
Coed Darcy

Environmental Impact Assessment Scoping Report

EIA Scoping Report

Coed Darcy



Document Title	EIA Scoping Report
Project	Coed Darcy
Client	St Modwen Developments
File Location	E:\Planning\Jobs\Live\St. Modwen\Coed Darcy\2021\EIA\3 Scoping Report

Version	Prepared by	Date	Issued to
Draft v1	Laura Williams	9/7/21	EIA Project Team & Client
Final	Laura Williams	15/7/21	NPTCBC

CONTENTS

CHAPTER 1: INTRODUCTION.....	4
CHAPTER 2: SITE & DESIGNATIONS	6
CHAPTER 3: PROPOSED DEVELOPMENT.....	14
CHAPTER 4: EIA APPROACH.....	23
CHAPTER 5: TRANSPORT	37
CHAPTER 6: AIR QUALITY	45
CHAPTER 7: NOISE AND VIBRATION	63
CHAPTER 8: GROUND CONDITIONS.....	75
CHAPTER 9: WATER ENVIRONMENT	87
CHAPTER 10: ECOLOGY AND NATURE CONSERVATION.....	102
CHAPTER 11: LANDSCAPE AND VISUAL IMPACT	140
CHAPTER 12: CLIMATE CHANGE.....	153
CHAPTER 13: SOCIO-ECONOMIC IMPACTS.....	173

List of Appendices

- Appendix 2.1 Site Location Plan
- Appendix 3.1 Scoping Masterplan

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

- 1.1.1 This Environmental Impact Assessment (EIA) Scoping Report has been prepared by Savills (UK) Limited ('Savills') on behalf of St Modwen Developments ('the Applicant') in support of a request for a 'scoping opinion' from Neath Port Talbot Council ('NPTCBC') as the local planning authority. It provides preliminary environmental information in relation to proposed development at Coed Darcy (hereafter referred to as the 'Site') and suggests the scope of key issues that the subsequent EIA will need to examine.
- 1.1.2 This report is provided in support of a request for a 'scoping opinion' from NPTCBC and is made pursuant to Part 4, Regulation 14 (1) of the the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017.
- 1.1.3 This report contains the information to allow NPTCBC to consult with relevant stakeholders on the proposed scope of the EIA, including the Welsh Government and Natural Resources Wales and, so that their comments can be taken into consideration on the provisional scope set out in this Scoping Report.
- 1.1.4 Comments provided to NPTCBC from the various consultees will be considered by Savills and other members of the projects consultant team, which may result in amendments to the scope of the EIA as appropriate and the results reported within the subsequent Environmental Statement (ES) that will accompany the planning application for the development of the Site.
- 1.1.5 Brief details of the site location and a summary description of the site are provided in Chapter 2. An overview of the proposed development is provided in Chapter 3. Further details are provided in subsequent chapters, along with the proposed technical scope of the EIA which is set out in individual topic chapters (Chapters 5 – 13). Chapter 4 sets out the proposed approach to the EIA.

1.2 THE PROJECT TEAM

- 1.2.1. The project team is being led by St Modwen Developments as development manager and the EIA team is being led by Savills with technical chapters being produced by a number of other specialists:

Topic	Consultant
EIA management and coordination; socio-economics	Savills
Masterplanning and urban design	Powell Dobson Architects
Transport; Air Quality; Noise	Atkins
Ground conditions; Water Environment	PJA
Biodiversity	Ecology Solutions
Landscape and Visual Impact	Soltys Brewster
Climate Change and Sustainability	Arup

CHAPTER 2: SITE & DESIGNATIONS

2.1 INTRODUCTION

- 2.1.1 This chapter provides a description of the site and its setting. Further details, relevant to the proposed technical scope, are provided in chapters 5-13.
- 2.1.2 The original Outline Planning Permission was granted in 2008, and since then, there has been considerable discussions and dialogue between the St Modwen team and NPTCBC about the delivery of the site and the implementation of the planning permission. As such, there is a considerable amount of information already known about the site, its constraints, challenges and the significant opportunity that it offers to deliver a high quality, sustainable new place.

2.2 SITE DESCRIPTION

- 2.2.1 The site is identified on the location plan at Appendix 2.1. The site is a former BP refinery and is predominately brownfield land.
- 2.2.2 The site is approximately 131 ha in size.
- 2.2.3 The site comprises former post-industrial land which has previously been cleared under the extant permission and has been subject to significant remediation since its previous use as an Oil Refinery. It therefore predominantly comprises bare land, which has been partially vegetated with patches of woodland and some existing landscaping at the site boundaries.
- 2.2.4 The site also includes the existing D'Arcy Business Park and existing building at Britannic House and William Knox House which accommodates office space. The site also includes the original contractor's yard, which is located to the south of the site boundary and to the north of Llandarcy Village, and is leased to a mix of businesses for open storage and industrial uses.
- 2.2.5 As noted below, around 300 homes have been delivered on the site already (i.e. Phase 1 Persimmon development) which lies outside of the site boundary. Furthermore, the 'Heritage Gate' development, comprising further residential development has been developed to the south west of the site, directly to the north of Llandarcy Village.

- 2.2.6 Further to the west of the site there are a number of commercial and leisure uses, including a hotel, restaurant and sports facilities.
- 2.2.7 The site is located to the east of the site is junction 43 of the M4 motorway. Swansea city centre lies 4km south-east of the site whilst Neath town centre lies circa 3.5km north-east. The site is currently accessed from the B4290 which feeds off of junction 43 of the M4 motorway via the Northern Access Road (which has been implemented under the existing planning permission).
- 2.2.8 The railway line dissects the northern and central part of the site. The far northern boundary adjoins the 'north site' reservoir (which lies outside of the site boundary) and the M4 abuts the eastern boundary of this part of the site.
- 2.2.9 The site is relatively steep in parts, with a number of topographical features. The high point of the site is identified immediately west of the existing residential development lying at approximately 77.0mAOD and falls from east to west towards the Crymlyn bog down to a level of approximately 9.0mAOD. Levels also fall from this high point to the railway to north, which is in a cutting, and towards the existing Coed Darcy Business Park where levels are approximately 29.0mAOD. The topography north of the railway has a plateau through the centre, where levels are approximately 55.0mAOD which falls away to approximately 40mAOD along the northern boundary and southern boundaries and approximately 25mAOD in the south-western corner of the Site.
- 2.2.10 The Crymlyn Bog Ramsar Site, Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR) abuts the western boundaries of the site.

2.3 PLANNING HISTORY

- 2.3.1 Outline Planning Permission (OPP) for its redevelopment was granted in February 2008 (reference P2005/03983) to deliver 4,000 new homes, business and retail space and commercial, education and community facilities together with highways, drainage, services, infrastructure, car parking and landscaping. Since approval of the OPP, there have been a number of applications submitted for the site for various works.

- 2.3.2 Aside from infrastructure and remediation works (including the northern access road), phases 1A and 1B have been delivered by Persimmon Homes, and comprised the development of approximately 300 new homes which is built out and occupied.

2.4 PLANNING POLICY

- 2.4.1 The development of the site is supported by both local and national planning policy, most notably by policy SRA1 and policy SP7 of the adopted LDP. Policy SP7 explains that the authority have identified a need to deliver 7,800 new homes (8,760 with contingency) during the plan period which runs from 2011 to 2026. The Coed Darcy Strategic Regeneration Site is anticipated to deliver 2,400 of those within the plan period (although the site is allocated for a total of 4,000). Policy EC1/3 also refers to 41,200 square metres of B1 Business Space at the site in addition to up to 3,000 square metres of retail floorspace.
- 2.4.2 Future Wales was published in February 2021. It sets out the key strategic priorities for Welsh Government as well as providing a framework for future planning direction at regional and local levels. New National Growth Areas for Wales were introduced for the first time in this strategic plan, including for Swansea Bay and Llanelli, which are intended to be the main focus for growth and investment in the region. The entirety of the Coed Darcy site is within the new National Growth Area designation.
- 2.4.3 A full explanation of the proposed development's compliance with planning policy will be considered in the Planning Statement which will be submitted as part of the planning application. Planning policies relevant to the assessment of each topic area will also be referenced in the ES.

2.5 ENVIRONMENTAL AND TECHNICAL CONSIDERATIONS

Ground Conditions

- 2.5.1 As noted above, the site forms part of the former BP Llandarcy oil refinery. Further to its closure in 1998, a demolitions programme removed the majority of the above ground operational structures prior to the disposal of the site to St. Modwen Developments in 2008. The Bitumen

Plant, a small scale independent operation continued until 2009, at which point all operational activity ceased.

2.5.2 A history of industrial usage left a legacy of impact which was inherited by the applicant. The central areas of the refinery comprised a raised sandstone plateau which housed the main processing activities. During construction the landform was modified to accommodate process plant which created the notable sandstone exposures. The raised northern and southern areas housed tank farms typically comprising circular above ground storage tanks. The topography fell away from the raised sandstone areas most notably along the western periphery which is bounded by the Crymlyn Bog SSSI and RAMSAR site. Process and storage areas were connected via series of pipelines. In peripheral areas of the site a number of lakes and ponds were located connected to the refinery drainage systems. The southern area of the refinery also housed the industrial landfill which was in-use until its closure in 1990s.

2.5.3 The pattern of contamination across the whole of the site reflected the industrial land use and resulted from numerous releases throughout the operational life of the refinery. Contamination ranged from dispersed areas of free phase oils, petroleum hydrocarbons, metals and asbestos to more concentrated locations of oil and impacted sludges (within the peripheral lagoons) and chlorinated solvents (north site).

Remediation Requirements of the previous Outline Planning Permission

2.5.4 Remediation requirements for the original Coed Darcy Outline Planning Permission were set out within the Section 106 Agreement (as approved in 2008). The two key elements of the approved remediation strategy were as follows:

- Remediation Action Plan (RAP) – a programme of works focussed on removing impacted materials from the site lagoons and the interception and collection of residual free oil, including within the tip. A particular target of the works was the improvement of conditions on the western margin and the interface with the Crymlyn Bog.
- Redevelopment Remediation – a programme of works focussed on the creation of development plots which were suitable for their proposed end use with respect to their impacts on human health

Remediation Progress since the 2008 Permission

- 2.5.5 The Section 106 contained remediation criteria (Risk Based Screening Levels (RBSLs)) and testing frequency requirements. These were originally derived by BP in the early to mid 2000s. The progress of the remediation and adherence to the Section 106 criteria were overseen by an independent monitor (the Monitor). The Monitor reported directly to Coed Darcy Ltd and provided RAP Works and Remediation Works Completion Certificates to demonstrate independent verification that works had been completed. The Monitor also directly liaised with NPTCBC and National Resources Wales (NRW) regarding progress and all completion certificates were provided.
- 2.5.6 All RAP works were completed and RAP Works Completion Certificates issued by summer 2015. Following the completion of the main remediation requirements (relating to lagoon clean up and the capture of free oil) regulation of the Tip was transferred to an Environmental Permit to provide for its continued monitoring and management under the appropriate regulatory mechanism. Works to restore the tip are on-going and subject to discussion between St Modwen and NRW.
- 2.5.7 Redevelopment Remediation works commenced in 2008 and initially involved the demolition of remnants structures, including the Bitumen Plant, removal of remnant above ground refinery pipework and an extensive programme of hardstanding removal and the recovery of substantial underground pipework and remnant structures, including many with residual refinery liquids. Following this first phase of reclamation an additional investigation was undertaken comprising circa 2000 exploratory holes and a substantial programme of chemical testing. The new investigation data, together with a significant amount of historic information, was used to undertake a targeted remediation programme. From 2011 through to 2015 circa 600,000cu m of material was excavated to allow the removal and treatment of impacted soils. Remediation typically involved the treatment of soils by conditioning and bio-remediation within a designated treatment area within the site. All treated soil was either re-used to create development plateau or stockpiled for later use.
- 2.5.8 Redevelopment Remediation was targeted at three land use types, residential, commercial and public open space. The Section 106 provided criteria for each land use. General remediation requirements requiring the removal of free phase oil and grossly contaminated

soil applied across all areas. The depth of remediation depended on the proposed land use and other physical factors such as the depth to groundwater and bedrock. Where design levels were available plots were remediated and engineered to provide a specific formation level. For many areas of the site no detailed masterplan layout or levels were available. In these areas the general requirements of the remediation programme was applied and plots were prepared to either public open space or commercial standards. Redevelopment Remediation Works Completion Certificates were issued by the Monitor for all areas of the Coed Darcy development site by 2015.

Nature Conservation

- 2.5.9 The Crymlyn Bog Ramsar Site, Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR) abuts the western boundaries of the site.
- 2.5.10 The Pant-y-Sais SSSI is located approximately 1km to the south of the site and the Earlswood Road Cutting and Ferryboat Inn Quarries SSSI is 1.7km south-east.
- 2.5.11 Within the 2-5km radius of the site is the Crymlyn Bog and Pant y Sais NNR, Crymlyn Burrows SSSI, Six Pit, Swansea Vale and White Rock SSSI and the Glais Moraine SSSI.
- 2.5.12 The following non-statutory nature conservation designations are located within 2km of the site:
- Jersey Marine Woods & Gelli Bwch Farm SINC
 - M4 Corridor SINC
 - Main Swansea – Fishguard Railway Line SINC
 - Crymlyn Quarry Woodland SINC
 - Pant-y-Sais LNR
 - Red Jacket Fen Wildlife Trust Reserve (WTR)
 - Pentrefynnon SINC
 - Junction 44 Heathlands SINC
- 2.5.13 The Conservation of Habitats and Species Regulations 2017 require competent authorities, before granting consent for a plan or project, to carry out an appropriate assessment (AA) in

circumstances where the plan or project is likely to have a significant effect on a European site (either alone or in combination with other plans or projects). The competent authority in respect of is the local planning authority who makes the final decision. It is the Applicant's responsibility to provide sufficient information to the competent authority to enable them to carry out an AA or determine whether an AA is required.

Flood Risk and Water Environment

- 2.5.14 There are a number of primary water receptors for the site, which are described in detail in section 10, including the North Site Reservoir which forms the northern boundary of the site, the South Site Reservoir which lies to the east of the site, the River Neath (which lies 80m east of the site) and Crymlyn Bog. DCWW sewers cross the site boundary.
- 2.5.15 The majority of the Site lies within Zone A of the Development Advice Mapping (DAM) which is considered the most appropriate area for development with regards to flood risk. A small area to the south-west of the Site is identified in DAM Zone C2, which is defined in TAN 15 as "*Areas of the floodplain without significant flood defence infrastructure*". See chapter 9 of this report provides further detail of the baseline water environment.

Historic Environment

- 2.5.16 There are no conservation areas, scheduled ancient monuments or listed buildings within the site boundary. Two designated sites have been identified in close proximity to the site – the Llandarcy Workers Village Conservation Area and St. Margaret's Chapel Scheduled Ancient Monument. William Knox House is a designated by NPTCBC as a Locally Listed Building.
- 2.5.17 The site has been subject to a considerable amount of below ground impact from the construction and operation of the former refinery. This past ground disturbance will have had a seriously detrimental effect on any archaeological deposits that may have been present in the area.

Active Travel Context

- 2.5.18 There are no Public Rights of Way (PRoW) within the site, but there are two public footpaths within the vicinity of the site. In addition, footways with street lighting are provided along the B4290 and a shared footway cycleway is provided around the southern gyratory of Junction 43, and then off-road to Britton Ferry. Bus services run along the B4290.

CHAPTER 3: PROPOSED DEVELOPMENT

3.1 INTRODUCTION

- 3.1.1 For the purpose of this EIA Scoping Report, the project comprises the comprehensive development of the site, delivering up to 2,000 no. residential dwellings, the associated access, ecological mitigation, local employment, local retail, leisure and community facilities, land for education facilities and supporting amenity space, landscaping, green infrastructure, remediation and sustainable drainage systems.

3.2 MASTERPLANNING APPROACH

- 3.2.1 Whilst at the time of submission of this Scoping Report, design development is ongoing, a high quality architectural approach is proposed which responds to the current context, while drawing on the site's past.
- 3.2.2 Powell Dobson Architects, along with other members of the design team, has undertaken a thorough investigation, analysis and appreciation of the site's constraints and history, and the potential for that to provide a benchmark for the redevelopment of the site. The master planning approach responds to the significant technical challenges that the site presents, including topography, landscape and ecology constraints. Whilst these constraints cause impact on the development scope and form, they also pose fantastic opportunities for landscape connectivity, viewing points and ecological enhancements that the development can exploit. Existing key landscape features within and around the site contribute to form a strong landscape setting and clear identity for the site.
- 3.2.3 The location of a number of key elements are fixed:
- The extension to the Darcy Business Park for additional commercial uses.
 - The location of the school on the flatter area of the lower plateau to enable efficient delivery of community pitches as well as allowing the DIME area to be brought into beneficial use.
 - Discussions are ongoing with TFW and Welsh Government over a potential new station at Coed Darcy. Its potential location is driven by technical requirements.

- 3.2.4 The approach to master planning the site is one that integrates urban design and landscape, by promoting the existing established landscape features and integrating them into a key GI movement network. This is achieved by forming a natural 'greenway' connecting key landscape features within and around the site to provide a continuous route around Coed Darcy and out into neighbouring communities for both leisure and active travel. Integration into the urban framework of the site is achieved by creating a network or urban 'greenways', a series of formal green streets containing SAB features suitable to topography and active travel routes across the site and out into neighbouring communities, connecting out to the natural greenway.
- 3.2.5 The vision and desire for the redevelopment of Coed Darcy is to create a recognisable, legible, desirable place to live and visit. Coed Darcy can become a place with a clear identity in terms of urban design concept and architectural language, and a benchmark for high quality design and placemaking. It can become an accessible and well-connected to the wider city through new and improved green infrastructure networks and safe pedestrian and cycle routes between communities. Detailed drawings will be submitted as part of the planning application, and following consultation with key stakeholders, the proposed amount of development is therefore evolving.

3.3 DEVELOPMENT PROPOSALS

- 3.3.1 Design development and pre-application consultation is ongoing, at this stage, and therefore the final composition of land uses, layout and amount of development could change in advance of a planning application being submitted, and subject to comments received from stakeholders and design development. However, the following key design principles (and inherent mitigation) should be considered in this scoping exercise:

- Up to 2,000 new homes¹, comprising a mixture of market and affordable housing (Use Class C3) and extra care provision (Use Class C2);

¹ This is likely to be a maximum quantum of new dwellings. However, for the purpose of scoping, it is anticipated that the evolving masterplanning process retain as much flexibility as possible at this stage to allow for increased housing numbers (for example, should a primary school option only be required). It should be noted that this capacity may also include a care home or sheltered accommodation.

- Land for education (either a through-school or primary school only), with associated public open space (Use Class D1);
- Circa 1.2 hectares of land for commercial uses (retail, employment, community, assembly and leisure uses facilities comprising a neighbourhood centre (assume A1, A2, A3, B1, D1 and D2 Uses);
- Approximately 1.2ha of land to be used for employment uses as an extension to the existing Llandarcy Business Park (assume B2 and B8 Uses), in addition to retaining the existing Contractors Yard commercial uses;
- An extensive scheme for ecological mitigation, including:
 - Adoption of appropriate construction safeguards to ensure that potential impacts on retained and off-site habitats are avoided. This to include consideration of all potential impact pathways on designated sites.
 - It is further anticipated that potential impacts on sites of international importance (SAC, Ramsar) will be subject to appropriate assessment. The applicant anticipates producing a shadow Habitat Regulations Assessment in support of the EIA.
 - The creation of an extensive green infrastructure network for the site, with this to support a wide range of high quality habitats and with in-perpetuity biodiversity management secured.
 - The adoption of a site wide Landscape and Ecological Mitigation and Management Plan, detailing precise habitat creation and management proposals for the site. It is envisaged a draft / framework version of the document will be submitted with the planning application, with a formal version to be secured by condition.
 - The completion of any necessary protected species translocations, not least in respect of amphibians and common reptiles.
 - Adoption of appropriate construction practices in respect of faunal species.

- The removal of undesirable and non-native species, such as Japanese Knotweed, where this is located within the site.
- Open space, sports pitches, formal areas of play and informal amenity space including, a mix of informal 'greenways', landscaping, green infrastructure, walking and cycling routes and sustainable drainage systems; and
- Associated highways works, including a new pedestrian footbridge across the railway line; new and improvements to active travel links, drainage works, ecology mitigation, landscaping, ground remediation and other engineering works.

3.3.2 At this stage, to inform the scoping exercise, a development framework plan has been prepared by Powell Dobson Architects – as enclosed at Appendix 3.1.

Site Preparation

Methods of Working

3.3.3 It is anticipated that contractor's compounds will be located as secure areas within the relevant phase under construction and will be relocated as each phase nears completion onto the subsequent phase. The precise nature and location of the contractor's compound cannot be determined at this time.

3.3.4 The working hours are anticipated to be:

- 07:00 - 19:00 hours Monday to Friday inclusive;
- 08:00 - 13:00 hours on Saturday; and
- No work to be carried out on Sundays or Bank Holidays.

3.3.5 In order to maintain these working hours, the contractor(s) may require a period of up to half an hour before and up to one hour after normal working hours for start-up and close down of activities. This does not include operation of plant or machinery giving rise to noise with the potential to disturb nearby residents or the arrival of any HGV at site before 06:30 hours.

- 3.3.6 It is anticipated that development would be undertaken on a rolling programme of site preparation and construction, allowing earlier phases to be completed and occupied while subsequent phases are constructed. All materials and plant storage will occur on the Site and no off-site compounds are necessary. The on-site materials storage compound will be located in a position compatible with the ongoing phases of development.

Construction Environmental Management Plan (CEMP)

- 3.3.7 Details of measures to protect the environment during the construction of the Proposed Development will be set out in a framework CEMP. Measures will address hours of working, noise, vibration, dust, light spill, wheel washing and control of runoff. It is anticipated that the implementation of a full CEMP will be a condition of the planning permission and that it will be regularly monitored.
- 3.3.8 Once finalised and approved by the Local Planning Authority, the CEMP would be held on-site. All site personnel would be made aware of its existence and undertake to adhere to the guidance.

3.4 PROPOSED PARAMETER PLANS

- 3.4.1 In order for the significant environmental effects of the Proposed Development to be identified and assessed, it is necessary to clearly identify all the components of the Proposed Development. However, in many cases the details of the development have not as yet been decided / agreed at the scoping stage and are reserved for later consideration by the Applicant and NPTCBC.
- 3.4.2 In order to enable the consideration of the scope of the potential effect of the construction and operation of the Proposed Development, the proposals at this stage will be within a maximum envelope defined by the Proposed Development parameters.
- 3.4.3 In undertaking the assessment of the EIA, parameters will be fixed which allow some flexibility for the Proposed Development within defined limits. Such parameters include residential unit numbers and building heights and floorspace for particular use classes. These will be outlined as maximum in order to usually provide assessment of the 'worst case'. Thus allowing inherent

flexibility for future applications within these parameters. This is known as the 'Rochdale Envelope'².

3.4.4 Alongside the Proposed Development description, it is anticipated that, subject to the evolution of the Proposed Development design, the EIA will be undertaken based upon the following parameters:

- Land Use Parameter Plan
- Green Infrastructure Parameter Plan (including ecological mitigation)
- Site Movement Parameter Plan
- Building Heights and Density Parameter Plan

3.4.5 In addition, an indicative masterplan will be prepared and submitted with the planning application, and will be referred to in the assessment process. However, it will not be a fixed application drawing.

3.5 SUSTAINABILITY AND ENERGY STRATEGY

3.5.1 The planning application will be accompanied by an Energy Strategy prepared by Ove Arup and Partners Ltd. The strategy will seek to minimise energy demand and associated GHG emissions through the application of the energy hierarchy and will include consideration of:

- Baseline building regulations requirements at the time of construction;
- Minimising energy demand through passive solar gain and a fabric first approach;
- Incorporating building integrated and / or masterplan level renewable energy sources;
- Incorporating low carbon energy sources including, where appropriate, viable and feasible.

3.5.2 The energy strategy will define and demonstrate that site-wide energy targets can be achieved in principle. Individual future phases will then be expected to demonstrate compliance with

² R. v Rochdale MBC ex parte Milne (No. 1) and R. v Rochdale MBC ex parte Tew [1999] and R. v Rochdale MBC ex parte Milne (No. 2) [2000].

targets through detailed design and updated energy calculations at the reserved matters stages. The proposed energy strategy will define the likely energy sources and requirements, including spatial requirements, within the masterplan and will underpin the relevant topics within the EIA.

3.5.3 In recognition of the climate emergency declared at UK and Welsh government levels, and of Welsh government targets to reduce emissions, the developer recognises that the reduction in GHG emissions must be a priority for the Coed Darcy development, and subject to a full techno-economic analysis is aiming to reduce emissions as close to net zero as viable. In defining the energy strategy for the site, consideration will be given to relevant legislation, policy and guidance including (but not limited to):

- The Well-being of Future Generations (Wales) Act 2015
- Building regulations – Part L and F (2014, however both are due to be updated in Autumn 2021)
- Prosperity for all: A low carbon Wales (2019)
- Technical advice note (TAN) 12: design
- Neath Port Talbot County Borough Council (NPTCBC) Local Development Plan (2011-2026)
- NPTCBC Decarbonisation and Renewable Energy Strategy (2020)
- NPTCBC Supplementary Planning Guidance: Renewable & Low Carbon Energy (2017)
- Expectations in decarbonisation of the electricity grid.

3.6 DEVELOPMENT ALTERNATIVES

3.6.1 Section 4, paragraph 2 of the EIA Regulations requires Environmental Statements to 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.'

3.6.2 The EIA Scoping report is based upon the proposed development for residential development, which is supported by the current planning policy position.

3.6.3 The assessment of alternatives to the development that will be presented in the ES and will consider options within the following categories:

- 'Do Nothing': under this scenario no new development is implemented at the site and baseline conditions continue in their current trends;
- A different design: under this scenario the proposed development is realised with alternative scales and layouts, often in the context of developmental constraints present at the site.

3.6.4 As identified above the site is subject to an allocation for residential-led mixed use development in the adopted LDP. This indicates that the site should be developed for a broad mix of uses including housing, education, retail and commercial. Given this policy position, it is not considered appropriate to consider any options for alternative uses. It is noted that the LDP allocation for the site includes the potential to deliver 41,500sqm of B1 office space. Justification for not delivering this amount of B1 office space will be provided in the Planning Statement which accompanies the planning application. However, for the purpose of the EIA, it is not considered necessary for a different mix of land uses (i.e. additional B1 office space) to be assessed as an alternative.

3.7 CONSULTATION

3.7.1 In the lead up to the planning application and throughout the development design, a programme of consultation is being undertaken with statutory and non-statutory consultees, key stakeholders and members of the public. Further technical consultation will also be undertaken as part of the ongoing EIA process and pre-application engagement.

3.7.2 A summary of relevant consultations will be presented in the introductory sections of the ES. This will provide details of any environmental issues raised and provide an audit trail of how the EIA process has responded to these issues. Consultation that is specific to particular topics will be reported, where relevant, within the corresponding chapters of the ES.

- 3.7.3 Details of technical consultation, directly related to the production of this Scoping Report are provided in the methodology and baseline sections of each topic chapter.

CHAPTER 4: EIA APPROACH

4.1 EIA PROCESS

- 4.1.1 EIA is a process through which the likely significant environmental effects of a development proposal can be identified and, where possible, adverse effects avoided or mitigated or beneficial effects enhanced. This process is then reported in the ES which will be submitted as part of the planning application seeking approval of the proposed development.
- 4.1.2 The overall aim of the proposed EIA is to provide an objective and systematic account of any likely significant environment effects of the development.

4.2 EIA SCREENING

- 4.2.1 The EIA Regulations require that before consent is granted for certain types of development, an EIA must be undertaken. The EIA Regulations set out the certain types of development which will only require assessment if they potentially likely to give rise to significant environmental effects (Schedule 2 developments). Guidance and thresholds are available to ascertain whether EIA is required for Schedule 2 development. This decision process is known as 'screening'.
- 4.2.2 The selection criteria for screening Schedule 2 development are provided in Schedule 3 of the EIA Regulations. Schedule 2 projects require EIA if they are likely to have significant effects on the environment by virtue of their nature, size or location. The potential for likely significant effects on 'sensitive areas', as defined in Regulation 2(1) of the EIA Regulations, is a particularly important consideration.
- 4.2.3 The proposed development falls within the definition of Schedule 2 Section 10(b) of the EIA Regulations as an 'urban development project' as the development includes more than 1ha of urban development which is of more than 150 dwellings and exceeds 5 hectares. The anticipated planning application will therefore be accompanied by an Environmental Statement.

4.3 EIA SCOPING

4.3.1 Part 4, Regulation 15 (1) of the EIA Regulations provides for an applicant to ask the Local Planning Authority (LPA), in this case NPTCBC, to provide a Scoping Opinion in which the information that should be provided with the ES is stated in writing.

4.3.2 When requesting a Scoping Opinion under Part 4, Regulation 15 (2) the following must be provided:

- A plan sufficient to identify the land;
- A brief description of the nature and purpose of the development, including its location and technical capacity;
- An explanation to the likely and significant effects of the development on the environment; and
- Such other information or representations as the person making the request may wish to provide or make.

4.3.3 It is the purpose of this EIA Scoping Report to provide sufficient information for NPTCBC to consider and consult upon the scope of the EIA to support the application for the proposed development.

4.4 SCOPE OF WORK

4.4.1 In order to determine the likely scope of the EIA, the process has involved the following steps:

- Identification of the site and boundary;
- Identification of the key characteristics of the site and the establishment of the environmental baseline through a series of desk and field studies;
- Identification of where there are gaps in the baseline and the further survey work required to address this;
- Initial consideration of the potential sources and nature of the environmental effects through assessment against the environmental baseline; and

- Definition of the assessment methodologies to be used in each study area.
- 4.4.2 A series of baseline studies have been undertaken to establish the baseline environment for this Scoping Report. The baseline and assessment work undertaken as part of preparing this Scoping Report is set out within the relevant technical chapter (chapters 5-15).
- 4.4.3 In accordance with Schedule 4 of the EIA Regulations, the proposed ES will include:
- A description of the proposed development;
 - A description of the reasonable alternatives studied by the developer and reasons for the selected option;
 - A description of the baseline environment and likely evolution without the proposed development;
 - A description of the factors specified in Regulation 4(2) likely to be significantly affected by the proposed development;
 - A description of the likely significant effects of the proposed development;
 - A description of the forecasting methods and evidence used in the assessment, including any difficulties experienced;
 - A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects and, where appropriate, of any proposed monitoring arrangements; and
 - Where relevant, a description of the expected significant adverse effects of the development from vulnerability to major accidents or disasters.
- 4.4.4 Part 1, Regulation 4(2) of the EIA Regulations refer to the following environmental factors; population, human health, biodiversity (fauna and flora), land, soil, water, air, climate, material assets, cultural heritage, landscape and the interaction between these factors.

Topics to be scoped in and out of the EIA

4.4.5 Table 4.1 provides a list of the topics that have been considered in the EIA scoping process. The results of the scoping process for each of the topics is presented in this report in chapter 4 below (if proposed to be scoped out) and in chapters 5-14 (where topics are proposed to be scoped in).

Table 4.1: Environmental topics considered in the EIA Scoping process

Topic	EIA Scoping Report Chapter	Scoped in/out
Accidents and Natural Disasters	4	Out
Waste	4	Out
Wind and Microclimate	4	Out
Socio-economics	13	In
Historic Environment	4	Out
Transport and Travel	5	In
Air Quality	6	In
Noise	7	In
Ground Conditions	8	In
Water Environment	9	In
Biodiversity	10	In
Landscape and Visual Impact	11	In
Human Health	4	In (throughout ES)
Climate Change	12	In

4.4.6 As part of the EIA scoping process, issues within the topic areas that have been identified as unlikely to give rise to significant environmental effects have been omitted (scoped out) from the EIA. The justification for scoping those topics out of the EIA process, is provided below.

Accidents, Fires and Natural Disasters

4.4.7 In the absence of recognised guidance on this subject in the context of the EIA, a range of sources providing guidance to the topic have been reviewed including:

- Cabinet Office National Risk Register (NRR) of Civil Emergencies 2017 Edition³

³ Cabinet Office. (2017) National Risk Register (NRR) of Civil Emergencies. [Online].
<https://www.gov.uk/government/publications/national-risk-register-of-civil-emergencies-2017-edition>

- UK Government Emergency Response & Recovery Guidance ⁴
- International Federation of Red Cross & Red Crescent Societies Disasters and Crisis Management Guidance⁵

4.4.8 A disaster can be defined as ‘a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, and economic or environmental losses that exceed the community’s or society’s ability to cope using its own resources. Though often caused by nature, disasters can have human origins.’⁶

4.4.9 The site’s location within the UK is such that natural disasters are not considered to represent a likely risk to the proposed development. For example, the likelihood of an earthquake with a magnitude sufficient to cause significant damage to humans, buildings or to disrupt site operations is extremely low. The topography of the site is not considered to be sufficiently steep that such a major mass movement disaster could arise.

4.4.10 Given the nature of the development and operations at the site, there are no significant fire and safety risks. The potential for either large volume storage or frequent passage / delivery of fuels and chemicals during either the construction phase or following completion, is considered to be low when compared to more industrial development proposals such as chemical works, storage depots, docks or major highways.

4.4.11 It is therefore concluded that whilst there is always a potential risk that an accident, fire or natural disaster could result in a significant environmental impact, this risk can be appropriately mitigated through embedded design and measures and through compliance with statutory operational guidelines.

4.4.12 It is therefore proposed that the EIA will not include accidents, fire and natural disasters.

⁴ International Federation of Red Cross and Red Crescent Societies. “The Red Cross and Red Crescent approach to disaster and crisis management: Position Paper” <https://www.ifrc.org/PageFiles/91314/1209600-DM-Position-Paper-EN.pdf>

⁵ International Federation of Red Cross and Red Crescent Societies. “The Red Cross and Red Crescent approach to disaster and crisis management: Position Paper” <https://www.ifrc.org/PageFiles/91314/1209600-DM-Position-Paper-EN.pdf>

⁶ Oxford English Dictionary. 2018. [Online] <https://www.lexico.com/definition/accident>

Health and Safety

- 4.4.13 The site is not located within or near any sites identified in zones for the Health and Safety Executive (HSE). Such zones are established around major hazard sites and pipelines for the purposes of consultation with the HSE upon any potential risks presented to either a proposed development or existing sites.
- 4.4.14 Therefore, significant effects related to Health and Safety associated with major hazard sites are not considered likely to result from the proposed development. It is therefore proposed that the EIA will not include health and safety associated with major hazard sites. Health and safety impacts arising as a result of topic specific impacts (e.g. Ground Conditions, Traffic and Transport) will be considered as appropriate (See Chapters 5-13).
- 4.4.15 A Human Health Impact Assessment will be undertaken as part of the EIA (See Chapter 13).

Waste

- 4.4.16 No major demolition is required as part of the Proposed Development.
- 4.4.17 Developments result in both construction and operational (municipal & commercial) waste arisings. Waste Disposal Authorities are responsible for ensuring that Local Authorities provide for sufficient facilities to exist to manage anticipated waste arisings (this include ensuring that sufficient sites exist for merchant facilities for the management of construction and commercial waste).
- 4.4.18 It is not proposed that a specific waste chapter will be incorporated into the ES. However, in accordance with the EIA Regulations, the Proposed Development description, upon which the EIA will be based, will include estimated volumes of waste associated with construction activities (Construction, Demolition and Excavation waste) and the operational phase of the Proposed Development (Commercial and Residential Waste).

Wind and Microclimate

- 4.4.19 The assessment of the wind microclimate around buildings is important both for pedestrian comfort and safety, as well as impacts on the buildings themselves. The impacts of the

proposed development are not considered to be significant and therefore it is **not** proposed that a specific chapter on wind and microclimate effects will be incorporated within the EIA.

Historic Environment

- 4.4.20 The previous EIA which was undertaken for the original 2008 OPP assessed the Historic Environment. This assessment found that because the site area has suffered a considerable amount of below ground impact from the construction and operation of the former Llandarcy oil refinery, which will have had a seriously detrimental effect on any archaeological deposits, therefore there is a very low potential for any deposits to have survived.
- 4.4.21 The closest heritage assets are outside of the red line boundary. St Margarets Chapel is a Scheduled Ancient Monument which is located approximately 4km to the south and Llandarcy Village Conservation Area is located approximately 1km to the east. William Knox House, a Locally Listed Building, is proposed to be retained and forms part of the masterplan. The design approach to these heritage assets will be covered in the Design and Access Statement to be submitted with the planning application.
- 4.4.22 Given the conclusions of the previous EIA and the fact that there are no new designations since the previous ES was prepared, there are no known significant effects likely to be triggered by the Proposed Development and therefore an assessment on the historic environment is proposed to be scoped out of the EIA.

Approach to Health Impact Assessment

- 4.4.23 Potential health effects that the proposed development may have on existing population groups, during the construction phase and subsequently on completion are to be scoped into the EIA. However, it is not proposed that they are considered in the form of a stand alone chapter in the assessment, rather their consideration will be provide, as applicable, within each technical chapter. This will include consideration of the health impacts of any predicted, adverse impacts that the proposed development may have on noise, air quality and traffic.
- 4.4.24 In addition, wider planning application documents such as Design and Access Statement will consider how the masterplan has been designed to consider opportunities for improving health and wellbeing of its residents and as a result of additional employment space.

Geographic Scope

- 4.4.25 The proposed EIA will include the physical extent of the site, as shown on the Location Plan (Appendix 2.1). Additionally, the proposed EIA for individual topic chapters will exceed beyond this red line where necessary for the scope of the assessment, based on the perceived Zone of Influence of that impact. This is set out and explained, where relevant, in each of the topic chapters.
- 4.4.26 The geographical extent of the EIA will also consider, if relevant, the potential implications of related and un-related development activities and any other land required for development specific infrastructure outside the current site boundary.

Temporal Scope

- 4.4.27 The EIA will assess the effects associated with the proposed development in 2036 as a theoretical consequence of the proposed development (when the development is expected to be completed and fully operational).
- 4.4.28 The EIA will assess the Proposed Development based upon the following scenarios.
- Baseline
 - Baseline + Construction of the Proposed Development (assumed 2023-2036)
 - Baseline + Operation of the Proposed Development in 2036, and
 - Baseline + Operation of the Proposed Development + Cumulative Development
- 4.4.29 Unless stated otherwise within a technical chapter, the proposed EIA will assess the effects of the proposed development arising during the anticipated construction phase and the occupation phase.

Cumulative Scope

- 4.4.30 The potential cumulative effects of the proposed development in association with other committed developments (if any are known), both during the construction phase and following completion, will be included.
- 4.4.31 In accordance with the best practice, as part of the EIA process, Savills is now consulting with NPTCBC to screen for other existing or approved developments that could give rise to significant cumulative effects – and seeks confirmation from Officers in this respect in its response to this Scoping Request.
- 4.4.32 Savills has undertaken a review of whether there are other development schemes within a reasonable proximity of the site boundary (which given the location of the site is 5km) and which benefit from an extant planning consent and are certain to progress to construction and operational phases. This review has indicated that, at the time of writing (and taking into account the availability of information at this time), there are not considered to be any existing or approved schemes of substantial size, within close proximity to the site, which have potential to result in cumulative effects with the proposed development. We would welcome confirmation of this from NPTCBC in advance of / during the preparation of the ES.
- 4.4.33 Given the location of the site therefore and absence of any other development projects in close proximity of the site and considered likely to come forward, it is not envisaged that there will be significant effects caused by the proposed development in combination with other development in relation to the majority of assessments.

Baseline

- 4.4.34 The assessments will be based on the comparison of qualitative and, where possible quantitative, predicted impacts, compared with current or recent baseline environmental conditions. Any significant changes expected in future baselines due to environmental trends will also be described qualitatively, or in certain cases calculated as quantitative future baseline to allow meaningful future year assessment. These future year baselines can take account of cumulative developments not yet built but in the planning system (should any be required to be considered). These approaches are explained in further detail in the relevant chapters concerned.

4.5 EIA REFERENCE TERMS AND METHODOLOGY

Proposed Development Parameters

- 4.5.1 As explained in Section 3.4 above, in order for the significant effects of the proposed development to be identified and assessed, it is necessary to clearly identify all the components of the proposed development. However, in many cases the details of the development have not yet been decided / agreed at the scoping stage and are reserved for later consideration and further design development by the applicant and NPTCBC.
- 4.5.2 In order to enable the consideration of the scope of the potential effect of the construction and operation of the proposed development, the proposals at this stage will be within a maximum envelope defined by the proposed development parameters, as set out above.
- 4.5.3 It is intended to agree this approach with NPTCBC as part of this Scoping Request.

Impact Assessment Guidance

- 4.5.4 Each technical chapter of the ES will detail the methodology used for its assessment. Unless otherwise specified in the specific technical chapter the ES will generally follow the generic assessment framework detailed below.

Receptor Sensitivity and Impact Magnitude

- 4.5.5 Receptors are those aspects of the environment sensitive to changes in baseline conditions. The sensitivity of a particular receptor depends upon the extent to which it is susceptible to such changes.
- 4.5.6 Impact magnitude is determined by predicting the scale of any potential change in the baseline conditions. Where possible magnitude is quantified, however where this is not possible a fully defined qualitative assessment is undertaken. The assessment of magnitude is carried out taking account of any inherent design mitigation in the proposal that forms part of the development description.

Table 4.3 Receptor Sensitivity and Impact Magnitude

Receptor		Impact	
Sensitivity to change		Magnitude of Change	
Very High	VH	Very High	VH
High	H	High	H
Medium	M	Medium	M
Low	L	Low	L
Very Low	VL	Very Low	VL
Negligible	N	Negligible	N

Effect Significance

4.5.7 As shown in Table 4.4, the effect significance is determined by combining the predicted magnitude of impact with the assigned sensitivity of the receptor. Table 4.5 sets out the broad definitions of significance. The definition of the level of significance at which a significant impact arises will be provided within the topic method section of each chapter of the ES.

Table 4.4: Effect Significance

Criteria			Receptor Sensitivity				
			VH	H	M	L	ML
Impact Magnitude	Positive	VH	Substantial	Substantial	Major	Moderate	Moderate
		H	Substantial	Major	Moderate	Moderate	Minor
		M	Major	Moderate	Moderate	Minor	Minor
		L	Moderate	Moderate	Minor	Minor	Minor-neutral
		VL	Moderate	Minor	Minor	Minor-neutral	Minor-neutral
	Negligible		Neutral	Neutral	Neutral	Neutral	Neutral
	Negative	VL	Moderate	Minor	Minor	Minor-neutral	Minor-neutral
		L	Moderate	Moderate	Minor	Minor	Minor-neutral
		M	Major	Moderate	Moderate	Minor	Minor
		H	Substantial	Major	Moderate	Moderate	Minor
		VH	Substantial	Substantial	Major	Moderate	Moderate

Table 4.5: Definition of Significance

Significance	Definition
Substantial	These effects represent key factors in the decision-making process. They are generally, but not exclusively associated with sites and features of national

	importance and resources/features which are unique and which, if lost, cannot be replaced or relocated.
Major	These effects are likely to be important considerations at a regional or district scale but, if adverse, are potential concerns to the proposed development, depending upon the relative importance attached to the issue during the decision-making process.
Moderate	These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.
Minor	These effects may be raised as local issues but are unlikely to be of importance in the decision-making process. Nevertheless, they are of relevance in the detailed design of the proposed development.
Neutral	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

4.5.8 As required by the EIA Regulations, the likely significant effects of the proposed development are described as:

- Adverse or beneficial
- Direct or indirect
- Temporary or permanent
- Reversible or irreversible
- Cumulative

4.5.9 Adverse effects are undesirable and result from negative impacts. Beneficial effects are desirable and result from positive impacts.

4.5.10 Each effect will have a source originating from the proposed development, a pathway and a receptor. Effects which operate in this direct way are regarded as direct effects. Effects on other receptors via subsequent pathways are regarded as indirect effects.

4.5.11 Unless stated otherwise, effects of moderate significance or above are considered to be significant in EIA terms.

Initial and Residual Effects

4.5.12 As stated previously, the EIA process enables the likely significant effects of a proposed development to be identified so that, where possible, adverse effects predicted to arise as a result of the proposal can be avoided or mitigated through the adoption of suitable measures. Additionally, enhancement measures can be incorporated to maximise the beneficial effects of the development. The adoption of mitigation and enhancement measures results in initial and residual effects. These can be defined as:

- Initial Effects: Effects occurring as a result of the proposed development prior to the adoption of any additional mitigation or enhancement measures.
- Residual Effects: Effects occurring as a result of the proposed development taking into account the adoption of identified additional mitigation or enhancement measures.
- Additional mitigation and enhancement is defined as a measure that is additional to the proposed development as initially proposed. Measures that design out significant effects that form an inherent part of the proposed development as proposed, known as inherent mitigation, are considered in the initial impact.

4.5.13 For example many environmental constraints, such as flood risk, must be designed out of a project for it to be viable and it would be impractical to consider the proposed development without such measures in place.

In-Combination Effects

4.5.14 In-combination effects relate to multiple effects from a single development, which may give rise to a potentially significant impact upon a receptor. This will take the form of a matrix identifying the sensitive receptors and the different effects arising from the proposed development likely to be experienced at each – for example, an individual receptor close to the site boundary may be affected by noise and visual effects.

4.6 EIA ASSUMPTIONS AND LIMITATIONS

4.6.1 The following key assumptions will be made in preparing the ES:

- All legislative requirements will be met. Therefore, any standard guidance which is provided to ensure minimum legal compliance is not considered to constitute mitigation in the EIA. The assessment of effects prior to the adoption of mitigation measures will assume that all legislative requirements will be met.
- The assessment of effects prior to the adoption of mitigation measures will assume that the Proposed Development will be constructed in accordance with industry standard techniques. Such techniques will therefore not be considered as mitigation.
- Where further assumptions have been made for individual topic assessments these will be identified within the relevant topic chapters.
- Any limitations or uncertainties associated with impact prediction or the sensitivity of receptors due to the absence of data or other factors will give rise to uncertainty in the assessment. Any such limitations will be referred to in the relevant technical chapters of the ES.

CHAPTER 5: TRANSPORT

5.1 INTRODUCTION

- 5.1.1 This chapter of the ES Scoping Report has been produced by Atkins and considers the potential impact on Transport during construction and operation of the proposed development. A Transport Assessment and Travel Plan will be prepared for submission with the planning application. The ES will utilise the trip generation and distribution of traffic in the TA to determine the environmental effects of the proposed development.

5.2 ASSESSMENT CRITERIA & METHODOLOGY

Previous Assessment

- 5.2.1 The previous outline consent granted in 2008 was supported by a Transport Assessment undertaken in 2005. Since the consent was granted junction capacity modelling has been updated with more recent traffic count data and background traffic growth assumptions. The most recent traffic counts were undertaken in December 2018 for Junction 43 of the M4 and the B4290.

Legislative Context

- 5.2.2 The transportation policy documents which are relevant to the proposed development at a national and local level have been included as follows:

National Policy:

- Planning Policy Wales – Edition 11
- TAN: 18 Transport
- The Wales Transport Strategy 2021
- Active Travel (Wales) Act 2013

Local Policy:

- Neath Port Talbot Local Development Plan (2011 to 2026)

Planning Policy and Guidance

National Planning Policy

- 5.2.3 **Planning Policy Wales** (Edition 11, February 2021) sets out the land use planning policies of the Welsh Government (WG) and is supplemented by a series of Technical Advice Notes (TANs), WG Circulars and policy clarification letters.
- 5.2.4 PPW outlines that the planning system should enable people to access jobs and services through shorter, more efficient and sustainable journeys, by walking, cycling and public transport. The planning system can improve choice in transport and secure accessibility in a way which supports sustainable development, increases physical activity, improves health and helps to tackle the causes of climate change and airborne pollution by:
- 5.2.5 Enabling more sustainable travel choices;
- Network Management; and
 - Demand Management.
- 5.2.6 It is considered that transport can also play a role in strategic and spatial choices, with strategic placemaking and good design fundamental to creating sustainable places where people want to live, work and socialise. PPW outlines the five key objectives of good design: access, movement, character, environmental sustainability and community safety, all of which transport plays a role
- 5.2.7 **TAN 18: Transport** explains how an efficient and sustainable transport system is required for a modern, prosperous and inclusive society. The WG has a statutory duty towards sustainable development. TAN 18 describes how the WG intends to integrate land use and transport planning in order to achieve their outcomes with regard to climate change. The integration of land use planning can help achieve positive sustainable development outcomes by ensuring new development is located where it is accessible by public transport, walking and cycling.
- 5.2.8 Section 6 of TAN 18 explains that it is imperative that local councils take walking and cycling into consideration when assessing planning applications.

- 5.2.9 **The Wales Transport Strategy 2021** A new Wales Transport Strategy (WTS) was published in 2021, setting out WG's vision for an accessible, sustainable and efficient transport system, which can contribute to a more prosperous, green and equal society.
- 5.2.10 The WTS is centred around the principle of achieving an integrated approach to transport, which will ensure that transport can address key issues to deliver wider commitments, through the following four pathways:
- Decarbonisation;
 - Equality;
 - Integrated Journey Planning; and
 - Rural Transport.
- 5.2.11 The WTS sets out three short-term key priorities and four longer-term well-being ambitions for the transport system in Wales. The priorities and ambitions of the WTS have been developed with reference to the Sustainable Transport Hierarchy.
- 5.2.12 **Active Travel (Wales) Act 2013** In September 2014, the Active Travel (Wales) Act 2013 was introduced by WG, making it a legal requirement for Local Authorities to map and plan suitable routes for Active Travel (within certain settlements within PCC as designated by WG).

Local Planning Policy

Current Planning Policy

- 5.2.13 **Neath Port Talbot Local Development Plan (2011 – 2026)** guides the future development of Neath Port Talbot, providing a clear vision for the County Borough setting out where, when and how much new development can take place between 2011–2026. The LDP is underpinned by gathered evidence and is aligned with national and regional policies.
- 5.2.14 The Neath Port Talbot LDP sets out how existing assets located along the urbanised coastal belt will be enhanced and utilised to improve the economic and social outlook for the whole area, while improving the general environment. The LDP sets out a number of objectives

through which this will be achieved and form the basis for policy development. Notable objectives which the LDP sets out to achieve include:

- 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;
- Deliver sustainable, safe and confident communities and develop vibrant settlements supporting a range and mix of facilities and services;
- Provide an adequate supply, mix, type and tenure of housing within sustainable settlements to meet the needs of the projected population;
- Increase accessibility, promote active travel and encourage a shift to more sustainable modes of transport for people and freight; and
- Reduce impacts of traffic growth and congestion and promote the efficient and effective use of the transport network.

5.2.15 The strategy for Neath Port Talbot in the LDP aims to facilitate growth within Neath Port Talbot, primarily focusing on the coastal corridor but also reinvigorating the valley communities. Based on the strategy aims,

5.2.16 Development will be focused along the coastal corridor in Neath and Port Talbot, in recognition of the important role these settlements play within the wider context;

- Maximising the benefit of market interest along the coastal corridor and stimulating growth through delivery of strategic employment sites and strategic regeneration areas;
- Development allocations have been selected in accordance with sustainable development principles to be in locations that take account of issues such as dependence on the private car, flood risk, air quality and access to facilities.

Guidance/ Best Practice

IEMA

5.2.17 The assessment of the transport and access impacts of the Development is based on The Institute of Environmental Management & Assessment (IEMA) guidelines set out in 'The Guidelines for the Environmental Assessment of Road Traffic' (Institute of Environmental Management & Assessment).

Baseline Data Collection

5.2.18 Baseline data will be collected for the following:

- Surrounding highway network;
- Walking and cycling infrastructure;
- Public Transport provision;
- Personal Injury Accident Data
- Traffic Flows from December 2018 will be supplemented with an updated survey in September 2021 at the following locations:
 1. M4 Junction 42 west facing slips;
 2. B4290 south;
 3. B4290 north;
 4. Crymlyn Road;
 5. M4 Junction 43;
 6. A465/A474;
 7. Ffordd Amazon, the A483 and the B4290

Proposed Assessment Methodology

5.2.19 The methodology for assessing the transport and access impacts of the Development is based on The Institute of Environmental Management & Assessment (IEMA) guidelines set out in

'The Guidelines for the Environmental Assessment of Road Traffic' (Institute of Environmental Management & Assessment).

5.2.20 The guidelines are primarily for the assessment of off-site traffic impacts associated with major new developments and are intended to complement professional judgement. The IEMA Guidelines recommend two rules to be considered when assessing the impact of development traffic on a highway link, which are considered as:

- Include highway links where daily traffic flows will increase by more than 30%, or the number of HDVs will increase by more than 30%; and
- Include any specifically sensitive areas where daily traffic flows will increase by more than 10%.

5.2.21 In cases where the thresholds set out above are exceeded, the IEMA Guidelines set out a list of environmental effects which should be assessed for their magnitude of change, which includes:

- Severance;
- Driver delay;
- Pedestrian delay and amenity;
- Accident and safety; and
- Fear and intimidation.

5.2.22 When considering the significance of potential traffic and access effects, the assessment will be based on two assessment criteria, including the magnitude of change (i.e. increase / decrease in traffic flow) and the sensitivity of the receptor (or road link) potentially being affected.

Geographical Scope

5.2.23 The scope of the assessment has been informed by the TA, for which the scope of traffic surveys was agreed with the highway authorities.

Temporal Scope

- 5.2.24 The base year assessment will be for 2021 with a future year assessment of 2026 to tie in with the Local Plan assessment year.

5.3 BASELINE ENVIRONMENT

- 5.3.1 The proposed development is located on the site of the former BP Oil Refinery at Llandarcy. The Coed Darcy development is located between Neath and Swansea, just west of M4 Junction 43.
- 5.3.2 The proposed development is accessed via Ffordd Coed Darcy which forms a signalised junction with the B4290. The site has good access to the strategic road network. The development site is located immediately adjacent to M4 Junction 43 which connects to the A465, and the M4 eastbound (to South East Wales and beyond) and westbound (to South West Wales).
- 5.3.3 Access to central Swansea is either via routes along the M4 to adjacent motorway junctions, or along the B4290 through Jersey Marine and onto the A483 Fabian Way.
- 5.3.4 Access to Skewen is provided by the B4290 (North) which is a single carriageway road.
- 5.3.5 Footways with street lighting are provided along the B4290 and a shared footway cycleway is provided around the southern gyratory of Junction 43, and then off-road to Britton Ferry.
- 5.3.6 Bus services run along the B4290.

5.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

Construction Impacts and Effects

- 5.4.1 Construction of the development will temporally increase traffic on the highway network, particularly HGVs. The likely impacts and effects that will be assessed are:
- Severance;
 - Driver Delay;

- Pedestrian Delay and amenity
- Accidents and safety; and
- Fear and Intimidation.

Occupation Impacts and Effects

5.4.2 Operation of the development will increase traffic on the highway network. The likely impacts and effects that will be assessed are:

- Severance;
- Driver Delay;
- Pedestrian Delay and amenity
- Accidents and safety; and
- Fear and Intimidation.

5.5 MITIGATION ENVISAGED

5.5.1 Mitigation is anticipated to include:

- Junction capacity improvements;
- Active Travel Measures;
- Construction Traffic Management Plan; and
- Travel Plan.

5.6 UNCERTAINTIES AND LIMITATIONS

5.6.1 The December 2018 traffic counts have been demonstrated to be representative of a neutral day in 2018. These counts will be supplemented by traffic counts undertaken in September 2021 which are assumed to be representative of typical conditions and won't be affected by COVID 19 travel restrictions.

CHAPTER 6: AIR QUALITY

6.1 INTRODUCTION

6.1.1 This chapter of the ES Scoping Report has been produced by Atkins and provides the environmental scoping assessment, in relation to air quality aspects, based upon information available as of June 2021. The project has the potential to affect local air quality, both during construction and in operation once occupied.

6.1.2 To determine the potential air quality impacts, this scoping assessment includes:

- Identification of baseline air quality conditions;
- Identification of air quality constraints and sensitive receptors;
- Commentary on the potential for air quality effects due to the project during the construction and occupation phases;
- Recommendations for mitigation to prevent or reasonably minimise any potentially significant effects identified at this stage; and
- Scope of further air quality assessment, including assessment methodology and data requirements.

6.2 ASSESSMENT CRITERIA & METHODOLOGY

Previous Assessment

6.2.1 An original outline planning permission to deliver 4,000 new homes across the Coed Darcy site was granted in February 2008 (reference P2005/0393). An air quality assessment was conducted in 2005 as part of the original Environmental Impact Assessment in support of this planning application.

Legislative Context

UK Air Quality Legislation

6.2.2 There are two types of air quality legislation that apply in Wales:

- The EU (Withdrawal Agreement) Act 2020 which implements the legally binding, mandatory limit values originally set by the EU Directive 2008/50/EC⁷ on ambient air quality and cleaner air for Europe; and
- Regulations implementing national air quality objectives as set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS)⁸: Air Quality (Wales) Regulations 2000 (SI 2000/1940 (W.138)) and Air Quality (Amendment) (Wales) Regulations 2002 (SI 2002/3182 (W.298))^{9,10}.

6.2.3 The air quality criteria in the context of this assessment for the protection of human health are presented in are presented in Table 6.1.

6.2.4 The EU (Withdrawal Agreement) Act 2020 implements the air quality limit values that are included in the EU Directive on ambient air quality and cleaner air for Europe (2008/50/EC) and were previously included in air quality regulations (Statutory Instrument (SI) 2010 No. 1001)¹¹, and as amended (SI 2016 No. 1184)¹². The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (SI 2019 74)¹³ and the Environment (Miscellaneous

⁷ Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe Available at: <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0050>

⁸ Defra (2011). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Available at; <https://www.gov.uk/government/publications/2010-to-2015-government-policy-environmental-quality/2010-to-2015-government-policy-environmental-quality#appendix-5-international-european-and-national-standards-for-air-quality>.

⁹ The Air Quality (Wales) Regulations 2000: <http://www.legislation.gov.uk/wsi/2000/1940/contents/made>

¹⁰ The Air Quality (Wales) (Amendment) Regulations 2002: <http://www.legislation.gov.uk/wsi/2002/3182/contents/made>

¹¹ The Air Quality Standards Regulations 2010. Available at: <http://www.legislation.gov.uk/ukqi/2010/1001/contents/made>

¹² The Air Quality Standards (Amendment) Regulations 2016. Available at: <https://www.legislation.gov.uk/ukqi/2016/1184/contents/made>

¹³ The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (legislation.gov.uk). Available from: <https://www.legislation.gov.uk/ukqi/2019/74/contents/made>

Amendments) (EU Exit) Regulations 2020 (SI 2020 1313)¹⁴ amend the Air Quality Regulations (SI 2010 No.1001) to account for EU withdrawal.

Table 6.1: Relevant human health air quality criteria

Pollutant	Objective
Nitrogen Dioxide - NO ₂	Hourly mean concentration should not exceed 200 µg/m ³ more than 18 times a year Annual mean concentration should not exceed 40 µg/m ³
Particulate Matter - PM ₁₀	24-hour mean concentration should not exceed 50 µg/m ³ more than 35 times a year Annual mean concentration should not exceed 40 µg/m ³
Particulate Matter - PM _{2.5}	UK (Except Scotland) annual mean concentration should not exceed 25 µg/m ³ † Exposure reduction^ (UK urban areas): target of 15% reduction in concentrations at urban background between 2010 and 2020*
† UK AQS objective is 25 µg/m ³ to be met by 2020. EU limit value is 25 µg/m ³ to be met by 2015, with a requirement in urban areas to bring exposure down to below 20 µg/m ³ by 2020. ^ Limit value exposure reduction target of 20% reduction between 2010 and 2020. * 25 µg/m ³ is a cap to be seen in conjunction with 15% reduction.	

6.2.5 Responsibility for achieving the national air quality criteria lies with the Government, although local authorities should contribute to this through local action plans designed to reduce pollution levels in Air Quality Management Areas (AQMA), and through the recent targeted feasibility studies¹⁵, including clean air zones where appropriate, to supplement the government's air quality plan for nitrogen dioxide in the UK¹⁶.

National Air Quality Strategy

¹⁴ The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (legislation.gov.uk). Available at: <https://www.legislation.gov.uk/ukxi/2020/1313/contents/made>

¹⁵ DEFRA, UK plan for tackling roadside nitrogen dioxide concentrations, July 2017, Available at: <https://uk-air.defra.gov.uk/library/no2ten/index>

¹⁶ Department for Environment, Food and Rural Affairs (Defra), 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. <http://archive.Defra.gov.uk/environment/quality/air/airquality/strategy/documents/air-qualitystrategy-vol1.pdf>

- 6.2.6 The 2007 AQS for England, Scotland, Wales and Northern Ireland¹⁷ sets out the national air quality standards and objectives for a number of local air pollutants. The standards are set by expert organisations with regard to scientific and medical evidence on the effects of the particular pollutant on health, and define the level of pollution below which health effects are expected to be minimum or low risk even for the most sensitive members of the population. The objectives are targets for air pollution levels to be achieved by a specified timescale, which take account of the costs and benefits of achieving the standard, either without exception or, for certain short-term averaging period standards, with a permitted number of exceedances. Local authorities have a responsibility (under Part IV of the Environment Act 1995, see below) to review and assess local pollution levels against these objectives.
- 6.2.7 It should be noted that the AQS objectives only apply in locations likely to have 'relevant exposure' i.e. where members of the public are exposed for periods equal to or exceeding the averaging periods set for the standards. For this assessment, locations of relevant exposure including building façades of residential premises, schools, public buildings and medical facilities; places of work (other than certain community facilities) are excluded.
- 6.2.8 In January 2019, the UK Government published a Clean Air Strategy¹⁸, which sets out actions to improve air quality by reducing pollution from a wide range of sources. Within the strategy, the Government proposes an ambitious target to reduce the population exposed to concentrations of PM_{2.5} above 10 µg/m³ by 50% by 2025.

Local Air Quality Management

- 6.2.9 Under Part IV of the Environment Act 1995 all local authorities are responsible for Local Air Quality Management (LAQM), the mechanism by which the Government's AQS objectives are to be achieved. As part of this LAQM role, local authorities are required to periodically review air quality in their area and to assess present and likely future air quality against the objectives defined in Regulations. Where a local authority anticipates an objective is expected to be breached within their area, they must designate an AQMA and develop an action plan to

¹⁷ Department for Environment, Food and Rural Affairs (Defra), 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. <http://archive.Defra.gov.uk/environment/quality/air/airquality/strategy/documents/air-qualitystrategy-vol1.pdf>

¹⁸ DEFRA, Clean Air Strategy. 2019. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf

improve pollution levels and work towards achieving the AQS objectives. Under the current LAQM regime, a local authority is responsible for regular review and assessment of local air quality, reports on which are published following public consultation and review by the Department for Environment, Food and Rural Affairs (DEFRA).

Ecological Criteria

- 6.2.10 The EU (Withdrawal Agreement) Act 2020 implements the air quality limit values that are included in the EU Directive and sets a critical level for annual mean concentrations of nitrogen oxides (NO_x) to protect sensitive vegetation. Assessment of compliance with this critical level is undertaken at locations more than 20 km from towns with more than 250,000 inhabitants or more than 5 km from other built-up areas, industrial installations or motorways or major roads with traffic counts of more than 50,000 vehicles per day. This objective does not apply in those areas where assessment of compliance with the limit value is not required. UK statutory nature conservation agencies' (Natural Resource Wales) policy is to apply the criterion of 30 µg/m³, on a precautionary basis as a benchmark only, in all designated conservation sites.
- 6.2.11 Critical loads for nitrogen deposition have been set by the United Nations Economic Commission for Europe. A critical load is a quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur, according to present knowledge. Critical loads vary by type of habitat and species. The critical load for deposition (eutrophication) is given as a range and is quoted in units of kg/ha/year, however the lower value of the critical load range is typically used in assessment.

Dust Deposition

- 6.2.12 There are no national standards or guidelines for dust deposition currently set for the UK, nor by the European Union or any international organisation. This is mainly due to the difficulty in setting a standard that needs to relate to dust being a perceptual problem rather than being specifically related to health effects. Typically, site action levels for dust deposition are set at 200 mg/m²/day averaged over a 4-week period using a passive deposition gauge¹⁹.

¹⁹ IAQM (2018) Guidance on Monitoring in the Vicinity of Demolition and Construction Sites. Available at: https://iaqm.co.uk/text/guidance/guidance_monitoring_dust_2018.pdf

Planning Policy and Guidance

National Planning Policy

Future Wales – The National Plan 2040²⁰

6.2.13 The development plan for Wales “Future Wales – the National Plan 2040” provides the framework for planning change and development in Wales over the next two decades towards sustainable living and efficient use of resources. It includes 11 Outcomes that it wants to achieve, including, of relevance to air quality, allowing people to live and work in healthy places, and having sustainable travel with lower emissions.

Planning Policy Wales²¹

6.2.14 The new edition of Planning Policy Wales was released on the 24th February 2021. It sets out the current land use planning policy for Wales, providing the policy framework for the effective preparation of local planning authorities’ development plans. This is supplemented by a series of Technical Advice Notes, while procedural advice is given in circulars and policy clarification letters.

6.2.15 Air quality is specifically considered within Air Quality and Soundscape with section 6.7.6 stating that “In proposing new development, planning authorities and developers must, therefore:

- Address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;
- not create areas of poor air quality or inappropriate soundscape; and
- seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.”

²⁰ Welsh Government, Future Wales The National Plan 2040, February 2021. Available at: <https://gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf>

²¹ Welsh Government, Planning Policy Wales, February 2021. Available at: https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf

Regional Planning Policy

Joint Transport Plan for South West Wales²²

- 6.2.16 The Joint Local Transport Plan for South West Wales (2015 - 2020) is the result of the joint working between the four local authorities (Carmarthenshire, Neath Port Talbot, Swansea and Pembrokeshire) in south Wales. It replaces the individual local transport plans previously adopted by the four councils.
- 6.2.17 Policy E2 under Reducing Greenhouse gas emissions and other environmental impacts from transport states that City Region partners will *“facilitate and promote improved rail and bus services, walking, cycling and car sharing to encourage modal shift and improve air quality”*

Local Planning Policy

Local Development Plan (2011-2026)²³

- 6.2.18 The Local Development Plan (LDP) is the development plan for Neath Port Talbot, and provides the basis for decisions on land use planning up to 2026.
- 6.2.19 Strategic Policy SP 16 Environmental Protection 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 levels;*
 - 2. Giving preference to the development of brownfield sites over greenfield sites where appropriate and deliverable; and*
 - 3. Ensuring that developments do not increase the number of people exposed to significant levels of pollution.”*

²² Npt.gov.uk, Joint Transport Plan For South West Wales 2015 – 2020. Available at: https://www.npt.gov.uk/media/4062/joint_ltp_300115.pdf?v=20170627002133

²³ Npt.gov.uk, 2016, Local Development Plan (2011-2026). Available at: https://www.npt.gov.uk/media/7321/ldp_written_statement_jan16.pdf?v=20170727124344

6.2.20 Policy EN 8 Pollution and Land Stability states that proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and/or local amenity or would expose people to unacceptable risk to air pollution among others will not be permitted. It also states that proposals which would create new problems or exacerbate existing problems 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.

Local Development Plan 2011-2026 – Pollution Supplementary Planning Guidance²⁴

6.2.21 The Supplementary Planning Guidance (SPG) sets out a more detailed topic or site-specific guidance on the way in which the policies of the LDP will be applied in particular circumstances or areas. While only policies in the LDP have special status in determining planning applications, SPG may be taken into account as a material consideration.

Air Quality Strategy²⁵

6.2.22 Neath Port Talbot's Local Air Quality Strategy, "AirWise - clean air for everyone", was published in November 2013. It sets out the Council's strategic policy for achieving cleaner air in partnership with the whole community. It also links in with the Council's aims and values and in particular with those relating to "Sustainable Communities and Environment" and "Prosperity for All," which includes improving air quality and regenerating the area's physical and industrial environment.

6.2.23 The Section 1.6 explains about the achieving the long-term aims of the Airwise Strategy which includes:

- 1) To ensure air quality in Neath Port Talbot allows residents and visitors to enjoy time outdoors without risk to their health;*
- 2) To ensure air quality throughout the County Borough is better than the standards required by EU and UK legislation;*

²⁴ Neath Port Talbot County Borough Council, Local Development Plan 2011 – 2026, October 2016. Available at : https://www.npt.gov.uk/media/7468/spg_pollution_oct16.pdf

²⁵ Neath Port Talbot, AirWise Clean Air for Everyone, November 2013. Available at: <https://www.npt.gov.uk/media/4170/airwise.pdf?v=20171010104554>

- 3) *To achieve consistently good air quality in Port Talbot so that we can revoke the Air Quality Management Area status by compliance with LAQM air quality objectives;*
- 4) *To better inform the public on issues relating to air quality; and*
- 5) *To reduce nuisance dust and thereby improve quality of life”.*

Emerging Planning Policy

6.2.24 There are no relevant emerging planning policies with reference to air quality.

Guidance/ Best Practice

LAQM Technical Guidance²⁶ and associated tools²⁷

6.2.25 Guidance concerning local air quality management is given in DEFRA's technical guidance LAQM.TG(16). The guidance provides relevant methods concerning treatment and interpretation of data for local authorities in relation to the LAQM regime but is frequently applied when undertaking assessments for planning applications.

Planning Guidance

6.2.26 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)'s 'Land-use Planning and Development Control: Planning for Air Quality' (2017)²⁸ guidance (IAQM Planning Guidance) sets out to ensure that air quality is adequately considered in the land-use planning and development control processes. It comprises an initial screening stage to determine the need for an air quality assessment. If further assessment is required, a number of more stringent criteria are provided to help establish the need for further work, which may be either qualitative or quantitative, simple or detailed, depending on the impact of the development on, for instance, traffic flow. It also provides a framework for describing the magnitude of changes in local air pollutant concentrations at individual receptors (the impact)

²⁶ Department for Environment Food & Rural Affairs, Local Air Quality Management, Technical Guidance (TG16), April 2021. Available at: <https://laqm.defra.gov.uk/documents/LAQM-TG16-April-21-v1.pdf>

²⁷ Laqm.defra.gov.uk. 2021. Tools. Local Air Quality Management Support - Defra, UK. [online] Available at: <https://laqm.defra.gov.uk/review-and-assessment/tools/tools.html>

²⁸ Environmental Protection UK and Institute of Air Quality Management (2017), 'Land-Use Planning & Development Control: Planning for Air Quality', <http://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

and gives advice on how overall significance may be assessed using professional judgement (the effect).

Construction Dust

6.2.27 The IAQM Construction Dust Guidance²⁹ provides a framework for a risk-based approach to the assessment of dust emissions from demolition and construction land development schemes and outlines options for mitigation depending on the level of 'dust risk' identified for a site through the assessment process.

Baseline Data Collection

6.2.28 Information on existing baseline air quality conditions in the study area has been obtained from the following sources:

- DEFRA background mapping³⁰,
- DEFRA Pollution Climate Mapping (PCM)³¹, and
- Local Authority LAQM reports^{32, 33}

6.2.29 The review of local air pollutants (NO_x, nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5})) and the regulatory and policy context, baseline conditions and measured ambient concentrations in the study area and a comparison with the relevant air quality criteria will be updated at the next stage.

²⁹ Institute of Air Quality Management (IAQM) (2014). Guidance on the assessment of dust from demolition and construction. <http://iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

³⁰ Uk-air.defra.gov.uk. Background Mapping Data For Local Authorities - Defra, UK. [online] Available at: <https://uk-air.defra.gov.uk/data/laqm-background-home>

³¹ Uk-air.defra.gov.uk. 2020 NO₂ and PM Projections Data (2018 Reference Year) - Defra, UK. [online] Available at: <https://uk-air.defra.gov.uk/library/no2ten/2020-no2-pm-projections-from-2018-data>

³² Neath Port Talbot County Borough Council, 2020 Air Quality Progress Report, September 2020. Available at: <https://www.npt.gov.uk/media/15338/npt-aq-progress-report-2020.pdf?v=20210309102532>

³³ Swansea Council, 2018 Air Quality Progress Report, September 2019. Available at: <https://www.swansea.gov.uk/article/2850/Local-air-quality-management-reports>

Proposed Assessment Methodology

6.2.30 Given the nature and the scale of the project, a detailed air quality assessment is recommended to be undertaken as described below.

6.2.31 The proposed assessment methodology is as follows:

- Qualitative construction dust assessment in accordance with IAQM Construction Dust Guidance²⁹.
- Where construction traffic data is available, further assessment will only be advised where data indicates that traffic changes during construction exceed traffic change criteria in the EPUK/IAQM Planning Guidance²⁸.
- A detailed assessment of the effect on sensitive receptors resulting from changes in air pollutant concentrations associated with changes in traffic flows during the occupation phase of the Project.
- The air quality study area for the occupation phase will be determined based on traffic change screening criteria detailed in the EPUK/IAQM Planning Guidance²⁸. These criteria are:
 - o a change in flows of LDV of more than 500 Annual Average Daily Traffic (AADT, or more than 100 AADT within or adjacent to an AQMA); or
 - o a change in flows of HDV³⁴ (Heavy Duty Vehicle) of more than 100 AADT (or more than 25 AADT within or adjacent to an AQMA).
- Representative sensitive receptors shall be chosen within the air quality study area and will include residential properties, schools, hospitals and ecological receptors for comparison against annual mean AQS objectives. The selection will include those receptors with the highest pollutant concentrations (closest to the road, junctions etc.) or anticipated to experience highest level of change (next to roads within the air quality study area with the largest change in the traffic screening criteria).

³⁴ A HDV is any vehicle with a gross weight in excess of 3.5t, including heavy goods vehicles and coaches

- Concentrations at sensitive receptors will be estimated using the dispersion modelling software ADMS Roads. Traffic emissions will be based on AADT, percentage HDV and annual average daily speed, calculated using the latest DEFRA emission factor toolkit. Scenarios assessed will include:
 - o Without the Project for the base year; and
 - o With and Without the Project for an appropriate future year
- Model results will be verified against monitoring data in the base year where possible with future year concentrations adjusted by the factor derived in the verification process.
- Additional air quality survey work is required as there is a limited number of local authority operated monitoring sites within the air quality study area that may be used to verify the dispersion modelling.
- If no monitoring data from the monitoring survey are available in time to inform the air quality assessment to be delivered in October 2021, a suitably conservative adjustment factor will be used to adjust the air quality model in lieu of verification.
- Overall determination of significance of effect will be reported in line with EPUK/IAQM Planning Guidance Air Quality Impact Descriptors
- Recommendations for mitigation of potentially significant effects, if appropriate

Geographical Scope

Construction phase

- 6.2.32 The study area for air quality during construction consists of the area within 350 m of the boundary of the project and/or within 50 m of the route(s) used by construction vehicles on the public highway up to 500 m from the site entrance.

Occupation Phase

- 6.2.33 An air quality study area will be determined based on the available traffic data at the next stage and will be determined in accordance with traffic screening criteria set out in the IAQM

Planning Guidance²⁸, which defines the road links which should be considered in an air quality assessment. The study area will consist of the area within 200m of a road with a change in traffic that meets the screening criteria.

6.2.34 All new or modified road links will also be included in the air quality study area.

Temporal Scope

Construction Phase

6.2.35 Construction of the project is expected to take place over a ten year period commencing at the earliest in 2023. The year with the highest traffic flows during construction will be compared with the relevant screening criteria for the air quality assessment.

Occupation Phase

6.2.5 For the occupation phase a base and opening year will be used based on the available information at this stage. It is anticipated that a base year of 2021 and a future opening year of 2023 will be used in the assessment. To err on the side of caution, it will be assumed that the development is completely occupied by 2036.

6.3 BASELINE ENVIRONMENT

Local Air Quality Management

6.3.1 The project is located within the administrative area of Neath Port Talbot County Borough Council (NPT).

6.3.2 NPT has declared one AQMA for exceedances of the 24- hour mean AQS objective for PM₁₀³⁵. The Neath Port Talbot AQMA is approximately 7.7 km southeast of the Project and is considered unlikely to be affected.

Air Quality Monitoring

Continuous Monitoring Data

³⁵ Uk-air.defra.gov.uk. AQMA Details - Defra, UK. [online] Available at: https://uk-air.defra.gov.uk/aqma/details?aqma_ref=76

6.3.3 Six Continuous Monitoring Stations (CMS) are operated in Neath Port Talbot and 12 by Swansea Council. None of the CMS are considered representative of conditions within the Project site, being located over 2 km away.

Passive Monitoring Data

6.3.4 NPT undertake passive monitoring of nitrogen dioxide using diffusion tubes at 27 sites. None of these sites are considered representative of conditions within the project site, as they are all located over 2 km away.

6.3.5 Monitoring of nitrogen dioxide using diffusion tubes is undertaken by SC at five roadside locations which are within 2 km of the project site. Pollutant concentrations presented in the latest available Progress Report, published in 2019³³ are summarised in Table 6.2.

6.3.6 The diffusion tube measurements indicate that the measured annual mean NO₂ concentrations are well below the annual mean NO₂ AQS objective of 40 µg/m³ in 2018 at all of the sites considered.

Table 6.2: Roadside Annual Mean Nitrogen Dioxide Concentrations (µg/m³)

Site ID	Site Type	X	Y	2018
415	Roadside	270242	197671	29.6
416	Roadside	270487	197805	20.3
417	Roadside	270485	197705	24.5
418	Roadside	270449	197600	24.6
419	Roadside	270475	197714	24.4

Note: Monitoring at sites 415 – 419 commenced on the 7th June 2018, concentrations are bias adjusted and annualised in accordance with LAQM guidance

DEFRA Mapped Concentrations

6.3.7 Estimates of background pollutant concentrations in the UK are available on the DEFRA UK-AIR website³⁰. The background estimates, which are a combination of measured and modelled data, are available for each one-kilometre grid square throughout the UK for a reference year of 2018 and future year estimates up to 2030. These background estimates include

contributions from all source sectors, e.g. road transport, industry and domestic and commercial heating systems.

- 6.3.8 Estimated annual mean background NO_x, NO₂, PM₁₀ and PM_{2.5} concentrations for the one-kilometre grid squares covering the Project site for 2021 are presented in Table 6.3. The data indicate that background concentrations for NO₂, PM₁₀ and PM_{2.5} are well below relevant AQS objectives for human health in 2021.

Table 6.3: DEFRA mapped background concentrations, 2021 (µg/m³)

Grid Reference	2021 Background Concentrations (µg/m ³)			
	NO _x	NO ₂	PM ₁₀	PM _{2.5}
270500_195500	9.1	7.1	10.4	6.7
271500_195500	10.4	8.1	10.7	6.8
271500_196500	13.5	10.3	11.6	7.3
270500_196500	10.2	7.9	10.8	7.0
272500_196500	17.6	13.2	12.8	8.1

Pollution Climate Mapping (PCM)

- 6.3.9 DEFRA's PCM model³¹ is used to demonstrate compliance with air quality limit values and provides projected roadside concentrations of pollutants, for the years 2018-2030 inclusive, based on a 2018 reference year.
- 6.3.10 There are PCM links in the vicinity of the Project as identified in Table 6.4, including links on the A4230, A48 and M4. The annual mean NO₂ roadside concentrations are shown to be compliant in 2021 with the air quality limit value of 40 µg/m³.

Table 6.4: DEFRA 2021 PCM Model Roadside Annual Mean NO₂ Concentration for PCM links in the Study Area (µg/m³)

Road Name	PCM Census ID	Maximum Annual Mean NO ₂ Concentrations (µg/m ³)
A4230	802020657	17.6
	802074084	19.6
A48	802030523	26.8

Road Name	PCM Census ID	Maximum Annual Mean NO ₂ Concentrations (µg/m ³)
M4	802050523	37.4
	802074085	37.9

Receptors

- 6.3.11 The nearest residential properties are located to the south of the project site. There are also residential areas to the north and east of the Project site.
- 6.3.12 The nearest statutory ecological site is Cors Crymlyn/Crymlym Bog (SAC/SSSI) and is located within 350 m to the west of the Project site.

Summary

- 6.3.13 A review of baseline air quality information indicates that the project site is not within an AQMA. Local authority monitoring data indicates that there are not currently any exceedances of AQS objectives at sensitive locations near to the Project site and background concentrations are well below their respective AQS objectives.
- 6.3.14 Annual mean roadside NO₂ concentrations on links on the A4230, A48 and M4 produced by the DEFRA PCM model are shown to be below the relevant limit value in 2021 with decreasing concentrations in subsequent years.

6.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

- 6.4.1 The project has the potential to affect local air quality, both during construction and once occupied.

Construction Impacts and Effects

Dust Emissions

- 6.4.2 There is the potential for elevated dust deposition and soiling at properties within 350 m of the site boundary, in accordance with IAQM Construction Dust Guidance²⁹, as a consequence of the works, if dust raising activities are not effectively controlled and mitigated. The level and

distribution of dust emissions would vary according to the duration and location of activity, weather conditions, and the effectiveness of suppression measures.

- 6.4.3 An assessment of the potential for construction dust impacts will be conducted at the next assessment stage.

Construction traffic

- 6.4.4 An increase in vehicle movements is expected to occur during the construction period, associated with the transport of materials, plant and labour to and from site. At this stage, the numbers of expected vehicle movements are not yet known, so cannot be quantitatively assessed. Any impact would be expected to be less than that during the occupation phase and would be temporary.

Occupation Impacts and Effects

- 6.4.5 Once the project site is complete and occupied, air quality at existing sensitive receptors could be affected (positively or negatively) by changes in vehicle activity (flows, speeds and composition).

6.5 MITIGATION ENVISAGED

Construction Phase

Dust Emissions

- 6.5.1 Application of suitable dust mitigation measures will be applied in accordance with the expected magnitude of dust impacts adjacent to the site boundary and local roads near to construction vehicle access points. With application of suitable mitigation measures, proportional to the risk of impacts, significant impacts at receptor locations are unlikely to occur.
- 6.5.2 Appropriate mitigation measures will be selected based upon the risk identified during construction dust assessment at the next stage of assessment.

Construction traffic

- 6.5.3 No specific mitigation is currently proposed. Appropriate mitigation measures will be selected based upon the magnitude of any adverse impacts identified during the air quality assessment.

Occupation Phase

- 6.5.4 No specific mitigation is currently proposed. Appropriate mitigation measures will be selected based upon the magnitude of any adverse impacts identified during a detailed air quality assessment.

6.6 UNCERTAINTIES AND LIMITATIONS

- 6.6.1 In undertaking the scoping assessment, the following uncertainties and limitations have been identified:
- The Scoping Report has been prepared based on the air quality baseline information available at the time of writing. Further information will become available which will help further inform the baseline as the design and assessment process proceeds.
 - Information regarding the detailed construction activities or construction vehicle movements is unknown at present.
 - No traffic data has been provided at this stage, hence the air quality study area at this stage is not yet known.

6.7 MATTERS TO BE SCOPED OUT

- 6.7.1 No matters relating to air quality can be scoped out at this stage, as there are expected to be effects during both construction and once the project is complete and occupied.

CHAPTER 7: NOISE AND VIBRATION

7.1 INTRODUCTION

- 7.1.1. This chapter of the ES Scoping Report has been produced by Atkins and sets out the noise and vibration assessment methodology that will be adopted for the ES, including a desktop review of baseline conditions and the identification of potential impacts with any associated mitigation measures that may be required.

7.2 ASSESSMENT CRITERIA & METHODOLOGY

Previous Assessment

- 7.2.1. An original outline planning permission to deliver 4,000 new homes across the Coed Darcy site was granted in February 2008 (reference P2005/0393). A noise and vibration assessment was conducted in 2005 as part of the original Environmental Impact Assessment in support of this planning application.

Legislative Context

Environmental Noise (Wales) Regulations

- 7.2.2. The Environmental Noise (Wales) Regulations 2006 as amended by the Environmental Noise (Wales) (Amendment) Regulations 2009 (collectively referred to as the Environmental Noise Regulations) is the transposition of the European Environmental Noise Directive (END) 2002/49/EC into UK law, which relates to the assessment and management of environmental noise.
- 7.2.3. Under the Environmental Noise Regulations, the Welsh government has an obligation to produce and keep updated strategic noise maps for agglomerations, major roads and major railways. It also requires the identification of quiet areas, and production of noise action plans to manage environmental noise sources.
- 7.2.4. The current noise action plan (the noise and soundscape action plan 2018 to 2023) identifies Priority Areas and Proximity Areas for roads and railways based upon the strategic noise map results. The Priority Areas highlight “hotspot” locations where people’s homes are exposed to

a Lden noise level exceeding 73 dB according to the noise maps, or where people live alongside concrete trunk roads. In accordance with the action plan, the priority areas provide a framework for further investigation.

The Control of Pollution Act 1974

- 7.2.5. The Control of Pollution Act 1974 sets out the framework for the legislative control of construction noise and vibration on any given site. It also sets out the principle of 'best practicable means' (as defined in Section 72 of the Act) and how this should be applied to construction activity noise. The Act refers to approved Codes of Practice, which include British Standard 5228, as being relevant for the purposes of determining the 'best practicable means'.
- 7.2.6. Section 61 of the Act states that construction works may apply for prior consent from the relevant local authorities prior to the construction works commencing. If this is sought, the relevant local authorities will need to be provided with information about the proposed construction works and how construction noise will be managed, including the use of 'best practicable means'.

Planning Policy and Guidance

National Planning Policy

Planning Policy Wales

- 7.2.7. Planning Policy Wales (PPW), Edition 11, dated February 2021 sets out the land use planning policies of the Welsh Government. It is supported 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. The primary objective of the PPW is to ensure the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental, and cultural well-being of Wales.
- 7.2.8. PPW wishes to promote healthier places by reducing the exposure of populations to noise pollution. Additionally, PPW recognises that an appropriate soundscape can contribute to a positive experience of a place as well as being necessary for public health, amenity, and well-being. Conversely, PPW recognises that noise pollution can have a negative effect on people, biodiversity and the resilience of ecosystems and should be reduced as far as possible.

- 7.2.9. The PPW states that in proposing new development, planning authorities and developers must address any implication arising as a result of its association with, or location within noise action planning priority areas or areas where there are sensitive receptors. Any sensitive developments located close to existing transportation infrastructure should be designed to limit noise levels within and around the development, both now and in the future. This may include employing the principles of good acoustic design. Additionally, the potential impacts of noise pollution arising from existing development, be this commercial, industrial or transport related, must be fully considered to ensure the effects on new development can be controlled to safeguard amenity and necessary measures and controls should be incorporated as part of the proposed new development.

Technical Advice Note 11 - Noise

- 7.2.10. Planning Guidance (Wales) Technical Advice Note (Wales) 11 – Noise (TAN-11), dated October 1997, 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 when determining planning approvals for developments which will either generate noise or be exposed to existing noise sources.
- 7.2.11. TAN-11 provides Noise Exposure Categories (NECs) for residential development, derived to assist the local planning authorities in their consideration of planning applications for residential development near transport related noise sources. These are replicated in Table 6.1 below;

Table 7.1: TAN-11 Noise Exposure Categories

Noise Exposure Category	Description
A	Noise need not be considered as a determining factor in granting planning permission, although the noise levels at the high end of the category should not be regarded as desirable.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example, because there are no

Noise Exposure Category	Description
	alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

7.2.12. TAN-11 provides a recommended range of noise levels, replicated in Table 6.2 below, for each of the NECs for dwellings exposed to noise from road, rail, air and mixed sources. However, TAN-11 states that in some cases it may be appropriate for local planning authorities to determine the range of noise levels they wish to attribute to the various NECs.

Table 7.2: TAN-11 Recommended noise exposure categories for new dwellings near existing noise sources

Noise Levels ⁽¹⁾ corresponding to the Noise Exposure Categories for New Dwellings $L_{Aeq,t}$ dB					
Noise Source		Noise Exposure Category			
		A	B	C	D
Road Traffic	0700-2300	<55	55-63	63-72	>72
	2300-0700 ⁽²⁾	<45	45-57	57-66	>66
Rail Traffic	0700-2300	<55	55-66	66-74	>74
	2300-0700 ⁽²⁾	<45	45-59	59-66	>66
Air Traffic ⁽³⁾	0700-2300	<57	57-66	66-72	>72
	2300-0700 ⁽²⁾	<48	48-57	57-66	>66
Mixed Sources ⁽⁴⁾	0700-2300	<55	55-63	63-72	>72
	2300-0700 ⁽²⁾	<45	45-57	57-66	>66

Notes

(1) **Noise levels:** the noise level(s) ($L_{Aeq,T}$) used when deciding the NEC of a site should be representative of typical conditions. (2) **Night-time noise levels (2300-0700):** sites where individual noise events regularly exceed 82 dB L_{Amax} (Slow time weighting) several times in any hour should be treated as being in NEC C, regardless of the $L_{Aeq,8h}$ (except where the $L_{Aeq,8h}$ already puts the site in NEC D).

(3) **Aircraft noise:** daytime values accord with the contour values adopted by the Department of Transport which relate to levels measured 1.2m above open ground. For the same amount of noise energy, contour values can be up to 2 dB(A) higher than those of other sources because of ground reflection effects.

(4) **Mixed sources:** this refers to any combination of road, rail, air and industrial noise sources. The "mixed source" values are based on the lowest numerical values of the single source limits in the table. The "mixed source" NECs should only be used where no individual noise source is dominant. To check if any individual noise source is dominant (for the purposes of this assessment) the noise level from the individual sources should be determined and then combined by

decibel addition (remembering first to subtract 2 dB(A) from any aircraft noise contour values). If the level of any one source then lies within 2 dB(A) of the calculated combined value, that source should be taken as the dominant one and the site assessed against the appropriate NEC for that source, rather than using the "mixed source" NECs. If the dominant source is industrial noise see paragraph B17 of Annex B [of TAN-11]. If the contribution of the individual noise sources to the overall noise level cannot be determined by measurement and/or calculation, then the overall measured level should be used and the site assessed against the NECs for "mixed sources".

- 7.2.13. TAN-11 states that the NEC principle cannot be applied sensibly to developments such as offices, hospitals and schools and it will be more appropriate to refer to specific guidance on internal noise standards in these instances.

Local Planning Policy

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

- 7.2.14. The Neath Port Talbot County Borough Council Local Development Plan (LDP) (2011-2026) was adopted in January 2016 and features Coed Darcy as a major development site identified in the strategy area, which will play a central role in shaping the future prosperity of the area.
- 7.2.15. The LDP recognizes the need to minimise adverse impacts from noise generating and polluting activities and to ensure the location of major housing developments considers the need to reduce people's exposure to noise.
- 7.2.16. LDP Policy EN8 'Pollution and Land Stability' states that 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.
- 7.2.17. LDP Policy EN10 'Quiet Areas' identifies areas which are public open spaces located within the urban area that have local amenity value that warrants protection from noise intrusion and are relatively quiet by urban standards in actual and perceived terms. The policy states that development proposals that would have unacceptable impacts on the characteristics that led to the designation will be resisted.

Guidance/ Best Practice

British Standard 4142 'Methods for rating and assessing industrial and commercial sound'

- 7.2.18. TAN-11 refers to BS 4142:1990 for the assessment of the likelihood of complaints from industrial development. The current version of this standard is BS 4142:2014(+A1:2019).
- 7.2.19. BS 4142 provides a method for assessing the significance of sound from industrial or commercial premises. BS 4142 is used to assess the potential significance of effects by comparing the 'rating sound level' of an industrial source to the typically representative 'background sound level' at the location of nearby receptor. The greater the difference between the rating level and the background sound level; the greater the impact, depending on context.
- 7.2.20. Certain acoustic features can increase the potential for a sound to attract attention, and therefore increase its relative significance than that expected from a simple comparison between the specific sound level and the background sound level. In particular, BS 4142 identifies noise that contains audible tonality, impulsivity and/or intermittency and recommends that a correction be added to the specific sound level. The specific sound level along with any applicable correction is referred to as the 'rating sound level'.

British Standard 8233 'guidance on sound insulation and noise reduction for buildings'

- 7.2.21. TAN-11 refers to BS 8233:1987 for general guidance for other non-residential developments such as offices, hospitals and schools. The current version of this standard is BS 8233:2014.
- 7.2.22. BS 8233 draws on the results of research and experience to provide information on the design of buildings that have internal acoustic environments appropriate to their functions. It deals with control of noise from outside the building, noise from plant and services within it, and room acoustics for non-critical situations. Included within this standard is a design range for internal noise levels in living rooms and bedrooms for resting/sleeping conditions.
- 7.2.23. The main factors affecting whether the internal design noise levels can be achieved are the level of noise outside the building and the sound insulation of the building envelope (windows, roof, walls, doors and ventilation systems). In practice, the sound insulation of the building envelope is only as good as the weakest element; in most cases this is taken to be an open window when determining the suitability of a site for development. However, alternative

appropriate ventilation can be considered where external noise levels are too high to meet internal design targets with windows open.

British Standard 5228 'Code of practice for noise and vibration control on construction and open sites'

- 7.2.24. BS 5228 provides guidance on the prediction, assessment, and control of construction noise and vibration.
- 7.2.25. BS 5228 Part 1 – 'Noise' provides calculation procedures for predicting the likely noise levels from specific construction activities at a receptor location, considering distance, ground absorption, screening, reflections, and the percentage on-time for an activity. Annexes C and D provide generic noise data for various items of plant which can be used for undertaking predictions where no other specific information is available. Annex E provides a number of example assessment methodologies for determining potential significant effects due to construction noise. Predicted construction noise levels are typically compared against the thresholds, in combination with other factors such as the duration of an activity, to determine likely impacts and significance.
- 7.2.26. BS 5228 Part 2 – 'Vibration' provides guidance on vibration levels that can be used to assess the likely impacts of construction vibration. Annex B gives guidance on the significance of vibration effects in terms of the human response to vibration and the structural response to vibration. Annex E provides empirical formulae for predicting vibration levels from various construction activities, including piling and vibratory compaction.

Building Bulletin 93 'Acoustic design of schools – performance standards'

- 7.2.27. Building Bulletin 93 (BB93) was published by the Department for Education (DfE). It sets out the minimum performance standards for the acoustics of school buildings and describes the normal means of demonstrating compliance with the Building Regulations. It also provides guidance in support of the School Premises Regulations (2012) and the Independent School Standards (2013). Performance standards include an upper limit for the indoor ambient noise level for a variety of spaces including rooms for children with Special Educational Needs.

Design Manual for Roads and Bridges 'LA 111 - Noise & Vibration'

- 7.2.28. The Design Manual for Roads and Bridges (DMRB) 'LA 111 - Noise and Vibration' provides guidance on the assessment, reporting and management of environmental effects, specifically changes in noise and vibration emissions, from road schemes. DMRB provides guidance for the assessment of construction noise and vibration, and operational noise from road schemes.
- 7.2.29. The DMRB guidance incorporates the calculation and prediction methodology from the Department of Transport's Technical Memorandum "Calculation of Road Traffic Noise" (CRTN)."

Professional Planning Practice Guidance on Planning and Noise

- 7.2.30. Professional Planning Guidance on Planning and Noise – New Residential Development (ProPG) was produced by the Association of Noise Consultants, the Institute of Acoustics and the Chartered Institute of Environmental Health. The guide has been written principally to assist with the planning process in England, however, the principles of good acoustic design put forward in Supplementary Document 2 may also be adopted in Wales and are referenced within PPW.

Baseline Data Collection

- 7.2.31. Baseline noise monitoring will be undertaken on the site to determine the prevailing noise conditions. Noise levels will be monitored at locations, to be agreed with NPTCBC, to adequately quantify the main noise constraints affecting the development site (expected to be a combination of road traffic noise, railway noise and commercial/industrial noise) during both representative daytime and night-time periods.
- 7.2.32. It is anticipated that unattended noise measurements would be undertaken at up to three locations across the site over a minimum five-day period. Unattended noise measurements would be supplemented with attended noise measurements at up to six additional locations during a weekday daytime period during installation/collection of the unattended noise monitoring equipment. Noise measurements would also be supplemented with observations of the prevailing noise climate across the site.
- 7.2.33. Noise monitoring will aim to avoid atypical traffic conditions (e.g. during school holiday periods or COVID-19 restrictions) as far as reasonably practicable.

Proposed Assessment Methodology

- 7.2.34. Baseline noise levels will be modelled across the development site using noise modelling software (such as SoundPLAN) utilising traffic data, where available, and verified using the baseline noise monitoring data. These noise contour maps will be used to assess the suitability of the site for residential development in accordance with the TAN-11 NECs and following any local guidance, where applicable. Where necessary, outline noise mitigation recommendations will be provided, following good acoustic design principles, to achieve suitable internal or external amenity noise levels with reference to the criteria within BS 8233. The outline suitability of the site for other proposed noise sensitive uses (e.g. the school) will be assessed referencing the relevant standards and guidelines including BB93 and BS 8233.
- 7.2.35. Where it is identified that existing commercial or industrial noise is a dominant source affecting areas of the site, an outline assessment of commercial and industrial noise affecting proposed noise sensitive receptors will be undertaken following the general methodology set out in BS 4142. For any proposed new commercial uses or fixed plant noise (e.g. associated with the school) outline noise targets to avoid significant effects will be determined in accordance with BS 4142, which will need to be achieved at a later stage through detailed design.
- 7.2.36. An outline assessment of construction noise and vibration impacts on the existing and proposed (where construction phasing information is available) noise and vibration sensitive receptors will be undertaken in accordance with the ABC method outlined in BS 5228. A potential significant effect will be deemed to occur where the ABC noise level thresholds are exceeded for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any six consecutive months. Best Practicable Means will be recommended in order to minimise the impact of construction noise and vibration as far as reasonably practicable.
- 7.2.37. An assessment of operational road traffic noise resulting from the development on existing noise sensitive receptors will be undertaken. Calculations of Basic Noise Level change will be undertaken using the CRTN prediction methodology and assessed following the general procedure outlined in DMRB.

7.3 BASELINE ENVIRONMENT

- 7.3.1. The nearest existing noise sensitive residential receptors to the site are the new build homes on Coed Darcy Phase 1 and Heritage Gate immediately to the south east of the site. Other existing residential receptors are located further afield to the south of the site on Prettyman Drive and The Greenway, and to the east of the site, on the opposite side of the M4 Motorway, on Pen-y-Heol, Bay View Gardens and Cefn-Parc. There are some non-residential receptors, including offices, that may be considered noise sensitive to a lesser degree on Heritage Gate, the Llandarcy Business Park to the east of the site and the Contractor's Yard on Tank Farm Road to the south of the site.
- 7.3.2. The nearest LDP designated 'Quiet Area' is Skewen Park, Neath (ID EN10/3) some 300m to the north east of the site, east of the M4 Motorway.
- 7.3.3. A desktop review of potential noise constraints identifies that the M4 Motorway, elevated on a viaduct to the east of the site, is likely to be the dominant noise source affecting the site. There may also be additional minor road traffic noise contributions from the B4290 which runs to the south east of the site. The Neath to Pontarddulais (Great Western Railway) railway line passes between the northern and southern land parcels in a cutting. Rail noise contributions are likely to be minimal as there are only a small number of passenger and freight services that use this line. Potential sources of commercial and industrial noise exist at the Llandarcy Business Park to the east of the site (comprising commercial and office uses), and Contractor's Yard to the south of the site (comprising a number of light industrial, commercial and office uses).
- 7.3.4. The European END required the Welsh Government to produce noise maps in 2017. These maps show noise levels from the major roads and industrial sites in agglomerations in 5-decibel "A-weighted" contour bands.
- 7.3.5. The 2017 noise maps indicate that daytime baseline road traffic noise levels from the M4 Motorway in the northern land parcel are likely to be in the region of 70-75 dB $L_{Aeq,16h}$ at the eastern boundary of the site, falling to below 55 dB $L_{Aeq,16h}$ at the western boundary of the site. Night-time noise levels are likely to be around 60-65 dB L_{night} at the eastern boundary, falling to below 50 dB L_{night} at the western boundary. It should be noted that there are existing dwellings located to the east of the M4 Motorway on Cefn-Parc at a distance of approximately 15m from the M4 carriageway. These properties are within a noise priority area (ID 345).

- 7.3.6. The noise maps indicate that daytime baseline road traffic noise levels from the M4 Motorway in the southern land parcel are likely to be below 55 dB $L_{Aeq,16h}$ across much of the site. Night-time noise levels are likely to be around 50-55 dB L_{night} or lower across the site.
- 7.3.7. The noise maps indicate that the contribution from railway noise will be negligible across the entire development site, falling below the daytime 55 dB $L_{Aeq,16h}$ and night-time 50 dB L_{night} contours.

7.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

Construction Impacts and Effects

- 7.4.1. Potential significant effects from construction noise and vibration are likely to be limited to the closest sensitive receptors to the site, such as the dwellings at Coed Darcy Phase 1, which are located adjacent the construction site boundary.
- 7.4.2. Potential significant effects from construction noise and vibration are likely to be limited in duration as construction progresses across the relatively large site and any effects will be minimised utilising standard Best Practicable Means.

Occupation Impacts and Effects

- 7.4.3. Residential plots nearest the main transportation and commercial noise sources (particularly those in the northern land parcel adjacent the M4 Motorway) are likely to require a level of enhanced glazing and ventilation to achieve suitable internal noise levels. Noise barriers or the orientation of buildings nearest these sources may need to be considered in order to provide screening to gardens to provide suitable noise levels in outdoor amenity spaces. It is considered at this stage that much of the development away from the main sources of noise will have minimal noise constraints.
- 7.4.4. Given the proximity of existing new dwellings to the Contractor's Yard on The Greenway and Heathland Way, it is considered unlikely that commercial or industrial noise will be a significant constraint in this area, however, this will be confirmed during the baseline noise monitoring survey.

- 7.4.5. Operational road traffic noise impacts on the existing road network are likely to be minimal as current traffic flows on the M4 Motorway are likely to already be high and an existing dominant road traffic noise source in the area.

7.5 MITIGATION ENVISAGED

- 7.5.1. Construction noise and vibration is expected to be controlled through the utilization of Best Practicable Means (BPM). Mitigation measures will be presented in a Construction Environmental Management Plan (CEMP) and the appointed contractors may wish to apply for prior consent under Section 61 of the Control of Pollution Act 1974 to demonstrate BPM to the Local Authority and safeguard against any Section 60 notices to stop works.
- 7.5.2. A detailed scheme of noise mitigation is likely to be required through reserved matters or planning conditions, however, at this outline planning stage it is not expected that noise would create any significant constraint to development of the site that could not be mitigated through standard means. Dwellings proposed closest to the main sources of noise, particularly at the eastern boundary of the northern land parcel, may need to consider building orientation (to screen outdoor amenity areas) or enhanced glazing and an alternative means of ventilation to noise sensitive facades to achieve suitable internal noise levels. Alternatively, perimeter noise barriers may be considered to reduce noise levels if they are found to be acoustically viable.

7.6 UNCERTAINTIES AND LIMITATIONS

- 7.6.1. The ES assessment will depend on representative baseline noise and traffic data information, which may be affected by COVID-19 travel restrictions. However, it is anticipated that the impact will be negligible as baseline noise surveys will aim to avoid periods of COVID-19 travel restrictions and public or school holiday periods as far as reasonably practicable.

7.7 MATTERS TO BE SCOPED OUT

- 7.7.1. Operational vibration is scoped out of the ES assessment as the distance between the railway and nearest development plots is anticipated to be around 30m and is beyond the distance at which adverse effects from railway vibration are expected.

CHAPTER 8: GROUND CONDITIONS

8.1 INTRODUCTION

- 8.1.1. This chapter of the ES Scoping Report has been produced by PJA.
- 8.1.2. This chapter presents the proposed scope and methodology of the assessment for ground conditions. Consideration is given to the potential physical effects of the scheme such as changes in ground stability and soil erosion, effects on geology as a valuable resource, effects associated with existing soil and groundwater contamination, effects associated with the introduction of new contaminative substances and/or migration pathways and effects associated with re-use of soils and generation of waste soils.

8.2 ASSESSMENT CRITERIA & METHODOLOGY

Previous Assessment

- 8.2.1. A soils, hydrogeology and ground conditions ES Chapter was prepared by Parsons Brinkerhoff as part of the 2005 planning application for the Site. However, given the changes in policy and guidance since 2005, the revised masterplan and the additional data following recent site works, an updated assessment on the impact of the proposed development on soils, hydrogeology and ground conditions is required.

Legislative Context

- 8.2.2. The key documents forming the legislative framework for the soils, hydrogeology and ground conditions topic comprise:
- The Contaminated Land (Wales) Regulations 2006;
 - The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) Regulations – amended 2018;
 - The Environment Act 2005;
 - Part 2A of the Environmental Protection Act 1990;

- The Water Framework Directive;
- The Water Resources Act, 1991 (as amended);
- The Waste Framework Directive, 2008 and Waste Management (England and Wales) Regulations, 2016 (as amended);
- The Environmental Permitting (England and Wales) Regulations, 2016;
- The Control of Substances Hazardous to Human Health Regulations, 2002 (as amended) (COSHH Regulations).

Planning Policy and Guidance

8.2.3. The relevant planning policy and guidance is summarised below:

National Planning Policy

- Planning Policy Wales 2021; and
- Minerals Planning Policy Wales 2000.

Local Planning Policy

Current Planning Policy

- Neath Port Talbot County Borough Council Local Development Plan 2011-2026, adopted 2016;
- Neath Port Talbot County Borough Council Local Development Plan 2011-2026 Minerals Topic Paper August 2013;
- Neath Port Talbot County Borough Council Biodiversity and Geodiversity Supplementary Planning Guidance May 2018;
- Neath Port Talbot County Borough Council Pollution Supplementary Planning Guidance October 2016; and

- Neath Port Talbot County Borough Council Contaminated Land Inspection Strategy 2015.

Guidance/ Best Practice

8.2.4. Relevant industry guidance and best practice includes:

- Welsh Government Contaminated Land Statutory Guidance 2012;
- Land Contamination Risk Management, Environment Agency (2020);
- The Government's Good Practice Guide for Environmental Impact Assessment (EIA), 2006 (withdrawn but still considered relevant);
- R and D Publication 66: Guidance for the Safe Development of Housing on Land Affected by Contamination, Environment Agency, 2008; and
- C552 Contaminated Land Risk Assessment - A Guide to Good Practice, CIRIA, 2001.

Baseline Data Collection

8.2.5. The baseline for the Site will be established by review of the following sources of information:

- British Geological Survey Onshore Geoindex;
- The Coal Authority Interactive Map Viewer;
- Neath Port Talbot County Borough Council Local Development Plan Interactive Map Viewer;
- DEFRA MAGIC Map Viewer;
- BP Llandarcy Refinery Desk Study 44382742/BRRP0001, URS, July 2007;
- Final Factual Report for Ground Investigation FR1287, URS, August 2005;
- Explosive Ordnance Threat Assessment in respect of Coed Darcy Urban Village, Swansea, Ref. 9741TA, BACTEC, January 2009; and

- Geo-environmental validation reports prepared by Atkins presenting the outcomes of investigation and remediation carried out between 2008 and 2016 across all areas of the Site.

Proposed Assessment Methodology

Physical Effects of the Development

- 8.2.6. Physical effects can include changes in topography, soil compaction, soil erosion and ground stability. A qualitative approach will be used for the assessment of physical effects, assessing the potential impact on the baseline conditions as a result of earthworks, foundation solutions, and construction methods associated with the scheme.

Effects on Geology as a Valuable Resource

- 8.2.7. Effects on geology as a valuable resource may include the sterilisation of mineral resources and loss of or damage to geological SSSI or LGS. The impact assessment will follow a qualitative approach based on the type and distribution of geological resource and its associated value, and the extent to which it will be sterilised, lost or damaged as a result of the scheme.

Effects Associated with Contamination

- 8.2.8. Effects associated with existing residual soil and groundwater contamination following recent remediation works, potential contamination associated with the scheme and re-use of soil/generation of waste soil will be assessed using a two-stage risk-based approach in accordance with industry guidance set out in Land Contamination Risk Management and EIA Good Practice Guidance.
- 8.2.9. The first stage typically comprises a land contamination risk assessment. A Phase 1 geo-environmental desk study will be carried out to determine the baseline for the Site, identifying plausible sources of contamination, receptors to contamination and pathways between the two. The sources, pathways and receptors will be presented in a Preliminary Conceptual Site Model with a qualitative risk assessment of each potential contaminant linkage based on consideration of probability and consequence in accordance with CIRIA C552 and R&D 66. This will form the baseline land contamination risk assessment. Given the extensive nature of

previous works it is assumed at this stage that additional ground investigation will be required to inform the preparation of the Environmental Statement. Existing laboratory analytical data and field monitoring data will be used to inform the baseline land contamination risk assessment.

- 8.2.10. The second stage comprises the impact assessment. Land contamination risk assessments will be completed for the construction phase and the occupation phase, using the same qualitative risk assessment approach as at baseline. The baseline land contamination risk assessment will then be compared with the construction phase land contamination risk assessment and with the occupation phase land contamination risk assessment to enable changes in risk to be determined as a result of construction and occupation of the scheme. This will allow for effects to be identified which are either beneficial or adverse, and major, moderate, minor or negligible. Whether or not effects are considered to be significant will be determined based on the sensitivity or importance of the receptor and the magnitude of potential impact (change). Major or moderate beneficial or adverse effects will be classed as 'significant', and minor beneficial or adverse effects and negligible effects will be classed as 'not significant'.

Geographical Scope

- 8.2.11. Effects will be considered from both within the Site boundary and areas external to those being developed to a distance of 500m.

Temporal Scope

- 8.2.12. The assessment will consider the current baseline conditions and the effects and impacts over the development lifespan which is considered to be 100 years. This will include both the construction and occupation stages.

8.3 BASELINE ENVIRONMENT

- 8.3.1. A summary of the baseline ground conditions is presented below based on currently available information. A Phase 1 geo-environmental desk study has been carried out which will establish baseline for the Site and inform a preliminary conceptual site model, prior to preparation of the Environmental Statement. A summary of ground conditions is presented below.

Geology

- 8.3.2. Made Ground is present at the Site associated with historical cycles of development and earthworks.
- 8.3.3. Published British Geological Survey records indicate that Till (Diamicton) is present across the majority of the Site, comprising a heterogeneous mix of clay, silt, sand and gravel, although it is noted to be absent in the south and east of the Site where bedrock outcrops at or close to current ground level. Peat encroaches on the western extent of the Site.
- 8.3.4. Underlying the Site is bedrock of the Hughes Member, Brithdir Member and Swansea Member of the Pennant Sandstone Formation, described as green-grey, lithic arenites with thin mudstone/siltstone and seatearth interbeds, and mainly thin coals. No geological faults are mapped within the Site boundary.
- 8.3.5. The regional bedrock geology forms part of the South Wales Upper Coal Measures Formation and the Site is located in a Coal Mining Reporting Area. Coal seams located in the vicinity of the south site have historically been mined and at least one abandoned mine entry is recorded by the Coal Authority in the far south of the Site.
- 8.3.6. There are no geological Sites of Special Scientific Interest (SSSI) or Local Geological Sites (LGS) on the Site or in the surrounding area.
- 8.3.7. A Mineral Safeguarding Area for sandstone surrounds the Site to the north, east and west directly beyond the red line boundary.

Hydrogeology

- 8.3.8. Natural Resources Wales classifies Till (Diamicton) as a Secondary (Undifferentiated) Aquifer, and the Pennant Sandstone Formation as a Secondary A Aquifer. The Site is not located within a groundwater source protection zone.

Hydrology

- 8.3.9. The North Site Reservoir forms the northern boundary of the Site and the South Site Reservoir is located in the west of the Site. Crymlyn Bog, a designated Site of Special Scientific Interest, is located directly to the west of the Site.

8.3.10. The River Neath lies approximately 650m to the east of the Site.

Potentially Contaminative Land Uses

8.3.11. The Site is located at the former BP Llandarcy Oil Refinery which commenced operation in 1921. The purpose of the refinery was to produce motor spirit, kerosene, gas fuel oil, fuel residue and lubricating oil and wax from imported crude oil. Between the wars, the oil industry developed rapidly and by 1939, the refinery had undergone significant development and expansion. In the mid-1980s a number of rationalisations occurred and the closure of the refinery was announced in 1997.

8.3.12. During operation of the oil refinery the Site was formally occupied by a range of storage and process infrastructure. A tankfarm for the storage of intermediate and finished products and recovered oil was located across the majority of north site, to the north of the railway cutting. A fields located in eastern portion of north site have never been developed and are currently used for occasional grazing of horses. The south site was formally occupied by various infrastructure including lube oil and gasoline barrelling plants, kerosene treatment area, the DiMe plant, dewaxing plants, a sulphur recovery unit, a bitumen plant, crude distillation plants, catalytic reformers, and associated aboveground and buried pipework, electricity substations, boiler houses and workshops. Commercial properties and oil-water separators are present in the east of south site. Following rationalisation and closure demolition of above ground infrastructure was largely complete by 2008.

8.3.13. Crymlyn Tip is located in the far south west of the Site, beyond and down-hydraulic gradient of the main area of proposed development in an area of proposed ecological mitigation. The Tip was used during operation of the oil refinery for the disposal of a range of wastes including asbestos, boiler cleanings, sludges, bitumens and waxes, ion exchanges resin, spent clay, pyrophoric material and contaminated debris. Work is ongoing to remediate the landfill and ultimately surrender the Environmental Permit. The Tip is not destined for built development.

8.3.14. Following transfer of the site to St Modwen Developments phases of ground investigation and characterisation of soil and groundwater contamination have been undertaken at the Site and in the locations of the proposed development.

8.3.15. Localised remediation has also been undertaken to target and remove identified sources of gross contamination, together with implementation of a series of remedial measures at Site boundaries to mitigate the risk of off-site migration of mobile contamination. Remediation standards were set within a Section 106 Agreement. All areas of the site were remediated to either residential, commercial or public open space standards.

8.3.16. Following the first stages of remediation residual levels of potential contamination at the site includes petroleum hydrocarbons, polycyclic aromatic hydrocarbons, asbestos and chlorinated solvents, and to a lesser extent metals. Depending on plot levels and the interactions indicated in para 9.1.2. further stages of remediation and risk management are likely to be required.

Unexploded Ordnance

8.3.17. An unexploded ordnance (UXO) risk assessment carried out for the former oil refinery concluded that although the refinery would have been a primary target and is known to have been hit, bomb strikes are likely to have been accurately recorded because of the nature of its operations. However, the potential for UXO at the Site cannot be ruled out.

8.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

Construction Impacts and Effects

8.4.1. Potential impacts and effects which may arise during the construction phase of the scheme are associated with:

- changes in topography as a result of the earthworks required to create suitable development platforms for construction;
- erosion or loss of soil which may be associated with vegetation clearance, increased surface water run-off on bare ground, movement of construction plant around the Site, earthworks, and construction of hardstanding;
- discharge of silt-laden run-off to surface water receptors from areas where bare soils are exposed;
- generation of rock aggregate as part of the earthworks;

- disturbance and mobilisation of existing soil and groundwater contamination, for example via generation of soil-derived dust and run-off from stockpiles and open excavations;
- remediation of legacy soil and groundwater contamination resulting from historical uses of the site;
- the regeneration of brownfield land to return the Site to beneficial use;
- creation of new migration pathways between residual sources of contamination and receptors, for example during foundation works and service installation;
- introduction of new sources of contamination such as fuels and oils associated with mechanical plant used for construction of the scheme which may be released to ground via spills or leaks;
- reprofiling of levels and/or ground improvement works carried out as part of construction of the scheme to address areas of the site affected by land instability; and
- generation of soil arisings which may not be suitable for reuse within the scheme or for which there may be no scope for reuse.

Occupation Impacts and Effects

8.4.2. Potential impacts and effects which may arise during the occupation phase of the scheme are considered to be relatively limited because of the predominantly residential nature of the scheme, but may be associated with:

- the presence of buildings and areas of hardstanding in the proposed scheme which will reduce the potential for surface water infiltration and mobilisation of residual contamination at the Site and minimise the potential for generation of soil-derived dust.
- Exposure of occupants to residual levels of contamination through normal occupation activities.

8.5 MITIGATION ENVISAGED

8.5.1. Mitigation measures which may be appropriate include, but not be limited to:

- completion of any plot specific ground investigation and gas, vapour and groundwater monitoring to assess potential contaminant linkages identified in the Phase 1 desk study and to characterise ground conditions at the Site. Any additional Ground investigation will be carried out in accordance with BS5930:2015+A1:2020, BS10175:2011+A2:2017, and Land Contamination Risk Management guidance;
- completion of a geo-environmental interpretative reports, including generic quantitative risk assessment for human health, gas risk assessment and preliminary controlled waters risk assessment, to determine potential unacceptable risks to the identified receptors and inform the requirement for detailed quantitative risk assessment and/or remediation;
- completion of any remediation and associated verification required to address potential unacceptable risks based on the proposed end use of the Site (if relevant);
- design of the scheme to minimise the effects associated with ground conditions constraints;
- design of the scheme to maximise the potential for reuse of materials on-Site;
- design of drainage strategy and SuDS features to minimise the risk of mobilising residual soil and groundwater contamination;
- preparation of a Construction Environmental Management Plan to set out the measures that all contractors are required to follow to ensure the impact of the construction works on the environment is minimised;
- preparing a Materials Management Plan;
- completion of a foundation works risk assessment prior to the commencement of construction works;

- programming of earthworks to avoid periods of inclement weather to reduce the potential for erosion of soils and an increase in surface water run-off with a high sediment load;
- practicing good stockpile management during the construction phase such as sealing to prevent deterioration of soils and to minimise the potential for generation of soil-derived dust;
- use of dust suppression across areas of bare ground in dry and/or windy weather conditions;
- deployment of drip trays and spill kits with mechanical plant in use around the Site during construction;
- ensuring potentially polluting substances required during construction are stored in bunded containers away from surface watercourses; and
- establishing a designated bunded re-fuelling area on hardstanding during the construction phase.

8.6 UNCERTAINTIES AND LIMITATIONS

- 8.6.1 Third party information has been used in the preparation of this report which PJA, by necessity, assumes is correct at the time of writing. Whilst all reasonable checks have been made on data sources and the accuracy of the data, PJA accepts no liability for same.
- 8.6.2 Final ground levels and the overall material balance for the scheme are unknown at this stage and it is assumed that these will be fixed for the purposes of the environmental impact assessment. A key project aspiration is for all soils to be retained and reused within the development as far as practicable, and this will therefore influence design levels.

8.7 MATTERS TO BE SCOPED OUT

- 8.7.1 For the purposes of ground conditions chapter, hydrogeology will be considered only as a receptor to and pathway for the migration of contamination, rather than as a resource. Hydrogeology will be considered further in the Water Environment chapter.

8.7.2 It is proposed that soils as a valuable resource is scoped out of the ground conditions chapter on the basis that no land at the site is in use for arable or pastoral farming.

CHAPTER 9: WATER ENVIRONMENT

9.1 INTRODUCTION

- 9.1.1 This chapter of the ES Scoping Report has been produced by PJA.
- 9.1.2 This Scoping Chapter considers the key likely potential effects of the Proposed Development on surface water, ground water, drainage and flood risk in the context of the Site and surrounding area. Effects will be considered from both within the Site boundary and areas external to those being developed.
- 9.1.3 The Environmental Statement (ES) chapter will be supported by a Flood Consequences Assessment (FCA) and Drainage Strategy (DS), which will be appended to the ES.
- 9.1.4 The Water Environment Chapter, FCA and DS will be prepared by PJA.

9.2 ASSESSMENT CRITERIA & METHODOLOGY

Previous Assessment

- 9.2.1 A water resources and quality ES Chapter produced by Parsons Brinkerhoff was submitted as part of the 2005 planning application for the site, however, given the changes in policy and guidance since 2005, this will be required to be revised and a new ES Chapter which reflects the current baseline of the Site and latest policy context is to be produced.

Legislative Context

- 9.2.2 The legislative framework applicable to water resources, and its relevant aspects such as water quality, availability, flood risk and drainage will be assessed with due regard to the following:
- The Environment (Wales) Act (2016)
 - The Water Act (2003) as amended 2014
 - The Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009
 - The Land Drainage Act 1991 as amended 1994

- The Water Framework Directive (2000) as amended 2015
- The Flood and Water Management Act (2010);
- Reservoirs Act 1975 (as amended for Wales); and
- Environmental Permitting (England and Wales) Regulations 2016.

Planning Policy and Guidance

9.2.3 The applicable planning policy and guidance is summarised as follows:

National Planning Policy

- Planning Policy Wales 11 (Feb 2021)
- Statutory Standards For Sustainable Drainage Systems – Designing, Constructing, Operating And Maintaining Surface Water Drainage Systems (2018)
- Natural Resources Policy (2017)
- Sustainable Management of Natural Resources (SNMR): Guide (June 2019)

Local Planning Policy

Current Planning Policy

- Neath Port Talbot County Borough Council Local Development Plan 2011-2026, adopted 2016.

Guidance/ Best Practice

- Technical Advice Note (TAN) 15: Development & Flood Risk
- CIRIA C753 'The SuDS Manual' (2016)
- Neath Port Talbot County Borough Council Local Development Plan (2011-2026)
- Design Supplementary Planning Guidance (2017)

Baseline Data Collection

9.2.4 The following sources have been utilised in the baseline data collection:

- Natural Resources Wales (NRW) 2m DTM LiDAR

- British Geological Survey (BGS) Geoindex Portal
- NRW West Wales River Basin Management Plan
- NRW Water Watch Wales
- Crymlyn Bog Management Plan

Proposed Assessment Methodology

9.2.5 The Water Environment chapter will include a review and summary of relevant legislation and national, regional and local planning policy relevant to the water environment.

9.2.6 A desk-based assessment will be carried out in order to establish sensitive water receptors and the potential effects that the proposed development might have on those receptors during the construction and operational phases. The assessment will comprise:

- Determination of Site geology and hydrogeology;
- Review of existing sources of data relating to the water regime (including discharge consents, abstraction licenses, etc.);
- Review of flood risk and drainage related constraints;
- Consideration of the historic uses, drainage regime and the soils and contamination status of the Site and surrounding area in order to determine the existing water quality and regime;
- Consideration of environmental design and management measures to minimise flood risk, such as the use of sustainable drainage systems (SuDS), water efficiency methods and consideration of best practice guidance; and
- Investigation of appropriate mitigation measures to avoid where possible, or, minimise any negative effects on water quality, drainage and flood risk during the construction and operational phases that remain following the implementation of environmental design and management measures.

9.2.7 It is anticipated that the surface water drainage solution for the Site will include the adoption of SuDS solutions including attenuation basins and swales.

9.2.8 An assessment of the potential direct and indirect effects during the construction and operational phases of the Scheme will be undertaken based on a review of published data, impacts identified within the site-specific Flood Consequence Assessment (FCA) and

Drainage Strategy and include liaison with statutory authorities such as the SuDS Approval Body (SAB), Natural Resources Wales (NRW) and Dwr Cymru Welsh Water (DCWW) where required.

- 9.2.9 Recommendations for appropriate mitigation measures will be made in order to minimise the potential effects of the Scheme on local sensitive water resources in terms of quality and flood risk. Any residual effects will be identified as well as the potential for cumulative effects associated with other major developments (as set out previously in this scoping request) nearby.

Geographical Scope

- 9.2.10 The assessment will include the Site and local area surrounding the Site including Crymlyn Bog to the west.

Temporal Scope

- 9.2.11 The assessment will consider the current baseline conditions and the effects and impacts over the development lifespan which is considered to be 100 years. This will include both the construction and occupation stages.

9.3 BASELINE ENVIRONMENT

- 9.3.1 The following sets out the baseline conditions that have been identified as part of this scoping assessment. Further parameters and conditions may come to light for further assessment once statutory consultations and site investigations have been undertaken as the scheme and the EIA process is progressed.

Topography

- 9.3.2 The topography of the Site has been reviewed using publicly available Natural Resources Wales (NRW) 2m DTM LiDAR and indicates the Site to be relatively steep. The high point of the Site is identified immediately west of the existing residential development lying at approximately 77.0mAOD and falls from east to west towards the Crymlyn bog down to a level of approximately 9.0mAOD. Levels also fall from this high point to the railway to north, which

is in a cutting, and towards the existing Coed Darcy Business Park where levels are approximately 29.0mAOD.

9.3.3 The topography north of the railway has a plateau through the centre, where levels are approximately 55.0mAOD which falls away to approximately 40mAOD along the northern boundary and southern boundaries and approximately 25mAOD in the south-western corner of the Site.

9.3.4 An extract of the 2m DTM LiDAR is available in **Figure 9.1**.

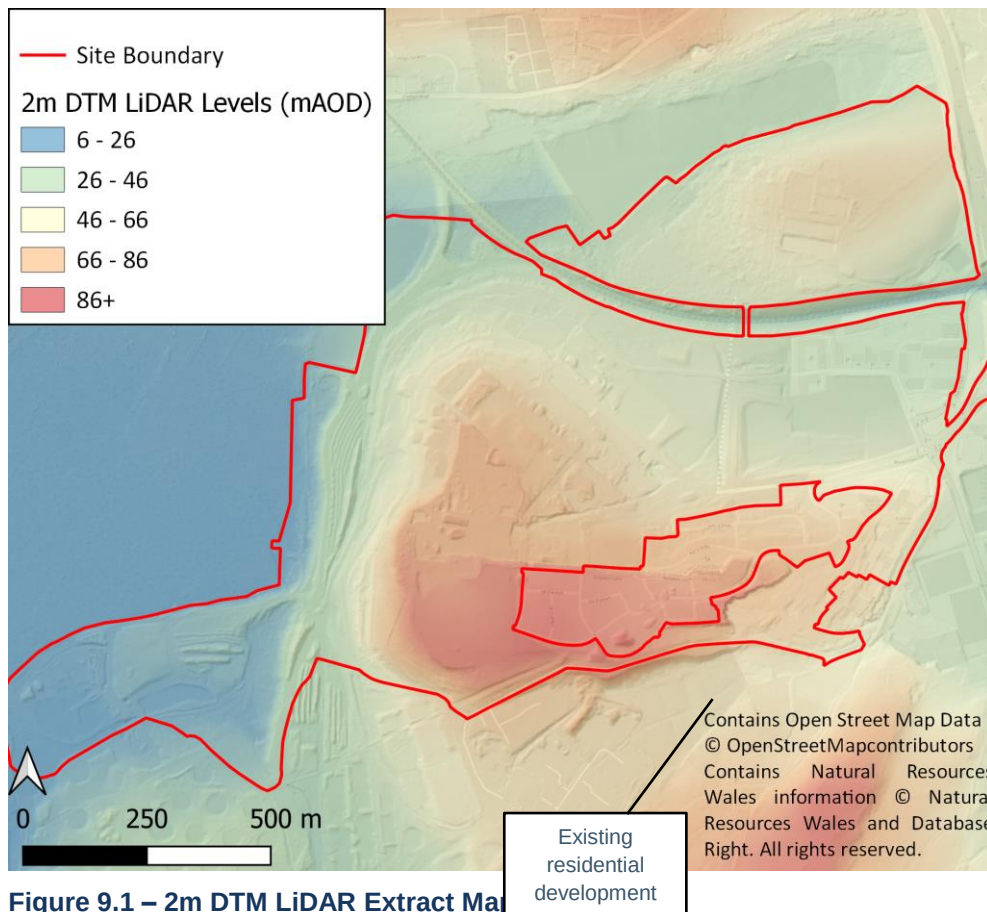


Figure 9.1 – 2m DTM LiDAR Extract Map

Water Receptors

9.3.5 The primary water receptors for the Site are;

- The 'North Site Reservoir' (NSR) which forms the northern boundary of the Site. It is our understanding that this currently receives surface water flows from the existing residential development. Water within the NSR is then pumped to the Dwr Cymru Welsh Water (DCWW) sewers east of the Site which eventually discharge to the River Neath.
- The 'South Site Reservoir' (SSR) which lies in the east of the Site, flows from this currently discharge from the reservoir to the Crymlyn Bog.
- The River Neath lies approximately 650m east of the Site and currently receives surface water from the Site which is pumped from the North Site Reservoir via the DCWW sewer system.
- The Crymlyn Bog lies immediately west of the Site and has a number of ditch courses running through the area. Given the existing Site topography, surface water flows are understood to discharge to the Bog at present and it is our understanding that previously, the oil refinery also used to discharge surface water flows to the bog through the South Site reservoir and a number of settling lagoons.
- DCWW sewers cross the Site boundary including a combined sewer system which is present in the north-east of the Site and an existing foul drainage network which serves the existing residential development and Coed Darcy Business Park. A DCWW surface water sewer also leaves the Site and discharges to the River Neath from the north-east of the Site (known as the Bridge House outfall).

Fluvial Flooding

- 9.3.6 The River Neath lies approximately 80m east of the Site and the Crymlyn Bog Lies immediately west of the Site in which lies a number of small watercourses.
- 9.3.7 From review of the NRW Flood Risk from Rivers Mapping, the Site lies outside the maximum flood extents, an extract of this mapping is available in **Figure 9.3** alongside the flood risk from Seas Mapping.
- 9.3.8 Furthermore, the majority of the Site lies within Zone A of the Development Advice Mapping (DAM) which is considered the most appropriate area for development with regards to flood risk. A small area to the south-west of the Site is identified in DAM Zone C2, which is defined

in TAN 15 as “Areas of the floodplain without significant flood defence infrastructure”. An extract of the DAM is contained in **Figure 9.2**. The area within the Site which is located within Zone C2 of the DAM appears to be on account of the flows from the Crymlyn Bog.

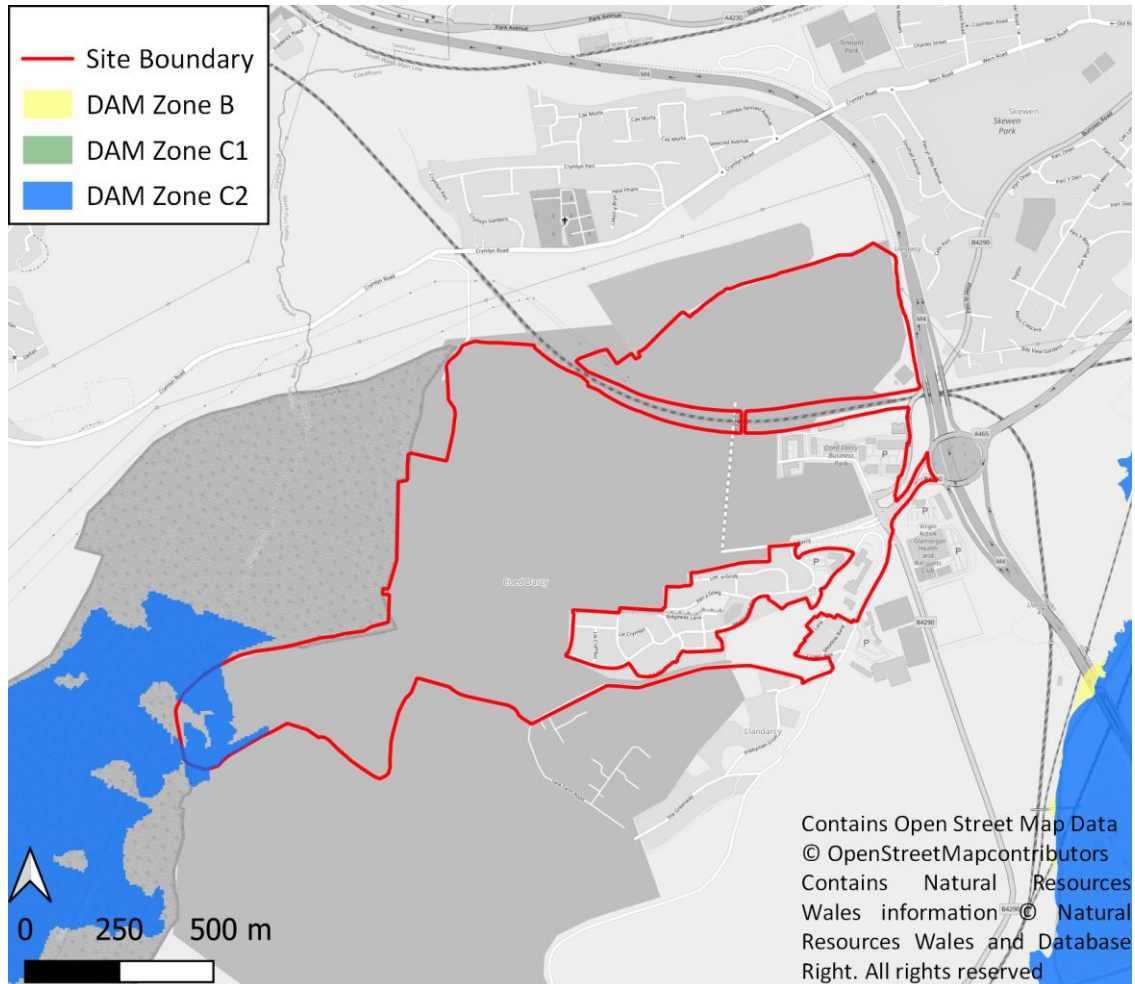


Figure 9.2 – NRW DAM Map Extract

Tidal Flooding

9.3.9 Swansea Bay lies approximately 3km south of the Site. The NRW Flood Risk from Seas mapping identifies that the Site lies outside the maximum extent of flooding from this source. This mapping has been reprinted alongside the NRW Flood Risk from Rivers mapping in **Figure 9.3**.

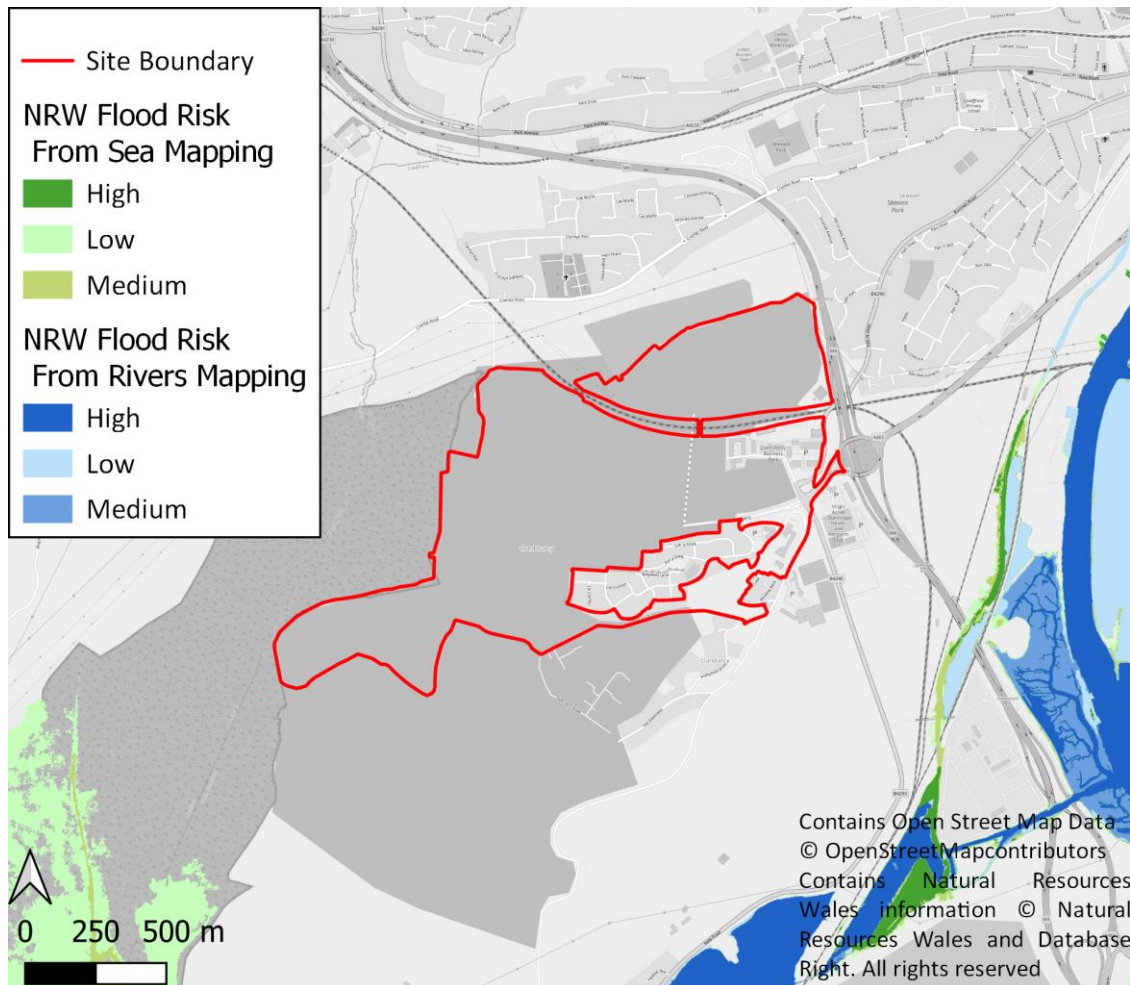


Figure 9.3 - Flood Risk from Rivers and Seas Extract

Reservoir Flooding

- 9.3.10 The SSR is located within the north western corner of the Site, whilst the NSR borders the Site to the very north. The NRW Flood Risk from Reservoirs mapping identifies that the majority of the Site to lie outside the maximum extent of flooding from this source and all development proposed will be located outside the maximum reservoir flood risk extents. This mapping has been reprinted in Figure 4. Other sources of flood risk will be assessed as part of the FCA.

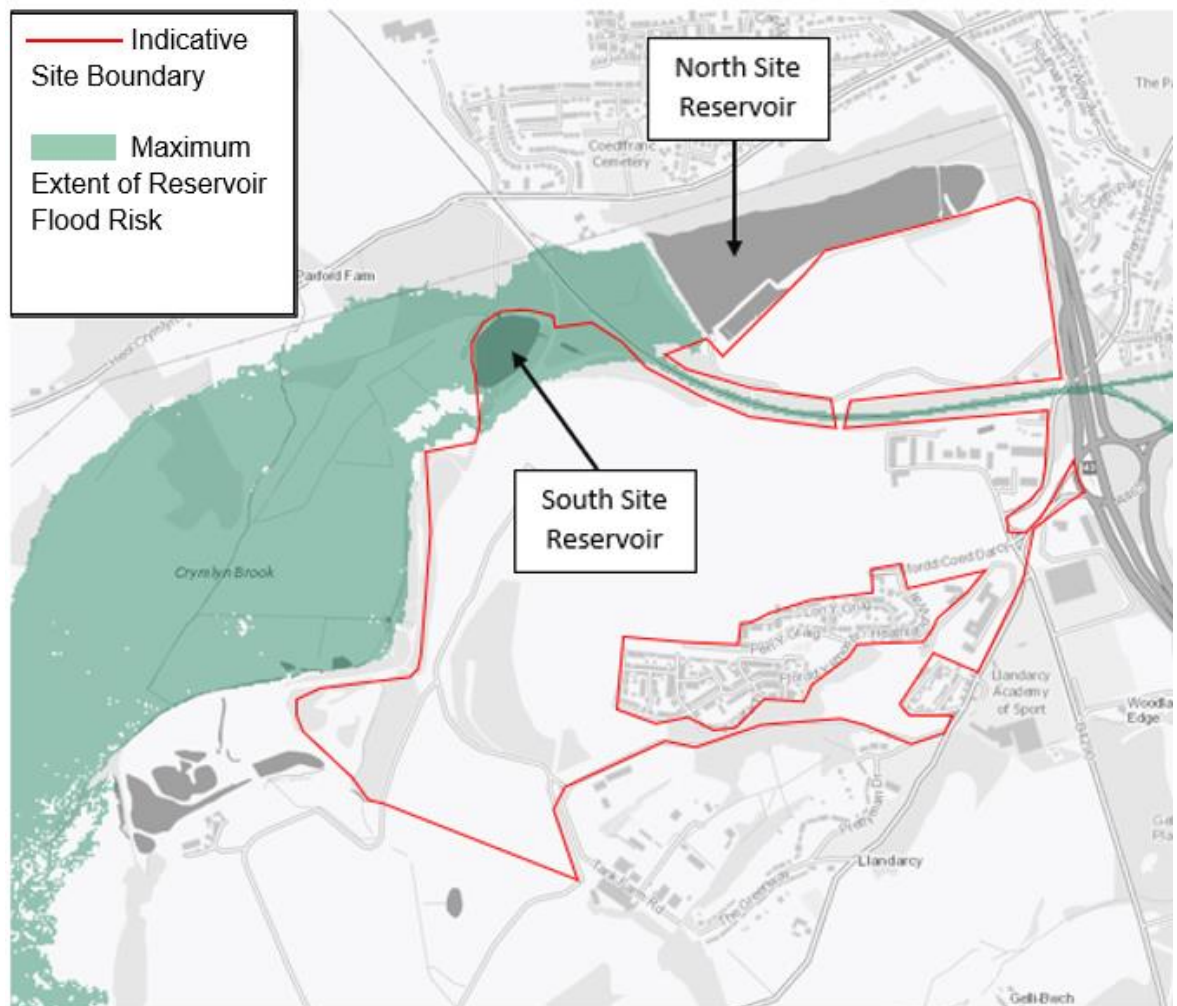


Figure 4 4 - Flood Risk from Reservoir Extract

Geology

9.3.11 The British Geological Survey (BGS) Mapping³⁶ indicates that the majority of the Site is underlain by Sandstone bedrock comprising Hughes Member. A band of Mudstone, Siltstone and Sandstone from the Hughes Member is identified bisecting the centre and south of the Site from west to east. A small area within the south of the Site which is identified to be underlain by a bedrock Mudstone, Siltstone and Sandstone of the Brithdir Member.

³⁶ <https://mapapps2.bgs.ac.uk/geoindex/home.html>

- 9.3.12 The Superficial Deposits BGS Geology Mapping has also been reviewed which identifies the majority of the Site to be underlain with Till Devensian – Diamicton and the east of the Site, in proximity to the Crymlyn Bog, is identified to be underlain with superficial deposits of Peat.
- 9.3.13 Ground contamination is likely to be identified on Site through ground investigation works given the Site's former use as a BP Oil Refinery. Existing drainage and services from this former use have been identified through the Site including, but not limited to; the north site reservoir, the south site reservoir and a number of existing settling lagoons. Existing ground and groundwater contamination will be assessed in more detail as part of the Soils, hydrogeology and ground conditions Chapter (Chapter 8).

Water Quality

- 9.3.14 The Site falls within the Western Wales River Basin District which extends across the entire western half of Wales from the Vale of Glamorgan in the South, to Denbighshire in the North³⁷. From review of the NRW Water Watch Wales mapping³⁸, the Site falls within the Tawe to Cadoxton Management Catchment and the waterbody Crymlyn Brook - HW to conf with Tennant Canal.
- 9.3.15 NRW employs a method for assessing the environmental conditions or the 'status' of a water body according to the objectives set out in the Water Framework Directive (WFD). To achieve the purposes of the Directive of protecting all waterbodies, NRW has set out a number of Environmental Objectives. These Environmental Objectives are reported for each waterbody which NRW operates in six year cycles. The achievement of the Environmental Objectives is dependent upon the current Ecological Status, which is assessed as High, Good, Moderate, Poor or Bad.
- 9.3.16 As noted previously, the Site falls into the *Crymlyn Brook - HW to conf with Tennant Canal* waterbody. This waterbody was classified overall as Moderate, according to the NRW Water Watch Wales mapping.

³⁷ <https://cdn.naturalresources.wales/media/674895/ww-rbmp.pdf?mode=pad>

³⁸ Water Watch Wales (naturalresourceswales.gov.uk)

- 9.3.17 NRW have also published the Core Management Plan for the Crymlyn Bog³⁹ which identifies the habitat and vegetation which have been visioned for the Crymlyn Bog.
- 9.3.18 NRW's Water Watch Wales mapping identifies the underlying groundwater body as *Swansea Carboniferous Coal Measures* which covers an area of 758.38km² and has an overall classification of 'Poor'.

Water Resources & Availability

- 9.3.19 The Site falls within NRW's Swansea Bay Abstraction Licensing Strategy area. NRW's licensing strategy for this area sets out the level of water available for abstraction from natural resources (i.e. ground and surface waters) within this catchment and how these resources are managed for abstraction purposes.
- 9.3.20 This has identified that the Site lies in an area where the "Groundwater unit balance shows groundwater available for licensing. New licences can be considered depending on impacts on other abstractors and on surface water".
- 9.3.21 The license strategy document also states that "it is recognised that there will be significant social and economic benefits from potential development within the lower Neath catchment. Therefore water will be made available to support such development, providing it is in balance with the environment and its socio-economic value."
- 9.3.22 The proposed development will seek to implement a sustainable water management system, where water efficient technology and Sustainable Drainage Systems (SuDS) will be integrated throughout the development to minimise the dependency and usage of a potable mains supply.

Designated Sites

- 9.3.23 According to Magic Maps (DEFRA's environment information mapping service) there are no designated sites within the Site boundary however, the Site is adjacent to the Crymlyn Bog Special Scientific Interest (SSSI) and Crymlyn Bog Special Areas of Conservation (SAC). Crymlyn Bog is also designated internationally as a Ramsar site.

³⁹ Crymlyn Bog SAC Core Management Plan ENGLISH (naturalresources.wales)

9.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

Construction Impacts and Effects

9.4.1 As part of the scoping process the potential impacts and significance of effects to key sensitive receptors within the local water environment will be fully considered during the construction phases of the development. In summary these include:

- **Flood Risk:** Without appropriate mitigation the proposed development has the potential to have a significant adverse effect on flood risk during construction via site drainage and surface water runoff if not properly managed. Potential impacts on the water quality and flood risk along the receiving watercourse to the north-east of the Site as well as surrounding land, as a result of Site demolition and construction will be fully assessed and appropriate mitigation measures proposed as part of a Construction Environmental Management Plan (CEMP). If temporary works are proposed to the watercourse to the north-east of the Site, a Land Drainage Consent (LDC) application will be submitted for approval before any works are commenced. In addition, should the SSR be abandoned so that it is incapable of holding 10,000m³ of water as part of the proposed development, then such works will be conducted under the supervision of a qualified reservoir panel engineer who will certify completion. Other approvals will be obtained from the relevant environmental and planning authorities prior to the SSR being abandoned. This consenting process should ensure that such adverse impacts should not occur to the receiving watercourse network and are avoided as best as practicable.
- **Controlled Waters:** Likely impacts to water resources during the construction phase of the development include accidental spillages of fuel oils, leaching of existing contamination, vehicle washdown, suspended solids in surface water runoff, etc. These potential impacts will be suitably mitigated for as part of a CEMP, Environmental Risk Assessment and Temporary Works Method Statements. The potential impacts on the quality of surface waters from the mobilisation of existing ground contamination through the creation of source-receptor pathways will be addressed (in addition to the germane preventative and mitigation measures required) within the Soils, hydrogeology and ground conditions Chapter (Chapter 9).

Occupation Impacts and Effects

9.4.2 As part of the scoping process the potential impacts and significance of effects to key sensitive receptors within the local water environment will be fully considered for the final occupation of the development. In summary these include:

- **Flood Risk:** Without appropriate mitigation, the final operation of the proposed development has the potential to have a significant adverse effect on flood risk. The proposed development will result in an increase in impermeable area and inherently alter the rainfall runoff relationship at the Site by increasing the rate and volume of surface water runoff. A FCA, which will use freely available data to assess the level of flood risk to the proposed development and surrounding area, will be carried out to ensure that there are no adverse effects to the Site itself and surrounding area. This assessment and the design of any mitigation measure required will be carried out according to the latest climate change factors to ensure that the development remains safe from flood risk during its lifetime. As part of Site-specific drainage strategy, the proposed surface water drainage system which meets the requirements of the SuDS Approval Body (SAB) will also be designed to ensure that the proposed development will sustainably manage the disposal of surface water, replicating the natural drainage system as closely as possible for the operational lifetime of the development.
- **Controlled Waters:** During the occupation of the development there is a potential for a long term adverse effect on the quality of receiving ground and surface water due to the quality of surface water runoff from the proposed development if it is not intercepted and treated before discharging to ground or surface water. The proposed surface water strategy will ensure that Sustainable Drainage Systems (SuDS) are utilised as part of the overall surface water drainage system, offering a treatment train approach where possible. Such systems will be designed not only to reduce flood risk, but also improve the water quality of surface water runoff discharged from the Site, providing areas of biodiversity and amenity for the local area as an additional benefit. There is also a potential long term adverse effect on the quality of public foul water, the operational efficacy of the receiving sewage treatment works and receiving watercourse.

9.5 MITIGATION ENVISAGED

9.5.1 The current mitigation measures which are currently envisaged include:

- The preparation of a Construction Environmental Management Plan (CEMP)
- A SuDS Scheme that meets the requirements of the SAB
- Land drainage consents for the construction of any new headwalls or works that may affect any ordinary watercourse
- Decommissioning of reservoirs in line with the requirements of NRW and reservoir panel engineer

9.6 UNCERTAINTIES AND LIMITATIONS

9.6.1 Third party information has been used in the preparation of this report, which PJA Civil Engineering Ltd, by necessity assumes is correct at the time of writing. Whilst all reasonable checks have been made on data sources and the accuracy of the data, PJA Civil Engineering Ltd accepts no liability for same.

9.6.2 There are also uncertainties in the data and information provided which include;

- As built information for existing residential development has not been made available.
- Existing Site drainage records and information on current discharge rates and consents has not been made available.
- The detailed Site topographic survey does not cover the whole Site.

9.7 MATTERS TO BE SCOPED OUT

9.7.1 As part of this Scoping Report exercise there are no particular elements of the water environment identified that will be scoped out as part of the relevant ES chapter.

9.7.2 An FCA and Drainage Strategy is to accompany the ES, which will assess the risk and consequences of flooding from all sources as well as the management of surface water runoff to the proposed development and off-site. As such the ES Chapter will summarise the findings set out within these reports.

- 9.7.3 Potential impacts, preventative and mitigation measures relating to ground contamination, groundwater confirmation and the potential for pollution linkages to cause deterioration in surface waters within and around the Site, will be addressed as part of the Soils, hydrogeology and ground conditions Chapter (Chapter 8).

CHAPTER 10: ECOLOGY AND NATURE CONSERVATION

10.1 INTRODUCTION

- 10.1.1 This chapter of the ES Scoping Report has been produced by Ecology Solutions and relates to the nature conservation impacts of the emerging development proposals at Coed Darcy (the study site).
- 10.1.2 It is informed by ecological survey work undertaken by Ecology Solutions between 2020 and 2021. In addition, this assessment is informed by historic survey work, including practical site works (protected species translocations) and assessment undertaken at the study site to facilitate previous development and remediation works associated with an extant outline

10.2 ASSESSMENT CRITERIA & METHODOLOGY

Previous Assessment

- 10.2.1. The study site forms part of a wider area of land for which Outline Planning Permission (OPP) was granted in 2008 to deliver 4,000 new homes, business and retail space and commercial, education and community facilities together with highways, drainage, services, infrastructure, car parking and landscaping (reference P2005/03983).
- 10.2.2. This OPP, alongside subsequent associated applications, have included for the completion of extensive assessment work. Regarding matters of nature conservation, assessment has included for the preparation of an Ecology & Nature Conservation Chapter for an Environmental Statement, including assessment of the proposals with regards to the tests now set out within the Conservation of Habitats and Species Regulations..
- 10.2.3. Previous assessment work undertaken in support of the OPP, as well as to facilitate subsequent construction works has included for the completion of extensive ecological survey work over an extended period. Specific survey work in this regard has included for:
- Botanical surveys (Extended Phase 1, NVC, Lichens and Bryophytes)

- Invertebrates
- Amphibians (Great Crested Newts)
- Reptiles
- Winter and Breeding Birds
- Bats (emergence and re-entry, activity transects)
- Badger
- Otter & Water Vole

10.2.4. As above, subsequent construction works, including for extensive site wide remediation works, have also included for the completion of translocation exercises for some faunal groups, including amphibians and reptiles.

10.2.5. The previous assessment work provides important historical and contextual information. This will be reviewed to further inform potential effects, as well as appropriate avoidance, mitigation and enhancement opportunities as will be detailed within an Ecology and Nature Conservation Chapter of the forthcoming EIA.

Legislative Context

10.2.6. The following legislation is considered to be of relevance to ecology and nature conservation at the study site.

- Wildlife & Countryside Act 1981 (as amended)
- Protection of Badgers Act 1992
- The Conservation of Habitats and Species Regulations 2017 (as amended)
- Well-being of Future Generations (Wales) Act 2015
- Environment (Wales) Act 2016

10.2.7. Also of relevance is the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat 1971.

10.2.8. The emerging proposals will be assessed against the tests set out in the above legislation.

Planning Policy and Guidance

10.2.9. The planning policy framework that relates to ecology nature conservation at Llandarcy, Neath Port Talbot, is issued at two main administrative levels: nationally through Planning Policy Wales, Future Wales (National Plan 2040) and Technical Advice Note 5; and at the local level through policies in the NPTCBC Local Development Plan (2011 - 2026).

10.2.10. The emerging development will be considered in relation to the policies contained within these documents.

National Planning Policy

10.2.11. As above, National Planning Policy is set out through Planning Policy Wales, Future Wales (National Plan 2040) and Technical Advice Note 5.

10.2.12. **Planning Policy Wales (Edition 11, February 2021).** Planning Policy Wales (PPW) sets out guidance with regard to nature conservation under Chapter 6 'Distinctive and Natural Places'. It provides guidance to local planning authorities relating to biodiversity and safeguarding statutory designated sites, non-statutory designated sites and protected species and their habitats. It also recognises the importance of trees, woodlands and hedgerows.

10.2.13. PPW requires local authorities to fully consider the effect of planning decisions on natural heritage, inclusive of biodiversity and geological conservation in Wales, ensuring that development 'contributes to meeting international responsibilities and obligations for biodiversity and habitats' and that appropriate weight is attached to statutory nature conservation designations, protected species and biodiversity within the wider environment.

10.2.14. PPW also considers the potential biodiversity and geological conservation gains which can be secured within developments, including the use of planning obligations.

- 10.2.15. National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.
- 10.2.16. **Technical Advice Note (Wales) 5: Nature Conservation and Planning.** The purpose of Technical Advice Note (Wales) 5 (TAN5) is to supplement the information provided in PPW, insofar as it relates to nature conservation matters.
- 10.2.17. TAN5 requires local planning authorities to fully consider the effect of planning decisions on biodiversity and ensure that appropriate weight is attached to statutory nature conservation designations, protected species and biodiversity and geological interests within the wider environment. It also considers the potential biodiversity and geological conservation gains which can be secured within developments, including the use of planning obligations.
- 10.2.18. **Future Wales (National Plan 2040).** The National Plan is a framework which seeks to guide development in Wales up until the period of 2040.
- 10.2.19. A key policy aspiration (Policy 9) of this plan is to realise opportunities to create, enhance and strengthen ecological networks on a national scale such that ecological functionality can be maximised, ecosystem services retained and net benefits for biodiversity secured.

Local Planning Policy

Current Planning Policy

- 10.2.20. Planning policy at the local level is detailed within NPTCBC Local Development Plan (2011 - 2026). The Local Development Plan includes for various policies relating to biodiversity and nature conservation, with these primarily falling within the following *Strategic Policies*:
- Strategic Policy SP14 – The Countryside and the Undeveloped Coast
 - Strategic Policy SP15 – Biodiversity and Geodiversity
- 10.2.21. The Local Development Plan is additionally supported by a suite of supplementary planning guidance (SPG) which provide further clarity on the intentions of local policy. In particular, the following is of relevance to biodiversity and nature conservation:

- Biodiversity and Geodiversity SPG (May 2018)

10.2.22. The emerging development will be considered in relation to the policies contained within the above referenced documents.

Guidance/ Best Practice

10.2.23. Assessment work undertaken in respect of the study area will give due regard to relevant guidance and best practice measures, including in respect of ecological survey work. The following documents are deemed of particular relevance:

- Joint Nature Conservation Committee (2010). Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit. JNCC, Peterborough
- Mitchell-Jones, A. J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough
- Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). Bat Workers' Manual. 3rd edition. Joint Nature Conservation Committee, Peterborough
- Bat Conservation Trust (2016). Bat Surveys – Good Practice Guidelines. Bat Conservation Trust, London
- English Nature (2001). Great Crested Newt Mitigation Guidelines.
- Paul Bright, Pat Morris and Tony Mitchell-Jones. The Dormouse Conservation Handbook Second Edition. English Nature (2006).
- Herpetofauna Groups of Britain and Ireland. 1998. Evaluating Local Mitigation / Translocation Programmes: Maintaining Best Practice and Lawful Standards. HGBI Advisory Notes for Amphibian and Reptile Groups (ARGs).
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (Second Edition)

Baseline Data Collection

- 10.2.24. To inform the emerging development proposals, a suite of ecological survey and assessment work will be undertaken to ascertain the existing baseline situation at the site, with regard afforded to designated sites of nature conservation interest (including both statutory and non-statutory sites), habitats and protected / notable species.
- 10.2.25. Site based assessment will be further supported through the completion of desk study reviews of records held by nature conservation groups (including local records centres). As noted above, due regard will also be given to previous ecological survey information gathered within the site and surrounding area, as gathered in association with the previously consented OPP works.

Proposed Assessment Methodology

Overview

- 10.2.26. Potential effects arising as a result of the emerging development proposals will be considered with regard to guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM), which avoids the provision of definitions as to how to assign habitats and species, different levels of value and relies on an approach that involves professional judgement and the use of available guidance and information.
- 10.2.27. Consideration will be afforded to all relevant legislation, including the Habitats Regulations 2017 (as amended) and Wildlife and Countryside Act 1981 (as amended), in addition to planning policy of relevance to biodiversity and other guidance.
- 10.2.28. Survey and assessment work will be undertaken by suitably qualified ecologists who have extensive experience in undertaking surveys, assessing potential effects arising as a result of development on designated sites, habitats and faunal species, and the design and implementation of avoidance, mitigation and enhancement measures.

Identifying the Zone of Influence

- 10.2.29. The potential ecological impacts of the emerging development are anticipated to be largely focused on the study site, and its immediate surroundings.

10.2.30. However, consideration will also be given to the potential for the following significant effects which may spread beyond the site:

- Disturbance to populations during the construction phase due to noise or vibration;
- Disruption to habitats / populations within receiving range of dust, other air quality considerations during the construction and operation phase;
- Disruption to the normal diurnal patterns for species during construction and operation due to lighting;
- Physical disturbance to habitats / populations by movements of people during the operation phase; and
- Pollution to watercourses/bodies during the construction and operation phases

10.2.31. In particular, noting the proximity of the site to several designated sites of nature conservation importance (not least the Crymlyn Bog SSSI / SAC / Ramsar), potential ecological impacts of the emerging development upon these designated sites will be considered in particular detail.

Impact Assessment Methodology

10.2.32. The methodology to be adopted for purposes of impact assessment in regard to ecology and nature conservation matters are detailed below.

10.2.33. The value of each resource or receptor will be determined within a defined geographical context:

- International;
- UK; National (England / Northern Ireland / Scotland / Wales);
- Regional;
- County (or Metropolitan – e.g. in London);
- District (or Unitary Authority, City or Borough);

- Local or Parish; or
- Within Zone of Influence only.

10.2.34. A number of other key considerations will include:

- Designated Sites and Features (e.g. Special Protection Areas, Sites of Special Scientific Interest, Important Hedgerows etc.);
- Biodiversity Value (Use of UK Post-2010 Biodiversity Framework, development plans and other published documents);
- Potential Value;
- Secondary or Supporting Value;
- Social or Economic Value; and
- Legal Issues.

10.2.35. Following identification of the ecologically important features likely to be affected by the development, current guidance promotes a transparent approach in which an impact is determined to be significant or not on the basis of a discussion of the factors that categorise it. This includes characterising the nature of the likely impacts on each important feature in terms of ecological structure and function, by considering the following parameters:

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Reversibility; and
- Timing and frequency.

10.2.36. Where it is concluded that there would be an impact (positive or negative and including cumulative impacts) on a defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, it will be described as significant in the following terms:

- Beneficial, negligible or adverse type of impact; and
- Minor, moderate or major scale of impact.

10.3 BASELINE ENVIRONMENT

- 10.3.1. The site has a long history of ecological survey work, with these undertaken to inform previous (extant) planning proposals for Coed Darcy.
- 10.3.2. Whilst much of this information is of high contextual relevance, it is noted that the wider Coed Darcy site has undergone extensive alterations in recent years, with site-wide remediation works having resulted in substantial habitat clearance and removal.
- 10.3.3. As a result of these works, large areas of the site comprise predominantly bare ground with very limited semi-natural habitats present. Where remediation works were completed less recently, substantial areas of the site have recolonised with a range of early successional habitats. These early successional habitats are complemented by the sites topographical variety as well as the presence of numerous ponds and mature vegetation such as scrub, tree belts and woodland.
- 10.3.4. Noting the significant alteration of the site in recent years, and that large areas have re-established to support a mosaic of semi-natural habitats, Ecology Solutions are in the process of completing a suite of updated ecological surveys at the site, the results of which will inform and guide the emerging development proposals.
- 10.3.5. Ecological survey undertaken by (or on behalf of) Ecology Solutions commenced in 2020, with survey work ongoing in 2021. A summary of the findings to date are detailed below. Full results will be provided within the Ecology and Nature Conservation Chapter of the EIA.

10.3.6. **Designated Sites.** There are no designated sites within the site itself. However, the site is located within a wider landscape which supports several sites of recognised nature conservation significance. Of particular relevance are the following sites:

- Crymlyn Bog Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI) and Ramsar
- Crymlyn Bog and Pant Y Sais National Nature Reserve (NNR)
- Crymlyn Burrows SSSI
- Coed Darcy GCN Area Site of Importance for Nature Conservation (SINC)

10.3.7. Careful consideration will be given to each of the above sites, alongside other designated sites in the local area, as part of the EIA process.

10.3.8. **Habitats.** The study site comprises a large area of previously developed land that has been subject to extensive remediation, vegetation clearance and reprofiling over an extended period. These previous works, undertaken in accordance with the consented OPP have resulted in the habitat clearance from the vast majority of the study site, albeit localised mature habitats, such as areas of mature woodland have remained.

10.3.9. The duration, extent and timings of the previous remediation and reprofiling works have varied across the study site, with some areas having been subject to works very recently and other areas having been left undisturbed for several years. Resultantly, whilst the vast majority of the site comprised bare ground as recently as 2016, the staggered cessation of construction related works has allowed for a range of early successional habitats to establish.

10.3.10. The structure and botanical composition of these habitats varies significantly across the study site, ranging from large areas of predominantly bare ground, to sparse ephemeral / perennial vegetation, closed sward dry grasslands, species-poor grazed grassland, wetland, ponds, scrub and woodland.

10.3.11. In many instances, particularly for early successional habitats, the botanical communities are diverse and support a good range of grasses, sedges and forbs. In particular, early successional terrestrial habitats to the north of the railway and along the western boundary of

the study area typically support a more diverse floral assemblage. In contrast, large central areas of the study area support very limited vegetation and are dominated by bare ground or include for vegetation more typical of disturbed ground and of a ruderal nature.

- 10.3.12. Whilst the intrinsic value of individual component habitat varies, it is acknowledged that collectively many of these habitats would classify as Open Mosaic Habitat, a habitat of noted intrinsic ecological value.
- 10.3.13. In undertaking any assessment of the habitats within the study site as part of the EIA process, consideration will be given to both the value of component habitats, as well as the collective value of the habitat mosaic within the site. Noting the ephemeral nature of many early successional habitats, particular consideration will be given to how management can retain a valuable Open Mosaic Habitat resource in perpetuity, as part of the emerging proposals.
- 10.3.14. **Amphibians (Great Crested Newts).** The wider Coed Darcy site, has previously been subject to extensive trapping and translocation works, allowing for the translocation of over 9,500 Great Crested Newts, 4,000 Palmate Newts, over 800 Common Frogs and 800 Common Toads and over 100 Smooth Newts. It is noted that these amphibians were translocated from land located to the south of the Site. Indeed, it is understood that the Site itself has not historically been assessed as supporting GCN (not least given an absence if suitable breeding opportunities).
- 10.3.15. Coinciding with these translocation works, the wider site has been subject to extensive remediation. These remediation works resulted in the clearance of semi-natural habitats from the vast majority of the Site, albeit localised areas of mature habitat, such as woodland and the South Site Reservoir were retained.
- 10.3.16. Following the immediate completion of these remediation works, the Site comprised almost entirely of bare ground and as such was unsuitable for amphibian populations. However, excavations left as a bi-product of these remediation works have subsequently established as ponds, some of which offer suitable breeding opportunities for amphibians.
- 10.3.17. Notwithstanding the young age of these ponds (most appearing to have been arisen between 2015 and 2016) and that, until recently, the surrounding terrestrial habitats appear to have been bare and inhospitable, a suite of six GCN surveys were undertaken for those ponds

within the red line boundary (see Plan 1) between April – June 2021. The scope of these surveys was discussed and agreed with NPTCBC and NRW and included for both eDNA and Population Size Class Assessment methodologies.

10.3.18. These surveys confirmed GCN to be present within six ponds within the Site, with a peak count of 53 individuals recorded (medium population size class). Summary results from these surveys are provided in Table 10.1 below, with the location of ponds detailed on Plan 10.1. For clarity, those ponds within which no GCN were recorded are not included in Table 10.1.

Table 10.1. Great Crested Newt Survey Results. Numbers shown represent total number of GCN as recorded through any one survey method

Pond No.	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6
P9	1	6	0	1	4	0
P10	4	9	0	1	0	0
P14	0	3	0	0	0	1
P16	0	0	0	0	0	1
P20	0	0	0	0	1	0
Pond B	21	35	2	7	15	6
Total	26	53	2	9	20	8



10.3.19. Given the size of the study area, with ponds broadly located within two separate 'clusters' (north and south), it is deemed likely that the site supports two meta populations between which there is likely to be only limited dispersal.

10.3.20. In the northern group of ponds (Pond 9, 10, 14, 16 & 20), GCN were recorded in ponds towards the western boundary of the Site with a peak count of 18 GCN. The absence of any confirmed GCN ponds in the east of the site indicates that GCN are likely colonising from off-site habitats to the west. The relatively small numbers of GCN recorded (relative to the number of waterbodies present) is considered to reflect the young age of the ponds and that suitable terrestrial habitat has only recently established (enabling dispersal).

10.3.21. A higher number of GCN were recorded in Pond B located in the south-west of the Site. Noting that these southern areas were previously translocated, it is possible that GCN recorded here are again colonising from off-site habitats. Alternatively, it may be that residual populations which avoided previous translocation have begun to re-establish in suitable habitat. As above, given the distances involved, it is considered that this sub-population has very limited connectivity to the northern group of ponds.

10.3.22. **Invertebrates.** Noting the range of early successional habitats present within the Site, and given the Site has historically been recorded to support a diverse invertebrate assemblage, a full suite of invertebrate surveys were completed in 2020. A summary of the findings from this survey work is provided below.

10.3.23. The dates and weather conditions for these surveys are detailed in Table 10.2 below.

Date	Weather	Notes
19th May 2020	Cloud: 8/8; Temperature: 15°C; Wind Speed: 1 (2) SW.	Scoping site
20th May 2020	Cloud: 0/8; Temperature: 18°C to 28°C; Wind Speed: Calm.	Very dry everywhere with ephemeral wetlands or shallow waterbodies dried out.
21st May 2020	Cloud: 8/8; Temperature: 16°C to 22°C; Wind Speed: 1.	
17th June 2020	Cloud: 7/8; Temperature: 17.5°C; Wind Speed: 1	Rain from 11:45 hrs. Installed pitfall traps

Date	Weather	Notes
2nd July 2020	Cloud: 8/8 clearing to 6/8; Temperature: 14°C to 20°C; Wind Speed: 2 W to 1 SW	Light drizzle and intermittent showers until 13:00 hrs.
21st July 2020	Cloud: 2/8 (high cloud); Temperature: 22°C; Wind Speed: Calm to 1 S.	
22nd July 2020	Cloud: 4/8; Temperature: 18°C to 23°C Wind Speed: 1 (2) W to 2(3) SW.	
29th July 2020	Cloud: 6/8; Temperature: 18°C; Wind Speed: Calm	
10th September 2020	Cloud: 8/8 to 7/8; Temperature: 13°C to 17°C; Wind Speed: 1	

Table 10.2. Dates and weather conditions for invertebrate survey visits.

10.3.24. It is noted that invertebrate surveys were undertaken across the wider Coed Darcy area, rather than specifically confined to the Site. For the purposes of this scoping chapter, the wider study site has been divided in to two sectors, northern and southern. The Site itself broadly coincides with the 'northern sector'. However, current evaluation has considered the wider site as a single entity.

10.3.25. A total of 505 species were recorded throughout the study site, of which 30 (6 % of the assemblage) are Key Species – those with a nature conservation status. These key species are detailed in Table 10.3 below.

Table 10.3: Key Species

Species	Status	Sector Recorded	Ecology
<i>Pardosa tenuipes</i> Araneae, Lycosidae	Nationally Scarce	Northern Southern	A wolf-spider associated with sparsely vegetated but humid (damp) environments such as dune slacks, floodplain meadows and riparian vegetation. It is a southern species in Britain and very scattered records within Wales.

Species	Status	Sector Recorded	Ecology
			Recorded within damper hollows and edge of waterbodies where there are exposed substrates.
<i>Xerolycosa miniata</i> Araneae, Lycosidae	Nationally Scarce	Southern	A contrastingly marked large wolf-spider of coastal environments, particularly fixed sand dunes. It is recorded throughout Britain but nowhere is it common; in Wales it is recorded along the Glamorgan and Pembrokeshire coast. A single individual recorded from the OMH just off Parc Amazon at the extreme southern tip of the proposed Southern Access Route.
<i>Argenna subnigra</i> Araneae, Dictynidae	Nationally Scarce	Northern.	A ground-dwelling spider associated with sparsely vegetated open grasslands, including those characteristic of brownfield sites. A rare species in Wales with only a dozen known locations. It is more frequent in south-eastern England.
<i>Cheiracanthium virescens</i> Araneae, Cheiracanthiidae	Nationally Scarce	Northern Southern	A ground-dwelling species associated with open habitat biotopes including coastal grasslands, dunes, heathland and OMH on brownfield sites. Away from south-east England, there are scattered records in the Midlands, becoming rare north of an imaginary line linking the Humber and the Mersey. Within Wales, it is a predominantly coastal species.
<i>Zodarion fuscum</i> Araneae, Zodariidae	Vulnerable; Nationally Rare	Northern	A very rare species known from six locations (five hectads) in Britain with only one previous record from Wales (Porthkerry Country Park, near Barry). It requires open habitats where the vegetation is either short or patchy, thus exposed to sunshine, creating a locally warmer microclimate, where it specialises in hunting ants (Hymenoptera, Formicidae).

Species	Status	Sector Recorded	Ecology
			A single male was collected in a pitfall trap located on the west-facing slope near the centre of the Oil Refinery.
<i>Marpissa nivoyi</i> Araneae, Salticidae	Nationally Scarce	Northern	A characteristic jumping-spider associated with coastal semi-fixed dunes with marram (<i>Ammophila arenaria</i>). The single individual was collected in tall dry grassland which presumably has a similar structure and environment. The species is restricted to coastal England with only five other modern Welsh records, though it has previously been recorded at Crymlyn Burrows SSSI in May 1991.
<i>Synageles venator</i> Araneae, Salticidae	Nationally Scarce	Northern	An ant-mimicking jumping spider associated with coastal dunes and other dry habitats, including inland. Within Wales, it is only known from the coast around Swansea and Port Talbot, where it has previously been recorded at Crymlyn Burrows SSSI.
<i>Haliphus mucronatus</i> Coleoptera, Haliplidae	Nationally Scarce	Northern Southern	A small brown 'crawling water beetle', distinctive within the genus due to its bulky appearance. It has a rather disjunct distribution, with its core across the east and south-east regions of England, but another centre of distribution occurs in south Wales clockwise into Somerset. Its habitat is typically on clay, including natural subsidence ponds, but also in man-made stagnant water bodies. The species probably feeds on plant and/ or algal matter.
<i>Elaphrus parvulus</i> Coleoptera, Carabidae	Nationally Scarce	Southern	This is a miniscule ground beetle, found on sandy and gravelly soils, but also in old walls and cracked paths, often in association with buildings. However, it can also occur next to water in gravel and sand pits and other post-industrial habitats. The species is widely distributed throughout southern and Midlands England and Wales and has recently been expanding its range. It has to date been found as far north as Cumbria.

Species	Status	Sector Recorded	Ecology
<i>Paederus fuscipes</i> Coleoptera, Staphylinidae	Nationally Scarce (Nb)	Northern Southern	This is a remarkably colourful species as are all the members of the genus. It has striking metallic blue elytra, the remainder of the beetle being black and red. It is a predator, found in marshes and bogs, on the margins of ponds and dykes and in permanently wet mires. It is also recorded in saltmarsh habitats. Its distribution is patchy throughout England and Wales, with most records from the coastal fringes. Adults have been recorded in most months of the year.
<i>Meligethes fulvipes</i> & <i>Meligethes rotundicollis</i> Coleoptera, Nitidulidae	Nationally Scarce	M.f. (Northern) M.r. (Southern)	<i>M. fulvipes</i> is a nondescript, brown pollen beetle, is very locally distributed in England and Wales with a predominantly coastal stronghold (South Wales and south-east England), but also inland in several areas, including East Anglian Breckland. It feeds on brassicas, within which plant group, it is certainly associated with charlock (<i>Sinapis arvensis</i>). <i>M. rotundicollis</i> is a small black, nondescript pollen beetle is primarily found in south-east England, but is also known from Wales. It can be located in waste and disturbed ground habitats, including brownfield sites, and road verges. Its foodplant associations are with charlock and also hedge mustard (<i>Sisymbrium officinale</i>) and possibly other plants in this family. Adults have been recorded in the field, mainly between April and August.
<i>Sitona waterhousei</i> Coleoptera, Curculionidae	Nationally Scarce (Nb)	Southern	This is a small weevil, with characteristic convex protruding eyes. It is found in England and Wales, although its distribution is predominantly coastal, with occurrences almost exclusively between Anglesey anticlockwise to the Thames Gateway in

Species	Status	Sector Recorded	Ecology
			West Kent. There are a very few inland records, from post-industrial sites. Otherwise, habitats such as coastal undercliffs, coastal shingle and coastal quarries are examples of its typical haunts. The species feeds on common bird's-foot trefoil (<i>Lotus corniculatus</i>) as both a larva and adult. Adults have been recorded between February and September.
<i>Bombylius canescens</i> Diptera, Bombyliidae	Nationally Scarce	Northern Southern	This small bee-fly is restricted to south-west England and southern Wales where it is associated with sparsely vegetated sandy or base-rich substrates in grasslands, woodland edge or coastal soft-cliffs (Stubbs and Drake, 2014; Harvey, 2018). It is a parasite of smaller mining bees in the genus <i>Lasioglossum</i> which are frequent within the study site.
<i>Drymus pilicornis</i> Hemiptera, Lygaeidae	Nationally Scarce	Southern	A small brown ground-bug. Sparsely distributed in southern England and Wales where it is associated with short turf habitats, including chalk downland. Adults overwinter, mating in spring to give a new generation of adults by August. There is one generation a year. It most probably feeds on mosses at ground level, and possibly also fungi.
<i>Andrena congruens</i> Hymenoptera, Andrenidae	Nationally Scarce (Na)	Northern	This mining bee is associated with exposures of soils, sand or chalk on sloping ground in southern England, with outlier populations associated with the region around the Forest of Dean and the Gower Peninsula in south Wales (Else and Edwards, 2018). It is identified as a threatened species in Wales (Olds et al., 2018). Several specimens were recorded within the former Oil Refinery and it seems likely that they are exploiting the various spoil heaps as nesting habitat.

Species	Status	Sector Recorded	Ecology
<i>Bombus humilis</i> (brown-banded carder bee) Hymenoptera, Apidae	SoPI	Northern Southern	The brown-banded carder bee is a species of warm, dry sites with extensive flower-rich calcareous or coastal grasslands. Within Britain, it is largely restricted to coastal south-east, southern and south-west England, and in Wales, to the coastal fringes of Gwynedd, Glamorgan and Pembrokeshire (Else and Edwards, 2018). It is identified as a threatened species in Wales (Olds et al., 2018).
<i>Sphecodes reticulatus</i> Hymenoptera, Halictidae	[Nationally Scarce (Nb)]	Northern	This blood-bee (so called, because of its partially red abdomen) is more-or-less restricted to south-east England where it is associated with sandy sites in open woodland or grassland: the extensive dry grasslands and scrub mosaics likely providing suitable habitat for the species in the study site. There are only three Welsh locations; one being in VC 41 near Merthyr Tydfil (Else and Edwards, 2018); and consequently, it is identified as a threatened species in Wales (Olds et al., 2018). It is a cuckoo of a few mining bees though its host range is poorly understood. A female was recorded in May 2020 at the western end of the study site.
<i>Erynnis tages</i> (Dingy skipper) Lepidoptera, Hesperiidae	Vulnerable; SoPI	Northern Southern	A declining butterfly which is generally associated with brownfield sites, colliery spoil heaps and similar places where habitats supporting short swards where its food plant, bird's-foot trefoil (<i>Lotus</i> spp.) occurs. Several individuals were recorded in late May 2020 at various locations within the OMH.
<i>Coenonympha pamphilus</i> (small heath) Lepidoptera, Nymphalidae	Near Threatened; SoPI	Northern Southern	Although a widespread species in the UK, this otherwise common species has experienced a substantial decline in both abundance and occurrence (Fox et al., 2015), hence its classification as Near Threatened.
<i>Hipparchia semele</i> (Grayling [butterfly])	Vulnerable, SoPI	Northern	A butterfly of patchy grasslands, which has suffered a substantial decline in Britain such that it is now more or less restricted to

Species	Status	Sector Recorded	Ecology
Lepidoptera, Nymphalidae		Southern	coastal habitats such as sand dunes and grasslands; or in Wales, colliery spoil heaps. Individuals were observed in late June and mid-July across the dunes.

10.3.26. Of the 30 Key Species, three are Rare Key Species (a spider – *Zodarion fuscum*; and two butterflies: dingy skipper and grayling); all of which are associated with dry grasslands and bare ground. Three Welsh threatened bees (*Andrena congruens*, *Sphecodes reticulatus* and brown-banded carder bee (*Bombus humilis*) were recorded in addition to several other species that are scarce or rare in the county/ Wales. The carder bee and both butterflies are also included in the Welsh Biodiversity List as Species of Principal Importance.

10.3.27. Within the study site, 76 species are reliant on the vegetation communities present to complete their lifecycle, of which 57 species are present within the northern sector. Most are intrinsically linked with the OMH which represents a substantial resource in the context of the Swansea Bay National Landscape Character Area and south Wales.

10.3.28. The physical characteristics of the OMH share similar properties to nearby coastal dune systems such as at Crymlyn Burrows SSSI and Kenfig SSSI. The OMH supports an assemblage of invertebrates that are characteristic of dry, flower-rich grasslands on highly heterogeneous topography of which coastal sand dune systems are interpreted as the natural equivalent. The study site is located within an ecological coastal landscape where there are several high quality protected sites such as at Crymlyn Burrows and Kenfig SSSIs which are known to support important populations of individual Key Species.

10.3.29. The invertebrate assemblages associated with the OMH has been evaluated to be of regional nature conservation value, based on the relative quality and extent of the habitat resource present for invertebrates within the wider region, number of Key Species and the proportion of stenotopic taxa (species dependent on restricted habitat conditions) recorded in specific assemblages, indicating favourable conservation status.

10.3.30. **Breeding Birds.** Three surveys were carried out between April and June 2020 in order to assess breeding bird activity across the wider Coed Darcy site. The weather conditions during the surveys are given in Table 10.4 below:

Date (2020)	Weather summary
30 th April	8/8 cloud, wind SW2-3, 7°C, showers.
17 th May	7/8 cloud, still, 10°C.
14 th June	6-7/8 cloud, wind E1, 12°C.

Table 10.4: Weather conditions during the breeding bird surveys.

10.3.31. A total of 73 species of birds was recorded during the three surveys, of which 53 were considered to be breeding or probably breeding and six possibly breeding (i.e. suitable habitat to support the species is present). The remaining 14 species were either breeding in adjacent habitats, recorded as migrants or flying over the site or were represented only by non-breeding individuals.

10.3.32. A summary of observations for each species is included in the systematic list in Table 10.5, whilst the distribution of breeding birds is shown in Plan 10.2 (both below).

Species (and BTO species code)	RSPB listed	Minimum no. pairs	Notes
Red-legged partridge (RL) <i>Alectoris rufa</i>	Feral	3	In open habitats in the south.
Pheasant (PH) <i>Phasianus colchicus</i>	Feral	3	In the southern half.
Canada goose (CG) <i>Branta canadensis</i>	Feral	1	On a pond in the south.
Greylag goose (GJ) <i>Anser anser</i>	Feral	0	Flying over.
Mallard (MA) <i>Anas platyrhynchos</i>	Amber	0-2	On various waterbodies.
Tufted duck (TU) <i>Aythya fuligula</i>		0-2	On the lake/pits.

Species (and BTO species code)	RSPB listed	Minimum no. pairs	Notes
Swift (SI) <i>Apus apus</i>	Amber	0	Flying over.
Cuckoo (CK) <i>Cuculus canorus</i>	Red	2	In the south.
Stock dove (SD) <i>Columba oenas</i>	Amber	0	Recorded feeding in open areas.
Woodpigeon (WP) <i>C. palumbus</i>		12	In woodland/scrub.
Collared dove (CD) <i>Streptopelia decaocto</i>		2	Associated with buildings.
Moorhen (MH) <i>Gallinula chloropus</i>		1	On the lake.
Coot (CO) <i>Fulica atra</i>		2	On the lake/pits.
Little grebe (LG) <i>Tachybaptus ruficollis</i>		2	On the lake/pits.
Lapwing (L.) <i>Vanellus vanellus</i>	Red	5	In open habitats.
Ringed plover (RP) <i>Charadrius hiaticula</i>	Red	6	All on bare ground in the northern half.
Little ringed plover (LP) <i>C. dubius</i>	Sch.1	4	In open habitats.
Herring gull (HG) <i>Larus argentatus</i>	Red	1	On industrial buildings.
Lesser black-backed gull (LB) <i>L. fuscus</i>	Amber	6	On industrial buildings.
Cormorant (CA) <i>Phalacrocorax carbo</i>		0	Flying over.
Grey heron (H.) <i>Ardea cinerea</i>		0	Flying over.
Buzzard (BZ) <i>Buteo buteo</i>		0-1	
Great spotted woodpecker (GS) <i>Dendrocopos major</i>		1	
Green woodpecker (G.) <i>Picus viridis</i>		0-1	
Peregrine falcon (PE) <i>Falco peregrinus</i>		0	One flew over in June.

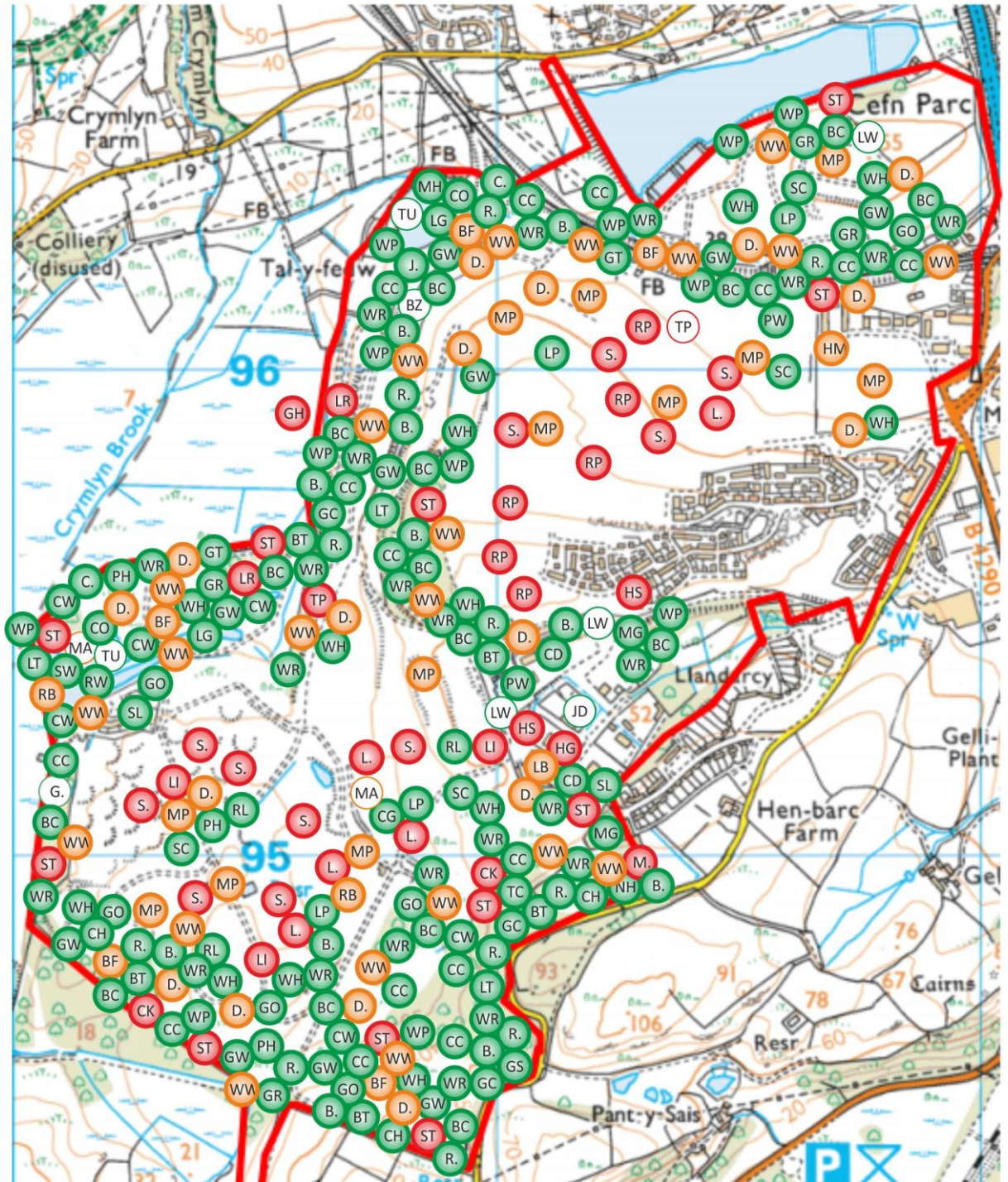
Species (and BTO species code)	RSPB listed	Minimum no. pairs	Notes
Jay (J.) <i>Garrulus glandarius</i>		1	
Magpie (MG) <i>Pica pica</i>		2	
Jackdaw (JD) <i>Corvus monedula</i>		0-1	In the industrial estate.
Carrion crow (C.) <i>Corvus corone</i>		2	
Raven (RN) <i>Corvus corax</i>		0	Regularly flying over the southern area.
Coal tit (CT) <i>Periparus ater</i>		0	Presumed dispersing bird in June.
Blue tit (BT) <i>Cyanistes caeruleus</i>		5	
Great tit (GT) <i>Parus major</i>		2	
Skylark (S.) <i>Alauda arvensis</i>	Red	11	In open habitats.
Sand martin (SM) <i>Riparia riparia</i>		0	Post-breeding birds present in June.
Swallow (SL) <i>Hirundo rustica</i>		2	Associated with out-buildings.
House martin (HM) <i>Delichon urbicum</i>	Amber	32	On Llan Coed House in the northeast.
Cetti's warbler (CW) <i>Cettia cetti</i>	Sch.1	6	Especially around the western wetland.
Long-tailed tit (LT) <i>Aegithalos caudatus</i>		3	
Willow warbler (WW) <i>Phylloscopus trochilus</i>	Amber	44	Abundant.
Chiffchaff (CC) <i>Phylloscopus collybita</i>		15	

Species (and BTO species code)	RSPB listed	Minimum no. pairs	Notes
Sedge warbler (SW) <i>Acrocephalus schoenobaenus</i>		1	In the western wetland.
Reed warbler (RW) <i>A. scirpeus</i>		6	In the western wetland.
Grasshopper warbler (GH) <i>Locustella naevia</i>	Red	0	In the adjacent Crymlyn Bog.
Blackcap (BC) <i>Sylvia atricapilla</i>		15	In wooded areas.
Garden warbler (GW) <i>S. borin</i>		10	In scrub throughout.
Lesser whitethroat (LW) <i>Sylvia curruca</i>		0-3	Possibly migrants.
Whitethroat (WH) <i>Sylvia communis</i>		12	In scattered scrub.
Goldcrest (GC) <i>Regulus regulus</i>		3	
Wren (WR) <i>Troglodytes troglodytes</i>		23	In all vegetated areas.
Nuthatch (NH) <i>Sitta europaea</i>		1	In woodland.
Treecreeper (TC) <i>Certhia familiaris</i>		1	In woodland.
Starling (SG) <i>Sturnus vulgaris</i>	Red	0	Only recorded flying over.
Blackbird (B.) <i>Turdus merula</i>		11	
Song thrush (ST) <i>T. philomelos</i>	Red	11	
Mistle thrush (M.) <i>T. viscivorus</i>	Red	1	In the far southeast.
Robin (R.) <i>Erithacus rubecula</i>		11	
Stonechat (SC) <i>Saxicola rubicola</i>		4	In open or 'heathy' areas.
Wheatear (W.) <i>Oenanthe oenanthe</i>		0	Three migrants on the first visit.

Species (and BTO species code)	RSPB listed	Minimum no. pairs	Notes
House sparrow (HS) <i>Passer domesticus</i>	Red	2+	Associated with buildings.
Dunnock (D.) <i>Prunella modularis</i>	Amber	17	
Pied wagtail (PW) <i>Motacilla alba</i>		2	
Meadow pipit (MP) <i>Anthus pratensis</i>	Amber	12	Numerous in open habitats.
Tree pipit (TP) <i>A. trivialis</i>	Red	1-2	
Chaffinch (CH) <i>Fringilla coelebs</i>		3	All in peripheral woodland.
Bullfinch (BF) <i>Pyrrhula pyrrhula</i>	Amber	5	In scrub.
Greenfinch (GR) <i>Carduelis chloris</i>		4	
Linnet (LI) <i>Linaria cannabina</i>	Red	3	In open habitats in the south.
Lesser redpoll (LR) <i>Acanthis cabaret</i>	Red	2	In western scrub/woodland.
Crossbill (CR) <i>Loxia curvirostra</i>	Sch.1	0	A party of eight flew over in June.
Goldfinch (GO) <i>Carduelis carduelis</i>		6	
Siskin (SK) <i>Spinus spinus</i>		0	A post-breeding bird in June.
Reed bunting (RB) <i>Emberiza schoeniclus</i>	Amber	2	In wetland areas.

Table 10.5: Bird species recorded during the breeding bird surveys at Coed Darcy.

*Sch.1 indicates a species included in Schedule 1 of the 1981 Wildlife and Countryside Act (as amended).



10.3.33. These surveys confirmed the wider site to support a diverse breeding bird assemblage, primarily on account of its size, and the diverse assemblage of habitats present.

- 10.3.34. The greatest interest is found across the open habitats within the site where breeding species include good numbers of lapwing, ringed plover, little ringed plover, skylark and meadow pipit, plus small numbers of cuckoo, tree pipit and linnet. With the exception of little ringed plover (which is included in Schedule 1 of the 1981 Wildlife and Countryside Act) and the Amber-listed meadow pipit, all these species are included on the RSPB Red List having undergone major declines in their UK populations.
- 10.3.35. Most of these species occur in the open grassland habitats in the south of the Coed Darcy area, with the noticeable exception of ringed plover which was nesting exclusively in the bare ground habitat of the cleared area within the site. By its nature such habitat is ephemeral, and hence this species is taking advantage of conditions which are going to be relatively short-lived.
- 10.3.36. The woodland and scrub habitats across the wider Coed Darcy site support a range of species typical of such habitat, including Red-listed song thrush, mistle thrush and lesser redpoll and Amber-listed dunnock, bullfinch and willow warbler, the latter occurring in notable abundance (and garden warbler also relatively numerous). All these species remain generally common and widespread in both a local and national context.
- 10.3.37. The wetland habitats, located to the south of the site but within the wider Coed darcy area, also support an interesting assemblage, including mallard, tufted duck, little grebe, reed bunting, Cetti's, sedge and reed warblers (with the Red-listed grasshopper warbler just off-site). Mallard and reed bunting are Amber-listed having undergone moderate declines, whilst Cetti's warbler is a Schedule 1 species.
- 10.3.38. Species associated with buildings include herring gull, lesser black-backed gull, house martin and house sparrow, all of which are Red- or Amber-listed. Particularly pleasing was the thriving colony of house martins on Llan Coed House, as so many breeding colonies have been lost.
- 10.3.39. Of further note, a single Nightjar was recorded during the completion of the final GCN survey in June 2021. The bird was heard briefly churring and seen in slight in the north of the site. Noting the reduced suitability of the habitats present for this species, the observation was deemed likely to represent a roaming male as opposed to evidence of a breeding territory. Notwithstanding this initial conclusion, a further dedicated Nightjar visit was undertaken in the

form of a dusk and dawn survey on the 22nd and 23rd June 2021. No evidence of Nightjar was recorded.

- 10.3.40. **Reptiles.** Areas of suitable reptile habitat are present on site, with previous surveys (prior to remediation works) identifying the presence of all four common reptile species.
- 10.3.41. However, it is understood that previous remediation works across the wider Coed Darcy site were facilitated through the completion of a site wide capture exercise. It is understood that this capture exercise included the installation of reptile fencing, trapping, translocation and the completion of destructive search exercises to relocate reptiles to suitable receptor sites.
- 10.3.42. Notwithstanding the completion of these relocation works, updated presence absence surveys are underway in 2021 in order to reassess the presence of reptiles within the site and, if present, allow an assessment of population size class.
- 10.3.43. To date, only one of seven reptile surveys have been completed. This survey identified the presence of a peak count of three Common Reptiles. No other reptile species have been recorded thus far.
- 10.3.44. **Bats (Roosts).** The majority of the site lacks mature tree or woodland vegetation which would otherwise have the potential to provide opportunities for roosting bats. Moreover, where such mature vegetation is present, this is anticipated to be retained and unimpacted (including in relation to indirect impacts). In the event that any mature vegetation is identified as likely to be impacted, this will be subject to specific ground based surveys by Ecology Solutions in the first instance. Should follow up survey work be deemed necessary, this will be undertaken in accordance with best practice guidance detailed within the Bat Conservation Trust's *Good Practice Guidelines (3rd Edition)*.
- 10.3.45. **Bats (Activity).** The paucity of mature vegetation across the majority of the site, with extensive areas lacking any potential navigational features or suitable foraging habitat was considered to greatly temper the potential suitability of the site for bats. Nonetheless, transect and static surveys were undertaken on a monthly basis between June and October 2020 in order to assess the sites value to this faunal group. These surveys covered the wider Coed Darcy area as opposed to the site specifically.

10.3.46. ***Transect surveys*** utilised Echometer Touch Pro detectors associated with iPads. Four transects were walked per survey. Although the exact route of each transect varied between surveys, it was ensured that the entirety of the site was covered during the course of the survey work, with this including all linear features. Transects surveys were undertaken on the following dates:

- 24 & 25 June 2020 (two transects per night)
- 29 July 2020
- 21 August 2020
- 29 September 2020
- 15 October 2020

10.3.47. As would be expected, these surveys confirmed bat activity to be overwhelmingly associated with areas of established woody vegetation. A summary of the findings are provided below. Please note that registrations are provided as combined between four detectors.

10.3.48. The transect surveys undertaken on 24.06.20 & 25.06.20 recorded a low number of registrations, with the majority of registrations associated to Common Pipistrelle (306 registrations) and Soprano Pipistrelle (161 registrations), with the main activity focused along the north-east of the site associated with the hedgerows and the treeline north of the railway. In addition, increased activity was associated with north-west and west boundaries in the wider study area, as well as the larger waterbodies such as the North and South site reservoirs. Bat activity was considerably lower in areas of bare ground. Other species recorded included Nathusius' Pipistrelle, *Nyctalus* sp. and *Myotis* sp., albeit at much lower numbers.

10.3.49. The transect surveys undertaken on 29.07.20 again recorded a low number of registrations, with the majority of registrations associated to Common Pipistrelle (290 registrations) and Soprano Pipistrelle (153 registrations), again with the main activity focused along the north-east of the site associated with the hedgerows and the treeline north of the railway. Increased activity was found within the wider area, particularly to the south of the south site reservoir, and in the south-east of wider study area associated with South Bay waterbody. Again bat activity was again considerably lower in areas of bare ground. Other species recorded include

Nathusius' Pipistrelle, *Nyctalus* species, *Myotis* species, Brown Long-eared bat and a single registration from Lesser Horseshoe bat.

- 10.3.50. The transect surveys undertaken on 21.08.20 recorded a low number of registrations, with the majority of registrations again associated to Common Pipistrelle (102 registrations) and Soprano Pipistrelle (88 registrations), with the majority of the activity focused in the north-west of the site associated with the hedgerows to the north of the railway. A higher level of activity was also recorded in the along the main access route to the west of the wider study area. Bat activity was again considerably lower in areas of bare ground. Other species recorded include Nathusius' Pipistrelle, Serotine, *Nyctalus* species and *Myotis* species.
- 10.3.51. The transect surveys undertaken on 29.09.20 recorded a low number of registrations, with the majority of registrations again associated to Common Pipistrelle (375 registrations) and Soprano Pipistrelle (144 registrations), with the majority of the activity focused in the north-west of the site associated with the hedgerows to the north of the railway. A higher level of activity was also recorded around the crescent woodland south-west of the site within the wider study area, and in the far south of the wider study area associated with hedgerows and woodland. Bat activity was again considerably lower in areas of bare ground. Other species recorded include Nathusius' Pipistrelle, *Nyctalus* species, *Myotis* species and Brown Long-eared bat.
- 10.3.52. The final transect surveys undertaken on 15.10.20 recorded a very low number of registrations, with the majority of the registration again associated to Common Pipistrelle (82 registrations) and Soprano Pipistrelle (80 registrations), with the majority of the activity focused in the north of the site associate with scrub features to the south of the d site reservoir and balancing ponds, and with the railway bridge. A higher level activity was also recorded around the crescent woodland south-west of the site within the wider study area. Bat activity was again considerably lower in areas of bare ground. Other species recorded include *Nyctalus* species, *Myotis* species and Lesser Horseshoe bat.
- 10.3.53. **Static surveys** utilised Song Meter (SM) 4 or SM Mini bat detectors. With the exception of the month of June, where six static detectors were deployed, eight detectors were deployed each month, for a minimum 5 night period.

- 10.3.54. The analysis of static surveys is ongoing and will be presented in full within the Ecology and Nature Conservation Chapter of the EIA.
- 10.3.55. From analysis to date, these surveys reaffirm the findings of the transect surveys, with bat activity overwhelmingly associated with areas of established woody habitats, in particular those close to the boundaries of the site and which benefit from improved connection to the wider landscape.
- 10.3.56. Again, analysis to date indicates that the vast majority of bat activity pertains to Common Pipistrelle and, albeit to a less extent, Soprano Pipistrelle. Other species, recorded in significantly lower numbers are listed in the order of prevalence and include for; *Myotis* sp., *Nyctalus* sp., Nathusius' Pipistrelle, Brown Long-eared Bat, Lesser Horseshoe Bat and Serotine. It is noted that Lesser Horseshoe and Serotine in particular were recorded in very low numbers (generally <5 registrations per deployment period).
- 10.3.57. **Summary.** From the survey work and assessment undertaken to date, the majority of the site is considered to be of low value to foraging and commuting bats. Higher levels of activity are associated with the larger waterbodies at the boundaries of the site, as well as areas of mature vegetation.
- 10.3.58. **Badger.** Specific survey work undertaken by Ecology Solutions between 2020 and 2021 has found no evidence of Badger within the site. A small number of active setts were recorded in land to the south of the site, albeit all were in excess of 500m from the study area.
- 10.3.59. The extensive areas of bare ground and early ephemeral habitats (many of which have colonised compacted clay and aggregate soils) are of low suitability for Badger. Areas of relatively high suitability include the mature woodland within and adjacent the site, as well as areas of closed sward grassland and scrub, primarily in the south-west and north-east of the site.
- 10.3.60. It is noted that some areas of dense woodland and/or scrub which have colonised on steep gradients were inaccessible and could feasibly support unrecorded sets. Nonetheless, noting the lack of any Badger activity recorded during nocturnal survey work, as well as an absence of mammal paths, latrines or foraging signs, it is deemed unlikely that the site is of potential significance to this faunal group.

- 10.3.61. **Dormouse.** The wider Coed Darcy area, including the site, is currently being subject to a suite of Dormouse presence / absence (nest tube) surveys. The methodology of these surveys accords with the best practice guidelines as set out within English Nature's Dormouse Conservation Handbook.
- 10.3.62. Dormouse nesting tubes were initially deployed in late July 2020 and have been subject to monthly checks in August, September, October and November 2020, as well as May and June 2021. A final check is scheduled to be undertaken in July 2021.
- 10.3.63. No evidence of Dormouse has been recorded during the survey work to date and this species is deemed highly likely to be absent from the site.
- 10.3.64. **Other Species.** Noting the habitats present, the site is not considered suitable to support Otter or Water Vole. It is noted that previous survey work within the main Coed Darcy site have found no evidence of either species. It is noted that habitats within the wider area offer suitable opportunities for both faunal groups.
- 10.3.65. The habitat present within the site are deemed suitable for European Hedgehog, should they be present in the local area. Due regard has been given to the potential presence of this species during the completion of night-time survey work at the site. No evidence of this species has been recorded during surveys undertaken by Ecology Solutions.
- 10.3.66. The site is not deemed likely to be of significance for any other protected or notable faunal groups and no additional survey work is proposed.

10.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

- 10.4.1. In the absence of mitigation, it is considered that emerging proposals would have the potential to give rise to adverse impacts of significance on a range of ecological receptors. Based on the information available, the potential impacts and effects are detailed below.
- 10.4.2. It is noted that the potential impacts detailed below would likely be of a comparable nature to those that would be realised through the extant OPP for the wider Coed Darcy site.

Construction Impacts and Effects

- 10.4.3. **Statutory Designated Sites.** Noting their proximity, there is potential for construction related impacts to arise on Crymlyn Bog SAC / SSSI and Ramsar, as well as Crymlyn Bog and Pant Y Sais NNR. The primary potential impact pathway of concerns is anticipated to be potential hydrological impacts (quality / quantity). However, noting the sites proximity, consideration will also be given to other potential impact pathways including air quality (dust), noise pollution and light pollution impacts.
- 10.4.4. The potential for impacts to arise on other designated sites, for example Crymlyn Burrows (where there is likely to be some affinity in invertebrate assemblages relative to the site) will also be assessed as part of the EIA process.
- 10.4.5. Collectively or individually, adverse impacts would have the potential to give rise to in-direct harm to the above mentioned sites, such as through deterioration of habitats or disturbance/harm to the faunal assemblages present within them.
- 10.4.6. **Non statutory Designated Sites.** There are several non-statutory sites located within a close proximity to the site, the closest of which, Coed Darcy GCN Area SINC, is located adjacent to the site boundary at its south-western edge. As for statutory designated sites above, consideration will be given to the potential for adverse impacts to arise on this and other non-statutory designated sites during construction.
- 10.4.7. **Habitats.** The development proposals will result in losses to much of the semi-natural habitats present on site. In the absence of mitigation, the following potential impacts are envisaged:
- Quantitative / qualitative losses to on-site habitats, including waterbodies, early successional habitats, grassland and scrub.
 - Accidental damage to retained habitats, including areas of woodland.
 - Potential in-direct impacts to retained habitats (e.g. dust) during construction
- 10.4.8. **Protected Species.** In the absence of mitigation, it is anticipated that potential adverse impacts could arise on the following species / assemblages during construction:
- **Great Crested Newts** – for example loss of breeding ponds and suitable terrestrial habitat, accidental injury/death or fragmentation.

- **Invertebrates** – for example losses to nesting and foraging habitats.
- **Breeding Birds** – for example losses to suitable nesting habitat, disturbance or destruction of nest sites.
- **Bats** – for example, construction lighting, loss of foraging or commuting habitats.
- **Reptiles** – for example habitat loss, accidental injury/death
- **Badgers** – for example, losses of suitable foraging and sett building habitats.

Occupation Impacts and Effects

10.4.9. **Statutory Designated Sites.** Similarly to construction impacts above, there is potential for operational impacts to arise on Crymlyn Bog SAC / SSSI and Ramsar, as well as Crymlyn Bog and Pant Y Sais NNR. Again, the primary potential impact pathway of concerns is anticipated to be potential hydrological impacts (quality / quantity). Noting the sites proximity, consideration will also be given to other potential impact pathways including potential noise and lighting impacts.

10.4.10. Again, the potential for impacts to arise on other designated sites will also be assessed as part of the EIA process.

10.4.11. **Non statutory Designated Sites.** As for statutory designated sites above, it is considered that there is potential for operational impacts to arise on nearby non-statutory designated sites, including Coed Darcy GCN Area SINC. Potential impact pathways, including recreational impacts, operational lighting and noise will all be considered as part of the EIA process.

10.4.12. **Habitats.** At this stage it is anticipated that new and retained habitats within the site will have the potential to be subject adverse impacts through the following pathways:

- Recreational pressure during operation;
- Habitat degradation or succession through inappropriate management.

10.4.13. **Protected Species.** In the absence of mitigation, it is anticipated that potential adverse impacts could arise on the following species / assemblages during the operational phase of the development:

- **Great Crested Newts** – for example through introduction of invasive species / predators, degradation of habitats through inappropriate use or management.
- **Invertebrates** – for example through disturbance / recreation or habitat degradation through inappropriate management.
- **Breeding Birds** – for example through disturbance / recreation or habitat degradation through inappropriate management.
- **Bats** – for example, lighting during operation.
- **Reptiles** – for example through disturbance.

10.5 MITIGATION ENVISAGED

10.5.1. At this stage, the following mitigation principles / targets are envisaged to safeguard and enhance the ecological interest of the site as part of the emerging development proposals:

- The adoption of appropriate construction safeguards to ensure that potential impacts on retained and off-site habitats are avoided. This to include consideration of all potential impact pathways on designated sites.
 - It is further anticipated that potential impacts on sites of international importance (SAC, Ramsar) will be subject to appropriate assessment. The applicant anticipates producing a shadow Habitat Regulations Assessment in support of the EIA.
- The creation of an extensive green infrastructure network for the site, with this to support a wide range of high quality habitats and with in-perpetuity biodiversity management secured. This green infrastructure design to be guided by the following principles:

- Retention / creation of an extensive green buffer to the western and northern boundaries of the site. This to connect to the Coed Darcy GCN Area SINC, thereby allowing a continuous ecological corridor linking the Coed Darcy site.
- Creation / retention of a large number of waterbodies, including both SuDS and dedicated biodiversity ponds. These features to be strategically located so as to maximise breeding and dispersal opportunities for amphibians.
- Retention of established woodland habitats and protection from development.
- Creation of a dedicated biodiversity area measuring approx. 9.5ha in the south-west of the site, adjoining the Coed Darcy GCN Area SINC. This habitat to be created and managed specifically for biodiversity, with no formal public access proposed. In particular, this area will be created and managed to maximise opportunities for ground nesting birds, GCN and invertebrates.
- A key guiding principle of habitat creation / management will be to retain or recreate extensive areas of high quality Open Mosaic Habitat, ensuring high quality (exemplar) habitat for invertebrates can be retained in perpetuity. Habitat creation to include informal greenspace as well as 'living' roof / wall habitats. Site wide green infrastructure to be designed to ensure the sites value for invertebrates is retained, both in its own right but also as an important functional component of the regional landscape.
- The adoption of a site wide Ecological Mitigation and Management Plan, detailing precise habitat creation and management proposals for the site. It is envisaged a draft version of the document will be submitted with the planning application, with a formal version to be secured by condition.
- The completion of any necessary protected species translocations, not least in respect of amphibians and common reptiles.
- Adoption of appropriate construction practices in respect of faunal species.
- The removal of undesirable and non-native species, such as Japanese Knotweed, where this is located within the site.

- 10.5.2. It is the intention of the applicant to engage with conservation sector groups in order to identify opportunities for their involvement in long-term management of areas of Green Infrastructure post-development.

10.6 UNCERTAINTIES AND LIMITATIONS

- 10.6.1 The survey work and assessment undertaken (and on-going) at the site is in accordance with best practice methodologies and there is no reason to consider that any significant uncertainties or limitations have arisen.

10.7 MATTERS TO BE SCOPED OUT

- 10.7.1. As detailed in the baseline section above, and based on the information available, it is anticipated that the potential for impacts to arise on the following receptors can be scoped out:
- Potential impacts on Otter and Water Vole
 - Potential impacts on Dormouse

CHAPTER 11: LANDSCAPE AND VISUAL IMPACT

11.1 INTRODUCTION

- 11.1.1. This chapter of the ES Scoping Report has been produced by Soltys Brewster in June 2021 in relation to a proposed mixed use, residential-led community on land contained within the Coed Darcy Strategic Development Area (northern area).

11.2 ASSESSMENT CRITERIA & METHODOLOGY

Previous Assessment

- 11.2.1. An Environmental Statement (Coed Darcy Urban Village ES February 2005) was submitted to NPTCBC in 2005. This included a Landscape and Visual Assessment.

Legislative Context

- 11.2.2. The LVIA will be compliant with the statutory requirements legislated by the Environmental Impact Assessment (Wales) Regulations 2017. National and local planning policy relevant to landscape and visual matters that will be considered in detail are outlined below.

Planning Policy and Guidance

National Planning Policy

- 11.2.3. *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), 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.

11.2.4. *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

11.2.5. The following local designations within the study area will be considered within the LVIA and are indicated on *Figure 1: Landscape Designations Plan* and *Figure 2: Site Location Context, Major Transport Routes and Public Rights of Way*:

Neath Port Talbot County Borough Council (NPTCBC) – Local Development Plan (2016).

- Green Wedge (EN3/4).
- Conservation Areas at Llandarcy and Neath Town Centre. (SP21/4c).
- Historic Parks and Gardens. (SP21/4b) – Jersey Park.
- Wales Coast path. (TO4/1).
- SAC – Crymlyn Bog (SP15/1a).
- SSSI – Crymlyn Bog (SP15/1b).
- NNR– Crymlyn Bog (SP15/1c).
- Scheduled Ancient Monuments (SP21/4d).

Swansea County Borough Council (SCBC) – Local Development Plan (Adopted 2019).

- Wales Coast Path.

- SINC's.
- Ancient woodland.
- National cycle network.

Advisory/non-statutory

- Ramsar Wetland of International Importance - Crymlyn Bog.
- Ancient Woodlands Inventory.

Transportation and circulation

11.2.6. The LVIA will consider effects on transport corridors, including scenic driving routes, tourist attractions, heritage areas, open access land (CRoW Act) and cycle routes. Relevant transport corridors and attractions within the study area that will be assessed will include:

- The M4 Motorway.
- 'A' roads including the A483 and A465.
- Railway, extending through the site.
- National Cycle Network (NCN) Route 4.
- Wales Coast Path, (as above LDP Policies).
- Areas of open access land, such as around Kilvey Hill

Baseline Data Collection

11.2.7. The extent of the baseline assessment will be determined using both professional judgement and industry best practice. Data collection will be achieved through desk study (including the use of data gathered for other developments in the area), consultation, field survey, and will be clearly reported in the LVIA section.

11.2.8. Preliminary baseline survey work, including a desk-based review of landscape related designations, policy and LANDMAP was carried out in April 2021 to identify the likely scope of the LVIA, (i.e. areas, features and visual receptors of potential sensitivity to change as a result of the proposed development). These preliminary baseline studies will be supplemented with sufficient data to enable a robust assessment, appropriate to the nature and scale of the proposed development.

11.2.9. Preliminary desk-based studies were also supplemented with field studies, including a walk-over of the development site and visit to areas considered likely to be within the visual envelope. As outlined within section 6.2.24, a 3km study area is considered adequate for the scale and nature of the development. Four number sensitive receptor viewpoints are proposed within this study area at a range of locations identified for their potential sensitivity to change. Figure 11.3 Visual Envelope Plan illustrates the approximate visual envelope in relation to the study area and also indicates the positions of the four viewpoints identified. A site visit was undertaken to ensure suitability of each of the viewpoint's locations selected.

Proposed Assessment Methodology

11.2.10. The methodology for the LVIA chapter of the ES will adopt a methodology developed in accordance with the following current guidance:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition. Landscape Institute with the Institute of Environmental Management and Assessment (2013).
- NRW Guidance Note 046, 'Using LANDMAP in Landscape and Visual Impact Assessments, (LVIA), January 2021.

11.2.11. The methodology for the LVIA, including criteria for determining sensitivity of receptors, magnitude and significance of effects on landscape character and visual amenity, is outlined below. However, in accordance with the above guidance and current best practice, a less prescriptive approach will be adopted by the LVIA through an emphasis on creating a narrative approach to describing the landscape and visual effects and the judgements made on the significance of any effects.

Landscape Character Significance

11.2.12. The significance of effects on landscape character will be determined in part by combining the sensitivity of the Landscape Character Area (LCA) with the magnitude of change that would occur. The criteria for informing the sensitivity, magnitude and the significance of effects on landscape character are demonstrated in the following tables:

Table 11.1: Landscape Sensitivity.	
Sensitivity	Description
High	A landscape highly sensitive to development of the type/size proposed, by virtue of the inherent physical form and elements, aesthetic and perceptual qualities that form its character. The landscape will be unique, rare, contain valued features and will be designated at a national or local level. The landscape may be highly susceptible to change and considered to be of high value.
Medium	A landscape where development of the type/size proposed may be accommodated to some degree without affecting overall character, by virtue of its inherent physical form and elements, aesthetic and perceptual qualities. The landscape may display some characteristics and features that are of high susceptibility and/or value and may be designated at a local level, although not exclusively so.
Low	A landscape where a development of the type/size proposed may be more readily accommodated, by virtue of its inherent physical form and elements, aesthetic and perceptual qualities that form its character. The landscape may be of generally low susceptibility to change and of low value.
Table 11.2 : Magnitude of Landscape Effects.	
Magnitude.	Description.
High	The proposed development would result in substantial loss or major alteration to key elements to the extent that there is a fundamental and permanent change to landscape character. The change may occur over an extensive area.
High -medium	The proposed development would result in major loss or alteration to key elements to the extent that there is a considerable change. The change may occur over a wide area and for a duration extending into the foreseeable future.
Medium	The proposed development would result in the loss or alteration to key elements to the extent that there is a partial change to landscape character that may have a duration extending from the medium term or into the foreseeable future. The change may occur over a notable area.
Medium - Low	The proposed development would result in minor loss or alteration to key elements to the extent that there is a slight change to landscape character. The change may be temporary or occur over a limited area.
Low	The proposed development would result in such a minor loss or alteration to key elements that there would be no fundamental change.
Table 11.3: Significance of Landscape Effects.	

Significance.	Description
Major	The development would have direct effects upon characteristic landscape features, altering elements of the landscape that contribute toward distinct character. The proposed development is likely to become a defining landscape element across a significant proportion of the LCA. Characteristic features affected or substantially influenced may include topography, woodland, prominent hedgerows or other dominant land cover features. The development is likely to become the defining landscape element.
Major-Moderate	The development is likely, although not exclusively, to have direct effects upon characteristic landscape features, resulting in changes to elements of the landscape that contribute toward its distinct character. The proposed development is likely to become a prominent, but not necessarily defining landscape element across a wide area of the LCA.
Moderate	The proposed development may be a characteristic component of landscape character, the alteration of which may influence key attributes to the extent that changes to the character of the landscape are noticeable. The development, however, would not become a defining landscape element. Effects may be direct or indirect and extend across a notable proportion of the LCA. Landscape character may be equally defined by the development and other existing landscape attributes.
Moderate-Minor	Where the proposed development can be integrated into the existing landscape, without the loss of key underlying landscape attributes. Effects are likely to be indirect and extend across a limited area of the LCA. The proposed development would have little, or no effect on existing landscape character.
Minor	The development would be integrated into the existing landscape without having a material effect upon the distinctive and valued landscape characteristics.
<i>Source: Soltys Brewster</i>	

11.2.13. There is no statutory definition of what constitutes a significant effect. A significant effect may be broadly defined as an effect which, either in isolation or combination with others, should be taken into account in the decision-making process. Landscape effects determined to have major or major/moderate landscape significance will be considered to be **significant**. Conversely, where it is determined that effects are moderate/minor or minor, these will be considered not **significant**.

11.2.14. Where effects are determined to be of moderate significance, whether these effects are significant or not significant will depend on the individual and specific mitigating circumstances and the professional opinion of the landscape specialist will determine this.

Visual Amenity Significance

11.2.15. The significance of effects on visual amenity will be determined by combining the sensitivity of the visual receptors with the magnitude of visual change that would occur. The criteria for informing the sensitivity, magnitude and the significance of effects on visual amenity are demonstrated in the following tables:

Table 11.4: Sensitivity of Visual Receptors.	
Sensitivity	Description
High	Receptors highly responsive to new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors would be highly susceptible to change and considered to be at a location that may be valued for its views. Receptors would typically include occupiers of residential properties and people engaged in recreational activities in the countryside such as using public rights of way, country parks or heritage assets.
Medium-high	Receptors responsive to new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors would be susceptible to change and considered to be at a location that may be valued for its views. Receptors would typically include people engaged in recreational activities in the countryside such as using public rights of way, country parks or heritage assets.
Medium	Receptors are able to accommodate new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors may be susceptible to change, although may not be at a location valued for its views. Receptors would typically include people engaged in outdoor sporting activities and people travelling through the landscape on minor (B and below) roads and trains.
Medium-low	Receptors are able to accommodate a degree of new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors are unlikely to be susceptible to change, or at a location valued for its views. Receptors would typically include people engaged in outdoor sporting activities and people travelling through the landscape on minor (B and below) roads and trains.
Low	Receptors are able to accommodate a high degree of new visual elements of the type proposed, by virtue of their location, nature and/or existing visual qualities and elements. Receptors are unlikely to be highly susceptible to change or at a location of valued for its views. Receptors would typically include people at place of work and people travelling through the landscape on A roads and motorways.
Table 11.5: Magnitude of Visual Effects.	

Magnitude.	Description.
High	The proposed development would be an immediately apparent feature that would occupy a wide proportion of the view, contrasting with existing built features within the view. It would affect and change the overall appearance of the view and to which other features would become subordinate. Development is likely to be visually dominant. Views of the development are likely to be from close distance and long in duration.
High - medium	The proposed development would be an apparent feature that is likely to occupy a significant proportion of the overall view. The development may contrast with existing features within the landscape. The proposed development is likely to be visually prominent to the extent that it would affect and change the appearance of a number of key existing elements within the view. Views are likely to be medium to short distance and long in duration.
Medium	The proposed development would form a recognisable new element within the overall view and would be readily observed without changing the overall nature of the view. Overall quality of the view may remain intact. Development is likely to be visible although not prominent. Views are likely to be medium distance and moderate in duration.
Medium - Low	The proposed development would form a component of the wider view that might be missed by the casual observer. Awareness of the development would not have a marked effect on the overall quality of the view. Development may be visible although not prominent. Views are likely to be medium to long distance and glimpsed or brief in duration.
Low	The proposed development would be barely perceptible, or imperceptible, and would have no marked effect on the overall quality of the view. Development is unlikely to be visible or restricted to long distance views that would be glimpsed or very brief in duration.
Table 11.6: Significance of Visual Effects.	
Significance.	Description
Major	The proposed development would affect existing views to the extent that defining visual elements would become subservient within the view. When viewed within the context of the landscape, the proposed development is likely to be seen to conflict with existing visual amenity. Receptors are likely to be categorised as being of high sensitivity.
Major - Moderate	The proposed development would be visually prominent, which may lead to the loss of some essential landscape features which contribute to the visual character or quality of the view. Receptors are more likely to be categorised as being of medium or high sensitivity.
Moderate	The proposed development would result in some alteration to landscape features which contribute to the existing visual character or quality, but the overall integrity of the landscape and its visual qualities are maintained. The proposed development may be suitably absorbed or accommodated within the view alongside existing visual elements. Receptors are likely to be categorised as being of medium sensitivity.
Moderate - Minor	The proposed development would be visually integrated within the existing landscape without the loss of essential landscape features which contribute to the visual character or quality of the view.

	Receptors are more likely to be categorised as being of medium or low sensitivity, although not exclusively so.
Minor	The development would be integrated into the existing landscape without having a material effect upon the distinctive and valued characteristics of the view. Receptors are likely to be categorised as being of low sensitivity.
<i>Source: Soltys Brewster</i>	

11.2.16. Viewpoint locations from where effects are determined to have major or major - moderate visual significance will be considered to be significant. Conversely any locations where it is determined that visual effects are minor or moderate - minor, visual effects will be considered as not significant.

11.2.17. Where effects are determined to be of moderate significance, whether these effects are significant or not significant will depend on the individual and specific mitigating circumstances relating to each viewpoint and the professional opinion of the landscape specialist will determine this. For example, effects from a particular viewpoint may be considered to be of moderate visual significance. However, the broad nature of the view in which the proposed development would be seen may reduce these effects to an extent where effects would still be considered to be moderate though not considered to be significant.

Geographical Scope

11.2.18. A 3km radius study area from the centre of the site is considered appropriate for the scale and nature of the development.

Temporal Scope

11.2.19. The assessment will consider construction stage effects that will persist for a limited period (to be defined) and will be considered as temporary.

11.2.20. Following construction activities, the changes and effects to the baseline landscape and visual receptors as a consequence of the 'operation' of the proposed development will be considered as permanent and irreversible and likely to persist for the foreseeable future.

11.3 BASELINE ENVIRONMENT

- 11.3.1. The site is predominantly brownfield land, subject to remediation following the removal of the BP refinery and associated infrastructure. The topography within and adjacent to the redline site boundary is complex with rock exposures, steep man-made slopes often colonised by scrub and woodland, including a railway cutting and a series of large platforms that offer potential for development. Existing commercial properties are located within the Darcy Business Park within the site, to the east and outside the site to the south, accessed via Tank Farm Road. Residential development, constructed recently and forming Phases 1a and b, extends along a central ridge forming a high point enclosing much of the proposed development site extending north. This housing is outside the redline application boundary.
- 11.3.2. The site is further enclosed to the south-east by the Gelli-bwch Hills, a series of steep-sided lowland hills, with a mosaic landcover of fields and wooded areas, rising prominently to form distinctive features above the lower Neath Valley and the adjacent coastal lowlands. Intervening lower-lying areas contain the small settlements including Llandarcy Village and Jersey Marine, with larger-scale commercial and light industrial developments beyond, including the Bay Studios, Amazon depot and the landmark Swansea University Bay Campus.
- 11.3.3. To the west of the site, Crymlyn Bog forms an extensive area of lowland wetland, comprising a uniform cover of marshy grasses and reeds, with willow and birch scrub growth in places. The disused Glan-y-wern and Tennant Canals extend through this area. A landfill site is located to the south-west, rising above the adjacent low-lying areas.
- 11.3.4. To the west of Crymlyn Bog, a mosaic of fields enclosed by well-treed hedges, rises up to more elevated areas, with scattered farmsteads and dwellings merging with the settlements of Llamsamlett and Skewen. Beyond this intimate landscape, the distinct and more imposing upland areas of Kilvey Hill to the south-west and Mynydd Drumau to the north provide a sense of enclosure to the site.
- 11.3.5. Neath extends to the east. The town centre is a compact area of retail and dwellings, some significant stone buildings, including the historic castle, with newer developments rising-up the valley side further to the east. Along the river corridor, declining industrial and commercial uses mingle with a degraded pastoral agriculture. There are few dwelling's and the landscape

is predominantly open. Land-uses include small-scale docks, breakers yards, storage depots, recreational facilities, floodplain pasture, wetland vegetation, saltmarsh and scrub.

11.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

11.4.1. The landscape and visual section will assess direct effects on the physical landscape within the site boundary, together with indirect effects on the wider landscape character and visual amenity within the study area.

11.4.2. Landscape and visual assessments are separate, although linked, procedures. Landscape effects derive from changes in the physical baseline landscape, which may give rise to changes in its character and how this is experienced. 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 the overall effects with respect to visual amenity.

11.4.3. Effects identified will be classified into one or more of the following:

- Positive effects that have a beneficial influence, negative effects that have an adverse influence;
- Temporary effects that persist for a limited period only, due for example to 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; and
- Cumulative effects that arise from the combination of different impacts at a specific location, the recurrence of impacts of the same type at different locations, the interaction of different impacts over time, or the interaction of impacts arising from the scheme in conjunction with other development projects.

- 11.4.4. As a result of the desk-based review and site visit, representative landscape and visual receptors that could sustain positive or negative impacts as a result of the proposed development have been identified and will be considered in detail within the LVIA.

Landscape Impacts and Effects

- 11.4.5. Direct landscape impacts comprise changes to the physical baseline landscape resulting directly from the development itself. These will likely arise as a consequence of changes to the existing pattern of landform, vegetation, habitats and other features found within the site, through the imposition of new buildings, hardstanding's and other associated infrastructure. Effects will be assessed using a combination of relevant site-based investigations and surveys to inform the baseline study and field work.
- 11.4.6. Indirect landscape impacts result from consequential change resulting from the development and are often produced away from the site of the proposed development or as a result of a complex pathway or secondary association and will include changes to the landscape character within the study area. Landscape character will be assessed using LANDMAP and site assessment field work, supplemented by Landscape Character Assessments where these are available.
- 11.4.7. The LVIA will include a review of available LANDMAP data, including all five aspect layers (i.e. Geological Landscapes, Landscape Habitats, Historic, Cultural, Landscape and Visual). Aspect areas evaluated as outstanding or high overall will be described and considered in more detail to enable the LVIA to focus on pertinent matters. An appendix will also be provided of all aspect areas within the study areas to supplementary information to the focus of the assessment. Landscape Character Areas (LCAs) will then be identified to form a baseline against which to assess effects as a result of the development of the proposed development.

Visual Impacts and Effects

- 11.4.8. Visual impacts relate to the changes that may arise in the composition of available views as a result of changes to the landscape resulting from the proposed development. The LVIA will consider people's likely responses to the changes, and to the overall effects with respect to visual amenity. Four viewpoints will be assessed within the LVIA to enable an evaluation to be

made regarding visual impacts and effects. These are listed below in Table 1.7, together with a brief reason for their inclusion.

Table 11.7: Viewpoints.				
VP no.	Location.	Easting.	Northing.	Reason for inclusion.
1	Drumau Road, Skewen.	271943	197779	Residents of Skewen Road users.
2	Crymlyn Bog Car Park, Dinam Road.	268605	194218	Visitors/tourists. Road users.
3	Old Road/Wheatley Road, Neath	274561	195956	Residents of Neath Road users.
4	Crymlyn Gardens, Skewen	270851	196778	Residents of Skewen. Road users.

11.4.9. Viewpoints 1 to 4, above, were selected following a desk and field-based study. At the time of assessment, each viewpoint will be visited, and the position refined to ensure adequate visibility and to take account of local conditions, including intervening vegetation, buildings and other structures. The viewpoints are intended to be broadly representative of the landscape character and visual sensitivities of the study area. They are not intended to cover all areas and receptors from where views may be possible, but are a sample designed to represent a 'balanced' range of receptors, (including footpath users, road users and residents of settlements), distances, elevations and directions from within the study area.

11.4.10. The viewpoints will illustrate:

- areas of notable visibility, as identified on Figure 3: Visual Envelope Plan. Wherever possible, viewpoints have been selected and micro-sited to display the worst-case scenario.
- Typical views from valued, designated landscapes, particularly Crymlyn Bog.
- Residential areas including the nearby edge of Skewen and Neath.

CHAPTER 12: CLIMATE CHANGE

12.1 INTRODUCTION

- 12.1.1 The climate change chapter will assess the impact of the proposed development on climate and the vulnerability of the proposed development to climate change, as per the requirements of the 2017 EIA Regulations.
- 12.1.2 This report sets out the scope of the proposed development in relation to the topic of climate change. The climate change topic consists of three parts:
- Impact of the development on climate – this considers the impact of greenhouse gas (GHG) emissions from the proposed development;
 - Vulnerability of the development to climate change – this considers the resilience of the proposed development in the context of projected future changes in climate variables.
 - In-combination climate change impact (ICCI) assessment – evaluates the combined effect of the proposed development and potential climate change impacts on the receiving environment during construction and operation.
- 12.1.3 To take account of the potential impacts of future climate conditions on the environment combined with the impacts of the proposed development, the future projected climate conditions for the area will be incorporated into the future baseline conditions and considered for relevant topics in their assessment of likely significant effects. This will ensure that environmental receptors that are vulnerable to impacts from both the development and climate factors are fully considered in the context of the changing climate.

12.2 ASSESSMENT CRITERIA & METHODOLOGY

Previous Assessment

- 12.2.1 The 2005 Environmental Statement did not assess climate change as the need for this assessment was introduced later in the EIA 2017 regulations.

Legislative Context

12.2.2 The climate change assessment will consider the requirements of the following International and UK legislation, policy and guidance:

International

- The Paris Agreement (2015)⁴⁰.

National

- The Climate Change Act 2008, as amended by the Climate Change Act (2050 Target Amendment) Order 2019⁴¹;
- The Planning (Wales) Act 2015;
- The Environment (Wales) Act 2016;
- The Well-being of Future Generations (Wales) Act 2015;

Policy and Guidance

National Policy and guidance

- UK Climate Change Risk Assessment (2017)⁴²;
- Climate Change: second national adaptation programme (2018 – 2023);
- The UK Clean Growth Strategy⁴³;
- Welsh Government – Climate emergency declaration;

⁴⁰ Paris Agreement to the United Nations Framework Convention on Climate Change (2015)

⁴¹ UK Government, The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Queen's Printer of Acts of Parliament, 2019.

⁴² UK Government, "UK Climate Change Risk Assessment 2017 (Policy Paper) Presented to Parliament pursuant to Section 56 of the Climate Change Act 2008," 2017.

⁴³ UK Government, "The Clean Growth Strategy Leading the way to a low carbon future," 2017.

- Welsh Government Climate change targets and carbon budgets⁴⁴;
- The 11th edition of Planning Policy Wales (PPW11);
- Prosperity for all: A low carbon Wales (2019);
- Prosperity for all: A Climate Conscious Wales (2019);
- 21st Century Schools and Education Funding Programme 201845;
- Technical advice note (TAN) 12: design;
- TAN 15: development and flood risk;

Local Policy

- Neath Port Talbot County Borough Council (NPTCBC) Local Development Plan (2011-2026)⁴⁶;
- Neath Port Talbot County Borough Council Local Flood Risk Management Strategy⁴⁷;
- NPTCBC Decarbonisation and Renewable Energy Strategy (2020)⁴⁸;
- NPTCBC Supplementary Planning Guidance: Renewable & Low Carbon Energy (2017).

Technical Guidance/ Best Practice

⁴⁴ <https://gov.wales/climate-change-targets-and-carbon-budgets>

⁴⁵ Welsh Government (2018) Guides to making your 21st Century Schools and educational facilities sustainable. Available at: <https://gov.wales/sites/default/files/publications/2019-05/guides-to-making-your-21st-century-schools-and-educational-facilities-sustainable.pdf>

⁴⁶ Available at: <https://www.npt.gov.uk/7328>.

⁴⁷ Available at: <https://www.npt.gov.uk/4520>.

⁴⁸ Available at: <https://www.npt.gov.uk/23524>.

- Institute of Environmental Management and Assessment (IEMA) (2017) Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance⁴⁹;
- The Publicly Available Specification 2080 (PAS2080) on carbon management in infrastructure⁵⁰;
- RICS (2017) Whole life carbon assessment for the built environment⁵¹
- IEMA (2020) Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation⁵²; and
- British Standards (BS) EN 15804:2012+A2:2019 (Sustainability of construction works).

Proposed Assessment Methodology

12.2.3 The study area for the GHG emissions assessment includes sources and removals of GHG emissions from construction and operation of the proposed development, as set out below. The temporal boundary for GHG emissions assessment constitutes the construction phase (assumed to commence in 2023 for a duration of approximately six years) and operational phase running between 2029-2089. The 60-year operational phase is based on the RICS reference study periods (RSP) to be used for whole life carbon assessments.

Study area for construction emissions

12.2.4 For the assessment of carbon emissions associated with construction of the proposed development, the study area is defined by the emissions associated with constructing the

⁴⁹ Institute of Environmental Management and Assessment (IEMA) (2017) Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance. Available online: <https://www.iema.net/assets/newbuild/documents/IEMA%20GHG%20in%20EIA%20Guidance%20Document%20V4.pdf>.

⁵⁰ British Standards Institution (2016) PAS 2080:2016 Carbon Management in Infrastructure.

⁵¹ RICS (2017) Whole life carbon assessment for the built environment. Available at:

<https://www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the--built-environment-november-2017.pdf>

⁵² Available online at: <https://www.iema.net/assets/newbuild/Policy%202020/IEMA%20EIA%20Climate%20Change%20Resilience%20June%202020.pdf>

physical development within the red line boundary. It takes account of emissions associated with the extraction, processing and transport of materials and workers required to deliver the proposed development within the red line boundary. Many of the emissions included in this calculation are known as embodied emissions. Embodied emissions are incurred outside as well as inside of the red line boundary and include those from energy consumption for acquisition of raw materials, their processing, manufacturing, transportation to site, and construction. Additionally, site-based emissions that result from the construction activities within the redline boundary will be included.

Study area for emissions associated with land use change

- 12.2.5 The spatial extent of the study area for emissions associated with land use change is defined by the red line boundary and will take account of any land-based changes in carbon sinks (primarily through changes to soils and vegetation).

Study area for direct operational emissions

- 12.2.6 For the assessment of carbon emissions associated with maintenance and refurbishment of the proposed development (e.g. replacing hardstanding or other infrastructure during the operational lifetime), the study area is the same as that defined for construction emissions (defined by the red line boundary). It takes account of the embodied emissions associated with the extraction, processing and transport of materials. Additionally, site-based emissions that result from the maintenance and refurbishment activities within the redline boundary will be included.

Study area for operational use phase emissions

- 12.2.7 Use phase emissions are defined as 'indirect emissions'⁵³ and are considered to be outside the direct influence⁵⁴ of the proposed development (i.e. the developer does not have direct control over these emissions sources, although it is acknowledged that a relationship exists

⁵³ Direct GHG emissions are emissions from sources that are owned or controlled by the reporting entity. Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity but occur at sources owned or controlled by another entity.

⁵⁴ The developer is considered to have 'direct influence' wherever it's within their control to make decisions that would directly impact GHG emissions (e.g. choice of building materials, site layout, machinery used on site and design decisions). The developer is considered to have 'indirect influence' wherever it is outside their control to directly impact the emissions sources (e.g. residents travel choices, the routes they take, their engine design or fuel use. These are all decisions made by third parties).

with the development decisions made for the site). The spatial extent of the study area for use phase emissions will be determined once traffic and design data are available.

- 12.2.8 The study area for carbon emissions arising from changes in road traffic movements will be consistent with the proposed development's traffic model. The local emissions study area will be consistent with the air quality assessment, this is likely to encompass the main roads and the proposed development.
- 12.2.9 The proposed development includes an area safeguarded for a potential future south wales metro station, however there is limited certainty around if and when such a facility may come online, and therefore a new railway station is not proposed to be taken in account within this assessment, and emissions from rail transport have been scoped out.

Vulnerability of the development to climate change

- 12.2.10 The study area for the climate change resilience (CCR) assessment is based on the construction footprint and includes temporary and completed works within the redline boundary. The assessment includes all potential climate hazards for infrastructure and assets associated with the development and the assessment of climate effects are assessed over the assumed 60-year operational life cycle of the development (2029-2089).

Consultation

- 12.2.11 In general, there are no specific statutory or non-statutory consultation bodies on climate change within the EIA process. However, with the growing importance of climate change on political and public agendas, this EIA Scoping Report facilitates consultation with the local authority (NPTCBC) within which the development is located, providing the opportunity to comment on the scope and methodology of assessment.

Impact of the development on climate (GHG emissions)

- 12.2.12 The GHG assessment will quantify and report the GHG emissions anticipated to be generated or avoided by the proposed development in the form of a 'carbon footprint'. The carbon footprint will be reported in tonnes of carbon dioxide equivalent (tCO₂e).
- 12.2.13 Table 12.1 identifies the key contributing GHG sources or activities from the proposed development, with a justification for those excluded from the GHG emissions assessment. The sum of the 'scoped in' emissions will comprise the gross carbon footprint associated with the

‘do something’ scenario (i.e. implementation of the proposed development, taking into account embedded GHG mitigation measures such as use of lower carbon building materials and operational equipment).

- 12.2.14 Emissions from the ‘scoped in’ sources will be compared to the baseline ‘do minimum’ scenario (as described under ‘Baseline Conditions’ below) to quantify the net impact (carbon footprint) of the proposed development. Note that the approach used to assess emissions for each lifecycle stage, including whether a qualitative or quantitative approach is used, will depend on the available data and the degree to which the proposed development will have a material impact⁵⁵ on the emissions source.

Table 12.1: Sources of emissions included in GHG assessment scope

Lifecycle stage and source of GHG emissions	Scoped in	Scoped out	Justification where scoped out or additional important information where scoped in
Pre-construction phase			
GHG emissions associated with the planning and consenting phases		✓	These are assumed to be insignificant and will not be included in the GHG emissions assessment.
Stage 1 - Construction phase			
Material supply including primary extraction and manufacturing	✓		n/a
Transport of materials to and from the site, including waste	✓		n/a
Construction process and site works associated with the development, including for any demolitions required	✓		n/a
Transport of workers to and from site	✓		n/a
Emissions associated with land use change. For example, immediate loss or planting of additional vegetation (a carbon sink).	✓		n/a

⁵⁵ An emissions cut off is defined as - emissions that contribute less than 1% of the footprint will not be quantified. The materiality consideration for this development will also take into account the developer's degree of control and influence.

Embodied emissions from maintenance and repair	✓		n/a
Stage B - Operation and use phase			
Emissions associated with electricity and natural gas (if identified as a preferred energy source) consumption in buildings and associated infrastructure – including residential, school and commercial buildings	✓		n/a
Embodied emissions from maintenance and repair	✓		n/a
Emissions associated with electricity consumption from public realm lighting	✓		n/a
Road use emissions – based on traffic model of local catchment, including roads which experience a significant change in use due to the proposed development	✓		Train travel – excluded as impacts of the proposed development on rail transport are currently unknown and as such emissions from rail transport have been scoped out.
Emissions associated with combustion of other fuels. Emissions associated with water consumption in buildings and public realm. Emissions associated with treatment of waste and wastewater generated by development occupants. Embodied emissions in goods consumed by development occupants.		✓	The emissions of these sources are considered unmeasurable at this stage in design and are unlikely to be significant in comparison to the emissions scoped in.
Stage C – End of life			
Emissions from end of life disposal		✓	It is assumed that the proposed development would not be decommissioned.
Workforce transport to site		✓	This is unknown as decommissioning is outside the scope of the EIA

Vulnerability of the development to climate change

12.2.15 A Climate Change Resilience (CCR) assessment will be undertaken to assess the vulnerability of the proposed development to climate change and to evaluate what resilience measures

may be appropriate to include in the design. Key issues related to adaptation to climate change include flooding risks due to changes in the amount, frequency and timing of precipitation. Increases in average temperatures and frequency of extreme temperature and other weather events also have the potential to impact the proposed development and other environmental receptors. These will need to be taken into consideration during the design stages; both for general layout and detailed design. The description of future climate conditions and extreme weather events will be based upon climate change projection data from the United Kingdom Climate Projections 2018 (UKCP18)⁵⁶. UKCP18 data is the most comprehensive and widely used data set of climate projections covering the UK.

12.2.16 Issues related to climate predominantly concern the operational phase and how buildings and infrastructure have been designed and developed to integrate climate change resilience. Flood risk (including taking account of climate change allowances) will be assessed within the Flood Consequence Assessment and will therefore be cross-referenced rather than duplicated in the climate change resilience assessment.

12.2.17 The impacts of climate change are already being experienced, particularly in terms of increased frequency and severity of extreme weather events such as storms and heatwaves. Due to the short temporal phase of construction, it is anticipated that good construction practice measures will appropriately address climate change risks during the construction phase. The construction phase has therefore been scoped out of the CCR assessment.

ICCI assessment

12.2.18 The approach and methodology for the ICCI assessment is as follows:

- Each topic discipline to analyse relevant climate change and weather data, emissions scenarios and probability levels relevant to their topic;
- Consideration of potential climate change impacts for all environmental topics;
- Assessment of each environmental topic's respective significant effects and the corresponding mitigation measures identified by each topic;

⁵⁶ Meteorological Office UK Climate Projections 2018. Available online:
<https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>

- Assessment of any potential in-combination climate change impacts and effects given existing mitigation measures (i.e. mitigation measures identified by each environmental topic);
- Assessment of whether there are any significant in-combination climate change effects, based upon whether potential in-combination climate change impacts are assessed to have a high likelihood or consequence;
- Consideration of additional mitigation measures to address significant in-combination climate change effects, beyond those existing mitigation measures identified by other environmental topics; and
- Inclusion of allowances for future mitigation measures and monitoring, to ensure continued resilience of receiving environment.

Significance criteria

Impact of the development on climate (GHG emissions)

12.2.19 The IEMA guide to assessing the significance of GHG emissions⁵⁷ publishes the over-arching principle:

12.2.20 *“The GHG emissions from all projects will contribute to climate change; ...as such any GHG emissions or reductions from a project might be considered to be significant...”*

12.2.21 In accordance with this guidance, any carbon emissions associated with the proposed development can be deemed significant. The guidance however does not provide significance criteria to assess potential effects against a scale of significance in the context of the EIA Regulations. The GHG assessment will be evaluated with reference to the UK and Welsh carbon budgets, and local and sector emissions profiles and targets (where relevant), in order to contextualise the emissions and develop appropriate mitigation measures.

12.2.22 Accordingly, initiatives to mitigate emissions will be integrated into design, as discussed under ‘Potential Effects and Mitigation Measures’ below.

⁵⁷ IEMA (2017) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance

Vulnerability of the development to climate change and ICCI assessments

12.2.23 This section outlines the methodology for assessing the likely significant effects relating to the climate change resilience of the proposed development. It is designed to assess whether the current design is suitably considering the resilience of the site to impacts caused by a changing climate.

12.2.24 The significance of the risks identified in the CCR assessment is based on the likelihood of a hazard having an impact on the proposed development and the consequence of the impact. The potential likelihood and consequence of impacts on the proposed development will be scored using a qualitative five-point scale, as set out in Table 12.2.

Table 12.2 Qualitative five-point scale of likelihood of hazard impact⁵⁸

Descriptor	Description
Very unlikely	The event may occur once during the lifetime of the project (60 years).
Unlikely	The event occurs during the lifetime of the project (60 years), e.g. once in 60 years.
As likely as not	The event occurs limited times during the lifetime of the project (60 years), e.g. approximately once every 15 years, typically 4 events.
Likely	The event occurs several times during the lifetime of the project (60 years), e.g. approximately once every five years, typically 12 events.
Very likely	The event occurs multiple times during the lifetime of the project (60 years), e.g. approximately annually, typically 60 events.

Table 12.3 Qualitative five-point scale of consequences of hazard impact⁵⁹

Descriptor	Description
Negligible	Minor cuts/abrasions requiring minimal treatment; Causing minimal work interruption; No financial loss or costs; No environmental consequence.
Slight	Injury requiring first aid treatment; Causing interruption of work for 3 days or less; Slight financial loss or cost;

⁵⁸ IEMA (2020) Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation. Available at: <https://www.iema.net/resources/reading-room/2020/06/26/iema-eia-guide-to-climate-change-resilience-and-adaptation-2020>

⁵⁹ These have been based on the IEMA guidance however additional text added to include injury to people, financial loss and environmental implications.

Descriptor	Description
	Slight environmental consequence.
Moderate	4 - 14 day lost-time injury(s). Medical treatment required; Substantial work interruption; Considerable financial loss; Moderate environmental implications.
Major	Major injuries, including permanent disabling injuries of over 14 days; Major work interruption; Serious financial loss; Severe environmental implications.
Catastrophic	Single or multiple deaths involving any persons; Disastrous work interruption; Huge financial loss; Devastating environmental implications.

12.2.25 The evaluation of significance is a product of the likelihood and consequence of each impact as set out in Table 12.4. Significant effects are generally defined as those that are of medium, high or very high significance. Significance conclusions for each impact will incorporate confirmed design and mitigation measures.

Table 12.4 Significance matrix⁶⁰

		Measure of consequence				
		Negligible	Slight	Moderate	Major	Catastrophic
Measure of likelihood	Very likely	Medium	Medium	High	Very high	Very high
	Likely	Low	Medium	Medium	Very high	Very high
	As likely as not	Low	Low	Medium	High	High
	Unlikely	Very low	Very low	Low	Medium	Medium
	Very unlikely	Very low	Very low	Low	Low	Medium

⁶⁰ These are based on the IEMA guidance, showing anything Medium or above being significant. However to match the outputs of the CCR assessment have been changed to show the sliding scale of very low to very high.

12.2.26 The outcomes of the ICCI assessment will be the categorisation of each environmental topic based on the following significance criteria:

1. Many potential in-combination climate change impacts with high consequences;
2. Some potential in-combination climate change impacts with high consequences;
3. Some potential in-combination climate change impacts with low consequences; and
4. No potential in-combination climate change impacts.

12.3 BASELINE ENVIRONMENT

GHG assessment

12.3.1 The GHG emissions from the proposed development will be compared to the historic baseline where the proposed development was not undertaken. The UK's most recent final GHG emissions national statistics (for 2019), set out the total UK GHG emissions for 2019 at 454.8 million tonnes of carbon dioxide equivalents (MtCO₂e). Local and regional emissions data will also be used to establish the historic baseline.

12.3.2 For transport the baseline scenario will take into account projected future increases in road transport that would occur without the proposed development. This will be compared against the future increases in road transport with the proposed development, for roads in the vicinity of the proposed development.

12.3.3 It is not anticipated that there will be any additional train services provided as a result of the proposed development. Therefore, train transport is excluded from the GHG assessment as there is no change in emissions due to the proposed development.

CCR and ICCI assessments

12.3.4 The baseline environment for the CCR and ICCI assessments includes consideration of:

- Current climate conditions – established for a range of climate variables based on the long-term average of historical weather data for 1961 – 1990. This data is a comparator for the projected future climate conditions.

- Future climate conditions – based on projections of different emissions scenarios and probability levels.

Historic baseline

- 12.3.5 The Meteorological Office (Met Office) generates climatologies for different areas of the UK, known as climate districts, including historical regional climate information. The proposed development is located within the South Wales and England South West⁶¹.

Future climate baseline

- 12.3.6 The description of future climate conditions and extreme weather events will be based upon climate change projection data from the United Kingdom Climate Projections 2018 (UKCP18)⁶². UKCP18 data is the most comprehensive and widely used data set of climate projections covering the UK.
- 12.3.7 This section presents future projected climate conditions and extreme weather events for the area encompassing the proposed development for the 2020s and 2070s⁶³. These time periods cover the assumed construction period, commencing in 2023 and assumed operational life, 2029-2089.
- 12.3.8 Using the historical baseline data, two methods will be implemented to establish the future climate baseline:
- The changes in average climate conditions obtained from the UKCP18 probabilistic projections of climate change⁶⁴; and
 - The changes in extreme weather events obtained using UKCP18 regional projections.

⁶¹ UK climate districts map. Available online: <https://www.metoffice.gov.uk/research/climate/maps-and-data/about/districts-map>

⁶² Meteorological Office UK Climate Projections 2018. Available online: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>

⁶³ The time periods for climate projections are selected based on the lifespan and stages of the proposed development

⁶⁴ Met Office, "UK Climate Projections (UKCP) - Met Office," 2018. [Online]. Available: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>.

- 12.3.9 Climate change projections for a range of meteorological parameters are presented for different probability levels within the Representative Concentration Pathway 8.5 (RCP8.5) high emission scenario⁶⁵ for the near-term and long-term future time periods.
- 12.3.10 Temperatures in the area are projected to increase both in winter and summer. The largest increase in temperature is projected to be in the mean daily maximum temperature in summer, which is expected to increase by 0.7C to 5.8C in the 2070s, relative to the baseline in the high emissions scenario.
- 12.3.11 Mean precipitation rates in the region are anticipated to change by -9% to 48% in the winter and by -61% to 3% in summer during the 2070s.

12.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

- 12.4.1 The proposed development has the potential to result in additional direct greenhouse gas emissions for the site during construction and operation, from the sources noted in Table 12.1.

Construction Impacts and Effects

- 12.4.2 GHG emissions during construction are likely to be emitted through the embodied carbon of the materials uses, most notably concrete and steel. The transport of these materials to site also has a carbon cost.
- 12.4.3 The existing habitats and soils on site will act as a carbon sink, having been sequestering carbon from the atmosphere. If these are removed or disrupted it is likely carbon will be emitted back to the atmosphere.

Operational Impacts and Effects

- 12.4.4 GHG emissions will be emitted during operation of the site through residential, commercial and educational use. These include the energy required for living i.e electricity lighting of the

⁶⁵ The RCP8.5 global warming scenario represents a very high baseline emission scenario, representing the 90th percentile of no-policy baseline scenarios available at the time. '8.5' represents 8.5 watts per metre squared, which is a measure of the end-of-century radiative forcing increase relative to pre-industrial conditions. The four RCP scenarios include "one mitigation scenario leading to a very low forcing level (RCP2.6), two medium stabilisation scenarios (RCP4.5/RCP6.0) and one very high baseline emission scenarios (RCP8.5)". The high emissions baseline scenario is chosen to represent a potential worst-case outcome, allowing sensitivity testing of critical features of the proposed development. This is also representative of the trajectory that global emissions have been on. Additionally, the future climate baseline forms part of other EIA topics' respective future baselines for assessment. Use of the high emissions scenario ensures that any very vulnerable, high-value receptors are considered.

public realm and lighting and heating for homes. Also, increased fuel usage through transport to and from the site.

12.5 MITIGATION ENVISAGED

GHG assessment

12.5.1 PAS 2080 outlines the GHG emissions reduction hierarchy shown in Figure 5. This will be adopted when identifying opportunities to reduce emissions over the life of the project.

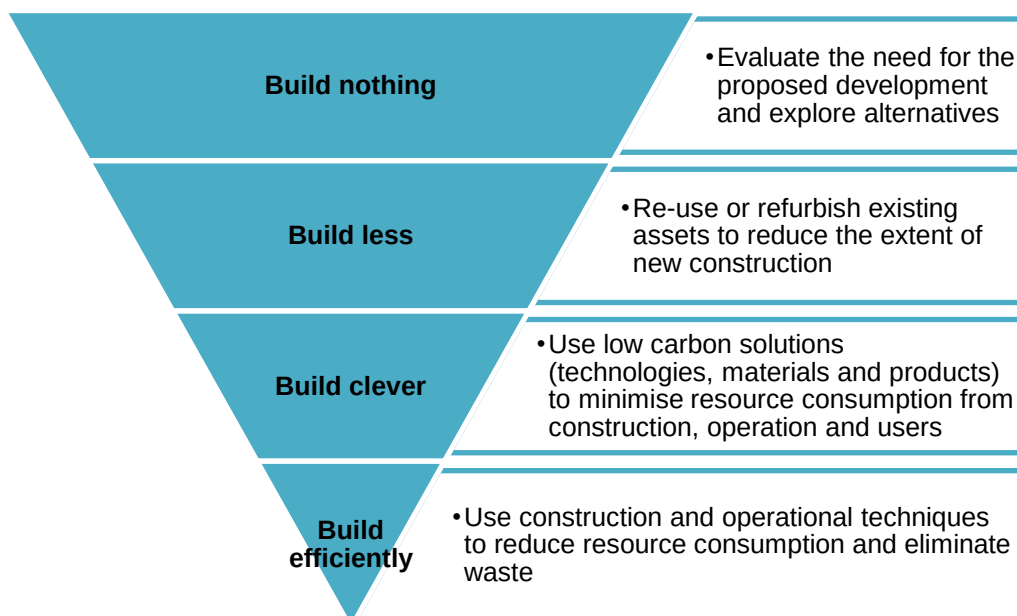


Figure 52.1 Carbon emissions reduction hierarchy⁶⁶

12.5.2 The GHG emissions assessment will be used to identify the greatest sources of GHG emissions and opportunities to reduce them. As there is limited infrastructure onsite, it is likely that the mitigation opportunities identified will largely fall under the 'build clever' and 'build efficiently' tiers of the hierarchy.

12.5.3 Measures proposed to mitigate the impact of GHG emissions from the construction of the proposed development may include:

⁶⁶ Construction Leadership Council & the Green Construction Board (2016) PAS 2080:2016 Carbon management in infrastructure. BSI Limited, London, UK. <https://shop.bsigroup.com/forms/PASs/PAS-2080/> [Accessed June 2021]

- Reduce the quantity of materials required through efficient design;
- Implement the principles of 'designing out waste' to reduce the embodied emissions used to manufacture materials that are subsequently wasted;
- Embedding passive design principles (orientation, form, spacing etc) within the layout in order to maximise building energy efficiency;
- Select alternative materials that have a lower emissions intensity e.g. recycled materials, cement substitutes;
- Select local material suppliers to reduce the transport distances and associated emissions from freight; and
- Minimising impact on existing carbon sinks, for example retaining woodlands where feasible.

12.5.4 Measures proposed to mitigate the impact of GHG emissions from the operation of the proposed development may include:

- Take a 'fabric first' approach to building design in order to improve the thermal efficiency of buildings and reduce heating and cooling energy requirements during operation;
- Select energy efficient infrastructure, equipment and fittings in order to reduce energy demand during operation;
- Install renewable energy generation and connect to low carbon energy sources (e.g. heat networks) where possible, feasible and viable, in order to reduce the emissions intensity of the energy consumed;
- Design for durable or reusable materials with low requirements for maintenance and replacement over the operational life of the development, with consideration of appropriate selection of materials based on the design life of the asset; and

- Develop strategies to encourage the use of low carbon transport modes, including active and public transport and providing EV charging points for zero / low emissions vehicles, in order to reduce emissions from transport.

12.5.5 The ability to influence and reduce GHG emissions is most effective during the design stage, therefore an iterative approach to design and assessment will be employed in order to minimise emissions where feasible.

CCR and ICCI assessments

12.5.6 Measures to improve the resilience of the development to future climate change impacts should be considered for integration into the design. These may include⁶⁷:

- Implementing design measures to keep buildings cool – including shading, green roofs, cool roofs, passive ventilation and energy efficient cooling systems powered by renewable energy. Building fabric insulation will assist with improving the performance of cooling systems, as well as heating systems.
- Implementing design measures to reduce the heat island effect and keep external spaces cool – including shading from structures and landscape vegetation, blue and green infrastructure and shading for public transport and parking infrastructure.
- Including allowances in structural design loading for future extreme events – including subsidence in foundation design and wind loading in above-ground lateral stability design.
- Selecting weather-resistant materials and fixings – including consideration of effects of extended wetting and heat in causing accelerated material degradation.
- Designing the development to manage water efficiently – including measures to store and reuse rainwater and greywater, implementing sustainable drainage systems (SuDS) principles in drainage design and drought-resistant landscape design.
- Designing the development to address flood risks – including locating the development to minimise risk, implementing sustainable drainage systems (SuDS) principles in

⁶⁷ Technology Strategy Board (2010) Design for Future Climate Report: Opportunities for Adaptation in the Built Environment

drainage design, consideration of flood-tolerant construction, temporary and permanent flood defences and post-flood recovery measures.

12.5.7 In addition to improving climate change resilience, many of these measures have co-benefits including improved thermal comfort for building occupants, reduced energy consumption and associated running costs, and improved amenity benefits.

12.5.8 Due to the uncertainties involved in adapting to future climate change, a pathways approach is recommended for monitoring and managing climate risks into the future. This involves maintaining a degree of flexibility in addressing climate change risks by implementing a long-term decision-making strategy for investing in climate adaptation measures based on environmental or social trigger points⁶⁸.

12.5.9 In order to avoid maladaptive outcomes that limit future adaptation options, further measures to mitigate the impacts identified in the CCR and ICCI assessments will be recommended if a significant impact is identified. For the ICCI assessment, these will be developed in conjunction with the relevant EIA topic leads.

12.6 UNCERTAINTIES AND LIMITATIONS

12.6.1 As with any assumption derived from climate model data, these projections are conditional on the set(s) of simulations from which they are derived. The projections exhibit a range of historical biases and projected changes that depend on the design choices made in construction of individual models. In addition, some simulation errors may be common to all climate models, implying limitations in knowledge and capability whose effects will not be represented in projections from current models.

12.7 MATTERS TO BE SCOPED OUT

12.7.1 The following GHG emissions associated with the proposed development have been scoped out:

- GHG emissions associated with the planning and consenting phases;

⁶⁸ BSI (2021) BS 8631:2021 Adaptation to climate change. Using adaptation pathways for decision making. Accessed June 2021 at <https://coastadapt.com.au/pathways-approach>

- Emissions associated with water consumption in buildings and public realm;
- Emissions associated with treatment of waste and wastewater generated by development occupants; and
- Embodied emissions in goods consumed by development occupants.

CHAPTER 13: SOCIO-ECONOMIC IMPACTS

13.1 INTRODUCTION

- 13.1.1. This chapter of the Scoping Report has been produced by Savills and sets out the methodology to assess the potential socio-economic effects of the proposed development during the construction and operational phase. It is proposed that socio-economic effects are scoped in to the EIA.
- 13.1.2. The consideration of socio-economic conditions within the context of the ES will cover issues such as demographic changes and economic effects, which are generally considered to be medium and long term effects.
- 13.1.3. There is no overarching guidance that sets out the preferred methodology for assessing likely socioeconomic impacts and effects of development proposals of this nature. Several established methodological guides have been published to cover key elements of the assessment. The HCA Additionality Guide and HCA Employment Densities Guide will be of particular relevance.
- 13.1.4. A section on mitigation will be provided, which will set out any relevant measures that are designed to bring forward socio-economic benefits, and ameliorate potential adverse impacts.

13.2 ASSESSMENT CRITERIA & METHODOLOGY

Legislative Context

- 13.2.1. There is no legislation specifically relevant to the socio-economic assessment.

Planning Policy and Guidance

- 13.2.2. There are a range of documents which are relevant to the undertaking of the socio-economic assessment at the national, regional and city level. In particular:
- Future Wales : The National Plan 2040 (2021)
 - Planning Policy Wales: Edition 11 (2021)

- The Well-being of Future Generations (Wales) Act 2015
- Neath Port Talbot Local Development Plan 2011-2026 (2016)
- Relevant Supplementary Planning Documents

National Planning Policy

- 13.2.3. Future Wales: The National Plan 2040 is the highest level development plan document for Wales. The plan states that:

'Future Wales – the National Plan 2040 is our national development framework, setting the direction for development in Wales to 2040. 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'.

- 13.2.4. Point 3 of the 'Future Wales Outcomes' relates to tackling health and socio-economic inequality through sustainable growth. It states that 'inequalities in the four regions will be addressed by building stronger links between public services, communities and business. Each region will be encouraged to build on their existing strengths and pursue opportunities to achieve greater prosperity and well-being'.

- 13.2.5. Planning Policy Wales: Edition 11 puts socio-economics at the heart of the document. It states:

'Productive and Enterprising Places are those which promote our economic, social, environmental and cultural well-being by providing well-connected employment and sustainable economic development. These places are designed and sited to promote healthy lifestyles and tackle the climate emergency. This is done by making them: easy to walk and cycle to and around; accessible by public transport; minimising the use of non-renewable resources; and using renewable and low carbon energy sources'.

- 13.2.6. The Well-being of Future Generations (Wales) Act 2015 places a duty on public bodies in Wales and those listed in the Act to work to improve the economic, social, environmental and cultural wellbeing of Wales. It puts in place seven wellbeing goals which include:

- A prosperous Wales

- A globally responsive Wales
- A Wales of vibrant culture and thriving Welsh language
- A Wales of cohesive communities
- A more equal Wales
- A healthier Wales
- A resilient Wales

Local Planning Policy

Current Planning Policy

13.2.7. Improving the socio-economics and growth in the area is key theme running through the Neath Port Talbot Local Development Plan. Strategic policy SP7 sets out the LPA's objective to deliver 8,760 dwellings over the plan period to meet the economic-growth strategy.

13.2.8. Several evidence base documents are relevant in the context of the socio-economic impact assessment. These are listed below:

- LDP Employment Land Review 2013
- Joint Housing Land Availability Study 2016

Guidance / Best Practice

13.2.9. There are a range of additional documents which will be considered as appropriate during the socio-economic assessment, including:

- SPG: Affordable Housing 2016
- SPG: Planning Obligations 2016

Baseline Data Collection

Description and key features

13.2.10. The baseline assessment will include information about the population that could be affected by the proposed development (the receptors). This section of the report will set out the socio-economic profile of the residents living and working in the study area, compared to regional and national data for context:

- Population profile, age structure, growth rates;
- Levels of employment activity;
- Latent labour force;
- Average income;
- Qualifications and skills; and
- Relative levels of deprivation.

13.2.11. Given the proposed residential use, the baseline analysis will also include an assessment of health care infrastructure (e.g. GP surgeries), education infrastructure (early years, primary schools and secondary schools), access and availability of open space and the availability of different housing types in the local impact area.

13.2.12. Baseline information on the underlying socio-economic conditions will be taken from a variety of sources which include: National Census (2011) and other ONS-produced sources; NOMIS labour market statistics; and the NPTCBC Evidence Base.

Proposed Assessment Methodology

13.2.13. Quantitative assessment will be used where possible and significance criteria will be produced to ensure that there is a consistent identification of effects applied during the assessment. Due to the complexity of socio-economic issues and the numerous interactions that can occur, it is not possible to predict the precise nature or scale of each impact. Qualitative assessment will therefore also be used where necessary.

13.2.14. The level of significance of an effect will be determined through professional judgement of factors such as the scale or sensitivity of the receptor group and the magnitude of the impact (the amount of change).

13.2.15. The level of significance is determined with reference to planning policy, best practice guidance and relevant contextual factors. Where possible, the assessment of significance will be consistent with the Generic Assessment Framework in Chapter 4 and defined as below (Table 14.1):

Table 13.1: Definition of Significance

Significance	Definition
Substantial	These effects represent key factors in the decision-making process. They are generally, but not exclusively associated with resources/features which are unique and which, if lost, cannot be replaced or relocated.
Major	These effects are likely to be important considerations to the receptors but, if adverse, are potential concerns to the project, depending upon the relative importance attached to the issue during the decision making process.
Moderate	These effects, if adverse, while important to the receptors, are not likely to be key decision making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on receptors.
Minor	These effects may be raised as issues but are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in the detailed design of the project.
Negligible	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

13.2.16. Impacts that are moderate or larger in scale are considered to be significant in EIA terms.

13.2.17. The methodology for assessing economic impacts will involve the following key stages:

- An analysis of the current state of the local economy including unemployment, skills and occupation profile of residents;
- An assessment of the housing market and housing needs in the area;
- An assessment of the employment potential of the commercial space included within the proposal; and
- The assessment of employment, education, community benefits will follow best practice guidance (for example, the Homes and Community Agency's Additionality Guide,

2016), applying assumptions to account for leakage, displacement and multiplier effects.

Geographical Scope

13.2.18. The principal study area for the purposes of this chapter would be the authority of Neath Port Talbot.

Temporal Scope

13.2.19. Potential impacts and effects upon socio-economic receptors will be assessed in relation to temporary and permanent impacts. As a general rule, temporary impacts relate to construction phases of development and permanent impacts relate to the occupation/operational phase.

13.3 BASELINE ENVIRONMENT

13.3.1 The socio-economic impact assessment assesses the impact of the Proposed Development on the population; a receptor under the 2017 EIA Regulations. The following have been considered as potential receptors during construction and operation and will be discussed under the following headings:

Construction

- Construction related employment including the number of construction jobs directly and indirectly supported through the construction supply chain, or gain training opportunities;
- Number of “induced” jobs supported by onward spending of wages in the economy
- Productivity impacts - as measured by Gross Value Added (GVA); and
- Potential of the development to address the employment needs of people currently unemployed and looking for work in the construction trades.

Operation

- Increased population and labour force;
- Uplift in local incomes and expenditure from new households (population) residing on the proposed development;

- Fiscal effects such as additional Council Tax Revenues;
- Direct, indirect and induced employment and productivity impacts associated with the operation of the local centre and proposed business park extension (including opportunities for local start up businesses);
- Community facilities effects including increased demand for local education and health care services;
- Availability and access to open space.

13.3.2 The baseline will set out the characteristics of the local economy and workforce, such as economic activity, unemployment rates, skills and qualifications, occupation profile. It will also assess the characteristics of the existing population e.g. age, household composition, and levels of deprivation.

13.4 POTENTIAL ENVIRONMENTAL IMPACTS & EFFECTS

13.4.1 Potential impacts are likely to relate to:

- The number of new construction jobs created and the capacity of the local construction labour market to meet this construction demand;
- The number of new operational jobs as a result of the proposed employment uses;
- Increased population and changes to local demography;
- Increased housing provision;
- Impact on educational facilities; and
- Increased pressure on local community services and facilities.

Construction Impacts and Effects

13.4.2 Construction of the proposed scheme would take place over the construction phase and would support the employment of a range of trades and professions in the construction industry. It would also have an indirect economic effect through the sourcing of building materials, services and supplies as well as the local spending of construction workers.

- 13.4.3 With regard to development being phased, this will be planned in such a way to ensure that essential infrastructure and services are delivered to ensure that those who occupy the development in the early phases are adequately serviced.

Occupation Impacts and Effects

- 13.4.4 There are a number of operational effects that may result from the Proposed Development. These include the delivery of new homes together with affordable housing. An increase in the local population will bring an associated increase in expenditure within local shops, business and services. Businesses and services would also be supported by the first occupation expenditure of the new householders. The new population would also require school places, access to GP services, open space and recreation facilities.

13.5 MITIGATION ENVISAGED

- 13.5.1 In general, it is considered that disruption during construction would be controlled and managed through implementation of the Construction Environmental Management Plan (CEMP).
- 13.5.2 The development will be phased in such a way to ensure that essential infrastructure and services are delivered to ensure that those who occupy the development in the early phases of the project are adequately served.
- 13.5.3 Proposed mitigation measures for socio-economic impacts will be directly related to meeting policy and infrastructure requirements as necessary and in a proportionate manner. #

13.6 UNCERTAINTIES AND LIMITATIONS

- 13.6.1 By the nature of the methodology, estimates of change in the socio-economic elements such as economic and employment impacts are subject to uncertainty. The estimates in this chapter are based on good practice, but there would likely be a degree of uncertainty around estimates.
- 13.6.2 We estimate that actual impacts are likely to be in a range of +/- 20% of figures given to account for this uncertainty, as is standard practice with such matters.

- 13.6.3 The coronavirus pandemic is likely to have a major operational and economic impact on commercial property sector in the short term. The analysis and conclusions should be considered as relevant to the situation once the UK economy has recovered from the most significant impacts of Coronavirus. However, it is too early to estimate how the crisis will impact on trends.

13.7 MATTERS TO BE SCOPED OUT

- 13.7.1 The potential for businesses and residents to be adversely affected by construction traffic will be considered as part of the assessment of transport impacts (in the TA). In general, it is considered that disruption during construction would be controlled and managed through implementation of the Construction and Environment Management Plan (CEMP).

Appendix 2.1: Site Location Plan

Appendix 3.1: EIA Scoping Parameter Plan