4 HIGHWAYS AND TRANSPORTATION

4.1 Introduction

4.1.1 This chapter assesses the likely significant traffic and transport effects resulting from the development proposal.

4.1.2 A Transport Assessment (TA) ~~has been~~ was prepared to accompany ~~this~~ the original chapter and although it remains a key supporting document, a Transport Note (TN) has been prepared to provide appropriate updates to the TA where necessary and is attached at **Appendix 4.1**.

4.1.3 This transport chapter is an updated version that is submitted in respect of appeal reference CAS-02641-G8G7M5 in September 2024. It addresses the comments made by PEDW in its ES Completeness Report issued in June 2023. The updates made in relation to highways and transportation are:

- Application of new assessment guidance that has been published following the preparation of the original ES;
- Updates to the development proposal trip generation based upon up to date estimates of land use demands;
- Updates to the assessments of likely significant traffic and transport effects based upon the new guidance and updated trip generation; and
- Inclusion of a cumulative effects assessment of likely significant traffic and transport effects.

4.2 Regulatory and Policy Framework

Planning Policies

4.2.1 A review of the national and local policies and guidance that the development proposal has been considered against is provided in Chapter 2 of the TA with further considerations set out in the TN attached at **Appendix 4.1**.

4.3 Methodology

Scoping and Consultation

4.3.1 This ES chapter follows the advice received from Highways Officers at the Vale of Glamorgan Council set out within the formal EIA screening opinion. A comprehensive scoping exercise was undertaken with the Council, Welsh Government and Transport for Wales to assess the transport aspects of the development proposal, full details of which are set out in the Transport Assessment ~~attached at Appendix 5.1~~, The scoping exercise has guided the content and assessment within this chapter.

Establishing Baseline Conditions

4.3.2 Site visits have been undertaken which identified the geometries and layout of the highway network, its local environs and the location of sensitive receptors. Traffic flow data has been obtained from the Department for Transport, the Vale of Glamorgan Council's Local Development Plan background papers and site-specific traffic surveys has been undertaken at the proposed northern site access. Personal Injury Accident data has been obtained from ~~the Council~~ Welsh Government to enable road safety to be analysed. Full details of these are set out in the TN ~~Section 3 of the TA~~.

Relevant Guidance

4.3.3 As a matter of best practice, this assessment has been undertaken based on current relevant guidance for assessing the environmental effects of traffic. This is set out within ~~The Institute of Environmental Assessment (IEA) (now the IEMA) publication 'Guidance Note Number 1: Guidelines on the Environmental Assessment of Road Traffic', 1993, the 'IEMA Guidelines'~~ The Institute of Environmental Management and Assessment (IEMA) publication 'Environmental Assessment of Traffic and Movement', 2023, the 'IEMA Guidelines' with reference to ~~Volume 11 – Environmental Impact Assessment~~ LA104: Environmental Assessment and Monitoring of the Design Manual for Roads and Bridges (DMRB).

Magnitude of Impact

4.3.4 The IEMA Guidelines recommend two rules to be considered when assessing the impact of development traffic on a road link and how far the geographical boundaries of that assessment should extend:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Rule 2: Include any other specifically sensitive areas where total traffic flows have increased by 10% or more.

4.3.5 The above guidance is based upon knowledge and experience of environmental effects of traffic. The 30% threshold is based upon research and experience of the environmental effects of traffic, with less than a 30% increase generally resulting in imperceptible changes in the environmental effects of traffic. ~~At a simple level, the guidance considers~~ The IEMA guidelines notes that the day-to-day variation of traffic on a road is frequently at least + or – 10% and goes on to set out that projected changes in total traffic flow of less than 10% creates no discernible environmental ~~effect~~ impact, hence the second threshold as set out in Rule 2.

4.3.6 In cases where the thresholds are exceeded, ~~Column 3 in Table 2.1 of~~ consistent with the IEMA guidelines ~~sets out a list of environmental effects which should be assessed for their magnitude of change:~~ the following are considered in this chapter: ~~noise, vibration, visual impact,~~ severance, driver delay~~, pedestrian~~ non-motorised user delay,~~ pedestrian amenity~~ fear and intimidation (non-motorised user amenity)~~, accidents~~ and road safety.~~ hazardous loads, air pollution and dust and dirt.~~

4.3.7 The IEMA guidelines do not set out guidance on assessing the noise, vibration and landscape and visual effects upon traffic and transport receptors, instead noting that they have their own detailed guidance and methodologies and does not seek to replicate these. Such effects are not considered in this chapter. The effects of noise and vibration upon traffic and transport receptors

was scoped out of the original ES and an assessment of the landscape and visual effects are set out in Chapter 5 (Landscape and Visual Character).

4.3.8 The IEMA guidelines references dust and dirt in the context of construction and sets out that the impact depends largely on the management practices undertaken on site, such as wheel washing and sheeting of goods vehicles. Such practices are normal and are undertaken as part of the Considerate Constructors Scheme, which all reputable contractors adhere to. Such effects are not considered in this chapter.

4.3.9 Definitions of each of the potential effects identified in the IEMA guidelines are summarised below along with explanatory text relating to assessment criteria to determine the magnitude of impact. It is on this basis that the assessment in this chapter has been undertaken.

4.3.10 ~~It is acknowledged at paragraph 2.4 of the IEMA guidelines that not all the effects listed in Column 3 of Table 2.1 would be applicable to every development.~~ A detailed inspection of the surrounding road network incorporating the current geometric layout of the road, traffic management and regulation orders and general observations of existing road user movements has been undertaken to assist with the assessments.

~~Noise and Vibration~~

~~4.3.11 Noise and vibration effects have been considered to be negligible and have been scoped out of the EIA through discussions with the Council and therefore, these effects are not included in this chapter.~~

~~Visual Effects~~

~~4.3.12 The visual effect of traffic is complex and subjective and includes both visual obstruction and visual intrusion. The IEMA guidelines states that obstruction refers to the blocking of views, by structures for example, and intrusion refers to the more subjective impact by traffic on an area of scenic beauty or of historical or conservation interest.~~

~~4.3.13 It goes on to state that increases in the number of large or high-sided vehicles may have an intrusive impact in areas of scenic beauty and in historic or conservation areas and acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect.~~

4.3.14 ~~Where relevant, the visual effects of traffic are considered within this chapter and the magnitude of impact identified using professional judgement and the advice provided in the IEMA Guidelines. The visual effects of the scheme as a whole are considered in Chapter 5.~~

Severance

4.3.15 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance can also result from difficulty in crossing a heavily trafficked road ~~(IEMA, March 1993)~~ or a physical barrier created by infrastructure.

4.3.16 The guidance indicates that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively.

4.3.17 Where relevant, effects on severance are considered within this chapter.

Driver Delay

4.3.18 Where roads affected by development are at or near capacity, the traffic associated with such development can cause or add to vehicle delays. Some roads are typically at or near capacity during the weekday AM (07:45 to 08:45) and PM (16:30 to 17:30) peak hours. Other sources of delay for non-development traffic can include:

- at the proposed site access where there will be additional turning movements;
- on the roads passing the site where there is likely to be additional traffic;
- at other key intersections along the road which might be affected by increased traffic; and
- at junctions where the ability to find gaps in the traffic may be reduced, thereby lengthening delays.

4.3.19 Where relevant, the effects on driver delay are considered within this chapter and the magnitude of impact identified using operational junction modelling, professional judgement and the advice provided in the above guidance document.

~~Pedestrian~~ Non-Motorised User Delay

~~4.3.20 Highly trafficked roads and changes to the volume or speed of traffic may affect the ability of people to cross roads. Studies have shown that pedestrian delay is perceptible or considered significant beyond a lower delay threshold of 10 seconds, for a link with no crossing facilities. A 10 second pedestrian delay in crossing a road broadly equates to a two-way link flow of approximately 1,400 vehicles per hour (IEMA, March 1993).~~

~~4.3.21 Where relevant, the effects on pedestrian delay are considered within this chapter and the magnitude of impact identified using professional judgement and the advice provided in the above guidance document.~~

4.3.22 The IEMA guidelines sets out that the assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads.

4.3.23 Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend upon the general level of pedestrian and non-motorised user activity, visibility and general physical conditions.

4.3.24 Given the range of local factors and conditions that can influence non-motorised user delay, for example, a discrete delay may have a lesser impact in an urban environment than a rural setting, the IEMA guidelines do not set out definitive thresholds against which to assess non-motorised user delay. The IEMA guidelines recommends that the competent traffic and movement expert uses judgement to determine whether any changes in pedestrian and non-motorised user delay may be significant.

4.3.25 The IEMA guidelines also states that pedestrian delay and severance can be grouped together as an increase in traffic flows is likely to lead to greater increases in delays and states that

increases in total traffic flows of 30%, 60% and 90% could result in slight, moderate and substantial changes in non-motorised user delay respectively.

4.3.26 In accordance with the IEMA guidelines, these thresholds have been considered to assess the impact on non-motorised delay.

~~Pedestrian~~ Non-Motorised User Amenity

4.3.27 The term ~~pedestrian~~ non-motorised user amenity is broadly defined as the relative pleasantness of a journey. It is considered to be affected by traffic flow, speed and composition as well as footway width and the separation/protection from traffic. This definition comprises fear and intimidation.

4.3.28 ~~It encompasses the overall relationship between pedestrians and traffic, including fear and intimidation which is the most emotive and difficult effect to quantify and assess. There are no commonly agreed thresholds for quantifying the significance of changes in pedestrian amenity, although the IEMA guidelines refer to a useful study which could be referenced when considering any effect.~~ The IEMA guidelines sets out that fear and intimidation from traffic, in terms of vehicular criteria, encompasses total traffic movements, HGV movements and vehicle speeds. It assigns a 'degree of hazard' score to each of these from which a total degree of hazard score is calculated and from which impacts can then be determined. This is calculated using the criteria set out in the IEMA guidelines, which is replicated in Table 4.1 below.

Table 4.1: Degree of Hazard Score Criteria

Average traffic flow over 18 hour day (vehicles/hour) (a)	Total 18 hour heavy goods vehicle flow (b)	Average vehicle speed (mph) (c)	Degree of hazard score
1,800 +	3,000 +	>40	30
1,200–1,800	2,000–3,000	30-40	20
600–1,200	1,000–2,000	20-30	10
<600	<1,000	<20	0

4.3.29 A 'total hazard score' is then calculated for each link for traffic flow scenarios. Table 3.2 of the IEMA guidelines provides an example of the total hazard score calculation to identify a level of fear and intimidation and is replicated in Table 4.2 below.

Table 4.2: Total Hazard Score and Level of Fear and Intimidation Calculation

Level of fear and intimidation	Total hazard score (a) + (b) + (c)
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

4.3.30 Where relevant, the effects on ~~pedestrian~~ non-motorised user amenity are considered within this chapter and the magnitude of impact identified.

~~Accidents and~~ Road Safety

4.3.31 It is possible to estimate the effects of increased traffic on ~~accidents and~~ road safety from existing accident records, national statistics, the type and quantity of traffic generated, journey lengths and the characteristics of the routes in question.

4.3.32 Where relevant, the effects on ~~accidents and~~ road safety are considered within this chapter and the magnitude of impact identified using professional judgement and the advice provided in the above guidance document.

Hazardous Loads

4.3.33 The development proposal will not generate hazardous loads and therefore there is nothing to assess in this regard in this chapter.

~~4.3.34 Certain types of development, particularly construction sites, can give rise to deposition of dust and dirt on surrounding roads. The overall impact of this phenomenon normally depends to a large extent on the management practices adopted at the site in question, such as vehicle sheeting and wheel washing.~~

~~4.3.35 Problems with dust and dirt are unlikely to occur at distances greater than 50m from the road (IEMA, March 1993).~~

~~4.3.36 Where relevant, the effects relating to dust and dirt are considered within this chapter and the magnitude of impact identified using professional judgement and the advice provided in the above guidance document.~~

Sensitive Receptors

~~4.3.37 Paragraph 2.5 of the IEMA Guidelines explains that locations which may be sensitive to changes in traffic conditions could be:~~

- ~~people at home;~~
- ~~people in work places;~~
- ~~sensitive groups such as children, the elderly or the disabled;~~
- ~~sensitive locations such as hospitals, churches, schools or historical buildings;~~
- ~~people walking or cycling;~~
- ~~open spaces;~~
- ~~recreational sites;~~
- ~~shopping areas;~~
- ~~sites of ecological/nature conservation value; and~~
- ~~sites of tourist/visitor attraction.~~

~~4.3.38 As a general guide, the determination of receptor sensitivity is based on the criteria of value, adaptability and tolerance. In terms of transport, receptors include people that are living in and using facilities, and using transport networks, in the area.~~

4.3.39 ~~Given that all persons are deemed to be of equal value, sensitivity to changes in transport conditions is generally focussed on vulnerable user groups who are less able to tolerate, adapt to or recover from changes.~~ Table ~~4.2~~ 4.3 summarises the broad criteria for identifying receptor sensitivity as based on the IEMA Guidelines. The definition of sensitivity in this chapter uses professional judgement and experience and guidance provided in the IEMA guidelines.

Table ~~4.2~~ 4.3: Definitions of Sensitivity or Value

Sensitivity	Typical Descriptors
High	~~Receptors of greatest sensitivity to traffic flows: schools, colleges, playgrounds, accident black spots (with reference to accident data), retirement homes, urban/residential roads without footways that are used by pedestrians.~~ High concentration of receptors with greatest sensitivity due to site-specific characteristics which make them particularly sensitive to changes in traffic flow, high instances of road collisions and clusters with reference to PIA data, urban/residential/built-up roads without commensurate footway provision, high footfall, severely congested junctions.
Medium	~~Traffic flow sensitive receptors including: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities.~~ Some concentrations of receptors with some sensitivity to traffic flows including congested junctions, urban/residential/built-up areas with narrow footway provision for its use, demand and footfall or with receptors where there are no setbacks from affected roads and junctions, unsegregated cycleways, some instances of road collisions with reference to PIA data.
Low	~~Receptors with some sensitivity to traffic flow: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision.~~ Low concentrations of receptors with some sensitivity to traffic flows including urban/residential/built-up areas with good footway provision commensurate for its use, demand and footfall and other receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.
Negligible	~~Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.~~ Receptors with negligible sensitivity to traffic flows and those sufficiently distant from affected roads and junctions or where no receptors are present.

4.3.40 Highway links with descriptions of high ~~or medium~~ sensitivity will be considered against the Rule 2 threshold described above. Other links with descriptions of medium, low or negligible sensitivity will be considered against the Rule 1 threshold. Where necessary, professional judgement has been applied in identifying the relevant category for each link.

4.3.41 Receptors to be considered within the impact assessment were selected based upon the access routes to be taken by the construction and operational route vehicles generated by the development proposal.

Significance Criteria

4.3.42 The approach to the assessment of significance of effects is summarised in Table ~~4.3~~ 4.4 and Table ~~4.4~~ 4.5 below~~, adapted from the Design Manual for Roads and Bridges (DMRB) HA 205/08~~. This considers the duration, magnitude, direction and location of each effect as well as the sensitivity of the receptor. ~~Where any of the above potential effects define any specific criteria to determine effects, these will be assessed to establish the significance.~~ The criteria for defining magnitude in this chapter are based upon the guidance set out in the IEMA guidelines.

Where a range of significance levels is presented, the final assessment for each effect is based upon professional judgement.

~~**Table 4.3: Definitions of Magnitude**~~

~~Magnitude~~	~~Typical Descriptors~~
~~High~~	~~Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse).~~ ~~Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).~~
~~Medium~~	~~Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse).~~ ~~Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).~~
~~Low~~	~~Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).~~ ~~Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).~~
~~Negligible~~	~~Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).~~ ~~Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).~~
~~No change~~	~~No loss or alteration of characteristics, features or elements; no observable impact in either direction.~~

Table 4.4: Magnitude of Impact Criteria

Sensitivity	Negligible	Low	Medium	High
Driver delay	Defined in conjunction with the transport assessment and a review of the change in traffic flows or operation of a junction or highway link with a particular focus on the weekday peak hour periods when baseline traffic flows are at their highest.			
Severance	Change in total traffic flow of less than 30%.	Change in total traffic flow of 30% to 60%.	Change in total traffic flow of 60% to 90%.	Change in total traffic flows of over 90%.
Non-motorised user delay	Change in total traffic flow of less than 30%.	Change in total traffic flow of 30% to 60%.	Change in total traffic flow of 60% to 90%.	Change in total traffic flows of over 90%.
Fear and intimidation (non-motorised user amenity)	No step changes in the level of fear and intimidation	One step change in the level of fear and intimidation, with <400 vehicle increase in average 18hr vehicle movements and/or <500 HV increase in total 18hr HV flow	One step change in the level of fear and intimidation, but with >400 vehicle increase in average 18hr vehicle movements and/or >500 HV increase in total 18hr HV flow	Two step changes in the level of fear and intimidation
Road safety	Defined from a review of PIA data along highway links and the predicted changes in traffic flow			

Table ~~4.4~~ 4.5: Assessment Matrix

Sensitivity	Magnitude of Impact			
	Negligible	Low	Medium	High

Negligible	Negligible	Negligible or slight	Negligible or slight	Slight
Low	Negligible or slight	Negligible or slight	Slight	Slight or moderate
Medium	Negligible or slight	Slight	Moderate	Moderate or Substantial
High	Slight	Slight or moderate	Moderate or substantial	Substantial

4.3.43 The broad definitions of the terms used to determine significance criteria are as follows:

- Substantial: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process;
- Moderate: These beneficial or adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a resource or receptor;
- Slight: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project; and
- Negligible: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

4.3.44 Effects described as moderate are considered to be significant as set out in Chapter 4.

4.3.45 In accordance with the above IEMA guidelines, the assessment is based upon the relative change between the baseline conditions and the baseline plus construction/development conditions. The effect along key highway links of the adjacent highway network where any development related traffic is predicted to route along and could result in an environmental effect will be assessed.

4.4 Baseline Conditions

Site Access

4.4.1 The development will be accessed via two points on the existing highway network. There will be one access in the north of the development, served by the addition of a fourth arm to the existing Port Road/A4226 three-arm roundabout. The second access will be in the south of the site, from the unnamed road serving the Holiday Inn Express which is accessed from the Port Road/Cardiff International Airport access road/unnamed road roundabout.

4.4.2 The Port Road/A4226 roundabout will be repositioned and enlarged with a fourth arm. The preliminary access proposal is shown at Appendix J of the Transport Assessment ~~attached at **Appendix 4.1**~~.

4.4.3 The southern access will be a simple priority junction which connects to the unnamed road that serves the Holiday Inn Express. The preliminary access proposal available at Appendix K of the Transport Assessment ~~attached at **Appendix 4.1**~~.

Highway Network

4.4.4 The local highway network is illustrated in Figure 1 of the Transport Assessment ~~attached at Appendix 4.1~~.

Port Road

4.4.5 Port Road routes from the north of the site to the south-west of the site along the entirety of the western site boundary. The road is an urban clearway, restricting vehicles from stopping for one and three-quarter miles, has a 50mph speed limit and is street-lit.

4.4.6 The road has three roundabout junctions, one simple priority junction and several private accesses. The simple priority junction serves Blackton Lane, which provides access to a small number of dwellings.

4.4.7 A roundabout junction with three arms connects Port Road and the A4226, at the north-eastern end of the road.

4.4.8 A second roundabout junction is located approximately 170m from the south-western end of the road. This junction has four arms which provides access to Cardiff Airport and Holiday Inn Express.

4.4.9 A third roundabout junction is located at the south-western end of Port Road. This junction has three arms which serve Port Road, Porthkerry Road and an Unnamed Road serving Raven Express Logistics.

A4226

4.4.10 The A4226 routes north-east to south-west from Barry to the north of Cardiff International Airport. The A4226 has four roundabout junctions along its route. There is a speed limit of 50mph from the 'Waycock Cross' roundabout to the A4226 / B4265 roundabout, with street lighting provided.

4.4.11 The first roundabout is in Colcot and has three arms. The roundabout serves the A4226, A4050 and Colcot Road. The A4050 is a continuation of the A4226, heading north-east towards the Culverhouse roundabout junction to the west of Cardiff.

4.4.12 The second roundabout is located north-west of Barry and is known as 'Waycock Cross'. The roundabout has four arms which connect the A4226, Waycock Road (Five Mile Lane) and B4266. The B4266 Pontypridd Road routes into Barry.

4.4.13 The third roundabout is located to the north of the site. This roundabout has three arms which serve the A4226 and Port Road.

4.4.14 The fourth roundabout is located north of Cardiff Airport. The roundabout has five arms and serves the A4226, B4265, Tredogan Road and Dragonfly Drive. Dragonfly Drive routes south-west to airport hangers

Five Mile Lane

4.4.15 Five Mile Lane is a highway link improvement () along the A4226 (Waycock Road), designed to improve access from the M4 corridor and Cardiff to Cardiff Airport Enterprise Zone, commissioned by Welsh Government. The aim of Five Mile Lane is to improve journey time and

network resilience to Cardiff Airport Enterprise Zone and to overcome congestion on Port Road. The highway improvements scheme ~~is currently under construction and is estimated for completion in Summer 2019~~ was completed in October 2019. Street lighting is ~~proposed~~ provided on the approach to Waycock Cross roundabout only.

4.4.16 The scheme ~~will upgrade~~ upgraded the road to a single lane carriageway of 7.3m width. The Waycock Cross roundabout ~~will be~~ was upgraded as part of the scheme, undergoing widening to two lanes on the A4226 arm and a length of unsegregated footway / cycleway ~~will be~~ was provided to the Waycock Cross roundabout.

4.4.17 The 'Sycamore Cross' junction is a staggered crossroad signalised junction accessed when travelling north along Five Mile Lane from the Waycock Cross roundabout, which ~~will also be~~ was also upgraded as part of the scheme. The work at this junction ~~will increase~~ increased capacity for turning movements at the junction, allowing for the highway improvement scheme to be maximised. The route provides access to the A48, an alternative route to the Culverhouse gyratory roundabout.

Porthkerry Road

4.4.18 Porthkerry Road routes from the south-west of the site. The road begins at the roundabout junction of Port Road / Porthkerry Road / Unnamed Road (serving Raven Express Logistics) and meanders south-west towards Rhoose. The road is street-lit and subject to a 50mph speed limit.

4.4.19 There are four simple priority junctions on this road; two of these junctions serve unnamed roads, one serving a few dwellings and the other serving a leisure park, church and farm. One of the other junctions serves Murlande Way and the other serves Rhoose Way; both roads serve residential areas.

4.4.20 Porthkerry Road also has two roundabouts along its course. The first roundabout has three arms, serving Porthkerry Road and Pentir Y De. The second roundabout is located at the end of Porthkerry Road and serves Porthkerry Road, Rhoose Road and Readers Way. Rhoose Road routes into the centre of Rhoose and Readers Way provides access to a residential area.

Tredogan Road

4.4.21 Tredogan Road routes from north to south from the village of Penmark to car parking areas for Cardiff International Airport.

B4265

4.4.22 The B4265 is a continuation of the A4226 and is accessed west of the site. The road routes west through Llantwit Major and culminates in Bridgend.

Pedestrian Routes

4.4.23 Footways are provided on the southern section of Port Road, south of the Holiday Inn Express roundabout access, and provide access to the Holiday Inn Express bus stops. These footways connect, albeit with the need to cross Port Road twice, to the shared use cycleway on the northern side of Porthkerry Road which provides a continuous link into Rhoose. The footways are well lit.

4.4.24 There are no footways on the northern section of Port Road or on the A4226, to the north of the site.

4.4.25 There are public footpaths which connect the site to Barry as well as the Wales Coastal path, to the south of the site. This can be seen on Figure 2 of the Transport Assessment ~~attached at **Appendix 4.1**~~. Public Right of Way (PRoW) footpath P4 17/1 provides access from the A4226 to Porthkerry Country Park and routes partially within the site, close to the eastern boundary.

Cyclist Routes

4.4.26 National Cycle Network (NCN) route 88 can be accessed on Porthkerry Road and used to route to Barry and Llantwit Major, together with Ewenny, just to the south of Bridgend. There is also a local cycle link to the NCR from Rhoose which connects the site to the Rhoose Cardiff International Airport Railway Station, as shown on Figure 2 of the Transport Assessment ~~attached at **Appendix 4.1**~~.

Public Transport

4.4.27 There are currently three bus stops in the vicinity of the site, providing four services. These provide links to Cardiff International Airport, Rhoose (CIA) Rail Station, Barry, Barry Rail Station, Llantwit Major, Bridgend and Cardiff.

4.4.28 There are six rail stations within 25 minutes cycle time of the station. The two closest, Rhoose (CIA) and Barry Rail Stations, provide services to and from Cardiff Central, Newport, Bridgend, Aberdare and Merthyr Tydfil.

Bus

4.4.29 There are three bus stops in the vicinity of the site. A summary of the frequency of the services is provided in Table ~~4.5~~ 4.6.

Table ~~4.5~~ 4.6 Summary of Local Bus Services

Service	Stop	Route	Weekday Frequency (per hour)			Time	
			AM Peak (07:00-09:00)	Inter-Peak	PM Peak (16:30-18:30)	First Arrival	Last Departure
~~303~~	~~Wellford Farm, Sky Plaza Hotel, Holiday Inn Express.~~	~~Bridgend - Barry~~	~~Two per hour~~	~~One per hour~~	~~Two per hour~~	~~07:25~~	~~00:55~~
304	Welford Farm, Celtic International Hotel, Cardiff Airport Holiday Inn Express, Eggerton Gray.	Cardiff – Llantwit Major via Cardiff Airport and Barry	One per hour	One per hour	One per hour	06:09	00:25
905	Holiday Inn Express.	Cardiff Airport – Rhoose Railway Station	One per hour	One per hour	~~One service~~ One per hour	~~06:20~~ 05:33	~~17:20~~ 22:53
~~X91~~	~~Wellford Farm, Sky Plaza Hotel, Holiday Inn Express.~~	~~Cardiff – Llantwit Major~~	~~One service~~	-	~~One service~~	~~06:34~~	~~18:20~~
~~Traws Cymru T9~~	~~Sky Plaza Hotel.~~	~~Cardiff Airport - Cardiff~~	~~Two per hour~~	~~Two per hour~~	~~Two per hour~~	~~04:36~~	~~23:04~~

4.4.30 ~~A~~ In preparing the original ES, a meeting held with the Council's Group Manager for Transport Services explored the current public transport provision. He considered that the 905 service would stop operating and be replaced with the 303 service (this bus service is now shared between the 303 and the 304 services).

Rail

4.4.31 The site is located between the two rail stations of Rhoose (CIA) and Barry. Both stations offer regular arrivals and departures from Cardiff Central, Newport, Bridgend, Aberdare and Merthyr Tydfil.

Rhoose Cardiff International Airport Rail Station

4.4.32 Rhoose Cardiff International Airport Rail Station is located approximately 3.9 kilometres south-west of the centre of the site. The 905 bus service serves the rail station bus stop, approximately 50 metres walking distance from the station. ~~The 303 and X91 bus services route to and from the Station Road bus stop in Rhoose, approximately 350m walking distance from the station.~~ The destinations and frequency of services provided from the rail station are summarised in Table ~~4.6~~ 4.7.

Table ~~4.6~~ 4.7: Arrival and Departure Frequency Rhoose Cardiff International Airport Rail Station

Arrivals			
Origin	Weekday Frequency		
	AM Peak (0700-0900)	Inter-Peak	PM Peak (1630-1830)
Rhymney via Cardiff Central	60 mins	60 mins	60 mins
~~Newport~~	~~60 mins~~	~~30 mins~~	~~30 mins~~
Bridgend	60 mins	60 mins	60 mins
Departures			
Destination	Weekday Frequency		
	AM Peak (0700-0900)	Inter-Peak	PM Peak (1630-1830)
Rhymney via Cardiff Central	60 mins	60 mins	60 mins
~~Newport~~	~~Two per hour~~	~~Two per hour~~	~~Two per hour~~
Bridgend	60 mins	60 mins	60 mins
~~Aberdare~~	~~60 mins~~	~~60 mins~~	~~60 mins~~

4.4.33 Rail services at Rhoose will increase from one train per hour to two trains per hour ~~in 2022/23~~ during peak periods by 2026 with increased bus frequency to provide access to the site and increases during off-peak periods under review.

Barry Rail Station

4.4.34 Barry Rail Station is located approximately 4.9 kilometres east of the centre of the site by road (bus and cycle). Alternatively, Barry Rail Station can be accessed using Porthkerry Country Park and the walking and cycling routes and trails provided within it. NCN route 88 provides a route from the development to the rail station. The 303 bus services the Barry Hotel bus stop, approximately 170m north of Barry Rail Station. The destinations and frequency of services provided from Barry Rail Station are summarised in Table ~~4.7~~ 4.8.

Table ~~4.7~~ 4.8: Arrival and Departure Frequency Barry Rail Station

Arrivals			
Origin	Weekday Frequency		
	AM Peak	Inter-	PM Peak

	(0700-0900)	Peak	(1630-1830)
Rhymney via Cardiff Central	~~15 – 20 mins~~ 30 mins	~~15 – 20 mins~~ 30 mins	~~15 – 20 mins~~ 30 mins
~~Newport~~	~~15 – 20 mins~~	~~15 – 20 mins~~	~~15 – 20 mins~~
Barry Island	15 – 30 mins	15 – 30 mins	15 – 30 mins
Bridgend	~~20 – 40 mins~~ 30 mins	~~20 – 40 mins~~ 30 mins	~~20 – 40 mins~~ 30 mins
~~Aberdare~~	~~30 mins~~	~~30 mins~~	~~30 mins~~
~~Merthyr Tydfil~~	~~30 mins~~	~~30 mins~~	~~30 mins~~
Departures			
Destination	Weekday Frequency		
	AM Peak (0700-0900)	Inter-Peak	PM Peak (1630-1830)
Rhymney via Cardiff Central	~~15 mins~~ 30 mins	~~15 mins~~ 30 mins	~~15 mins~~ 30 mins
~~Newport~~	~~15 mins~~	~~15 mins~~	~~15 mins~~
Barry Island	15 – 30 mins	15 – 30 mins	15 – 30 mins
Bridgend	~~15 – 30 mins~~ 60 mins	~~15 – 45 mins~~ 60 mins	~~15 – 30 mins~~ 60 mins
~~Aberdare~~	~~30 mins~~	~~15 – 45 mins~~	~~30 – 60 mins~~
~~Merthyr Tydfil~~	~~30 mins~~	~~30 mins~~	~~30 mins~~

Traffic Flows

4.4.35 ~~To determine existing traffic flows on the adjacent highway network an independent Manual Classified Count was undertaken at the existing A4226/Port Road roundabout on Thursday 24th May 2018 between 07:00 and 10:00 and between 16:00 and 19:00. A factor was applied to the peak hour traffic flows to provide an Average Annual Daily Traffic (AADT) flow~~.

4.4.36 ~~The 2018 AADT flows for the majority of the links was obtained from the Department for Transport Road Traffic Statistics~~.

4.4.37 ~~Traffic flows for links where DfT was not available have been taken from the Vale of Glamorgan Local Development Plan 2011-2016 Background Paper 'Highway Impact Assessment' (September 2013). Factors were applied to the peak hour traffic flows to provide an AADT flow~~.

4.4.38 Details of baseline traffic flows are set out in the TN (Appendix 4.1).

Initial Study Area

4.4.39 Based on the above, the following links form the initial study area ~~for the screening exercise~~ to delimit the geographic extent of assessment (Rules 1 and 2) ~~to~~ and determine which links will be subject to EIA:

- Port Road, between A4226 roundabout and Tredogan Road roundabout
- Port Road and Porthkerry Road, between Tredogan Road roundabout and Pentir Y De roundabout
- A4226, between A4226 roundabout and B4265 roundabout
- B4265, between B4265 roundabout and Llanwit Road
- B4265, between Llantwit Road junction and B4270 roundabout
- B4270, between B4270 roundabout and Sigingstone Road junction
- B4265, between B4270 roundabout and Wick Road junction
- Cowbridge Road, between B4270 roundabout and High Street roundabout
- A4226, between A4226 roundabout and B4266 roundabout
- B4266, between B4266 roundabout and A4050 roundabout
- A4226, between Stirling Road junction and Colcot Road roundabout
- A4226, between Colcot Road roundabout and Merthyr Dyfan Road
- A4231, between A4231 roundabout and A4055 roundabout
- A4050, between A4231 roundabout and Old Port Road roundabout
- A4050, between Old Port Road roundabout and A48 roundabout
- A4232, between A48 roundabout and A4232 slip road (north of B2467 roundabout)
- A48, between A48 roundabout and Green Farm Road junction
- A4232, between A48 roundabout and south of M4 roundabout
- M4, between M4 roundabout and Coryton roundabout
- M4, between M4 roundabout and A4119 roundabout
- A4226, between B4266 roundabout and A4226 junction

- A48, between A4226 junction and Redway Road junction
- A48, Village of St Nicholas
- A48, between 40mph speed limit sign (west of Copthorne Way junction) and A48 roundabout
- Pendoylan Road, Village of Pendoylan
- Pendoylan Road, Village of Clawdd-coch
- M4, between A4119 roundabout and A473 roundabout

Road Safety

4.4.40 Personal Injury Accident (PIA) data for the ~~previous~~ most recently available five-year period ~~(01/01/14 – 31/12/18)~~ (01/01/19 – 31/12/23) has been provided by Welsh Government on a confidential basis with strict controls over its reporting. The study area is between the A4226/B4265/Dragonfly Drive roundabout and the A4050/A4321 roundabout and along Port Road to the west of the Development proposal.

4.4.41 The analysis of the PIA's is provided in ~~Chapter 3 of the Transport Assessment~~ the TN attached at **Appendix 4.1**

4.4.42 The analysis of the PIA data indicates that there are no common contributory factors of injury accidents which would highlight any potential deficiency in the design of the highway network. Therefore, there no prevailing highway safety issues that need to be addressed within the area of the scope. It is therefore concluded that analysis has shown that there are no existing highway safety issues along the highway network selected for analysis.

Sensitivity of Receptors

4.4.43 The sensitive receptors listed in Table ~~4.8~~ 4.9 below have the potential to be affected by effects arising from the development proposal. The assessment in this chapter has considered the effects listed in the table upon the identified sensitive receptors.

4.4.44 Receptors to be considered within the impact assessment were selected based upon the access route to be taken by vehicles to the site and the assessment methodology set out above.

4.4.45 Table ~~4.8~~ 4.9 highlights the qualification of the sensitivity assessment of each receptor group for the proposals.

Table ~~4.8~~ 4.9: Definitions of Magnitude

Receptor	Sensitivity	Qualification
Port Road, between A4226 roundabout and Tredogan Road roundabout	Low	Road link contains a hotel, caravan park and airport car park on a section of its northern side. There are bus stops on the northern and southern side of the road link at the hotel and

Receptor	Sensitivity	Qualification
		airport car park, there is no pedestrian footway provided.
Port Road and Porthkerry Road, between Tredogan Road roundabout and Pentir Y De roundabout	Low	Road link contains a low number of residential properties on its eastern side only that are set back from the carriageway. There is a good standard footway / cycleway on its eastern side.
A4226, between A4226 roundabout and B4265 roundabout	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
B4265, between B4265 roundabout and Llanwit Road	Low	Road link contains a section with a low number of residential properties that are set back from the carriageway on its northern and southern side. There is a good standard footway on its northern and southern side in the vicinity of the residential properties. Non-signalised crossing for pedestrians is provided.
B4265, between Llantwit Road junction and B4270 roundabout	Low	Road link contains residential properties on its southern side only that are set back from the carriageway and screened. There are two signalised crossings at junctions which have a good standard footway.
B4270, between B4270 roundabout and Sigingstone Road junction	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
B4265, between B4270 roundabout and Wick Road junction	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
Cowbridge Road, between B4270 roundabout and High Street roundabout	High	Road link contains residential properties on its eastern side that are set back from the carriageway and screened. There are also residential properties on its western side which front onto the road link together with a farm access. There are no footways provided for pedestrians.
A4226, between A4226 roundabout and B4266 roundabout	Low	Road link contains a farm on its northern side which is set back from the carriageway and screened. The road link also contains a hotel and public house on its southern side. There are bus stops on either side of the road link at

Receptor	Sensitivity	Qualification
		the hotel which connect to bus stops via narrow footways.
B4266, between B4266 roundabout and A4050 roundabout	Low	Road link contains residential properties on its northern and southern sides that are set back from the carriageway. Wide footways are provided to a good standard which connect to bus stop and signalised crossing points are provided.
A4226, between Stirling Road junction and Colcot Road roundabout	High	Road link contains residential properties on its northern side that are set back from the carriageway and screened, together with a supermarket and emergency services station. On its southern side the link contains a school. Footways are provided to a good standard on the northern and southern sides of the road link, which connect to the bus stops. Signalised crossings are also provided.
A4226, between Colcot Road roundabout and Merthyr Dyfan Road	Medium	Road link contains residential properties on its northern side that are set back from the carriageway, together with a golf course and service station. On its southern side residential properties are set back from the carriageway and screened, together with a school. A good standard of footway provision is provided together with signalised crossings.
A4231, between A4231 roundabout and A4055 roundabout	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
A4050, between A4231 roundabout and Old Port Road roundabout	Low	The village of Wenvoe is located to the west of a section of the road link, with residential properties set back from the carriageway. There is also a school, hotel and garden centre on the link. There is a good standard of footway provision together with a footbridge over the carriageway.
A4050, between Old Port Road roundabout and A48 roundabout	Medium	Road link contains businesses on its western side which are set back from the carriageway and screened. On its eastern side the road link contains a retail park with restaurants and a supermarket. Footways are provided to a good standard, together with signalised crossing points which connect to bus stops. The road link connects to a congested junction.

Receptor	Sensitivity	Qualification
A4232, between A48 roundabout and A4232 slip road (north of B2467 roundabout)	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
A48, between A48 roundabout and Green Farm Road junction	Medium	The road link contains a cemetery and residential properties which are set back from the carriageway on its northern side. On its southern side residential properties front onto the carriageway together with retail businesses. Footways are provided to a good standard on the northern and southern sides of the carriageway together with signalised crossings. The road link connects to a congested junction.
A4232, between A48 roundabout and south of M4 roundabout	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
M4, between M4 roundabout and Coryton roundabout	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
M4, between M4 roundabout and A4119 roundabout	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
A4226, between B4266 roundabout and A4226 junction	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.
A48, between A4226 junction and Redway Road junction	Medium	The road link bisects the village of Bonvilston, there are residential properties on its northern and southern sides which are set back from the carriageway. On its northern side there is a public house which fronts onto the carriageway. There are narrow footways provided together with a signalised crossing point.
A48, Village of St Nicholas	Medium	Road link bisects the village of St Nicholas, there are residential properties on the northern and southern sides which are set back from the carriageway. There are narrow footways provided together with a signalised crossing.
A48, between 40mph speed limit sign (west of Copthorne Way junction) and A48 roundabout	Medium	Road link has retail park with restaurants and supermarket set back from the carriageway and screened on its northern and southern sides. A good standard of footway is provided on its northern and southern sides with

Receptor	Sensitivity	Qualification
		signalised crossings. The road link connects to a congested junction.
Pendoylan Road, Village of Pendoylan	High	Road link bisects the village of Pendoylan with residential properties set back from the carriageway and screened on its eastern and western sides. On its eastern side there is a public house and a school. Narrow footways are provided with no crossing points. The western side contains no footway provision at its southern point.
Pendoylan Road, Village of Clawdd-coch	High	Road link bisects the village of Clawdd-coch with residential properties on its eastern and western sides fronting the carriageway. On its eastern side no footway provision is provided and on its western side narrow footways connect to a bus stop, there are no crossings points.
M4, between A4119 roundabout and A473 roundabout	Negligible	Road link does not contain any sensitive receptors as advised by the IEMA Guidelines.

4.4.46 On the basis of the above, highway links with descriptions of high ~~or medium~~ sensitivity will be considered against the Rule 2 threshold described above. Other links with descriptions of medium, low or negligible sensitivity will be considered against the Rule 1 threshold.

Future Baseline

Future Assessment Year

4.4.47 ~~The traffic survey was undertaken and the DfT traffic data is for 2018 and therefore, the baseline for the development proposal is 2018. The development proposal is expected to begin occupation and therefore operation in 2023 and this has been used as the future assessment year.~~ The original ES assessed a future year of 2023, which was four years after the submission of the planning application, a period in which occupation of the development proposal was estimated to be underway and a period that represented the largest impact as a result of the development traffic flows forming the greatest proportion of the baseline traffic flows (on the basis traffic growth rates increase traffic flows year on year). For consistency, a future year of 2028 has been prepared on which to undertake assessment. When fully operational the development proposal will generate approximately 6,400 AADT light vehicles movements and 400 AADT heavy vehicle movements; this is considered to be in excess of the expected construction daily vehicle movements and therefore no assessment of the construction impacts has been undertaken.

Traffic Growth Rates and Committed Development

4.4.48 A future year baseline traffic scenario of ~~2023~~ 2028 has been created by applying traffic growth rates to the observed traffic flows. ~~The local planning authority in their EIA Screening Opinion and subsequent correspondence (**Appendices 1.1 and 1.2**) stated that there were no committed or cumulative developments to be considered in the assessment.~~

4.4.49 Growth rates have been applied to the observed traffic flows using the DfT software TEMPRO and then traffic flows from committed developments have been added to create future ~~2023~~ 2028 baseline traffic flows. The TEMPRO software presents the output of the DfT's National Trip End Model which forms part of the National Transport Model (NTM). ~~The DfT's Webtag guidance Unit 3.15.2 advises the use of NTM in preference to the National Road Traffic Forecasts (NRTF) as the NTM data is based on a more up-to-date model.~~ The core growth scenario has been adopted, as set out in the DfTs Webtag Unit M4.

4.4.50 It should be noted that growth rates include allowances for background traffic growth as well as development growth and therefore will include allowance for expected development traffic expected to be on the highway network in ~~2023~~ 2028. Growth rates for the individual authority and South-East Wales were investigated against different road types and ~~the highest value used to ensure the assessment was robust. The TEMPRO growth rate used is 1.06635 (based on the average of the growth rates for the Vale of Glamorgan and Cardiff areas – Rural Principle road type).~~ those for 'Minor Road – Region', 'A Road – Region', 'Trunk Road – Region' and 'Motorway – Region' were calculated accordingly.

4.4.51 Details of other developments have been reviewed from the cumulative long list (Appendix 1.3) that are committed developments. Three sites have been identified as follows:

- 2022/00278/RG3, Docks Office, Subway Road, Barry. Low traffic generation which is included within the baseline traffic flows as part of the growth rates.
- 2019/01260/HYB, Land between Aston Martin Lagonda and taxiway echo (Keithrow), Bro Tathan Business Park, St. Athan. Traffic generation extracted from its Transport Assessment prepared in support of its planning application and assigned onto the network to form part of the 2028 baseline traffic flows.
- 2023/00780/FUL, Land North of Ffordd Bro Tathan, St. Athan. Low traffic generation which is included within the baseline traffic flows as part of the growth rates.

4.5 Predicted Effects

Construction Effects

4.5.1 On the basis that the July 2019 Transport Assessment provided assessment of a scheme which comprised an increased quantity of floorspace (1.9 million square foot), the assessment of effects set out below similarly assesses a 1.9 million square foot scheme, as a worst-case scenario.

4.5.2 When operational the Development proposal is expected to generate approximately 6,400 AADT light vehicle movements and 400 AADT heavy vehicle movements. Vehicle generation during the construction period is expected to be significantly less than the operational vehicle generation and therefore no assessment of the construction impacts has been undertaken.

Completed Development Effects

Trip Generation

4.5.3 The trip generation for the development proposal has been calculated by interrogating the online TRICS database and the methodology and generation is set out in ~~Chapter 7 of the Transport Assessment~~ the TN attached at **Appendix 4.1**. In order to calculate AADT flows it has been assumed that the B1 element would operate 5 days a week with the B2 and B8 elements operating 7 days a week.

Temporal Distribution

4.5.4 The development proposal traffic has been temporally distributed throughout the day in accordance with the TRICS profiles shown in the TN ~~Appendix L of the Transport Assessment attached at **Appendix 4.1**~~.

Trip Distribution and Assignment

4.5.5 For the purposes of this assessment, the development proposal traffic has been distributed from the inputs into the strategic VISUM modelling undertaken using the South East Wales Transport Model which has itself assigned the traffic onto the highway network. Details of which are within Chapter 8 and Appendix M of the Transport Assessment and the TN, a copy of which is attached at **Appendix 4.1**.

Impact of Operational Traffic

4.5.6 The assessment has been undertaken to enable an understanding of the typical effects for the operation of the development proposal.

4.5.7 In accordance with the IEMA guidelines, the operational traffic flows as attached to the ~~Transport Assessment~~ TN at **Appendix 4.1** ~~and~~ have been assessed against the ~~2023~~ 2028 baseline traffic flows. A summary of the assessment is set out in Table ~~4.9~~ 4.10.

Table ~~4.9~~ 4.10: Summary of Daily Impact of Development Proposal Traffic Flows

Receptor		Impact					
		Total Vehicles			HGVs		
Link No.	Link	2023 Base	Dev	%	2023 Base	Dev	%
1	Port Road, between A4226 roundabout and Tredogan Road roundabout	~~8298~~ 11,341	~~-399~~ -389	~~-4.8%~~ -3.4%	~~199~~ 185	~~24~~ 31	~~11.9%~~ 16.6%
2	Port Road and Porthkerry Road, between Tredogan Road roundabout and Pentir Y De roundabout	7,184	~~-289~~ -281	-3.9%	269	~~0~~ 0	0.0%
3	A4226, between A4226 roundabout and B4265 roundabout	~~10295~~ 11,920	~~361~~ 351	~~3.5%~~ 2.9%	~~466~~ 615	~~-95~~ -123	~~-20.4%~~ -20.0%
4	B4265, between B4265 roundabout and Llanwit Road	~~10295~~ 15,343	~~591~~ 575	~~5.7%~~ 3.7%	~~466~~ 578	~~-24~~ -31	~~-5.1%~~ -5.3%
5	B4265, between Llantwit Road junction and B4270 roundabout	~~9477~~ 12,234	~~721~~ 702	~~7.6%~~ 5.7%	~~380~~ 560	~~-24~~ -31	~~-6.3%~~ -5.5%

Receptor		Impact					
		Total Vehicles			HGVs		
Link No.	Link	2023 Base	Dev	%	2023 Base	Dev	%
6	B4270, between B4270 roundabout and Sigingstone Road junction	~~11023~~ 12,202	~~260~~ 253	~~2.4%~~ 2.1%	~~605~~ 670	~~24~~ 31	~~3.9%~~ 4.6%
7	B4265, between B4270 roundabout and Wick Road junction	~~3923~~ 4,646	~~184~~ 179	~~4.7%~~ 3.9%	~~215~~ 255	~~-40~~ -51	~~-18.4%~~ -20.1%
8	Cowbridge Road, between B4270 roundabout and High Street roundabout	~~4280~~ 4,309	~~-196~~ -190	~~-4.6%~~ -4.4%	~~10~~ 10	~~8~~ 10	~~81.6%~~ 104.7%
9	A4226, between A4226 roundabout and B4266 roundabout	~~16008~~ 24,675	~~5488~~ 5,345	~~34.3%~~ 21.7%	~~362~~ 778	~~190~~ 246	~~52.5%~~ 31.6%
10	B4266, between B4266 roundabout and A4050 roundabout	~~14400~~ 14,506	~~-108~~ -105	~~-0.7%~~ -0.7%	~~149~~ 150	~~71~~ 92	~~47.8%~~ 61.3%
11	A4226, between Stirling Road junction and Colcot Road roundabout	~~16566~~ 16,455	~~2109~~ 2,054	~~12.7%~~ 12.5%	~~477~~ 629	~~111~~ 143	~~23.3%~~ 22.8%
12	A4226, between Colcot Road roundabout and Merthyr Dyfan Road	~~25237~~ 20,911	~~1461~~ 1,423	~~5.8%~~ 6.8%	~~608~~ 501	~~-24~~ -31	~~-3.9%~~ -6.1%
13	A4231, between A4231 roundabout and A4055 roundabout	~~19588~~ 18,009	~~172~~ 167	~~0.9%~~ 0.9%	~~852~~ 743	~~-32~~ -41	~~-3.7%~~ -5.5%
14	A4050, between A4231 roundabout and Old Port Road roundabout	~~31405~~ 28,491	~~639~~ 622	~~2.0%~~ 2.2%	~~1408~~ 893	~~8~~ 10	~~0.6%~~ 1.1%
15	A4050, between Old Port Road roundabout and A48 roundabout	~~34864~~ 31,626	~~436~~ 425	~~1.3%~~ 1.3%	~~1562~~ 992	~~-32~~ -41	~~-2.0%~~ -4.1%
16	A4232, between A48 roundabout and A4232 slip road (north of B2467 roundabout)	~~60558~~ 65,749	~~578~~ 563	~~1.0%~~ 0.9%	~~2164~~ 2308	~~0~~ 0	~~0.0%~~ 0.0%
17	A48, between A48 roundabout and Green Farm Road junction	~~21917~~ 19,863	~~337~~ 328	~~1.5%~~ 1.7%	~~501~~ 281	~~16~~ 20	~~3.2%~~ 7.3%

Receptor		Impact					
		Total Vehicles			HGVs		
Link No.	Link	2023 Base	Dev	%	2023 Base	Dev	%
18	A4232, between A48 roundabout and south of M4 roundabout	~~76120~~ 62,492	~~471~~ 459	~~0.6%~~ 0.7%	~~3208~~ 2987	~~24~~ 31	~~0.7%~~ 1.0%
19	M4, between M4 roundabout and Coryton roundabout	~~107809~~ 107,824	~~224~~ 218	~~0.2%~~ 0.2%	~~7557~~ 7882	~~-16~~ -20	~~-0.2%~~ -0.3%
20	M4, between M4 roundabout and A4119 roundabout	~~115654~~ 109,785	~~237~~ 230	~~0.2%~~ 0.2%	~~7438~~ 7794	~~-24~~ -31	~~-0.3%~~ -0.4%
21	A4226, between B4266 roundabout and A4226 junction	~~7920~~ 12,808	~~1311~~ 1,277	~~16.6%~~ 10.0%	~~120~~ 527	~~-24~~ -31	~~-19.7%~~ -5.8%
22	A48, between A4226 junction and Redway Road junction	~~15966~~ 13,990	~~-58~~ -57	~~-0.4%~~ -0.4%	~~470~~ 709	~~55~~ 72	~~11.8%~~ 10.1%
23	A48, Village of St Nicholas	~~15188~~ 13,416	~~1760~~ 1,714	~~11.6%~~ 12.8%	~~310~~ 367	~~71~~ 92	~~23.0%~~ 25.1%
24	A48, between 40mph speed limit sign (west of Copthorne Way junction) and A48 roundabout	~~15188~~ 13,416	~~1707~~ 1,662	~~11.2%~~ 12.4%	~~310~~ 367	~~71~~ 92	~~23.0%~~ 25.1%
25	Pendoylan Road, Village of Pendoylan	~~1872~~ 6,982	~~-49~~ -48	~~-2.6%~~ -0.7%	~~11~~ 126	~~16~~ 20	~~138.2%~~ 16.3%
26	Pendoylan Road, Village of Clawdd-coch	~~1872~~ 6,982	~~-49~~ -48	~~-2.6%~~ -0.7%	~~11~~ 126	~~16~~ 20	~~138.2%~~ 16.3%
27	M4, between A4119 roundabout and A473 roundabout	~~94253~~ 94,166	~~155~~ 151	~~0.2%~~ 0.2%	~~6920~~ 6882	~~0~~ 0	~~0.0%~~ 0.0%

4.5.8 Using the above thresholds and the receptor sensitivity Links 8, 9 and 10 exceed the Rule 1 threshold and Link~~s, 8,~~ 11~~, 23, 24, 25 and 26~~ exceed~~s~~ the Rule 2 threshold and assessment has been undertaken below to assess the effect of the Development proposal traffic in detail.

4.5.9 The remaining links are below the relevant threshold for the links due to their receptor sensitivity and in accordance with the IEMA guidelines the development proposal traffic flows will result in imperceptible effects along the adjacent highway.

Link 8 - Cowbridge Road, between B4270 roundabout and High Street roundabout

4.5.10 This link will have a decrease in daily traffic of ~~196~~ 190 vehicles (~~-4.6%~~ -4.4 impact) and a daily increase of ~~8~~ 20 HGVs (~~+81.6%~~ +104.7%) impact. Although the HGV percentage increase appears high, this is as a result of the low baseline HGV flows (10 vehicles). This link has been assessed under Rule ~~2~~ 1.

4.5.11 **Driver Delay** – the effect of delay to other road users of an additional ~~8~~ 20 HGVs ~~per day~~ would be imperceptible. The Transport Assessment ~~at **Appendix 4.1**~~ undertakes an assessment of the development proposal peak hour traffic on key junctions on the highway network and concludes that the impact of the increased traffic flows at the junction in the vicinity of this link would be imperceptible to the daily traffic flow fluctuation. As a result, the effect of the development proposal upon receptors on this link would be long-term and slight ~~adverse~~ beneficial (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.12 ~~**Increased Risk of Accidents**~~ **Road Safety** - there would be a decrease in traffic flows along this link whilst the slight increase in HGVs would not significantly change the character of the network and therefore it is considered that the proposals would not alter the injury accident rate. It is therefore considered that the magnitude of impact on ~~accidents and~~ road safety would be negligible. The effect would therefore be long-term and slight ~~adverse~~ beneficial (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.13 **Severance** - The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. There will be fewer total vehicles on this link and the additional ~~8~~ 20 HGVs on a handful of residential properties will not impact on severance. It is therefore considered that the magnitude of impact on severance would be negligible. The effect would therefore be long-term and slight ~~adverse~~ beneficial (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.14 ~~**Pedestrian**~~ **Non-Motorised User Amenity (Fear and Intimidation)** - the IEMA guidelines ~~suggest a tentative threshold for judging the significance of changes in pedestrian amenity where the traffic flow (or its HGV component) is halved or doubled. The HGV daily increase is 81.6% and therefore is approaching this threshold. However, this increase is due to the low baseline HGV flow and an additional 8 HGVs are not expected to have a significant impact.~~ sets out criteria to assess fear and intimidation (non-motorised user amenity) using a degree of hazard score and then considering the change in this (as a step change) with development traffic, as set out in Tables 4.1 and 4.2. It is calculated that there would be small fear and intimidation on link 8 in the 2028 baseline scenario which would remain as such with development. There is therefore no step change, and it is therefore considered that the magnitude of impact on ~~pedestrian~~ non-motorised user amenity would be negligible. The effect would therefore be long-term and slight ~~adverse~~ beneficial (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.15 ~~**Pedestrian**~~ **Non-Motorised User Delay** – The total number of daily vehicles is predicted to fall by 4.6% with an increase of 8 daily HGV movements. The IEMA guidelines set out that increases in total traffic flows of 30%, 60% and 90% could result in slight, moderate and substantial changes in non-motorised user delay respectively. On this basis, it is therefore considered the effect on ~~pedestrian~~ non-motorised user delay as a result of the development proposal will be long-term and slight ~~adverse~~ beneficial (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.16 ~~**Dust and Dirt** – the additional 8 daily HGV movements will be associated with Class B1, B2 and B8 uses and as all roads and car parking will be constructed to the relevant highway design standards and will be hard surfaced are not expected to distribute dust and dirt on the local road network. It is therefore considered the dust and dirt effect as a result of the development proposal~~

~~on receptors on the link would be long-term and slight adverse ((negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance~~.

4.5.17 ~~**Visual Effects** - The IEMA guidelines set out that the number of high sided vehicles (HGVs) may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. It acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect. This link is not located in such locations and there are already HGVs travelling along it. With a daily increase of only 8 HGV movements it is therefore considered that the magnitude of impact on visual effects would be negligible. The effect would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance~~.

Link 9 - A4226, between A4226 roundabout and B4266 roundabout

4.5.18 This link will have an increase in daily traffic of ~~5,488~~ 5,345 vehicles (~~+34.3%~~ +21.7% impact) and a daily increase of ~~190~~ 246 HGVs (~~+52.5%~~ +31.6%) impact. This link has been assessed under Rule 1.

4.5.19 **Driver Delay** - the Transport Assessment ~~at **Appendix 4.1**~~ undertakes an assessment of the Development proposal peak hour traffic on key junctions on the highway network and concludes that the impact of the increased traffic flows at the Waycock Cross junction in the vicinity of this link would lead to an increased driver delay of 104 seconds in the AM peak hour and 651 seconds in the PM peak hour. During other parts of the day, when base traffic and development traffic are both significantly lower than the levels during the peak hours delay will be less. As a result, the effect of the development proposal upon receptors on this link would be long-term and slight/moderate adverse (high magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of moderate significance.

4.5.20 ~~**Increased Risk of Accidents**~~ **Road Safety** - PIA statistics have been obtained for the highway network for the latest available five year period, an analysis of which ~~is set out above and~~ concludes there are no current road safety issues. The increase in traffic flows may lead to an increase in minor accidents (i.e. rear shunt at low speeds) and therefore an increase to slight injury accidents ~~rates~~. It is therefore considered that the magnitude of impact of the development proposal on ~~accidents and~~ road safety may be low/medium. The effect would therefore be long term and slight adverse (low/medium magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.21 **Severance** - The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. However, the link does not route through a community and there are only a very small number of pedestrian crossing movements. It is therefore considered that the magnitude of impact on severance would be negligible. The effect of the development proposal on severance would therefore be long term and negligible/slight adverse (negligible magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.22 ~~**Pedestrian**~~ **Non-Motorised User Amenity** - the IEMA guidelines ~~suggest a tentative threshold for judging the significance of changes in pedestrian amenity where the traffic flow (or its HGV component) is halved or doubled. Daily increases in total vehicle movements are predicted to be 34.3% and for HGV movements 52.5%, which are well below such changes.~~ sets out criteria to assess fear and intimidation (non-motorised user amenity) using a degree of hazard score and then considering the change in this (as a step change) with development traffic, as set out in Tables 4.1 and 4.2. It is calculated that there would be extreme fear and intimidation on link

9 in the 2028 baseline scenario which would remain as such with development. There is therefore no step change, and it is therefore considered that the magnitude of impact on ~~pedestrian~~ non-motorised user amenity would be negligible ~~to low~~. The effect of the development proposal on ~~pedestrian~~ non-motorised user amenity would therefore be long term and slight adverse (negligible ~~to low~~ magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.23 **~~Pedestrian~~ Non-Motorised User Delay** – ~~The maximum increase in daily vehicles expected due to the development proposal will be 5,488 on the link. It is generally accepted that peak hour traffic flows equate to approximately 10% of daily traffic flows giving an estimated peak hour increase of 549 vehicles. The increase in traffic movements falls below the 1,400 vehicles per hour as described in the IEMA guidelines.~~ The IEMA guidelines set out that increases in total traffic flows of 30%, 60% and 90% could result in slight, moderate and substantial changes in non-motorised user delay respectively. On this basis, it is therefore considered the effect on ~~pedestrian~~ non-motorised user delay as a result of the development proposal would be long-term and negligible/slight adverse (negligible magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.24 **~~Dust and Dirt~~** ~~- the additional traffic will be associated with B1, B2 and B8 Use Classes and as all roads and car parking will be constructed to the relevant highway design standards and will be hard surfaced are not expected to distribute dust and dirt on the local road network. It is therefore considered the dust and dirt effect as a result of the development proposal on receptors on the link would be long-term and negligible/slight adverse (negligible magnitude of impact with low sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance~~.

4.5.25 **~~Visual Effects~~** ~~- The IEMA guidelines set out that the number of high sided vehicles (HGVs) may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. It acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect. This link is not located in such locations and there are already HGVs travelling along it. It is therefore considered that the magnitude of impact on visual effects would be negligible. The effect of the development proposal on visual effects would therefore be long-term and negligible/slight adverse (negligible magnitude of impact with low sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance~~.

Link 10 - B4266, between B4266 roundabout and A4050 roundabout

4.5.26 This link will have a decrease in daily traffic of ~~108~~ 105 vehicles (-0.7% impact) and a daily increase of ~~71~~ 92 HGVs (~~+47.8%~~ +61.3% impact). This link has been assessed under Rule 1.

4.5.27 **Driver Delay** - the Transport Assessment at **Appendix 4.1** undertakes an assessment of the development proposal peak hour traffic on key junctions on the highway network and concludes that the impact of the increased traffic flows at the Waycock Cross junction in the vicinity of this link would lead to an increased driver delay of 23 seconds in the AM peak hour only with an improvement of 0.49 seconds in the PM peak hour on Pontypridd Road. The impact assessment also shows that this arm of the junction will continue to operate within capacity. During other parts of the day, when base traffic and development traffic are both significantly lower than the levels during the peak hours delay will be less. As a result, the effect of the development proposal upon receptors on this link would be long-term and negligible/slight adverse (low magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.28 **~~Increased Risk of Accidents~~ Road Safety** - PIA statistics have been obtained for the highway network for the latest available five year period, ~~an analysis of which is set out above~~ and

concludes there are no current road safety issues. Overall, there is a decrease in traffic with an increase of ~~71~~ 92 daily HGV movements. It is not considered that the increase in HGV movements on a highway link subject to a 30mph speed limit will lead to an increase in injury accident rates. It is therefore considered that the magnitude of impact on ~~accidents and~~ road safety would be negligible. The effect of the development proposal would therefore be long-term and negligible/slight ~~adverse~~ beneficial (negligible magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.29 **Severance** - the IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. There will be fewer total vehicles on this link and the additional ~~71~~ 92 daily HGV movements will not impact on severance. It is therefore considered that the magnitude of impact on severance would be negligible. The effect of the development proposal on severance would therefore be long-term and negligible/slight ~~adverse~~ beneficial (negligible magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.30 ~~**Pedestrian**~~ **Non-Motorised User Amenity** - the IEMA guidelines ~~suggest a tentative threshold for judging the significance of changes in pedestrian amenity where the traffic flow (or its HGV component) is halved or doubled. Daily increases in total vehicle movements are predicted to be -0.7% and for HGV movements 47.85%, which are well below such changes.~~ sets out criteria to assess fear and intimidation (non-motorised user amenity) using a degree of hazard score and then considering the change in this (as a step change) with development traffic, as set out in Tables 4.1 and 4.2. It is calculated that there would be moderate fear and intimidation on link 10 in the 2028 baseline scenario which would remain as such with development. There is therefore no step change, and It is therefore considered that the magnitude of impact on ~~pedestrian~~ non-motorised user amenity would be negligible ~~to low~~. The effect of the development proposal on ~~pedestrian~~ non-motorised user amenity would therefore be long term and negligible/slight ~~adverse~~ beneficial (negligible ~~to low~~ magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.31 ~~**Pedestrian**~~ **Non-Motorised User Delay** – The total number of daily vehicles is predicted to decrease by 0.7% with an increase of ~~71~~ 92 daily HGV movements. The IEMA guidelines set out that increases in total traffic flows of 30%, 60% and 90% could result in slight, moderate and substantial changes in non-motorised user delay respectively. On this basis, it is therefore considered the effect on ~~pedestrian~~ non-motorised user delay as a result of the development proposal will be long-term and negligible/slight ~~adverse~~ beneficial (negligible magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.32 ~~**Dust and Dirt** - the additional traffic will be associated with B1, B2 and B8 Use Classes and as all roads and car parking will be constructed to the relevant highway design standards and will be hard surfaced are not expected to distribute dust and dirt on the local road network. It is therefore considered the dust and dirt effect as a result of the development proposal on receptors on the link would be long-term and negligible/slight adverse ((negligible magnitude of impact with low sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance~~.

4.5.33 ~~**Visual Effects** - The IEMA guidelines set out that the number of high sided vehicles (HGVs) may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. It acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect. This link is not located in such locations and there are already HGVs travelling along it. It is therefore considered that the magnitude of impact on visual effects would be negligible. The effect would therefore be long-term and negligible/slight adverse (negligible~~

~~magnitude of impact with low sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance~~.

Link 11 - A4226, between Stirling Road junction and Colcot Road roundabout

4.5.34 This link will have an increase in daily traffic of ~~2,109~~ 2,054 vehicles (~~+12.7%~~ +12.5% impact) and a daily increase of ~~111~~ 143 HGVs (~~+23.3%~~ +22.8% impact). This link has been assessed under Rule 2.

4.5.35 **Driver Delay** - the Transport Assessment ~~at **Appendix 4.1**~~ undertakes an assessment of the development proposal peak hour traffic on key junctions on the highway network and concludes that the impact of the increased traffic flows at the Waycock Cross junction in the vicinity of this link would lead to an increased driver delay of 7 seconds in the AM peak hour and 0.28 seconds in the PM peak hour on the A4226 east of the junction. The impact assessment also shows that this arm of the junction will continue to operate within capacity. During other parts of the day, when base traffic and development traffic are both significantly lower than the levels during the peak hours delay will be less. The assessment of the junction at the eastern end of the link shows that the impact of the increased traffic flows would be imperceptible to the daily traffic flow fluctuation. As a result, the effect of the Development proposal upon receptors on this link would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.36 ~~**Increased Risk of Accidents**~~ **Road Safety** - PIA statistics have been obtained for the highway network for the latest available five year period, an analysis of which ~~is set out above and~~ concludes there are no current road safety issues. The increase in traffic flows may lead to an increase in minor accidents (i.e. rear shunt at low speeds) and therefore an increase to slight injury accidents ~~rates~~. It is therefore considered that the magnitude of impact on ~~accidents and~~ road safety may be low. The effect of the development proposal would therefore be long term and negligible/slight adverse (low magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.37 **Severance** - The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. Whilst the majority of development is on one side of the link there is a ribbon of development on the opposite side; however, there are two controlled pedestrian formal pedestrian crossings available. It is therefore considered, with the development proposal increasing daily traffic flows by ~~12.7%~~ 12.5%, that the magnitude of impact on severance would be negligible. The effect of the development proposal on severance would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.38 ~~**Pedestrian**~~ **Non-Motorised User Amenity** - the IEMA guidelines ~~suggest a tentative threshold for judging the significance of changes in pedestrian amenity where the traffic flow (or its HGV component) is halved or doubled. Daily increases in total vehicle movements are predicted to be 12.7% and for HGV movements 23.3%, which are well below such changes.~~ sets out criteria to assess fear and intimidation (non-motorised user amenity) using a degree of hazard score and then considering the change in this (as a step change) with development traffic, as set out in Tables 4.1 and 4.2. It is calculated that there would be moderate fear and intimidation on link 11 in the 2028 baseline scenario which would remain as such with development. There is therefore no step change, and It is therefore considered that the magnitude of impact on ~~pedestrian~~ non-motorised user amenity would be negligible. The effect of the development

proposal on ~~pedestrian~~ non-motorised user amenity would therefore be long term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.39 **~~Pedestrian~~ Non-Motorised User Delay** – ~~The maximum increase in daily vehicles expected due to the development proposal will be 2,109 on the link. It is generally accepted that peak hour traffic flows equate to approximately 10% of daily traffic flows giving an estimated peak hour increase of 211 vehicles. The increase in traffic movements falls below the 1,400 vehicles per hour as described in the IEMA guidelines.~~ The IEMA guidelines set out that increases in total traffic flows of 30%, 60% and 90% could result in slight, moderate and substantial changes in non-motorised user delay respectively. On this basis, it is therefore considered the effect on ~~pedestrian~~ non-motorised user delay as a result of the Development proposal would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

4.5.40 ~~**Dust and Dirt** - the additional traffic will be associated with B1, B2 and B8 Use Classes and as all roads and car parking will be constructed to the relevant highway design standards and will be hard surfaced are not expected to distribute dust and dirt on the local road network. It is therefore considered the dust and dirt effect as a result of the development proposal on receptors on the link would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance~~.

4.5.41 ~~**Visual Effects** - The IEMA guidelines set out that the number of high sided vehicles (HGVs) may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. It acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect. This link is not located in such locations and there are already HGVs travelling along it. It is therefore considered that the magnitude of impact on visual effects would be negligible. The effect would therefore be long-term and negligible/slight adverse (negligible magnitude of impact with low sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance~~.

~~Link 23 - A48, Village of St Nicholas~~

~~4.5.42 This link will have an increase in daily traffic of 1,760 vehicles (+11.6% impact) and a daily increase of 71 HGVs (+23.0% impact). This link has been assessed under Rule 2.~~

~~4.5.43 **Driver Delay** - the Transport Assessment at **Appendix 4.1** undertakes an assessment of the Development proposal peak hour traffic on key junctions on the highway network and concludes that the impact of the increased traffic flows at the Sycamore Cross junction in the vicinity of this link would be imperceptible to the daily traffic flow fluctuation. As a result, the effect of the development proposal upon receptors on this link would be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

~~4.5.44 **Increased Risk of Accidents** - the increase in traffic flows would be similar to those which are already on the network. There would be no significant change in the character of the network and therefore it is considered that the proposals would not alter the injury accident rate. It is therefore considered that the magnitude of impact on accidents and safety would be negligible. The effect of the development proposal would therefore be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

4.5.45 **Severance** - The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. Where the link routes through the village of St Nicholas there is development on both sides; however, there is a controlled pedestrian crossing available. It is therefore considered, with the development proposal increasing traffic flows by 11.6%, that the magnitude of impact on severance would be negligible. The effect of the development proposal on severance would therefore be long term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance.

4.5.46 **Pedestrian Amenity** - the IEMA guidelines suggest a tentative threshold for judging the significance of changes in pedestrian amenity where the traffic flow (or its HGV component) is halved or doubled. Daily increases in total vehicle movements are predicted to be 11.6% and for HGV movements 23.0%, which are well below such changes. It is therefore considered that the magnitude of impact on pedestrian amenity would be negligible. The effect of the development proposal on pedestrian amenity would therefore be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance.

4.5.47 **Pedestrian Delay** – The maximum increase in daily vehicles expected due to the Development proposal will be 1,760 on the link. It is generally accepted that peak hour traffic flows equate to approximately 10% of daily traffic flows giving an estimated peak hour increase of 176 vehicles. The increase in traffic movements falls below the 1,400 vehicles per hour as described in the IEMA guidelines. On this basis, it is therefore considered the effect on pedestrian delay as a result of the Development proposal would be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.48 **Dust and Dirt** - the additional traffic will be associated with B1, B2 and B8 Use Classes and as all roads and car parking will be constructed to the relevant highway design standards and will be hard surfaced are not expected to distribute dust and dirt on the local road network. It is therefore considered the dust and dirt effect as a result of the development proposal on receptors on the link would be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.49 **Visual Effects** - The IEMA guidelines set out that the number of high sided vehicles (HGVs) may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. It acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect. This link is not located in such locations and there are already HGVs travelling along it. It is therefore considered that the magnitude of impact on visual effects would be negligible. The effect of the development proposal would therefore be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance.

Link 24 - A48, between 40mph speed limit sign (west of Copthorne Way junction) and A48 roundabout

4.5.50 This link will have an increase in daily traffic of 1,707 vehicles (+11.6% impact) and a daily increase of 71 HGVs (+23.0% impact). This link has been assessed under Rule 2.

4.5.51 **Driver Delay** - the Transport Assessment at **Appendix 4.1** undertakes an assessment of the development proposal peak hour traffic on key junctions on the highway network and concludes that the impact of the increased traffic flows at the Culverhouse Cross junction in the vicinity of

this link would be imperceptible to the daily traffic flow fluctuation. As a result, the effect of the development proposal upon receptors on this link would be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.52 **Increased Risk of Accidents** - the increase in traffic flows would be similar to those which are already on the network. There would be no significant change in the character of the network and therefore it is considered that the proposals would not alter the injury accident rate. It is therefore considered that the magnitude of impact on accidents and safety would be negligible. The effect of the development proposal would therefore be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.53 **Severance** – The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. It is therefore considered, with the development proposal increasing traffic flows by 11.2%, that the magnitude of impact on severance would be negligible. The effect of the development proposal would therefore be long term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance.

4.5.54 **Pedestrian Amenity** - the IEMA guidelines suggest a tentative threshold for judging the significance of changes in pedestrian amenity where the traffic flow (or its HGV component) is halved or doubled. Daily increases in total vehicle movements are predicted to be 11.2% and for HGV movements 23.0%, which are well below such changes. It is therefore considered that the magnitude of impact on pedestrian amenity would be negligible. The effect would therefore be negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance.

4.5.55 **Pedestrian Delay** – The maximum increase in daily vehicles expected due to the development proposal will be 1,707 on the link. It is generally accepted that peak hour traffic flows equate to approximately 10% of daily traffic flows giving an estimated peak hour increase of 171 vehicles. The increase in traffic movements falls below the 1,400 vehicles per hour as described in the IEMA guidelines. On this basis, it is therefore considered the effect on pedestrian delay as a result of the development proposal would be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.56 **Dust and Dirt** - the additional traffic will be associated with B1, B2 and B8 Use Classes and as all roads and car parking will be constructed to the relevant highway design standards and will be hard surfaced are not expected to distribute dust and dirt on the local road network. It is therefore considered the dust and dirt effect as a result of the development proposal on receptors on the link would be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.57 **Visual Effects** - The IEMA guidelines set out that the number of high sided vehicles (HGVs) may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. It acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect. This link is not located in such locations and there are already HGVs travelling along it. It is therefore considered that the magnitude of impact on visual effects would be negligible. The effect of the development proposal would therefore be long-term and negligible/slight adverse (negligible magnitude of impact with medium sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance.

~~Link 25 - Pendoylan Road, Village of Pendoylan~~

~~4.5.58 This link will have a decrease in daily traffic of 49 vehicles (-2.6% impact) and a daily increase of 16 HGVs (+138.2% impact). Although the HGV percentage increase appears high, this is as a result of the low baseline HGV flows (11 vehicles). This link has been assessed under Rule 2.~~

~~4.5.59 **Driver Delay** – the effect of delay to other road users of an additional 16 daily HGV movements would be imperceptible. The Transport Assessment at **Appendix 4.1** undertakes an assessment of the development proposal traffic on key junctions on the highway network and concludes that the impact of the increased traffic flows at the junction in the vicinity of this link would be imperceptible to the daily traffic flow fluctuation. As a result, the effect of the development proposal upon receptors on this link would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

~~4.5.60 **Increased Risk of Accidents** – the increase in traffic flows would be similar to those which are already on the network. There would be no significant change in the character of the network and therefore it is considered that the proposals would not alter the injury accident rate. It is therefore considered that the magnitude of impact on accidents and safety would be negligible. The effect of the development proposal would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

~~4.5.61 **Severance** – The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. There will be fewer total vehicles on this link and the additional 16 HGVs at Pendoylan village will not impact on severance. It is therefore considered that the magnitude of impact on severance would be negligible. The effect of the development proposal on severance would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

~~4.5.62 **Pedestrian Amenity** – the IEMA guidelines suggest a tentative threshold for judging the significance of changes in pedestrian amenity where the traffic flow (or its HGV component) is halved or doubled. The HGV daily increase is 138.2% and therefore meets this threshold. However, this increase is due to the low baseline HGV flow and only an additional 16 daily HGV movements are not expected to have a significant impact. It is therefore considered that the magnitude of impact on pedestrian amenity would be negligible. The effect of the development proposal on pedestrian amenity would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

~~4.5.63 **Pedestrian delay** – The total number of daily vehicles is predicted to fall by 2.6% with an increase of 16 daily HGV movements. On this basis, it is therefore considered the effect on pedestrian delay as a result of the development proposal will be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

~~4.5.64 **Dust and Dirt** – the additional 16 daily HGV movements will be associated with B1, B2 and B8 Use Classes and as all roads and car parking will be constructed to the relevant highway design standards and will be hard surfaced are not expected to distribute dust and dirt on the local road network. It is therefore considered the dust and dirt effect as a result of the development proposal on receptors on the link would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

4.5.65 Visual Effects - The IEMA guidelines set out that the number of high sided vehicles (HGVs) may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. It acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect. This link is not located in such locations and there are already HGVs travelling along it. With a daily increase of only 8 HGV movements, it is therefore considered that the magnitude of impact on visual effects would be negligible. The effect would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance.

Link 26 - Pendoylan Road, Village of Clawdd-coch

4.5.66 This link will have a decrease in daily traffic of 49 vehicles (-2.6% impact) and a daily increase of 16 HGVs (+138.2% impact). Although the HGV percentage increase appears high, this is as a result of the low baseline HGV flows (11 vehicles). This link has been assessed under Rule 2.

4.5.67 **Driver Delay** – the effect of delay to other road users of an additional 16 daily HGV movements would be imperceptible. The Transport Assessment at **Appendix 4.1** undertakes an assessment of the development proposal traffic on key junctions on the highway network and concludes that the impact of the increased traffic flows at the junction in the vicinity of this link would be imperceptible to the daily traffic flow fluctuation. As a result, the effect of the development proposal upon receptors on this link would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.68 **Increased Risk of Accidents** - the increase in traffic flows would be similar to those which are already on the network. There would be no significant change in the character of the network and therefore it is considered that the proposals would not alter the injury accident rate. It is therefore considered that the magnitude of impact on accidents and safety would be negligible. The effect of the development proposal would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.69 **Severance** - The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. There will be fewer total vehicles on this link which has very little development and the additional 16 HGVs will not impact on severance. It is therefore considered that the magnitude of impact on severance would be negligible. The effect of the development proposal on severance would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.70 **Pedestrian Amenity** - the IEMA guidelines suggest a tentative threshold for judging the significance of changes in pedestrian amenity where the traffic flow (or its HGV component) is halved or doubled. The HGV daily increase is 138.2% and therefore meets this threshold. However, this increase is due to the low baseline HGV flow and only an additional 16 daily HGV movements are not expected to have a significant impact. It is therefore considered that the magnitude of impact on pedestrian amenity would be negligible. The effect of the development proposal would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.

4.5.71 **Pedestrian delay** – The total number of daily vehicles is predicted to fall by 2.6% with an increase of 16 daily HGV movements. On this basis, it is therefore considered the effect on pedestrian delay as a result of the development proposal will be long-term and slight adverse

~~(negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

~~4.5.72 **Dust and Dirt** – the additional 16 daily HGV movements will be associated with B1, B2 and B8 Use Classes and as all roads and car parking will be constructed to the relevant highway design standards and will be hard surfaced are not expected to distribute dust and dirt on the local road network. It is therefore considered the dust and dirt effect as a result of the development proposal on receptors on the link would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and 4.4) and thus of minor significance.~~

4.5.73 ~~**Visual Effects** - The IEMA guidelines set out that the number of high sided vehicles (HGVs) may have an intrusive impact in areas of scenic beauty and in historic or conservation areas. It acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect. This link is not located in such locations and there are already HGVs travelling along it. With a daily increase of only 8 HGV movements it is therefore considered that the magnitude of impact on visual effects would be negligible. The effect would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.3 and Table 4.4) and thus of minor significance.~~

Summary

4.5.74 The effect of the development proposal operational flows is predicted not to have any significant effect on the majority of criteria for all links.

4.5.75 The exception to this is that it is predicted that the development proposal will have a moderate significant effect on driver delay on Link 9. The delay has been identified from the operational assessments undertaken and reported in the Transport Assessment ~~attached at **Appendix 4.1**~~ of the Waycock Cross roundabout junction.

Mitigation

4.5.76 The development proposal will reduce traffic impact through the delivery of a strong Travel Plan which will promote sustainable travel and a Car Parking Management Plan which will limit the provision of parking for staff at the site.

4.5.77 The development proposal will provide walking and cycling links to the existing infrastructure and provide a spine road that enables public transport penetration.

4.5.78 An improvement scheme at Waycock Cross roundabout to reduce delay and its delivery will be discussed with the Vale of Glamorgan Council and 3rd party landowners.

Residual Effects

4.5.79 An improvement scheme at Waycock Roundabout will reduce the effect of the development proposal upon receptors on Link 9. The expected effect of the improvement scheme would be long-term and negligible/slight adverse (low magnitude of impact with low sensitivity as set out in Tables ~~4.3~~ 4.4 and ~~4.4~~ 4.5) and thus of minor significance.

Risk of Accidents or Disasters

4.5.80 There are no anticipated additional accidents or disasters which have not been assessed in the chapter that would affect identified transport receptors.

Cumulative Effects

4.5.81 ~~The local planning authority, in their EIA screening opinion stated that there were no committed or cumulative developments to be considered in the assessment. Therefore, no cumulative assessment has been undertaken~~.

4.5.82 A cumulative long list (Appendix 1.3) has been reviewed to identify sites to include as part of the cumulative environmental assessment (CEA). This has identified two sites as follows:

- 2024/00329/FUL, Cardiff and Vale College Advanced Technology Centre at Cardiff Airport. Traffic generation extracted from its Transport Assessment prepared in support of its planning application and assigned onto the network to form part of the CEA.
- 2022/00733/FUL, Land North of the railway line, Rhoose. Traffic generation extracted from its Transport Assessment prepared in support of its planning application and assigned onto the network to form part of the CEA.

4.5.83 Those screened out of the CEA from the cumulative long list are:

- Candidate Site 361, Land at Port Road, Rhoose. Unspecified land use with similarly unspecified and unknown potential traffic generation. From a traffic perspective, the status of the site at candidate stage is too premature to consider as a cumulative site as its traffic generation, transport infrastructure and transport mitigation have not yet been formed / are in their infancy. Upon the formation of these, those proposals would then undertake their own CEA. Notwithstanding, site size is relatively small, and its traffic generation is expected to be low. For these reasons, site not included within CEA.
- DNS/3273713, Land at Pen-Onn Solar Farm, Llancarfan, CF62 3AG. Negligible traffic generation. Not included within CEA.
- CAS-01391-M3G6Q9, Fonmon / East Aberthaw Solar. Negligible traffic generation. Not included within CEA.
- 2023/00051/HYB, Land at The Mole, Barry. Negligible traffic generation with a local study area only, no overlap with Model Farm study area. Not included within CEA.
- Candidate Site 544, The Port of Barry. This site includes that of planning application at Land at The Mole (above). Similar study area to the Mole expected, therefore no overlap with Model Farm study area. Not included within CEA.
- Candidate Site 433, Aberthaw Power Station. Unspecified land use with similarly unspecified and unknown potential traffic generation, other than 'green energy park'. From a traffic perspective, site is premature to consider as a cumulative site as its traffic generation, transport infrastructure and transport mitigation have not yet been formed / are in their infancy. Upon the formation of these, those proposals would then undertake their own CEA. For these reasons, site not included within the CEA.

4.5.84 In addition to the above sites on the cumulative long list, the proximity of Cardiff International Airport and changing passenger numbers may affect traffic flows.

4.5.85 Prior to the pandemic, there were over 1.5M passengers through Cardiff International Airport. This has reduced to 837,000 in 2023.

4.5.86 In a written statement to the Senedd on 22 July 2024, Ken Skates, Cabinet Secretary for Economy, Transport and North Wales, set out a strategy for passenger numbers through Cardiff International Airport to reach 2M by 2034.

4.5.87 As a precautionary assessment, an estimate of the associated vehicle movements generated by such a passenger increase have been included within the CEA. This is based upon assuming an equal spread of passengers across 365 days of the year to estimate an average number of passengers per day for each year, a mode share of 87% private car and 13% public transport (report to Ministers in 2014 and verified by the Civil Aviation Authority 2019 passenger survey) and an average group size of 2.228 (Civil Aviation Authority 2019 passenger survey).

4.5.88 Based upon this, this equates to additional 1,224 vehicle movements per day to and from Cardiff International Airport.

4.5.89 As above, the traffic generation from those sites forming the CEA has been obtained from the Transport Assessments that supported their planning application. These have then been added to the proposed development traffic flows to form the cumulative development traffic flows.

4.5.90 In accordance with the IEMA guidelines, the cumulative development traffic flows have been assessed against the 2028 baseline traffic flows. A summary of the assessment is set out in Table 4.11.

Table 4.11: Summary of Daily Cumulative Impact of Cumulative Development Traffic Flows

Receptor		Cumulative Impact					
		Total Vehicles			HGVs		
Link No.	Link	2028 Base	Cmltve Dev	%	2028 Base	Cmltve Dev	%
1	Port Road, between A4226 roundabout and Tredogan Road roundabout	11,341	5,859	51.7%	185	31	16.6%
2	Port Road and Porthkerry Road, between Tredogan Road roundabout and Pentir Y De roundabout	7,184	1,616	22.5%	269	0	0.0%
3	A4226, between A4226 roundabout and B4265 roundabout	11,920	616	5.2%	615	-123	-20.0%
4	B4265, between B4265 roundabout and Llanwit Road	15,343	700	4.6%	578	-31	-5.3%

Receptor		Cumulative Impact					
		Total Vehicles			HGVs		
Link No.	Link	2028 Base	Cmltve Dev	%	2028 Base	Cmltve Dev	%
5	B4265, between Llantwit Road junction and B4270 roundabout	12,234	826	6.8%	560	-31	-5.5%
6	B4270, between B4270 roundabout and Sigingstone Road junction	12,202	253	2.1%	670	31	4.6%
7	B4265, between B4270 roundabout and Wick Road junction	4,646	304	6.5%	255	-51	-20.1%
8	Cowbridge Road, between B4270 roundabout and High Street roundabout	4,309	-190	-4.4%	10	10	104.7%
9	A4226, between A4226 roundabout and B4266 roundabout	24,675	11,329	45.9%	778	246	31.6%
10	B4266, between B4266 roundabout and A4050 roundabout	14,506	1,064	7.3%	150	92	61.3%
11	A4226, between Stirling Road junction and Colcot Road roundabout	16,455	4,462	27.1%	629	143	22.8%
12	A4226, between Colcot Road roundabout and Merthyr Dyfan Road	20,911	1,423	6.8%	501	-31	-6.1%
13	A4231, between A4231 roundabout and A4055 roundabout	18,009	167	0.9%	743	-41	-5.5%
14	A4050, between A4231 roundabout and Old Port Road roundabout	28,491	1,036	3.6%	893	10	1.1%

Receptor		Cumulative Impact					
		Total Vehicles			HGVs		
Link No.	Link	2028 Base	Cmltve Dev	%	2028 Base	Cmltve Dev	%
15	A4050, between Old Port Road roundabout and A48 roundabout	31,626	839	2.7%	992	-41	-4.1%
16	A4232, between A48 roundabout and A4232 slip road (north of B2467 roundabout)	65,749	770	1.2%	2308	0	0.0%
17	A48, between A48 roundabout and Green Farm Road junction	19,863	536	2.7%	281	20	7.3%
18	A4232, between A48 roundabout and south of M4 roundabout	62,492	1,009	1.6%	2987	31	1.0%
19	M4, between M4 roundabout and Coryton roundabout	107,824	529	0.5%	7882	-20	-0.3%
20	M4, between M4 roundabout and A4119 roundabout	109,785	469	0.4%	7794	-31	-0.4%
21	A4226, between B4266 roundabout and A4226 junction	12,808	3,683	28.8%	527	-31	-5.8%
22	A48, between A4226 junction and Redway Road junction	13,990	67	0.5%	709	72	10.1%
23	A48, Village of St Nicholas	13,416	2,264	16.9%	367	92	25.1%
24	A48, between 40mph speed limit sign (west of Copthorne Way junction) and A48 roundabout	13,416	2,212	16.5%	367	92	25.1%
25	Pendoylan Road, Village of Pendoylan	6,982	-48	-0.7%	126	20	16.3%

Receptor		Cumulative Impact					
		Total Vehicles			HGVs		
Link No.	Link	2028 Base	Cmltve Dev	%	2028 Base	Cmltve Dev	%
26	Pendoylan Road, Village of Clawdd-coch	6,982	-48	-0.7%	126	20	16.3%
27	M4, between A4119 roundabout and A473 roundabout	94,166	389	0.4%	6882	0	0.0%

4.5.91 Using the above thresholds and the receptor sensitivity Links 1, 8, 9 and 10 exceed the Rule 1 threshold and Link 11 exceeds the Rule 2 threshold.

4.5.92 Of these, an assessment of effects resulting from the development proposals, above, identified reductions in traffic flows on links 8 and 10 with associated beneficial effects. The development proposals would also result in reductions in traffic flows on link 1 and beneficial effects are also predicted.

4.5.93 Although the cumulative development traffic flows exceed the IEMA thresholds on links 1, 8 and 10, the contribution from the development proposals is beneficial. The CEA for the proposed development does not therefore need to include links 1, 8 or 10.

4.5.94 On this basis, the CEA has been undertaken below to assess the cumulative effect from the cumulative development traffic flows on links 9 and 11.

4.5.95 The impacts along the remaining links (those excluding links 1, 8, 9, 10 and 11) are below the relevant IEMA threshold for the links and in accordance with the IEMA guidelines the cumulative development traffic flows will result in imperceptible effects along the adjacent highway.

Link 9 - A4226, between A4226 roundabout and B4266 roundabout

4.5.96 This link will have a cumulative increase in daily traffic of 11,329 vehicles (+45.9% cumulative impact) and a daily cumulative increase of 246 HGVs (+31.6%) cumulative impact. This link has been assessed under Rule 1.

4.5.97 **Driver Delay** - the Transport Assessment undertakes assessments of highway capacity and the operation of the Waycock Cross junction in the vicinity of this link and identifies that increases in eastbound traffic along the A4226 results in a deterioration of its performance with increased queuing and delay. As a result, the effect of the cumulative development upon receptors on this link would be long-term and moderate adverse (high magnitude of impact with low sensitivity as set out in Tables 4.4 and 4.5) and thus of moderate significance.

4.5.98 **Road Safety** - PIA statistics have been obtained for the highway network for the latest available five year period, an analysis of which concludes there are no current road safety issues. The cumulative increase in traffic flows may lead to an increase in minor accidents (i.e. rear shunt at low speeds) and therefore an increase to slight injury accidents. It is therefore considered that the magnitude of impact of the cumulative developments on road safety may be low/medium. The effect would therefore be long term and slight adverse (low/medium magnitude of impact with low sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

4.5.99 **Severance** - The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. However, the link does not route through a community and there are only a very small number of pedestrian crossing movements. It is therefore considered that the magnitude of impact on severance would be negligible. The effect of the cumulative development on severance would therefore be long term and negligible/slight adverse (negligible magnitude of impact with low sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

4.5.100 **Non-Motorised User Amenity** - the IEMA guidelines sets out criteria to assess fear and intimidation (non-motorised user amenity) using a degree of hazard score and then considering the change in this (as a step change) with cumulative development traffic, as set out in Tables 4.1 and 4.2. It is calculated that there would be extreme fear and intimidation on link 9 in the 2028 baseline scenario which would remain as such with cumulative development. There is therefore no step change, and it is therefore considered that the magnitude of impact on non-motorised user amenity would be negligible. The effect of the cumulative development on non-motorised user amenity would therefore be long term and slight adverse (negligible magnitude of impact with low sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

4.5.101 **Non-Motorised User Delay** – The IEMA guidelines set out that increases in total traffic flows of 30%, 60% and 90% could result in slight, moderate and substantial changes in non-motorised user delay respectively. On this basis, it is therefore considered the effect on non-motorised user delay as a result of the development proposal would be long-term and negligible/slight adverse (low magnitude of impact with low sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

Link 11 - A4226, between Stirling Road junction and Colcot Road roundabout

4.5.102 This link will have an increase in daily traffic of 4,462 vehicles (+27.1% impact) and a daily increase of 143 HGVs (+22.8% impact). This link has been assessed under Rule 2.

4.5.103 **Driver Delay** – the Transport Assessment undertakes assessments of highway capacity and the operation of the Waycock Cross junction in the vicinity of this link and identifies that approach from this link operates within capacity. The impact as a result of the development proposal on the operation of this part of the junction was negligible and the cumulative development traffic flows are similarly expected to result in a negligible impact on the operation of this part of the junction. As a result, the effect of the cumulative development upon receptors on this link would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

4.5.104 **Road Safety** - PIA statistics have been obtained for the highway network for the latest available five year period, an analysis of which concludes there are no current road safety issues. The cumulative increase in traffic flows may lead to an increase in minor accidents (i.e. rear shunt at low speeds) and therefore an increase to slight injury accidents. It is therefore considered that the magnitude of impact on road safety may be low. The effect of the cumulative development would therefore be long term and negligible/slight adverse (low magnitude of impact with low sensitivity as set out in Tables 4.4 and4.5) and thus of minor significance.

4.5.105 **Severance** - The IEMA guidelines indicate that severance effects are considered 'slight', 'moderate' and 'substantial' with changes in traffic flows of 30%, 60% and 90% respectively. Whilst the majority of development is on one side of the link there is a ribbon of development on the opposite side; however, there are two controlled pedestrian formal pedestrian crossings

available. It is therefore considered, with the development proposal increasing daily traffic flows by 27.1%, that the magnitude of impact on severance would be negligible. The effect of the cumulative development on severance would therefore be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

4.5.106 **Non-Motorised User Amenity** - the IEMA guidelines sets out criteria to assess fear and intimidation (non-motorised user amenity) using a degree of hazard score and then considering the change in this (as a step change) with development traffic, as set out in Tables 4.1 and 4.2. It is calculated that there would be moderate fear and intimidation on link 11 in the 2028 baseline scenario which would remain as such with cumulative development. There is therefore no step change, and it is therefore considered that the magnitude of impact on non-motorised user amenity would be negligible. The effect of the cumulative development on non-motorised user amenity would therefore be long term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

4.5.107 **Non-Motorised User Delay** – The IEMA guidelines set out that increases in total traffic flows of 30%, 60% and 90% could result in slight, moderate and substantial changes in non-motorised user delay respectively. On this basis, it is therefore considered the effect on non-motorised user delay as a result of the cumulative development would be long-term and slight adverse (negligible magnitude of impact with high sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

Summary

4.5.108 The effect of the cumulative development traffic flows is predicted not to have any significant effect on the majority of criteria for all links.

4.5.109 The exception to this is that it is predicted that the cumulative development will have a moderate significant effect on driver delay on Link 9. The delay has been identified from the operational assessments undertaken and reported in the Transport Assessment of the Waycock Cross roundabout junction.

Mitigation

4.5.110 The development proposal will reduce traffic impact through the delivery of a strong Travel Plan which will promote sustainable travel and a Car Parking Management Plan which will limit the provision of parking for staff at the site. The development proposal will also provide walking and cycling links to the existing infrastructure and provide a spine road that enables public transport penetration. An improvement scheme at Waycock Cross roundabout to reduce delay and its delivery will be discussed with the Vale of Glamorgan Council and 3rd party landowners.

4.5.111 It is expected that the other cumulative developments will require similar mitigation to address the effects of traffic at Weycock Cross which would in turn address the cumulative effects identified above.

Residual Effects

4.5.112 An improvement scheme at Waycock Roundabout will reduce the effect of the cumulative development upon receptors on Link 9. The expected effect of the improvement scheme would be long-term and negligible/slight adverse (low magnitude of impact with low sensitivity as set out in Tables 4.4 and 4.5) and thus of minor significance.

Summary

4.5.113 This chapter has assessed the likely significant traffic and transport effects resulting from the development proposal. Assessments have been undertaken using current guidance documents and best practice and baseline conditions have been established through industry standard methods.

4.5.114 The assessment predicts that with the exception of a moderate significant effect on driver delay on Link 9 that the development proposal and the cumulative development would result in effects that are not significant.

4.5.115 Mitigation for the moderate significant effect on driver delay on Link 9 would result in a residual effect of negligible/slight adverse for both the development proposal and the cumulative development.