://gov.wales/sites/default/files/publications/2019-04/tackling-roadside-nitrogen-dioxide-concentrations-in-wales.pdf>.

¹⁴ Neath Port Talbot County Borough Council. (2012). Air Quality Action Plan for the Taibach Margam Air Quality Management Area.

¹⁵ The Council of the European Communities (1992) European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043>.

¹⁶ The Conservation of Habitats and Species Regulations 2017 Statutory Instrument 1012 (2017), HMSO.

¹⁷ The European Parliament and the Council of the European Union (2009) Directive 2009/147/EC of the European Parliament and of the Council, Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147>.

¹⁸ The Conservation of Habitats and Species Regulations 2010 Statutory Instrument 490 (2010), HMSO, Available: http://www.legislation.gov.uk/uk/si/2010/490/pdfs/uksi_20100490_en.pdf.

- 13.34. The Regulations primarily provide measures for the protection of European Sites and European Protected Species, but also require local planning authorities to encourage the management of other features that are of major importance for wild flora and fauna.
- 13.35. In addition to SACs and SPAs, some internationally important UK sites are designated under the Ramsar Convention. Originally intended to protect waterfowl habitat, the Convention has broadened its scope to cover all aspects of wetland conservation.
- 13.36. The Habitats Directive (as implemented by the Regulations) requires the competent authority, which in this case will be the planning authority, to firstly evaluate whether the development is likely to give rise to a significant effect on the European site. Where this is the case, it has to carry out an 'appropriate assessment' in order to determine whether the development will adversely affect the integrity of the site.

National Policies

- 13.37. Sites of national importance may be designated as Sites of Special Scientific Interest (SSSIs). Originally notified under the National Parks and Access to the Countryside Act¹⁹, SSSIs have been re-notified under the Wildlife and Countryside Act²⁰. Improved provisions for the protection and management of SSSIs (in England and Wales) were introduced by the Countryside and Rights of Way Act²¹ (the "CROW" act). If a development is "likely to damage" a SSSI, the CROW act requires that a relevant conservation body (i.e. Natural England) is consulted. The CROW act also provides protection to local nature conservation sites, which can be particularly important in providing 'stepping stones' or 'buffers' to SSSIs and European sites. In addition, the Environment Act²² and the Natural Environment and Rural Communities Act²³ both require the conservation of biodiversity.
- 13.38. National planning policy on biodiversity and conservation is set out in the NPPF²⁴. This emphasises that the planning system should seek to minimise impacts on biodiversity and provide net gains in biodiversity wherever possible as part of the Government's commitment to halting declines in biodiversity and establishing coherent and resilient ecological networks.

¹⁹ National Parks and Access to the Countryside Act (1949), Available: <https://www.legislation.gov.uk/ukpga/Geo6/12-13-14/97>.

²⁰ Wildlife and Countryside Act (1981), Available: <http://www.legislation.gov.uk/ukpga/1981/69>.

²¹ Countryside and Rights of Way Act 2000 (2000), Available: <http://www.legislation.gov.uk/ukpga/2000/37/contents>.

²² Environment Act (1995), HMSO, Available: <http://www.legislation.gov.uk/ukpga/1995/25/contents>.

²³ Natural Environment and Rural Communities Act (2006), HMSO, Available: <http://www.legislation.gov.uk/ukpga/2006/16/contents>.

²⁴ Ministry of Housing, Communities & Local Government (2019) National Planning Policy Framework, Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf.

- 13.39. The Environment (Wales) Act²⁵ replaces the biodiversity duty in the Natural Environment and Rural Communities Act²³. This duty requires that public authorities seek to maintain and enhance biodiversity in the proper exercise of their functions. The duty also helps to deliver the sustainable management of natural resources, as it will require public authorities, in delivering the new biodiversity duty, to promote the resilience of ecosystems.
- 13.40. Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife sites will be judged, making distinctions between different levels of site designation. If significant harm from a development cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.

Relevant Elements of the Proposed Development

- 13.41. In terms of the potential air quality effects, the assessment will consider:
- the impacts of the demolition and construction phase of the Proposed Development on dust soiling and concentrations of PM₁₀ at existing sensitive receptors during the construction period;
 - the impact of the construction of the Proposed Development on concentrations of NO₂, PM₁₀ and PM_{2.5} from heavy duty construction traffic;
 - the impacts of the operation of the Proposed Development on concentrations of NO₂, PM₁₀ and PM_{2.5} from road traffic, at existing local sensitive receptors (including designated ecological sites), in the proposed year of opening;
 - the impacts of the operation of the Powder Processing Plant on concentrations of PM₁₀, PM_{2.5}, chromium, nickel, copper, cobalt and lead at existing local sensitive receptors, in the proposed year of opening; and
 - the impacts of existing and proposed emission sources of NO₂, PM₁₀ and PM_{2.5} on future users of the Proposed Development.

Assessment Methodology and Significance Criteria

Defining the Baseline

Current Baseline Conditions

- 13.42. Existing sources of emissions within the study area have been defined using a number of approaches. The study area is effectively defined by the extent of the road network included

²⁵ Welsh Government (2016) Environment (Wales) Act, Available: <http://gov.wales/topics/environmentcountryside/consmanagement/natural-resources-management/environment-act/?lang=en>.

in the air quality modelling assessment of the construction and operational road traffic impacts of the Proposed Development, and the assessment distances for operational process emissions as mandated by relevant guidance²⁶. Industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register²⁷. Local sources have also been identified through examination of the Council's Air Quality Review and Assessment reports.

- 13.43. Information on existing air quality has been obtained by collating the results of local monitoring carried out by the Neath Port Talbot Borough Council (NPTBC) and national monitoring carried out by Defra. Background concentrations have been defined using the national pollution maps published by Defra²⁸. These cover the whole country on a 1x1 km grid. The background annual mean NO₂ maps for 2019 have been calibrated against concurrent measurements from national monitoring sites²⁹. Data for 2019 have been used rather than 2020 as this is the latest year of representative monitoring data (i.e. prior to the Covid-19 pandemic). The calibration factor calculated has also been applied to future year backgrounds. Further details are provided in Appendix A5.
- 13.44. Whether or not there are any exceedances of the annual mean EU limit value for NO₂ in the study area has been identified using the maps of roadside concentrations published by Defra^{30 31}. These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to EU data quality standards, to report exceedances of the limit value to the EU. The national maps of roadside PM₁₀ and PM_{2.5} concentrations, which are available for the years 2009 to 2019, show no exceedances of the limit values anywhere in the UK in 2019.
- 13.45. Current baseline concentrations have also been modelled using the ADMS-Roads dispersion model. Details of the model inputs, assumptions and the verification are provided in Appendix A5, together with the method used to derive baseline year background concentrations. Where assumptions have been made a realistic worst-case approach has been adopted, as discussed in Section 0.

Future Baseline Conditions

- 13.46. Future baseline concentrations have been predicted using the ADMS-Roads dispersion model for the first year of operation of the Proposed Development (as 2024). Details of the

²⁶ Environment Agency (2021) Air Emissions Risk Assessment for your Environmental Permit, [Online], Available: <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>

²⁷ Defra (2021) UK Pollutant Release and Transfer Register, [Online], Available: prtr.defra.gov.uk.

²⁸ Defra (2020) 2020 NO₂ projections data (2018 reference year), Available: <https://uk-air.defra.gov.uk/library/no2ten/2020-no2-pm-projections-from-2018-data>.

²⁹ AQC (2020) Calibrating Defra's 2018-based Background NO_x and NO₂ Maps against 2019 Measurements, Available: <https://www.aqcconsultants.co.uk/CMSPages/GetFile.aspx?guid=163e7362-578e-4a4c-8feb-0006f1531ff1>.

³⁰ Defra (2020) 2020 NO₂ projections data (2018 reference year), Available: <https://uk-air.defra.gov.uk/library/no2ten/2020-no2-pm-projections-from-2018-data>.

³¹ Defra (2021) UK Ambient Air Quality Interactive Map, Available: <https://uk-air.defra.gov.uk/data/gis-mapping>.

model inputs, assumptions and the verification are provided in Appendix A5, together with the method used to derive future year background concentrations. Where assumptions have been made, a realistic worst-case approach has been adopted.

Evolution of the Baseline

- 13.47. If the Proposed Development was not to come forward, it is expected that the Proposed Development Site would remain in its current state. Air quality is generally expected to improve with time, due for example to more stringent emissions standards for motor vehicles and the uptake of cleaner vehicles. The likely evolution of the baseline conditions if the Proposed Development did not come forward has been considered in this assessment, and is hereafter referred to as '2024 Without Proposed Development'. Baseline conditions in the absence of the Proposed Development, but allowing for natural evolution and the inclusion of all cumulative schemes in the surrounding area, are provided in Table 13.13 and Table 13.14.

Impact Assessment Methodology

Assessment Criteria

Health Criteria

- 13.48. The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations 2000³² and the Air Quality (England) (Amendment) Regulations 2002³³.
- 13.49. The UK-wide objectives for NO₂ and PM₁₀ were to have been achieved by 2005 and 2004 respectively and continue to apply in all future years thereafter. The PM_{2.5} objective was to be achieved by 2020. Measurements across the UK have shown that the 1-hour NO₂ objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m³³⁴. Where relevant, this value has been used as an indication of the likelihood of the 1-hour mean NO₂ objective to be exceeded in the study area.

³² The Air Quality (England) Regulations, 2000, Statutory Instrument 928 (2000), HMSO, Available: <http://www.legislation.gov.uk/uksi/2000/928/contents/made>.

³³ The Air Quality (England) (Amendment) Regulations, 2002, Statutory Instrument 3043 (2002), HMSO, Available: <https://www.legislation.gov.uk/uksi/2002/3043/contents/made>.

³⁴ Defra (2018) Review & Assessment: Technical Guidance LAQM.TG16 February 2018 Version, Defra, Available: <https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf>.

Measurements have also shown that the 24-hour PM₁₀ objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m³³⁴. The predicted annual mean PM₁₀ concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM₁₀ objective. Where predicted annual mean concentrations are below 32 µg/m³ it is unlikely that the 24-hour mean objective will be exceeded.

- 13.50. The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. The Department for Environment, Food and Rural Affairs (Defra) explains where these objectives will apply in its Local Air Quality Management Technical Guidance (LAQM.TG16). The annual mean objectives for NO₂ and PM₁₀ are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM₁₀ is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for NO₂ applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.
- 13.51. EU Directive 2008/50/EC³⁵ sets limit values for NO₂, PM₁₀ and PM_{2.5}, as well as numerous other substances, and is implemented in UK law through the Air Quality Standards Regulations³⁶ (2010). The limit values for NO₂ are the same numerical concentrations as the UK objectives, but achievement of these values is a national obligation rather than a local one. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).
- 13.52. Health-based criteria for other pollutants not covered as part of the Government's objectives of EU Limit Values are provided by the Environment Agency/Natural Resources Wales in the form of Environmental Assessment Levels (EALs)²⁶. EALs are guideline values and do not form statutory legislation.
- 13.53. The relevant air quality criteria for this assessment are provided in Table 13.1.

Table 13.1 Air Quality Criteria for NO₂, PM₁₀ and PM_{2.5}

Pollutant	Time Period	Objective / Environmental Assessment Level
NO ₂	1-hour mean	200 µg/m ³ not to be exceeded more than 18 times per year

³⁵ The European Parliament and the Council of the European Union (2008) Directive 2008/50/EC of the European Parliament and of the Council, Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050>.

³⁶ The Air Quality Standards Regulations 2010 Statutory Instrument 1001 (2010), HMSO, Available: http://www.legislation.gov.uk/ukxi/2010/1001/pdfs/ukxi_20101001_en.pdf.

	Annual mean	40 µg/m ³ ^a
PM ₁₀	24-hour mean	50 µg/m ³ not to be exceeded more than 35 times per year
	Annual mean	40 µg/m ³ ^b
PM _{2.5} ^c	Annual mean	25 µg/m ³
Chromium ^d	Annual mean	5 µg/m ³
	1-hour mean	150 µg/m ³
Nickel	Annual mean	0.02 µg/m ³
Copper	Annual mean	10 µg/m ³
	1-hour mean	200 µg/m ³
Lead	Annual	0.25 µg/m ³

^a A proxy value of 60 µg/m³ as an annual mean can be used to assess the likelihood of the 1-hour mean NO₂ objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 1-hour mean NO₂ objective are possible.

^b A proxy value of 32 µg/m³ as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM₁₀ objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM₁₀ objective are possible.

^c The PM_{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

^d Sandvik Osprey have confirmed that hexavalent chromium (Cr VI) is not processed. Consequently, total chromium emissions have been assessed against the EAL for trivalent chromium (Cr III) and its compounds.

- 13.54. The above objectives and EALs apply to concentrations of a particular pollutant in air. Additional health-based metrics are provided Environment Agency/Natural Resources Wales for the purposes of assessing the deposition of certain metal species to land²⁶. These maximum deposition rates (MDRs) are provided in Table 13.2 for the relevant metal species emitted during the operational phase.

Table 13.2 Maximum Deposition Rates

Pollutant	Maximum Deposition Rate (mg/m ² /day)
Chromium	1.5
Nickel	0.11
Copper	0.25
Lead	1.1

Vegetation and Ecosystems Criteria

- 13.55. Objectives for the protection of vegetation and ecosystems have been set by the UK Government. They are the same as the limit values. The limit values and objectives only apply a) more than 20 km from an agglomeration (about 250,000 people), and b) more than 5 km from Part A industrial sources, motorways and built up areas of more than 5,000 people. Critical levels and critical loads are the ambient concentrations and deposition fluxes below which significant harmful effects to sensitive ecosystems are unlikely to occur. Some of the critical levels are set at the same concentrations as the objectives, but do not have the same legal standing. Typically, the potential for exceedances of the critical levels and critical loads is considered in the context of the level of protection afforded to the ecological site as a whole. For example, the level of protection afforded to an internationally-designated site (such as a SAC) is significantly greater than that afforded to a local nature reserve; reflecting the relative sensitivity of the sites as well as their perceived ecological value. The critical levels relevant to this assessment are set out in Table 13.3, while the critical loads are provided in Table 13.4.

Table 13.3 Vegetation and Ecosystem Critical Levels ^a

Pollutant	Time Period	Critical Level
Nitrogen Oxides (expressed as NO ₂)	Annual Mean ^{a,b}	30 µg/m ³
	24-Hour Mean ^{a,c}	75 µg/m ³
Ammonia	Ecosystems where sensitive lichens and bryophytes are an important part of the ecosystem integrity.	1 µg/m ³
	Everywhere else (all higher plants)	3 µg/m ³

^a The critical levels are defined by the World Health Organisation³⁷.

^b Away from major sources (see paragraph 13.55), this critical level is set as an objective¹ and a limit value³⁸.

^c This critical level is not an objective and thus does not have the same legal standing.

Table 13.4 Vegetation and Ecosystem Critical Loads

Site	Nutrient Nitrogen (kgN/ha/yr) ^a	Acid Deposition 'N _{max} ' (keq/ha/yr) ^b
Cynffig SAC/SSSI	8	1.053

^aCritical load for nutrient nitrogen taken from³⁹.

^bCritical loads for acid deposition have been taken from⁴⁰. N_{max} is the value above which additional nitrogen deposition will lead to an exceedance.

Construction Dust Criteria

- 13.56. There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the Institute of Air Quality Management (IAQM)⁴¹ has been used. Full details of this approach are provided in Appendix A2.

Screening Criteria

Road Traffic

- 13.57. Environmental Protection UK (EPUK) and the IAQM⁴² recommend a two-stage screening approach to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts. The approach, as described in Appendix A3, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m² of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.

³⁷ European Environment Agency (2021) The European Nature Information System, Available: <http://eunis.eea.europa.eu/habitats-code.jsp>.

³⁸ The European Parliament and the Council of the European Union (2008) Directive 2008/50/EC of the European Parliament and of the Council, Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050>.

³⁹ APIS (2013) Recommended values within nutrient nitrogen critical load ranges for use in air pollution impact assessments. http://www.apis.ac.uk/sites/default/files/downloads/APIS%20critical_load_range_document_0.pdf.

⁴⁰ APIS (2021) APIS, Available: <http://www.apis.ac.uk/>.

⁴¹ The IAQM is the professional body for air quality practitioners in the UK.

⁴² Moorcroft and Barrowcliffe et al (2017) Land-Use Planning & Development Control: Planning For Air Quality v1.2, IAQM, London, Available: <http://iaqm.co.uk/guidance/>.

- 13.58. The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in Appendix A3) inside an AQMA are a change in flows of more than 25 heavy duty vehicles or 100 light duty vehicles per day; outside of an AQMA the thresholds are 100 heavy duty vehicles or 500 light duty vehicles. Where these criteria are exceeded, a detailed assessment is required, although the guidance advises that *“the criteria provided are precautionary and should be treated as indicative”, and “it may be appropriate to amend them on the basis of professional judgement”*.
- 13.59. While these screening criteria are specifically intended to act as a trigger for a detailed assessment, they can also be used to identify the extent of the road network that requires assessment; where the change in traffic on a given road link is less than the relevant screening threshold, it is unlikely that a significant impact would occur, and these links can be disregarded unless there are additional sources affecting the link (e.g. emissions from a point source).

Vegetation and Ecosystems

- 13.60. In terms of the potential for ecological impacts on local (as opposed to national or European) wildlife sites, the Environment Agency's Air Emissions Risk Assessment guidance^{Error! Bookmark not defined.}, which continues to be followed by Natural Resources Wales, discounts as insignificant any impacts where the PC is less than 100% of the long-term or short-term environmental standard. For national or European sites, the Environment Agency's guidance explains that, regardless of the baseline environmental conditions, a process can be considered as insignificant if:
- the long-term (annual mean) process contribution is <1% of the long-term environmental standard; and
 - the short-term (15-minute, 1-hour, 24-hour mean) process contribution is <10% of the short-term environmental standard.
- 13.61. It should be recognised that these criteria determine when an impact can be screened out as insignificant. They do not imply that impacts will necessarily be significant above one or both of these criteria, merely that there is a potential for significant impacts to occur that should be considered using a detailed assessment methodology, such as a detailed dispersion modelling study (as has been carried out for this project in any event). The next step in the Environment Agency's screening process for long-term contributions is to add the process contribution (PC) to the local background concentration to calculate the predicted environmental concentration (PEC). For short-term contributions the PC is compared against the short-term environmental standard minus twice the long-term background concentration. The emissions are insignificant if:
- the long-term PEC is less than 70% of the long-term environmental standard; and

- the short-term PC is less than 20% of the short-term environmental standards minus twice the long-term background concentration.

13.62. However, the Environment Agency also advises that, where detailed dispersion modelling has been undertaken, no further action is required if resulting PECs do not exceed environmental standards and Best Available Techniques (BAT) have been applied.

13.63. It should also be noted that the previously mentioned EPUK and IAQM guidance does not apply to nature conservation sites, thus the use of the Environment Agency guidance is most appropriate for assessing impacts on ecosystems.

13.64. For the purposes of this assessment, wherever the detailed modelling shows that concentrations and fluxes are below the critical level or critical load, it is considered that there will be no significant impacts.

Demolition and Construction Methodology

13.65. ES Volume 1, Chapter 5: Construction Programme and Methods outlines the proposed demolition, enabling and construction works. Consideration has been given to the potential for significant effects from the following impacts that will occur during the demolition, enabling and construction stage:

- Dust emissions;
- Demolition and construction traffic emissions; and
- Demolition and construction site plant.

Demolition and Construction Dust

13.66. The demolition and construction dust assessment considers the potential for impacts up to 350m from the Proposed Development Site boundary⁴³; or within 50m of roads used by construction vehicles. The assessment methodology follows the IAQM's Guidance⁴⁴. This follows a sequence of steps. Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required. Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the Proposed Development Site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Step 3 uses this information to determine the appropriate level of

⁴³ The assessment considers different distance buffers, with the smallest distance being 20m from the Proposed Development Site boundary. If there are a large number of highly sensitive uses within the lowest boundary, only these distances need be considered.

⁴⁴ IAQM (2016) Guidance on the Assessment of Dust from Demolition and Construction v1.1, Available: <http://iaqm.co.uk/guidance/>.

mitigation required to ensure that there should be no significant effects. Appendix A2 explains the approach in more detail.

Demolition and Construction Traffic

- 13.67. EPUK & IAQM consider that a detailed assessment is required where a development leads to an increase in HDV of more than 25 Annual Average Daily Traffic (AADT) in an AQMA (such as the Margam AQMA). The average daily number of two-way HDV trips generated by the Proposed Development during construction is two, which is well below the screening criterion of 25 HDVs; thus, a detailed assessment of impacts of construction traffic emissions has been screened out. In addition, the Proposed Development will adopt a Construction Environmental Management Plan (CEMP) and a Construction Logistics Plan (CLP) to minimise the environmental and road traffic related impacts of the demolition and construction work.

Demolition and Construction Site Plant

- 13.68. Demolition and construction plant emissions have not been explicitly modelled or assessed, as the relevant guidance from the IAQM states that *“experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) [...] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed”*. However, suitable mitigation measures for site plant are presented as part of the mitigation measures based on advice presented in the IAQM guidance document.

Completed Development Methodology

- 13.69. This assessment of operational air quality considers:
- The effects of the operation of the Proposed Development on concentrations of NO₂, PM₁₀ and PM_{2.5} from road traffic, at existing sensitive human and ecological receptors, in the proposed first year of occupation;
 - The effects of the operation of the proposed metal processing facility on concentrations of PM₁₀, PM_{2.5} and metals, including chromium, nickel, copper and lead and the deposition of these metals; and

Road Traffic Impacts

- 13.70. The Proposed Development will lead to an increase in traffic on the local roads, which may affect air quality at existing sensitive receptors. Emissions associated with road traffic on local roads may also impact on air quality for future users of the Proposed Development itself. The main air pollutants of concern related to traffic emissions are NO₂ and fine particulate matter (PM₁₀ and PM_{2.5}).

- 13.71. An assessment of the operational impacts that the Proposed Development will have on concentrations of these pollutants has been carried out following the methodology presented below.

Screening Stage

- 13.72. The first step in considering the road traffic impacts of the Proposed Development has been to screen the development and its traffic generation against the criteria set out in the EPUK/IAQM guidance⁴², as described in Appendix A3. Where impacts can be screened out there is no need to progress to a more detailed assessment. The following sections describe the approach to dispersion modelling of road traffic emissions, which has been required for this project, as the Proposed Development leads to an increase in traffic greater than the screening criteria on multiple roads, and to determine future air quality conditions at the Proposed Development.

Assessment Scenarios

- 13.73. NO₂, PM₁₀ and PM_{2.5} concentrations have been predicted for a base year of 2019 (the most recent full calendar year of monitoring data available unaffected by the Covid-19 pandemic) and the proposed first year of operation (2024). For 2024, predictions have been made assuming both that the Proposed Development does proceed ('With Scheme'), and does not, proceed ('Without Scheme').

Modelling Methodology

- 13.74. Concentrations have been predicted using the ADMS-Roads dispersion model, with vehicle emissions derived using Defra's latest Emission Factor Toolkit (EFT) (v10.1)³⁴. Details of the model inputs, assumptions and the verification are provided in Appendix A5, together with the method used to derive base and future year background concentrations. Where assumptions have been made, a realistic worst-case approach has been adopted.

Traffic Data

- 13.75. Traffic data for the assessment have been provided by Apex Transport Planning Ltd, who have undertaken the Transport Assessment (TA) for the Proposed Development. Further details of the traffic data used in this assessment are provided in Appendix A5.
- 13.76. The traffic data used in the assessment for 2024 includes data for all cumulative schemes which would affect flows on the roads included in this assessment. As such, predictions of future pollutant concentrations presented in this chapter take account of cumulative effects.

Uncertainty

- 13.77. There are many components that contribute to the uncertainty of modelling predictions. The road traffic emissions dispersion model used in this assessment is dependent upon the traffic

data that have been input, which will have inherent uncertainties associated with them. There are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms.

- 13.78. An important stage in the process is model verification, which involves comparing the model output with measured concentrations (see Appendix A5). Because the model has been verified and adjusted, there can be reasonable confidence in the prediction of base year (2019) concentrations.
- 13.79. Predicting pollutant concentrations in a future year will always be subject to greater uncertainty. For obvious reasons, the model cannot be verified in the future, and it is necessary to rely on a series of projections provided by DfT and Defra as to what will happen to traffic volumes, background pollutant concentrations and vehicle emissions. Historically, Defra's EFT had a tendency to over-state emissions reductions into the future. However, analysis of the most recent versions of Defra's EFT carried out by AQC⁴⁵ ⁴⁶ suggest that, on balance, these versions are unlikely to over-state the rate at which NOx emissions decline in the future at an 'average' site in the UK. In practice, the balance of evidence suggests that NOx concentrations are most likely to decline more quickly in the future, on average, than predicted by the EFT, especially against a base year of 2016 or later. Using EFT v10.1 for future-year forecasts in this report thus provides a robust assessment, given that the model has been verified against measurements made in 2019.
- 13.80. Forecasts of future-year concentrations are usually based on measurements made during a recent year. They then take account of projected changes over time to factors such as the composition of the vehicle fleet and the uptake of other new technologies, as well as population increases etc. In early 2020, activity in the UK was disrupted by the Covid-19 pandemic. As a result, concentrations of traffic-related air pollutants fell appreciably⁴⁷. While the pandemic may cause long-lasting changes to travel activity patterns, it is reasonable to expect a return to more typical activity levels in the future. 2020 is thus likely to present as an atypically low pollution year for roadside pollutant concentrations, as is 2021.
- 13.81. It is not currently possible to make robust predictions of the rate at which travel activity patterns will return to historically-normal levels; or the extent of any long-lasting changes to travel behaviour. The most robust approach to making future-year projections is thus to base these on measurements made during 2019, and to use activity forecasts made before the

⁴⁵ AQC (2020) Performance of Defra's Emission Factor Toolkit 2013-2019, Available:

<https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=7fba769d-f1df-49c4-a2e7-f3dd6f316ec1>.

⁴⁶ AQC (2020) Comparison of EFT v10 with EFT v9, Available:

<https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=9d6b50e1-3897-46cf-90f1-3669c6814f1d>.

⁴⁷ Defra Air Quality Expert Group (2020) Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK- Rapid evidence review, Available: https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2007010844_Estimation_of_Changes_in_Air_Pollution_During_COVID-19_outbreak_in_the_UK.pdf.

impact of the pandemic was understood, which is the approach that has been taken in this assessment.

Point Source Impacts

Assessment Scenarios

- 13.82. PM₁₀, PM_{2.5}, chromium, nickel, copper and lead concentrations and deposition rates have been predicted for the proposed first year of operation (2024), assuming that the Proposed Development proceeds ('With Scheme').

Emissions Data

- 13.83. The emissions data input into the model for the Powder Processing Plant have been taken from monitoring data at a similar development by the same operator. Further details of the emissions data used in this assessment are provided in Appendix A5. These emission estimates are expected to be conservative, as the abatement plant and technology to be introduced at the Proposed Development is more modern than the equivalent abatement technology at the operator's other site.

Modelling Methodology

- 13.84. The impacts of emissions from the proposed Powder Processing Plant have been modelled using the ADMS-5 dispersion model (the latest release code of the model, ADMS 5.2, has been used). ADMS-5 is a next generation model that incorporates a state-of-the-art understanding of the dispersion processes within the atmospheric boundary layer. The model input parameters are set out in Appendix A5. The air quality modelling has been carried out based on a number of necessary assumptions, detailed further in Section 0 and in Appendix A5. Where possible a realistic worst-case approach has been adopted.
- 13.85. Deposition fluxes have been calculated from the predicted concentrations of chromium, nickel, copper and lead. Details on the method for calculating the deposition rates are provided in Appendix A5.

Assessment Scenarios

- 13.86. Concentrations as a result of emissions from the Powder Processing Plant have been predicted for the year 2024 for the following sensitivity scenarios:
- without buildings, with complex terrain;
 - with all nearby buildings, without complex terrain; and
 - with all nearby buildings and complex terrain.

- 13.87. This sensitivity testing is considered necessary because ADMS 5 takes a relatively simplistic approach to modelling building downwash effects, thus additional uncertainty is introduced when using the buildings module, but it would not be appropriate to ignore the potential effects of the entrainment of the plume in building downwash.

Uncertainty

- 13.88. The point source dispersion model used in the assessment is dependent upon emission rates, flow rates, exhaust temperatures and other parameters for each source, all of which in reality are variable as the plant will operate at different loads at different times. The assessment has, however, addressed this by applying worst-case assumptions where necessary, and provided that the actual plant installed adheres to the emission parameters set out in Appendix A5, the conclusions of this assessment will remain valid.
- 13.89. There are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms. These uncertainties cannot be easily quantified and it is not possible to verify the point-source model outputs. Sensitivity tests have also been applied to address specific uncertainties.

Site Suitability

- 13.90. As discussed previously, the air quality objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. However, places of work are not classed as publicly accessible locations and are therefore not categorised as sensitive receptors and no further assessment of the site for future occupants has been undertaken.

Methodology for Defining Effects

Receptors and Receptor Sensitivity

Demolition and Construction Dust

- 13.91. The IAQM, in their guidance on construction dust⁴⁴, provides criteria to define receptor sensitivity to dust soiling or health effects of PM₁₀ (see Table A2.2 in Appendix A2). Residential properties are considered as high sensitivity receptors to both dust soiling and health effects of PM₁₀ while commercial properties are medium sensitivity. The warehouse and storage facility, offices, amenity, laboratory and service buildings within the Proposed Development are therefore considered to be medium sensitivity receptors.

Completed Development

- 13.92. The 2007 Air Quality Strategy^{Error! Bookmark not defined.} explains that air quality standards and objectives were determined based on expert recommendations, and represent “*levels at which no significant health effects would be expected in the population as a whole*”. The

objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality Management Technical Guidance³³. The annual mean objectives for NO₂ and PM₁₀ are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM₁₀ is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for NO₂ applies wherever members of the public might regularly spend 1-hour or more, including commercial and cultural spaces, outdoor eating locations and pavements of busy shopping streets.

- 13.93. Within this ES chapter, all receptors where the air quality objectives apply are considered to be of high sensitivity. Locations where the objectives do not apply must be considered not to be sensitive, therefore there are no medium or low sensitivity receptors within the context of this assessment.

Magnitude of Impact

Demolition and Construction

- 13.94. There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the IAQM has been used. Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required. Step 2 consists in determining the risk of dust impacts for each activity (i.e. demolition, earthworks, construction and the trackout of material from the Proposed Development Site onto the local road network). First, the 'dust emission magnitude' is determined for each of the four activities listed above, and is defined as 'small', 'medium' or 'large' (Step 2A, see Table A2.2 in Appendix A2). Then, the sensitivity of the area to dust soiling and human health effects is determined based on the number of receptors located within certain distances from the Proposed Development Site, and their sensitivity (Step 2B, see Tables A2.3 and A2.4 in Appendix A2). Area sensitivities are defined for each type of effect (dust soiling or human health) and are described as 'low', 'medium' or 'high'. The dust emission magnitudes determined at Step 2A are combined with the sensitivities of the area determined at Step 2B to determine the risk of dust soiling and human health impacts for each activity, with no mitigation applied. Risks are defined as 'negligible', 'low', 'medium' or 'high'. Full details of this approach are provided in Appendix A2.

Completed Development

- 13.95. There is no official guidance in the UK in relation to development control on how to describe air quality impacts and effects, nor how to assess their significance. The approach developed jointly by EPUK & IAQM⁴² has therefore been used. This includes defining descriptors of the impacts at individual receptors, which take account of the percentage change in

concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective.

- 13.96. Table 13.5 sets out how impact descriptors have been determined within this assessment, being an adapted version of the table presented in Appendix A2. For the assessment criterion the term Air Quality Assessment Level or AQAL has been adopted, as it covers all pollutants, i.e. those with and without formal standards. Typically, as is the case for this assessment, the AQAL will be the air quality objective value. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 13.5 Air Quality Impact Scale Descriptors for Individual Receptors for All Pollutants ^a

Long-term average concentration at receptor in assessment year ^{b,c}				Change in concentration relative to AQAL ^{c,d}				
% of AQAL	Annual Mean NO ₂ (µg/m ³)	Annual Mean PM ₁₀ (µg/m ³)	Annual Mean PM _{2.5} (µg/m ³)	0%	1%	2-5%	6-10%	>10%
75% or less of AQAL	Less than 30.2	Less than 30.2	Less than 18.9	Negligible	Negligible	Negligible	Minor	Moderate
76-94% of AQAL	30.2 – 37.8	30.2 – 37.8	18.9 – 23.6	Negligible	Negligible	Minor	Moderate	Moderate
95-102% of AQAL	37.8 – 41.0	37.8 – 41.0	23.6 – 25.6	Negligible	Minor	Moderate	Moderate	Major
103-109% of AQAL	41.0 – 43.8	41.0 – 43.8	25.6 – 27.4	Negligible	Moderate	Moderate	Major	Major
110% or more of AQAL	More than 43.8	More than 43.8	More than 27.4	Negligible	Moderate	Major	Major	Major

^a Values are rounded to the nearest whole number

^b This is the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme' concentration where there is an increase.

^c AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'. The WHO target for PM_{2.5} as well as the air quality objective is also presented.

^d *Minor and Major are used as standard EIA terminology, and correspond to Slight and Substantial respectively in relevant guidance¹⁴*

- 13.97. Additional guidance is provided by the Environment Agency and Natural Resources Wales for installations regulated under the Environmental Permitting (England and Wales) Regulations 2016. This guidance provides a staged approach for assessing the significance of air quality impacts. Process contributions can be screened as 'insignificant' if they are less than 1% of the relevant long-term assessment level and less than 10% of the relevant short-term assessment level. Process contributions that cannot be screened as 'insignificant' are not necessarily significant, but further analysis is required.
- 13.98. The further assessment for process contributions that cannot be screened as insignificant is based on the following tests and accounts for the baseline/background concentration. If both of the following criteria are met, no further assessment of that substance is required:
- the short-term process contribution is less than 20% of the relevant short-term assessment level minus twice the long-term background concentration;
 - the long-term predicted environmental concentration (i.e., the process contribution plus background) is less than 70% of the long-term assessment level.

Defining the Effect

Demolition and Construction

- 13.99. Dust generated by the Proposed Development during demolition and construction has the potential to cause effects at a local and borough level (up to 350m from the Proposed Development Site boundary). These would be temporary, medium-term, direct effects.

Completed Development

- 13.100. Emissions of pollutants from road traffic and process (stack) emissions associated with the Proposed Development have the potential to cause air quality effects at a local and borough level (refer to receptor locations in Table 13.6 and Figure 13.1, which define the study area). These would be permanent, long-term, direct effects.

Categorising Likely Significant Effects

Demolition and Construction

- 13.101. Guidance from the IAQM is that, with appropriate mitigation in place, the effects of construction dust will be 'not significant'. The assessment thus focuses on determining the appropriate level of mitigation to ensure that effects will normally be 'not significant'.

Completed Development

- 13.102. There is no official guidance in the UK in relation to development control on how to assess the significance of effects. The approach developed jointly by EPUK & IAQM⁴² has therefore been used.
- 13.103. It is important to differentiate between the terms impact and effect with respect to the assessment of air quality. The term impact is used to describe a change in pollutant concentration at a specific location. The term effect is used to describe an environmental response resulting from an impact, or series of impacts. Within this chapter, the air quality assessment has used published guidance and criteria to determine the likely air quality impacts at a number of sensitive locations (see Table 13.6). The overall significance of the air quality effects is then determined using professional judgement, giving consideration to various factors including the magnitude of the predicted impacts and the presence of any objective exceedances; full details of the EPUK/IAQM approach are provided in Appendix A3. The experience of the consultants who have prepared this chapter is set out in Appendix A4.
- 13.104. Where the predicted concentrations are below the relevant objectives, the effect of air quality on future occupiers is judged to be 'not significant'.

Sensitive Receptors*Human Health Receptors**Road Traffic*

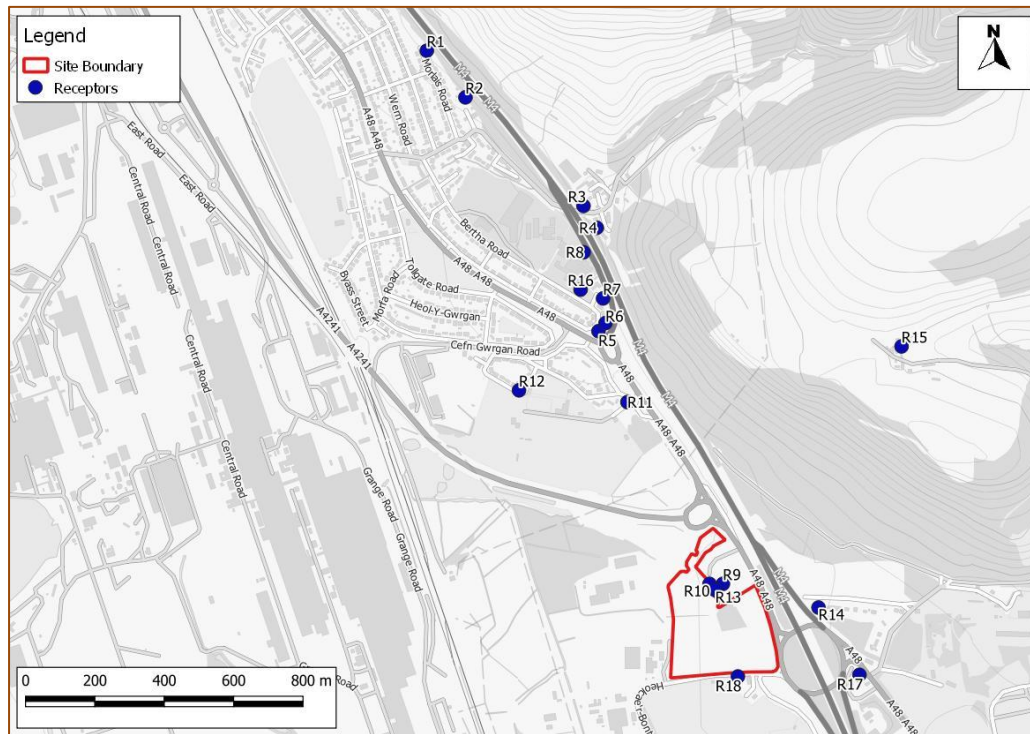
- 13.105. Concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} have been predicted at a number of locations close to the Proposed Development, including at sensitive locations within the Margam AQMA (Figure 13.1). Receptors have been identified to represent the worst-case locations (these being at the façades of the residential properties closest to the sources). When selecting receptors, particular attention has been paid to assessing impacts close to junctions, where traffic may become congested and where there is a combined effect of several road links, and close to those roads where the traffic increases as a result of the Proposed Development will be greatest.
- 13.106. Ten existing residential properties have been identified as receptors for the assessment. These locations are described in Table 13.6 and shown in Figure 13.1.

Table 13.6 Modelled Human Health Receptors ^a

Receptor	Description
R1	56 Morlais Road
R2	Brombil Court
R3	Brombil Barns
R4	Tudor Grove
R5	3 Tygroes Drive
R6	9 Tygroes Drive
R7	23 Tygroes Drive
R8	Afan College
R9	Tyn Y Caeau
R10	Tyn Y Caeau
R11	76 Abbots Close
R12	46 Abbots Close
R13	Tyn Y Caeau
R14	Gorsedd
R15	Farmhouse
R16	Afan College
R17	1 Cross Hill
R18	1 Heolcae'r-Bont

^a All receptors modelled at ground floor level (1.5 m).

Figure 13.1 Human Health Receptors

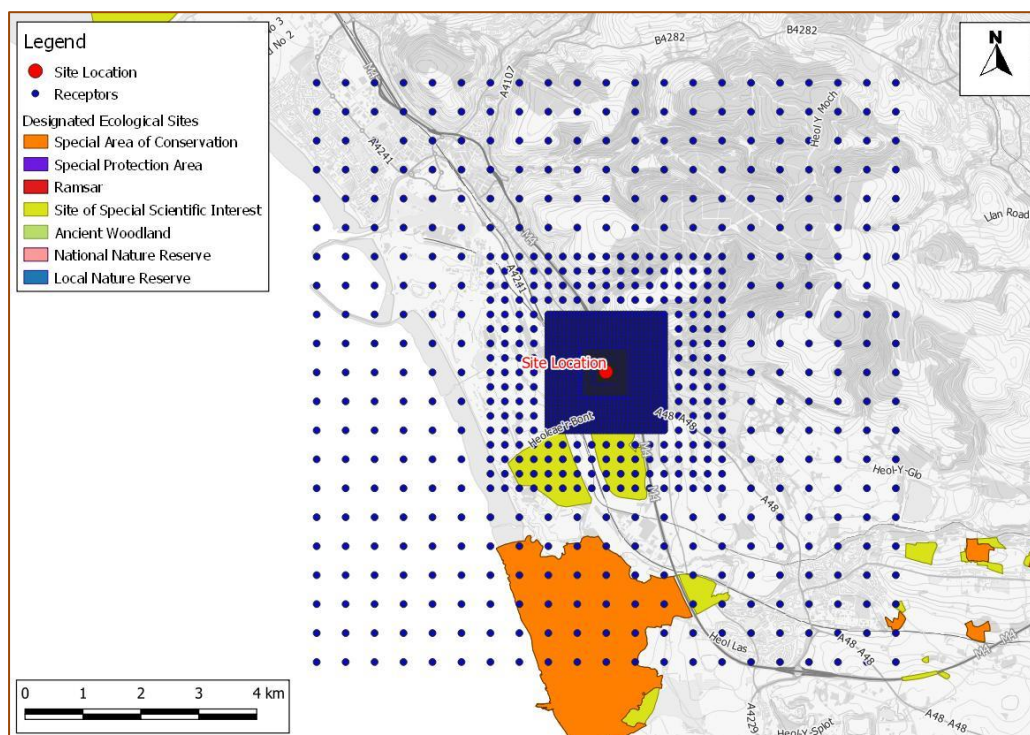


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Powder Processing Plant

13.107. Impacts as a result of emissions from the Powder Processing Plant have been predicted over a 10 km x 10 km model domain, within the Proposed Development at the centre. Concentrations have been predicted across this area using nested Cartesian grids (see Figure 13.2). These grids have a spacing of 5 m x 5 m within 200 m of the facility, 25 m x 25 m within 400 m, 50 m x 50 m within 1,000 m, 250 m x 250 m within 2,000 m, and 500 m x 500 m within 5,000 m of the facility. The receptor grid has been modelled at a height of 1.5 m above ground level. A number of specific, worst-case receptors have also been included in the modelling, as detailed in Table 13.7.

Figure 13.2 Nested Cartesian Grids of Receptors



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Ecological Receptors

Road Traffic

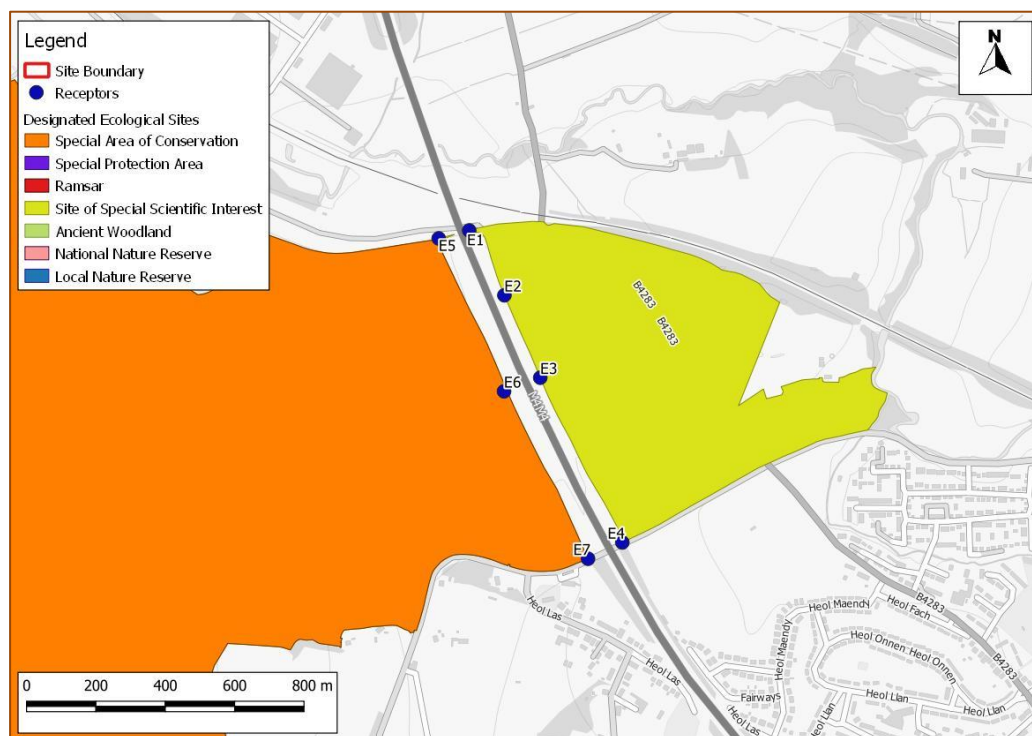
13.108. The ecological impacts at the Cynffig SAC and SSSI have been assessed. Specific receptors have been modelled at several worst-case locations in proximity to the M4. Receptors have been modelled at 1.5 m above ground level to be consistent with Defra's national modelling of ecosystem impacts. These locations are described in Table 13.7 and shown in Figure 13.3.

Table 13.7 Modelled Ecological Receptors

Receptor	Description
E1	Cynffig SSSI
E2	Cynffig SSSI
E3	Cynffig SSSI
E4	Cynffig SSSI

E5	Cynffig SAC
E6	Cynffig SAC
E7	Cynffig SAC

Figure 13.3 Ecological Receptors



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Powder Processing Plant

13.109. As discussed previously, the impacts of emissions from the Powder Processing Plant have been predicted over a 10 km x 10 km grid, as shown in Figure 13.2. However, although this includes locations within the relevant designated ecological receptors, there are no Air Quality Standards or EALs for assessing the impacts of PM or metals on ecological receptors; thus, a formal impact assessment of these has not been undertaken.

Baseline Conditions

Relevant Features

13.110. The Proposed Development site is located to the west of the M4 Junction 38, approximately 4.5 km to the south east of Port Talbot town centre. The site is bounded by the M4 slip road to the east, Hoelcae'r-Bont to the south and the Western Wood and Margam Green Energy Plants to the west. It currently consists primarily of arable farmland.

Industrial Sources

13.111. A search of the UK Pollutant Release and Transfer Register²⁷ identified the following significant industrial emission sources that are likely to affect the proposed development, in terms of air quality:

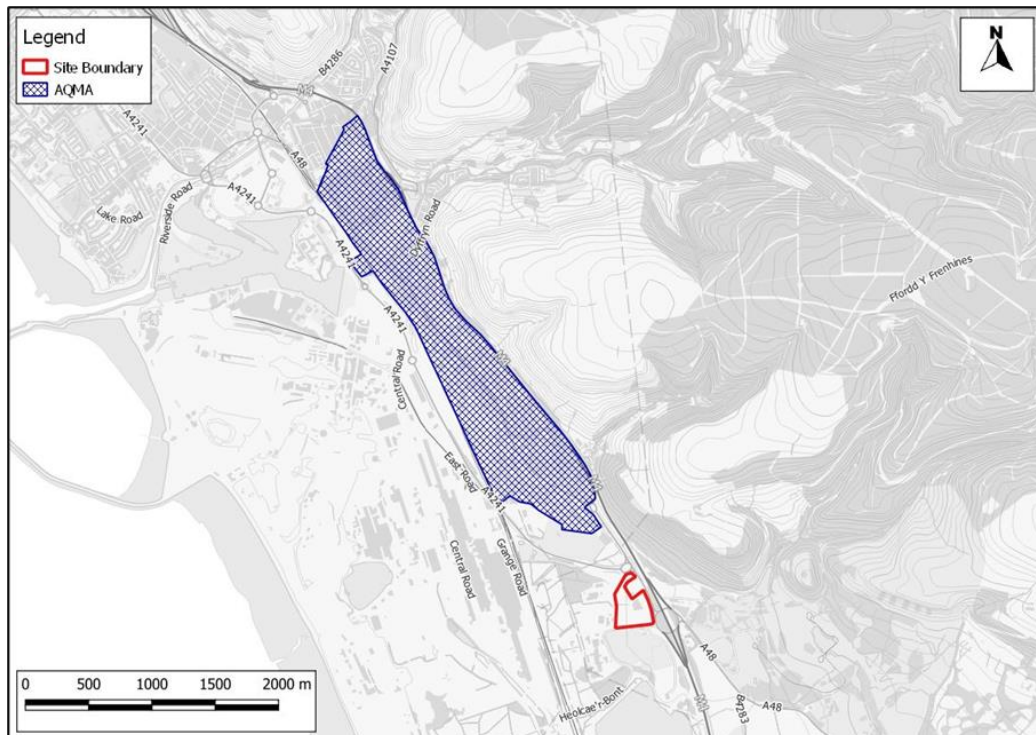
- Margam Green Energy Plant;
- Western Wood Energy Plant;
- Port Talbot Steel Works; and
- Harsco Metals Port Talbot.

13.112. All of these existing pollution sources have been operational for a number of years and their contribution to local air quality is likely accounted for in the ambient monitored data and background concentrations; thus, no specific modelling of emissions from these sources is deemed necessary for this assessment.

Air Quality Management Areas

13.113. NPTC has investigated air quality within its area as part of its responsibilities under the LAQM regime. In July 2000, an AQMA was declared for an area covering the majority of land and properties between the Corus Steel Works and the M4 motorway for exceedances of the 24-hour mean particulate matter PM₁₀ objective. The declared AQMA is shown in Figure 13.4.

Figure 13.4 Declared AQMA



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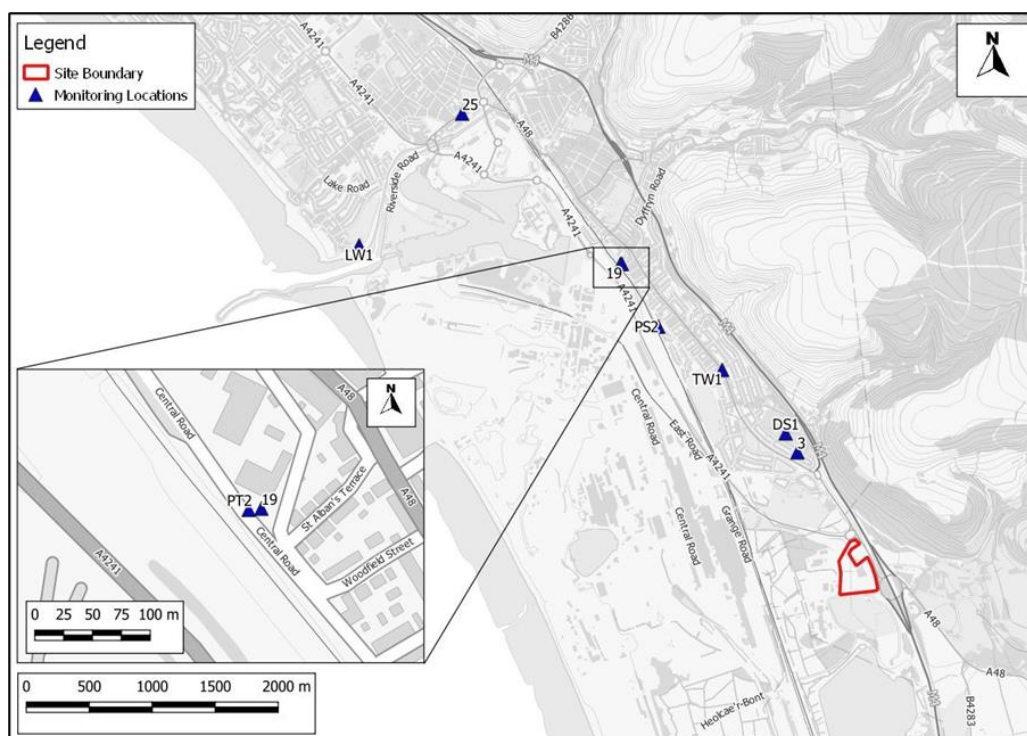
Local Air Quality Monitoring

13.114. NPTBC operates six automatic monitoring stations within its area, five of which are in proximity to the proposed development site, although only one measures nitrogen dioxide concentrations. The Council also operates a number of nitrogen dioxide monitoring sites using diffusion tubes prepared and analysed by Socotec (using the 50% TEA in acetone method). These include three deployed in proximity to the proposed development. Results for the years 2015 to 2019 are summarised in Table 13.8 and the monitoring locations are shown in Figure 13.5.

Table 13.8 Summary of NO₂ Monitoring (2015-2019)

Site No.	Site Type	Location	2015	2016	2017	2018	2019
Automatic Monitors - Annual Mean (µg/m³)							
PT2	Industrial	Port Talbot Fire Station	17.0	21.0	16.0	15.0	15.0
Objective			40				
Automatic Monitors – No. of Hours >200 µg/m³							
PT2	Industrial	Port Talbot Fire Station	0	0	0	0	0
Objective			18 (200)				
Diffusion Tubes – Annual Mean (µg/m³)							
3	Urban Background	11 College Green, Margam	14.5	14.0	13.2	12.1	12.9
19	Industrial	Port Talbot Fire Station	16.6	16.8	15.6	13.7	15.7
25	Roadside	Old Fire Station, Water Street	24.2	26.8	26.4	24.1	27.7
Objective			40				

Figure 13.5 Monitoring Locations



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- 13.115. Measured annual mean NO_2 concentrations remained well below the objective between 2015 and 2019 at all nearby monitoring stations. There were also no exceedances of the 1-hour mean NO_2 objective recorded at the PT2 automatic monitor. There were no clear trends in concentrations between 2015 and 2019.
- 13.116. The five nearby automatic monitoring stations all measure PM_{10} concentrations and two stations also measure $\text{PM}_{2.5}$ concentrations. Measured annual mean PM_{10} and $\text{PM}_{2.5}$ concentrations remained well below the objective at all nearby monitoring stations between 2015 and 2019, and there were no recorded exceedances of the 24-hour PM_{10} objective. Results for the years 2015 to 2019 are summarised in Table 13.9.

Table 13.9 Summary of PM₁₀ and PM_{2.5} Monitoring (2015-2019)

Site No.	Site Type	Location	2015	2016	2017	2018	2019
PM ₁₀ Annual Mean (µg/m³)							
PT2	Industrial	Port Talbot Fire Station	27.0	22.0	23.0	23.0	21.0
DS1	Industrial	Dyffryn School	20.0	18.0	21.0	-	22.0
TW1	Industrial	Twll-yn-y Wal Park	26.0	24.0	21.0	21.0	21.0
LW1	Industrial	Port Talbot Little Warren	24.0	21.0	21.0	21.0	20.0
PS2	Industrial	Prince Street	-	23.0	25.0	23.0	20.0
Objective			40				
PM ₁₀ No. of Days >50 µg/m³							
PT2	Industrial	Port Talbot Fire Station	28	8	17	11	12
DS1	Industrial	Dyffryn School	5	0	2	-	2
TW1	Industrial	Twll-yn-y Wal Park	10	4	3	9	10
LW1	Industrial	Port Talbot Little Warren	15	9	16	9	9
PS2	Industrial	Prince Street	-	9	18	12	8
Objective			35 (50)				
PM _{2.5} Annual Mean (µg/m³)							
PT2	Industrial	Port Talbot Fire Station	10.0	9.0	10.0	11.0	11.0
PS2	Industrial	Prince Street	10.0	10.0	10.0	9.0	9.0
Objective			25 ^a				

^a The PM_{2.5} objective, which was to be met by 2020, is not in the Air Quality Regulations but is listed as a statutory standard in the Air Quality Standards Regulations.

Exceedances of Limit Value

13.117. There are no AURN⁴⁸ monitoring sites within the study area with which to identify exceedances of the annual mean nitrogen dioxide limit value. Defra's roadside annual mean nitrogen dioxide concentrations⁴⁹, which are used to identify and report exceedances of the limit value, identify exceedances of the limit value in 2019 along the M4 near the site. Using the same Defra roadside concentration data, compliance along the M4 is expected by 2024; thus, no exceedances are expected in the study area by the time the proposed development is operational.

Background Concentrations

National Background Pollution Maps

13.118. Estimated background concentrations in the study area are set out in Table 13.10 and are all well below the objectives. A range of values is presented as the study area covers multiple 1x1 km grid squares.

Table 13.10 Estimated Annual Mean Background Pollutant Concentrations in 2019 and 2024 ($\mu\text{g}/\text{m}^3$)

Year	NO _x	NO ₂	PM ₁₀	PM _{2.5}
2019	17.4 – 27.4	12.4 – 18.4	11.8 – 14.5	7.4 – 9.2
2024	13.3 – 22.3	9.6 – 15.3	11.1 – 13.8	6.8 – 8.7
Objective	-	40	40	25

^a The 25 $\mu\text{g}/\text{m}^3$ PM_{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

National Heavy Metals Network

13.119. Background concentrations of various heavy metals are recorded by monitors as part of the National Heavy Metals Network. 2019 baseline concentrations of chromium, nickel, copper and lead recorded at the Port Talbot Margam site, located approximately 3 km northwest of the Proposed Development, are presented in Table 13.11.

⁴⁸ Defra. (2021). Defra AURN Archive. Retrieved from <https://uk-air.defra.gov.uk/interactive-map?network=aurn>

⁴⁹ Defra. (2021). UK Ambient Air Quality Interactive Map. Retrieved from <https://uk-air.defra.gov.uk/data/gis-mapping>

Table 13.11 Monitored Annual Mean Background Metal Concentrations in 2019 ($\mu\text{g}/\text{m}^3$)

Year	Chromium	Nickel	Copper	Lead
2019	0.005	0.001	0.018	0.008
EAL ($\mu\text{g}/\text{m}^3$)	5	0.02	10	0.25

Background Deposition and Acidity

13.120. Background nitrogen deposition fluxes to the SAC and SSSIs are presented in Table 13.12.

Table 13.12 Estimated Annual Mean Background Nitrogen Deposition

Site	Nutrient Nitrogen Deposition ($\text{kgN}/\text{ha}/\text{yr}$)		Acid Nitrogen Deposition ($\text{keq}/\text{ha}/\text{yr}$)	
	Background	Critical Load	Background	Critical Load
Cynffig SAC/SSSI	12.7	8	0.91	1.053

Baseline Dispersion Model Results

Human Health Receptors

13.121. Baseline concentrations of nitrogen dioxide, PM_{10} and $\text{PM}_{2.5}$ have been modelled at each of the existing receptor locations (see Figure 13.1 and Table 13.6 for receptor locations). The results, which cover both the existing (2019) and future year (2024) baseline (Without Scheme), are set out in Table 13.13 for nitrogen dioxide and Table 13.14 for PM_{10} and $\text{PM}_{2.5}$. The modelled road components of nitrogen oxides, PM_{10} and $\text{PM}_{2.5}$ have been increased from those predicted by the model based on a comparison with local measurements (see Appendix A5 for the verification methodology).

Table 13.13 Modelled Annual Mean Baseline Concentrations of NO_2 ($\mu\text{g}/\text{m}^3$) at Existing Receptors

Receptor	2019	2024 Without Scheme
R1	25.3	19.6
R2	25.6	19.8
R3	35.3	25.9
R4	35.2	25.8
R5	23.8	18.8
R6	24.9	19.5

R7	28.0	21.4
R8	29.6	22.4
R9	22.8	18.0
R10	21.9	17.4
Objective	40	

Table 13.14 Modelled Annual Mean Baseline Concentrations of PM₁₀ and PM_{2.5} (µg/m³) at Existing Receptors

Receptor	PM ₁₀ ^a		PM _{2.5}	
	2019	2024 Without Scheme	2019	2024 Without Scheme
R1	15.0	14.4	9.5	9.0
R2	15.0	14.4	9.5	9.0
R3	15.3	14.6	9.8	9.2
R4	15.3	14.6	9.8	9.1
R5	14.8	14.1	9.4	8.8
R6	14.8	14.1	9.4	8.8
R7	14.9	14.2	9.5	8.9
R8	15.0	14.3	9.6	9.0
R9	13.6	12.9	8.4	7.9
R10	13.5	12.9	8.4	7.9
Assessment Criterion	32^a		25^b	

^a While the annual mean PM₁₀ objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM₁₀ objective is possible, as outlined in LAQM.TG16³⁴. A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM₁₀ objective, as recommended in EPUK & IAQM guidance⁴².

^b The 25 µg/m³ PM_{2.5} objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

13.122. The predicted annual mean concentrations of nitrogen dioxide are below the objective in 2019 and 2024 at all receptors. The annual mean nitrogen dioxide concentrations are also

below 60 $\mu\text{g}/\text{m}^3$ at every receptor in both 2019 and 2024; it is, therefore, unlikely that the 1-hour mean nitrogen dioxide objective will be exceeded.

- 13.123. The predicted annual mean concentrations of PM_{10} and $\text{PM}_{2.5}$ are well below the objective in both 2019 and 2024 at all receptors. The annual mean PM_{10} concentrations are below 32 $\mu\text{g}/\text{m}^3$ and it is, therefore, unlikely that the 24-hour mean PM_{10} objective will be exceeded.

Ecological Receptors

- 13.124. Baseline concentrations of nitrogen oxides at the location within the SAC and SSSI with the highest concentration in 2019 and 2024 (Without development) are set out in Table 13.15. Annual mean nitrogen oxide concentrations exceed the objective at locations within the SAC and SSSI in 2019 and in 2024 without the development.

Table 13.15 Annual Mean Nitrogen Oxides Concentrations in the Ecological Sites

Receptor	2019	2024 Without Scheme
E1	72.5	46.3
E2	46.8	30.9
E3	47.8	31.5
E4	46.7	30.8
E5	33.5	22.9
E6	32.4	22.3
E7	31.4	21.7
Objective	30	

- 13.125. No background 24-hour mean nitrogen oxide concentrations are available therefore baseline 24-hour mean concentrations have not been calculated. The worst-case assumption, that they already exceed, has been adopted.

- 13.126. Baseline nutrient and acid nitrogen deposition rates within the SAC and SSSI in 2019 and 2024 (Without development) are set out in Table 13.16 and Table 13.17.

Table 13.16 Modelled Baseline Nutrient Nitrogen Deposition Rates in the Ecological Sites (kgN/ha/yr)

Receptor	2019	2024 Without Scheme
E1	27.2	25.6
E2	18.6	17.3
E3	18.9	17.6
E4	18.6	17.3
E5	14.5	13.5
E6	14.2	13.3
E7	13.9	13.0
Critical Load	8	

Table 13.17 Modelled Baseline Acid Nitrogen Deposition Rates in the Ecological Sites (keq/ha/yr)

Receptor	2019	2024 Without Scheme
E1	1.95	1.83
E2	1.33	1.24
E3	1.36	1.26
E4	1.33	1.23
E5	1.04	0.97
E6	1.02	0.95
E7	1.00	0.93
Critical Load	1.053	

13.127. Baseline nutrient nitrogen deposition rates at all roadside locations within the SAC and SSSI exceed the critical load in both 2019 and 2024. Acid nitrogen deposition rates exceed the critical load at four of the seven modelled locations in 2019 and 2024.

Assessment of Effects, Mitigation and Residual Effects

On-site Exhaust Emissions

13.128. The IAQM guidance⁴⁴ states:

“Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a

significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur”.

- 13.129. The Proposed Development is located well away from any sensitive properties. A Construction Environmental Management Plan (CEMP) will also ensure emissions generated by NRMM are controlled. It is judged that there no risk of significant effects at existing receptors as a result of on-site machinery emissions.

Demolition and Construction Dust

- 13.130. The demolition and construction works will give rise to a risk of dust impacts during demolition, earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are receptors within the distances set out in the guidance (see Appendix A2 and the assessment buffers visualised in Figure 13.6 and Figure 13.7 below), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

Potential Dust Emission Magnitude

Demolition

- 13.131. There is no requirement for demolition on site.

Earthworks

- 13.132. The characteristics of the soil at the site have been defined using the British Geological Survey's UK Soil Observatory website⁵⁰, as set out in Table 13.18. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

Table 13.18 Summary of Soil Characteristics

Category	Record
Soil Layer Thickness	Deep
Soil Parent Material Grain Size	Mixed (Arenaceous ^a – Rudaceous ^b)
European Soil Bureau Description	Glaciofluvial Deposits
Soil Group	Light to Medium (Sandy)
Soil Texture	Sand to Sandy Loam ^c

⁵⁰ British Geological Survey (2021) UK Soil Observatory Map Viewer, Available: <http://mapapps2.bgs.ac.uk/ukso/home.html>.

^a grain size 0.06 – 2.0 mm.

^b grain size > 2.0 mm.

^c a loam is composed mostly of sand and silt.

13.133. The site covers approximately 75,000 m² and most of this will be subject to earthworks. Dust will arise mainly from vehicles travelling over unpaved ground and from the handling of dusty materials (such as dry soil). Based on the example definitions set out in Table A2.1 in Appendix A2, the dust emission class for earthworks is considered to be *large*.

Construction

13.134. The total building volume of buildings to be constructed is in excess of 100,000 m³. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dusty materials, and from the cutting of concrete. Based on the example definitions set out in Table A2.1 in Appendix A2, the dust emission class for construction is considered to be *large*.

Trackout

13.135. The number of two way heavy vehicles accessing the site, which may track out dust and dirt, is expected to peak around 40 per day. Based on the example definitions set out in Table A2.1 in Appendix A2, the dust emission class for trackout is considered to be *medium*.

13.136. Table 13.19 summarises the dust emission magnitude for the proposed development.

Table 13.19 Summary of Dust Emission Magnitude

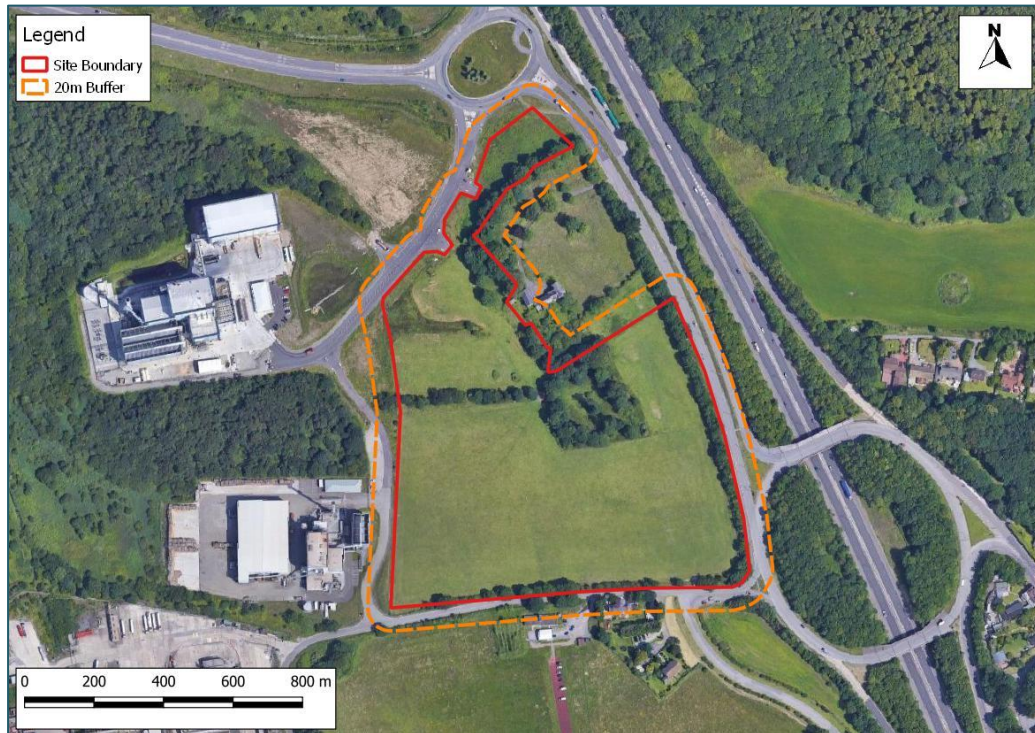
Source	Dust Emission Magnitude
Demolition	n/a
Earthworks	Large
Construction	Large
Trackout	Medium

Sensitivity of the Area

13.137. This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM₁₀ concentrations.

13.138. The IAQM guidance explains that residential properties are 'high' sensitivity receptors to dust soiling (Table A2.2 in Appendix A2). Residential properties are also classified as being of 'high' sensitivity to human health effects, while places of work are classified as being of 'medium' sensitivity. There are two residential properties within 20 m of the site, (see Figure 13.6).

Figure 13.6 20 m Distance Band around Site Boundary



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13.139. Table 13.19 shows that the dust emission magnitude for trackout is medium and Table A2.3 in Appendix A2 thus explains that there is a risk of material being tracked 200 m from the site exit. Since it is not known which roads construction vehicles will use, it has been assumed that all possible routes could be affected. There are no sensitive receptors within 50 m of the roads along which material could be tracked (see Figure 13.7).

Figure 13.7 50 m Distance Band around Roads Used by Construction Traffic Within 200 m of the Site Exit



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Sensitivity of the Area to Effects from Dust Soiling

- 13.140. Using the matrix set out in Table A2.3 in Appendix A2, the area surrounding the onsite works is of 'medium' sensitivity to dust soiling and not sensitive to dust soiling due to trackout.

Sensitivity of the Area to any Human Health Effects

- 13.141. The matrix in Table A2.4 in Appendix A2 requires information on the baseline annual mean PM_{10} concentration in the area. The properties nearest the site are well away from local roads and the existing annual mean PM_{10} concentration is best described by the background concentration from Table 13.10 ($14.5 \mu g/m^3$). Using the same matrix, the area surrounding the 'on-site works' is of 'low' sensitivity to human health effects, while the area surrounding roads along which material may be tracked from the site is not sensitive to human health effects.

Sensitivity of the Area to any Ecological Effects

- 13.142. The guidance only considers designated ecological sites within 50 m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50

m of the site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

Summary of the Area Sensitivity

13.143. Table 13.20 summarises the sensitivity of the area around the proposed construction works.

Table 13.20 Summary of the Area Sensitivity

Effects Associated with:	Sensitivity of the Surrounding Area	
	On-site Works	Trackout
Dust Soiling	Medium	n/a
Human Health	Low	n/a
Ecological	n/a	n/a

Risk and Significance

13.144. The dust emission magnitudes in Table 13.19 have been combined with the sensitivities of the area in Table 13.20 using the matrix in Table A2.7 in Appendix A2, in order to assign a risk category to each activity. The resulting risk categories for the four construction activities, without mitigation, are set out in Table 13.21. These risk categories have been used to determine the appropriate level of mitigation as set out in Appendix A6 (step 3 of the assessment procedure).

Table 13.21 Summary of Risk of Impacts Without Mitigation

Source	Dust Soiling	Human Health
Demolition	n/a	n/a
Earthworks	Medium Risk	Low Risk
Construction	Medium Risk	Low Risk
Trackout	n/a	n/a

13.145. The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be 'not significant'⁴⁴.

Completed Development

Road Traffic Impacts

Human Health

13.146. The proposed development will generate traffic volumes that exceed the EPUK/IAQM screening thresholds on a number of local roads, including within the Margam AQMA, thus a detailed assessment is required.

Nitrogen Dioxide

13.147. Predicted annual mean concentrations of nitrogen dioxide in 2024 for existing receptors are set out in Table 13.22 for both the “Without Scheme” and “With Scheme” scenarios. The impact at each receptor is also described using the impact descriptors given in Table 13.5.

Table 13.22 Summary of the Area Sensitivity

Receptor	Without Scheme	With Scheme	% Change ^a	Impact Descriptor
R1	19.9	19.9	0	Negligible
R2	20.1	20.1	0	Negligible
R3	26.6	26.7	0	Negligible
R4	26.5	26.7	0	Negligible
R5	19.0	19.0	0	Negligible
R6	19.7	19.8	0	Negligible
R7	21.7	21.9	0	Negligible
R8	22.8	23.0	0	Negligible
R9	18.2	18.2	0	Negligible
R10	17.5	17.6	0	Negligible
Objective	40		-	-

^a % changes are relative to the objective and have been rounded to the nearest whole number

13.148. The annual mean nitrogen dioxide concentrations are well below the objective at all receptors and all impacts are *negligible*.

PM₁₀ and PM_{2.5}

13.149. Predicted annual mean concentrations of PM₁₀ and PM_{2.5} in 2024 for existing receptors are set out in Table 13.23 for both the “Without Scheme” and “With Scheme” scenarios. The impacts at each receptor are also described using the impact descriptors given in Table 13.5.

Table 13.23 Summary of the Area Sensitivity

Receptor	Annual Mean PM ₁₀ (µg/m ³)				Annual Mean PM _{2.5} (µg/m ³)			
	Without Scheme	With Scheme	% Change ^a	Impact Descriptor	Without Scheme	With Scheme	% Change ^a	Impact Descriptor
R1	14.4	14.4	0	Negligible	9.0	9.0	0	Negligible
R2	14.4	14.4	0	Negligible	9.0	9.0	0	Negligible
R3	14.6	14.6	0	Negligible	9.2	9.2	0	Negligible
R4	14.6	14.6	0	Negligible	9.1	9.2	0	Negligible
R5	14.1	14.1	0	Negligible	8.8	8.8	0	Negligible
R6	14.1	14.1	0	Negligible	8.8	8.9	0	Negligible
R7	14.2	14.3	0	Negligible	8.9	8.9	0	Negligible
R8	14.3	14.3	0	Negligible	9.0	9.0	0	Negligible
R9	12.9	12.9	0	Negligible	7.9	7.9	0	Negligible
R10	12.9	12.9	0	Negligible	7.9	7.9	0	Negligible
Criterion	32 ^b		-	-	25 ^c		-	-

^a % changes are relative to the objective and have been rounded to the nearest whole number

^b While the annual mean PM₁₀ objective is 40 µg/m³, 32 µg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM₁₀ objective is possible, as outlined in LAQM.TG16. A value of 32 µg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM₁₀ objective, as recommended in EPUK & IAQM guidance.

13.150. The annual mean PM₁₀ and PM_{2.5} concentrations are well below the relevant criteria at all receptors, with or without the proposed development. Furthermore, as the annual mean PM₁₀ concentrations are below 32 µg/m³, it is unlikely that the 24-hour mean PM₁₀ objective will be exceeded at any of the receptors. The impacts at all receptors are *negligible*.

Ecological Receptors

13.151. The changes in predicted concentrations of nitrogen oxides and ammonia in 2024 are set out in Table 12.24. The maximum changes in rates of nutrient and acid nitrogen deposition in 2024 with and without the proposed development are set out in Table 13.25.

Table 13.24 Changes in Nitrogen Oxides Relative to the Critical Levels

Pollutant	Change	% of Critical Level
Annual Mean NO _x	0.16	0.5
Screening Criterion	0.3 (1%)	
24hr-Mean NO _x	0.71	0.9
Screening Criterion	7.5 (10%)	
Annual Mean NH ₃	0.005	0.5
Screening Criterion	0.01 (1%)	

Table 13.25 Changes in Nitrogen Deposition Relative to the Critical Load

Pollutant	Change	% of Critical Level
Annual Mean Nutrient Nitrogen (kgN/ha/yr)	0.07	0.8
Screening Criterion	0.08 (1%)	
Annual Mean Acid Nitrogen (keq/ha/yr)	0.005	0.4
Screening Criterion	0.01 (1%)	

13.152. Changes in nutrient and acid nitrogen deposition rates at the worst-case receptor locations are predicted to be below the relevant screening criteria for the Proposed Development in isolation. Chapter 10 – Ecology sets out the significance of the effects of the Proposed Development on designated ecological sites.

Powder Processing Plant Impacts

13.153. The maximum changes in predicted concentrations of PM₁₀, PM_{2.5}, chromium, nickel, copper and lead at any sensitive receptor in 2024 are set out in Table 13.26. The maximum changes in rates of deposition in 2024 are set out in Table 13.27.

Table 13.26 Changes in Concentrations Relative to the EALs

Pollutant	Change	% of EAL
Annual Mean PM ₁₀	0.21	0.5
Screening Criterion	0.4 (1%)	
Annual Mean PM _{2.5}	0.21	0.8
Screening Criterion	0.25 (1%)	
Annual Mean Chromium	0.03	0.6
Screening Criterion	0.05 (1%)	
1-hour Mean Chromium	4.2	2.8
Screening Criterion	15 (10%)	
Annual Mean Nickel	0.004	21.6
Screening Criterion	0.02 (1%)	
Annual Mean Copper	0.05	0.5
Screening Criterion	0.1 (1%)	
1-hour Mean Copper	7.5	3.8
Screening Criterion	20 (10%)	
Annual Mean Lead	0.005	2.0
Screening Criterion	0.0025 (1%)	

Table 13.27 Changes in Deposition Rates Relative to the MDRs

Pollutant	Change	% of MDR
Annual Mean Chromium	0.1	5.1
Screening Criterion	0.015 (1%)	
Annual Mean Nickel	0.01	10.2
Screening Criterion	0.0011 (1%)	
Annual Mean Copper	0.12	49.0
Screening Criterion	0.0025 (1%)	
Annual Mean Lead	0.01	1.2
Screening Criterion	0.011 (1%)	

13.154. The maximum changes in annual mean concentrations are below the EAL screening criteria for most modelled pollutants at the worst-case sensitive receptor locations. For these pollutants, the potential for significant impacts at existing receptors as a result of emissions from the Powder Processing Plant can thus be discounted as insignificant.

13.155. In the cases of the contributions to annual mean nickel and lead concentrations, and the annual mean chromium, nickel, copper and lead deposition rates, there are exceedances of the relevant screening criteria. Where relevant, the annual mean total predicted environmental concentrations (PECs) and total deposition rates for these pollutants have therefore been calculated by adding the process contribution to the baseline monitored concentrations presented in Table 13.11. These PECs and total deposition rates are presented in Table 13.28 and Table 13.29 respectively.

Table 13.28 Predicted Environmental Concentrations Relative to the EALs

Pollutant	PEC	% of EAL
Annual Mean Nickel	0.005	26.6
Screening Criterion	0.014 (70%)	
Annual Mean Lead	0.01	5.2
Screening Criterion	0.175 (70%)	

Table 13.29 Total Deposition Rates Relative to the MDRs

Pollutant	Change	% of MDR
Annual Mean Chromium	0.1	6.0
Screening Criterion	1.05 (70%)	
Annual Mean Nickel	0.014	12.5
Screening Criterion	0.077 (70%)	
Annual Mean Copper	0.17	67.7
Screening Criterion	0.175 (70%)	
Annual Mean Lead	0.034	3.1
Screening Criterion	0.77 (70%)	

13.156. As presented in Table 13.28, all annual mean PECs and total deposition rates are below 70% of the relevant EALs and MDRs, indicating that no significant effects will occur as a result of emissions from the Powder Processing Plant; thus, no further assessment has been undertaken.

13.157. The screening criteria adopted for point source emissions from the Powder Processing Plant are those from the Environment Agency/NRW guidance, rather than the IAQM guidance. As these emissions will be regulated under the Environmental Permitting (England and Wales) Regulations 2016, it is considered more appropriate to use criteria derived from guidance that will be used to control and regulate emissions from the operational phase of the Proposed Development.

13.158. It should be highlighted that the maximum deposition rates of metals presented in the tables are likely to be significantly overstated by almost a factor of 3. These predictions are for a receptor adjacent to the site boundary (Receptor R18) where there is unlikely to be sufficient time for significant in-cloud and below cloud scavenging to occur. Consequently, actual contributions to wet deposition at this receptor would be negligible (wet deposition has been accounted for by applying a factor of 3 to the dry deposition rate in line with Environment Agency/NRW guidance).

Sensitivity Analysis

13.159. As discussed previously, the point source dispersion model used in this assessment is required to simplify real-world conditions into a series of algorithms. This is because atmospheric turbulence is a stochastic (random) process which cannot be completely resolved by deterministic methods. These simplifications introduce uncertainties that cannot be easily quantified, whilst it is generally not possible to verify point-source model outputs. Acknowledging this fact, a number of sensitivity tests have been undertaken to investigate some of the key modelling uncertainties associated with the model created for this assessment. Based on this particular model setup, it is deemed appropriate to run sensitivity tests of the following parameters:

Buildings and Terrain.

13.160. It is important to emphasise that the aim of the sensitivity analysis is not to find a model setup that obtains the maximum possible prediction from the model, but to provide greater understanding of how assumptions on key input variables may affect the assessment, so that these factors can be considered when evaluating the significance of potential effects.

13.161. Sensitivity has been undertaken by running the model, with and without the above parameters, in order to quantify the impact these model options may have on predicted concentrations. As the worst-case results across five meteorological years have been presented in the main results section, and a variable surface roughness file has been used across the whole modelling domain, it is not deemed necessary to perform sensitivity tests on meteorological year or surface roughness. Furthermore, as nested Cartesian grids have been used with a grid resolution of 5 m x 5 m for the finest resolution grid, it is also not considered necessary to perform sensitivity analysis on grid resolution.

13.162. The results of the sensitivity test at the worst-case receptor have been compared and presented as a ratio to the base model. For example, a value of 0.8 in the table indicates the maximum result from the sensitivity test is 20% smaller than the base model, whilst a value of 1.2 indicates the maximum result from the sensitivity test is 20% greater than the base model.

13.163. Table 13.30 presents the sensitivity tests for the annual mean nickel contributions. The analysis indicates the model is moderately sensitive to buildings (16%) but more sensitive to terrain (33%), which is a consequence of the relatively complex terrain within the model domain. Both scenarios show that the base model scenario represents the most conservative model setup.

Table 13.30 Model Sensitivity Results

Model Sensitivity Test	Annual Mean Nickel Process Contribution
Base Model (buildings and terrain included)	1
No Buildings (terrain included)	0.84
No Terrain (buildings included)	0.67

Combined Impacts of Road Traffic and Powder Processing Plant

13.164. As presented in Table 13.23 the emissions of PM₁₀ and PM_{2.5} associated with additional road traffic from the Proposed Development will have a negligible impact on concentrations at existing receptors. Once combined with the Powder Processing Plant contributions presented in Table 13.26 the impacts remain *negligible*. No other pollutants are emitted by both road traffic and the Powder Processing Plant; thus, the combined impacts of the Proposed Development emissions on air quality at existing receptors are considered to be 'not significant' and no further assessment is required.

Limitation and Assumptions

Demolition and Construction

13.165. The demolition and construction dust risk assessment has assumed that measures described in Appendix A2 will be in place.

13.166. Consideration is given to emissions from non-road mobile machinery (NRMM) based on the control measures that would be implemented to ensure emissions do not result in significant effects at existing or introduced receptors.

Completed Development

13.167. It is necessary to make a number of assumptions when carrying out an air quality assessment; in order to account for some of the uncertainty in the approach, as described above, assumptions made have generally sought to reflect a realistic worst-case scenario. Key assumptions made in carrying out this assessment include:

- The assumption that the Proposed Development is complete and fully operational in 2024. This will have overestimated the traffic emissions and hence the 2024 “With Scheme” concentrations;
- that the Powder Processing Plant will be installed and fully operational in the year 2024. Again, this is likely to have resulted in an overestimate of emissions and hence the 2024 “With Scheme” concentrations; and
- that the Mumbles Head meteorological monitoring station appropriately represents conditions in the study area (this is discussed further in Appendix A5).
- Emissions from the point sources (stacks) will be at levels observed at a similar site operated by Sandvik Osprey. Actual emissions will be lower than these levels due to the use of newer, more efficient emission control technologies.

Summary

13.168. The assessment has considered the impacts of the Proposed Development on local air quality in terms of dust and particulate matter during construction, emissions from road traffic generated by the completed and occupied development, and emissions from the Powder Processing Plant. It has also identified the air quality conditions that would likely prevail in the future.

Construction Impacts

13.169. The construction works have the potential to create dust. During construction it will therefore be necessary to apply a package of mitigation measures to minimise dust emissions. Appropriate measures have been recommended and, with these measures in place, it is expected that any residual effects will be ‘not significant’.

Completed Development

13.170. The operation of the Proposed Development is not predicted to result in any significant effects on the existing receptors considered within this assessment in relation to air quality in terms of NO₂, PM₁₀, PM_{2.5}, chromium, nickel, copper and lead.

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14. HYDROLOGY, FLOOD RISK AND DRAINAGE

Introduction

- 14.1 This chapter of the Environmental Statement (ES) assesses the likely significant effects of the proposed development with respect to hydrology, flood risk and drainage. The chapter also describes the legislative and policy framework; methods used to assess the effects; baseline conditions currently existing at the application site; the mitigation measures required to prevent, reduce, or offset any significant negative effects; and the likely residual effects after these measures have been adopted. It has been written with consideration of the Scoping Opinions received from the Local Planning Authority and their consultation bodies.
- 14.2 This chapter is supported by the following two documents, which form technical appendices to this chapter and are required to support the planning application for the proposals:
- Development Site Margam Port Talbot Preliminary Drainage Strategy Report prepared by James and Nichols (2021) included in Appendix 14.1, which contains a Sustainable Drainage System (SuDS) design for SuDS Approving Body (SAB) approval by Neath Port Talbot Council. Herein referred to as the Preliminary Drainage Strategy.
 - Margam J38 Flood Consequence Assessment (FCA) GLR-JBAU-XX-XX-RP-Z-0001-D3-C03-Margam_J38_Flood_Consequence_Assessment prepared by JBA Consulting in October 2021 included in Appendix 14.2. Prepared in accordance with Planning Policy Wales requirements to assess flood risk from all sources both to and from the proposed scheme. Herein referred to as the FCA.
- 14.3 These documents should be referred to for all detailed assessment data and read in conjunction with the summary information provided in this chapter. Information relevant to this water environment assessment can also be found in other chapters in the ES, in particular Chapter 10 Ecology and Nature Conservation.

Legislation, Policy and Guidance

Flood and Water Management Act 2010

- 14.4 The Flood and Water Management Act (FWMA) 2010 places a duty on Local Authorities to prepare a Local Flood Risk Management Strategy (LFRMS) that sets out how the Lead Local Flood Authority (LLFA) will proactively seek to minimise flood risk and prepare our communities. It places duties on Neath Port Talbot Council as LLFA to provide better, more comprehensive management of flood risk for people, homes and businesses by promoting an integrated approach to planning and managing all forms of flood risk.
- 14.5 Schedule 3 of the FWMA requires surface water drainage for new developments to comply with statutory national standards for sustainable drainage systems (SuDS). The statutory standards were published by Welsh Government on 15 October 2018 along with the Statutory Instruments. Schedule 3 to the FWMA 2010 places a duty on local authorities as SuDS Approving Body (SAB) to approve, adopt and maintain systems compliant with section 17 of the Schedule. Under Schedule 3, as of 7th January 2019, all new developments of

more than 1 dwelling house or where the construction area is 100m² or more, require SuDS for surface water.

Water Environment (WFD) (England and Wales) Regulation 2017

- 14.6 The EU Water Framework Directive (WFD) (2000/60/EC) is transposed into law in England and Wales by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The WFD requires all watercourses that are not designated as Artificial or Heavily Modified Water Bodies (A/HMWB) to achieve both Good Chemical Status (GCS) by 2027 and Good Ecological Status (GES) by 2021. River Basin Management Plans (RBMP) prepared by the competent authority, outline the actions required to enable these water bodies to achieve GES. All HMWB's are required to achieve Good Ecological Potential (GEP) and Good Chemical Status by the deadlines given above, through the implementation of a series of mitigation measures. The proposed development is within the Western Wales River Basin Management Plan, which is led by Natural Resources Wales.
- 14.7 New activities and schemes that affect the water environment have the potential to adversely impact biological, hydro-morphological, physico-chemical and/or chemical quality elements (WFD quality elements), leading to a deterioration in water body status. They may also render proposed improvement measures ineffective. Under the WFD, activities and schemes must not cause deterioration in water body status or prevent a water body from meeting GES/GEP by invalidating improvement measures.

Planning Policy Wales (PPW) 2021

- 14.8 Chapter 6 of PPW (Edition 11, February 2021) provide guidance to the issues relating to water and flood risk. With regards to water services, the Welsh Government aims to secure the provision of water services whilst minimising adverse impacts on the environment, amenity, health and communities, in light of the consequences of climate change. This should be achieved by ensuring that infrastructure upon which communities and businesses depend is adequate to accommodate proposed development, ensuring sustainable drainage systems are an integral part of the design approach for new development, and ensuring the protection of the quantity and quality of surface and ground water supplies is taken into account as part of development proposals.
- 14.9 Sections of PPW of particular relevance to sustainable water management and water quality are quoted below:

Section 6.6.6 'The ability of the planning system to protect water features and foster sustainable water management as key attributes of attractive and resilient places to live is closely aligned with securing the multiple benefits of green infrastructure. Embracing integrated approaches should make a contribution toward achieving the requirements imposed by EU Water Framework Directive along with Welsh Government policy for the integrated planning and management of water both in urban and rural areas.'

Section 6.6.9 'The adequacy of water supply and sewerage infrastructure should be fully considered when proposing development, both as a water service and because of the consequential environmental and amenity impacts associated with a lack of capacity'.

Section 6.6.18 'The provision of SuDS must be considered as an integral part of the design of new development and considered at the earliest possible stage when formulating proposals for new development.'

Section 6.6.19 'Development proposals should incorporate design for surface water management, based on principles which work with nature to facilitate the natural functioning of the water cycle, providing issues such as land contamination would not result in the mobilisation of contaminants which may have an impact over a wider area.'

- 14.10 With regards to development and flood risk, planning authorities should take a precautionary approach of positive avoidance in areas of flooding from the sea or from rivers. Surface water flooding should affect the choice of location and layout of scheme designs. Sections of PPW with particular relevance to flood risk are quoted below:

Section 6.6.25 'Development should reduce, and must not increase, flood risk arising from river and/or coastal flooding on and off the development site itself. The priority should be to protect the undeveloped or unobstructed floodplain from development and to prevent the cumulative effects of incremental development.'

Section 6.6.27 'Planning authorities should be aware of the risk of surface water flooding and ensure developments are designed and planned to minimise potential impacts. Development should not cause additional run-off, which can be achieved by controlling surface water as near to the source as possible by the use of SuDS.'

- 14.11 PPW uses a series of Technical Advice Notes to provide more guidance on areas of planning and development in Wales. Technical Advice Note 15 (TAN-15), introduced by the Welsh Government in 2004 provides technical guidance relating to development planning and flood risk in Wales. The initial requirements of TAN-15 are to identify the vulnerability classification(s) and flood zones relevant to the proposed development, and to apply this information to the application of the Justification Tests. The requirements of the TAN15 are discussed in more detail within the Margam J38 Flood Consequence Assessment provided in Appendix X.

Neath Port Talbot Local Development Plan (2011-2026)

- 14.12 Neath Port Talbot County Borough Council Local Development Plan (LDP), adopted in January 2016, includes specific policies regarding the sustainable management of the water environment and flood risk. These are outlined below.

- 14.13 As part of Policy BE1 the LDP requires that:

'Development have no detrimental effects on the water environment or on flood risk. Normally this will involve the use of Sustainable Drainage Systems (SuDS) techniques'...

drainage systems are designed to limit surface water run-off and flood risk and prevent pollution.'

- 14.14 SP1: Climate Change Policy aims to reduce the consequences from climate change and stipulates the following:

'Likely increased flood risk will be taken into account and addressed by ensuring that there is a greater resilience by avoiding development on land that is at risk of flooding in the first instance in accordance with the sequential approach set out in national guidance or in locations that could increase the risk of flooding elsewhere'

'Development will only be considered in areas at risk of flooding where it can be demonstrated that the site can comply with the justification and assessment requirements set out in the TAN.'

SP16: Environmental Protection aims to protect and where feasible improve the environment including water quality.

'Ensuring that proposals have no significant adverse effects on water, ground or air quality and do not significantly increase pollution levels'

- 14.15 The Margam Junction 38 site (EC1/2+) is an allocated Strategic Employment Site identified within the LDP.

Relevant Elements of the Proposed Development

- 14.16 The key element of the proposal relevant to the assessment of impacts on hydrology, flood risk and drainage are outlined below.
- 14.17 The change in land use from existing greenfield land to substantial hardstanding is relevant to the assessment of impacts on flood risk. The development proposal includes large-scale production buildings, amenity and office buildings, car parking and access roads and 168 car parking spaces. Such development will increase surface water runoff from pluvial (rainfall) sources on and off site and require new infrastructure for surface water drainage and discharge.
- 14.18 As the site is identified to be partially located in an area already identified at risk of flooding from fluvial and tidal sources, the proposed layout and site activities is of relevance to the assessment of flood risk both to the users of the facility itself and off-site flood receptors.
- 14.19 The activities carried out on site during operation will include metal processing; chemical delivery, storage and use; industrial and staff vehicle use and parking. These activities have the potential to cause pollution of surface water runoff and are of relevance to the assessment.
- 14.20 During construction of the proposed development, the construction activities are of relevance to the assessment of potential impacts on flood risk and water quality receptors.

Methodology of Assessment

Scope of the Assessment

- 14.21 This assessment includes the Likely Significant Effects (LSE) of the proposed metal processing facility as described in Chapter 3, on the water environment, with specific regards to hydrology, flood risk and drainage during the construction, operational and decommissioning phases of the development.

- 14.22 It should be noted that the Neath Port Talbot County Borough Council (NPTCBC) Scoping Opinion lists 'Hydrology, Hydrogeology and Geology' as a chapter to be scoped into this ES. However, upon review of the relevant comments from NPTCBC and the NRW consultation response, the issues of concern are specific to 'hydrology, flood risk and drainage'. The Boyer EIA Scoping Report submitted to the LPA on behalf of the applications included the findings of the Geotechnical Desk Study undertaken by Terra Firma (May 2021) and concluded that geotechnical topics should be scoped out of the assessment. The NRW Scoping Opinion (5th July 2021) confirms that NRW are satisfied that the previous use of the site was undeveloped land and geotechnical issues are scoped out of further assessment. No further comment was made by the LPA in their Scoping Opinion Report and it has been assumed to remain scoped out. Consequently, this chapter has instead been titled 'Hydrology, Flood Risk and Drainage' and focuses on these elements of assessment.
- 14.23 The spatial scope of assessment regarding morphological and water quality impacts is confined to the Nant Cwm Philip and Ffrwd Wylt water bodies, Swansea Carboniferous Coal Measures Groundwater Body, Margam Moors SSSI and Junction 38 Wetland SINC. The spatial scope of assessment for flooding and drainage impacts extends to any area affected by the scheme in the 0.01% Annual Exceedance Probability (AEP) event including climate change allowances.
- 14.24 The strategic impact of the proposed development on the capacity of the water supply (abstraction) and foul drainage system (discharges) has not been considered in detail within this ES chapter. The assessment of this issue is carried out by Dwr Cymru Welsh Water (DCWW) as the water and sewerage provider. It is the responsibility of DCWW to ensure that their functions are carried out as part of strategic assessment of water resource capacity, taking into account the environmental impacts, including environmental consent for abstraction and discharges. The detailed environmental assessment of these impacts is therefore not within the scope of this assessment.
- 14.25 Furthermore, the Scoping Opinion Report received from the LPA includes comments from DCWW, and no system capacity constraints were identified at this stage of consultation. Further consultation with DCWW will be required to confirm requirements for consent under the provisions of the Water Industry Act 1991. The LPA Scoping Opinion Report comments from DCWW includes a requirement to consider the location of existing on-site DCWW assets and relevant easements. This is also considered to be outside of the scope of this ES chapter. However, this comment has been addressed in Table 144-1 below.
- 14.26 The likely cumulative effects of the proposal with other development proposals near the site has also been assessed with regards to hydrology, flood risk and drainage.

Consultation Scoping Responses

- 14.27 An EIA Scoping Opinion Report was received from the Neath Port Talbot County Borough Council (NPTCBC) in August 2021. Relevant to the scope of this chapter, the report included comments from statutory consultation with DCWW, Highways Authority and Natural Resources Wales (NRW). The NRW response to NPTCBC dated 5th July 2021 has also been directly used to inform the scope of this ES chapter.

14.28 Table 1-1 describes the issues raised for consideration withing the ES and where they are addressed.

Table 144-1 Comments from the consultation sources in the NPTC Scoping Report August 2021

Comments for inclusion in the ES chapter	Consultee	Methodology of assessment
A Flood Consequences Assessment is required to demonstrate the risks and consequences of flooding can be managed to an acceptable level. The FCA will need to demonstrate compliance with Tables A1.14 and A1.15 of TAN-15 and ensure there is no increased flood risk elsewhere.	NRW	Margam J38 FCA is provided in Appendix 14.2. Assessment of flood risk is summarised in Section 0 and Section 0.
There is a ditch present on site which may have hydrological links to protected sites (Eglwys Nynydd Reservoir SSSI and Junction 38 Wetland Complex SINCE). An assessment of direct and indirect impacts on protected sites will need to be considered as part of the ES.	NRW	Assessment of risk to the water environment of these sites is included in Section 0 and Section 0. and Chapter 10 of this ES.
The proposed development site is crossed by various assets of DCWW, including a combined public sewer and trunk watermain, which have 3m and 4.5 protection zones, respectively. Some sewers may not be recorded on the maps of public sewers and additional consultation with DCWW is advised.	DCWW	Site layout plans show that the required protection zone have been implemented. Further consultation to be carried out. Not assessed further within this ES chapter.
Further information required in relation to the proposed foul water drainage strategy and anticipated foul water discharge rates and potable water consumption rates. If the development will give rise to a new discharge (or alter an existing discharge) of trade effluent, directly or indirectly to the public sewerage system, then a Discharge Consent under Section 118 of the Water Industry Act 1991 is required.	DCWW	Foul and potable supply requirements outlined in the Preliminary Drainage Strategy in Appendix 14.1. Discharge Consent required. Not assessed further within this ES chapter.

Comments for inclusion in the ES chapter	Consultee	Methodology of assessment
SAB approval will be required prior to any work commencing. A separate assessment will be required for drainage to the existing Harbour Way balancing pond as part of the SAB application.	NPTC SAB and Highways Authority.	SAB compliant SuDS scheme required. Assessment of risk to flood risk and water quality addressed in Section 0 and Section 0.
The impacts of the SAB scheme must be fully assessed under the appropriate sections of the EIA including the hydrological, ecological and climate change sections.	NPT SuDS Approving Body	SAB compliant SuDS scheme required. Assessment of risk to flood risk and water quality addressed in Section 0 and Section 0 and Chapter 10 of the ES.

Assessment Methodology and Significant Criteria

- 14.29 Baseline conditions regarding water receptors have been established via a desk based assessment by reviewing the following sources of information:
- Western Wales River Basin Management Plan, including the NRW Water Watch Wales data viewer.
 - Magic maps, www.magic.defra.gov.uk.
 - NRW Flood Map for Planning web-based resource.
 - NRW Flood Risk Assessment Wales Map web-based resource
 - Lle Open Data Web Viewer.
 - Margam J38 Flood Consequence Assessment.
 - Margam Development Site Preliminary Drainage Strategy.
 - Neath Port Talbot County Borough Council LDP Examination in Public – online resources.
 - Geotechnical Desk Study undertaken by Terra Firma (May 2021).
 - Boyer Planning Proposed Industrial Development at J38 M4 Margam. EIA Scoping Report, 2021. 21.8012
 - Ecology Note to Inform EIA Scoping (June 2021) by Soltys Brewster.
- 14.30 A future baseline is considered for how the site is likely to develop and evolve over an approximate six-year period if the proposed development were not to proceed and classified as the 'do nothing' scenario.
- 14.31 The water assessment has been adapted from methodology for assessment of impacts to the water environment as outlined in the industry recognised guidance in LA113 of the DMRB (Highways Agency, 2020).

Identification of Receptors

- 14.32 Water environment receptors have been identified based on the value of the feature or resource using the criteria described in Table 14-2, a version the DMRB LA 113 Table 3.70 was adapted for use in this chapter. The sensitivity is determined through a combination of professional judgement and the environmental value of receptors, as recognised or determined by criteria from the WFD classifications and flood risk vulnerability classifications specified in TAN15. Each receptor may be categorised as being of negligible, low, moderate or high or very high importance or sensitivity. Examples of the classification of receptors are outlined in Table 14-2.

Table 14-2 Estimating the importance of water environment receptors (adapted from DMRB Highways Agency 2020)

Value/Sensitivity	Criteria	Examples	
Very High	Internationally or nationally significant attribute of high importance	Surface water	Watercourses having a WFD classification shown in a RBMP. Site protected/designated for international importance (SAC, SPA, SSSI, Ramsar site, salmonid water)/species
		Ground water	Principal aquifer providing a regionally important resource and/or supporting a site protected under UK legislation as referenced in DMRB LA 108. Groundwater locally supports GWDTE.
		Flood risk	Essential infrastructure or highly vulnerable as defined by TAN-15.
High	Locally significant attribute of high importance	Surface water	Watercourse having a WFD classification shown in a RBMP. Species protected under UK legislation as referenced in DMRB LA 108.
		Ground water	Principal aquifer providing locally important resource or supporting a river ecosystem. Groundwater supports a Groundwater Dependant Terrestrial Ecosystems (GWDTE) SP22
		Flood risk	More vulnerable development as defined in TAN15.
Medium	Of moderate quality and rarity	Surface water	Watercourses not having a WFD classification shown in a RBMP.

Value/Sensitivity	Criteria	Examples	
Low	Lower quality	Ground water	Aquifer providing water for agricultural or industrial use with limited connection to surface water or SPZ3
		Flood risk	Less vulnerable development
		Surface water	Watercourses not having a WFD classification shown in a RBMP.
		Ground water	Unproductive strata
		Flood risk	Water compatible development

14.33 Impact magnitude has been assessed following the criteria outlined in Table 14-3 (adapted from the DMRB LA 113 Table 3.71).

14.34 Assessment of impact magnitude has been based on the risk of flooding from all sources to the site. Further consideration has been given to flooding impacts caused from the site during both construction and operational phases of the proposed development. The assessment of flood risk impacts with regards to surface water drainage is based on the policy requirements to limit the post-development surface water discharge rate to that of the existing greenfield site, during storm events up to the 1% annual exceedance probability (AEP) plus a 40% allowance for climate change.

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

Table 14-3 Estimating the magnitude of an impact on an attribute (adapted from DMRB Highways Agency 2020)

Magnitude	Criteria	Examples	
High adverse	- Results in loss of attribute and/or quality and integrity of the attribute	Surface water	Acute-soluble and chronic sediment related pollution. High risk of pollution from spillage. Loss or extensive change to a fishery Loss of regionally important public water supply Loss or extensive change to a designated nature conservation site Reduction in water body WFD classification.

Magnitude	Criteria	Examples	
		Groundwater	Loss of, or extensive change to, an aquifer. High risk of pollution from spillage. Loss of regionally important water supply. Potential high risk of pollution to groundwater from routine runoff. Loss of, or extensive change to GWDTE or baseflow contribution to protected surface water bodies. Reduction in water body WFD classification. Loss or significant damage to major structures through subsidence or similar effects.
		Flood risk	Increased in peak flood level (>100mm).
Medium adverse	- Results in effect on integrity of attribute, or loss of part of attribute.	Surface water	Acute-soluble and chronic-sediment related pollution. Partial loss in productivity of a fishery. Degradation of regionally important public water supply or loss of major commercial/industrial/agricultural supplies. Contribution to reduction in waterbody WFD classification.
		Groundwater	Partial loss or change to an aquifer. Degradation of regionally important public water supply or loss of significant commercial/industrial/agricultural supplies. Potential medium risk of pollution to groundwater from routine runoff. Partial loss of the integrity of GWDTE. Contribution to reduction in water body WFD classification. Damage to major structures through subsidence or similar effects of loss of minor structures.
		Flood risk	Increase in peak flood level (>50mm)
Low adverse	- Results in some measurable change in attributes, quality or vulnerability	Surface water	Acute soluble or chronic sediment related pollution. Low calculated risk of pollution from spillages. Minor effects on water supplies
		Ground water	Potential low risk of pollution to groundwater from routine runoff. Low probability of pollution from spillages. Minor effects on an aquifer, GWDTEs, abstractions and structures.
		Flood risk	Increased in peak flood level (>10mm)
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity	The proposed project is unlikely to affect the integrity of the water environment	
		Surface water	No risk identified from acute soluble or chronic sediment related pollutants. Very low risk of pollution from spillages
		Groundwater	No measurable impact upon aquifer and/or groundwater receptors and risk of pollution from spillage is very low.
		Flood risk	Negligible change to peak flood levels ($\leq \pm 10\text{mm}$)

Magnitude	Criteria	Examples	
Low beneficial	- Results in some beneficial effect on attribute or a reduced risk of negative effect occurring	Surface water	Acute soluble or chronic sediment related pollution becomes pass from previous fail. Calculated reduction in risk of pollution from spillages.
		Ground water	Calculated reduction in risk of spillages. Reduction in groundwater hazards to existing structures. Reduction in waterlogging and groundwater flooding.
		Flood risk	Creation of flood storage and decrease in peak flood level (> 1-mm)
Medium beneficial	- Results in moderate improvement of attribute quality	Surface water	Acute soluble or chronic sediment related pollution becomes pass from previous fail. Calculated reduction in risk of pollution from spillages. Contribution to improvement in water body WFD classification.
		Ground water	Calculated reduction in risk of spillages. Contribution to improvement in water body WFD classification. Improvement in waterbody CMAS classification. Support to significant improvements in damaged GWDTE.
		Flood risk	Creation of flood storage and decrease in peak flood level (> 50mm)
High beneficial	- Results in major improvement of attribute quality	Surface water	Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring. Recharge of an aquifer. Improvement in water body WFD classification.
		Ground water	Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring. Recharge of an aquifer. Improvement in water body WFD classification.
		Flood risk	Creation of flood storage and decrease in peak flood level (> 100mm)

Significance Criteria

- 14.36 Significance of an effect is determined using the matrix of determining significance of effects, and by appraising the value of the receptor against the magnitude of likely impacts, as outlined in Table 14-4 below. In line with changes brought about in the 2017 EIA Regulations, the magnitude of impact terminology has been updated to include intensity, complexity and/or irreversibility of impacts on receptors. Where a likely significant effect would fall between significance scores a professional judgement has been made on which to apply.

- 14.37 Significance of effects is assessed for the construction and operational phases, both with and without mitigation and taking into account the scheme design and planned mitigation. Likely significant effects can be beneficial or adverse, direct or indirect, temporary or permanent. Intense impacts that would only persist for the duration of the construction works or a short time afterwards are considered temporary, while impacts that are complex, irreversible or would persist for a long time during the operation of the development are considered permanent.
- 14.38 Residual effects refer to effects that would remain following the implementation of mitigation measures proposed.

Table 14-4 Matrix of determining significance of effect

Magnitude of Change		Sensitivity of Receptor/Receiving Environment to Change/Effect				
		Very high	High	Medium	Low	
	High	Substantial	Major or Substantial	Moderate or Major	Minor or Moderate	Minor
	Medium	Major or Substantial	Moderate or Major	Moderate	Minor	Negligible or Minor
	Low	Moderate or Major	Minor or Moderate	Minor	Negligible or Minor	Negligible
	Negligible	Moderate	Minor	Negligible or Minor	Negligible	Negligible
	No change	Neutral	Neutral	Neutral	Neutral	Neutral

Sensitive Receptors

- 14.39 Table 14-5 summarises the relative value of baseline receptors on the basis of their importance and sensitivity relating to flooding, drainage and water quality. As outlined in the methodology section above, this will be used in combination with the assessment of the magnitude of impacts to determine the Likely Significant Effects (LSE) arising from the proposed development.

Table 14-5 Summary of baseline water environment receptors

Receptor Type	Receptor	Importance/sensitivity
Flood risk	Less vulnerable development (on-site industrial development).	Medium

Receptor Type	Receptor	Importance/ sensitivity
Surface water	Unnamed ditch on site (non-designated)	Low
Surface water	Ditch system forming Neath Port Talbot SINC (non-statutory designated site of local importance)	High
Groundwater	WFD Groundwater Body Swansea Carboniferous Coal Measures	Medium

Baseline Conditions

Topography and Land Use

- 14.40 The proposed development site is adjacent to J38 of the M4, approximately 0.65km south-east of Margam. The development site is a 7.9 ha plot of greenfield land mostly comprised of grassland, scrub and woodland. The site is bounded by the A48 Margam Road to the east, Hoel Cae'r Bont road to the south, an unnamed road serving the Margam Green and Western Wood energy plants to the west, and a roundabout to the north. Margam Green Energy Plant and Western Wood Energy Plant are found to the west of the site.
- 14.41 The topography of the site slopes downwards from the east towards the western boundary of the site, decreasing from 10.27-15.25 mAOD to 8.25-9.8 mAOD respectively. An access road to Margam Green Energy Plant was constructed along the north west boundary in 2016. As a result of the embankment on which the road was built there is approximately a 3mAOD increase in land elevation north of the access road relative to the south.

Soils and Geology

- 14.42 According to the British Geological Survey (BGS) Geology of Britain Viewer the area's geology consist of a bedrock of South Wales Middle Coal Measures Formation, which is comprised of mudstone, siltstone and sandstone. This bedrock is overlain by superficial glaciofluvial deposits of sand and gravel.
- 14.43 The Cranfield University Soilscape viewer describes the site's soil as freely draining slightly acid loamy soils.
- 14.44 An initial Desk Top Study was carried out by Terra Firma Wales Ltd in 2021 to inform the Preliminary Drainage Strategy and subsequent trial pitting indicated the ground profile comprises of the following:
- Topsoil (0.3-0.5 m)
 - Firm to stiff clay (1.0-2.0 m)
 - Sands and Gravels to depth
 - Middle Coal Measures
- 14.45 Infiltration tests undertaken by Terra Firma (Wales) Ltd indicate the site appears to have very good soakaway potential.

Hydrology and Surface Drainage

- 14.46 There are no designated watercourses or water bodies within the boundary of the site. The Eglwys Nunydd Reservoir is located approximately 0.45km to the south of the site. The nearest NRW main river, the Nant Cwm Philip, is located approximately 1.1km to the south east of the site.
- 14.47 An existing drainage ditch crosses the site running east-to-west and drains to a culvert located on the western boundary (named Culvert A). This culvert runs beneath Margam Green Energy Plant's access road into a ditch that forms part of the Site of Importance for Nature Conservation (SINC) referred to as Junction 38 Wetland Complex. Drainage from these ditches feeds into the Upper Mother Ditch, which forms part of Margam Moors. The Upper Mother ditch becomes culverted under the Tata Steel industrial site located to the west of the development, eventually discharging into the sea at Margam Sands.
- 14.48 The direction of flow from the unnamed ditch and into the Upper Mother Drain appear to be north and west, flowing away from the designated Margam Moors SSSI and Eglwys Nunydd Reservoir SSSI to the south, as indicated on the OS VectorMap Local mapping available on NRW Lle Geo-Portal and shown in Figure 14-3 below.
- 14.49 A second culvert (Culvert B) is located at the north west corner of the site and appears to serve nearby highway drainage from the Harbour Way access road to the adjacent Margam Green Energy Plant. This is presumed to eventually discharge to the SINC and Margam Moors drainage system via a balancing pond located outside the north west corner of the site.
- 14.50 Watercourses on or near the site are illustrated in Figure 14-1 and Figure 14-2 below.

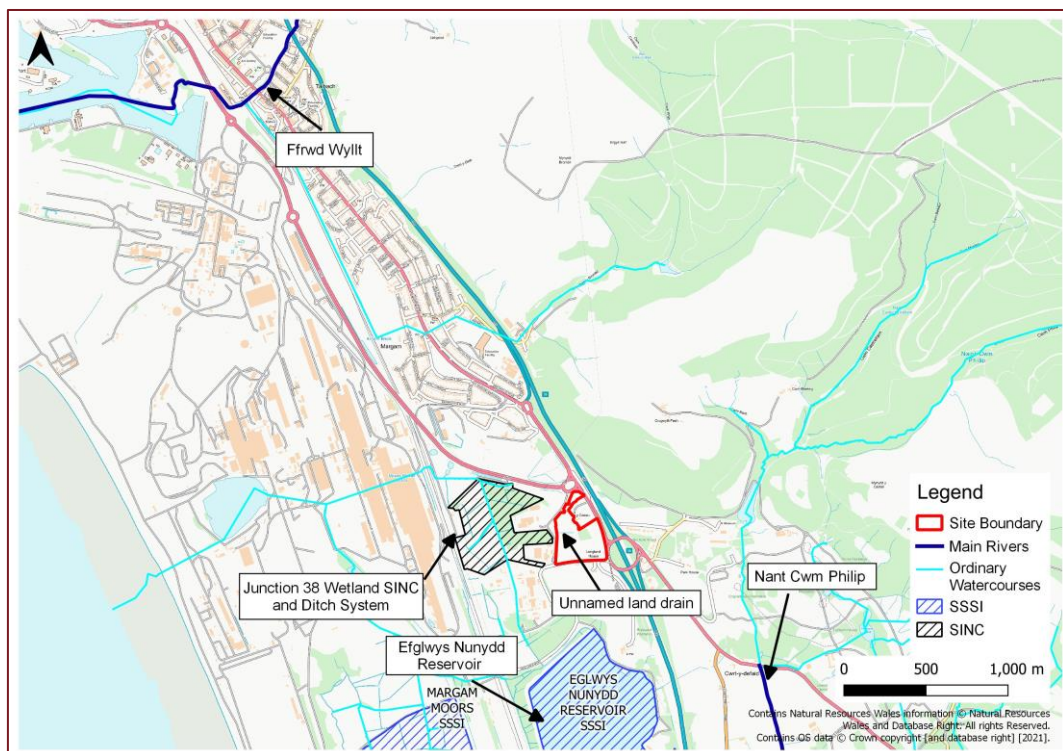


Figure 14-1 Designated waterbodies and watercourses surrounding the site

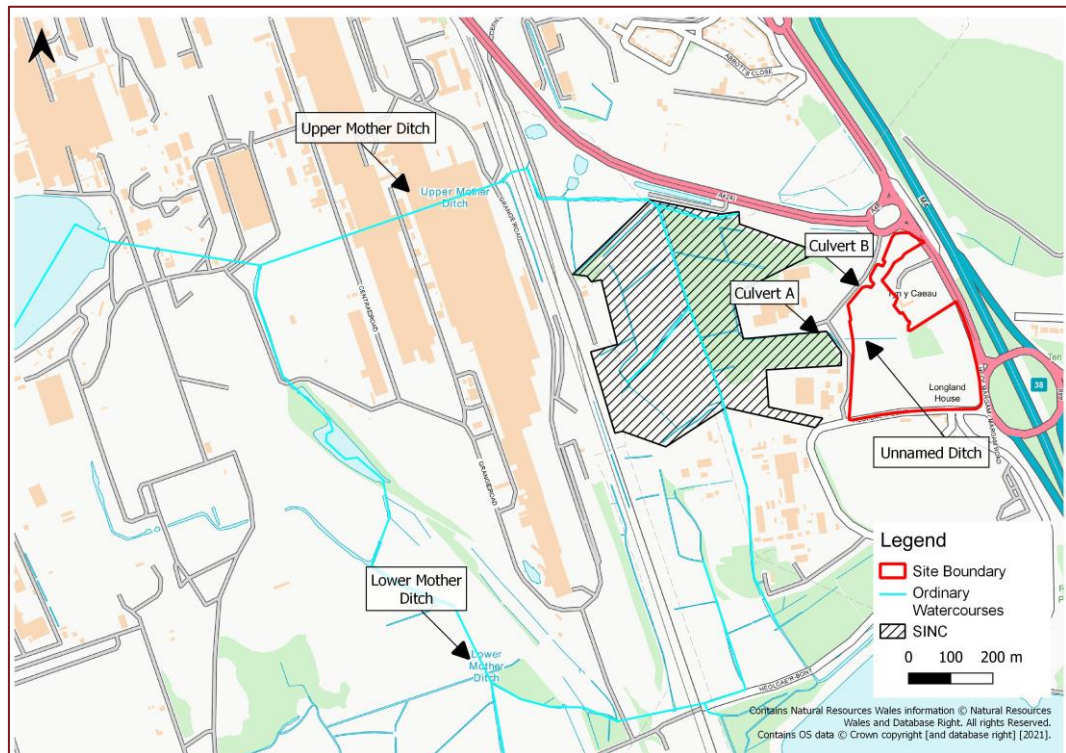


Figure 14-2 Ditch system and designated waterbodies connected to the site.

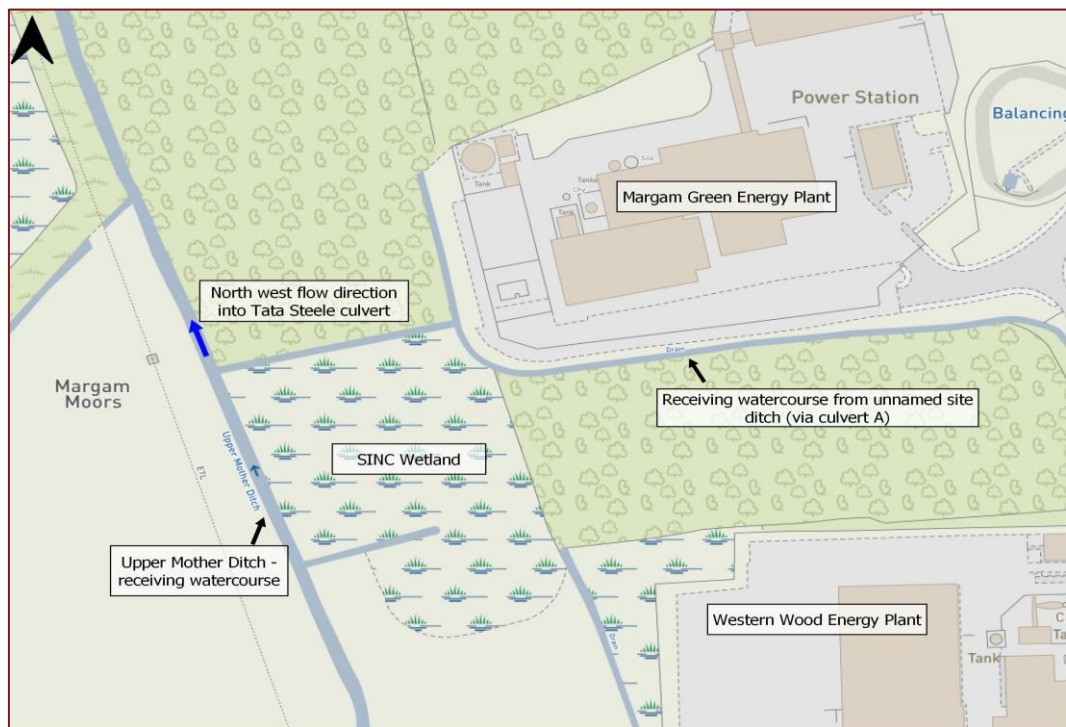


Figure 14-3 Waterbodies receiving runoff from the site.

Foul Drainage

- 14.51 The site is not currently served by a dedicated foul sewerage system, however a 450 mm diameter vitrified clay combined adopted sewer, currently crosses the site running parallel to and within the eastern boundary.
- 14.52 The combined adopted sewer runs northwards draining into a 525 mm diameter concrete pipe located within the roundabout on the A48 and its junction within the Harbour Way.

Flood Risk

- 14.53 The NRW Flood Map for Planning is used to trigger different planning actions based on a precautionary assessment of flood risk, assigning Flood Zones and incorporating future risk over the lifetime of the development. The FCA provided in Appendix 14.2 indicates that the majority of the existing site is located in Flood Zone 1 and therefore at very low risk of flooding from tidal and fluvial sources. A small portion of the site is located in Flood Zone 2 and 3 for fluvial, tidal and surface water flooding sources.
- 14.54 The NRW Flood Risk Assessment Wales (FRAW) Map has also been reviewed and presented in the FCA. This mapping is generated from more detailed flood modelling and new national scale mapping, it shows present day risk to the site with the inclusion of flood defences but does not include an allowance for climate change. The FRAW mapping indicates very low risk for the majority of the site except the same areas identified in Flood Zone 2 and 3 for fluvial and surface flood risk in the Flood Map for Planning on the northern perimeter. However, the FRAW mapping indicates very low risk for the entire site from tidal sources (differing from the outcome of the Flood Map for Planning). Flood risk from reservoirs and sewers is also classified as very low.
- 14.55 The FCA concluded that the Flood Map for Planning is not based upon best available data and the assigned flood zones are therefore unrepresentative of flood risk at the site. The national scale modelling, which the Flood Map for Planning is based on, uses LiDAR which is not representative of the land levels at the site. A comparison of the 2m LiDAR Digital Terrain Model (DTM) data and the topographic survey was carried out in the FCA. This indicated that the LiDAR (flown in 2014) does not account for ground raising to construct the access road for the Margam green Energy Plant along the northern perimeter of the development site (constructed in 2016).
- 14.56 In order to fully understand the risk from tidal sources, the FCA carried out tidal projection modelling using 2m LiDAR Digital Terrain Model (DTM) data and applying predicted still water levels from the Environment Agency Coastal Flood Boundary Conditions for UK Mainland and Islands, with an allowance for sea level rise (applying the Welsh Government Guidance¹ for a 75-year lifetime of development). The FCA noted that the existing embankment created by the Margam Green Energy Plant access road offers sufficient protection such that the site is not at risk of flooding during a 0.5% AEP and 0.1% AEP tidal flood event.

¹ Welsh Government Guidance on Climate Change Allowances for Planning Purposes: https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf

- 14.57 Figure 14-4 below was taken from the FCA tidal projection mapping for the 0.1% AEP tidal flood event for 2100 and shows that the site is predominantly flood free. The north western part of the site is shown to flood to a depth of up to 1.2m. However, topographic survey indicates that road levels are over 8mAOD along the access road shown to be at risk. The still water level for this event is approximately 7.55mAOD and as such flood water will be restricted behind the site access road. Further to this, Figure 14-5 shows the flow path for water to reach the site in an extreme tidal event is extensive and it is highly unlikely that tidal flooding would be able to propagate to the site during the limited time afforded by high tide.

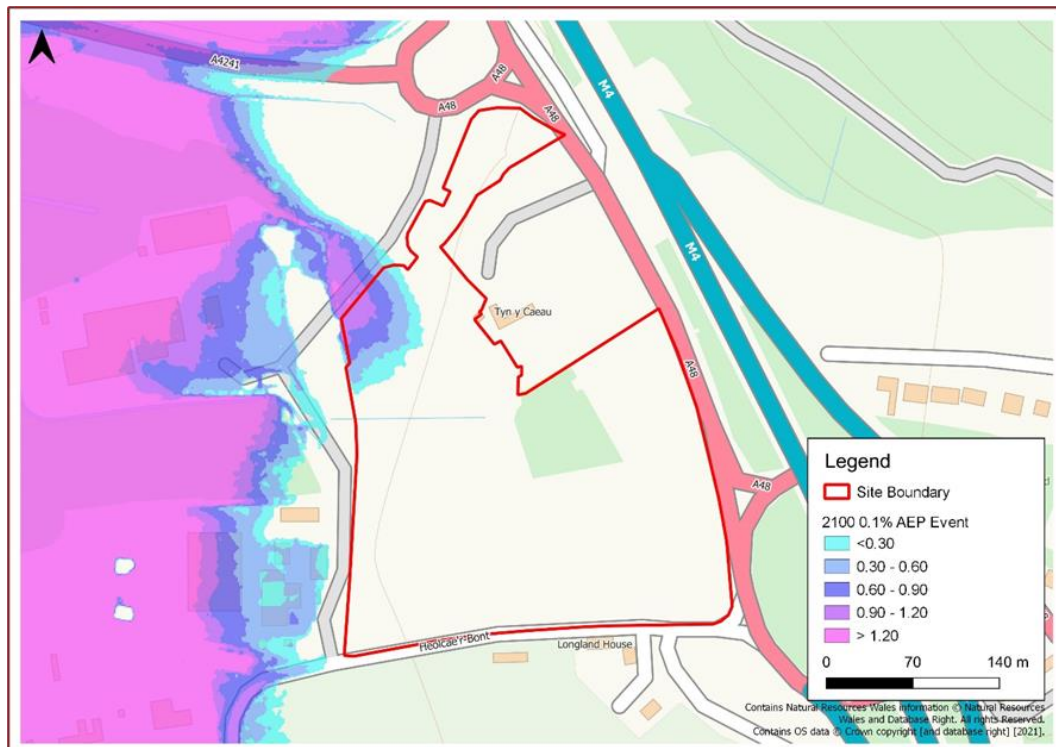


Figure 14-4 2100 0.1% AEP tidal flood event flood depths

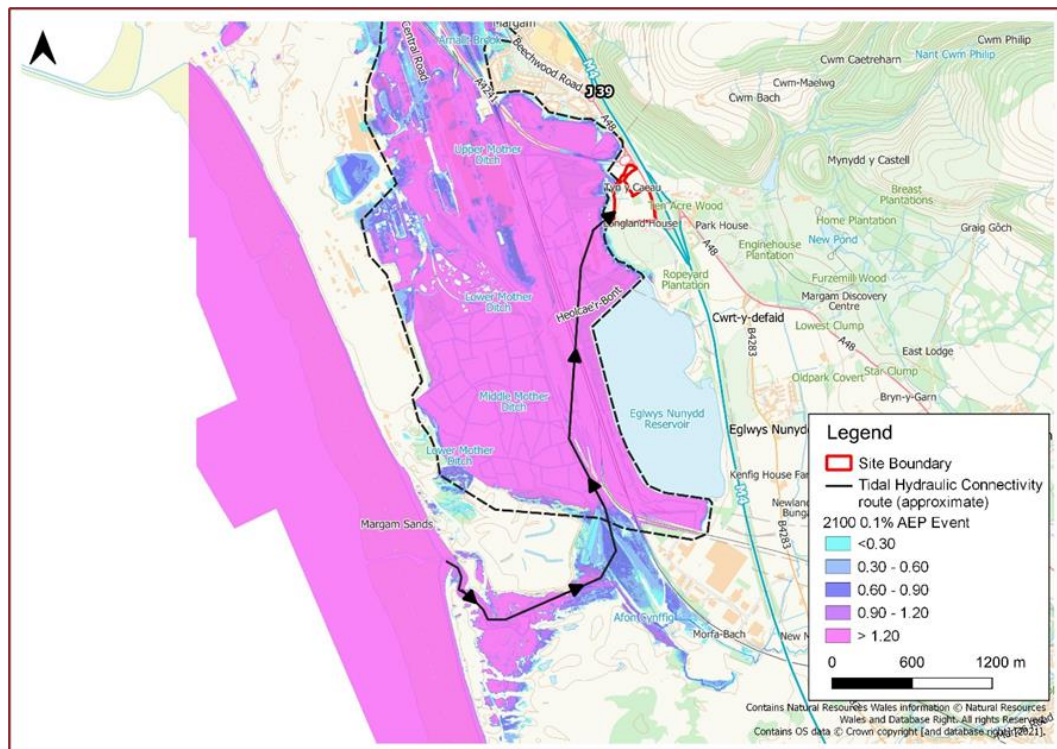


Figure 14-5 2100 0.1% AEP tidal flood event flood depths - flow path of flood water to the site.

- 14.58 Based upon the outcomes of the FCA, the baseline flood risk at the site from all sources is considered to be low.

Water Quality and WFD

- 14.59 There are no known water quality data records available for the unnamed ditch on-site. The water quality of the ditch will be influenced by surface water entering the water course upstream of and inside the site itself. This may include input from highways drainage in the north west corner.
- 14.60 As mentioned in section 14.46 above, the site ditch drains into a section of the Margam Moors drainage system and is designated as a Site of Importance for Nature Conservation (SINC). The SINC comprises of wet woodland, reedbeds, ditches and marshy grassland. This type of complex is rare in Neath Port Talbot, with the only other known good quality example found at Crymlyn Bog Special Area of Conservation (SAC). The ditch system in this area is also a key element of the complex, which forms part of a larger system that includes Margam Moors Site of Special Scientific Interest (SSSI) to the south. The wet and ancient woodlands at this location are considered to be irreplaceable and not possible to re-create due to the complexities of the hydrology requirements of this habitat. Although not designated as a WFD waterbody, the protected status of this wetland and inherent role of the ditch system in supporting the protected habitats and species, means that the baseline water quality and hydro-morphology status of this system can be assumed to be high.
- 14.61 The NRW Watch Water Wales data viewer provides WFD classification data for the nearby surface waterbodies. The WFD Cycle 2 waterbody status of the rivers within the vicinity of

the site are given in Figure 14-6 and Table 14-6. The Nant Cwm Philip to the south east of the site has an overall status of “Poor” with an objective of “Good” by 2021. The Ffrwd Wyllt River has an overall waterbody status of “Moderate” with an objective of “Good” by 2027.

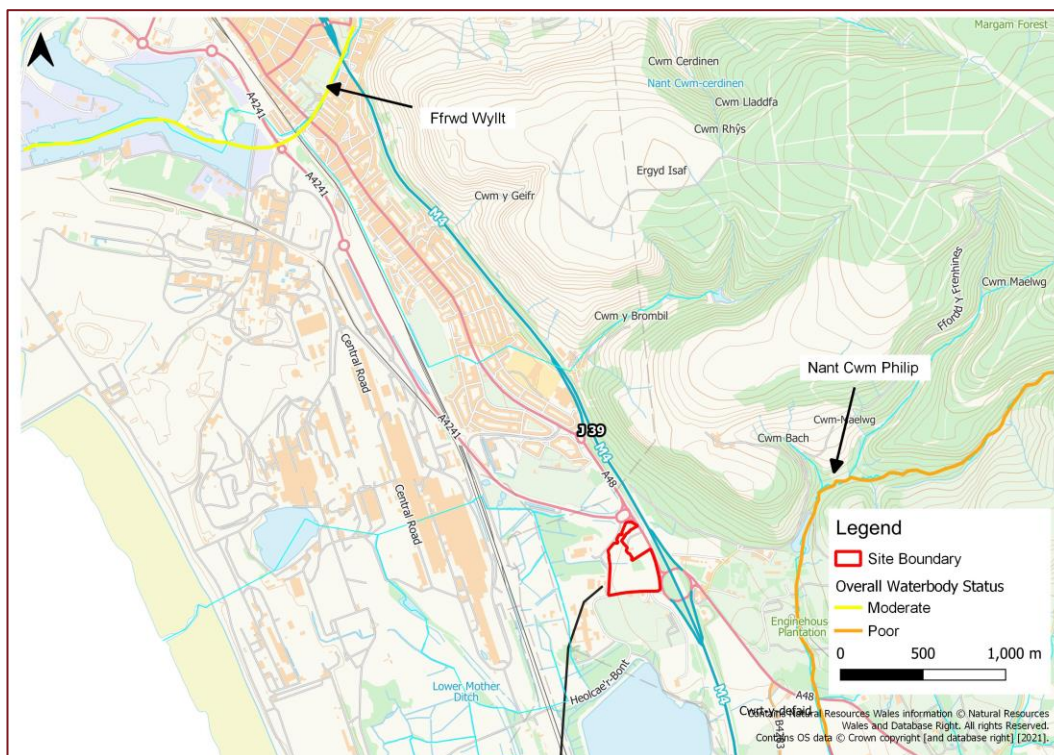


Figure 14-6 WFD Cycle 2 waterbody status

- 14.62 British Geological Survey maps shows the site and surrounding area is located on a highly vulnerable secondary aquifer but is not categorised as a Source Protection Zone for drinking water. The aquifer is designated as the WFD Groundwater Body Swansea Carboniferous Coal Measures and has a WFD Groundwater Chemical status of “Poor”. The WFD Cycle 2 waterbody status of the aquifer within the vicinity of the site is given in Figure 14-7, Figure 14-8 and Table 14-6.

Table 14-6 WFD classification items for the Rivers Nant Cwm Philip and Ffrwd Wyllt and the Swansea Carboniferous Coal Measures Groundwater Body

River	WFD Classification Item	2018	Objective year for good status
Nant Cwm Philip	Overall waterbody	Poor	2021
	Ecological	Poor	2021
	Biological quality element	Moderate	
	- Macrophytes and Phytobenthos Combined	-	

River	WFD Classification Item	2018	Objective year for good status
	- Fish	Poor	
	- Invertebrates	High	
	Hydro-morphological supporting elements	Supports good	
	Physio-chemical Pollutants	High	
	Chemical	Good	2015
	Priority substances	High	
	Other Pollutants	Not assessed	
	Priority hazardous substances	Not assessed	
FFrwd Wylt	Overall waterbody	Poor	2027
	Ecological	Moderate	2021
	Biological quality element	Moderate	
	- Macrophytes and Phytobenthos Combined	High	
	- Fish	Moderate	
	- Invertebrates	High	
	Hydro-morphological supporting elements	Does not support good	
	Physio-chemical Pollutants	High	
	Chemical	Fail	2027
	Priority substances	High	
	Other Pollutants	High	
	Priority hazardous substances	Moderate	
Swansea Carboniferous Coal Measures Groundwater Body	Overall waterbody	Poor	
	Quantitative	Good	
	Groundwater abstraction	Good	
	Saline Intrusion	High	
	Chemical	Poor	
	Drinking water protected area	Good	

River	WFD Classification Item	2018	Objective year for good status
	General chemical quality test	Poor	
	Terrestrial Ecosystem (wetland) dependent groundwater chemical tests.	Good	
	Surface water dependent groundwater chemical tests.	Poor	

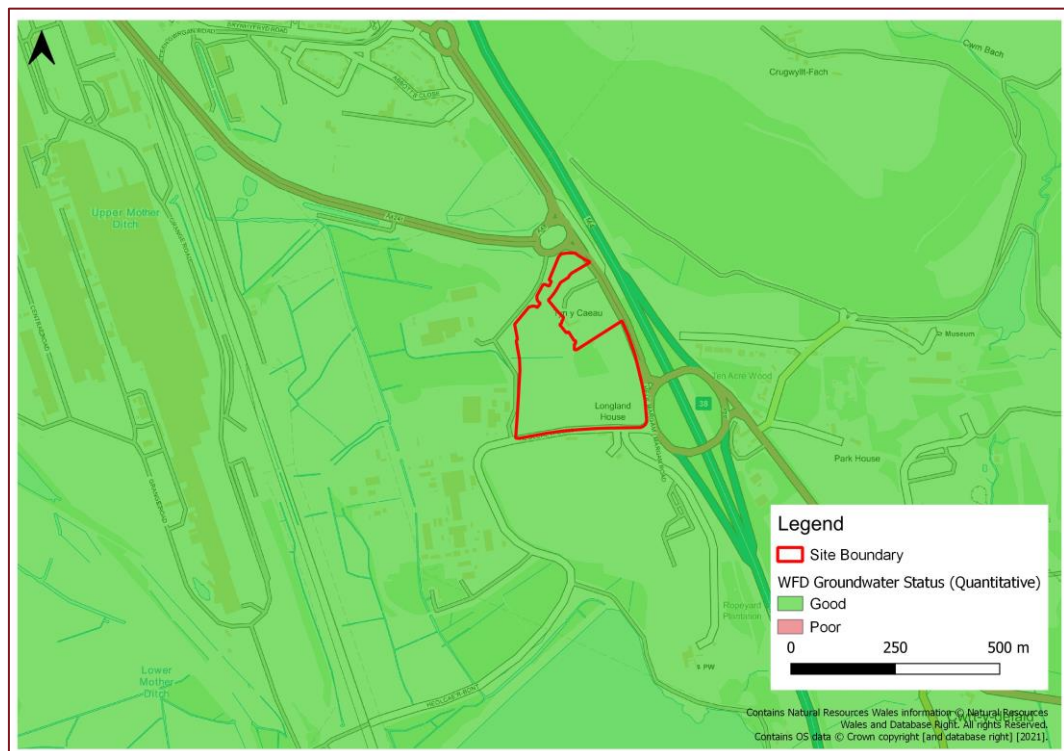


Figure 14-7 WFD Quantitative Groundwater Status

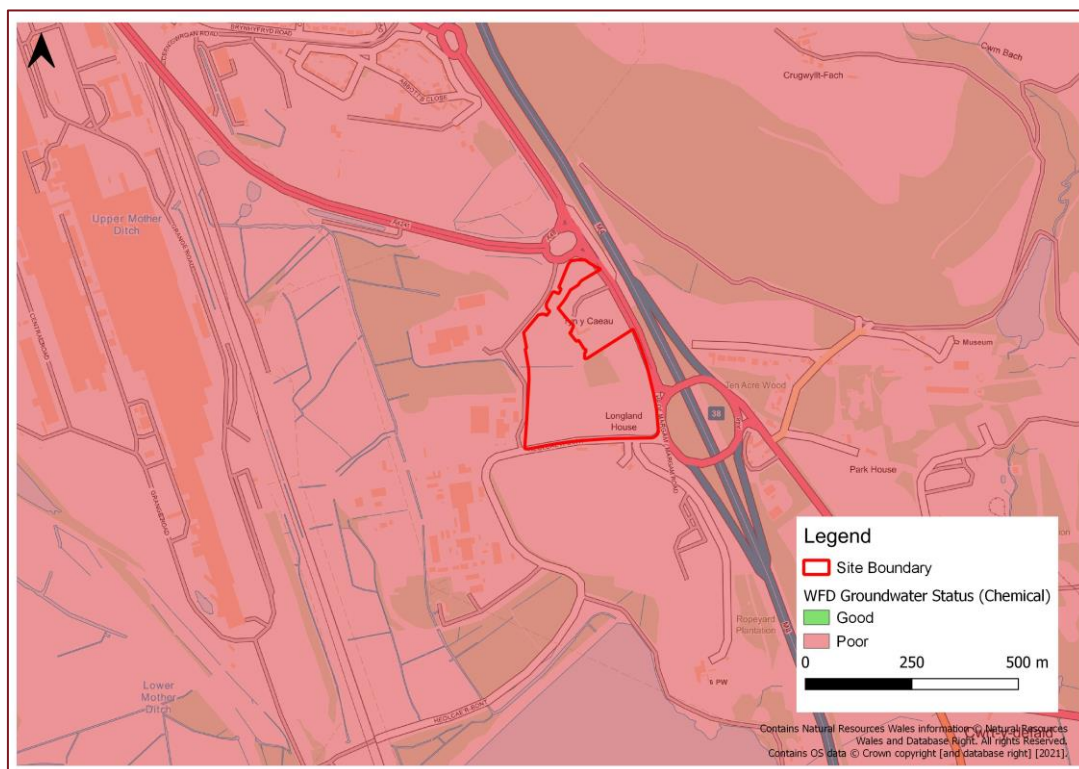


Figure 14-8 WFD Chemical Groundwater Status

- 14.63 Table 14-7 shows the reasons for not achieving good status and deterioration in status from WFD Cycle 1 as reported on NRW Watch Wales Website. Poor flow conditions as a result of surface water abstraction, barriers to fish migration as a result of physical modifications to the waterbodies and pollution are key reasons for the waterbodies not achieving a “Good” overall status.

Table 14-7 Reasons for not achieving good WFD status

River	WFD Classification Item	Reason
Nant Cwm Philip	Hydrological Regime	Poor flow conditions caused by surface water abstraction.
	Fish	Barriers to fish migration due to physical modifications negatively impacting morphology, poor flow due to surface water abstraction and an unknown source.
FFrwd Wylt	Hydrological Regime	Poor flow conditions caused by surface water abstraction.

River	WFD Classification Item	Reason
	Fish	Physical modification from ports and harbours structures, poor flow due to surface water abstraction, barriers to migration due to physical modifications, forestry, high ammonia from sewage discharge and high iron pollution from an abandoned mine.

- 14.64 There are not anticipated to be any significant sources of water pollution from the site itself under baseline conditions, as it is currently a greenfield site consisting of mostly grassland. The surface water entering the culvert at the north west of the site could contain sources of road pollution from the highway; however, a highway drainage system is in place that transfer runoff to the balancing pond to the north-west of the site, which will provide some form of surface water treatment.

Cumulative Effects Baseline

- 14.65 The cumulative impacts of the proposed development with adjacent planned developments in the Neath Port Talbot County Borough Council Planning Application Map must also be assessed.
- 14.66 An application for change of use from a dwelling house to mixed use development, guest house and associated truck stop on a property to the north east of the development site is currently awaiting approval. The site is located at Tyn Y Caeau, Margam Road and under application reference P2020/0601. The ES for the proposed development has been reviewed and the development of the site does not impact the baseline hydrology, flood risk and drainage conditions of the development site.

Assessment of Effects, Mitigation and Residual Effects

- 14.67 An assessment of the likely significant effects of the proposed development on water environment receptors from the construction and operation of the proposed development has been undertaken
- 14.68 Climate change is expected to increase future flood risk from both fluvial and surface water sources. Climate change may also lead to negative impacts on water environment receptors such as fish, invertebrates and aquatic flora as a result of impacts on water temperature, shading, invasive species and summer flows. The impact of climate change does not affect the assessment of impacts for the construction phase but has been considered in the assessment of the operational impacts during the lifetime of the scheme.
- 14.69 Cumulative impacts of the proposed development with additional planning applications in the area have been considered separately after this section.

Construction Phase

14.70 Potential impacts on the water environment during construction are expected to be temporary and would relate to:

- Increased overland flow entering watercourses;
- Impediments to flow pathways on site causing changes to drainage conditions;
- Reduction in water quality due to pollution from onsite activities.
- Sedimentation through silt mobilisation entering on-site and off-site watercourses.

14.71 These impacts are discussed below. With reference to the methodology provided in Paragraphs 14.29 and 14.36, Table 14-8 provides a summary of the likely significant effects of the construction phase without mitigation measures in place, utilising criteria provided in Table 14-4 taking account of the value of the receptor as given in Table 14-2 and Table 14-5 and the magnitude of potential impact as given in Table 14-3.

Sedimentation

14.72 During construction there will be considerable disturbance to the existing soils and superficial geology while preparing foundations for buildings. The disturbance of the soils and the subsequent surface water runoff could cause increased sediment loads into receiving watercourses on site (unnamed ditch) and indirect impacts to the off-site watercourse that receives runoff from the unnamed ditch located within the adjacent SINC. The increased sediment load could have an impact on the ecological quality status of the downstream receptors.

14.73 The risk of impacts from sedimentation are medium term (1-5 years), however the degree of sedimentation could pose long-term impacts on receiving SINC watercourses.

Flooding, Increased Flow and Impediments

14.74 The compaction of soils during construction could give rise to increased surface overland flows into the receiving watercourses and a reduction in the natural attenuation of the soil on site.

14.75 However, in the baseline conditions section it was noted that there are no off-site flood receptors downstream of the site up to the 0.1% AEP surface water flood event. Therefore, the potential impact of increased flows during construction on flood risk receptors is minimal due to the very low risk currently experienced and not considered further. On site flood risk receptors as a result of the development of the site would not be affected by the construction phase of the development.

14.76 Increased surface water flows during flood events as a result of the construction phase could lead to increased erosion of the ditches onsite and indirect impacts downstream. The hydro-morphological features of the SINC downstream of the ditches could be negatively impacted, with a corresponding impact on ecology and water quality.

14.77 The risk of impacts from increased flow are medium term (1-5 years) and temporary and therefore likely to be recoverable over time for most smaller rainfall events.

Pollution

- 14.78 During construction of the proposed development there is a risk of uncontrolled discharge of pollutants that could impact the water quality and ecology of the onsite ditch, downstream SINC ditch system and the Swansea Carboniferous Coal Measures WFD groundwater body. The main source of pollution risk is accidental spillages of hazardous substances from plant operation or cementitious materials from construction.

Summary of likely significant effects

- 14.79 Table 14-8 provides a summary of the likely significant effects on water environment receptors during the construction phase, without any mitigation measures in place.
- 14.80 The likely significant effects on the water quality and morphology of the surface water bodies that form the wetland ditch system of the adjacent SINC are considered to be significant (Moderate) without mitigation in place. The likely significant effect on the groundwater WFD waterbody from pollution events without mitigation measures are also considered significant (Moderate).

Table 14-8 Significance of potential effects from construction phase without mitigation

Receptor	Importance/ sensitivity	Potential Impact	Impact Magnitude	Impact
Flood risk - Less vulnerable development	Medium	Flooding	Negligible	Negligible
Surface water - Unnamed ditch on site	Low	Increased flow	Low Adverse	Negligible
		Sedimentation	Medium Adverse	Minor
		Pollution	Medium Adverse	Minor
Surface water - Neath Port Talbot SINC	High	Increased flow	Medium Adverse	Moderate
		Sedimentation	Medium Adverse	Moderate
		Pollution	Medium Adverse	Moderate
Groundwater - WFD groundwater body	Medium	Pollution	Medium Adverse	Moderate

Operational Phase

- 14.81 Potential operational impacts on the water environment are expected to be permeant and would relate to:
- Sedimentation and pollution.
 - Flood risk and increased flow.
 - Foul drainage.
 - Morphology
- 14.82 These impacts are discussed below. With reference to the methodology provided in Paragraphs 14.29 and 14.36. Table 14-9 provides a summary of the likely significant effect of the operational phase without mitigation measures in place, utilising criteria provided in Table 14-4 taking account of the value of the receptor as given in Table 14-2 and Table 14-5 and the magnitude of potential impact as given in Table 14-3.

Sedimentation and pollution

- 14.83 The proposed development involves the permanent construction of hardstanding, including access roads and parking areas. These pose a source of sediment and pollutant load that could result in significant negative effects on the receiving watercourses and downstream water environment receptors. The risk of this occurring during operation is lower than during construction but could give rise to significant effects on receiving waterbodies due to their permanent nature.
- 14.84 The CIRIA C753 SuDS Manual can be referenced for assessment of water quality impacts as a result of development proposals. Chapter 26 of the manual provides assessment criteria for the water quality impacts of runoff from hard standing for different land use classifications. The pollution hazard index for the proposed development is given as High on the basis that it falls under the category of 'industrial site', as given in Figure 14-9 below.

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways ¹	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways ¹	High	0.8 ²	0.8 ²	0.9 ²

Figure 14-9 CIRIA SuDS Manual Simple Index Approach Hazard Index

- 14.85 Risk of severe pollution from accidental spillages of chemicals and hydro-carbons during delivery, storage and use as part of operational activities at the plant could result in significant effects from pollutant to the onsite ditch, with significant indirect impacts on the downstream SINC ditch system and/or the Swansea Carboniferous Coal Measures WFD groundwater body. This could also result in significant negative effects on the ecosystems and protected habitat/species that are supported by the hydrology of the ditch system.

Flood Risk and Increased Flow

- 14.86 The proposed development will include large areas of impermeable surface which will generate increased volumes of surface water runoff to the receiving watercourses compared to the present greenfield land use. This higher runoff rate and volume would result in increased surface water flood risk on-site. Without mitigation, the potential impact could cause flooding to the properties onsite. Climate change would further exacerbate the impact of the development on surface water flood risk across the lifetime of the development.
- 14.87 A review of the FRAW mapping for risk from surface water flooding provided in the FCA (Appendix 14.2) and LiDAR data suggests that there are no surface water flow pathways across the site that would be negatively affected by the development layout and further exacerbate flood risk on site. The natural flow pathway is away from any existing development and towards the SINC on the western border of the site. As the SINC constitutes a large hydraulically controlled wetland ditch system, it is likely that the wetland would be able to store additional flood volumes from the surface water runoff of the site development without impacts on receptors downstream or upstream (through backing up of the ditch flow rates).
- 14.88 As with the construction phase impacts, increased surface water flow rate during rainfall events (as a result of the significant increase in impermeable area) could lead to increased erosion of the ditches and ecological impacts. The CIRIA C753 SuDS Manual state that rainfall events likely to be significant for the morphology, ecology and capacity of receiving surface waters is normally specified as the 1 in 1 year event frequency. This impact could result in a frequent negative long term effect on the hydro-morphological features of the SINC with a corresponding impact on ecology and water quality if not mitigated.

Channel Morphology

- 14.89 Table 14-9 A small section of the unnamed drain on the site will be culverted underneath the north western access road. The unnamed drain is not part of a defined drainage scheme and only drains the surrounding site. The culvert will not alter the morphology of the of the drain and will not have a significant effect on the channel profile. Any impacts on the unnamed ditch would be negligible.

Summary of Likely Significant Effects

- 14.90 Table 14-9 provides a summary of the likely significant effects on water environment receptors during the operational phase without mitigation measures in place.
- 14.91 Surface water flood risk to the receptors on site is deemed to result in a likely significant effect (Moderate) if no mitigation measures are in place. A likely significant effect (Major) is also concluded for the impact on the water quality and morphology of the surface water bodies without mitigation in place. A likely significant effect on the groundwater WFD waterbody from pollution events is also concluded (Moderate).

Table 14-9 Significance of potential effects from operational phase without mitigation

Receptor	Importance/ sensitivity	Potential Impact	Impact Magnitude	LSE
Flood risk - Less vulnerable development	Medium	Flooding	Medium Adverse	Moderate
Surface water - Unnamed ditch on site	Low	Increased flow	Low Adverse	Negligible
		Sedimentation	Medium Adverse	Minor
		Pollution	Medium Adverse	Minor
		Morphology	Low Adverse	Negligible
Surface water - Neath Port Talbot SINC	High	Increased flow	Medium Adverse	Major
		Sedimentation	Medium Adverse	Major
		Pollution	Medium Adverse	Major
Groundwater - WFD groundwater body	Medium	Pollution	Medium Adverse	Moderate

Potential Mitigation and Residual Significant Effects

- 14.92 The likely significant effects during construction and operation highlighted in the section above can potentially be mitigated with the implementation of appropriate mitigation measures.

Construction Phase

- 14.93 During construction the mitigation measures for the impacts of sedimentation and pollutants will be implemented by adherence to strict protocols relating to the method of construction. A Construction Environmental Management Plan (CEMP) will be developed and agreed with the appropriate stakeholders.
- 14.94 The CEMP can be regarded as tertiary mitigation when approved by the relevant authorising body, as defined in the Institute of Environmental Management and Assessment (IEMA) 2016 guidance on Environmental Impact Assessment². Tertiary mitigation includes actions that have been undertaken regardless of the EIA process, due to other legislative requirements or standard practices.

² Institute of Environmental Management and Assessment (IEMA) (2016). Environmental Impact Assessment Guide to Delivering Quality Development.
<https://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf>

- 14.95 The CEMP should be developed in accordance with best practice guidance such as the Pollution Prevention Guidelines (Environment Agency) and Control of Water Pollution from Construction Sites (CIRIA). The CEMP should incorporate on-going monitoring by the environmental clerk of works throughout the construction phase.
- 14.96 The CEMP should incorporate measures and procedures to reduce the potential effect on water quality in line with the Environment Agency (EA) Pollution Prevention Guidelines. These measures include:
- Minimising sediment load in runoff by covering/sealing exposed surfaces. Early re-seeding of cleared land where practicable to minimise exposed land and the entrainment of sediment by overland flow. Construction plant / materials will be stored on hardstanding surfaces where possible; if this is not possible, the contractor will ensure any compacted topsoil is loosened as soon as possible following completion of the works.
 - Protection measures will be in place to control potentially contaminated construction runoff. No runoff from working areas will be discharged into controlled waters unless specific approval has been obtained in advance from NRW.
 - Restrictions will be in place on use of unnecessary machinery near to adjacent water. Exclusion zones around particularly sensitive areas (e.g. adjacent to the unnamed ditch and off-site culverts) may be implemented. Any works within these areas undertaken with the necessary regulatory consent.
 - Prevention of runoff from unaffected areas mixing with construction runoff.
 - Controls on the use of potential pollutants such as cementitious materials.
 - Correct storage, handling and use of hazardous substances (liquid and solid). Adequately bunded and secure areas with impervious walls and floor will be provided for the temporary storage of fuel, oil and chemicals on site during construction. Drip trays will be in place to collect leaks from diesel pumps / standing plant. Oil interceptor(s) will be fitted to all temporary discharge points and for discharge from any temporary oil storage / refuelling areas. Suitable spill kits will be available on site.
 - Where possible, the attenuation pond/infiltration basin/other drainage features within each identified drainage catchment will be constructed first and used to attenuate and store run-off from the site during construction to prevent possible contamination of the surface and groundwaters. If this is not possible, use of temporary settlement and detention basins will mitigate the risk of increased flows and sediment loads from construction activities.
 - The relevant sections of BS6031:2009 Code of Practice for Earthworks will be followed and reference should be made to SuDS best practice during construction.
- 14.97 The adoption of appropriate pollution prevention measures and good construction practices should ensure that any oils, hydrocarbons or hazardous materials stored on site will not leak onto the ground surface and thereby ensure that surface water courses and associated ecosystems in the vicinity of the site are protected.
- 14.98 Table 14-10 Significance of residual effects from construction Table 14-10 provides a summary of the residual effects from impacts on water environment receptors during the construction phase, with mitigation measures in place. The construction phase impacts are

not considered to cause likely significant effects on the water environment receptors; all effects are classified as Negligible or Minor. The mitigation measures listed are considered to be standard measures to reduce the effects and no actionable measures to remedy effects are necessary.

Table 14-10 Significance of residual effects from construction

Receptor	Importance/ sensitivity	Potential Impact	Impact Magnitude	LSE
Flood risk - Less vulnerable development	Medium	Flooding	Negligible	Negligible
Surface water - Unnamed ditch on site	Low	Increased flow	Negligible	Negligible
		Sedimentation	Low Adverse	Negligible
		Pollution	Low Adverse	Negligible
Surface water - Neath Port Talbot SINC	High	Increased flow	Negligible Adverse	Minor
		Sedimentation	Negligible Adverse	Minor
		Pollution	Negligible Adverse	Minor
Groundwater - WFD groundwater body	Medium	Pollution	Negligible Adverse	Negligible

Operational Phase

14.99 The development proposal is accompanied by a drainage strategy to manage surface water runoff from the site and the associated risks to water quantity and water quality. The Preliminary Drainage Strategy (provided in Appendix 14.1) can be regarded as tertiary mitigation when approved by the relevant authorising organisation (SAB). The relevant strategy measures are described below with reference to mitigation of likely significant effects and residual effects.

14.100 The drainage strategy is required to implement Sustainable Drainage Systems (SuDS) in accordance with the Welsh Government SuDS Statutory Standards³ and obtain SuDS Approval Body (SAB) approval from Neath Port Talbot Council. As such, the drainage

³ Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems. <https://qweddi.gov.wales/docs/desh/publications/181015-suds-statutory-standards-en.pdf>

strategy must attenuate surface water runoff and volume from impermeable developed areas up to the 1 in 100 year rainfall event plus a 40% allowance for climate change. Flow discharge rate off-site will be maintained at or below the present greenfield runoff rate for the 1 in 100 year plus climate change rainfall event. It will also be demonstrated that exceedance flow pathways for higher magnitude events are considered to manage risk to on site receptors. Surface water will therefore be attenuated within drainage system components or flow pathways and does not result in an impact on the receptors on site (less vulnerable development). These measures therefore mitigate the potential for likely significant effects.

14.101 As required by the Welsh Government SuDS Statutory Standards⁴, the drainage strategy will also control low flow discharges from the site for the purpose of morphological protection of the receiving surface watercourses. The runoff rate will therefore be restricted for the 1 in 1 year rainfall event, or a minimum throttle rate agreed by the SAB (e.g. 1–2 l/s/ha.). This mitigation measure will reduce the risk of likely significant effects from surface water runoff to the downstream receiving watercourse and SINC drainage ditches.

14.102 Due to the size of the development, the drainage strategy divides the site into five sub-catchments. The discharge arrangements are outlined below:

- Area 1 will discharge into the existing highway drainage system to the north-west of the site on the Margam Green Energy Access Road via Culvert B which enters an existing highway drainage balancing pond and is presumed to discharge into the watercourse to the west of the site along the southern boundary of Margam Green Energy Plant and within the SINC.
- Area 2 will discharge into the ground via a cellular soakaway.
- Area 3 will discharge into the ground via an infiltration basin.
- Area 4 will discharge into the existing site drainage ditch that runs east-to-west across the site and into the SINC watercourse west of the site via the existing Culvert A.

14.103 The proposed attenuation is in the form of attenuation ponds, infiltration basins, cellular soakaways and attenuation tanks, which will be constructed to CIRIA C753 SuDS Manual standards.

14.104 Section 26.6.3 of the CIRIA C753 SuDS Manual references the findings of two studies into the extent to which surface water may present a risk to groundwater. These studies state that source control measures such as grass filter strips, swales and detention areas should be priority features of SuDS networks where oil contamination may be significant. Source control measures have been implemented in the proposed Preliminary Drainage Strategy.

14.105 The CIRIA C753 Simplex Index Approach for assessment and identification of control measures for water quality pollution has been reviewed and the relevant requirements copied in Figure 14-10 below for surface water and Figure 14-11 below for groundwater. The Simplex Index Approach requires that the management train is applied for surface water treatment from the proposed development site; a minimum of two SuDS components should

⁴ Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems. <https://qweddiill.gov.wales/docs/desh/publications/181015-suds-statutory-standards-en.pdf>

be applied sequentially for each discharge to mitigate the pollution hazard index to the appropriate level (0.8). A SAB compliant drainage strategy for the site that applies the management train in line with industry best practice and the CIRIA C753 SuDS Manual is considered to mitigate pollution from surface water such that the development will not result in likely significant effects to water quality receptors.

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters				
Type of SuDS component	Mitigation indices¹			
	TSS	Metals	Hydrocarbons	
Filter strip	0.4	0.4	0.5	
Filter drain	0.4 ²	0.4	0.4	
Swale	0.5	0.6	0.6	
Bioretention system	0.8	0.8	0.8	
Permeable pavement	0.7	0.6	0.7	
Detention basin	0.5	0.5	0.6	
Pond ⁴	0.7 ³	0.7	0.5	
Wetland	0.8 ³	0.8	0.8	
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.			

Figure 14-10 CIRIA C753 SuDS Manual SuDS mitigation indices for surface water using the Simple Index Approach

TABLE 26.4 Indicative SuDS mitigation indices for discharges to groundwater				
Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates¹		TSS	Metals	Hydrocarbons
A layer of dense vegetation underlain by a soil with good contaminant attenuation potential ² of at least 300 mm in depth ³		0.6 ⁴	0.5	0.6
A soil with good contaminant attenuation potential ² of at least 300 mm in depth ³		0.4 ⁴	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, ie graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20 mm gravel) underlain by a soil with good contaminant attenuation potential ² of at least 300 mm in depth ³		0.4 ⁴	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential ² of at least 300 mm in depth ³		0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential ² of at least 300 mm in depth ³		0.8 ⁴	0.8	0.8
Proprietary treatment systems ^{5,6}		These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area.		

Figure 14-11 CIRIA C753 SuDS Manual SuDS mitigation indices for ground water using the Simple Index Approach

14.106 Further to the above, the Welsh Government SuDS Statutory Standards provides guidance on assessment approaches and pollution control for different land use types, referencing the approaches outlined in the CIRIA C753 SuDS Manual. Table G3.1 of the Welsh Government SuDS Statutory Standards provides treatment requirements and is copied in Figure 14-12 below. For the proposed site, it indicates that an NRW Environmental Permit may be required to manage pollution risk from surface water drainage. If required, compliance with the conditions of the permit will also form relevant mitigation measures for likely significant effects on the surface water and groundwater receptors from pollution

Table G3.1 Treatment requirements and design strategies for discharges of surface water runoff to surface waters, from different land use types²⁰.

Land Use	Pollution Hazard Level	Requirements for discharge to surface waters, including coasts and estuaries	Requirements for discharge to groundwater
Residential roofs	Very Low	Removal of gross solids and sediments only	
Individual property driveways, roofs (excluding residential), residential car parks, low traffic roads (eg cul de sacs, homezones, general access roads), non-residential car parking with infrequent change (eg schools, offices)	Low	Simple Index Approach (1) <i>Note: Additional measures may be required for discharges to protected resources (2)</i>	
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	Simple Index Approach (1) <i>Note: Additional measures may be required for discharges to protected resources (2)</i>	Simple Index Approach (1) <i>Note: Additional measures may be required for discharges to protected resources (2)</i> Risk Screening (3) must be undertaken first to determine whether consultation with Natural Resources Wales is required.
Trunk roads and motorways	High	Follow the guidance and risk assessment process set out in HD45/09 (Highways Agency, 2014)	
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, manufactured, stored, or	High	Discharges may require an environmental licence or permit. Secure pre-permitting advice first from Natural Resources Wales. Risk assessment is likely to be required.(4)	

Figure 14-12 Welsh Government SuDS Statutory Standards guidance on assessment approaches and pollution control for different land use types

14.107 Mandatory maintenance requirements for SuDS will ensure that these assets are maintained and provide the necessary functioning throughout their lifetime.

14.108 Table 14-11 provides a summary of the residual effects from impacts on water environment receptors during the operational phase, with mitigation measures in place. The impacts are not considered to cause likely significant effects on the water environment receptors; all

effects are classified as Negligible or Minor. The mitigation measures listed are considered to be standard measures to reduce the effects and no actionable measures to remedy effects are necessary.

Table 14-11 Significance of potential effects from operational phase with mitigation

Receptor	Importance/ sensitivity	Potential Impact	Impact Magnitude	LSE
Flood risk - Less vulnerable development	Medium	Flooding	Negligible	Negligible
Surface water - Unnamed ditch on site	Low	Increased flow	Negligible	Negligible
		Sedimentation	Low Adverse	Negligible
		Pollution	Low Adverse	Negligible
Surface water - Neath Port Talbot SINC	High	Increased flow	Negligible Adverse	Minor
		Sedimentation	Negligible Adverse	Minor
		Pollution	Negligible Adverse	Minor
Groundwater - WFD groundwater body	Medium	Pollution	Negligible Adverse	Negligible

Cumulative Effects Assessment

- 14.109 The scope of this ES includes consideration of cumulative impacts of the proposed development with adjacent planned developments. As detailed in the cumulative effects baseline section (Section 1.7), a proposed change of use and extension is awaiting approval at Tyn Y Caeau, Margam Road on the eastern boundary of the proposed development site.
- 14.110 The proposed drainage strategy detailed in the Environmental Statement for the Tyn Y Caeau development includes the management of surface water quantity and mitigates any risk of flood risk to the proposed development site from the Tyn Y Caeau development. Furthermore, the Tyn Y Caeau development proposes to discharge all surface water to ground using industry good practice SuDS. Consequently, there are no discharges to surface water which could compound with those from the proposed site and result in cumulative impacts. There are not considered to be any cumulative impacts to the receiving groundwater body as a result of the implementation of the SuDS management train and CIRIA SuDS Manual compliance for the design of the Tyn Y Caeau drainage strategy.

Limitations and assumptions

- 14.111 The following assumptions have been made in this assessment.
- 14.112 The scheme will be implemented and constructed in accordance with masterplan.
- 14.113 The scheme will be implemented and constructed in accordance with an approved SAB compliant drainage strategy in accordance with the guidance provided in the CIRIA SuDS manual. In particular, applying the management train for water quality management and the control of surface water quantity from the site for small (1 in 1 year) and large (1 in 100 year) magnitude events with an allowance for climate change as per the Welsh Government Guidance⁵.
- 14.114 The outcomes of the Margam J38 FCA are accepted by NRW and represents the most likely scenario for flood risk to and from the proposed development site.
- 14.115 The WFD Cycle 2 information for the relevant waterbodies is the latest information available regarding water quality data.
- 14.116 Data for water quality from the unnamed watercourse on site and SINC ditch system is not available.
- 14.117 Construction mitigation measures will follow standard industry best practice be implemented as outlined this chapter, with particular focus on the CEMP measures, for example.
- CIRIA Report C532: Control of water pollution from construction sites – guidance for consultants and contractors (CIRIA, 2001);
 - CIRIA Report C624: Development and Flood Risk – guidance for the construction industry (CIRIA, 2004);
 - CIRIA Report C741: Environmental good practice on site (CIRIA, 2015);
 - Environment Agency: Pollution prevention guidance (Environment Agency, 2014).
- 14.118 All environmental regulatory consents will be gained prior to construction and adhered to throughout.
- 14.119 DCWW will continue to manage the necessary mitigation measures from water supply and sewerage discharge under their existing responsibilities and will meet all consenting requirements.
- 14.120 Mitigation measures will be implemented as outlined in this chapter.
- 14.121 These assumptions are considered to be appropriate for the type of assessment, the proposed development and the importance of the baseline water environment.

⁵ Welsh Government Guidance on Climate Change Allowances for Planning Purposes: https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf

Summary

14.122 The likely significant effects of the proposed development with regards to flood risk, hydrology and drainage are considered to be Negligible or Minor as a result of planned tertiary mitigation measures. In particular, this includes implementation of:

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

14.123 Table 14-12 below summarises the potential impacts, their likely significant effects, mitigation measures to be implemented and residual effects.

14.124 No likely significant effects have been identified as a result of cumulative impacts.

Table 14-12 Summary of potential impacts, likely significant effects (LSE), mitigation and residual effects

Potential Impact	Receptor	Nature of effect	Pre-mitigation LSE	Mitigation measures	Residual LSE
Construction Phase					
Flood Risk	Less vulnerable development	Direct Temporary Medium term	Negligible	None required	Negligible
Increased flow/erosion	Surface water – unnamed ditch on site	Direct Temporary Medium term	Negligible	CEMP	Negligible
	Surface water – SINC	Indirect Temporary Medium term	Moderate	CEMP	Minor
Sedimentation	Surface water – unnamed ditch on site	Direct Temporary Medium term	Minor	CEMP	Negligible
	Surface water – SINC	Indirect Temporary Medium term	Moderate	CEMP	Minor
Pollution	Surface water – unnamed ditch on site	Direct Temporary Medium term	Minor	CEMP	Negligible

Potential Impact	Receptor	Nature of effect	Pre-mitigation LSE	Mitigation measures	Residual LSE
	Surface water - SINC	Indirect Temporary Medium term	Moderate	CEMP	Minor
	Groundwater – WFD Groundwater body	Direct Permanent Medium term	Moderate	CEMP	Negligible
Operational Phase					
Flood Risk	Less vulnerable development	Direct Permanent Long term	Moderate	SAB Compliant drainage strategy	Negligible
Increased flow/erosion	Surface water – unnamed ditch on site	Direct Permanent Long term	Negligible	SAB Compliant drainage strategy	Negligible
	Surface water – SINC	Indirect Permanent Long term	Major	SAB Compliant drainage strategy	Minor
Sedimentation	Surface water – unnamed ditch on site	Direct Permanent Long term	Minor	SAB Compliant drainage strategy	Negligible

Potential Impact	Receptor	Nature of effect	Pre-mitigation LSE	Mitigation measures	Residual LSE
	Surface water – SINC	Indirect Permanent Long term	Major	SAB Compliant drainage strategy	Minor
Pollution	Surface water – unnamed ditch on site	Direct Permanent Long term	Minor	SAB Compliant drainage strategy	Negligible
	Surface water - SINC	Indirect Permanent Long term		SAB Compliant drainage strategy	Minor
	Groundwater – WFD Groundwater body	Direct Permanent Long term	Major	SAB Compliant drainage strategy	Negligible

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15. HEALTH AND SAFETY AND RISK TO HUMAN HEALTH

Introduction

- 15.1. This report presents the findings of a Health Impact Assessment for the proposed erection of a metal processing facility, offices, amenity building (Use Classes B1, B2 and B8) and other associated infrastructure on a site situated to the northwest of Junction 38 of the M4 in Margam, Port Talbot.

Definition of Health

- 15.2. The constitution of the World Health Organisation (WHO) defines health as not only the absence of disease or infirmity, but also as ‘*a state of complete physical, mental and social wellbeing.*’ It emphasises that all people have right to the highest attainable standard of health and wellbeing, stating that health is ‘*one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.*’
- 15.3. It is now accepted that an individual or community’s health is determined not only by the availability and quality of healthcare services, but that a range of economic, social, psychological and environmental influences play an equally important role.

Planning and Legislative Context

Planning and Policy Guidance

National Policy

- 15.4. Planning Policy Wales 11 (PPW11) (February 2021), policies and guidance for development within Wales. PPW supports the role of planning to create healthy, inclusive communities by supporting local strategies to improve health, social and cultural wellbeing for all and by working with public health leads and health organisations to understand and take account of the health status and needs of the local population.
- 15.5. Section 1 of PPW sets out the purpose of the PPW and states that:
- “The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation and resultant duties such as the Socio-economic Duty. A well-functioning planning system is fundamental for sustainable development and achieving sustainable places.”*
- 15.6. Section 2 of the PPW specifically outlines the promotion of health and well-being, wherein it outlines that developments should aim to promote healthy and safe communities which support the needs of local health and well-being through Placemaking.

“The planning system should create sustainable places which are attractive, sociable, accessible, active, secure, welcoming, healthy and friendly. Development proposals should create the conditions to bring people together, making them want to live, work and play in areas with a sense of place and wellbeing, creating prosperity for all...”

...“Placemaking” is a holistic approach to the planning and design of development and Spaces, focused on positive outcomes. It draws upon an area’s potential to create high quality development and public spaces that promote people’s prosperity, health, happiness, and well-being in the widest sense.”

- 15.7. Planning Practice Guidance (PPG) web-based resource was updated by the Ministry for Housing, Communities and Local Government (MHCLG) on 1st November 2019 in order to support the NPPF and make it more accessible. The PPG guidance on Healthy and Safe Communities encourages the design and use of the built and natural environments, including green infrastructure are major determinants of health and wellbeing.

Future Wales: The National Plan 2040

- 15.8. Published in February 2021, this plan sets out the long-term direction of development in Wales to 2040. It states:

“It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities.”

Local Policy

- 15.9. Following a review of the Neath Port Talbot County Borough Council Local Development Plan (2011-2026) (Adopted April 2016), the following policies linked to health were identified.

Policy EN8: Pollution and Land Stability

“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 the following will not be permitted:

- *Air pollution;*
- *Noise pollution;*
- *Light pollution;*
- *Contamination;*
- *Land instability;*
- *Water (including groundwater) pollution.*

Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation measures are included to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level.”

Public Health Profile

- 15.10. It is important to understand the context within which a development is proposed. In this section the nature of the local environment and community profile is summarised for each of the relevant ‘health determinants’ (referred to in Section 15.1.0 above and in Section 15.3.0, Table 15.3.2) to be used in the HIA.
- 15.11. The proposed development is located northwest of Junction 38 of the M4 in Margam, Port Talbot within the jurisdiction of Neath Port Talbot Council (NPTC). The total resident population in Neath Port Talbot was 144,386 people in 2020 according to the Local Government Association data for NPTC¹.
- 15.12. The life expectancy for the whole of Neath and Port Talbot for both men and women is lower than the Wales average², with men’s life expectancy being 77.0 years (15 months below the national average) and women’s life expectancy being 80.9 years (17 months below the national average) in 2015-2017¹.
- 15.13. Approximately 24.1% (5,915) of children in Neath and Port Talbot lived in low-income families during 2016¹. Low income groups in the area may be more vulnerable to health effects. This is because low income groups are commonly associated with a higher rate of mortality and long-term health conditions due to a lower standard of living.
- 15.14. 73.3% of the population of Neath Port Talbot are reported as having ‘Good’ general health³.

Lifestyles

Physical activity

- 15.15. 43% of adults in the Borough do the recommended weekly physical activity¹, below the national average of 53%. Approximately 66.6% of Borough adults were classified as overweight or obese – an average higher than the national value of 60%.
- 15.16. The principal causes of premature death in Neath Port Talbot are cancers, heart disease and stroke, respiratory and liver disease. These conditions are also the principal causes of disability and ill health.

¹ https://ginform.local.gov.uk/reports/lgastandard?mod-metric=3281&mod-period=1&mod-area=W06000012&mod-group=AllFireInRegion_Wales&mod-type=namedComparisonGroup

² <https://phw.nhs.wales/services-and-teams/observatory/data-and-analysis/life-expectancy-and-mortality-in-wales-2020/>

³ <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/articles/generalhealthinenglandandwales/2013-01-30#welsh-unitary-authority-comparisons>

Social and Community Influences on Health

Community Identity

- 15.17. Neath Port Talbot is made up of a predominantly 'White' population (95.4%). Other ethnic groups in the region including Black, Asian and minority ethnic groups account for approximately 5.6% of the population.
- 15.18. English or Welsh is the predominant language of 99.0% of households. 58.91% of Neath Port Talbot residents stated that they had a religion, with the majority of these being Christian. Over one third of the population stated that they had no religion.

Living / Environmental Conditions Affecting Health

Traffic / Road Network

- 15.19. There is a risk of injuries associated with traffic collisions/accidents on local road networks and there is the potential for a level of distress when travelling in busy periods or sitting in queuing traffic.
- 15.20. As per the submitted Transport Assessment, an analysis of personal injury accident data records has identified no significant issues associated with the local highway network that are detrimental to road safety levels.
- 15.21. There is cycle parking proposed at the development. The roads around the scheme have good access to cycle lanes and infrastructure, inclusive of a shared footway / cycleway running along the A48 which connects the development site to surrounding residential areas in Margam and Port Talbot.
- 15.22. The busiest road within the site study area is the M4 to the east of the proposed development, however pedestrian crossing points are located within the vicinity of the development site, which minimise risks.

Air Pollution / Air Quality

- 15.23. A full Air Quality Assessment has been undertaken for the application by Air Quality Consultants (October 2021). The Air Quality Assessment shows that the proposed development is not situated within an Air Quality Management Area. Table 13-22 within the Assessment shows that the proposed development is not predicted result in any significant effects on existing receptors considered within the assessment in relation to air quality in terms of NO₂, PM₁₀, PM_{2.5}, chromium, nickel, copper and lead.
- 15.24. As indicated in Table 13-23 within the Air Quality Assessment, the proposed development is not predicted to exceed the Air Quality objective for PM₁₀ or PM_{2.5} concentrations, respectively. Additionally, Table 13-26 indicated that no significant effects will occur as a result of emissions of chromium, nickel copper and lead from the Metal Processing Facility.

- 15.25. Temporary elevation in dust levels may arise on an intermittent basis as part of the construction phase of the proposed development. This is more likely when the proposed activities are undertaken during dry and/or windy meteorological conditions. The magnitude of the potential impact and resulting environmental effects depend on the potential for dust to become and remain airborne prior to returning to the surface as a deposit. Unlike other atmospheric pollutants, the presence of dust and its deposition is particularly dependent on distance to discrete receptors and prevailing weather conditions, with areas most consistently affected being located downwind of emission sources.
- 15.26. The increase in mortality risk associated with long-term exposure to particulate air pollution (PM₁₀ and PM_{2.5}), i.e. the inhalation of small particles penetrating the lungs, is one of the most important, and best-characterised, effects of air pollution on health. There is evidence that people with pre-existing respiratory or cardiac disease or diabetes are more susceptible to the health effects of air pollution.

Green Space

- 15.27. The development site is located approximately 4.5 km south of Port Talbot centre, with the area immediately surrounding the development predominantly agricultural, suburban and industrial land. The proposed development is located in close proximity to walking and cycling routes, such as the long-distance recreational route of the Wales Coastal Path which extends around the southern and eastern edge of the proposed development site. Additionally, Tyn y Caeau, a 2-Storey residential dwelling, is located in close-proximity to the north-eastern site boundary. Currently, the development site is used for agricultural purposes comprising of enclosed field boundaries, hedgerows and a small woodland copse. Margham Country Park lies to the east of the development site across the other side of Junction 38, M4. The existence of such facilities majorly benefits human health and well-being.

Noise

- 15.28. An initial Noise Assessment has been undertaken for the application. Table 5-3 within the Assessment dated September 2021, shows that during the daytime operational noise levels of the proposed development are predicted to meet criteria. At night, the Noise Assessment states:

“However, a marginal excess is indicated at night; however, we would argue that as these are limited to only two night-time HGV visits per week and absolute levels are well below prevailing ambient noise climate at night that these occasional HGV movements should be easily accommodated within the existing soundscape.”

- 15.29. A noise assessment of the car park associated with the development has been undertaken. The car park noise assessment indicates an insignificant impact in comparison to the existing ambient noise levels. The report states:

“However, car park noise is indicated to exceed the proposed noise criteria, and therefore options for screening should be investigated.”

- 15.30. Screening which removes line of sight from the residential dwelling, Tyn y Caeau, to the car park access road as well as the staff car park is suggested as a possible mitigation measure
- 15.31. The type of screening suggested could take the form of a landscaped earth bund or a solid structure such as a close board timber fence or a wall.
- 15.32. About 30% of UK's population is expressing dissatisfaction with their noise environment. The effects of exposure to noise on health include:
- Annoyance and sleep deprivation;
 - An increased level of stress hormones leading to the possibility of long-term effects on blood pressure and on cardiovascular disease;
 - An increased likelihood of developing mental illness and exacerbating existing mental health conditions;
 - Impairment of cognitive performance in children.
- 15.33. A living environment free from noise disturbance is especially important for people who are at home for long periods, such as people living with existing mental health conditions.

Water

- 15.34. Much of the development site is located within flood Zone B with a small area in Zone C2. The Site is classed as being at 'Very low risk', defined as having less than 0.1% chance of flooding. Approximately 420m from the proposed site boundary is the Eglwys Nunydd Reservoir (SSSI). The surrounding area does not have any water-dependent designated sites such as National Parks, Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Areas of Outstanding Natural Beauty (AONB).

Economic Conditions Affecting Health

Economic Activity

- 15.35. In 2021, 75.1% of Neath Port Talbot residents are economically active. Of these, 75.1% are in employment (4.9% self-employed) and 3.8% of the population are unemployed⁴.
- 15.36. The top occupations listed by people in Neath Port Talbot is Professional Occupations 17.4%, Administrative & Secretarial 15.9%, Caring, Leisure And Other Service Occupations 11.5%, Associate Professional And technical 11.3%, Skilled Trades Occupations 11.2%, Elementary Occupations 10.3%, Sales And Customer Service Occupations 8.5%, Managers, Directors And Senior Officials 6.9% and Process Plant & Machine Operatives 5.9%⁴.
- 15.37. The dominating industry within Neath Port Talbot is manufacturing.

Table Earning by place of residence (2021)⁴

Gross Weekly Pay	Neath Port Talbot (£)	Wales (£)	Great Britain (£)
Full-Time Workers	589.6	570.6	613.1
Male Full-Time Workers	612.7	599.7	655.5
Female Full-Time Workers	518.3	528.3	558.1

- 15.38. Table 15.3.1 indicates the average weekly salary for residents of Neath Port Talbot is greater than the Regional Average but lower than the UK Average.

Biological Diversity

- 15.39. An ecological impact assessment has been undertaken by Saltys Brewster Ecology dated June 2021. In the absence of mitigation measures, there is potential for mortality, injury or disturbance to wildlife such as badgers, bats, nesting birds and common reptiles. There is also likely to be a loss, fragmentation or disturbance to priority and important habitats including Semi-natural broad-leaved woodland, hedgerows, marshy grassland and semi-improved neutral grassland. Appropriate mitigation measures have been suggested within the ecological assessment.
- 15.40. NPTCs area of jurisdiction Kenfig Pool and Dunes (NNR), Eglwys Nunydd Reservoir (SSSI) and Kenfig / Cynffig (SSSI, SAC) which are located within 5km of the proposed site.
- 15.41. The proposed metal processing facility is not expected to have a significant impact on the above sites.

Climate change

- 15.42. Some of the challenges that the Borough and the UK are expected to face as a result of climate change include higher temperatures that could potentially lead to increased air pollution and consequent increase in number of people suffering from respiratory illnesses and asthma.

Wellbeing

- 15.43. The World Health Organisation includes wellbeing as a distinct part of its definition of health where health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. In this instance wellbeing is the state of being mentally or

⁴ <https://www.nomisweb.co.uk/reports/lmp/la/1946157394/report.aspx>

physically comfortable, healthy, or happy. However, wellbeing can be understood as how people feel and how they function, both on a personal and a social level, and how they evaluate their lives as a whole.

- 15.44. It is not possible to determine the wellbeing of a populous and therefore it is measured using indicative factors, such as access to open space, nature reserves or heritage assets, which can affect a population's wellbeing.
- 15.45. People with the poorest personal wellbeing are most likely to have at least one of the following characteristics or circumstances:
- self-report very bad or bad health;
 - be economically inactive with long-term illness or disability;
 - be middle-aged;
 - be single, separated, widowed or divorced;
 - be renters; and,
 - have no or basic education.
- 15.46. In 2020, 24.9% of Neath Port Talbot residents were economically inactive, higher than the Regional Average of 24.6% for Wales and greater than the UK Average of 21.6%. These figures show that the Local Authority area is less economically active than the Region, and less economically active than the UK Average⁴.
- 15.47. In 2020, 27.5% of Neath Port Talbot residents were educated to NVQ4 (equivalent to a Higher Education Certificate/BTEC) and Above, compared to 38.5% of the Region and 43.1% of the UK. A full breakdown of the education profiles of Neath Port Talbot, Wales, and the UK Averages is outlined in Table 15.3.24.

15.3.2 Table Office for National Statistics Data on Qualifications

Qualification	Neath Port Talbot (%)	Wales (%)	Great Britain (%)
NVQ4 And Above	27.5	38.5	43.1
NVQ3 And Above	49.6	58.3	61.3
NVQ2 And Above	72.7	76.5	78.1
NVQ1 And Above	82.2	86.7	87.7
Other Qualifications	6.6	5.6	5.9
No Qualifications	11.2	7.7	6.4

- 15.48. Table 15.3.2 shows that Neath Port Talbot residents have obtained a lower level of education and qualifications than the Regional and UK Averages up to NVQ4 (inclusive), the equivalent of a Higher Education Certificate/BTEC.

15.49. The Office for National Statistics has compiled data from an Annual Population Survey to assess personal wellbeing, which has been surveyed through four measures: Life satisfaction, feeling the things done in life are Worthwhile, Happiness, and Anxiety⁵. The four measures are assessed using a scale from 0-10 where 0 is 'not at all' and 10 is 'completely', and using the questions outlined below:

- Life satisfaction - Overall, how satisfied are you with your life nowadays?
- Worthwhile - Overall, to what extent do you feel that the things you do in your life are worthwhile?
- Happiness - Overall, how happy did you feel yesterday?
- Anxiety - On a scale where 0 is "not at all anxious" and 10 is "completely anxious", overall, how anxious did you feel yesterday?

15.3.3 Table Office for National Statistics Wellbeing Survey

Qualification	Neath Port Talbot	Wales	Great Britain
Anxiety			
Very good	38.05	33.34	33.07
Good	19.78	22.59	24.16
Fair	17.81	17.65	18.56
Poor	24.35	26.42	24.21
Average (mean)	3.25	3.42	3.31
Happiness			
Very good	37.03	30.00	29.53
Good	34.67	42.25	42.59
Fair	16.77	17.84	18.61
Poor	11.53	9.92	24.21
Average (mean)	7.36	7.30	7.31
Life Satisfaction			
Very good	26.07	25.25	23.75
Good	47.72	49.62	52.59
Fair	18.87	18.13	17.54
Poor	7.33	7.01	6.12
Average (mean)	7.31	7.38	7.71
Worthwhile			
Very good	36.81	31.45	31.48
Good	45.85	46.39	50.15
Fair	10.32	12.81	13.9

Poor	7.01	5.11	4.47
Average (mean)	7.79	7.63	7.71

- 15.50. Table 15.3.3 outlines the Office for Nations Statistics' data for the Annual Population Survey for each of the four wellbeing measures. In each of the four categories which constitute the measurements of wellbeing, Neath Port Talbot has the highest population percentage in 'Very Good' or 'Good' and the lowest in 'Poor' or 'Fair' when compared against the Regional and UK averages.
- 15.51. Given the analysis of baseline wellbeing within the Authority area of Neath Port Talbot, it can be concluded that the wellbeing in the Local Authority Area is above the Regional Average and in places, above the UK Averages.
- 15.52. The proposed development is located in close proximity to walking and cycling routes, such as the long-distance recreational route of the Wales Coastal Path which extends around the southern and eastern edge of the proposed development site.
- 15.53. The Proposed Development is located on arable land and therefore may be perceived to result in a loss of some green space, however, the existing use of the land does not contain any active Public Rights of Way and it should be noted that this land use is unlikely to have any health or wellbeing benefit to any local populous.
- 15.54. Additionally, the development will have an economic impact on the Local Authority Area as well as further afield, as during the construction phase, the proposed development will provide job opportunities. It is estimated that the construction of the project will support direct and indirect jobs through the supply chain. Once completed the development is envisaged to provide approximately 150 direct jobs, which will comprise a range of opportunities, from entry level warehouse roles through to skilled technical and managerial positions.
- 15.55. The economic benefits of employment at the Proposed Development are likely to be felt adjacent to the Proposed Development and in the Neath Port Talbot Local Authority Area.
- 15.56. Access to green space and economic activity are recognised to have an impact on wellbeing, and therefore is determined that the proposed development is likely to have a net increase on local wellbeing on completion of the scheme.

Assessment Methodology

Health Impact Assessment Approach and Methodology

- 15.57. HIA is commonly defined as *"a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population."* It is a tool to appraise both positive (e.g. creation of new jobs) and negative (e.g. generation of pollution) impacts on the different affected subgroups of the population that might result from the development.

- 15.58. The Health Impact Assessment aims to identify all these effects on health in order to enhance the benefits for health and minimise any risks to health. It includes specifically a consideration of the differential impacts on different groups in the population, such as those on a low income, people involved in the criminal justice system, minority ethnic groups, young, disabled (physically and learning) and elderly people.
- 15.59. Spatial planning and development has the potential to impact on human health and wellbeing. This is because a wide range of social and environmental factors affect the health of local communities. Good health is related to good quality housing and developments, well designed street scenes, well laid out neighbourhoods, quality and efficiency in transport systems, opportunities to experience leisure and cultural services activities and green and open space. These factors are known as the “wider determinants of health” and include:
- Individual lifestyle factors such as smoking habits, diet and physical activity.
 - Interactions with friends, relatives and mutual support within a community.
 - Wider influences on health including - living and working conditions, unemployment, sanitation, health care service, housing, food supplies, education, and the work environment.

Health Impact Assessment, A Practical Guide Version 2

- 15.60. Whilst there is no statutory regional or national guidance for undertaking Health Impact Assessments (HIAs) in Neath Port Talbot or the UK, advice provided by the Welsh Health Impacts Assessment Support Unit (WHIASU) has been used to inform the HIA as it provides a methodology for completing HIAs.
- 15.61. The HIA has been undertaken with reference to the Public Health England produced ‘Health Impact Assessment in spatial planning: A guide for local authority public health and planning teams’, published October 2020, which outlines the requirements of an HIA, and the general scope of the assessments.
- 15.62. The above is further supplemented by the applicant’s and consultant’s experience of other similar sites and developments.
- 15.63. Based on the Health and Wellbeing Determinants Checklist within the ‘Health Impact Assessment, A Practical Guide Version 2’, the scoping assessment identified a number of health determinants (as outlined in Section 15.3.0, Table 15.3.2) as having the potential to result in health impacts on the development and therefore have been scoped into further assessment.
- 15.64. The HIA takes a proportionate approach to the consideration of any health-related impacts which could arise from the proposed development.
- 15.65. This guide provides advice on defining health and measuring impacts on it. It includes a checklist of potentially vulnerable and disadvantaged groups (appendix 1) and a checklist of health determinants (appendix 2). The documents recognises that target groups are a guide only and will depend upon the:

- Characteristics of the local population; and
- The nature of the proposal.

15.66. In the context of this assessment, health effects as a result of a change in pollutant levels has been identified as the most relevant topic for assessment within the HIA.

Aims And Objectives Of Health Impact Assessment

15.67. A Health Impact Assessment should:

- Include individual lifestyle factors such as smoking habits, diet and physical activity. Impacts of the proposed development on planned new communities and the adjacent existing communities in the development area;
- Highlight any potential differential distribution effects of health impacts among groups within the population by asking 'who is affected?' for the impacts identified; and
- Suggest actions / mitigations that aim to minimise any potential negative health impacts and maximise potential positive health impacts, referencing where possible the most affected vulnerable group(s).

15.68. A topic of great concern is mental health and wellbeing and the importance of certain aspects of the built and natural environment are to such health factors. It is difficult to appropriately measure the mental health and wellbeing of populations, and therefore it is not possible to show trends in fluctuations of health and wellbeing in communities. Aspects of developments and their surroundings are used as indicators for mental and physical health as well as wellbeing, such as the availability of greenspace, and the potential effects the development will have on these factors.

15.4.1 Table Health Determinants considered in the HIA

Health Determinant	Explanation	Population Group Potentially Affected
Lifestyles		
Physical activity	Physical activity is defined as any bodily movement that requires energy expenditure. Popular ways to be active includes walking, cycling, sports and recreation. Within the proposed development, physical activity is considered within the availability of pedestrian and cycle routes which encourage 'healthy travel'.	Pedestrians and cyclists
Social and community influences on health		
Community Identity	There is no one definition of community identity however it is considered to comprise a neighbourhood's history, natural features, cultures, population and services make-up and sources of community pride.	Local residents
Living / environmental conditions affecting health		
Traffic NO ₂ emissions	Emissions from all of the above have the potential to affect human health through inhalation.	Future Residents Surrounding residents
Traffic particulate matter		

Boiler/CHP NO ₂ Emissions		
Health effects of air pollutants		
Access to green space	Green space includes parks and gardens, natural and semi-natural urban green spaces, outdoor sports facilities, landscape around spaces and accessible countryside ⁶ . There is significant and growing evidence on the health benefits of access to good quality green spaces. The benefits include better self-rated health; lower body mass index, overweight and obesity levels; improved mental health and wellbeing; increased longevity.	General population
Noise	Noise has the potential to disrupt sleep and cause nuisance at surrounding receptors and has the potential to damage the hearing of site employees if working near particularly loud sources.	Surrounding Residents; Future Residents
Flood Risk	There is potential for distress as a result of damage to property as a result of flooding.	Site residents/employees
Wind	There is potential for microclimate effects of tall buildings to create strong gusts which would cause discomfort to pedestrians and there is a risk that cyclists could be blown over.	Pedestrians/cyclist
Economic conditions affecting health		
Economic activity	Economic activity is generated through employment opportunities and trade within the area.	Employees; Local residents
Access and quality of services		
Road hazards	The potential for traffic accidents as a result of road infrastructure such as signage and road crossings and the behaviour of drivers, pedestrians and cyclists.	Pedestrians; cyclists; road users
Journey distress	Mental and physiological effects experienced by a driver traversing a road network. Journey distress can result in drivers the feelings of discomfort, annoyance, frustration or fear culminating in physical and emotional tension that detracts from the value and safety of a journey.	Drivers
Macro-economic, environmental and sustainability factors		
Government policies	Government policy encourages mineral extraction so as to have necessary aggregates for construction	Local Residents and General population
Climate change	As a result of anthropogenic activities, the climate of the UK is expected to change over time with increasing temperatures, more varied rainfall patterns and an increase in the frequency of extreme weather events.	
Biological diversity	Biological diversity includes habitats, species and any protected designated areas.	Surrounding habitats

⁶https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/355792/Briefing8_Green_spaces_health_inequalities.pdf

Assessment of Each Identified Health Determinant

- 15.69. Based on the above scoping exercise, an assessment and summary of the relevant potential health effects is included in Table 15.5.1 to 15.5.3 below. The tables provide a summary of the proposals for each health determinant, but these should be read in conjunction with the relevant technical report submitted with the planning application.

15.5.1 Table Summary of Proposed Development

Proposal Summary
This report presents the findings of a Health Impact Assessment for the proposed erection of a metal processing facility, offices, amenity building (Use Classes B1, B2 and B8) and other associated infrastructure on a site situated to the northwest of Junction 38 of the M4 in Margam, Port Talbot.

15.5.2 Table Summary of Health Effects

Health Determinant	Assessment Summary	Additional Comments	Is the Development predicted to have a Significant Effect on this Aspect Health?
Lifestyles			
Physical activity	The proposed development is located in close proximity to walking and cycling routes, such as the long-distance recreational route of the Wales Coastal Path which extends around the southern and eastern edge of the proposed development site. There may be a loss of some green space as a result of the development, however, the proposed development is situated on land with an existing agricultural use, and therefore unlikely to have any health or wellbeing benefit. Cycle parking is proposed as part of the development, subject to planning consent, which will promote cycling to and from the proposed development.	There will be a benefit as a result of greater access to cycle parking and a promotion of healthy commuter methods as a result of the proposed development.	No Significant adverse effect. There will be a benefit from the additional cycle infrastructure and as a result of the modal shift towards sustainable transport measures and as a result reduction in vehicles movements to and from the site.
Social and community influences on health			
Community Identity	Despite the challenging circumstances due to Covid-19, the applicant has undertaken consultation with NPTBC, key stakeholders and the community		No Significant Adverse Effect

Health Determinant	Assessment Summary	Additional Comments	Is the Development predicted to have a Significant Effect on this Aspect Health?
	which follows the Government's advice that the planning system should not be delayed as a result of the pandemic.		
Living / environmental conditions affecting health			
Traffic NO ₂ emissions	An Air Quality Technical assessment has been completed by Air Quality Consultants (October 2021) to accompany the planning application. This shows that the changes in air quality to surrounding residents will be 'negligible'. The assessment showed no exceedances of the Air Quality Objective for Nitrogen Dioxide. Mitigation measures included within the Travel Plan associated with the scheme will be implemented to promote the use of sustainable transport measures.		No Significant Adverse Effect There will be a benefit as a result of the modal shift towards sustainable transport measures and as a result reduction in vehicles movements to and from the site.
Traffic and Metal Processing Plant facility particulate matter	An Air Quality Technical assessment completed by Air Quality Consultants (October 2021) has been completed to accompany the planning application. This shows that the changes in air quality to surrounding residents will be 'negligible'. The proposed development is not predicted to result in any significant effects on existing receptors considered within the assessment in relation to emissions of chromium, nickel, copper and lead. The assessment showed no exceedances of the Air Quality Objective for Particulate Matter.		No Significant Adverse Effect There will be a benefit as a result of the modal shift towards sustainable transport measures and as a result reduction in vehicles movements to and from the site.
Health effects of air pollutants	There is currently limited awareness among the general population of local air pollution levels and how they can affect people and the difference between perception and risk. There is predicted to be a 'negligible' impact associated with air pollutants as a result of the development.		No Significant Adverse Effects

Health Determinant	Assessment Summary	Additional Comments	Is the Development predicted to have a Significant Effect on this Aspect Health?
Access to green space	The proposed development is not expected to have any significant impact on nearby green spaces such as Margam Country Park.		No Significant Adverse Effect
Flood risk and water quality	A flood risk assessment has been undertaken. The site is located in an area of 'Very Low' risk to flooding.		No Significant Adverse Effect
Noise	A Noise Assessment undertaken by Hunter Acoustics (September 2021) has been completed which assesses the effects of noise from the scheme on surrounding residences. A car park noise assessment indicates a likely exceedance of the proposed noise criteria. The assessment gives appropriate mitigation measures to manage any noise levels at sensitive internal or external spaces.	During Construction, Site employees will wear personal protective equipment (PPE) where required.	No Significant Adverse Effect
Wind	The proposed building is not tall enough to require a wind microclimate assessment and there are not expected to be any adverse effects as a result of the development in terms of wind.		No Significant Adverse Effect
Economic conditions affecting health			
Economic activity	Once completed the development is envisaged to provide approximately 150 direct jobs, which will comprise a range of opportunities, from entry level warehouse roles through to skilled technical and managerial positions.	The economic benefits of employment at the proposed development are likely to be felt in neighbouring Local Authority areas and the neighbouring communities.	No Significant Adverse Effect There will be a benefit from the ongoing employment and economic growth.
Access and quality of services			
Road hazards	The proposals are unlikely to have any material impact on the level of personal injury accidents in the area; There are also walking and cycleways to the north and west of the site along the A48.	Safe vehicular access points into the Site will be created.	No Significant Adverse Effect

Health Determinant	Assessment Summary	Additional Comments	Is the Development predicted to have a Significant Effect on this Aspect Health?
	A Transport Assessment and Travel Plan have been produced by Apex Transport Planning (September 2021) and has been submitted as part of this application.		
Journey distress	Construction work to the road network within the development area could result in congestion or diversions for both motorised and non-motorised users. A CEMP has been submitted as part of the application, which outlines best practice mitigation measures which will be implemented on and off site.		No Significant Adverse Effect
Macro-economic, environmental and sustainability factors			
Climate change	The UK Climate Projections contains regional climate information for which Neath Port Talbot is included in the South Wales region. The South Wales region is predicted to experience changes in temperature, rainfall, and frequency of extreme weather events as a consequence of climate change. These changes are predicted to occur under all three emissions scenarios (i.e. low, medium, and high Green House Gas emissions), which are incorporated into the climate change models produced by the Met Office Hadley Centre. The general trend for the region is warmer and drier summers and warmer and wetter winters.	The assessment of air quality has considered the meteorological conditions at the site.	No Significant Adverse Effect
Biological diversity	An ecological impact assessment has been undertaken by Saltys Brewster Ecology (June 2021). In the absence of mitigation measures, there is potential for mortality, injury or disturbance to wildlife such as badgers, bats, nesting birds and common reptiles. There is also likely to be a loss, fragmentation or disturbance to priority and important habitats including Semi-natural broad-leaved woodland, hedgerows, marshy grassland and semi-improved	Appropriate mitigation measures to minimize the impact on the affected wildlife and habitats have been suggested within the ecological assessment.	No Significant Adverse Effect

Health Determinant	Assessment Summary	Additional Comments	Is the Development predicted to have a Significant Effect on this Aspect Health?
	neutral grassland.		

15.5.3 Table Rapid Health Impact Assessment

Planning and Development Issue	Impact			Certainty		Description of Impact on health and your rationale for this	Recommendation (to minimise or maximise impact)
	+	-	?	?	!		
Construction							
Pollution	x				x	The Air Quality Assessment confirms that during the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the Site. However, assuming good practice dust control measures are implemented, the residual significance of potential air quality impacts from dust generated by earthworks, construction and trackout activities is predicted to be negligible. The Noise Impact Assessment confirms that the noise levels at existing noise sensitive properties from the factory & HGVs will meet criteria. A car park noise assessment indicates a likely exceedance of the proposed noise criteria.	The Air Quality Assessment recommends that principles of standard construction mitigation measures are implemented on site to reduce the impact of construction activities. Following the implementation of mitigation outlined within the CEMP, the impact of construction activities is predicted to be ‘negligible’. Options of screening to mitigate against car park noise should be investigated.
Access to Sustainable Travel and Transport							
Promotion and ease of	x				x	A Transport Assessment undertaken by Apex	A Travel Plan is submitted alongside the application

Planning and Development Issue	Impact			Certainty		Description of Impact on health and your rationale for this	Recommendation (to minimise or maximise impact)
	+	-	?	?	!		
cycling and walking						Transport Planning (September 2021) has been submitted as part of this application. This confirms that the Site is located adjacent to major transport links with a high standard of pedestrian infrastructure and off-road and on-road cycle routes easily accessible from the Site. The development area is served by existing bus routes and is accessible by a range of public transport options. In terms of parking, secure and covered cycle parking spaces will be provided on the site to encourage cycling.	which demonstrates a commitment to sustainable travel initiatives, and provides an indication of how the development will be designed and managed to discourage reliance on the private car and how alternative modes of travel will be promoted at the Site. This includes the implementation of safe and secure cycle storage areas, and the promotion of healthy travel options such as walking and cycling.
Access to public transport links	x				x	The applicant has plans to introduce measures to promote car sharing, the use of public transport and sustainable commuting methods, which would allow staff to access the premises without the need for private cars. It therefore concludes that the Site is accessible by a range of sustainable modes of transport and can be considered a suitable location for the proposed development.	A Travel Plan is submitted alongside the application which demonstrates a commitment to sustainable travel initiatives, and provides an indication of how the development will be designed and managed to discourage reliance on the private car and how alternative modes of travel will be promoted at the Site. This includes the promotion of public transport links, and the provision of information packs containing the relevant public transport

Planning and Development Issue	Impact			Certainty		Description of Impact on health and your rationale for this	Recommendation (to minimise or maximise impact)
	+	-	?	?	!		
							routes.
Other	x				x	Electric vehicle charging points will be installed, with a minimum of 10% of available parking.	N/A
Access to healthy food/food							
Ease of access to local supermarkets or convenience stores	x				x	There are currently no local shops, supermarkets or other amenity and commercial entities are within walking distance of the development.	An employee amenities block had been proposed as part of this development.
Opportunities for local food growing						N/A	N/A
Other	x				x	An amenities block is proposed within the development, which will provide affordable healthy food options to staff.	N/A
Community Safety							
Traffic management		x			x	Construction work to the road network within the development area could result in congestion or diversions for both motorised and non-motorised users. Safe vehicular access points into the Site will be created. The proposals are unlikely to have any material impact on the	Implementation of the CEMP submitted as part of the application, using best practice mitigation measures.

Planning and Development Issue	Impact			Certainty		Description of Impact on health and your rationale for this	Recommendation (to minimise or maximise impact)
	+	-	?	?	!		
						level of personal injury accidents in the area;	
Safe and secure play areas						N/A	N/A
Safe and inclusive environments						N/A	N/A
Prevention of crime and anti-social behaviour	x				x	The current Site with its lack of development and maintenance, presents an opportunity for anti-social behavior and crime. The design of the site includes security measures on site, to be accompanied with landscaping, including the installation of security fencing. This will ensure a high level of security is achieved. Appropriate lighting will also be provided on site which will prevent crime and increase community safety.	N/A
Employment and Economy							
Local employment opportunities	x				x	The operation of the proposed Metal Processing Facility of the development will result in direct and ongoing employment opportunities. Numerous jobs are	N/A

Planning and Development Issue	Impact			Certainty		Description of Impact on health and your rationale for this	Recommendation (to minimise or maximise impact)
	+	-	?	?	!		
						supported throughout the downstream supply chain (drivers, construction workers).	
Access of a variety of travel modes to places of work						N/A	N/A
Community Cohesion							
Ease of access to public buildings for all						N/A	N/A
Ease of access to public spaces for all						N/A	N/A
Opportunities for promoting community interaction						N/A	N/A
Climate Change							
Green infrastructure	x				x	The proposed development is designed with sustainability in mind. The proposal includes buildings which are energy efficient and designed to reduce carbon emissions.	Green infrastructure in the form of new trees, hedgerows and grassland will be provided.
Flood risk and drainage	x				x	Much of the site is located within flood Zone B with a small area in Zone C2.	A Sustainable Drainage scheme (SuDS) will be incorporated into the development scheme to

Planning and Development Issue	Impact			Certainty		Description of Impact on health and your rationale for this	Recommendation (to minimise or maximise impact)
	+	-	?	?	!		
							ensure it is protected from flooding.

Conclusions

- 15.70. Tetra Tech have undertaken a Health Impact Assessment (HIA). The potential effects of the scheme on human health have been identified and summarised. The HIA draws heavily on the extensive work undertaken for the planning application. The summary of health effects is included in Tables 5-1 to 5-3. This concludes that the proposed development is not predicted to give rise to any significant adverse health-related impacts, and that there will be some benefits.
- 15.71. The public health profile for the surrounding area has been summarised. This generally shows that life expectancy is lower than the Wales average around the site. Additionally, average weekly pay is greater than the average for Wales, but less than the UK average. However, there is not likely to be an adverse impact as a result of the development.
- 15.72. A review of the potential for the development to have health effects for both future users of the site and surrounding occupants has been undertaken. The assessment concludes that there are no significant adverse effects to health as a result of the scheme. In addition, the proposed development will provide a number of jobs, which is also a benefit to the area. Jobs will be created, both directly and indirectly, through the construction of the project and, once operational, 150 direct jobs will be created.

16. WASTE

Introduction

- 16.1. This chapter of the Environmental Statement (ES) assesses the likely significant effects of the Proposed Development with respect to waste management, particularly the effects on waste management infrastructure. This Chapter also describes the legislative and policy framework; the methods used to assess the effects; the baseline conditions currently existing at the Application Site; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 16.2. This chapter provides an assessment of the existing environment at the proposed metal processing site in terms of waste and considers how waste generated from the proposed development would be managed through both the construction phase and the site's operational life.

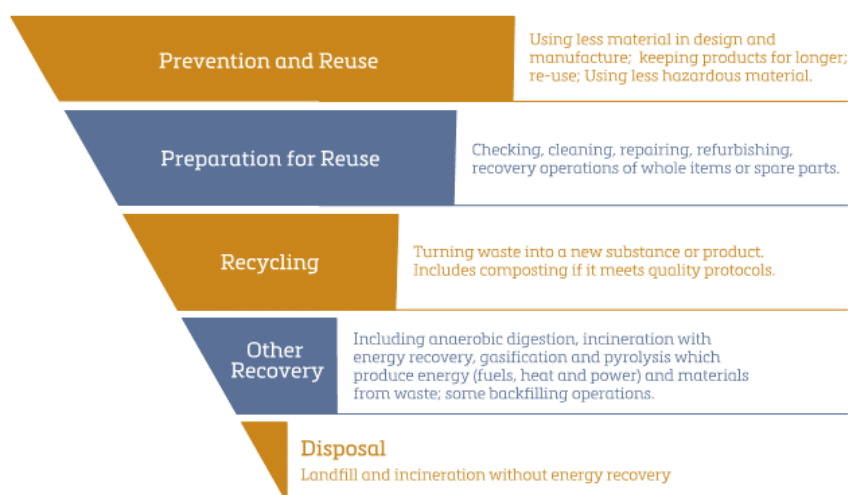
Legislation, Planning Policy and Guidance

National Policy

- 16.3. Future Wales: The National Plan 2040 was published in February 2021. The document is a spatial plan, prepared with the intention of setting the direction for development in Wales from 2020 to 2040.
- 16.4. There are no specific waste policies included in the document, although Policy 19 – 'Strategic Policies for Regional Planning' requires that: 'Strategic Development Plans should embed placemaking as an overarching principle and should establish for the region (and where required constituent Local Development Plans)... a co-ordinated framework for minerals extraction and the circular economy, including waste treatment and disposal.'
- 16.5. Planning Policy Wales: Edition 11 (2021) (PPW) sets out the land use planning policies of the Welsh Government.
- 16.6. Paragraph 3.61 in PPW states that sustainable waste management is crucial for economic, social and environmental sustainability. Paragraph 5.12.9 of PPW states: '*Adequate facilities and space for the collection, composting and recycling of waste materials should be incorporated into the design and, where appropriate, layout of any development as well as waste prevention measures at the design, construction and demolition stage.*'
- 16.7. A chapter (5.13) on Sustainable Waste Management Facilities is included in PPW and explains the concept of the Waste Hierarchy as shown in Figure 1 overleaf.

Figure 16.1: Waste Hierarchy (PPW Extract)

Figure 11: Waste Hierarchy



- 16.8. Waste arising from the development would be managed in accordance with the Waste Hierarchy using the most appropriate waste management options. The principal objective of the Waste Hierarchy is to minimise the amount of waste produced by ensuring economy and efficiency in raw materials usage. Where this is not possible, the aim is to deal with the waste produced in a reasonable and sustainable way, with the least preferred option being disposal to landfill. The overall objective being to minimise the environmental impact both in the short term via prevention of pollution and in the long term, in terms of resource and land usage.
- 16.9. The 'Towards Zero Waste One Wales: One Planet' (TZW) is the overarching waste strategy document for Wales. The document sets out a long-term framework for waste management and resource efficiency to 2050. The document identifies Welsh Government (WG) aspirations, sets high level targets and provides a general approach of delivering these targets as well as other key actions. The key aim of the strategy document is to recycle 70% of all waste by 2025 with an aim of zero waste to landfill or recovery facilities by 2050. The document includes targets including:-
- reusing, recycling, composting (green waste) or anaerobically digesting (food waste) any waste that is produced;
 - reducing waste by around 1.5% (of the 2007 baseline level) each year across all sectors; and
 - all sectors recycling at least 70% of their waste and minimising residual waste to less than 30% by 2025.
- 16.10. Page 45 of the TZW document states: '2025 target is an intermediate step on the way towards 'zero waste', which we (the WG) define as an aspirational end point where all waste that is produced is reused or recycled as a resource, without the need for any landfill or

energy recovery... This will mean that we maximise recycling and minimise the amount of residual waste produced, and eliminate landfill as far as possible.'

- 16.11. The TZW document includes targets to reduce waste year on year to 2050. For household and commercial waste there is 1.2% annual reduction target and for construction and demolition (C&D) waste the annual reduction target is 1.4%. The ambition, as set out in the strategy document, is to have phased out residual waste through actions on waste prevention and sustainable consumption by 2050.
- 16.12. The proposals are for a metal recycling facility and therefore would help increase recycling rates, which will help support the aspirations of TZW.
- 16.13. National policy is supplemented by a series of Technical Advice Notes (TANs). Technical Advice Note 21: Waste (2014) sets out detailed guidance on specific waste related planning considerations that developers will be required to meet to satisfy waste management Local Development Plan policies.
- 16.14. TAN 21 focuses on sustainable waste management, recognising that waste is a resource. Paragraph 1.10, titled 'Sustainable Waste Management', states that sustainable development is a key functioning principle of the WG. Section 2.7.1 on the prevention of waste states: 'planning authorities could help raise awareness, either at the pre-application stage or through supplementary planning guidance, by encouraging developers to think about how they may reduce waste at both the construction and operational stages of development. This could mean taking into account the potential to use excavated waste material on site... and whilst not strictly a prevention measure, by encouraging the provision of space for facilities to manage waste sustainably as part of development schemes.'
- 16.15. TAN 12: 'Design' (2016) includes guidance on the design of developments and this includes waste management. Page 23 of the TAN lists the following as a design solution: 'the way in which waste will be dealt with during and after construction (re-use and disposal), including the provision of appropriate facilities for sorting, storing and recycling of waste in buildings and across the site.' Page 33 provides further text on this and states: 'facilities for good at source segregation of wastes need to be integrated sensitively – separating those wastes for reuse and recycling on site from those wastes to be removed from the site and provisions for the reuse and recycling of wastes remaining on site for the lifetime of the development'. The Design TAN also includes guidance on construction processes and states: 'sustainable construction processes which avoid or reduce waste and other environmental, health, or social effects during construction'.

Local Policy

- 16.16. The Development Plan for Neath Port Talbot County Borough Council (NPTCBC) with respect to waste comprises the Neath Port Talbot Local Development Plan (LDP) which was adopted in January 2016. The LDP includes Strategic Policy SP19: 'Waste Management', which shows how provision will be made for an integrated network of waste management facilities. The LDP also includes three policies (W1, W2 & W3) relating to waste

management. Policies W1 and W3 are relevant to this proposal. Policy W1: 'In-Building Waste Treatment Facilities' provides criteria for proposals for treatment and processing facilities, which include reflecting the waste hierarchy, being carried out in a purpose-built building and demonstrating the proposals can be achieved in an acceptable manner (highways & amenity).

- 16.17. The LDP Adopted Plan Interactive Map shows that the site 'Junction 38 (M4) Margam' is allocated as both a preferred In-Building Waste Treatment Facility: 'W1/1 (b)' and a Strategic Employment Site: 'EC1/2'.
- 16.18. Policy W3: 'Waste Management in New Development' is perhaps the most relevant to this ES Chapter as it requires proposals to demonstrate design, layout, storage and management of waste is provided in the construction and occupation of a development. The policy also shows that a Site Waste Management Plan will be required in a development that would generate in excess of 1,000 tonnes of waste per year or would generate hazardous waste.
- 16.19. The LDP is supported by a range of Supplementary Planning Guidance (SPG) documents, including Design (2017) and Pollution (2016). The Design SPG (paragraph 4.3.8) states: 'Where it is appropriate or realistically possible any existing materials on site should be re-used, and waste minimised... all new built development is required to demonstrate that provision has been made for the management of waste both during the construction and the occupation phases, and larger proposals will be required to produce a Site Waste Management Plan.'
- 16.20. The SPG for pollution includes a section on dust and the storage of materials. Paragraph 3.3.7 states: '*Loose materials and stockpiled soils or sand etc can be liable to create dust, and the ways in which materials are transported and handled can exacerbate this.*' Mitigation measures, set out in this Chapter and accompanying Site Waste Management Plan, explain how construction and waste materials can be stored, handled and managed to reduce impacts.
- 16.21. Waste arising from the construction of the metal recycling facility would be minimised as far as possible, through a combination of both design and operational measures. However, where waste does arise it would be managed in accordance with the Waste Hierarchy. Waste which can be reused would be retained on-site in preference to being transported off-site. No waste would be sent to landfill unless all other options have been proven to be unviable for technical or economic reasons. Industrial waste would generally comprise specialist waste streams which can be recovered. However, opportunities for minimising and reusing industrial waste at source would also be explored in order to ensure that it is managed in accordance with the Waste Hierarchy. The management of waste arising from the site would therefore accord with both national and local planning policy.

Relevant Elements of the Proposed Development

- 16.22. Waste would be generated as a result of the site clearance, preparation and construction works undertaken. Based on the assumption that the proposed development would be

constructed between Spring 2022 and Spring 2026, site preparation and construction phase works would generate waste over a period of approximately 4 years.

- 16.23. The completed development would generate a range of commercial and industrial wastes that would require off-site management throughout the lifetime of the development. Wastes produced from the site operations would mainly comprise non-hazardous waste streams (around 97%) with a small amount of hazardous waste produced (around 3%).

Assessment Methodology

Scope of the Assessment

- 16.24. The area of study includes not only the land within the planning application red line boundary but also the local area and wider region. It is not possible to determine the precise area of study for this assessment. However, for impacts relating to waste management capacity we have generally considered an area within a 25km radius of the site. For landfill sites and hazardous waste, there is scope for facilities to be affected on a regional scale including authorities further afield from within South Wales.

Consultation

- 16.25. A request for a Scoping Opinion was submitted to NPTCBC in June 2021 by Boyer Planning Ltd (Boyer). In respect of waste the Scoping Request set out that: 'waste powder metals are recycled on site, while waste alloys are recycled off site and supplied back as clean material. Refractory waste is sent off-site for recycling. Other waste is sorted and sent for recycling.'
- 16.26. The Scoping Request proceeded to state: 'Both the construction and operational phases of the proposed development will generate waste. However, there is a clear understanding of what waste will arise, and how it will be managed, will therefore ensure both environmental impacts and costs are considered and minimised.'
- 16.27. The Council issued a Scoping Opinion on 24th August 2021 (Ref: P2021/0625) which in paragraph 7.2 confirmed that Waste is scoped into the Environmental Statement. In 7.11 NPTCBC stated: 'Full consideration should be given to appropriate waste management systems throughout the design, construction and operation of the proposed development.' The Scoping Opinion proceeded to state that a Site Waste Management Plan is also required.
- 16.28. The need for waste to be managed in accordance with the waste hierarchy is a legal requirement and this, together with the need for waste to be collected and transported by a registered waste carrier, are set out within the Site Waste Management Plan.

Significance Criteria

- 16.29. Table 16.1 below provides examples of receptor sensitivity with respect to the waste management assessment:

Table 16.1 – Sensitivity of Waste Receptors

Sensitivity	Criteria	Example of Receptor
Major	Very high importance and rarity; international scale; very little potential for substitution	Residents; construction workers; internationally important nature conservation sites
Moderate	High importance and rarity; national scale; limited potential for substitution	Nationally important nature conservation sites; landfill capacity
Minor	High/medium importance and rarity; regional scale; limited potential for substitution	Regionally important nature conservation site
Negligible	Low or medium importance and rarity; local scale	Locally important nature conservation sites; local soil quality; waste recycling and recovery capacity

16.30. Magnitude will be defined along a sliding scale using the terms substantial, moderate, slight and negligible as shown in Table 16.2 below:

Table 16.2 – Magnitude of Impacts upon Waste Receptors

Magnitude	Example of Impact
High	Generation of large volumes of non-inert waste materials for disposal off-site to landfill; and Waste produced by proposed development cannot be accommodated by local or regional waste facilities. Waste produced by proposed development cannot be accommodated by local or regional waste facilities.
Medium	Generation of moderate volumes of non-inert waste for disposal off-site in landfill; Generation of large to moderate volumes of inert waste for disposal off site to landfill; Waste produced by proposed development leads to strain on local and regional waste management capacity; and Waste is transported long distances for treatment out of the region.
Low	Generation of relatively small volumes of non-inert waste for disposal off-site to landfill; Generation of moderate to small volumes of inert waste for disposal off site to landfill; and Waste produced by the development can be managed locally but using management methods lower down the Waste Hierarchy (e.g. incineration with energy recovery).
Negligible	No discernible change to existing waste infrastructure; and Negligible volumes of waste produced.

Matrix for Determining the Significance of Effects

16.31. The level of significance of each effect is determined by combining the impact magnitude with the sensitivity of the receptor. Table 16.3 shows how the interaction of magnitude and sensitivity can be combined to determine the significance of an environmental effect. If an impact magnitude is negative then the resulting effect is described as being adverse; if an impact magnitude is positive the resulting effect is classed as being beneficial.

Table 16.3 – Significance of Effects Matrix

		Magnitude of Impact			
		High	Medium	Low	Negligible
Sensitivity of Receptor	Major	Major	Major	Major or moderate	Negligible
	Moderate	Major	Major or moderate	Moderate or Minor	Negligible
	Minor	Major	Moderate	Minor	Negligible
	Negligible	Moderate or Minor	Minor	Negligible	Negligible

Significance Threshold

- 16.32. For the purposes of this EIA, an impact identified as being of Moderate significance or greater is considered to be significant and as such would require, where possible, mitigation measures to be adopted.

Limitations

- 16.33. It is important to note that in terms of estimating waste arisings, even with the quantitative data, there is uncertainty involved in predicting construction waste quantities on this scale due to different building designs, footprints, construction methods and materials used. All quantities are therefore forecasts which should be used with caution.
- 16.34. Estimated quantities of construction waste for this development have been based on guidance provided by Building Research Establishment (BRE) and Waste and Resources Action Programme (WRAP). Waste quantities have been estimated for the industrial development based on floorspace figures, albeit the bespoke nature of this proposal must be taken into consideration.
- 16.35. Quantities of operational (commercial and industrial) waste would be produced and for this application it possible to provide reliable estimates of the waste quantities that would be generated. This application is for a replacement facility and the same operation is currently taking place at a site in Neath. The operator has confirmed that the process and therefore the outputs will be the same.

Baseline Conditions

Existing Baseline

- 16.36. The proposed development site currently comprises agricultural land to the south of Margam. The site contains a number of fields, hedgerows and trees.

- 16.37. The site is currently grazed by cattle and therefore currently produces minimal amounts of waste.
- 16.38. The most up-to-date information in respect of the local provision of waste facilities is provided in NPTCBC's LDP Annual Monitoring Report (AMR) dated October 2020, which is for the period 1st April 2019 and 31st March 2020. Paragraph 8.6.3 states: '...regional collaboration is needed to establish an integrated and adequate network of facilities for the disposal and recovery of waste and for joint monitoring arrangements across the region.' Paragraph 8.6.4 continues: 'Waste management facilities currently in operation in Neath Port Talbot include the Materials Recovery and Energy Centre (MREC) at Crymlyn Burrows, a number of Household Waste Recycling Centres and a number of other privately run facilities, including Pwllfawatkin Landfill Site at Cwmgors.'
- 16.39. In respect of landfill capacity paragraph 8.6.5 states: 'In terms of remaining landfill capacity, the most up to date information has been published in the 'Waste Planning Monitoring Report (WPMR) 2019' for the South West Wales region. Currently, the predicted landfill capacity for the region amounts to 11.2 years. Whilst this remains above the thresholds set out in TAN 21, whereby action may be necessary to facilitate future provision, it should be noted that this figure is dependent upon several assumptions, such as the individual circumstances of the landfill facilities currently operating (e.g. potential contracts coming to an end), new landfills or alternative residual treatment plants becoming operational, and the reduction in actual quantities of residual waste produced.'
- 16.40. In respect of in-building waste treatment facilities paragraph 8.6.6 states: 'Based on the results of the monitoring to date, coupled with the existing network of facilities that are currently operational, it is considered that there is sufficient land and facilities across the County Borough to deal with waste arisings in Neath Port Talbot.'
- 16.41. As this development would only produce certain types of waste, an exercise has been carried out assessing the capacity of the local and wider area to absorb waste generated during both the construction and operational phases of the proposed development. Analysis of waste management facilities within the local and sub-regional area has been undertaken. The findings of this are set out within Table 16.4 - 16.8.

Construction Phase

- 16.42. Excavated soil as well as green waste would potentially arise from the excavation and site preparation phase. A range of construction wastes would be produced from the construction phase works. These are likely to include concrete, timber, metal, insulation, plastics, cabling, paints, solvents as well as material arising from the fit-out stage. To establish the baseline environment, it will therefore be necessary to consider waste management facilities which accept these waste streams.
- 16.43. Facilities within an approximate radius of 25km from the site have been considered as potential receptors for the construction and excavation waste stream. The sites have been identified through information available on Natural Resources Wales (NRW's) webpage 'find

details of permitted waste sites'. This website contains information of all sites with environmental permits, although it is possible that some of these sites are not currently operational. Therefore, these sites have been cross-referred with NRW's Waste Permit Returns Data (WPRD) information, which is also available through their website. The most recent WPRD information is for 2020. The 2020 WPRD information not only shows that the sites are currently operating (as of last year), but also shows what types of wastes are being accepted. Therefore, as the waste types that would be generated by the development can be reasonably assumed, it is possible to assess which waste sites are likely to be able to accept waste from the development. It is also possible to calculate the remaining capacity at each of these sites (in tonnes per annum (TPA)) for the 2020.

- 16.44. The identified sites that could manage waste that is generated through the sites' construction are shown below in Table 16.4.

Table 16.4 – Construction Waste Sites

Operator	Permit Ref	Location	Road Km from site	Relevant Materials Accepted	Permitted TPA	2020 tonnage	Spare capacity
Celtic Recycling Ltd	UP3998FB	Pyle	7.2	C&D, oils, wood, metal, cables	10000	7076	2924
Wern Tarw Recycling Ltd	EB3430RT	Pyle	7.4	C&D, soils	24999	7055	17944
Scott Waste Ltd	AB3292CD	Pyle	7.9	Soils, biodegradable, wood	75000	3983	71017
Nolan Recycling Ltd	BP3599SZ	Pyle	10.3	C&D, soils, biodegradable, metals, wood, plastic, gypsum	74999	17887	57112
Stiens Haulage Ltd	MB3193HZ	Swansea	14.1	C&D	75000	555	74445
Derwen Aggregates Ltd	GB3831AM	Skewen	16	C&D, soils, gypsum	300000	127113	172887
Derwen Recycling Ltd	FP3893SF	Skewen	16	C&D, packaging, wood, plastic, gypsum, biodegradable	149999	89952	60047
A C D Skips Ltd	CP3198FE	Bridgend	17	C&D, wood, metals, plastic, glass	24999	671	24328
A C D Skips Ltd	PP3094FA	Bridgend	17	C&D, soils, metals, gypsum, wood	74999	2570	72429
Stenor Environmental Services Ltd	JP3198FJ	Swansea	17.9	Soils	74999	6380	68619
Bridgend County Borough Council	PP3394FP	Bridgend	18.7	C&D, soils, gypsum, wood, metals	24999	3267	21732
Green Circle Sustainable Developments Ltd	FB3232AW	Bridgend	19.7	Soils	74999	6000	68999
Gavin Griffiths Recycling Ltd	EB3397TU	Swansea	22.7	C&D, soils, biodegradable, wood, metal, glass, plastic, gypsum	74999	74771	228
Brisco Waste Disposal Ltd	JP3995FK	Swansea	23.7	C&D, biodegradable, wood, metal, plastic, gypsum	74999	16690	58309
Stenor Limited	AB3392HL	Swansea	23.9	Soils	75000	33791	41209
							812,229

- 16.45. There are fifteen sites identified, which had a combined spare permitted capacity of 812,229tpa in 2020. With the exception of Scott Waste Ltd.'s site, which is a Waste Transfer Station (WTS), the environmental permit descriptions of each site, and / or information gathered from operator websites, show that each of the waste management sites includes a recycling/ treatment operation.
- 16.46. In addition to these fifteen sites a further nine specialist waste management sites have been identified and these sites are displayed in Table 16.8, with the potential operational waste management sites. These are the site that accept a single material such as metals, plastic or wood. Each of these sites include a recycling or treatment operation.
- 16.47. The Celtic Recycling Ltd site in Pyle (Table 16.4) is permitted to accept hazardous waste and the WPRD information shows that the site accepted fuel, oil, diesel, emulsions, absorbents, insulation material and cables in 2020. These waste types are likely to be generated by the development, although in much smaller quantities than the more typical construction, demolition, and excavation waste types. In addition, the WPRD information shows that Brisco Waste Disposal Ltd.'s site (also in Table 16.4) has a special waste transfer station and can accept hazardous waste. Four additional hazardous waste facilities were also identified, although it is possible that the accepted waste at these sites is generated by the operator's own activities and the sites may not accept waste from nearby construction sites. The Tata Steel sites are landfill facilities, and the other two sites are Waste Transfer Station and include a treatment activity.

Table 16.5 – Potential Hazardous Waste Sites

Operator	Permit Ref	Location	Road Km from site	Hazardous Materials Accepted	Permitted TPA	2020 tonnage	Spare capacity
Tata Steel UK Limited, restricted landfill.	BV7311IE	Port Talbot	4	Insulation materials, welding waste	Unavailable	3571	Unknown
Tata Steel UK Limited, hazardous restricted landfill.	BW2692IM	Port Talbot	4	Insulation materials, absorbents	Unavailable	46	Unknown
Gower Chemicals Ltd	GP3193LE	Swansea	15.3	Organic solvents	4999	45	4954
Western Power Distribution (South Wales) PLC	AB3392ZY	Bridgend	18.6	Oils	500	119	381
							5,335

- 16.48. As described in paragraph 16.4.1 hazardous waste sites are less common than other forms of waste management facilities and therefore these waste streams may need to be taken further than 25km in order to be disposed of at an appropriately permitted facility. Whilst it is considered likely that Celtic Recycling Ltd.'s facility, 7.2 road km from the site, would be able to manage the majority of hazardous waste arisings, a search for additional facilities has been undertaken in an expanded search area. The expanded search identified a further three facilities as displayed in Table 16.6. The three sites are all described as Special Waste Transfer Stations. Hazardous waste sourced in Neath Port Talbot was managed at each of the below facilities in 2020.

Table 16.6 – Other Hazardous Waste Sites

Operator	Permit Ref	Location	Road Km from site	Materials Accepted	Permitted TPA	2020 tonnage	Spare capacity
Egan Waste Services Limited	KP3636HB	Treforest	43.1	Chemicals, oils, fuels, sludges	Unavailable	4283	Unknown
Biffa Waste Services Ltd	SP3031SJ	Cardiff	51.3	Paints, varnish, oils, chemicals, sludges, absorbents	Unavailable	2558	Unknown
Safety Kleen U K Ltd	DP3399FJ	Cardiff	57.1	Oils, solvents, chemicals, paints, varnish, sealants	5000	1507	3493

16.49. Whilst it will be possible for the majority of construction waste to be recycled, there may be elements that are not suitable for recycling. The 2020 WPRD shows that C&D waste was taken to four landfill sites in the vicinity of the site, although the NRW website shows that Tir John Landfill has now ceased accepting waste. These four sites also include the two sites operated by Tata Steel, shown in Table 16.5, where negligible amounts of C&D waste were accepted in 2020 (a total of 238 tonnes at the two sites). This could have been for use as daily cover. Pwllfawtkin Landfill, which is northwest of Pontardawe, approximately 33 road km from the site, accepted 17,794 tonnes of C&D waste. However, it is understood that a Scoping Opinion was submitted in September 2021 to NPTCBC, in view of extending the use of the site to October 2023. Five other potential facilities have been identified in Table 16.7 below.

Table 16.7 – Potential Recovery and Landfill Sites

Location	Permit Ref	Site	Type	Road km to site	Total C&D 2020
Neath Port Talbot	BU8819IV	Pwllfawtkin Landfill	Non-Hazardous Landfill	33.3	17794
Rhondda Cynon Taff	BB3696FV	Garth Isaf Farm	Deposit of waste to land as a recovery operation	41.8	220
Rhondda Cynon Taff	DP3732SQ	Bryn Pica Landfill EPR/DP3732SQ	Non-Hazardous Landfill	48	65561
Newport	DP3733BK	Docksway Landfill	Non-Hazardous Landfill	59.5	10658
Cardiff	CB3297TB	Talfarn Farm	Deposit of waste to land as a recovery operation	77.3	2094
Pembrokeshire	MP3330WP	Withy hedge Landfill	Non-Hazardous Landfill	113	149572

16.50. Whilst these sites are between 41.8 and 113 road km from the site it should be noted that C&D waste that was sourced in Port Talbot was taken to Docksway Landfill for disposal in 2020 and waste sourced in Derby, Buckinghamshire, Liverpool, Manchester and Nottingham was disposed at Withy hedge Landfill in Pembrokeshire.

Operational Phase

16.51. The proposed development would generate a range of commercial wastes which would arise from the metal processing and general activities on site. The waste streams that would be directly produced as a result of metal recycling operation would comprise metal, wood and

refractory waste and from the administrative and amenity areas is likely to comprise paper, cardboard, clear plastic, general waste and quantities of food and catering wastes. Small amounts of hazardous wastes including electrical and electronic equipment (WEEE), machining coolant, print cartridges, oily rags and empty paint and aerosol containers would also be generated.

- 16.52. The operator, Sandvik Osprey, have confirmed that the same waste management company as are currently contracted at their site in Neath, Forward Waste, would be contracted again at their new facility. Forward Waste are a specialist waste management company within the manufacturing sector.
- 16.53. The WPRD information for 2020 shows that Forward Waste accepted a total of 6,513 tonnes of waste at their East Moors site in Cardiff. NRW's website shows that the sites Environmental Permit (AB3099FT) can accept a maximum of 10,000tpa meaning there was approximately 3,500 remaining permitted capacity last year. It should however be reiterated that this proposal is for a replacement metal processing facility and therefore this waste is already being generated and accepted at the site.
- 16.54. The only change in the proposals in respect of waste management would actually reduce the capacity impact on the East Moors facility. Waste wood would be sent to adjacent biomass power station to be used as fuel. The adjacent waste wood facility is Western Wood Energy Biomass Plant and burns wood to generate electricity. There are no details of the site's environmental permit on NRW's website, but it is understood the facility processes around 160,000 tonnes of waste per year. For the previous 12 months Sandvik Osprey's current facility produced 36.9 tonnes of wood waste and the outputs are anticipated to be the same at the new site.
- 16.55. Should there be any change to waste management arrangements an exercise has been completed to assess other facilities in the surrounding area. The capacity information of each of these facilities is displayed in Table 16.8 below. Each of the sites include a recycling or treatment activity except Scott Waste Ltd WTS site in Pyle.
- 16.56. The sites include facilities that accept a range of waste types as well as specialist waste management facilities. It is perhaps more likely that if a change in waste contract was required, to manage the operational waste, a facility that accepted a range of wastes, including mixed municipal wastes, would be required. On this basis suitable sites would include the sites operated by Celtic Recycling Ltd, Nolan Recycling Ltd, Kier Services Limited, Derwen Recycling Ltd, Bridgend County Borough Council, City and County of Swansea, Gavin Griffiths Recycling Ltd and Brisco Waste Disposal Ltd. These sites have a spare combined capacity of around 350,000tpa. Furthermore, the facilities operated by Celtic Recycling Ltd, Derwen Recycling Ltd and the City and County of Swansea also accept a range of hazardous waste types. These three sites have a spare combined capacity of around 160,000tpa.

Table 16.8 – Potential Operational Waste Sites

Operator	Permit Ref	Location	Road Km from site	Materials Accepted	Permitted TPA	2020 tonnage	Spare capacity
Celtic Recycling Ltd	UP3998FB	Pyle	7.2	WEEE, oils, liquid waste, batteries, paper, card, metals, absorbent, wood	10000	7076	2924
Scott Waste Ltd	AB3292CD	Pyle	7.9	Mixed municipal, wood	75000	3983	71017
Nolan Recycling Ltd	BP3599SZ	Pyle	10.3	Mixed municipal, wood, paper, card, food, metals, plastic	74999	17887	57112
Briton Ferry Shipping Services Ltd	ZP3198FN	Briton Ferry	12	Metals	74999	21192	53807
Kier Services Limited	GP3690LR	Bridgend	13.1	Mixed municipal, paper, card, food, WEEE	74999	23758	51241
Trojan Electronics 2018 Limited	DB3993HD	Swansea	14.3	WEEE	75000	80	74920
Jonathan Mark Rees	MB3333DG	Neath	15.4	Metals	29998	523	29475
Derwen Aggregates Ltd	GB3831AM	Neath	16	Mixed municipal	300000	127113	172887
Morris & Co (Handlers) Ltd	BB3394CL	Skewen	16	Metals	150000	81576	68424
Derwen Recycling Ltd	FP3893SF	Skewen	16	Mixed municipal, mixed packaging, plastic packaging, wood, paper, card, metal, plastic, paint, ink, WEEE	149999	89952	60047
Fenestration Recycling Company Limited	HP3938RN	Skewen	16	Plastic	24999	2862	22137
Sims Group U K Ltd	UP3898FQ	Skewen	16	Metals, batteries, WEEE	130000	46115	83885
Celsa Manufacturing (UK) Ltd	AB3891FT	Swansea	17.9	Metals	120000	35385	84615
Broughshire Ltd	MP3998FW	Bridgend	17.9	Metals	24999	3847	21152
Bridgend County Borough Council	PP3394FP	Bridgend	18.7	Mixed municipal, paper, card, metals, wood	24999	3267	21732
City and County of Swansea	QB3032RW	Swansea	19.2	Mixed municipal, food, plastic, paper, card, paints, inks, WEEE, wood, metals	229998	132280	97718
I Wood Renewables Ltd	FP3095ET	Bridgend	20.3	Wood	120000	28356	91644
Gavin Griffiths Recycling Ltd	EB3397TU	Swansea	22.7	Mixed municipal, wood, metal, glass, plastic, fuel, paper, card, packaging	74999	74771	228
South West Wood Products Limited	NP3699VX	Swansea	22.7	Wood	150000	44577	105423
Brisco Waste Disposal Ltd	JP3995FK	Swansea	23.7	Mixed municipal, wood, metal, paper, card	74999	16690	58309
							1,228,697

16.57. As described in paragraph 16.6.3 Crymlyn Burrows Materials Recycling and Energy Centre is a key waste management facility in the borough for managing residual waste, as well as waste recycling. The sites Environmental Permit (EPR/BJ5775IF) shows that the site accepts commercial and industrial waste and can accept a maximum throughput of 260,200tpa of mixed municipal waste. This facility is 14.5 road km from the application site.

Future Baseline

16.58. The site is used for agriculture and there are currently no proposals for the site other than the proposed development. In terms of the future baseline, the situation on the site itself would not be expected to change.

16.59. In terms of the local area, the key changes to the existing baseline would arise from the approval of planning permissions for residential, commercial, industrial or other uses. In terms of waste development, the closure of existing sites or the opening of new waste

management facilities would change the baseline environment, having a positive or negative effect on waste management capacity.

Sensitive Receptors

- 16.60. A number of different types of facility are likely to be involved in the management of waste arising during the construction and operational phases of the proposed development, including specialist waste treatment facilities for the management of the operational waste. The receptors sensitive to changes in waste arisings relevant to the development proposals are the following:-
- Landfill voidspace capacity; and
 - Capacity at facilities for the sorting, recycling and recovery of waste.
- 16.61. Due to the limited potential for substitution and rarity, landfill voidspace is considered to be of high sensitivity.
- 16.62. The capacity at facilities for the local sorting, recycling and other management of waste is considered to be of low sensitivity.

Human Receptors

- 16.63. A property, Tyn Y Caeau, is located to the north of the site. Heol Cae'r-Bont is located to the south of the site, beyond which lie Glan Afon Comprehensive School Playing Fields and two residential dwellings.
- 16.64. The occupants have the potential to be affected by waste generated from the construction activities. It is however considered likely that the human receptors who are most at risk are site construction workers. This is attributed to the increased likelihood of exposure when compared with local residents. Construction workers would not only handle site waste but would have access to waste storage areas. Local residents are unlikely to be exposed to construction waste. Due to the potential for waste to adversely affect human health if managed inappropriately, human receptors are considered to be of very high sensitivity to waste.

Assessment of Effects

Construction Phase

- 16.65. There are no demolition works required so the site preparation stage of the development will mainly comprise the excavation of soils and the majority of which could be reused on site.
- 16.66. The construction works would produce a wide range of construction wastes, which are likely to include the materials detailed in Table 16.9 below:

Table 16.9 – Predicted Construction Waste Types

Waste Type	EW C Codes	Typically Produced From
Waste paint and varnish containing organic solvents or other dangerous substances	08 01 11* (hazardous)	Construction (fit out)
Waste paint and varnish other than those mentioned in 08 01 11	08 01 12	Construction (fit out)
Paper and cardboard packaging	15 01 01	Construction (all stages). Associated with deliveries of construction materials and fixtures etc.
Plastic packaging	15 01 02	Construction (all stages). Associated with deliveries of construction materials and fixtures etc.
Wooden packaging	15 01 03	Construction (all stages). Associated with deliveries of construction materials and fixtures etc.
Metallic packaging	15 01 04	Construction (all stages). Associated with deliveries of construction materials and fixtures etc.
Composite packaging	15 01 05	Construction (all stages). Associated with deliveries of construction materials and fixtures etc.
Mixed packaging	15 01 06	Construction (all stages). Associated with deliveries of construction materials and fixtures etc.
Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances.	15 02 02* (hazardous)	Construction (all stages) but particularly fit out (decoration) and installation of plant and equipment.
Concrete	17 01 01	Construction (foundations, building fabric) (excess or damaged).
Bricks	17 01 02	Construction (excess or damaged).
Tiles and ceramics	17 01 03	Construction (excess or damaged).
Wood	17 02 01	Construction (excess or damaged).
Glass	17 02 02	Construction (excess or damaged).
Plastic	17 02 03	Construction (excess or damaged).
Bituminous mixtures other than those mentioned in 17 03 01	17 03 02	Construction (excess).
Copper, bronze, brass	17 04 01	Construction (excess or damaged).
Aluminium	17 04 02	Construction (fit out).
Iron and steel	17 04 05	Construction (structural supports, cladding etc).
Cables other than those mentioned in 17 04 10	17 04 11	Construction (excess).
Insulation materials other than those mentioned in 17 06 01 and 17 06 03.	17 06 04	Construction (damaged, excess/off-cuts).
Paper and cardboard	20 01 01	Construction (fit out).

Waste Type	EWG Codes	Typically Produced From
Biodegradable kitchen and canteen waste	20 01 08	Small quantities from construction workers within site accommodation.
Biodegradable waste	20 02 01	Site clearance (vegetation removal), tree pruning, landscaping etc.

16.67. In order to estimate the quantity of construction waste generated from the proposed development, benchmark construction waste data from BRE has been used (BRE, June 2012). To estimate the quantity of construction waste associated with the scheme, the proposed floorspace figures have been used. The estimates for construction waste are provided within Table 16.10 below. The calculations are based on the benchmark figures for 'industrial Buildings' with the exception of the office building, where the figure for 'commercial offices' has been used.

Table 16.10 – Estimates for Construction Waste

Building	Total Floor Area (GEA) sqm	Tonnes per 100m ² (BRE)	Estimated Waste Quantities (tonnes, total)	Estimated Waste Quantities (tpa) *
Processing Plant	17,255m ²	14	2415.7	603.925
Warehouse and Storage Facility	5,400m ²	14	756	189
Office Building	1,965m ²	23.8	467.67	116.9175
Amenity Building	729m ²	14	102.06	25.515
Service Building	450m ²	14	63	15.75
Laboratory	200m ²	14	28	7
Total	25,999m²		3,832.43	958.1075

* Based off four-year construction period

16.68. It is estimated that the quantity of construction waste arising from the proposed development would be approximately 3,832 tonnes, which equates to approximately 958 tonnes per annum over a four-year construction period.

16.69. In addition to this quantity of construction waste there would be excavation materials produced from the site as a result of site preparation and earthworks (including vegetation clearance). Whilst it is not possible at this stage to quantify the volume of this waste stream, it is considered that the majority of soils and excavation wastes which, for example may arise from ground levelling, would be retained on site as part of the development works. Cut and fill works would also enable much of the materials to be retained. Landscaping proposals also provide an opportunity to reuse soils and excavation waste on the development site. Green waste from site preparation works can be composted and the scope for this is considered within the assessment.

Sorting and Recycling Facilities

- 16.70. WRAP have published information, which considers that a recycling figure of 80% for construction and demolition waste is readily achievable (i.e. good practice) and that many sites are recycling in excess of 90% of this waste stream (i.e. best practice). Based on the assumption that 80% of the total quantity of construction waste would be recycled, this would equate to around 766tpa of construction waste, assuming that all waste requires off site management, for a period of around 4 years. Additionally, quantities of excavation wastes, soils and organic green waste from vegetation clearance would be produced during the initial phases of development.
- 16.71. There are currently 15 waste management facilities within 25km which accept wastes forecast to arise during the construction phase (C&D waste and soils). In addition to these facilities, there are a further 9 facilities which are permitted to treat, recover or recycle a single waste type such as metal, plastic and wood.
- 16.72. It is more likely that the construction waste is taken to a facility such as provided in Table 16.4. The combined spare capacity at these facilities, based off the most recent available data (for 2020) is 812,229 tonnes.
- 16.73. A small amount of hazardous waste may also be generated in the sites construction and this ES Chapter has identified numerous potential sites that could accept these waste streams.
- 16.74. It is therefore concluded that there is sufficient local capacity within the area to manage the predicted quantities of construction waste arising from the development.
- 16.75. The magnitude of impact on waste recycling infrastructure (of low sensitivity) arising from the construction waste arisings is slight negative which results in an effect of negligible significance. This is not a significant effect. The nature of this effect is a direct and would be a temporary impact on recycling infrastructure capacity.

Disposal

- 16.76. On the basis that 80% of the construction waste would be recycled and therefore not landfilled, a residual amount of up to 20% of the construction waste would require further management. This would equate to approximately 191tpa over a four-year construction period. Historically this waste would be disposed of at landfill. Lower quality construction and excavation waste, which is not suitable for recycling, could go towards the restoration of quarries within the local area or be used in engineering projects. These types of operations would be classed as 'recovery' rather than disposal which would minimise the amount of inert waste being sent to landfill. There are two 'deposit of waste to land as recovery' operations that have been identified in Table 16.7.
- 16.77. Six suitable landfill or recovery sites have been identified although Pwllfawtakin Landfill Site will likely only be open for part of the site's construction period. It is reasonable to assume that these sites would be able to accept the types of construction waste produced by the site

during its construction phase. The 2020 WPRD shows that these sites accepted C&D wastes last year. It is also possible that Tata Steel's Landfill site could be used.

- 16.78. In respect of landfill capacity paragraph 8.6.5 of NPTCBC's 2020 AMR states: 'In terms of remaining landfill capacity, the most up to date information has been published in the 'Waste Planning Monitoring Report (WPMR) 2019' for the South West Wales region. Currently, the predicted landfill capacity for the region amounts to 11.2 years. This would mean landfill capacity in the southwest region is expected to last until around 2030. The proposed construction period for this development is between 2022 and 2026.
- 16.79. Landfill voidspace is of high sensitivity due to its limited nature and there are clear national and local policy objectives to reduce the volume of materials being disposed of to landfill. However, given the small quantities of construction waste predicted to arise, the high recycling rates for construction and excavation waste and the potential for recovering inert waste via local recovery schemes, it is considered likely that the identified landfill sites could adequately manage the likely waste arisings. Another important consideration is that C&D waste is often required at landfill sites for use as daily cover. 191tpa is a fairly nominal amount in respect of waste to landfill and it should be noted that this is a high-end estimate, with it being likely that over 80% would actually be recycled.
- 16.80. The magnitude of impact of construction waste disposal from the site on available landfill capacity (of high sensitivity) is considered to be negligible negative. This is regarded as having a negligible significance. This is not a significant effect. The disposal of waste to a landfill site is a direct and permanent effect on landfill capacity.

Potential Effects on Human Receptors

- 16.81. Construction workers would potentially be at risk from construction wastes and their exposure to these materials could be high. Site workers generally handle waste and would possibly be exposed to a variety of wastes in storage and general construction areas. Workers may be exposed to hazardous wastes, including oils, paints, etc which can potentially have corrosive or toxic properties.
- 16.82. It has been assumed that site workers handle waste and operate in accordance with environmental and health and safety legislation, including the use of appropriate Personal Protective Equipment (PPE). It has also been assumed that appropriate environmental and waste management training would be provided to construction staff as part of the site induction process (and if necessary, further toolbox talks etc). The magnitude of the impact from wastes on construction workers (of very high sensitivity) is therefore assessed as being negligible negative. The significance of this impact on site workers (of very high sensitivity) is assessed as being negligible significance. This is not regarded as a significant impact. The nature of potential impacts on human receptors is direct (from physical contact with waste), temporary and reversible.
- 16.83. Residents living in close proximity to the site would not be exposed to construction waste and would not be affected by the generation, storage or handling of construction wastes.

Operational Phase

- 16.84. The operation of the metal processing facility would produce a range of commercial wastes. The proposed processes comprise the melting and atomising of raw materials to manufacture metal powder for use in other industry. The metals will include (but are not limited to) stainless steels, nickel alloys, cobalt alloys, aluminium alloys and copper.
- 16.85. The operations are described in detail in chapter 3. The operations from a waste perspective are described below:-
- Waste powder metals would be recycled on-site;
 - Waste alloys would be recycled off-site and supplied back as a raw material;
 - Refractory waste would be sent off-site for recycling; and
 - Other waste (for example, from the administrative and amenity areas) would be sorted and sent for recycling.
- 16.86. As described previously this proposal is for a replacement site and the same waste contractor, Forward Waste, would be responsible for the management of operational waste. The current and proposed waste types, quantities and processes are explained below:-
- General Waste: 32.1 Tonnes. This is sent off site for hand sorting. It is then either recycled or sent to an energy from waste facility. No waste is sent to landfill;
 - Refractory Waste: 247 Tonnes. This is sent for recycling (crushing) to be used as sub-base infill for road construction;
 - Metal waste: 117.2 Tonnes. Fully recycled;
 - Wood: 36.9 Tonnes. This is currently fully recycled. At the new site, this will be sent to the adjacent biomass power station as fuel;
 - Card: 5.66 Tonnes. Fully recycled;
 - Paper: 2.82 Tonnes. Fully recycled;
 - Clear plastic: 2.14 Tonnes. Fully recycled; and
 - Hazardous waste: 15.17 tonnes comprising WEEE, Machining coolant, Filter media (cartridges), oily rags and Empty paint/aerosol containers.
- 16.87. The operational waste would continue to be collected by Forward Waste who would manage this waste in accordance with the Waste Hierarchy. Where the materials cannot reasonably be recycled, they would be sent for energy recovery in preference to landfill disposal. Forward Waste specialise in manufacturing waste management and the company promote waste segregation in order to increase rates of recovery. Their objective is to manage all wastes to the highest possible level required by the Waste Framework Directive.

Sorting and Recycling Facilities

- 16.88. NRW's website shows that an updated Industrial and Commercial Waste survey has been completed with survey data from 2018. Table 19 shows that 78% of industrial waste and 63% of commercial waste generated in Mid and South West Wales was recycled. However, through appointing a specialist manufacturing waste management contractor, the data from the current sites suggests that a much higher recycling rate is achieved at this site. On the

assumption that all waste types except the general waste and hazardous wastes are recycled, around 90% of the total waste is currently recycled and with wood being sent for Energy Recovery, this could be expected to decrease to around 82%. These are high-end estimates as some general waste is likely to be suitable for recycling as well as some hazardous waste.

- 16.89. As these waste streams and quantities are already being produced by the current Sandvik Osprey facility in Neath, and the proposed waste management strategy is very similar, with only a change in arrangements for wood, which would now go to Energy Recovery, there would be a slight reduction in amount of material being managed at sorting and recycling facilities (Forward Waste's East Moor Site).
- 16.90. A small amount of hazardous waste may also be generated in the sites operation and this ES Chapter has identified numerous potential sites that could accept these waste streams.
- 16.91. The magnitude of impact on recycling waste infrastructure (of low sensitivity) arising from commercial waste arisings is considered to be negligible positive, as wood waste would now be managed through other means. This is regarded as having negligible significance. This is not a significant effect. The nature of this effect is a direct and temporary impact on recycling infrastructure capacity.
- 16.92. This ES Chapter has also demonstrated there are three sites, with a spare combined capacity of around 160,000tpa that accept very similar waste types to those currently being generated by Sandvik Osprey within 20 road km of the site.

Waste Disposal

- 16.93. As explained above it is considered that a maximum of around 18% (84tpa) of the waste generated would not be recycled. This is a maximum figure as some general waste is likely to be suitable for recycling as well as some hazardous waste.
- 16.94. Waste wood would be sent to adjacent biomass power station to be used as fuel. The adjacent waste wood facility is Western Wood Energy Biomass Plant and burns wood to generate electricity. There are no details of the site's environmental permit on NRW's website, but it is understood the facility processes around 160,000 tonnes of waste per year. For the previous 12 months Sandvik Osprey's current facility produced 36.9 tonnes of wood waste and the outputs are anticipated to be the same at the new site. It is therefore considered the site would have a negligible impact on the capacity at the Western Wood site.
- 16.95. Aside from wood, there would be no change to the management of the waste types at the current and new facilities and there would be no impact on waste disposal infrastructure capacity.
- 16.96. The Chapter has identified alternative disposal facilities should any change to current and proposed arrangements be required. The facility at Crymlyn Burrows includes an energy recovery activity (through incineration). This facility can process 260,200tpa of mixed municipal waste. This site currently and will continue to generate around 31 tonnes of general

waste per year. This equates to around 0.01% of the capacity at Crymlyn Burrows. Potential landfill sites have also been identified in this Chapter although it is considered that no waste generated in the site's operation, or at worst nominal quantities, would need to go to landfill.

- 16.97. In terms of non-hazardous commercial waste, the magnitude of impact of waste disposal from the site on available landfill capacity (of high sensitivity) is considered to be negligible negative. This is regarded as having a negligible significance. This does not represent a significant effect. The disposal of waste to a landfill site is a direct and permanent effect on landfill capacity.

Potential Effects on Human Receptors

- 16.98. Site workers, including permanent, temporary/contract staff and visitors, would potentially be at risk from the presence of commercial and industrial wastes. Depending on their allocated role within the site operations, their exposure to these materials may be high. Site workers may physically handle waste and would possibly be exposed to a variety of wastes in operational and waste storage areas. Workers may also be exposed to hazardous wastes.
- 16.99. It has been assumed that site workers handle waste and operate in accordance with environmental and health and safety legislation, including the use of appropriate Personal Protective Equipment (PPE). It is also assumed that all site staff would receive appropriate training on waste management issues through the site induction process and on-going staff training. The magnitude of the impact from wastes on site-based workers (of very high sensitivity) is therefore assessed as being negligible negative. The significance of this impact on site workers (of very high sensitivity) is assessed as being negligible significance. This is not regarded as a significant impact. The nature of potential impacts on human receptors is direct (from physical contact with waste), temporary and reversible.
- 16.100. Residents living near the site would not be exposed to operational (commercial and industrial) waste and would not be affected by the generation, storage or handling of these wastes.

Mitigation

Mitigation Within Submitted Design

Construction Phase

- 16.101. A number of mitigation measures are included within the development design and in terms of waste management, the key measures comprise:-
- 16.102. All buildings will be constructed to Building Research Establishment's Environmental Assessment Method (BREEAM) excellent standard;
- 16.103. The detailed design of the proposed development would, as far as possible, meet the five basic 'designing out waste' principles developed by Waste & Resources Action Programme

(WRAP) which can be adopted to reduce the waste burden of projects through design. The principles are:-

- Design for reuse and recovery;
- Design for off-site construction;
- Design for materials optimisation;
- Design for waste efficient procurement; and
- Design for deconstruction and flexibility.

16.104. A Site Waste Management Plan has been submitted with this EIA planning application. This document provides further details of the types and quantities of construction waste which would be likely to arise from the construction phase. It also provides a guide for the management of construction waste including its storage, segregation, handling and transport to ensure that waste is managed responsibly and in accordance with the Duty of Care and other environmental legislation;

16.105. As far as possible construction waste would be prevented at source. Key opportunities include:-

- As far as is practicable, structures and features would be pre-fabricated off site which avoids the production of waste on the development site. This will include building steelwork and may also include roof structures, windows and door frames, external cladding, rainwater disposal systems, fascias, etc;
- Structural repetition would be included within the design which would reduce the amount of waste produced;
- The sustainable procurement of building materials would result in the minimisation of waste by selecting products and materials with reduced levels of packaging, reusable rather than single-use products and specifying durable and long-life construction materials;
- The implementation of 'just in time' deliveries which minimises the potential for damage to stockpiled materials from adverse weather or physical damage from mobile plant etc. Good on-site housekeeping measures would also reduce the potential for construction materials to become damaged; and
- The use of supplier take-back schemes, particularly with respect to packaging waste, pallets etc. Where possible, outer and inner packaging and timber pallets would be returned to a supplier by prior arrangement.

16.106. The reuse and recovery of waste would be encouraged by proactively identifying opportunities for the on-site reuse of materials (for example in landscaping), and by appointing a waste contractor which can demonstrate high levels of recycling (i.e. more than 80% construction waste recovery rates by weight). The use of modern methods of construction would provide further opportunities for minimising waste arisings; and

16.107. Construction development phases would be laid out to ensure that there is sufficient space to manage waste and to allow it to be effectively segregated and securely stored prior to removal and off-site management. However, the regular removal of waste and recycling

would minimise the amount of external space required for waste storage both in the construction and operational phases of the developments. These measures would be inherent on the scheme design.

Operational Phase

- 16.108. Sandvik Osprey are proposing to use a specialist waste management contractor who would seek to ensure that the amount of waste sent to landfill during the use of the operational site is minimised. Forward Waste encourage reuse and recycling through segregating waste streams and for example they segregate clear plastics, which some companies and Local Authorities would treat as general waste. Forward Waste would provide appropriate internal and external waste storage containers.
- 16.109. The design of the proposed development would provide appropriate access for refuse collection vehicles (RCVs) to access the development as required. The site design would also ensure safe access and manoeuvrability for collection crews, including provision of flat or gently sloping gradients, dropped kerbs and appropriate distances between waste storage areas and collection points.

Mitigation

- 16.110. In considering the potential environmental effects arising from waste generated at the site during both the construction and post-construction (operational) phases of development, no potentially significant effects have been identified.
- 16.111. Inherent mitigation measures would adequately control any potential impacts arising from the development. No additional mitigation measures are therefore considered necessary.

Residual Effects

- 16.112. The waste impact assessment of the proposed development has identified no potential significant effects arising from the predicted waste arisings during either the site preparation and construction phase or the operational phase.

Construction Phase

- 16.113. During the construction phase, the responsibility for waste management would lie with the appointed contractor. Waste would be managed in accordance with all environmental legislation, including the Duty of Care, and the Waste Hierarchy. In the context of the available waste management capacity in the local area, the predicted waste arisings are not considered likely to give rise to any significant effects.

Operational Phase

- 16.114. A range of commercial and industrial wastes would arise from the operation of the facility. The waste would be collected by Forward Waste who specialise in the management of manufacturing waste. Waste would be managed in accordance with the Waste Hierarchy

where it would be reused or recycled in preference to energy recovery or disposal. An assessment of local waste infrastructure has also identified a number of facilities which are permitted to accept the commercial and industrial wastes for recycling, treatment, recovery or disposal. No significant environmental effects have been identified in relation to the operational waste arisings.

- 16.115. Table 16.11 provides a summary of the waste impacts including residual environmental effects.

Cumulative / In-Combination Effects

- 16.116. Cumulative impacts may arise where a number of developments are permitted in close proximity to each other which produce large quantities of the same waste types. The most significant cumulative impacts are thus likely to arise from local developments which produce high levels of construction and demolition type waste and/or commercial and industrial waste. Of the information obtained, it is considered that the following proposed developments, may potentially give rise to cumulative impacts, assuming that the proposed development is permitted.

Tyn Y Caeau, Margam Road, Port Talbot, SA12 2NW – Appeal Ref. 3263628 Application Ref. P2020/0601

- 16.117. The proposal is for:-

Change of use from dwelling house and annex building into a mixed used development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces. The proposal includes the demolition of an existing single storey rear extension, and the erection of a single-storey rear extension, together with widened site access, additional internal access roads, parking areas and associated works.

- 16.118. The current appeal is on hold to allow the applicant to prepare a revised ES.

- 16.119. The proposed dates for construction and occupation of the development are unknown, however due to relatively small nature of the proposals it is possible that construction works would be complete, or largely completed, prior to Spring 2022, when the construction is proposed to commence for the application site.

- 16.120. The likely quantities of construction waste arising from the Yyn Y Caeau are not likely to be significant. The building works comprise the demolition and building of a single storey extension. There would also likely be a small amount of construction waste generated during the fit-out works. However, there is significant waste management capacity within the local area and the predicted quantities of construction waste arising from the application site are also relatively small (especially as the application site would be built over 4 years). It is therefore considered that there would be no significant cumulative effects from construction waste arisings.

16.121. The operational waste arisings from the two developments are not likely to be similar in nature. As the application site will use a waste management contractor, who specialise in manufacturing waste, it is considered that the operational waste would be managed at different facilities and would not therefore give rise to any significant cumulative effects.

Summary of Impacts

16.122. The proposed development would generate a range of wastes from all phases of the scheme, including site clearance and preparation, construction works as well as the operation of the plant and associated activities.

16.123. A number of mitigation measures have been included within the scheme design in order to minimise the amount of waste produced, such as the retention of excavation soils and materials on the development site and the off-site pre-fabrication of structures and materials. Throughout the construction phase, consideration would be given to the scope for reusing or recycling wastes in preference to sending it for energy recovery or disposal. There are a number of local waste management facilities which would enable waste to be managed sustainably and in accordance with the Waste Hierarchy. It is considered that significant effects on sensitive receptors, such as waste management capacity or construction workers, would not arise as a result of construction waste production.

16.124. The operational phase of the site would produce a range of wastes, a small proportion of which would be classified as hazardous waste. Forward Waste manage these waste streams currently at the existing site in Neath and no additional waste would be generated by this development. Forward Waste manage waste in accordance with the Waste Hierarchy. No significant effects are predicted on waste management capacity or on human receptors, such as site staff and visitors.

Table 16.11 – Summary of Significance of Effects

Summary description of the identified impact	Sensitivity of Receptor	Impact Magnitude	Significance and Nature of Effect	Additional Mitigation	Residual Impact Magnitude	Residual Significance and Nature of Effect	Confidence Level
Site Preparation/Construction							
Waste infrastructure (capacity of sorting and recycling facilities)	Minor	Low	Negligible Direct and temporary impact on recycling capacity (not significant)	None required	Low	Negligible Direct and temporary impact on recycling capacity (not significant)	High
Waste infrastructure (landfill disposal capacity)	Moderate	Negligible	Negligible Direct and permanent impact on landfill capacity (not significant)	None required	Negligible	Negligible Direct and permanent impact on landfill capacity (not significant)	Low
Human Receptors (e.g. construction workers)	Major	Negligible	Negligible Direct, temporary and reversible impact on	None required	Negligible	Negligible Direct, temporary and reversible impact on	High

Summary description of the identified impact	Sensitivity of Receptor	Impact Magnitude	Significance and Nature of Effect	Additional Mitigation	Residual Impact Magnitude	Residual Significance and Nature of Effect	Confidence Level
			human health (not significant)			human health (not significant)	
Operational							
Waste infrastructure (capacity of sorting and recycling facilities)	Minor	Negligible	Negligible Direct and permanent impact on recycling capacity (not significant)	None required	Negligible	Negligible Direct and permanent impact on recycling capacity (not significant)	High
Waste infrastructure (landfill disposal capacity)	Moderate	Negligible	Negligible Direct and permanent impact on landfill and energy recovery capacity (not significant)	None required	Negligible	Negligible Direct and permanent impact on landfill and energy recovery capacity (not significant)	Low
Human Receptors (e.g. site workers & visitors)	Major	Negligible	Negligible Direct, temporary and reversible impact on human health (not significant)	None required	Negligible	Negligible Direct, temporary and reversible impact on human health (not significant)	High

References

1. Future Wales- The National Place 2040: Welsh Government 2021
2. Planning Policy Wales- Edition 11: Welsh Government 2021
3. Towards Zero Waste One Wales- One Planet: Welsh Assembly Government 2010
4. Technical Advice Note 21: Waste: Welsh Assembly Government 2014
5. Technical Advice Note 12: Design: Welsh Assembly Government 2016
6. Local Development Plan (2011-2026): Neath Port Talbot County Borough Council 2016
7. Design- Supplementary Planning Guidance: Neath Port Talbot County Borough Council 2017
8. Pollution- Supplementary Planning Guidance: Neath Port Talbot County Borough Council 2016
9. Local Development Plan 2011 – 2026- Annual Monitoring Report (October 2020) : Neath Port Talbot County Council 2020
10. Find details of a permitted waste site (<https://naturalresources.wales/evidence-and-data/maps/find-details-of-permitted-waste-sites/?lang=en>) Natural Resources Wales (No date)
11. SmartWaste BRE Waste Benchmark Data: Building Research Establishment 2012
12. Co-collection of household and commercial waste and recyclables Waste & Resources Action Programme 2011
13. Survey of Industrial and Commercial Waste Generated in Wales 2018: Natural Resources Wales (No date)

17. CUMULATIVE EFFECTS

Introduction

- 17.1. This Chapter provides an overview of the cumulative effects identified as part of the ES, in relation to the Proposed Development as required by Clause 5e of Schedule 4 of the 2017 ES Regulations.
- 17.2. Clause 5e of Schedule 4 of the 2017 EIA Regulations requires that an ES must include a description and assessment of:

“The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources”.

Projects and Approved Developments

- 17.3. The cumulative impacts of the following projects have been considered within the EIA:
- 17.4. ‘Tyn y Caeau, Margam Road, Port Talbot, SA12 2NW’ Appeal Ref. 3263628 Application Ref. P2020/0601 - Change of use from dwelling house and annex building into a mixed used development consisting of guest house accommodation consisting of 16 guest rooms, with associated bar, cafe and spa facilities, and truck stop with 21 HGV parking spaces. The proposal includes the demolition of an existing single storey rear extension, and the erection of a single-storey rear extension, together with widened site access, additional internal access roads, parking areas and associated works. (Bat survey and mitigation submitted 18/09/2020).’

Assessment of Effects

- 17.5. Each environmental topic set out in the relevant Technical Chapter is assessed individually in terms of the significance of the overall predicted residual and in-combination effects that would result from the development proposals as discussed within the individual chapter. A summary of the in-combination / combined effects is provided below:

Socio-Economic

- 17.6. No in-combination or cumulative effects identified. The majority of socio-economic effects arising from the Proposed Development are Beneficial.

Land and Soil Resources

- 17.7. There are no significant effects on agricultural land anticipated to arise as a result of the Proposed Development. Prior to mitigation measures, the Proposed Development would have a moderate adverse effect on soil resources. The residual effect following mitigation would be minor and not significant.

Archaeology and Cultural Heritage

- 17.8. With regard to the proposed development (as set out above) a low adverse impact to the undesignated Farmhouse has been identified, due to a change to a part of its 'setting' which contributes (to a limited degree) to its value; a resultant minor effect. It is not considered that this effect, when considered in-combination with conversion of the Farmhouse to a new function, would result in different or greater impact to the values of the Farmhouse.

Landscape and Visual Impact

- 17.9. The Tyn-y-Caeau Planning application does not include a landscape and visual impact assessment. However, it is considered unlikely that, when considered in isolation, this development will have any significant effects on landscape and visual receptors.
- 17.10. When considered in combination, the cumulative developments (i.e. the Proposed Development and Tyn-y-Caeau) will be located entirely within **Landscape Character Area 01 Margam Marsh**. The Proposed Development site is located entirely within this LCA, forming a small part of the eastern parcel, to the north. Tyn-y-Caeau Proposed Development will increase the development area to the northeast.
- 17.11. Key characteristics identified for this LCA, relate to the strong visual influence of surrounding heavy industry, domination of the skyline with pylons and the steel works and influence of transport corridors, (i.e. M4 Motorway), are particularly appropriate to this part of the LCA. The coherence of the landscape area, particularly in the eastern portion is poor, with a mix of large scale, contrasting land-uses, including the Eglwys Nynydd Reservoir, the crematorium and Longlands recreation ground. The more sensitive key characteristics identified, particularly relating to the open landscape of the marshland, including the ditches and associated wetland vegetation are located within the western portion.
- 17.12. The Tyn-y-Caeau development will not be visible beyond the Proposed Development and there will be no added intervisibility with sections of the LCA possessing more sensitive characteristics to the south-east.
- 17.13. The sensitivity of LCA 03 Margam Marsh is very low. The cumulative operational development will directly extend across a small portion of the LCA but there will be limited intervisibility/views elsewhere in the LCA due to intervening vegetation. Furthermore, existing trees and hedges in and around the site will be retained and these will assist with integration of the operational development locally within the existing landscape fabric. Overall, the magnitude of the cumulative impact will be medium. The significance will be slight-moderate and not significant.

Ecology and Nature Conservation

- 17.14. Mature trees located along the on the boundary of the Application Site to Tyn Y Caeau are to be retained under the proposals above with potential impacts to foraging and commuting bats to be mitigated for via sensitive site lightning.

- 17.15. The bat roost mitigation proposals include the provision of a replacement bat house/roost, located along the boundary of Tyn Y Caeau and the Application Site. The bat mitigation house has designed with both crevice dwelling bat species and Lesser Horseshoe Bat (known to be light intolerant) in mind. The Proposed Development has the potential to significantly adversely impact this feature and roosting bats within the local area in the absence of mitigation. With the implementation of the listed measures, it is unlikely there will be a significant adverse impact on this ecological feature (i.e., roosting bats within the local area).

Transport

- 17.16. As the Tyn y Caeau application is proposing lorry parking and a small guest house type development, the level of additional vehicle movements would be minimal, particularly during the peak hours and no transport analysis was provided in support of the application. As such, the application of growth rates to the base data is considered to allow for the minimal increase in movements which may result from this Proposed Development, if it is approved on appeal. On this basis, separate additional vehicle movements specifically from this proposed scheme have not been considered within the analysis.
- 17.17. The assessments above provide an allowance for robust traffic growth which incorporates development growth as well as background traffic growth. The traffic growth in this context also allows for cumulative and strategic development, much of which would not yet be consented.
- 17.18. Therefore, cumulative assessment has been undertaken and this demonstrates that the Proposed Development is forecast to have a negligible and not significant environmental effect.

Noise and Vibration

- 17.19. Cumulative effects have been considered and the cumulative impact of the proposed development is not indicated to be significant.
- 17.20. It is understood that plans for the redevelopment of the Tyn y Caeau site (SSR) are proposed to include a truck stop with B&B accommodation.
- 17.21. We would advise that Tyn y Caeau would still be assessed as a Sound Sensitive Receptor (SSR). The development noise impact assessment therefore does not need to be modified.

Air Quality

- 17.22. As presented in Table 13.23 the emissions of PM10 and PM2.5 associated with additional road traffic from the Proposed Development will have a negligible impact on concentrations at existing receptors. Once combined with the Powder Processing Plant contributions presented in Table 13.26 the impacts remain negligible. No other pollutants are emitted by both road traffic and the Powder Processing Plant; thus, the combined impacts of the

Proposed Development emissions on air quality at existing receptors are considered to be 'not significant' and no further assessment is required.

Hydrology, Hydrogeology and Geology

- 17.23. The proposed drainage strategy detailed in the Environmental Statement for the Tyn Y Caeau development includes the management of surface water quantity and mitigates any risk of flood risk to the proposed development site from the Tyn Y Caeau development. Furthermore, the Tyn Y Caeau development proposes to discharge all surface water to ground using industry good practice SuDS. Consequently, there are no discharges to surface water which could compound with those from the proposed site and result in cumulative impacts. There are not considered to be any cumulative impacts to the receiving groundwater body as a result of the implementation of the SuDS management train and CIRIA SuDS Manual compliance for the design of the Tyn Y Caeau drainage strategy.

Cumulative Effects

- 17.24. Cumulative effects generally occur where there may be combined or sequential visibility of two or more developments of the same type and scale, or where the consideration of other schemes would increase an effect identified.
- 17.25. The EIA Regulations states that an EIA should include a consideration for the cumulation of significant effects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected. Consequently, as set out within NPTBC's EIA Screening and Scoping Opinions, and has been demonstrated within this ES, there are no significant, cumulative effects anticipated in respect of any other environmental considerations.
- 17.26. Consequently, it is felt that no further assessment of potential, cumulative impacts beyond landscape and visual considerations is considered necessary.
- 17.27. In this regard, the assessment of cumulative effects has been assessed throughout the ES. This allows evaluation of the potential cumulative effects resulting from the introduction of the Application Proposals to a baseline that currently exists or is likely to exist. As acknowledged above, the construction phase of Tyn y Caeau has therefore been considered as part of the site's baseline context.
- 17.28. This assessment has been undertaken with the confidence that this scheme will be in operation by the time the proposed development is completed. The cumulative landscape and visual impact assessment uses the same assessment methodology as that presented for the main LVIA above, and considers impacts on the same receptor groups. The assumptions with regard to mitigation set out in the main LVIA also apply to the cumulative assessment.
- 17.29. Overall, it is evident from this assessment that the Proposed Development can proceed on its own, and in conjunction with other development proposals without any unacceptable combine or cumulative impacts on the local or wider environment.

18. SUMMARY OF MITIGATION MEASURES, RESIDUAL EFFECTS AND MONITORING

Introduction

- 18.1. This Chapter of the ES summarises the effects of the Proposed Development outlined in the proceeding Chapters as well as any mitigation measures and monitoring incorporated into either the construction or operational phases of the Proposed Development in the Tables and text which follow.

Land and Soil Resources

- 18.2. The potential effects and the significance of these effects are detailed below. Any mitigation subsequently required is identified and the residual effects, taking into account the mitigation, are confirmed.

Table 18.1 – Land and Soil Effects Table

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse / Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Construction				
Loss of agricultural land	Temporary	Negligible	n/a	Negligible
Potential damage to and loss of soil resource	Permanent	Major (adverse)	Soil Resources Plan will aim to ensure the quality of topsoils retained on site and exported off site is maintained.	Minor (adverse)

Archaeology and Cultural Heritage

- 18.3. The potential effects and the significance of these effects are detailed below. Any mitigation subsequently required is identified and the residual effects, taking into account the mitigation, are confirmed.

Table 18.2 – Archaeology and Cultural Heritage Table of Effects

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Construction				
Physical	Permanent	Minor adverse	Trial trench evaluation at pre-commencement stage	Negligible
Non-Physical	Temporary	Negligible	Trial trench evaluation at pre-commencement stage	Negligible
Completed Development				
Physical	None	None	-	None
Non-Physical	Permanent	Minor adverse	-	Negligible
Cumulative Effect				
Construction	Temporary	Minor adverse	-	Negligible
Operation	Permanent	Minor adverse	-	Negligible

Landscape and Visual

- 18.4. The potential effects and the significance of these effects are detailed below. Any mitigation subsequently required is identified and the residual effects, taking into account the mitigation, are confirmed.

Table 18.3 – Landscape and Visual Table of Effects

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Construction				
Landscape effects – direct	Temporary	Negligible	Apply measures from CEMP	
Landscape designations	Temporary	Negligible		
Landscape Character and LANDMAP	Temporary	Minor adverse		

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Viewpoint 1 Abbots Close	Temporary	Negligible		
Viewpoint 2 Longlands Lane Recreation Ground	Temporary	Major		
Viewpoint 3 Margam Park House and Garden		Minor		
Viewpoint 4 Margam Park (Deer Park)		Minor		
Residents of key settlements		Moderate adverse		
Residents of small settlements and individual dwellings		Major		
Ogwr Ridgeway Walk		Moderate		
Visitors undertaking active outdoor recreation activities that are not directly associated with the enjoyment of scenery.		Moderate		
Outdoor workers		Moderate / negligible		

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Users of indoor workplaces and community facilities		Moderate / negligible		
Completed Development				
Direct effects	Permanent	Moderate	Design mitigation through structural tree planting and hedgerow reinforcement	
Mynydd Margam Special Landscape Area (SLA)		Minor adverse		
Mynydd Margam Landscape of Special Historic Interest (LSHI)		Minor adverse		
Margam Park Registered Parks and Gardens of Special Historic Interest (RPG)		Moderate adverse		
Margam Country Park		Moderate adverse		
Margam Park Conservation Area		Negligible		
LCA 01 Margam Marsh		Minor / moderate adverse		
LCA 03 Margam Country Park		Minor / moderate adverse		

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
LCA 04 Coedhirwaun		Negligible		
LCA 06 Mynydd Brombil, Emroch and Dinas		Minor adverse		
LCA 49 Port Talbot, Sandfields, Baglan and Margam.		Negligible		
LCA 50 Port Talbot Docks and Margam Works		Negligible		
Viewpoint 1 Abbots Close, Margam				
Residents		Moderate adverse		
Users of Wales Coast Path		Minor adverse		
Cyclists		Negligible		
Road Users		Negligible		
Public Open spaces users		Negligible		
Viewpoint 2 Longlands Land Recreation Ground				
Recreational users		Moderate / major adverse		
Wales Coast Path Users		Moderate adverse		
Road users		Minor adverse		
Viewpoint 3 Margam Park House and Garden				
Recreational users		Negligible		
Viewpoint 4 Margam Park (Deer Park)				

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Recreational users of long-distance footpath		Moderate adverse		
Cumulative Effect				
Construction	Landscape character	Moderate	-	-
Operation	Landscape Character	Moderate	-	-

Ecology and Nature Conservation

- 18.5. The potential effects and the significance of these effects are detailed below. Any mitigation subsequently required is identified and the residual effects, taking into account the mitigation, are confirmed.

Table 18.4 – Ecology and Nature Conservation Table of Effects

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)
Construction				
Eglwys Nunydd Reservoir SSSI and SINC	Temporary	Major		Minor adverse
J38 Wetland Complex SINC	Temporary	Minor adverse		
Margam Country Park SINC	Temporary	Negligible		
Poor semi-improved grassland	Temporary	Moderate adverse		
Semi-improved neutral grassland	Temporary	Negligible		

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)
Marshy grassland	Temporary	Minor adverse		
Broad leaved semi natural woodland	Temporary	Minor adverse		
Dense / continuous scrub	Temporary	Moderate adverse		
Defunct species-rich hedgerow	Temporary	Minor adverse		
Species-rich hedgerow with trees	Temporary	Negligible		
Amphibians	Temporary	Minor adverse		
Badger	Temporary	Minor adverse		
Bats – foraging / community	Temporary	Adverse		
Bats – roosting	Temporary	Minor adverse		
Birds	Temporary	Minor adverse		
Reptiles	Temporary	Minor adverse		
Terrestrial invertebrates	Temporary	Minor adverse		
Completed Development				
Eglwys Nunydd Reservoir SSSI and SINC	Permanent	Negligible		
Junction 38 Wetland Complex SINC	Permanent	Negligible		
Margam Country Park SINC	Permanent	Negligible		
Semi-improved neutral grassland	Permanent	Minor adverse		

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)
<i>Marshy grassland</i>	Permanent	Minor adverse		
<i>Broad-leaved semi-natural woodland</i>	Permanent	Minor / moderate		
<i>Dense / continuous scrub</i>	Permanent	Minor / moderate		
<i>Defunct species-rich hedgerow & Species-rich hedgerow with trees</i>	Permanent	Minor / moderate		
<i>Amphibians</i>	Permanent	Negligible		
<i>Badger</i>	Permanent	Minor adverse		
<i>Bats – foraging/ commuting</i>	Permanent	Major		
<i>Bats – roosting</i>	Permanent	Minor adverse		
<i>Birds</i>	Temporary	Minor adverse		
<i>Reptiles</i>	Permanent	Negligible		
<i>Terrestrial invertebrates</i>	Temporary	Minor adverse		
Cumulative Effect				
Construction	Temporary	Minor adverse		
Operation	Permanent	Minor adverse		

Transport

- 18.6. The potential effects and the significance of these effects are detailed below. Any mitigation subsequently required is identified and the residual effects, taking into account the mitigation, are confirmed.

Table 18.5 –Transport Table of Effects

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Construction				
Construction traffic	Permanent	Negligible		
Completed Development				
Highway links	Permanent	Negligible	-	None
Traffic	Permanent	Minor	-	Negligible
Cumulative Effect				
Construction	Temporary	Negligible	-	Negligible
Operation	Permanent	Negligible	-	Negligible

Noise

- 18.7. The potential effects and the significance of these effects are detailed below. Any mitigation subsequently required is identified and the residual effects, taking into account the mitigation, are confirmed.

Table 18.6 –Noise Table of Effects

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Construction				
Construction noise	-	-		
Completed Development				
Atomising pouring	Permanent	Minor	-	None
Car park	Permanent	Negligible	-	Negligible
Cumulative Effect				
Construction	-	-	-	
Operation	-	-	-	

Air Quality

- 18.8. The potential effects and the significance of these effects are detailed below. Any mitigation subsequently required is identified and the residual effects, taking into account the mitigation, are confirmed.

Table 18.7 –Air Quality Table of Effects

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Construction				
Dust soiling		Moderate		
Human health		Low		
Ecological		n/a		
Completed Development				
Emission	Permanent	Minor	-	None
Cumulative Effect				
Construction	-	-	-	
Operation	-	-	-	

Hydrology, Flood Risk and Drainage

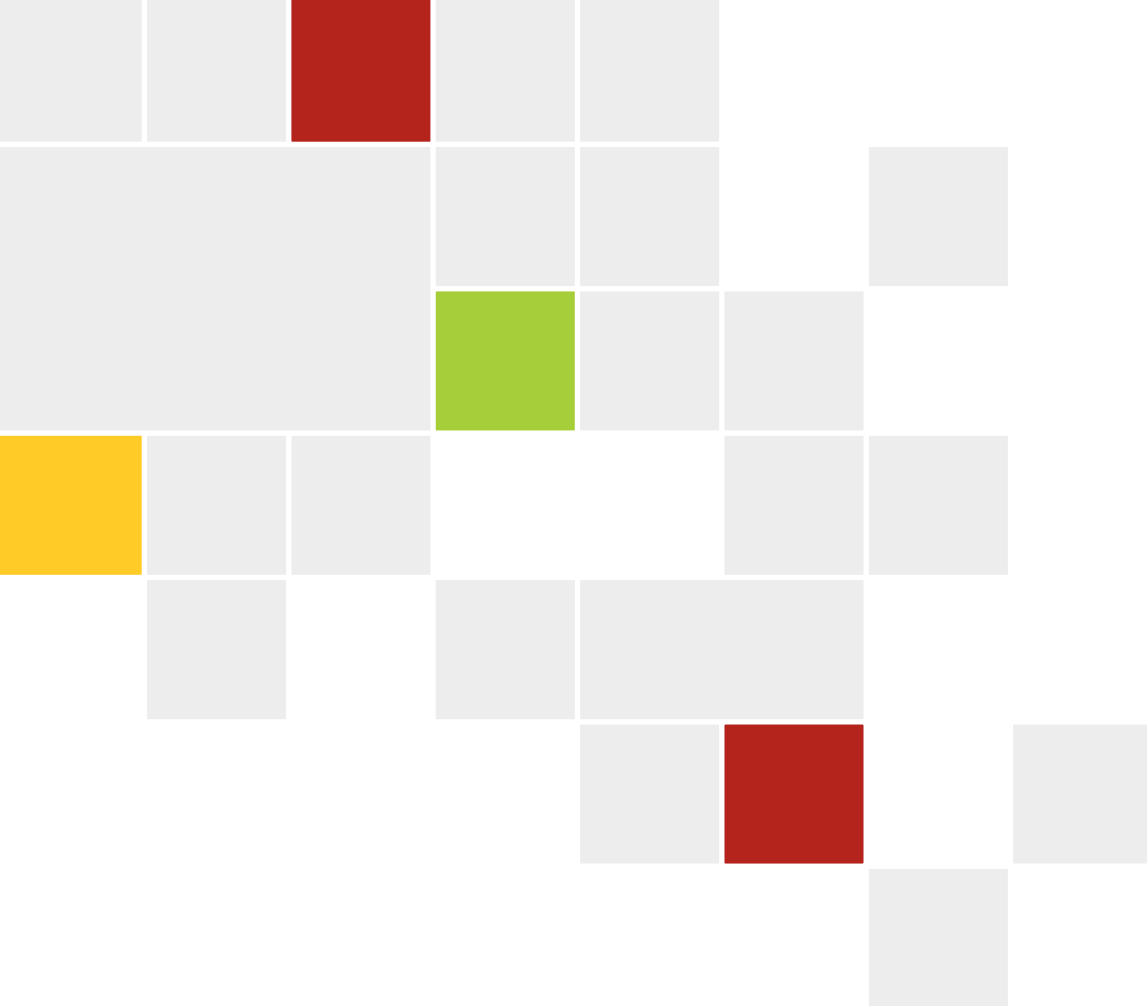
- 18.9. The potential effects and the significance of these effects are detailed below. Any mitigation subsequently required is identified and the residual effects, taking into account the mitigation, are confirmed.

Table 18.8 –Hydrology, Flood Risk and Drainage Table of Effects

Potential Effect	Nature of Effect (Permanent / Temporary)	Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures & Monitoring	Residual Effects (Major/Moderate/Minor) (Beneficial / Adverse / Negligible)
Construction				
Flood Risk	Temporary	Negligible		
Surface Water – unnamed ditch	Temporary	Negligible / Minor		
Surface water – Neath Port Talbot SINC	Temporary	Moderate		
Groundwater – WFD groundwater body	Temporary	Moderate		
Completed Development				

Flood Risk – less vulnerable development	Permanent	Moderate	-	None
Surface water – unnamed ditch on site	Permanent	Minor		
Surface water – NPT SINC	Permanent	Major		
Groundwater – WFD groundwater body	Permanent	Moderate		
Cumulative Effect				
Construction	-	-	-	
Operation	-	-	-	

18.10. The ES demonstrates that the measured environmental consequences of the Proposed Development wholly support the granting of planning permission.



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