

## 5 Traffic and transport

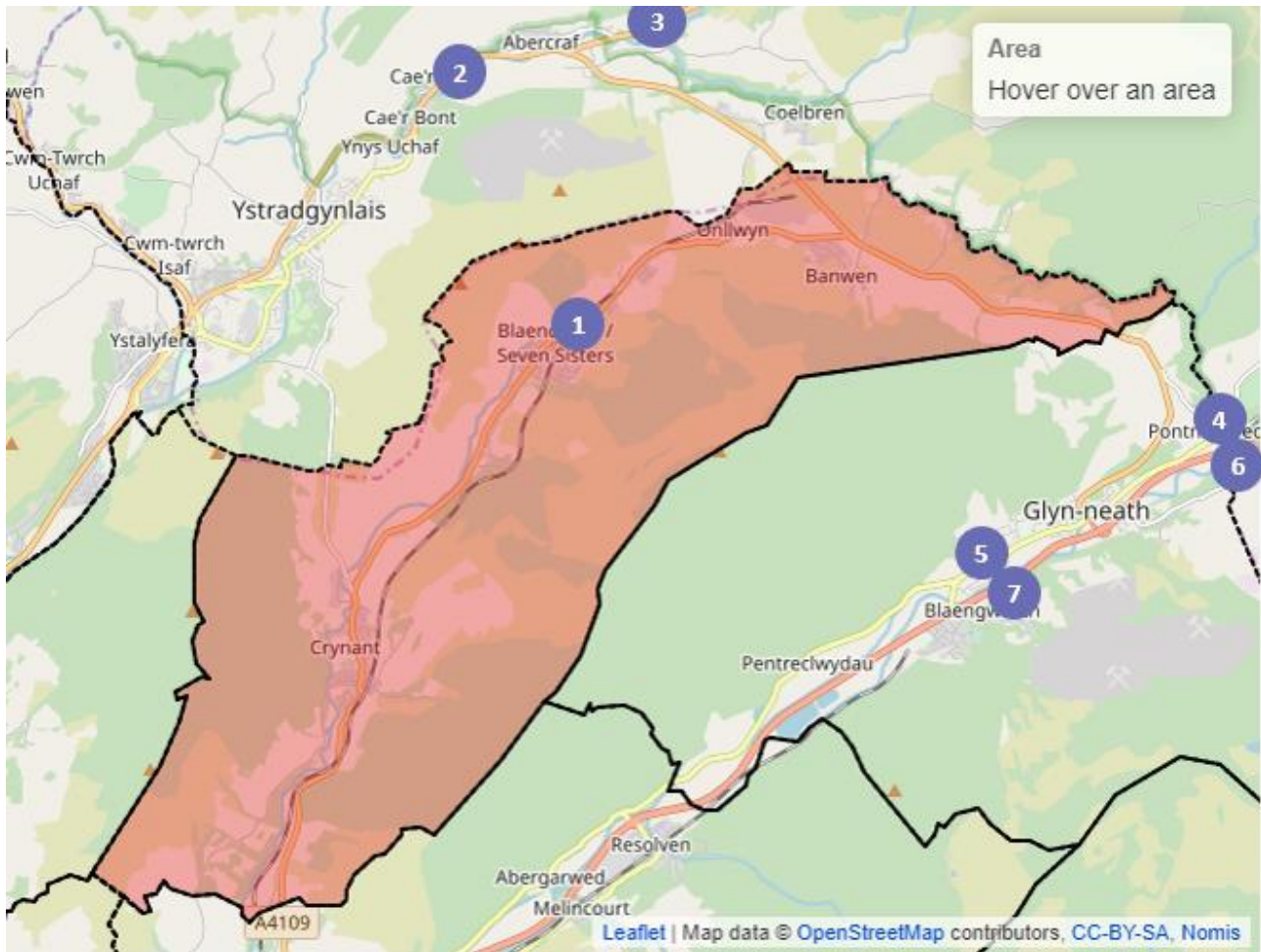
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### 5.1 Introduction

- 5.1.1 This chapter of the ES assesses the potential construction and operational traffic and transport related impacts of the proposed development. The assessment focuses on the potential transport impacts (defined as a change resulting from the proposed development) and effects (defined as a consequence of an impact) associated with the construction and operational phases. It considers and assesses the effects and extent of the environmental impacts arising from the proposed development on safety, capacity and the operation of the transport network within the vicinity of the site, including walking, cycling and public transport.
- 5.1.2 The assessment draws closely on the findings of a comprehensive Transport Assessment (TA) prepared by Arup (TA – Volume III, Appendix 9.1), which has been submitted with the planning application.

### 5.2 Review of proposed development

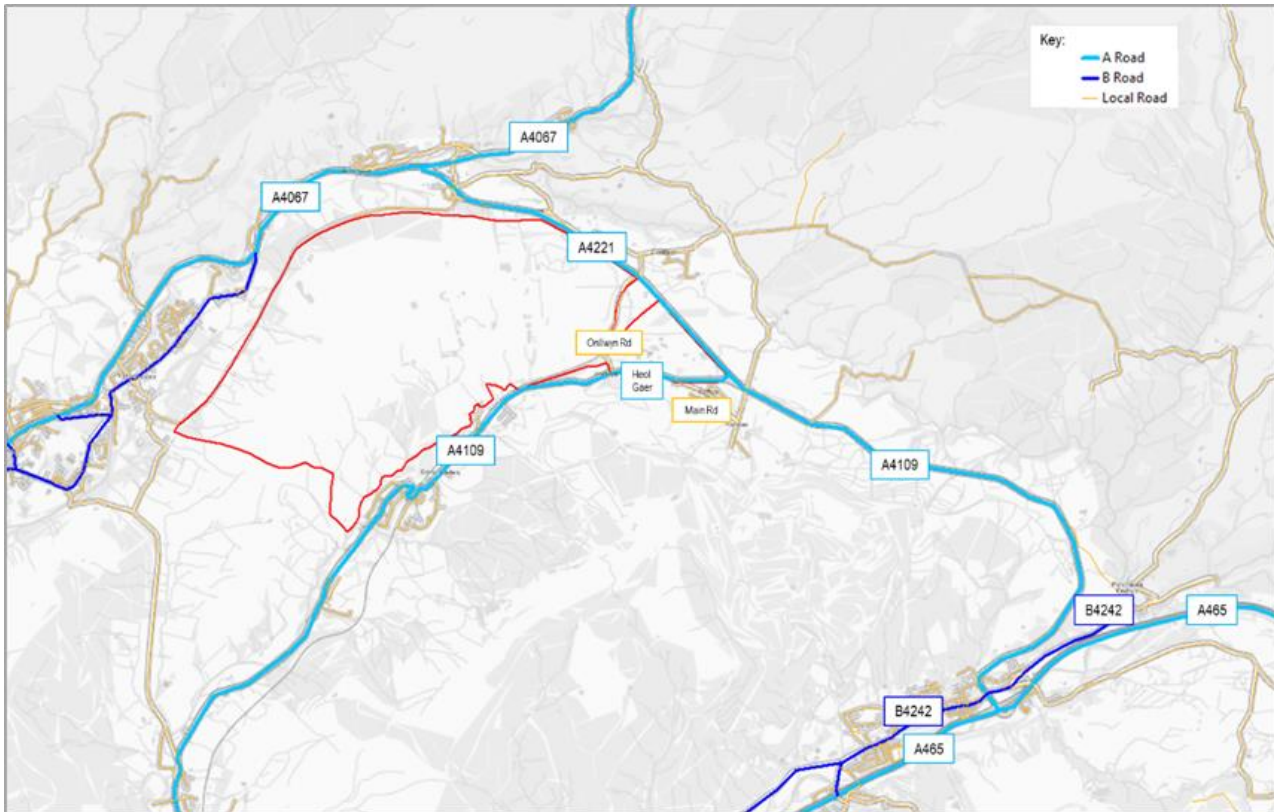
- 5.2.1 The proposed development is described in detail in Chapter 3 of this ES. This section provides an outline review of the transport related proposals associated with the proposed development during construction and once operational.
- 5.2.2 There are seven existing access routes to/from the development which are listed below that may be used for deliveries and by employees for both construction and operation of the GCRE. All routes make use of A and B class roads. Assumptions have been made in regard to distribution, as summarised in Section 5.6, and further explained in the TA (TA – Volume III, Appendix 9.1).
- 5.2.3 The potential routes are:
- Route 1: Via A4109 South to/from Seven Sisters/Neath;
  - Route 2: Via A4067 South to/from Ystradgynlais;
  - Route 3: Via A4067 North to/from Mid-Wales;
  - Route 4: Via B4242 North to/from Pontneddfechan/Rhigos;
  - Route 5: Via B4242 South to/from Glynneath;
  - Route 6: Via A465 North to/from Heads of the Valleys/A470; and
  - Route 7: Via A465 South to/from Neath/Swansea and M4.



**Figure 5-1: Potential traffic routes (Neath Port Talbot MSOA)**

5.2.4 The outline transport strategy for the proposed development, as detailed in the TA (TA – Volume III, Appendix 9.1) seeks to encourage journeys to be made to the development by sustainable modes of transport. The strategy has been refined with reference to the Welsh Government’s Sustainable Transport Hierarchy<sup>1</sup>, which requires new development to prioritise walking, cycling and public transport ahead of private motor vehicles.

<sup>1</sup> Welsh Government (2021) Planning Policy Wales Edition 11



**Figure 5-2: Highway Network**

## 5.3 Legislative and Policy Context

5.3.1 The following national and local planning policy and legislation have been considered relevant during the preparation of this assessment, as summarised below and further analysed in the TA (TA – Volume III, Appendix 9.1).

### National legislation, Policy and Guidance:

- Taking Wales Forward 2016-2021 - To create a prosperous and secure Wales, Welsh Government will support rural transport, and invest in transport to ensure that people can travel easily to jobs.
- Well-being of Future Generation (Wales) Act, 2015 - The 2015 Act places a duty on public bodies in Wales and those listed in the Act to work to improve the economic, social, environmental and cultural well-being of Wales.
- Wales Transport Strategy, 2008 - The overarching aim of the Wales Transport Strategy is to promote sustainable transport networks that safeguard the environment whilst strengthening the country's economic and social performance.
- Active Travel Act 2013 and Interactive Mapping - The National Assembly for Wales, the Active Travel (Wales) Act 2013 requires local authorities in Wales to map and plan for suitable routes for active travel, and to build and improve their infrastructure for walking and cycling every year. It creates new duties for highways authorities to consider the needs of walkers and cyclists and make better provision for them.

- Technical Advice Note 18: Transport, 2007 – TAN 18 reaffirms the importance of a sustainable transport systems and describes how to integrate land use and transport planning. It explains how transport impacts should be assessed and mitigated.
- Planning Policy Wales, Edition 11, 2021 – The primary objective of the policy is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, environmental and cultural well-being of Wales.
- Network Rail Welsh Route Study, 2016 – provides a strategic vision for the railway in Wales between 2019 – 2043 to identify long term priorities for rail.

### **Regional legislation, Policy and Guidance:**

- Joint Transport Plan (JTP) for South West Wales (2015-2020) - The Regional Transport Strategy for the study area has been replaced by the South West Wales Joint Transport Plan (JTP). The JTP focuses on those transport improvements that lie within the remit of the following local authorities: Carmarthenshire County Council, Neath Port Talbot County Borough Council, Pembrokeshire County Council (PCC) and City and County of Swansea.
- The JTP sets out a strategic framework for improvements to transport for a 20-year period and a five-year programme of projects.

### **Local legislation, Policy and Guidance:**

- Neath Port Talbot Local Development Plan 2011 – 2026 (Adopted 2016) – The Local Development Plan (LDP) guides future development in the Neath Port Talbot area providing a clear vision setting out where, when and how much new development can take place between 2011-2026. The overarching policies relate to matters considered to be of primary importance for the whole of the County Borough.
- Neath Port Talbot Local Development Plan 2011- 2026, Parking Standards, Supplementary Planning Guidance (adopted 2016) - The supplementary planning guidance (SPG) sets out the Council’s guidance on the provision of car and cycle parking including standards for different land uses.
- Powys County Council Local Development Plan 2011-2026 (adopted 2018) – The LDP supports transport infrastructure improvements that support sustainable growth, maximise the efficiency and safety of the transport systems, improve public and private transport integration and encourage passenger and freight rail operations.
- Powys County Council Local Development Plan 2011 – 2026, Supplementary Planning Guidance (adopted 2018) - The type of planning obligation is assessed on the developments individual merits and there are no set thresholds. Developments may be subject to planning obligations where there is a requirement to mitigate the identified development impacts in respect to transport or traffic requirements.

#### **5.3.2** Other relevant guidance used in the production of this assessment includes:

- “Guidelines for the Environmental Assessment of Road Traffic” Institute of Environmental Assessment (IEA) 1993. (IEA now known as the Institute of Environmental Management and Assessment (IEMA))

## 5.4 Scoping and Consultation

- 5.4.1 A formal Environmental Scoping Report (September 2019) was submitted to Neath Port Talbot CBC and Powys County Council in order to agree the scope of the ES.
- 5.4.2 The report included a high-level summary of the baseline situation, a summary of key potential effects, a high-level approach in terms of assessment methodology and a summary of planned consultation.
- 5.4.3 A formal Scoping Opinion was received in November 2019 and the pertinent points in relation to the assessment of transport effects are summarised in **Table 5-1**, with a response as to how the advice received has been taken onboard within this assessment.
- 5.4.4 Additional liaison with Powys County Council has also taken place, and responses have been included below.

**Table 5-1: Response to scoping opinion**

Scoping opinion	Response
<b>Neath Port Talbot Internal Consultees</b>	
Public Rights of Way Note that the majority of the network (in NPT), whilst located within the site is unaffected by the proposals – unless they want to remove all the network from the site to make the area secure. Provides comments in respect of potential impacts on 3 rights of way, namely: Bridleway 26 and Footpaths MO ANO2 and Fp33.	The development will not affect existing PROWs and will provide safe pedestrian infrastructure if there is conflict between the PROWs and the proposed development or proposed rail alignment.
Head of Engineering & Transport (Highways) advises that in principle there is no highway objection to the proposal subject to a full and detailed Traffic Impact Assessment (TIA) in accordance with TAN 18 be submitted to and approved in writing by the LPA. Suggest that a meeting between all stakeholders take place at the earliest convenience.	A full and detailed Traffic Impact Assessment (TIA) in accordance with TAN 18 has been provided as part of the EIA.
<b>Powys County Council Internal Consultees</b>	
<p>Countryside, Access and Recreation (Rights of Way) The application site is located across the county border of Powys and Neath Port Talbot. This response relates to public rights of way in Powys.</p> <p>The application site is located on a number of public rights of way in Powys. These are footpath 40, bridleway 45 (which becomes bridleway 66), footpath 19, footpath 50 (which becomes footpath 90), footpaths 11, 17, 52 and 76, footpath 49 and footpath 7. A plan of the paths is attached.</p> <p>Use of public rights of way across the Nant Helen Opencast Coal site is suspended for the duration of coaling works, via an Order under the Opencast Coal Act 1958. If the proposed development would not be compatible with the public rights of way being used on the alignments that are currently recorded on the Definitive Map, once the suspension is revoked, then the paths will need to be legally diverted.</p> <p>Planning permission does not, in itself, grant authority for a public right of way to be diverted. A separate legal diversion process must be completed, before development is commenced over the public rights of way.</p> <p>Even if the paths do not need to be permanently diverted, consideration will need to be given to management of the paths both during and after construction. For further information about applying to divert a public right of way and the options for managing them during and after construction,</p>	The development will not affect existing PROWs and will provide safe pedestrian infrastructure if there is conflict between the PROWs and the proposed development or proposed rail alignment. Upon further investigation at a later stage, if a PROW is required to be diverted then the Countryside Services and Outdoor Recreation team will be contacted by GCRE.

please contact the Countryside Services and Outdoor Recreation team.	
Highways No response received to date	n/a
<b>Powys County Council consultation via email</b>	
<p>Discussion with N&amp;PT in relation to the current planning application and acknowledge the importance of maintaining a level of consistency for highway responses across both boundaries.</p> <p>‘Whilst I have no issue with the count locations agreed, there are 2 other points of access to the site from within the PCC boundary that should also be included/considered, particularly the main access to the north east corner of the site from the A4221. The other potential point of access (although conditioned not to be used as part of the current consent covering the site) is via the C0197 which links to the A4221 via the Coelbren crossroads. Measures need to be included to ensure that this particular route is not used as part of the redevelopment proposals. Both PCC &amp; N&amp;PT officers agree that surveys should cover a minimum 7 day period for any collected data to be reflective of existing highway conditions.</p> <p>Whilst potential traffic movements could be considered against the existing movements associated with the extant consent, I understand that there are potentially multiple additional uses being considered on the site. Are there any plans to factor in any of these potential uses are part of the highway considerations covering this element?’</p>	<p>Coelbren crossroads, located on the northern end of Onllwyn Road (priority junction with A4221) will not be used. It is anticipated that only the southern end of this road will be used (priority junction with A4109) with traffic generated from GCRE turning in and out of the site via this junction and has been included within this EIA for a worst case scenario and any mitigation required has been considered. Surveys will have a minimum of 7-day period – ATC traffic count data has been collected. All options for GCRE have been considered which include the various uses of the site. The worst-case operation scenario, Option C, has been used for a robust assessment.</p>
<b>PAC Response with Neath Port Talbot and Powys County Borough Council via email</b>	
<p>Discussion with N&amp;PT in relation to the current planning application and their concerns:</p> <ol style="list-style-type: none"> <li>1. Both LAs have instructed the resurvey to take place as soon as possible during Covid but excluding the October half term to enable a better representation of traffic movements. This would include a 7-day ATC and 12 hour Classified Junction Turning Count on a neutral day of all previous survey points plus 2 additional junctions – Onllwyn Road/Coelbren crossroads and the Celtic Energy access on the A4221.</li> <li>2. NPTCC and PCC raised concerns of the facility attracting train enthusiasts/unplanned visitors. It is likely that any such visitors would arrive by car and without a designated area for such visitors to park, there is a potential risk of visitors parking on the highway or PROWs. NPTCC and PCC have therefore requested for car parking opportunities to be explored</li> <li>3. Distribution of flows to be reconsidered – Powys distribution is too low. Current distribution closely linked to existing census travel to work but will be amended/uplifted to provide a robust case for Powys.</li> <li>4. More detail required on Active Travel and Wembley/Onllwyn Road junction – what is required? Traffic orders/Visitor provision?</li> <li>5. The TA future scenario is currently only carried out for 11 years and should be 15</li> <li>6. Consideration of emergency access required</li> <li>7. Include note of new development within Glynneath although impact will be negligible but should be mentioned within TA</li> </ol>	<ol style="list-style-type: none"> <li>1. A resurvey was undertaken using a seven-day Automatic Traffic Count (ATC) during the period Wednesday 9<sup>th</sup> December to Tuesday 15<sup>th</sup> December 2020. All Junction Turning Counts 1-8 were also re-surveyed with the addition of two additional junctions. During the ATC re-survey period in December, schools were required to change to home schooling due to increased COVID-19 restrictions which came into force on Monday 14<sup>th</sup> December. COVID-19 has had an impact on the number of journeys undertaken but for the purpose of this assessment it has been assumed that in the medium-term traffic volumes in the area will resume previous trends/volumes. The average traffic flows from the December re-surveys were lower than the January survey data. Through dialogue with NPT and PCC it was agreed that in order to provide a robust assessment the December data would not be used for junction analysis except for the additional two junctions. The ATC data comparison is included as Appendix E of the TA for reference (TA – Volume III, Appendix 9.1).</li> <li>2. It is acknowledged that the facility may attract train enthusiasts and leisure trips passing by who would try to view GCRE. Although no formal provision for viewing the facility is currently proposed, recognising the sensitivity of some of the likely activities / testing which the facility would accommodate, and the</li> </ol>

<p>8. Site is on hill – so expected that mode split will be car dominant, and this should be reflected within TA</p> <p>9. Construction Method Statement required.</p>	<p>potential impact of such visitors has been considered following concerns raised by NPTCBC and PCC. Some potential car parking locations are indicated in Appendix F of the TA. Given that no formal viewing area is currently proposed, it is recommended that the traffic generated from these types of visitors is monitored and an appropriately worded condition added to any future decision in terms of the implementation of suitable traffic management measures should visits of this nature cause concerns. Scope for mitigation is further acknowledge within the Transport Implementation Strategy of the TA (TA – Volume III, Appendix 9.1).</p> <p>3. Workforce distribution has been redistributed from Neath to Powys with an uplift from 5% to 10% as agreed with the LAs.</p> <p>4. Infrastructure standard of crossing facilities along Onllwyn Road will be agreed on in the reserved matters process as Onllwyn Road creates severance between the bridleways and paved footpaths across the GCRE site. Pedestrian access to the site will be provided from Onllwyn Road by provision of a surfaced footway and the requirement for an improved crossing at the Wembley Avenue priority T. This would include an improved crossing of Wembley Avenue to Onllwyn Road to include, as a minimum, dropped kerbs and tactile paving.</p> <p>5. This has been revised and modelled within the assessment for 15 years.</p> <p>6. A4221/Onllwyn Road – This will only be a secondary access and is not considered a main access point to site however should still be considered within the TA. Emergency access will be possible via multiple other access points. Further consideration in construction and operational plans will be developed when a contractor is appointed.</p> <p>7. Acknowledged new development within Glynneath within the TA. Impact is negligible as agreed with NPTCBC and therefore not included within the assessment.</p> <p>8. Mode share has not been considered within the assessment and it is assumed that all trips will be made by car, for a robust assessment.</p> <p>9. A construction method statement has been included in the TA which should be included within the Framework Construction Traffic Management Plan which will be developed once a contractor is appointed post permission. This is further acknowledged in chapter 7.2 of the TA (TA – Volume III, Appendix 9.1)</p>
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## 5.5 Assessment Methodology

- 5.5.1 The methodology presented in this section has been prepared in accordance with The Guideline for the Environmental Assessment of Road Traffic produced by the Institute of Environmental Assessment (IEA) (now Institute of Environmental Management and Assessment (IEMA)) in 1993, hereafter known as the IEMA guidelines.
- 5.5.2 A forecast of the future travel demand expected to be generated by the proposed development during the construction and operational phases of the development will be determined. These form the basis for understanding how demand will be spread across the traffic and transport networks. The vehicular trip forecasts will also enable the impact of the proposed development to be quantified at each of the junctions to be assessed.
- 5.5.3 The methodology used for this assessment is based upon a comparison of predicted traffic flows along affected roads using the IEMA guidelines on the environmental impacts of road traffic. This assessment is structured around the consideration of potential environmental effects relating to traffic and transport, which includes the following:
- Noise and vibration;
  - Visual impacts;
  - Severance;
  - Driver delay;
  - Pedestrian delay;
  - Pedestrian amenity;
  - Accidents and safety;
  - Hazardous loads;
  - Air pollution; and
  - Dust and dirt.
- 5.5.4 The environmental effects associated with visual amenity are addressed in Chapter 9, Chapter 14 assesses the effects associated with air quality and dust and dirt, and the effects associated with noise and vibration are assessed in Chapter 10. Hazardous loads are not considered to be relevant for this scheme and have therefore not been scoped into the assessment.
- 5.5.5 This chapter presents the following:
- The methodology behind the assessment of transport effects, including the criteria for the determination of sensitivity of receptor and magnitude of change from the existing of 'baseline' condition;
  - An explanation as to how the identification and assessment of potential transport effects has been reached; and
  - The significance criteria and terminology for the assessment of transport residual effects.



## Methodology for establishing Baseline conditions

5.5.6 To understand and quantify the future impacts of the proposed development, an assessment of existing local highway characteristics and trends has been undertaken, including:

- A 2019 traffic count survey conducted on a weekday to represent a typical day of traffic as agreed with NPTCBC to assess existing traffic levels, locations of which are shown in Figure 5-7.
- Site visits to assess surrounding areas and the proximity of any residential dwellings or receptors to the potential construction traffic routes;
- Liaison with NPTCBC; and
- Desktop studies to gather local highway accident records and the nature of the highways likely to be affected sourced from publicly available information produced by Welsh Government, TfW and DfT. This includes public transport, and active travel routes.

5.5.7 The study area for the transport chapter of this assessment broadly reflects that of the TA (TA – Volume III, Appendix 9.1) and will encompass all highways, walking and cycling routes that surround the site. To establish the baseline conditions, multi modal traffic data was collected at the following junctions:

1. A4067 and A4221 priority-controlled T-Junction;
2. A4221 and Nant Helen access priority-controlled T Junction;
3. A4221 and Onllwyn Road priority-controlled staggered junction;
4. A4221 and CPL South Wales Coal priority-controlled T-Junction;
5. A4221 and A4109/Heol Gaer priority-controlled T-Junction;
6. Onllwyn Road and A4109 priority-controlled T-Junction;
7. A4109 and A465 priority-controlled T-Junction; and
8. A4109 and B4242 signalised junction.

5.5.8 Two different peak periods were looked at which were the worst-case scenarios based on the 2019 Traffic Count Data weekday AM peak hour and weekday PM peak hour. The traffic flows were then predicted for the following seven scenarios;

- Year 2020 Traffic Flow;
- Year 2024 Traffic Flow;
- Year 2024 Traffic Flow with Phase Two Construction Traffic;
- Year 2026 Traffic Flow;
- Year 2026 Traffic Flow with Operational Development Trips;
- Year 2035 Traffic Flow; and
- Year 2035 Traffic Flow with Operational Development Trips.

5.5.9 A baseline year of 2020 has been adopted for the purposes of this assessment and junction assessments are carried out for the construction and operational phases. Links

near sensitive receptors have been assessed if the traffic flow increase (traffic impacts) is greater than 10% as in accordance with best practice IEMA guidelines.

- 5.5.10** In addition, other links have been assessed where traffic flows increase by 30%. IEMA guidelines also recommend a link should be assessed where there is a significant increase in HGV flows. As noted in paragraph 4.39 of the IEMA guidelines, a significant change would be where the HGV component of traffic flow is halved or doubled. Therefore, a link has also be assessed if the HGV component of traffic flow increases by 100%.
- 5.5.11** During the construction stage, the proposed development will likely generate a regular flow of HGVs during the hours of construction activity. While the Noise and Vibration assessment (ES Chapter 10) is based upon 18-hour Annual Average Weekday Traffic (AAWT) flows, the Air Quality assessment (ES Chapter 14) is based upon the use of 24-hour AADT flows.
- Methodology for assessment of effects from construction**
- 5.5.12** Both the distribution and assignment of staff and deliveries have been assessed.
- 5.5.13** The construction phase of the proposed development will result in an increase in the number of HGVs on some links within the study area. The routing for construction vehicles will include the primary highway routes in the region. Construction traffic movements have been estimated on the basis of the volume of materials and deliveries to the site, as well as the rate of construction as defined by a high-level phasing plan. The estimated construction traffic movements are based on a worst-case scenario and analysed with junction movements that are already trafficked.
- 5.5.14** Deliveries to the site are likely to be made via a mix of road and rail vehicle movements. Whilst the exact split of deliveries is not known at this stage, a logical approach has been taken to generate assumptions around the split of vehicles.
- 5.5.15** Distribution of delivery vehicles during the construction phase have been estimated based on the likely spread of construction materials. The assignment of development traffic has been determined by examination of the highway network. This exercise has been undertaken by attributing each set of trips to the destination via the most likely route. Where several feasible routes could be used, the development trips have been split accordingly. The delivery vehicle distribution calculations are summarised in Table 5-8.
- 5.5.16** The forecasted volume of traffic generated has been assessed against baseline traffic flows to calculate the uplift in traffic because of the planned construction and the effect that these additional trips would have on the network.
- 5.5.17** Eight key junctions were assessed and industry-standard software, LinSig, was used to assess key junction capacities. Theoretically, junctions have a maximum capacity, which is dependent on junction geometry, vehicular flow, proportion of HGVs and traffic signal timing. LinSig estimates vehicle delay through a junction and hence, by testing each junction in the baseline and with development scenario, it is possible to estimate increased vehicle delays.

- 5.5.18 Routeing specifications will be formally agreed with the contractor once appointed. A plan showing the proposed access to site for construction vehicles is shown in Figure 5-3.
- 5.5.19 A sensitivity test has been carried out, which tests a higher percentage of construction delivery traffic travelling to/from the west via the A4067 from Ystradgynlais. Deliveries from the west are likely to come from J45 of the M4 and take the A4067 to the site. The construction delivery access will remain as before via the Washery Access.

### Methodology for assessment of effects from Operation

- 5.5.20 Both the distribution and assignment of staff, visitors (i.e. testing teams) and deliveries have been assessed.
- 5.5.21 Once operational, the proposed development is forecast to result in additional vehicle movements on the local highway network. An assessment of employment potential was carried out within the Outline Business Case (OBC) for the proposed development. This considers the direct on-site employment that the various options could support.
- 5.5.22 The mode split breakdown for the site will be derived through reference to 2011 Census Travel to Work Data for the Neath Port Talbot 002 Mid-layer Super Output Area (MSOA).
- 5.5.23 The operational phase of the development will also generate delivery vehicle trips on an ad-hoc basis, such as the delivery of rolling stock vehicles for testing. Whilst it is not possible to quantify these deliveries in detail at this stage of the project, a high-level assumption of delivery vehicles per day is assumed during each of the AM and PM peak hours for a robust analysis.
- 5.5.24 GCRE will attract visiting testing teams once operational. It has been assumed that a typical test team of around 30 people would arrive/depart daily in four minibuses during the AM and PM peak hours for a robust analysis. The distribution of which is estimated based on the likely geographical spread of hotel and accommodation, assuming that each testing team will remain local during their test trials. Majority of accommodation is located within Swansea, and some located nearer the site via Ystradgynlais and Glynneath. During the operational phase of the development, it is assumed that visitors will primarily be routed via the A4109 as this is the most direct route to the main access from Swansea.
- 5.5.25 After some concern expressed by the LA's from consultation on staff and visitor routing, a sensitivity test has been carried out. All those travelling to/from the west of GCRE will travel via the A4221/Onllwyn Road staggered junction as this is seen to be the most likely route if travelling to the southern access of GCRE located on Onllwyn Road/Wembley Avenue. Prior to this it was assumed all those travelling from the west will access GCRE via the Washery access due to the Onllwyn Road access being a secondary access.

## 5.5.26 Significance Criteria

### Significance of Receptors

5.5.27 In accordance with the EIA Regulations, the likely environmental effects of the project have been identified and their significance determined. Evaluation of their significance has been based upon specific criteria for each type of receptor and impact. This process considers the following:

- Impact likelihood, extent and magnitude;
- Impact nature (whether beneficial or adverse, direct or indirect, primary or secondary, permanent or temporary);
- Importance and sensitivity of the environmental receptor;
- The number of receptors that are impacted;
- Impact duration (whether short, medium or long term); and
- Whether it is a stand-alone impact or is cumulative.

5.5.28 Unless specified otherwise, the following terms have been used to assess the overall significance of effects:

- Major beneficial or adverse – where the proposed development is likely to cause a significant improvement or deterioration to the future baseline environment;
- Moderate beneficial or adverse – where the proposed development is likely to cause a noticeable improvement or deterioration to the future baseline environment;
- Minor beneficial or adverse – where the proposed development is likely to cause a barely perceptible improvement or deterioration to the future baseline environment; and
- Negligible – no discernible improvement or deterioration to the future baseline environment.

5.5.29 Paragraph 2.5 of the IEMA guidance indicates the followings user groups are susceptible to being impacted by changes in traffic conditions:

- People at home;
- People in workplaces;
- Sensitive groups including children, elderly and disabled;
- Sensitive locations, e.g. hospital, churches, schools, historical buildings;
- People walking;
- People cycling;
- Open spaces, recreational sites, shopping areas;
- Sites of ecological/nature conservation value; and
- Sites of tourist/visitor attraction.

5.5.30 Table 5-2 below presents the receptor sensitivity based on paragraph 2.5 of the IEMA guidelines and adapted using professional judgements.

**Table 5-2: Receptor Sensitivity Terminology**

Receptor Sensitivity	Receptor Type
Very High	Receptors of greatest sensitivity to traffic flow including roads without footways, rural settlements containing a high number of community and public services and facilities, areas with traffic control signals, waiting and loading restrictions, traffic calming measures and minor rural roads, not constructed to accommodate frequent use by HGV. This usually includes areas that include schools/colleges/playgrounds, historic hotpots and retirement homes.
High	Receptors sensitive to traffic flow including roads with limited/narrow footway or unsegregated cycleways, congested junctions, intermediate sized rural settlements containing community or public facilities and services, areas with some traffic calming or traffic management measures and local A or B roads, capable of regular use by HGV. These areas usually include GPs/hospitals/shopping areas with roadside frontages, parks and recreational facilities.
Medium	Receptors with some sensitivity to traffic flow including small rural settlements with few community or public facilities/services, areas with little or no traffic calming, or traffic management measures and trunk of A-class roads constructed to accommodate significant HGV movements. These areas may also include residential streets with suitable footway provision, places with ecological/nature/heritage value and tourist/visitor attractions
Low	Receptors with low sensitivity to traffic flow including roads with no adjacent settlements including new strategic trunk roads or motorways that would be little effected by additional traffic and suitable for abnormal loads and those located sufficiently away from affected roads and junctions.

### Potential Receptors

5.5.31 For the purpose of this environmental statement, receptors are defined as physical (i.e. roads) or user groups that would be affected by the project impacts. The sensitivity of a receptor is defined by the degree of which it responds to change in its environment. In this assessment, it will be related to the effect in an increase in traffic flow.

5.5.32 For the purpose of this assessment receptors have been identified along the following road links, that may experience potential impacts from the increase in traffic flow:

- A4221 - Single carriageway
- A4067 North - Single carriageway
- A4067 South- Single carriageway
- A465 – Dual carriageway
- A4019 - Single carriageway
- B4242/A4109 signalised junction
- B4242 – Single carriageway
- Onllwyn Road
- Heol Gaer Road
- Main Road
- Pedestrian level crossings/footbridges along the existing railway line

## Assessment Criteria

**5.5.33** Magnitude is determined by predicting the scale of any potential change in the baseline conditions. Where possible, magnitude has been quantified; however, where this has not been possible a fully defined qualitative assessment has been undertaken.

**5.5.34** To assess the magnitude of impact arising from an increase in HGV movements, the following impacts have been considered:

- Severance – the IEMA Guidance states that, “severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery”. Further, “changes in traffic of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ (or minor, moderate and major) changes in severance respectively”. However, the Guidelines acknowledge that “the measurement and prediction of severance is extremely difficult”;
- Driver delay – the IEMA Guidelines note that these delays are only likely to be ‘significant (or major) when the traffic in the network surrounding the development is already at, or close to, the capacity of the system.’;
- Pedestrian delay – similar to driver delay, a major impact is likely to occur when the traffic or network surrounding the development is already at, or close to, the capacity of the system. An increase in total traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross the road and would be considered ‘major’.
- Pedestrian amenity – the IEMA guidelines suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its HGV Component) is halved or doubled.;
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow of 30%, 60% and 90% are regarded as producing ‘minor, ‘moderate’ and ‘major’ changes in severance respectively; and
- Accidents and safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents.

**5.5.35** There are other potential impacts that could arise from the increase in traffic from the Proposed Development; such effects are discussed in: Chapter 7: Biodiversity, Chapter 9: Landscape and Visual Impact Assessment, Chapter 10: Noise and Vibration and Chapter 14: Air Quality.

## Magnitude of Impact

**5.5.36**

**5.5.37** Table **5-3** outlines the criteria by which potential impacts have been assessed. The IEMA guidelines have been used for developing the assessment criteria to determine the magnitude of impact caused by either a general increase in traffic flow or HGVs.

**Table 5-3: Assessment criteria to determine magnitude of impact**

Impact	Assessment Criteria			
	Negligible	Minor	Moderate	Major
<b>Severance</b> – results from the creation of new barriers such as roads combined with increased traffic flows along existing routes. Magnitude is based on IEMA Guidelines	Change in traffic flow of up to 30%	Change in traffic flow of 30% to 60%	Change in traffic flow of 60% to 90%	Change in traffic flow of over 90%
<b>Pedestrian delay</b> - results from increase in traffic flow, speed or composition along existing routes.	To be assessed on a case by case basis, with consideration given to the sensitivity and vulnerability of the receptor.			
<b>Pedestrian amenity</b> - relates to the relative pleasantness of a journey and can be affected by increase in traffic	To be assessed on case by case basis using professional judgement with consideration given to changes to traffic flow.			
<b>Fear and intimidation</b> - a pedestrian's level of fear and indication is linked to the volume of traffic on the local road network.	Change in traffic flow of up to 30%	Change in traffic flow of 30% to 60%	Change in traffic flow of 60% to 90%	Change in traffic flow of over 90%
<b>Driver delay</b> - often caused by the impact of the works on the local road network, along with increase in overall traffic flow along existing routes.	To be assessed on case by case basis using professional judgement and the results of the junction modelling assessments.			
<b>Accidents and Safety</b> - the impact of the proposed development through an increase in vehicles could influence the accidents and safety of the surrounding road network.	To be assessed on case by case basis using professional judgement with consideration given to accident assessment included within the TA (TA – Volume III, Appendix 9.1) and the forecast increase in traffic flows resulting from the development			

**5.5.38** As a guide to inform the assessment, but not as a substitute for professional judgement, an overall impact of significance matrix used for determining the significance of traffic related effects is set out in Table 5-4 and has been developed by combining receptor sensitivity and the magnitude of the impact.

**Table 5-4: Significance of effects matrix**

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	Minor	Moderate	Major
<b>Very High</b>	Minor	Moderate	Major	Major
<b>High</b>	Negligible	Minor	Moderate	Major
<b>Medium</b>	Negligible	Negligible	Minor	Moderate
<b>Low</b>	Negligible	Negligible	Negligible	Minor

**5.5.39** Potential effects are therefore categorised as either Major, Moderate, Minor or Negligible significance. Major and moderate significance represents effects considered to be significant in IEMA guidelines.

## 5.6 Limitations and assumptions of methodology

### Limitations

#### Traffic Count Data

- 5.6.1 WebTAG sets out neutral months most likely to be representative of daily traffic. The timescales associated with data processing and preparation of this EIA have dictated the survey period within a non-neutral month, and as such an uplift factor has been calculated to account for seasonality.

#### Traffic Growth

- 5.6.2 In order to generate traffic flows for the future assessment years of 2024, 2026 and 2035, background traffic growth factors have been derived from the DfT's Trip End Model Presentation Program (TEMPro) version 7.2b. The geographical area has been set at the Neath Port Talbot local authority area. Origin/Destination growth rates for Car Driver trips have been obtained for the AM and PM peak hours and the adjusted local growth figure for NPTCBC has been calculated.

### Assumptions

#### Construction: Traffic increase assessment

- 5.6.3 Vehicular trips associated with staff and delivery of construction materials have been estimated for each of the three construction phases. A breakdown of estimated duration, delivery and staffing requirements for each construction element is summarised in Table 5-5.

**Table 5-5: Summary of Construction Workforce and Delivery Estimates**

Phase	Construction Element	On-way Daily Deliveries Veh	On-way Daily Staff Veh	On-way Train Deliveries
Phase 1	Earthworks (for Track)	0	4	0
	Power	3	6	0
	Staff Facilities	2	4	0
	Train Storage	5	20	12
	High Tonnage Infrastructure Test Loop	5	24	10
	Signalling	2	3	0
	Infrastructure, Access Roads & Rail Crossings	2	3	0
	Miscellaneous	16	14	0
Phase 2	Earthworks (for proposed trackwork)	0	4	0
	Power	1	2	0
	Rolling Stock and Infrastructure Testing	3	24	0
	Large Railroad Test Loop	9	53	27
	Carriage Wash Facility	1	2	0
	Central Control Centre	1	2	0
	Staff Facilities	1	2	0



Phase	Construction Element	On-way Daily Deliveries Veh	On-way Daily Staff Veh	On-way Train Deliveries
	Additional Track - Testing Facilities	2	8	2
	Train Storage	5	18	11
	Access Roads and Rail Crossings	9	19	0
Phase 3	Earthworks (for proposed trackwork)	0	4	0
	Switches and Crossings Upgrades	1	2	0
	Additional Infrastructure	2	6	0
	Rolling Stock Decommissioning	1	2	0
	Train Storage	13	23	12

5.6.4 It has been assumed that equipment associated with the track works (formation, ballast, sleepers, rails, clips etc.) and other rail infrastructure (overhead line equipment, switches and crossings etc.) will primarily be delivered by rail.

5.6.5 There may be opportunities for the appointed contractor(s) to explore the potential for the delivery of other construction materials for buildings and civils works to also be delivered by rail, but for the purposes of generating a worst-case scenario for highway junction capacity assessment, it is assumed that these construction materials will be delivered by road. Additionally, Phase Two is used to assess construction trips, as it represents the most intense period in terms of workforce on site and frequency of delivery vehicles.

5.6.6 Below is a summary of Phase Two trip generation, which is the worst phase and is used as the worst-case scenario to assess the impact from construction. A Passenger Car Unit (PCU) is a vehicle unit for expressing highway capacity. A car is considered one PCU and an HGV is considered 2.3 PCUs. All HGVs are converted to PCUs to represent a robust worst-case assessment of the impact of the facility on surrounding transport networks.

**Table 5-6: Phase Two Construction Vehicle Trip Generation**

Time Period	Staff		Deliveries (PCUs)	
	Arrivals	Departures	Arrivals	Departures
AM Peak Hour (08:00-09:00)	142	0	76	76
PM Peak Hour (15:00-16:00)	0	142	76	76

5.6.7 Translating overall staff and delivery estimates into daily trip generation requires several assumptions which are listed in section eight of this chapter. Again, several of these assumptions involve an element of robustness to ensure that worst-case scenario in traffic terms has been developed.

5.6.8 The relevant assumptions for construction traffic are summarised as follows:

- AM and PM peak hours correspond with surrounding highway network peak hours of 08:00-09:00 and 15:00-16:00 respectively;
- Deliveries of construction materials will be primarily undertaken by road, with typical rail infrastructure delivered by train;

- Extant trips associated with the Celtic Energy site have been removed from the network based on closure of this facility (Extant AADT of 147 vehicle at the Nant Helen Access and 177 vehicles at the Celtic Energy Access) ;
- No committed development sites within the study area;
- Seasonality factors of +23% applied to observed January 2020 traffic counts and +64% applied to the observed December 2020 traffic counts to account for difference in traffic flows during January and December survey period;
- Traffic flows for with and without development scenarios calculated for the following future year scenarios using TEMPro traffic growth factors:
  - 2020 Base Year;
  - 2024 Construction Phase;
  - 2026 Opening Year; and
  - 2035 Future Year Assessment.
- Assumed that all delivery vehicles are OGV2 for purposes of PCU conversion.
- Junction Assessments will be carried out assuming that all staff trips during construction will be made by car, representing a worst-case for junction assessment.
- The assignment of development traffic has been determined by examination of the highway network. This exercise has been undertaken by attributing each set of trips to the destination via the most likely route. Where several feasible routes could be used, the development trips have been split accordingly.
- Assumptions on the distribution of construction staff have been determined through reference to 2011 origin/destination census data from the WU03EW location of usual residence and place of work by method of travel to work census category, with place of work set to Neath Port Talbot 002 MSOA.

**Table 5-7: Staff Trip Distribution and Assignment Summary**

#	Route	Percentage
1	Via A4109 South to/from Seven Sisters/Neath	57%
2	Via A4067 South to/from Ystradgynlais	10%
3	Via A4067 North to/from Mid-Wales	20%
4	Via B4242 North to/from Pontneddfechan/Rhigos	1%
5	Via B4242 South to/from Glynneath	5%
6	Via A465 North to/from Heads of the Valleys/A470	7%
7	Via A465 South to/from Neath/Swansea and M4	0%

5.6.9 It is assumed that delivery vehicles will be routed via the M4 and A465 South. The delivery vehicle distributions are summarised in Table 5-8.

**Table 5-8: Construction and Operational Trip Distribution and Assignment Summary**

#	Route	Construction Deliveries	Operational Deliveries
1	Via A4109 South to/from Seven Sisters/Neath	20%	-
2	Via A4067 South to/from Ystradgynlais	-	-
3	Via A4067 North to/from Mid-Wales	10%	-
4	Via B4242 North to/from Pontneddfechan/Rhigos	-	-

#	Route	Construction Deliveries	Operational Deliveries
5	Via B4242 South to/from Glynneath	-	-
6	Via A465 North to/from Heads of the Valleys/A470	30%	-
7	Via A465 South to/from Neath/Swansea and M4	40%	100%

**5.6.10** A sensitivity test has been carried out, which tests a larger percentage of construction delivery traffic travelling to/from the west via the A4067 from Ystradgynlais. Deliveries from the west are likely to come from J45 of the M4 and take the A4067 to the site. The construction delivery access will remain as before via the Washery Access. The construction delivery vehicle distributions are shown in Table.5-9 for the sensitivity test.

**Table.5-9: Sensitivity Test - Construction Delivery Trip Assignment summary**

#	Route	Construction Deliveries
1	Via A4109 South to/from Seven Sisters/Neath	20%
2	Via A4067 South to/from Ystradgynlais	10%
3	Via A4067 North to/from Mid-Wales	10%
4	Via B4242 North to/from Pontneddfechan/Rhigos	-
5	Via B4242 South to/from Glynneath	-
6	Via A465 North to/from Heads of the Valleys/A470	30%
7	Via A465 South to/from Neath/Swansea and M4	30%

## Site Access

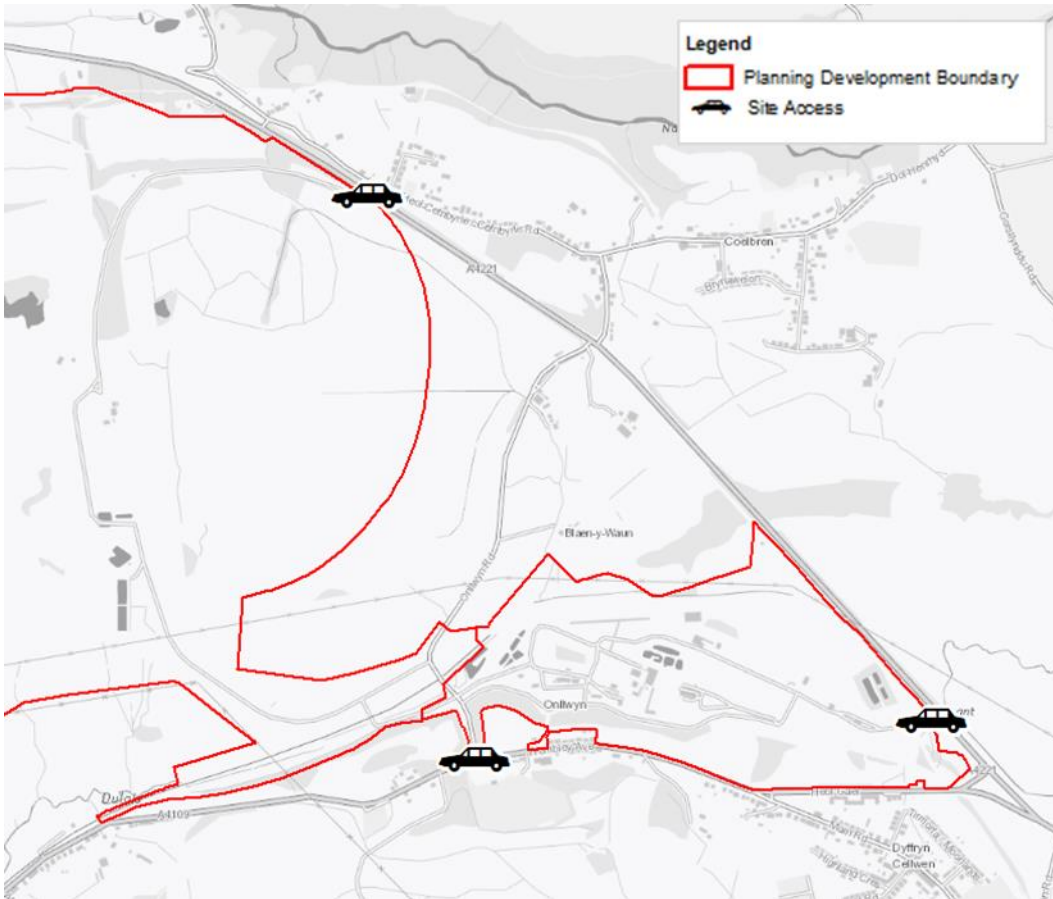
**5.6.11** It is proposed to provide access from the external highway network at three locations:

- The existing junction of the A4109 Wembley Avenue with Onllwyn Road;
- The existing A4221 Celtic Energy – Nant Helen access road; and
- The existing A4221 Washery and Distribution centre access.

**5.6.12** The three access points are shown in Figure 5-3.

**5.6.13** There is an additional secondary access from Onllwyn Road via the Onllwyn Road/A4221 staggered junction but as a secondary access. A sensitivity analysis has been carried out to assess the A4221/Onllwyn Road junction however, any car parking will likely be near the A4221 Washery and Distribution centre access. During operation, it is assumed that car users will use the existing washery access if travelling from west or east on the A4221, and the Onllwyn Road/Wembley access if traveling from the south. Onllwyn Road will be discouraged from being used from the A4221. Management of the access is further covered within the Framework Travel Plan within the TA (TA – Volume III, Appendix 9.1).

**5.6.14** Emergency access will be possible via multiple access points. Further consideration in construction and operational plans will be developed when a contractor is appointed.



**Figure 5-3: Site Access**

**Operational: Traffic increase assessment**

**5.6.15** An assessment of the employment potential of GCRE has been made within the Outline Business Case (OBC) for the proposed development. This considers the direct on-site employment that the various options could support.

**5.6.16** For the purposes of the vehicular trip generation, the upper estimate of 118 staff has been used which represents a robust worst-case assessment of the impact of the facility on surrounding transport networks.

**Table 5-10: OBC On-site Operational Staff Estimation**

Staff Category	Staff Estimate		
	Option A	Option B	Option C
Support Staff	29	29	29
R&D/Technical Staff	32	72	89
<b>Total</b>	<b>61</b>	<b>101</b>	<b>118</b>

**5.6.17** The assignment of development traffic has been determined by examination of the highway network. This exercise has been undertaken by attributing each set of trips to the destination via the most likely route. Where several feasible routes could be used, the development trips have been split accordingly. The delivery vehicle distribution calculations are summarised in Table 5-11.

**Table 5-11: Staff Trip Distribution and Assignment Summary**

#	Route	Percentage
1	Via A4109 South to/from Seven Sisters/Neath	62%
2	Via A4067 South to/from Ystradgynlais	5%
3	Via A4067 North to/from Mid-Wales	20%
4	Via B4242 North to/from Pontneddfechan/Rhigos	1%
5	Via B4242 South to/from Glynneath	5%
6	Via A465 North to/from Heads of the Valleys/A470	7%
7	Via A465 South to/from Neath/Swansea and M4	0%

5.6.18 Assumptions on the distribution of operational staff have been determined through reference to 2011 origin/destination census data from the WU03EW location of usual residence and place of work by method of travel to work census category, with place of work set to Neath Port Talbot 002 MSOA. Modal split data is presented in Table 5-12.

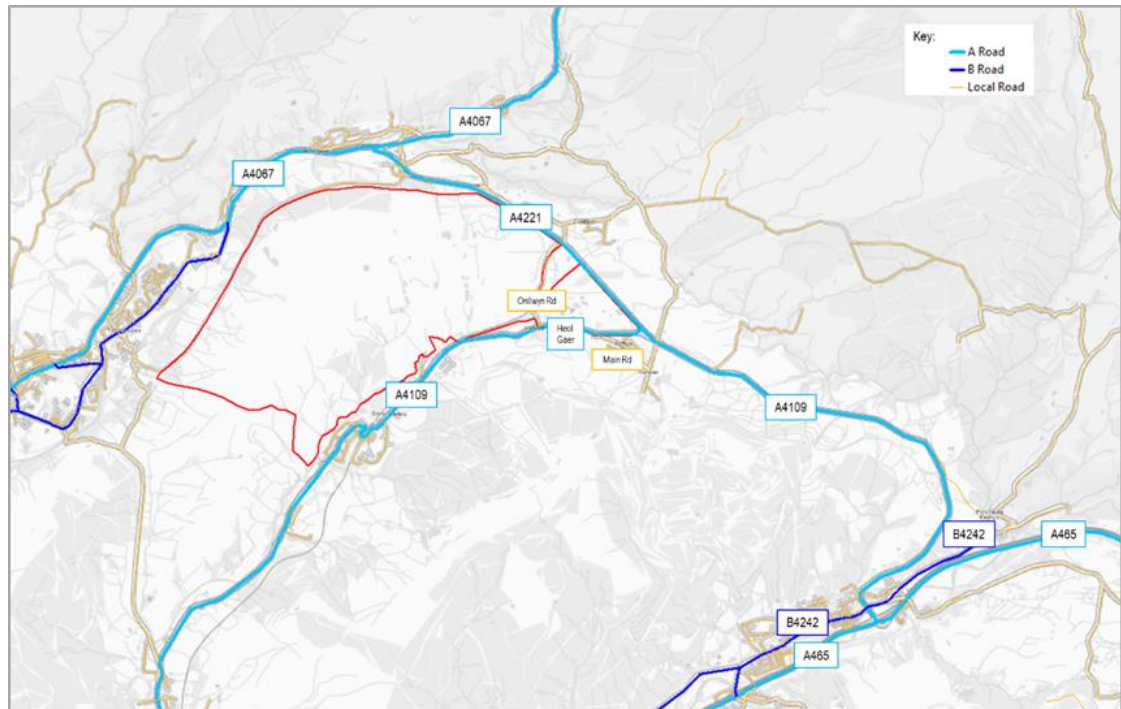
5.6.19 A mode share analysis was carried out for operational staff. Whilst the mode share is likely to be around 20% lower based on the mode share analysis, for the purposes of junction assessment it is assumed that all staff trips will be made by car, representing a worst-case for junction assessment.

**Table 5-12: Existing Mode Split - Neath Port Talbot 002 MSOA**

Travel Mode	Existing Mode Share
Driving a car or van	80.1%
Passenger in a car or van	8.1%
On foot	5.7%
Bus, minibus or coach	3.7%
Bicycle	0.8%
Motorcycle, scooter or moped	0.8%
Train	0.6%
Taxi	0.2%
<b>Total</b>	<b>100.0%</b>

## Baseline Situation

### Local Highway Network



**Figure 5-4: Highway Network**

- 5.6.20** The north of the site is bounded by the A4221 with a posted speed limit of 40mph. To the west, the A4221 joins the A4067 at a priority junction near Caehopkin. The A4067 runs roughly parallel to western site boundary separated by woodland and connects south to Swansea and the M4 at Junction 45, and north to the Brecon Beacons.
- 5.6.21** The A4221 continues east of the site meeting the A4109 to the north of Banwen, with a posted speed limit of 30mph. From this point the A4109 to the southeast passes the primary site access at Onllwyn Road and 15km to the south connects to the A465 at Tonna providing an onward route to Junction 43 of the M4. The A4109 is crossed by a rail link with an underbridge vehicle height limit of 4.6m north of the Onllwyn Road junction. Onllwyn Road has a 7.5 tonne weight restriction north of the washery site access and several minor junctions connecting to private entries.
- 5.6.22** To the southwest of the junction at Banwen the A4109 connects to the A465 at Glyneath from where the A465 provides an onward route to destinations towards Merthyr Tydfil.

## Public Transport

### Bus

- 5.6.23** There are two bus stops known as Coelbren Turn on either side of A4019 at the Onllwyn Rd T junction located within 400m of the existing washery southern site access from Onllwyn Road. Each bus stop includes a waiting shelter but there is no timetable information present.

- 5.6.24 Four bus services serve these bus stops and provide access to Crynant, Seven Sisters, Neath and Swansea that stop at the Coelbren Turn and other services that do not serve the site directly.
- 5.6.25 There are no busses that provide accessibility east and west cross valley that operate within vicinity of Onllwyn Road Junction.

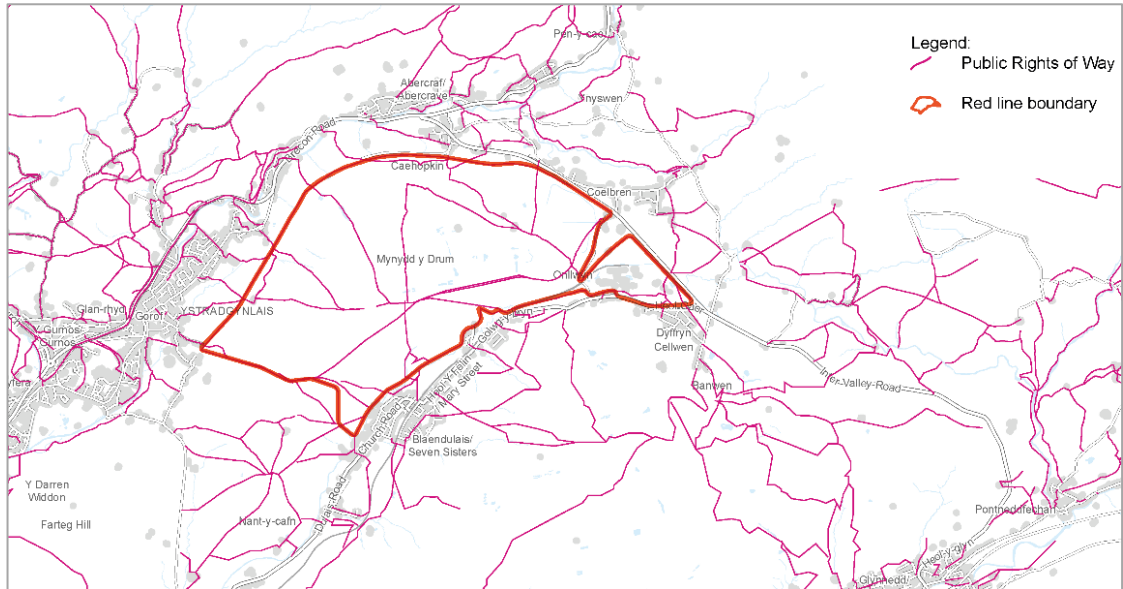
### **Rail**

- 5.6.26 There are no passenger services to the site but the Neath and Brecon branch line remains open to freight trains with access via Neath and Brecon Junction. Trains accessing the branch line are currently required to travel to Swansea docks and shunt to the Neath and Brecon Junction or travel to Swansea Burrows sidings to turn around.
- 5.6.27 The single-line branch line route operates using a physical token-block signalling system up-chainage from Neath & Brecon Junction.

## **Public Footpaths and Cycle Paths**

### **Walking**

- 5.6.28 From the A4109/Onllwyn Road junction a continuous footway (part of the highway) adjoins the eastern carriageway of the A4019 south towards Severn Sisters. Footways also adjoin both carriageways to the north of the junction towards Banwen.
- 5.6.29 At the T junction with Main Road and A4109, approximately 752 m northeast from A4109/Onllwyn Rd junction the footway continues on the eastern carriageway into Banwen and on the western carriageway towards the A4221 which terminates at the A4109/ Heol Gaer Overbridge.
- 5.6.30 There are several Public Rights of Way (PRoW) which pass through the site. These PRoW's link east to west connecting a number of villages including Penrhos and Onllwyn onto Banwen and north to south between Caehopkin and Severn Sisters. The PRoW through and near the proposed site are shown in **Figure 5-5**. More details are provided in Chapter 12 in relation to proposed changes to the PRoW network across the site.

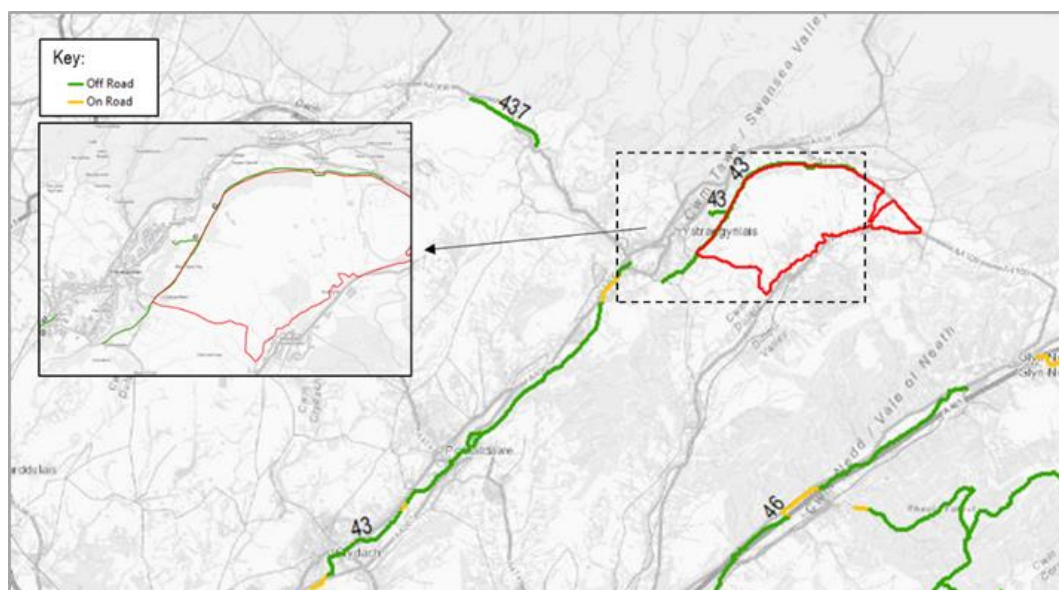


**Figure 5-5: Public Right of Way (PRoW) within vicinity of the project.**

### Cycling

- 5.6.31 National Cycle Network (NCN) 43 connects the site to Swansea via an on and off-road cycle route. The route runs along the north and western boundary of the study area and through Ystalyfera, Cilmaengwyn, Pontardawe, Clydach and along the River Tawe through Swansea where it connects with NCN 4, as illustrated in Figure 5-6.
- 5.6.32 The Active Travel Map for both Neath and Powys do not show any future routes that are planned near the site that would directly affect GCRE. The closest active travel routes planned are walking routes within Seven Sisters along the A4109 and an integrated cycle way between Seven Sisters and Banwen away from the road and through the grass land that lies between. The Active Travel map of proposed future routes is shown within the TA (TA – Volume III, Appendix 9.1).





**Figure 5-6: National Cycle Network (NCN)**

### 5.6.33 Existing Traffic Flows

5.6.34 To understand the pattern of existing traffic movements on the network, traffic surveys were carried out on Tuesday 7<sup>th</sup> January 2020. The type and location of counts were agreed in advance with NPTCBC and are illustrated in Figure 5-7.

5.6.35 Automatic Traffic Counts (ATC) were carried out at the following locations:

- ATC 1: A4109, west of Onllwyn Road;
- ATC 2: A4109 Main Road, west of Heol Bryn Seion;
- ATC 2: A4221, south of Onllwyn Road; and
- ATC 3: A4109 Inter-Valley Road, east of Roman Road.

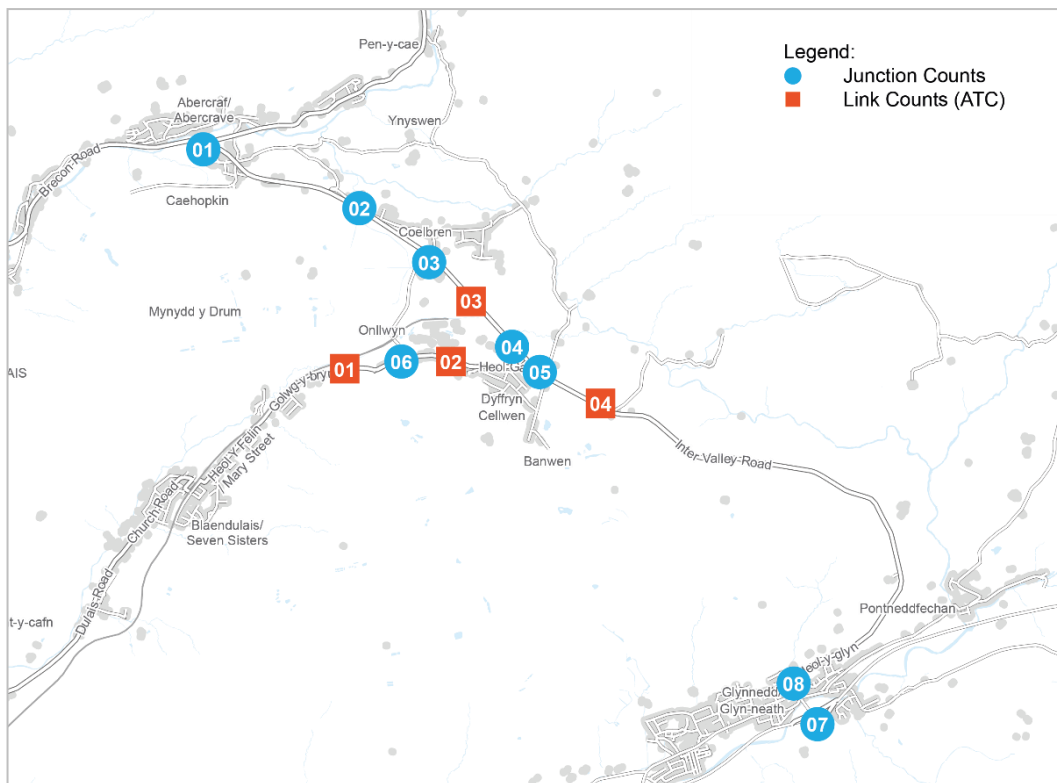
5.6.36 Junction Turning Counts (JTC) and Queue Length surveys were also carried out for the time period 07:00-19:00 on at the following locations:

- JTC 1: A4067 and A4221 priority-controlled T-Junction;
- JTC 4: A4221 and CPL South Wales Coal priority-controlled T-Junction;
- JTC 5: A4221 and A4109/Heol Gaer priority-controlled T-Junction;
- JTC 6: Onllwyn Road and A4109 priority-controlled T-Junction;
- JTC 7: A4109 and A465 priority-controlled T-Junction; and
- JTC 8: A4109 and B4242 signalised junction.

5.6.37 Surveyed traffic flows for the identified AM (08:00-09:00) and PM (15:00-16:00) peak hours as well as 24-hour AADT are illustrated spatially within the Appendix A of the TA (TA – Volume III, Appendix 9.1), Figures A1-A4. Corresponding figures showing the percentage HGVs are presented within the Appendix of the TA (TA – Volume III,

Appendix 9.1) as Figures A5-A6. A high proportion of HGV movements were recorded which might be anticipated as a result of the extant land use in the study area.

- 5.6.38 A resurvey was undertaken using a seven-day Automatic Traffic Count (ATC) during the period Wednesday 9th December to Tuesday 15th December 2020. This was instructed by both LAs to give a better representation of the traffic. All Junction Turning Counts 1-8 were also re-surveyed with the addition of two additional junctions. The additional surveys are JTC 2: A4221 and Nant Helen priority-controlled T-Junction, and JTC 3: A4221 and Onllwyn Road priority controlled staggered junction.
- 5.6.39 During the ATC re-survey period in December, schools were required to change to home schooling due to increased COVID-19 restrictions which came into force on Monday 14<sup>th</sup> December. COVID-19 has had an impact on the number of journeys undertaken but for the purpose of this assessment it has been assumed that in the medium term traffic volumes in the area will resume previous trends/volumes.
- 5.6.40 The average traffic flows from the December re-surveys were lower than the January survey data. Through dialogue with NPT and PCC it was agreed that in order to provide a robust assessment the December data would not be used for junction analysis except for the additional JTC 2 and JTC 3.
- 5.6.41 The ATC data comparison is included within Appendix E of TA (TA – Volume III, Appendix 9.1) for reference.



**Figure 5-7: Traffic count survey locations**

**Table 5-13: Surveyed Traffic flows**

Survey Point	AM Peak (PCUs) / HGV (%)	PM Peak (PCUs) / HGV (%)	Average Annual Daily (Vehs) / HGV (%)
ATC 1: A4109, west of Onllwyn Road	171 / 13%	142 / 17%	2,057 / 17%
ATC 2: A4109 Main Road, west of Heol Bryn Seion	115 / 17%	156 / 13%	1,463 / 21%
ATC 3: A4221, south of Onllwyn Road	326 / 17%	276 / 17%	2,711 / 26%
ATC 4: A4109 Inter-Valley Road, east of Roman Road	360 / 16%	338 / 16%	3,540 / 24%
JTC 1: A4067 and A4221 priority-controlled T-Junction	618 / 8%	550 / 7%	6,413 / 5%
JTC 2: A4221 and Nant Helen priority-controlled T-Junction	282 / 9%	355 / 17%	3,423 / 5%
JTC 3: A4221 and Onllwyn Road priority controlled staggered junction	327 / 7%	397 / 9%	3,930 / 6%
JTC 4: A4221 and CPL South Wales Coal priority-controlled T-Junction	326 / 40%	313 / 44%	3,046 / 12%
JTC 5: A4221 and A4109/Heol Gaer priority controlled T-Junction	351 / 77%	374 / 69%	4,330 / 8%
JTC 6: Onllwyn Road and A4109 priority controlled T-Junction	183 / 8%	219 / 4%	2,090 / 5%
JTC 7: A4109 and A465 priority controlled T-Junction	740 / 7%	837 / 9%	8,751 / 5%
JTC 8: A4109 and B4242 signalised junction	456 / 41%	483 / 47%	5,178 / 5%

#### 5.6.42

A Passenger Car Unit (PCU) is a vehicle unit for expressing highway capacity. A car is considered one PCU and a HGV is considered 2.3 PCUs.

### 5.6.43 Road Traffic Collision Assessment

5.6.44 Whilst the IEMA guidelines suggest using existing link road accident data, they also recommend that professional judgement is exercised to gain an understanding of the likely number of accidents following the opening of any development. Furthermore, the guidelines suggest that local circumstances or factors that may elevate or decrease levels of accidents should be taken into consideration.

5.6.45 The number of Personal Injury Accidents (PIA) in the study area that occurred between 2014 and 2018 have been obtained from DfT road safety data (STATS19), as compiled by Crashmap. This represents the most recent five-year period which data is available.

5.6.46 Majority of incidents that have occurred during 2014 to 2019 have been slight incidents along the various A roads, three serious incidents and two fatal incidents along the A4109, east of Banwen, at different locations. These serious accidents have no common theme in location.

### 5.6.47 Receptor Sensitivity Classification

5.6.48 Using the receptor sensitivity criteria presented in Table 5-2, a sensitivity classification has been carried out on the links at baseline condition. ‘Sensitive’ links are those deemed to have a High or Very High sensitivity classification and are highlighted in Table 5-14.

5.6.49 All receptors that have been identified in section 5.5.4 along the road links have been taken into account to determine the sensitivity of receptor classification.

**Table 5-14: Sensitivity Classification of Receptors**

Ref	Road Link/Receptor	Location	Receptor Sensitivity	Justification
1	A4221	North of site	Medium	Has no footpath or frontages, but some residents north of Onllwyn Road/A4221 junction
2	A4067 North	A4067 runs roughly parallel to the sites north western boundary	Medium	Abercraf/Ynyswen Residential frontages, and some local amenity frontages i.e. a church and small corner shop
3	A4067 South	South of A4067 and A4221 junction	Low	Residents of Ystradgwynlias surround this A road, however, it is assumed that traffic generated from the development will unlikely pass through area
4	A465	South of A4109	Low	Dual Carriageway – no footpaths or frontages
5	A4019	East of A4221	Medium	Some residential frontages, one of which being a small summer camp
6	B4242/A4109 junction	South of A4109	Medium	Residential frontages in Glyneath town and local amenities i.e. supermarkets, bank, petrol station and leisure centre along the B4242 South
7	B4242	Parallel to A465	Low	Residential frontages in Glyneath town and local amenities i.e. supermarkets, bank, petrol station and leisure centre along the B4242 South surround this A road. However, it is assumed that traffic

Ref	Road Link/Receptor	Location	Receptor Sensitivity	Justification
				generated from the development will unlikely pass through area
8	Onllwyn Road	Connects A4221 and A4109	Low	Three residential frontages
9	Heol Gaer	East of the A4109	Medium	Some Dyffryn residential frontages.
10	Main Road	South of Heol Gaer, leading to Banwen	High	Residential frontages and some local amenities i.e. pharmacy and Post office. Main access to Banwen
11	Pedestrian level crossings	Various locations along the existing railway line towards Swansea	High	Dependant on train frequency, but pedestrian and cyclists who are unaware of this change are at risk when crossing the railway.

## 5.7 Assessment of Construction Effects

5.7.1 A capacity analysis was carried out on vehicular trip forecast to assess the impact of the proposed development on eight key junctions surrounding the site for all seven future year scenarios. The trip forecast is detailed in the TA – Volume III, Appendix 9.1, Chapter 5.

5.7.2 It is anticipated that Phase Two of construction will have the highest increase in HGVs. Majority of links show a percentage change above 50% in HGVs. This is depicted in Figure 5-8 which shows the worst-case scenario of HGV percentage impact of the construction traffic on all links within the study area.

5.7.3 Figure 5-9 shows the worst-case scenario of HGV percentage impact of the construction traffic from the sensitivity test carried out.

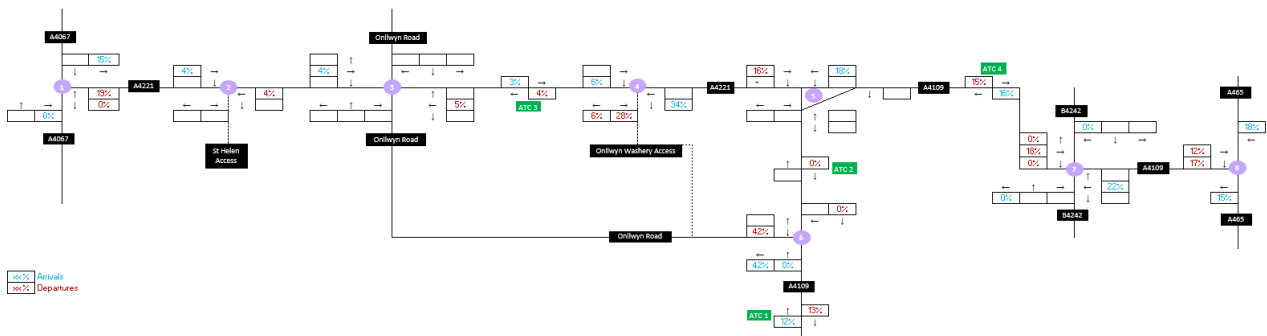
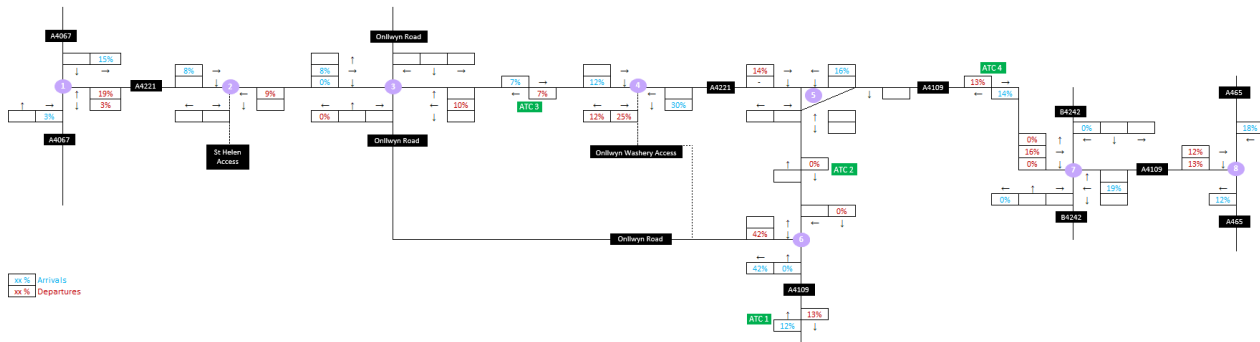


Figure 5-8: Construction Delivery HGV percentage increase from surveyed Baseline, AADT % Vehicle



**Figure 5-9: Sensitivity Test - Construction Delivery HGV percentage increase from surveyed Baseline, AADT %Vehicle**

**Severance**

5.7.4 Severance is defined as the perceived division that can occur within a community when it becomes separated by a major traffic artery. It can be quantified by the percentage change in traffic. An increase in traffic of 30% or less is deemed to have a negligible impact with regards to severance.

**Table 5-15: Construction traffic HGV increase in peak hours.**

Ref	Road Link	Receptor Sensitivity	Percentage Increase (HGV)	Sensitivity Test-Percentage Increase (HGV)
1	A4221	Medium	4%	8%
2	A4067 North	Medium	15%	15%
3	A4067 South	Low	0%	3%
4	A465	Low	18%	18%
5	A4019	Medium	16%	14%
6	B4242/A4109 junction	Medium	22%	19%
7	B4242	Low	0%	0%
8	Onllwyn Road	Low	42%	42%
9	Heol Gaer	Medium	0%	0%
10	Main Road	High	0%	0%
11	Pedestrian level crossings	High	0% (train frequency anticipated to remain the same as present)	0% (train frequency anticipated to remain the same as present)

5.7.5 Onllwyn Road has a low environmental sensitivity classification given the number and type of receptors along the link. Construction traffic is expected to increase by 42% in the AM Peak and the PM Peak, which is classified as a Minor impact. Therefore, it is predicted that any environmental effects associated with severance would be **negligible** with regards to severance.

5.7.6 The impact of construction traffic on all other links in the study area is predicted to have environmental effects that are envisaged to be **negligible** with regards to severance.

**Driver delay**

5.7.7 With predicted traffic growth and additional construction traffic, all eight junctions that were assessed continue to operate within capacity and without any noticeable queues. The predicted forecast of traffic has a negligible impact on the junctions for all scenarios assessed showing that the junctions operate within practical capacity. The

magnitude of impact of construction traffic on all road links are deemed ‘not significant’ as per the IEMA guidelines. Therefore, the predicted adverse environmental effects associated would be **negligible** regarding driver delay. The full junction analysis is detailed in the TA – Volume III, Appendix 9.1.

### **Pedestrian and cycle delay**

- 5.7.8 Pedestrian and cycle delay are predicted to occur where the two-way traffic flow exceeds 1,400 vehicles an hour, providing there are no controlled pedestrian crossings. No link exceeds this threshold in the peak hour which was assessed as being the worst-case scenario, and therefore has a negligible impact on all receptors.
- 5.7.9 The B4242/A4109 junction has controlled pedestrian crossings, however due to site visit observations of the low number of pedestrians using the crossing, and the existing high HGV usage at this junction, it is predicted that the increase in HGVs from construction could have a minor impact. Therefore, the predicted adverse environmental effects associated would be **negligible**.

### **Pedestrian amenity**

- 5.7.10 The IEMA guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its HGV component) is halved or doubled. In addition, the guidelines indicate that pavement width and separation from traffic are also key factors.
- 5.7.11 The receptor link, A4067 North could have a temporary HGV increase of 15% in the peak hours in the worst-case scenario. Within Ynyswen town, along the A465 northbound, there are segregated pedestrian paving alongside the road in this residential area.
- 5.7.12 At the A4067/A4221 junction there are no existing footways and limited verge for pedestrians, however this junction is considered to not be used by pedestrian and cyclists.
- 5.7.13 The impact is therefore deemed to be minor. Given both the A4067 north and the junction sensitivity is medium, it is predicted that any environmental effects associated with pedestrian and cycle amenity would be **negligible** and therefore not significant.
- 5.7.14 The receptor link A465 will experience an estimated 18% HGV increase during Phase two of construction. Given the receptor sensitivity is low, and the nature of a dual carriage way which is not typically used by pedestrians or cyclists, it is deemed to environmental effects that are **negligible**.
- 5.7.15 Where there are residential frontings on the A4019 there are segregated narrow footpaths along the road on the northern side, and segregated pedestrian footpaths along each side of the road within the Glynneath area. There are no cycle provisions along this route. The temporary impact on pedestrian and cycle amenity is therefore considered moderate with an HGV increase of 16%. The sensitivity link is medium, and therefore the predicted environmental effects associated would be **negligible**.
- 5.7.16 Similarly, the B4242/A4109 junction has controlled pedestrian crossings and narrow pavements on each side of the road. Given the junction sensitivity is medium, and a

potential HGV increase of 22% is considered significant, however due to site visit observations of the low number of pedestrians using the crossing, the predicted environmental effects associated with pedestrian amenity would be **negligible**.

- 5.7.17 Where there are residential frontings on Onllywn Road South of the A4019 junction there are segregated narrow footpaths along both sides of the road with a bus stop that has a service of five busses per day. Onllwyn Road is estimated to have an increase of 42% in HGVs and therefore classed as moderate. However, the construction traffic would access Onllwyn Road from the south, and therefore not pass the residential dwellings located north. There is however a lack of pedestrian/cycle crossing facilities at the southern end of the road which forms a priority junction with A4109. Therefore, the impact on pedestrian and cycle amenity is major, but given the link sensitivity being low, the overall environmental effect would have a **negligible** adverse effect.

### **Fear and intimidation**

- 5.7.18 An increase in HGV movements can have an adverse effect on pedestrian fear and intimidation. The suggested threshold presented in the IEMA guidelines proposes a small impact if the average HGV flow is around 1,000-2,000 vehicles and negligible if the HGV flow is below 1,000 (18-hour AAWT). The guidance also recommends other factors are considered such as road speed and footway width/separation.
- 5.7.19 With majority of HGV construction access to be taken from the Onllwyn washery access on the A4221, the 18-hour AAWT HGV flow on all other links is predicted to be below 1,000 HGVs. Therefore, on all links it is predicted that any environmental effects associated with fear and intimidation would be **negligible**.

### **Accidents and safety**

- 5.7.20 An analysis of Crashmap data has been undertaken within the study area. No correlations were identified between highway layout, design or condition that were considered contributory factors in the pattern of collisions. However, the cause of accident is unknown, therefore it is considered that any increases in traffic resulting from the proposed development are anticipated to have a **minor** effect with regards to accidents and safety along the A4109, east of Banwen.

### **Summary**

- 5.7.21 The temporary increase in the HGV component of traffic flow in the busiest phase of construction is deemed to have a negligible effect on severance, pedestrian and cycle delay, fear and intimidation, driver delay and accident and safety.
- 5.7.22 The temporary increase in the HGV component of traffic flow from the sensitivity test in the busiest phase of construction is deemed to have a negligible effect on severance, pedestrian and cycle delay, fear and intimidation, driver delay and accident and safety.
- 5.7.23 It is proposed that a Construction Traffic Management Plan (CTMP) be secured with a planning condition to ensure that all reasonable steps are taken to minimise and mitigate the predicted adverse effects of the construction process.



5.7.24 The identified access routes make use of roads with ‘negligible’ receptor sensitivity. It is proposed that construction traffic is monitored as part of the CTMP to review compliance.

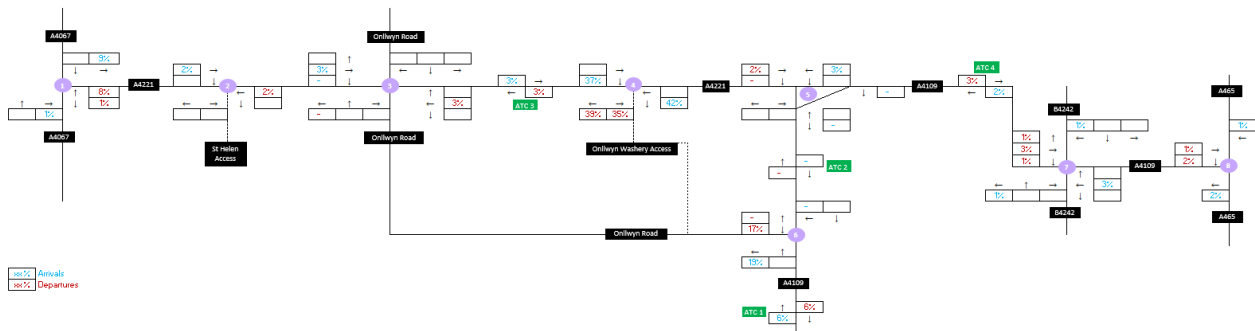
## 5.8 Assessment of Operational Effects

5.8.1 A capacity analysis was carried out on vehicular trip forecast to assess the impact of the proposed development on eight key junctions surrounding the site as shown in Figure 5-7 for all seven future year scenarios. The trip forecast is detailed in the TA – Volume III, Appendix 9.1.

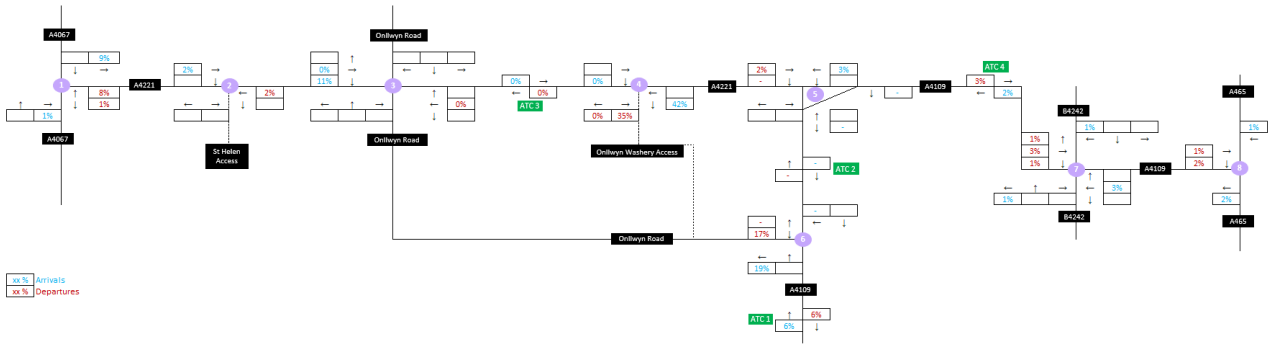
5.8.2 Figure 5-10, presents the percentage impact of the operational traffic on all links within the study area in the peak hours.

5.8.3 Figure 5-11 presents the percentage impact of the operational traffic from the sensitivity analysis of all links within the study area in the peak hours.

5.8.4 The traffic impacts associated with the proposed development are deemed to reflect a worst-case, with some assumptions made as detailed in section 1.6. Interventions such as the Travel Plan are proposed to increase the proportion of journeys made to the site by sustainable modes of transport.



**Figure 5-10: Operational traffic percentage increase from surveyed baseline (Staff, visitors & deliveries), AADT Vehicle %**



**Figure 5-11: Sensitivity Test: Operational traffic percentage increase from surveyed baseline (Staff, visitors & deliveries), AADT Vehicle %**

**Severance**

5.8.5

Severance is defined as the perceived division that can occur within a community when it becomes separated by a major traffic artery. It can be quantified by the percentage change in traffic. An increase in traffic of 30% or less is deemed to have a negligible impact with regards to severance.

**Table 5-16: Operational traffic PCU increase in peak hours.**

Ref	Road Link	Receptor Sensitivity	Percentage Increase (traffic)	Sensitivity Test - Percentage Increase (traffic)
1	A4221	Medium	20%	20%
2	A4067 North	Medium	43%	43%
3	A4067 South	Low	8%	8%
4	A465	Low	19%	19%
5	A4019	Medium	19%	19%
6	B4242/A4109 junction	Medium	22%	22%
7	B4242	Low	10%	10%
8	Onllwyn Road	Low	72%	72%
9	Heol Gaer	Medium	0%	0%
10	Main Road	High	0%	0%
11	Pedestrian level crossings	High	0% (train frequency anticipated to remain the same as present)	0% (train frequency anticipated to remain the same as present)

5.8.6

Onllwyn Road has a low environmental sensitivity classification given the number and type of receptors along the road. Operational traffic is expected to increase in both AM

and PM Peak, which is classified as a moderate impact. Therefore, it is predicted that any environmental effects associated with severance would be **negligible**.

5.8.7 A4067 North has a medium environmental sensitivity classification given the number and type of receptors along the road. Operational traffic is expected to increase in both AM and PM Peak, which is classified as a minor impact. Therefore, it is predicted that any environmental effects associated with severance would be **negligible**.

5.8.8 The impact of construction traffic on all other links in the study area is predicted to have environmental effects that are envisaged to be **negligible** with regards to severance.

### Driver delay

5.8.9 With predicted traffic growth and additional operational traffic, all eight junctions continue to operate within capacity and without any noticeable queues. The predicted forecast of traffic has a magnitude of impact that is negligible on the junctions for all scenarios assessed showing that the junctions operate within practical capacity. The magnitude of impact of operational traffic on all road links are deemed 'not significant' as per the IEMA guidelines. Therefore, the predicted adverse environmental effects associated would be **negligible**.

### Pedestrian delay

5.8.10 Pedestrian and cycle delay are predicted to occur where the two-way traffic flow exceeds 1,400 vehicles an hour, providing there are no controlled pedestrian crossings. No link exceeds this threshold in the peak hour which was assessed as being the worst-case scenario and therefore the predicted adverse environmental effects associated would be **negligible**.

### Pedestrian amenity

5.8.11 The IEMA guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its HGV component) is halved or doubled. In addition, the guidelines indicate that pavement width and separation from traffic are also key factors.

5.8.12 Where there are residential frontings on Onllywn Road South of the A4019 junction there are segregated narrow footpaths along both sides of the road with a bus stop that has a service of five busses per day. Onllwyn Road is estimated to have an increase of 72% in traffic and therefore classed as significant. However, the operational traffic would access Onllwyn Road from the south, and therefore not pass the residential dwellings located north. There is however a lack of pedestrian/cycle crossing facilities at the southern end of the road which forms a priority T junction with A4109. Therefore, the impact on pedestrian and cycle amenity is major, but given the link sensitivity being low, the overall environmental effect would have a **minor adverse** effect.

### Fear and intimidation

5.8.13 An increase in HGV movements can have an adverse effect on pedestrian fear and intimidation. The suggested threshold presented in the IEMA guidelines proposes a

Small impact if the average HGV flow is around 1,000-2,000 vehicles and negligible if the HGV flow is below 1,000 (18-hour AAWT). The guidance also recommends other factors are considered such as road speed and footway width/separation.

- 5.8.14 With majority of HGV construction access to be taken from the Onllwyn washery access on the A4221, the 18-hour AAWT HGV flow on all other links is predicted to be below 1,000 HGVs. Therefore, on all links it is predicted that any environmental effects associated with fear and intimidation would be **negligible**.

### Accidents and safety

- 5.8.15 An analysis of Crashmap data has been undertaken within the study area. No correlations were identified between highway layout, design or condition that were considered contributory factors in the pattern of collisions. However, the cause of accident is unknown, therefore considered that any increases in traffic resulting from the proposed development are anticipated to have a **minor** effect with regards to accidents and safety along the A4109, east of Banwen.

### Summary

- 5.8.16 The review of potential effects on the study area established that there are unlikely to be any significant adverse effects resulting from the operation of the proposed development. It is considered that no further detailed assessment is required, and no mitigation measures are deemed necessary to alleviate specific environmental effects, however it is proposed that soft measures are adopted for the site in the form of Travel Plans to mitigate and minimise the vehicular traffic to align with the Well-being of Future Generations (Wales) Act and advised by the Technical Advice Note 18.
- 5.8.17 Therefore, from this assessment no residual environmental effects with respect of traffic and access are considered likely, however, interventions such as the Travel Plan should be considered to increase the proportion of journeys made to the site by sustainable modes of transport.

## 5.9 Mitigation

### 5.9.1 Construction Mitigation

- 5.9.2 To manage impacts arising from the construction of the proposed development, a CTMP will be prepared that outlines a range of measures to minimise potential traffic impacts arising from the construction of the proposed development. It is anticipated that the CTMP will include details of the following:

- **The CTMP will seek to enable safe walking within and surrounding the development:** All PROWs will be protected from all construction activity. Alternative walking routes will be provided with appropriate signage and crossings where necessary to ensure safe accessibility.
- The provision of facilities for pedestrians regarding the level crossings along the existing railway should also be specified within the CTMP and aim to minimise disruption during construction of the GCRE and ensure safe passing for pedestrians.

- **The CTMP should encourage active travel accessibility to/from the development:** this is to lessen the number of vehicles to and from site. Temporary cycle storage facilities should be provided for construction workers who live within cycling distance.
- **The potential provision of bus services for construction workers should be specified within the CTMP.** GCRE should collaborate with existing bus operators and NPTCBC to provide a service that benefits construction workers in key neighbouring towns if existing services do not satisfy demand to encourage use of public transport and lessen the number of vehicles to and from site. If possible, GCRE will co-ordinate with the existing bus service timetable to minimise disruption during construction and the existing bus operations.
- **Through correct traffic management, the CTMP should ensure correct signage and wayfinding.** This will aim to minimise highway disruptions during construction of the GCRE.
- **Parking measures detailed in the CTMP** to minimise any disruption this may cause. During construction of the development, a temporary car park will be made available on site and of suitable size as deemed necessary within the CTMP to support the operation of construction.
- Given the above, it is proposed that a CTMP is prepared to ensure that all reasonable steps are taken to minimise and mitigate any possible adverse effects of the construction process.
- Monitoring of the traffic associated with the proposed development during the construction period will also be undertaken as part of the CTMP. It is anticipated that monitoring of traffic in the operational phase will be undertaken as part of the implementation of the full Travel Plans.

### 5.9.3 Operational Mitigation

5.9.4 In addition to the physical measures proposed as part of the scheme, it is proposed that soft measures are adopted for the site in the form of Travel Plans. When the proposed development becomes operational, Travel Plans will be implemented to mitigate and minimise the vehicular traffic impacts of the proposed development. The aim of the Travel Plans associated with GCRE will be to potentially reduce car usage and increase the use of public transport by staff. It is unlikely that active travel such as walking and cycling would be attractive to staff given the rural location, however these have still been considered for a holistic sustainable approach given the potential future visitors to GCRE and proximity to the NCN.

5.9.5 It is anticipated that this will be achieved through the identification of specific proposals and mechanisms to be implemented that will maximise the accessibility of the site by means other than the private car.

5.9.6 Surrounding and within the study area is a mix of footpaths and bridleways, that do not conform to the active travel infrastructure standard. The development will provide safe pedestrian infrastructure if there is conflict between the PROWs and the proposed development or proposed rail alignment.

5.9.7 The main pedestrian access to the site will be from Onllwyn Road which lacks good pedestrian infrastructure. Appropriate footpaths will be provided along Onllwyn Road

to the site entrance, allowing for a safe pedestrian crossing around Onllwyn Road and Wembley Avenue priority junction.

- 5.9.8 Within the site, pedestrian footpaths will be provided with clear wayfinding signage. Footpaths will be kept separate from the internal road and rail network, allowing for a safe pedestrian crossing where necessary.
- 5.9.9 The provision of facilities for pedestrians should be specified within the Travel Plan to promote Active Travel to/from the GCRE.
- 5.9.10 The development will connect with the existing NCN 43 and the local network of cycling routes to enable better cycling accessibility. A direct shared pedestrian/cycle route from Ystradgynlais to Onllwyn should be provided, making use of the existing PROWs within the site area, and be designed to active travel standards. Safe pedestrian/cycling infrastructure will be provided if there is conflict between the proposed rail alignment.
- 5.9.11 The site will provide cycle parking at all points of pedestrian access excluding the existing A4221 Washery and Distribution centre access which will be used by HGVs only. The number of cycle stands should be determined by NPTCBC parking standard guidance as a minimum which is included in the Transport Assessment (TA – Volume III, Appendix 9.1). Cycle parking will include covered cycle parking, light and CCTV to cater for long stay parking requirements.
- 5.9.12 This development will also make provisions for employers and clear wayfinding signage within the site. The provision of facilities for cyclists should be specified within the Travel Plan to encourage active travel to/from the GCRE.
- 5.9.13 GCRE will collaborate with existing bus operators, NPTCBC, PCC to provide a service that benefits employers in key neighbouring towns if existing services do not satisfy demand. This will be detailed within the Travel Plan that will also specify the provision of facilities for bus users to enable better public transport accessibility to/from the GCRE.
- 5.9.14 Vehicle access to site will remain the same as the existing vehicle access to the current site for operation of GCRE. The provision of facilities for vehicle users including clear way finding signage should be specified within the Travel Plan to support the operation of the proposed development given its rural location.
- 5.9.15 The development will provide a carpark within the site boundary of suitable size and according to local standards due to the rural location of the development.
- 5.9.16 Car parking standards are assessed on land use of the proposed development as assessed in Transport Assessment (TA – Volume III, Appendix 9.1). As the development will be a new employment premises, the recommended proportion is 5% of the total car park capacity should be dedicated for blue badge holders.
- 5.9.17 The car park facilities will encourage the use of Ultra Low Emission Vehicles (ULEWs) and will have a minimum of 10% of car parking spaces to have ULEV charging points as encouraged by PPW Edition 10.
- 5.9.18 Scope for the mitigation of unplanned visitors and more detailed work will be developed during the detailed design/reserved matters and the following should be considered:

- A specific visitor allocation in the day given in a non-peak hour which allows visitors and train enthusiasts to park within the GCRE site and view the facility;
- Parking regulations applied to surrounding local highways to discourage on street parking;
- Provision of a Park and Ride facility for visitors which performs a bus tour of GCRE on set days.

5.9.19 At this point in time, and given the commercial sensitivities of some of the likely testing/activity within the site, these types of visits would not be encouraged and mitigation should only be implemented should future monitoring show that visitors of this nature are causing problems on the local highway network. Precise wording of any conditioning and monitoring scheme will be decided on during the reserved matters process.

## 5.10 Residual Effects

5.10.1 Table 5-17 and Table 5-18 presents the residual traffic impacts on all receptors of the development during construction and once operational respectively.

### 5.10.2 Construction

5.10.3 Residual effects are the predicted effects of a project on the environment after the proposed practicable mitigation measures have been adopted. In other words, the predicted actual effects of the project.

5.10.4 Subject to the successful implementation of the CTMP, it is considered that any residual effects associated with the construction phase will be of a temporary nature and the magnitude will be either 'minor' or 'negligible'. It is therefore considered that the residual effects of the construction phase will not be significant.

5.10.5 The construction period would result in a change in vehicular composition proportions on the local road network and these would be temporary for the duration of the works.

**Table 5-17: Residual Construction Traffic Impacts**

Potential Effect	Receptor	Prior to mitigation			Mitigation Measure with CTMP	Following mitigation	
		Sensitivity of Receptor	Magnitude of effect	Overall Sig. of Impact		Magnitude	Significance
Severance	Onllwyn Road	Low	Minor	Negligible	The rail and road split of deliveries is yet to be determined. It is envisaged that rail will be used where possible over road. Therefore, the overall significance impact may be subject to change to reflect this at a later date.	Negligible	Negligible
Pedestrian Amenity	A4067 North	Medium	Minor	Negligible	The timings and number of HGV deliveries will be confirmed, and unlikely to occur all within the AM or PM peak hour.	Negligible	Negligible
Pedestrian Amenity	B4242/A4 109 junction	Medium	Minor	Negligible	The timings and number of HGV deliveries will be confirmed, and unlikely to occur all within the AM or PM peak hour.	Negligible	Negligible
Pedestrian Amenity	Onllwyn Road	Low	Moderate	Negligible	Facilities to be provided if deemed necessary by appointed contractor to ensure safe pedestrian and cyclist crossings to improve pedestrian and cycling amenity	Negligible	Negligible
Accidents and Safety	A4109	Medium	Moderate	Minor	Traffic management plan will be put in place as well as specified routeing agreed by the contractor which will be communicated with drivers before and during construction.	Minor	Negligible
	Various pedestrian level crossings and footbridges along railway line towards Swansea				The number of deliveries made by rail is yet to be determined.		

**5.10.6** Construction will have a short-term impact (approximately three years) on the surrounding highway network, with some localised impacts having little significant effect. CTMP measures are proposed for all effects not considered to be negligible.



### 5.10.7 Operational

The operational impact of the proposed development is not anticipated to have a significant adverse effect with regards to transport. The significance of effect for all receptors is either ‘minor’ or ‘negligible’. Subject to the successful implementation and monitoring of the Travel Plans for both the station and business district, it is considered that residual effects associated with the operational phase could be further mitigated.

Several beneficial effects are identified, most of which are of minor significance, but do represent an improvement to the local pedestrian and cycle infrastructure. A significant beneficial effect has been identified in relation to the accessibility to public transport for the local communities.

**Table 5-18: Residual Operation Traffic Impacts**

Potential Effect	Receptor	Prior to mitigation			Mitigation Measure with Travel Plan	Following mitigation	
		Sensitivity of Receptor	Magnitude of effect	Overall Sig. of Impact		Magnitude	Significance
Severance	Onllwyn Road	Low	Moderate	Negligible	To encourage sustainable modes of transport to/from the site	Negligible	Negligible
Severance	A4067 North	Medium	Minor	Negligible	To encourage sustainable modes of transport to/from the site	Negligible	Negligible
Pedestrian Amenity	Onllwyn Road	Low	Major	Minor	Facilities to be provided to ensure safe pedestrian and cyclist crossings, and better bus facilities within vicinity of the GCRE	Minor	Negligible
	Various pedestrian level crossings and footbridges along railway line towards Swansea				The number of deliveries made by rail is yet to be determined.		

**5.10.8** Once the GCRE is operational, overall, it is considered to have a negligible/minor and not significant effect on the surrounding highway network, however a Travel Plan should be produced to encourage sustainable modes of transport to and from GCRE for both employees and visitors.

## 5.11 Conclusion – Summary of Effects

- 5.11.1 Links near sensitive receptors were assessed as traffic impact is greater than 10%. IEMA guidelines also recommend a link should be assessed where there is a significant increase in HGV flows. In summary, highway infrastructure would continue to function within practical capacity with additional vehicles generated from construction and operation:
- 5.11.2 Due to the existing nature of the highway and HGV use in the area, a significant amount of the transport infrastructure for the local highway is already in place to deal with a large number of HGV/traffic. There is a frequent bus service providing north-south accessibility with a well-situated bus stop, a good cycling route to Swansea and many PRow's outside of active travel standards within the area. The single line branch line route that operates to/from the proposed site location and Swansea is not open to passengers currently. A key element of success for the GCRE site is therefore to integrate with the facilities and better sustainable transport modes to maximise the benefits.
- 5.11.3 In addition, due to the site's rural location the development will include a car park for the land use of a multi-storey control building that is proposed for the site. The car park will also provide Ultra Low Emission Vehicles charging points. The number of parking spaces is still to be determined once designs are finalised.
- 5.11.4 The GCRE site will adopt a site wide Travel Plan and use this as a means of monitoring the transport situation and encouraging sustainable transport journeys.
- 5.11.5 During construction, deliveries to the site are likely to be made via a mix of road and rail vehicle movements. The effects of the traffic generated by the development on the local highway network have been tested using traffic models for a variety of scenarios with robust assumptions made for a worst-case scenario for buildings and civils works to be delivered by highway. The results indicate that Traffic and Transport impacts of the Proposed Development are deemed to be negligible or minor adverse and not significant. Where minor effects are identified, mitigation measures and recommendations have been included and are to be considered in preparation of the Full CTMP.
- 5.11.6 The CTMP will be used as a means of monitoring the transport situation during construction for health and safety, ensuring mitigation against any potential disruptions to the construction works being carried out or any disruptions to the local highway and community.
- 5.11.7 A sensitivity test was carried out and summarised in Table 5-19 and Table 5-20 below which presents the residual traffic impact summary of the development during construction and once operational respectively.

**Table 5-19: Construction Traffic Impact Summary**

Potential Impact	Overall Significance of Impact	Mitigation Measure	Residual Impact after Mitigation
Severance	Negligible/minor	CTMP	Negligible - Not Significant
Pedestrian delay	Negligible	No mitigation necessary	Negligible - Not Significant
Pedestrian amenity	Minor/Moderate	CTMP	Negligible/Minor
Fear and intimidation	Negligible	No mitigation necessary	Negligible - Not Significant
Driver Delay	Negligible	No mitigation necessary	Negligible - Not Significant
Accidents and safety	Minor	CTMP	Negligible

**Table 5-20: Operational Traffic Impact Summary**

Potential Impact	Overall Significance of Impact	Mitigation Measure	Residual Impact after Mitigation
Severance	Minor/Negligible	Travel Plan	Negligible
Pedestrian delay	Negligible	No mitigation necessary	Negligible - Not Significant
Pedestrian amenity	Negligible/Minor	Travel Plan	Negligible
Fear and intimidation	Negligible	No mitigation necessary	Negligible - Not Significant
Driver Delay	Negligible	No mitigation necessary	Negligible - Not Significant
Accidents and safety	Minor	Travel Plan	Negligible