

Chapter 8: Transport

8. Traffic and Transport

8.1. Introduction

8.1.1. Author

Cora IHT Limited was formed in 2016 and has a dedicated transport team that specialises in undertaking transport planning, modelling, and appraisal for development schemes, including land development, regeneration, and infrastructure projects.

This assessment has been authored by Toan Chau who is a Director of Cora IHT Ltd. He holds a master's degree [MSc] in Highway Management and Engineering and a bachelor's degree [BEng (Hons)] in Civil Engineering. Toan has worked in the transport sector for 24 years and has considerable experience in the preparation of transport and highways chapters for EIAs on a range of development proposals, including retail, residential, renewables, energy, employment, leisure, health and education.

In addition, Toan has considerable experience in the preparation of Transportation Assessments, Travel Plans, negotiating S106 agreements and S278 works, and undertaking town centre studies and public transport studies.

8.1.2. Chapter Purpose

This chapter of the ES, prepared by Cora IHT Limited, assesses the likely effects of the proposed development on the environment in terms of traffic and transport.

The chapter and its supporting appendices provide a description of the assessment methodology, a description of the relevant baseline conditions within the area, and an assessment of any likely environmental effects relating to transport during the demolition and construction works and once the proposed development is completed and operational.

Any mitigation measures required to prevent, reduce, or offset any significant adverse effects and the likely residual or cumulative effects following the implementation of these are identified. Additionally, the cumulative effects of any relevant inter-development schemes are considered.

In summary, the objectives of the chapter are to:

- Review the baseline conditions within the area, including traffic flows and infrastructure;
- Identify the potential impacts of the proposed development on the area;
- Identify the embedded transport mitigation measures that have been incorporated into the development proposals; and
- Outline any further mitigation measures that could be required in order to address any significant residual effects of the proposed development.

8.1.3. Figures

8.1.4. All figures are presented in Appendix 8.3.Appendices

The chapter is supported by the following technical appendices in ES Volume IV:

- Appendix 8.1: AADT Traffic Figures;
- Appendix 8.2: AAWT Traffic Figures;
- Appendix 8.3: Transport Assessment (TA);
- Appendix 8.4: Travel Plan; and
- Appendix 8.5: Transport Assessment (TA) Scoping report and response.

8.2. Methodology

8.2.1. Guidance

This Chapter has been prepared in accordance with the requirements set out in the EIA Regulations 2017, and has taken account of the guidance presented within the following:

- Department for Transport (DfT), 'Guidance on Transport Assessment' (1);
- Institute of Environmental Management and Assessment (IEMA), 'Guidelines for Environmental Impact Assessment' (2020) (2); and
- Design Manual for Roads and Bridges (DMRB), 'LA 104 – Environmental assessment and monitoring' (2020) (3).

8.2.2. Legislation and Policy

The following section describes the relevant national, regional and local policy context as well as relevant legislation, guidance and standards related to transport.

National Legislation and Policy

THE TRANSPORT DECARBONISATION PLAN – MARCH 2020 (4)

The Government is developing an ambitious plan to accelerate the decarbonisation of transport. The Transport Decarbonisation Plan (TDP) sets out in detail what government, business and society will need to do to deliver the significant emissions reduction needed across all modes of transport, putting us on a pathway to achieving carbon budgets and net zero emissions across every single mode of transport by 2050.

TRAVEL PLANS, TRANSPORT ASSESSMENTS AND STATEMENTS IN DECISION-TAKING (5)

In March 2014, the Department for Communities and Local Government (DCLG) in conjunction with the Department for Transport (DfT) released advice on when transport assessments and transport statements are required and what they should contain, which is intended to assist stakeholders in determining whether an assessment may be required. If an assessment is required, the level and scope of that assessment is set out within the document.

The advice reflects current Government policy, promoting a shift from the 'predict and provide' approach to transport planning to one more focused on sustainability. The document focuses on encouraging environmental sustainability, managing the existing network and mitigating the residual impacts of traffic from the development proposal.

PLANNING POLICY WALES (2021) (6)

Planning Policy Wales (PPW), published in 2021, sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters which together with PPW provide the national planning policy framework for Wales.

People and Places: Achieving Well-being Through Placemaking

Development proposals should create a sense of place, well-being, and prosperity for all (paragraph 2.3). Placemaking in development decisions happens at all levels and involves considerations at a global scale, including the climate emergency, down to the very local level, such as considering the amenity impact on neighbouring properties and people (paragraph 2.7).

The Welsh Government define Placemaking as a holistic approach to the planning and design of development and spaces. It relates to context, function, and relationships between a development site and its wider surroundings (page 14).

Strategic and Spatial Choices

Good design is fundamental to the creation of sustainable places where people want to live, work, and socialise. Design is not just about the architecture of a building but also the relationship between all elements of the natural and built environment and between people and places.

8. Traffic and Transport

PPW identifies the following objectives of good design:

- Access: ensuring access for all
- Character: sustaining or enhancing local character; promoting legible development, a successful relationship between public and private space, quality, choice and variety, innovative design;
- Community Safety: ensuring attractive, safe public spaces & security through natural surveillance;
- Environmental Sustainability: achieving efficient use and protection of natural resources, enhancing biodiversity, designing for change; and
- Movement: promoting sustainable means of travel.

Transport Planning in Wales has a very strong focus on following an accessibility led approach. This is developed from the national policies set out in Planning Policy Wales. In Edition 11 of Planning Policy Wales the transport policies are included in the Section entitled “Active and Social Places”. Paragraph 4.1.1 introduces the transport section with:

‘The planning system should enable people to access jobs and services through shorter, more efficient and sustainable journeys, by walking, cycling and public transport. By influencing the location, scale, density, mix of uses and design of new development, the planning system can improve choice in transport and secure accessibility in a way which supports sustainable development, increases physical activity, improves health and helps to tackle the causes of climate change and airborne pollution by:

- *Enabling More Sustainable Travel Choices – measures to increase walking, cycling and public transport, reduce dependency on the car for daily travel;*
- *Network Management – measures to make best use of the available capacity, supported by targeted new infrastructure; and*
- *Demand Management – the application of strategies and policies to reduce travel demand, specifically that of single-occupancy private vehicles.’*

In the subsection of Planning Policy Wales entitled Sustainable Transport paragraphs 4.1.9 and 4.1.10 state:

‘The Welsh Government is committed to reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. Delivering this objective will make an important contribution to decarbonisation, improving air quality, increasing physical activity, improving the health of the nation and realising the goals of the Well-being of Future Generations Act. The planning system has a key role to play in reducing the need to travel, particularly by private car, and supporting sustainable transport, by facilitating developments which:

- *are sited in the right locations, where they can be easily accessed by sustainable modes of travel and without the need for a car;*
- *are designed in a way which integrates them with existing land uses and neighbourhoods; and*
- *make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.’*

Locally this has been translated into Wrexham’s Sustainable Urban Mobility Plan (SUMP) and informed the policies in the LDP, as discussed below.

The Active Travel Act (July 2021) requires Welsh authorities to provide routes and encourage people to walk and cycle.

TECHNICAL ADVICE NOTES (TANS)

TAN 18 Transport (2007)

TAN 18 provides guidance in relation to the integration of land use planning and transport, parking, design, accessibility, sustainable modes of transport, and infrastructure development.

TAN 12: Design (2016)

This Advice Note identifies the objectives of good design under the following headings: Access, Character, Community Safety, Environmental Sustainability, and Movement. A series of design objectives are identified for each category. Guidance is

provided in relation to the design process, including collaboration stages, appraising the context of a site and consideration of design objectives as well as detailed matters.

Local Policy

WREXHAM CONNECTED PROVIDING TRAVEL CHOICES FOR ALL (7)

The Wrexham Sustainable Urban Mobility Plan (SUMP) has five Objectives all focused on the provision of sustainable communities within a sustainable transport network.

- **Safer Places:** Wrexham Connected will work with partners to create places and environments where people from all walks of life can live, work and play safely together - both on and off the transport network and at the final destination.
- **Sustainable Places:** Wrexham Connected will embrace a ‘sustainable’, transport-first approach to new development through the planning process. It will facilitate and manage the County Borough’s growth agenda in the most sustainable and efficient way possible, strengthening its economy and improving access to jobs, education, services and tourism.
- **Healthy Places:** Wrexham Connected will reduce the impacts of air and noise pollution, greenhouse gas emissions and energy consumption. It will contribute to raising health standards through the promotion of active travel, particularly along the ‘last mile’. By connecting communities we will make it easier for people to access open spaces and the countryside.
- **Affordable Places:** Wrexham Connected will stimulate inward investment and regeneration that leads to job-creation across a wide skill-base, using the planning process to ensure that affordable housing and employment needs are met.
- **Well Connected Places:** Wrexham Connected will enhance connectivity to, from and within Wrexham. Transport solutions will improve the attractiveness and quality of the environment both on key transport corridors and in the town centre.

WREXHAM UNITARY DEVELOPMENT PLAN (2005) (8)

The statutory development plan for Wrexham County Borough Council (WCBC) currently comprises the Wrexham Unitary Development Plan (UDP) (adopted 2005), which covers the plan period 1996 to 2011.

Policy T8: Parking

Development granted planning permission will be required to provide vehicle parking spaces either on site or nearby in accordance with the Council’s current parking standards.

Policy T9: Walking, Cycling and Horse Riding Routes

Development proposals will be required to provide walking and cycling routes, where feasible and appropriate, that link with existing or proposed walking and cycling routes and integrate with the public transport system.

EMERGING WREXHAM LOCAL DEVELOPMENT PLAN 2013-2028 (9)

WCBC are preparing a Local Development Plan (LDP) which will replace the current adopted Unitary Development Plan. The LDP is a land use plan that sets out the planning requirements for achieving sustainable development in the Borough over the period 2013- 2028. WCBC has decided not to adopt the plan at this stage, however it remains a material consideration with significant weight, as it has been found sound by a Planning Inspector.

Draft Policy SP11 KSS3: Land to the north of Bryn Lane, Wrexham Industrial Estate

The site to the north of Bryn Lane forms draft employment allocation KSS3, which is identified as an Employment Key Strategic Site, under Policy SP11 ‘KSS3: Land to the north of Bryn Lane, Wrexham Industrial Estate’.

This policy allocates the site to deliver 28ha of employment land for B-use class purposes, including an ecological network and residential buffer zone, alongside enabling and necessary infrastructure which will be delivered in a phased manner, with specific details tied into planning consents for the site.

8. Traffic and Transport

Draft Policy SP12: Transport and Accessibility

Wrexham’s transport network will be developed in a safe, efficient, and sustainable manner. This will be achieved by restricting development that would have an unacceptable impact on the safe and efficient operation of the transport network. In addition, the Council will ensure adequate levels of car parking are incorporated into new development and develop the coverage of the Active Travel Network across Wrexham to promote increased use of walking and cycling as safe, viable, and sustainable alternatives to the car (inter alia).

Draft Policy T1: Managing Transport Impacts

Development will be supported where it will facilitate increased journeys by more sustainable modes of travel, mitigate any significant adverse effects upon the transport network that arise from the proposed development, does not compromise the safe, effective, and efficient use of the highway network and does not have an adverse impact on highway safety or create unacceptable levels of traffic generation, and provide appropriate levels of parking and access arrangements.

Draft Policy T2: Active Travel

This policy supports new development which integrates walking and cycling, provides facilities to encourage Active Travel, develops and enhances Active Travel routes, provides appropriate travel choice information and reduces the dominance and speed of vehicles, to increase priority to pedestrians and cyclists.

Draft Policy DM1: Development Management Considerations

Developments must accord with or enhance the character and local distinctiveness of a site in terms of their siting, layout, scale, height, density, and landscaping. In addition, developments must (inter alia):

- Prioritise walking, cycling and public transport use ahead of travel by car; and
- Not give rise to parking or highway safety problems on site or in the locality.

The policies in the LDP continue the theme of the accessibility lead approach.

Four of the Strategic Objectives of the Plan are relevant to the development of KSS3 in this context.

- Strategic Objective 4: Promote active travel and use of public transport by locating new development in the most accessible and sustainable locations; and seek to alleviate known highway infrastructure capacity constraints on the road network within the County Borough.
- Strategic Objective 6: Promote and encourage a healthy, active and safe lifestyle.
- Strategic Objective 8: Ensure all development is supported by the necessary provision of, or improvements to infrastructure, services and facilities in an effective and timely manner to make development sustainable and minimise its effect upon existing communities.
- Strategic Objective 10: Reduce carbon emissions and maximise our resilience to and mitigate and adapt to the impact of climate change.

In this context the planning of KSS3 will follow an accessibility led approach.

Local Guidance

Cycling Local Planning Guidance Note (No. 15)

To encourage a greater number of journeys to be made by bicycle, this note sets out how developers are expected to provide facilities for cyclists in the preparation of relevant development schemes. It also provides design guidance on the construction of cycle routes and cycle parking facilities.

New developments must make provision for the safe parking of cycles. A series of minimum standards have been adopted for different types of development.

Parling Standards Local Planning Guidance Note (No. 16)

This guidance note explains the parking standards Wrexham Council applies to new development.

The car parking standards set out below are maximum standards for each land use category. In accordance with national policy the Council has no minimum parking requirements. In cases where the amount of parking provided is below the maximum the Council will need to be satisfied that this is appropriate for the likely level of demand, without undermining requirements for inclusive access.

The Wrexham car and cycle parking standards are set out in **Table 8.2.1**.

Table 8.2.1
Car Parking Standards

Land Use	Car parking 1 space per sqm	Cycle Parking 1 space per sqm
B1	30	300
B8	100	1000
B2	50	500
Drive thru	10	40
Hotel	1 per bedroom	10%

8.2.3. Consultees

The following authorities have been consulted, and their comments addressed as part of the assessment process:

- Wrexham CBC: A Transport Assessment (TA) Scoping Report was submitted to Wrexham CBC on 26 January 2023.
- A pre-application meeting between Cora IHT Ltd, CBRE and Wrexham CBC’s Transport Consultants, Mott Macdonald, was held on 16th January 2023 to discuss the Transport Assessment Scoping Report, following which Mott Macdonald issued their response on 9th March 2023.
- The comments provided within their response have been incorporated into the preparation of the Transport Assessment (**Appendix 8.5**), as well as the assessment presented within this chapter.
- The TA Scoping Report, together with Mott Macdonald’s Scoping Response, are provided within the TA (**ES Appendix 8.5**).

8.2.4. Scoping

The EIA Scoping Report (**Appendix 2.1, ES Volume IV**) was submitted to Wrexham CBC on 02 November 2022. The proposed scope of the Traffic and Transport ES chapter was set out in Chapter 5: Topics with Potential for Likely Significant Effects.

Wrexham CBC provided their Scoping Opinion on 02 June 2023.

Table 8.2.2 summarises the key EIA Scoping Opinion comments with respect to the transport assessment and how and where these have been addressed in the chapter.

Table 8.2.2
Comments Provided in Scoping Opinion

Scoping Comments	How addressed in the ES chapter
Wrexham CBC (9th March 2023)	
The impact on the highway network is not considered to be significant in EIA terms and therefore does not need to fall within the scope of the ES. Notwithstanding the above, a TA should be prepared	As confirmed in an email to Matthew Phillips on 03 March 2023 and set out in the EIA Scoping Report, based on Cora IHT’s understanding of the scale and nature of the proposals and prior to undertaking a transport assessment, it is considered that significant effects are likely to arise in relation to transport. As such, to ensure that the ES meets the requirements

8. Traffic and Transport

Scoping Comments	How addressed in the ES chapter
and submitted with a planning application, albeit as a non-ES document.	of the EIA Regulations 2017, a Transport assessment has been scoped into the ES as a discrete chapter. It is noted that a TA has also been prepared and, as set out in the EIA Scoping Report, has been appended to the ES (Appendix 8.5).
Wrexham CBC Environmental & Technical Officer (12 December 2022)	
Wrexham CBC is happy in principle to the proposals for the ES chapter for which a Transport Assessment, Travel Plan and Framework Delivery and Servicing Plan would be included as appendices. A Construction Traffic Management Plan (CTMP) would also be required to mitigate the impacts of construction traffic. In their response, Wrexham CBC also set out the requirements for the scope of the TA.	This is noted. The assessment presented here within has been undertaken in accordance with the scope set out in the EIA Scoping Report. Measures to be secured via a CTMP are set out as additional mitigation measures as discussed within Chapter 6: Construction Strategy and CEMP. It can also be confirmed that the TA has been undertaken in line with the TA Scoping Report and scope set out in Wrexham CBC’s response. This is with the exception of the TRICS locations category. Due to TRICS’ limited data on industrial estates located in a “neighbourhood centre” and “free standing”, which only has data for 2 sites and 1 site respectively, the assessment has used TRICS’ data for sites located in “Edge of Town” locations, which has a greater sample size of over 10 sites.
Wrexham CBC would request that the traffic surveys are undertaken again to ascertain current traffic levels. These should ideally be in a ‘neutral’ month. 2021 traffic levels were likely impacted by the COVID-19 pandemic. Wrexham CBC requested that Bryn Lane should be included within the scope of the updated traffic surveys.	New traffic surveys were carried out in March 2023, which is representative of a ‘neutral’ month as set out in DfT TAG (1). Wrexham CBC’s Transport Consultant, Mott Macdonald, confirmed in an email 10 March 2023 that they were happy with the proposed approach to undertake the surveys in March as long as school holidays are avoided. The traffic surveys were undertaken at all of the locations originally surveyed, including along Bryn Lane.
Welsh Government (20 December 2022)	
As the Welsh Government is aware that Junction 6 of the A483 may be approaching capacity, it requests that the scope of the Transport Assessment be extended to include consideration of the impact the additional vehicle movements may have on the junction. In respect of the above, the cumulative impact from the development of the emerging LDP allocations (Key Strategic Sites 2 and 3 (KSS2 and KSS3) was considered in 2019 in the Vectos Murcrosim Hold Road VISSIM Modelling; however, the modelling did not assess the impact on Junction 6 of the A483. As such, in accordance with the recommendation from Welsh Government, Wrexham CBC recommend that this is included within the scope of the TA given that the development, alone and in-combination with future developments (KSS2 in particular) will increase traffic on local roads.	New traffic surveys were carried out in March 2023 to include the Junction 6 of the A483. The impact of this junction has been considered. As Wrexham CBC consider there to be in-combination effects with future developments, and KSS2 in particular, the traffic data for the KSS2 allocation has been included within the ‘inter-development’ cumulative effects assessment (Scenario 4 for the completed development stage assessment, as set out in Section 8.2.6 of this chapter). Whilst the criteria for cumulative schemes to be considered within the ‘inter-development’ cumulative assessment within this EIA has been limited to schemes which have been consented but not yet completed, the inclusion of the KSS2 allocation for the purpose of the transport assessment is considered to be representative of a reasonable worst-case. This approach has also been used for the Air Quality and Noise assessments which have been based on the same traffic data (see Chapter 9 <i>Air Quality</i> and Chapter 10 <i>Noise and Vibration</i>).

8.2.5. Assessment Scope

Technical Scope

The technical scope of the assessment reported in this ES chapter comprises the following:

- Transport impacts related to severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation, and accidents and safety on the local road network as a result of demolition and construction traffic from the proposed development; and
- Transport impacts related to severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation, and accidents and safety on the local road network as a result of operational traffic from the proposed development.

The potential effects associated with dust and dirt have been considered within the air quality assessment, as presented in ES Chapter 9 *Air Quality*, with mitigation measures to be implemented through a CEMP.

Spatial Scope

The study area for the assessment of impacts to the local highway network comprises the following links, as agreed with Wrexham CBC in the EIA scoping process:

- A5156 link;
- A534 link;
- Industrial Estate Road link;
- Bryn Lane link; and
- Ridley Wood Road link.

These road links have been selected based on the GEART guidance, as set out in Section 8.2.9, which sets out rules used to identify the appropriate extent of the highways assessment area.

8.2.6. Assessment Scenario

In respect of demolition and construction, the worst-case traffic generation is predicted to take place in 2023. The scenarios that have been assessed for the demolition and construction stage are set out below:

- Scenario 1: 2023 Existing Baseline; and
- Scenario 2: 2023 Existing Baseline + Proposed Development; and
- Scenario 3: 2023 Existing Baseline + Proposed Development + Cumulative Schemes.

In respect of the completed development stage, the assessment has been based on a 2030 future baseline year, which is the anticipated to be when the proposed development is fully operational. Two options are assessed as described in Section 8.2.8.

The scenarios that have been assessed for the completed development stage are set out below:

- Scenario 1: 2023 Existing Baseline;
- Scenario 2: 2030 Future Baseline;
- Scenario 3: 2030 Future Baseline + Proposed Development; and
- Scenario 4: 2030 Future Baseline + Proposed Development + Cumulative Schemes.

The 2030 future baseline has been calculated using the TEMPro database, in conjunction with the National Transport Model (NTM) dataset, which has been applied to the 2023 surveyed traffic flows, using the following parameters:

- Wrexham area definition;
- Trip end by time period for car drivers; and
- NTM, all road types.

8. Traffic and Transport

The above factors have been used for traffic growth, which takes into account local demographic change, socioeconomic variation and changes in modes, as well as other factors that affect the growth of traffic within the locality.

8.2.7. Baseline Characterisation Approach

Desk Study

Data was obtained from the following sources in order to establish the baseline conditions within the study area:

- Available existing traffic count data, including data from the Wrexham Industrial Estate Study (traffic counts at the Gourton Hall Road Roundabout (2018) and the DfT Annual Daily Traffic Database); and
- Holt Road VISSIM Modelling, Forecasting, Mitigation Proposals & Summary Results September 2019.

Field Study

To assist in characterising the baseline conditions within the study area, traffic surveys were carried out on Wednesday 22 March 2023. Further information on the scope of the surveys is set out in the Assessment of Baseline Conditions section below.

8.2.8. Assessment Method

The assessment has been based on the scheme information and planning application drawings presented in ES Chapter 4 *Proposed Development* and the construction methodology presented in ES Chapter 6 *Construction Strategy and CEMP*.

The methodology that will be employed in this assessment has been developed from guidance given in the DfT’s ‘Guidance on Transport Assessment’ (GTA) and also the Institution of Environmental Management and Assessment’s (IEMA) ‘Guidelines for the Environmental Assessment of Road Traffic’. Methodologies detailed in the DfT’s GTA guidelines recommend that Environmental Statements for large developments should be assessed in accordance with the IEMA guidelines.

The IEMA guidelines outline that “Previous research has identified that the most discernible environmental impacts of traffic are noise, severance, pedestrian delay and intimidation”. The noise effects of changes in road traffic associated with the proposed development will be assessed in ES Chapter 10 *Noise and Vibration*.

Assessment of Baseline Conditions

The baseline traffic flows have been based on the classified turning counts conducted on Wednesday 22 March 202, at the following junctions within the local road network:

- A483 Junction 6 including B5445 / A5156 / Blue Bell Lane / Industrial Park Access;
- A534 / A5156 / Wrexham Golf Club roundabout;
- A534 / Industrial Estate Road / Sandy Lane / Borrass Hall Lane roundabout;
- Industrial Estate Road / Bryn Lane / Ash Road North / Abenbury Way roundabout;
- Bryn Lane / Ridley Wood Road priority junction; and
- B5130 / Ridley Wood Road priority junction.

Queue surveys were also undertaken at the above junctions at the same time as the turning counts.

A 7-day Automatic Traffic Count (ATC) was also installed for a 1-week period between the 20th March and 26th March 2023 to determine vehicle speeds and volume along Bryn Lane.

The 2030 future baseline traffic flows were derived from the manual traffic counts by applying a daily growth factor to the peak hour traffic flows using the 7-day traffic count for 24 hour Annual Average Daily Traffic (AADT) and 18 hour Annual Average Weekday Traffic (AAWT). These growth factors have been extracted from the Department for Transport’s (DfT)

TEMPro database, which provides locally adjusted growth factors for background traffic within the middle layer super output area (MSOA) of Wrexham; this is considered to be the industry standard methodology.

Demolition and Construction Stage

An assessment of the potential impacts of construction transport arising from the proposed development was undertaken by assessing the number of vehicle movements anticipated during the demolition and construction works, taking into account HGVs associated with construction and light vehicles associated with the permanent workforce and specialist subcontractors. The construction traffic has been estimated using professional judgement based on the nature and scale of the scheme and construction works, as well as the proposed construction duration. Further detail is provided in Volume 2, ES Chapter 6 *Construction Strategy and CEMP*.

The assessment focuses on the most intensive (i.e. peak) period of construction and has been undertaken based on professional judgement.

As set out in Chapter 6 *Construction Strategy and CEMP*, it is anticipated access for the entirety of the demolition and construction stage will be taken off Bryn Lane. As the vehicle routing is anticipated to come from the west of the application site, should the newly constructed roundabout junction be used towards the end of the construction period, potential impacts to the roundabout will therefore also be captured.

Completed Development Stage

Due to the flexibility in potential uses being sought by the Applicant in respect of the outline component, two options have been assessed for the completed development stage assessment to ensure the worst-case trip calculations have been assessed for each of the potential impacts (such as driver delay, severance etc., as set out in Section 8.2.5). The two assessment options used are as follows:

OPTION 1

For Option 1 it has been assumed that all floorspace to be delivered as part of the proposed development would comprise industrial floorspace (use classes B1c, B2 and B8 uses) as industrial floorspace is considered to be the highest trip-generating use proposed. As such, the worst-case highest-trip generating uses that have been used to inform the assessment are as follows:

- Detailed Component: it has been assumed that the total 65,550 sqm GEA¹ comprises B8 uses (storage and distribution); and
- Outline Component: it has been assumed that the total 72,635 sqm GEA comprises B8 uses (storage and distribution).

For Option 1, the completed development stage trip generation methodology is based on the assumption that all traffic will access the application site via the access point from Bryn Lane. This is considered worst-case as traffic would arrive to the application site from the west and therefore this routing assesses potential impacts to all surrounding roads, including those routes used for vehicles entering the application site from the new roundabout junction.

OPTION 2

For Option 2 it has been assumed that the alternative use classes would be delivered as part of the proposed development, including A1, A3, C1 and *sui generis* use classes. The worst-case highest-trip generating uses that have been used to inform the assessment are as follows:

- Detailed Component: it has been assumed that the total 63,254 sqm GEA comprises B8 uses (storage and distribution); and

¹ 65,550 sqm GEA was the floorspace proposed prior to further design amendments. Given that it is larger than what is being proposed now for the detailed component (63,254 sqm GEA), it is considered to be representative of a worst-case.

8. Traffic and Transport

- Outline Component: it has been assumed that the total 72,635 sqm GEA comprises 56,485 sqm GEA B8 uses (storage and distribution), with the remaining 16,150 sqm GEA comprising a mix of A1, A3, C1 or sui generis uses (ancillary retail / drive thru-facilities and potential for a hotel and petrol filling station). The mix of the A1, A3, C1 or sui generis uses have been determined as follows:
 - The largest trip-generating use is A1/A3, and more specifically the potential drive thru use (A3). As such, the data has been calculated based on an assumed area of 1,106 sqm GEA A3 uses, which is the area presented in the illustrative masterplan, and a further 894 sqm GEA A1 use to account for potential local centre retail trips. This is considered to be a reasonable conservative assumption based on the application site’s location, the potential market demand, as well as the typical size of drive thru units with these factors in mind;
 - The potential for a PFS has also been considered as a large trip-generating use when compared to the possible land uses to be brought forward. For the PFS it has been assumed that 10 bays could be provided, which would be delivered across a floor area of approximately 500 sqm GEA. This is in line with the illustrative masterplan and is considered a reasonable assumption based on the application site’s location, the potential market demand, as well as the typical size of drive thru units with these factors in mind.
 - In respect of the hotel, the illustrative masterplan provides for 90 rooms. As such, an 100-room hotel, with a floor area of approximately 3,600 sqm GEA, has been considered a reasonable worst-case for the purpose of this assessment.
 - The remaining floorspace (10,050 sqm GEA) has been assumed for B8 uses.

As the vehicles access the alternative uses within the proposed development (i.e., the PFS, drive thru and hotel) would access the application site via the roundabout, the completed development stage trip generation methodology for Option 2 has also assumed that the majority of the traffic (70%) will access the application site via the Roundabout access junction and the remaining 30% will access the application site via the Bryn Lane access.

Non-primary trips (Existing Trips in the Network) are defined as multi-purpose trips which call into a development en-route to another destination:

- Pass-by Trips are those non-primary trips that visit the new development without having to make any significant diversion from their existing route.
- Diverted Trips are those non-primary trips that deviate off their normal route to visit the new development.
- Linked Trips - these are trips that will have multiple destinations within the proposed development site. Examples include trips to food and non-food retail, between both the development site and existing adjacent sites or between the development site and an established town centre. Where there is a high probability that there will be a proportion of linked trips between two uses on a development, it is customary only to ‘count’ those trips once for the development as a whole, and not effectively double-count them by attributing two visits and departures affecting the sections of highway network being assessed.

The TRICS Consortium research report, 14/1 ‘Pass-by and Diverted Trips (10), states that a significant number of trips to developments already exist on the network, especially at peak times.

For the PFS, there is already a Shell at the Holt Road Services and various facilities to the north and west of the application site. Therefore, it is assumed that no new PFS trips would be generated within the highway network with 90% being pass-by (the site accesses) and 10% diverted from Wrexham Road.

For the Drivethrus, due to the application site being remote from the residential areas and existing similar facilities to the west and within Wrexham town centre, it is assumed that no new trips would be generated within the highway network, with 90% being pass-by by (the site accesses), and 10% diverted from Wrexham Road. The assumptions are considered reasonable as the catchment for the PFS and drivethrus would be from the local area (Wrexham Industrial Estate).

Cumulative Development Stage

The cumulative assessment has been undertaken based on the list of cumulative schemes presented in Chapter 2: EIA Methodology. Traffic flows associated with cumulative schemes have been taken from the Transport Assessments or Environmental Statements for those schemes. As discussed in **Table 8.2.1**, traffic flows for the proposed KSS2 allocation have also been included to ensure a conservative assessment is undertaken .

8.2.9. Assessment Criteria

Receptor Sensitivity Criteria

The IEMA Guidelines suggest two broad rules to identify the appropriate extent of the highways assessment area, as follows:

- 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 traffic flows have increased by 10% or more.

Therefore, whilst the highway scope area includes all links of the application site’s surrounding local and strategic road network that are likely to be subject to daily traffic flow changes as a result of the proposed development’s construction or operation, a full assessment is undertaken on the links which satisfy the conditions set out in the rules above. The receptors that have been identified for the proposed development have been determined based on professional judgement; this has taken into account their relative importance for all road users and the existing characteristics such as the presence (or absence) of pedestrian facilities.

Table 8.2.3 sets out the scale of sensitivity that has been applied to receptors identified and considered within this assessment.

Table 8.2.3
Scale of receptor sensitivity used in the assessment

Sensitivity	Description
High	Transport links with schools, colleges, playgrounds, accident black spots, retirement homes, roads without footways that are used by pedestrians.
Medium	Transport links with congested junctions, doctors’ surgeries, hospitals, shopping area with roadside frontage, roads with narrow footways, recreation facilities.
Low	Transport links with places of worship, public open space, listed buildings, tourist attractions and residential areas with adequate footway provision.

The identified receptors, alongside the determined sensitivity, are summarised in Section 8.3 of this chapter. The majority of the identified receptors are links; in the interests of a robust assessment, each link has been categorised in relation to the most sensitive receptor.

Assessment of Impact Magnitude

The IEMA Guidelines identify the main transport effects that could arise from the construction and operation of new developments. These effects relate to the following:

- Severance;
- Driver delay;
- Pedestrian and cycle delay and amenity;
- Fear and intimidation;
- Accidents and road safety;
- Dust and dirt; and
- Hazardous loads.

8. Traffic and Transport

In line with the approach set out in the EIA Scoping Report (**Appendix 2.1, ES Volume IV**), the ‘dust and dirt’ criterion is not considered further within this chapter as it is covered within Chapter 9: Air Quality, ES Volume II. The ‘hazardous loads’ criterion is also not considered in this assessment, as it is deemed unlikely that the construction or operation of the development will require the transportation of hazardous loads that would have the potential for a significant effect on receptors. The impact of the proposed development in relation to the remaining five aspects have been considered accordingly.

Further details of the approach to the assessment in respect of each of the above criteria is provided below.

Severance

The IEMA Guidance states that "*Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery*".

It is acknowledged within the Guidance that the measurement and prediction of severance is “extremely difficult” and that “there are no predicative formulae which give simple relationships between traffic factors and levels of severance”, however, the Guidance tentatively suggests that “*Changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively*”.

The assessment of severance in this ES chapter pays full regard to specific local conditions, in particular the location of pedestrian routes to key local facilities and whether or not crossing facilities are provided. AADT traffic data has been used to assess severance.

Table 8.2.4 below details the thresholds for severance used in this assessment.

Table 8.2.4
Scale of impact magnitude for Severance

Magnitude	Description
Large	90% or greater change in traffic flow
Medium	60% to 89% change in traffic flow
Small	30% - 59% change in traffic flow
Negligible	Less than 30% change in traffic flow

Driver Delay

Paragraph 4.33 of the IEMA Guidance states that “*Traffic delays to non-development traffic can occur at several points on the network surrounding the site including; at the site entrance, on the highways passing the site, at other key intersections or / and at side roads where the ability to find gaps in traffic may be reduced, thereby lengthening delays*”.

Values for delay due to these elements can be determined through the use of DfT’s junction modelling software packages, ARCADY and PICADY, or other suitable programs. The Guidance further states however that “*These delays are only likely to be significant when the traffic on the network surrounding the proposed Development is already at, or close to, the capacity of the system*”.

The TA (**Appendix 8.4**) provides detailed analysis on the level of Driver Delay across the highway network, whilst a summary of the magnitude of impact and scale of effect is included within this ES Chapter. It should be noted that the demolition and construction stage has not been assessed for driver delay as the majority of the construction movements would be outside of the AM and PM peaks, and, therefore, driver delay is unlikely to be affected. In respect of the completed development stage, the delay has only been assessed where the traffic impact at the adjoining junction is greater than 7%. Traffic level impacts below 7% can be categorised as daily traffic variations, therefore, the impact would be negligible. Peak hour traffic has been used for this assessment.

Table 8.2.5 below shows the magnitude-scale applied for the purpose of this assessment.

Table 8.2.5
Scale of impact magnitude for Driver Delay

Magnitude	Description
Large	Average vehicle delay changes of more than 1 minute as a result of the proposed development during the peak hour periods and/or traffic impact at junction greater than 20%.
Medium	Average vehicle delay changes of 30 - 60 seconds as a result of the proposed development during the peak hour periods and/or traffic impact at junction between 10% and 20%.
Small	Average vehicle delay changes of 20 - 30 seconds as a result of the proposed development during the peak hour periods and/or traffic impact at junction between 7% and 10%.
Negligible	Average vehicle delay changes of less than 20 seconds as a result of the proposed development during the peak hour periods and/or traffic impact at junction below 7%.

Pedestrian Delay and Amenity

Pedestrian delays for a particular walking journey can be increased by changes to traffic flows, and can affect the ability of pedestrians to cross roads. This, therefore, will affect an individual’s desire to make particular journeys on foot.

Paragraph 4.35 of the IEMA Guidance states that “*Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads*”, dependent on the “*level of pedestrian activity and the general visibility and physical conditions*” at the site.

For the purposes of this assessment, the scale of magnitude set out in **Table 8.2.6** will be used to categorise and assess the impact on pedestrian delay, with the characteristics of the link-receptor taken into consideration.

Table 8.2.6
Scale of impact magnitude for Pedestrian Delay

Magnitude	Description
Large	Link subject to a two-way traffic flow of more than 5,600 vehicles per hour.
Medium	Link subject to a two-way flow of 3,500-5,600 vehicles per hour.
Small	Link subject to a two-way flow of 1,400-3,500 vehicles per hour.
Negligible	Link subject to a two-way flow of less than 1,400 vehicles per hour.

The AM & PM peak hour flows and average hourly AAWT flows over an 18 hour period have been used.

Pedestrian amenity is broadly defined as the “relative pleasantness of a journey”, and it is affected by traffic flow, traffic composition, and pavement width / separation from traffic. The Guidance suggests a tentative threshold for judging the significance of changes in pedestrian amenity of where traffic flow (or its lorry component) is halved or doubled. For the purposes of this assessment, if this is not met the magnitude can be described as ‘Negligible’.

Fear and Intimidation

The impact of this is dependent upon the volume of traffic, traffic composition, its proximity to people, or the lack of protection caused by such factors as narrow pavement widths. The Guidance states that there are no commonly agreed thresholds for estimating this from known traffic and physical conditions, but it does nevertheless suggest some thresholds which could be used, based on previous research. For the purpose of this assessment 18-hour AAWT traffic data has been used. These are shown in **Table 8.2.7** below.

8. Traffic and Transport

Table 8.2.7
Scale of impact magnitude for Fear and Intimidation

Magnitude	AVERAGE HOURLY TWO-WAY TRAFFIC FLOW OVER 18- HOUR DAY
Large	>1,800
Medium	1,200-1800
Small	600 – 1,200
Negligible	< 600

It should be reasserted that whilst quantitative thresholds are suggested, the experience of road users is dependent on qualitative factors such as the availability of pedestrian facilities. These thresholds also do not take into consideration how change in traffic flow is perceived by road; for example, a small addition to a link already experiencing higher traffic volumes is unlikely to correspond with higher levels of fear and intimidation as it is likely to be in line with the existing perception of the road. In light of this, the guidance set out in **Table 8.2.4** will additionally be utilised to understand higher-trafficked roads (those with ‘Medium’ or ‘Large’ baseline levels) where the perception of the road, and therefore the levels of fear and intimidation, are unlikely to be impacted. If the additional traffic is in line with the existing perception of the area, i.e. a ‘Negligible’ increase in traffic flow, the impact will be described as ‘Negligible’.

Accidents and Safety

The IEMA Guidance suggests that “*Professional judgement will be needed to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents, e.g. junction conflicts*”. For the purposes of this assessment, links where no inherent highway safety issues were identified in the 2023 Baseline year are described as having a ‘Negligible’ magnitude, where ‘Negligible’ is applied where there are ‘Neutral’ or ‘No Change’ in impacts. Similarly, if a professional review of the development proposals and potential traffic impact suggests that there will be no effect on highway safety in the area, the impact magnitude will be described as ‘Negligible’.

Table 8.2.8
Scale of impact magnitude for Accidents and Safety

Magnitude	Description
Large	Expected change in accident risk of 15%+
Medium	Expected change in accident risk of 10% - 14%
Small	Expected change in accident risk of 5% - 9%
Negligible	Expected change in accident risk of less than 5%

It should be noted that the roundabout access and Bryn Lane access will be subject to the Section 278/38 process. It is, therefore, expected that the junctions will be subject to a Road Safety Audit, mitigating any potential impacts on road safety.

Assessment of Significance

The assessment of significance within this chapter is based on the matrix presented in **Table 8.2.10** below.

Table 8.2.10
Significance matrix

		Sensitivity of Receptor				
		Very High	High	Medium	Low	Very Low
Magnitude of Impact	Very Large	Major	Major	[3]	Moderate	[1]
	Large	Major	[3]	Moderate	Minor	[2]
	Medium	[3]	Moderate	Minor	[2]	Negligible
	Small	Moderate	[2]	[2]	Negligible	Negligible
	Negligible	[1]	[2]	Negligible	Negligible	Negligible

[1] The choice between ‘Moderate Significance’, ‘Minor Significance’ and ‘Negligible Significance’ will depend on the specifics of the impact and will be down to professional judgement and reasoning.

[2] The choice between ‘Minor Significance’ and ‘Negligible Significance’ will depend on the specifics of the impact and will be down to professional judgement and reasoning.

[3] The choice between ‘Major Significance’ and ‘Moderate Significance’ will depend on the specifics of the impact and will be down to professional judgement and reasoning.

n.b. ‘Negligible Significance’ includes ‘Neutral’ and ‘No Impact’ assessments.

8.2.10. Relevant Associated Development

Given the hybrid nature of the planning application, the full extent of any associated development, such as utilities or junction works outside the application site boundary, are not confirmed at this stage. However, any such works are not expected to be substantial in the context of the proposed development as a whole and are not considered likely to affect the outcome of this assessment. For avoidance of doubt, the upgrades to the roundabout have been considered within this assessment

8.2.11. Climate Change

It is not considered that Climate Change will have an effect on the proposed development in terms of transport. In terms of the impact of the vehicular emissions from the proposed development on climate change, the proposed development will deliver improvements to the pedestrian, cycle and public transport networks, as well as electric vehicle (EV) charging on-site, which will assist in addressing climate change.

8.2.12. Human Health

The consideration of human health is implicitly incorporated into the assessment and mitigation of traffic and transport impacts; this is additionally encouraged or required through the suite of policy and guidance documents this chapter refers to, which note the intentional or unintentional benefits of different transport measures, and the effects on human health and wellbeing. The consideration given to human health within the Transport Assessment, and supporting documents such as the Framework Travel Plan, are summarised in **Table 8.2.11**.

8. Traffic and Transport

Table 8.2.11
Topics considered with regards to human heath

Aspect Assessed	Consideration of Human Health
Personal Collision Injury (PIC) data analysis.	Assesses whether there are mitigatory measures which can be introduced by the proposed development to prevent or reduce the severity of collisions.
Accessibility of walking and cycling facilities and proposals for the development to deliver improvements.	Walking and cycling is known to have a positive effect on human health and wellbeing; policy and guidance documents encourage new developments to infer priority to and deliver facilities for pedestrians and cyclists wherever possible.
Severance / Pedestrian delay / Pedestrian amenity.	Walking is known to have a positive effect on human health and wellbeing. Pedestrian amenity, meaning the pleasantness of pedestrians’ journeys, can amplify this effect, whilst severance / pedestrian delay can inhibit uptake.
Fear and intimidation	Increased fear and intimidation can be detrimental to human health and wellbeing, and can have additional consequences such as discouraging walking and cycling.

8.2.13. Consideration of Risk of Major Accidents and/or Disasters

The IEMA Guidance suggests that "Professional judgement will be needed to assess the implications of local circumstances, or factors, which may elevate or lessen risks of accidents, e.g. junction conflicts". An accident can be defined as “an unfortunate incident that happens unexpectedly and unintentionally, typically resulting in damage or injury”. Accidents and safety have been assessed within this ES Chapter; consideration is given to the likelihood of the development causing or exacerbating any existing highway safety conditions which could lead to road traffic accidents. The baseline accident and safety conditions, which this assessment refers to, is included in Section 2.3 of the appended Transport Assessment.

8.2.14. Assumptions / limitations

In undertaking the traffic and transport assessment of the application site and wider surrounding area, several assumptions have been applied, however, these comprise the standard assumptions and limitations inherent to assessments of this nature and are, therefore, not considered to affect the validity of the results.

Further detail is provided in each of the technical documents appended to this chapter.

8.3. Sensitive Receptors

Existing Receptors

The existing sensitive receptors that have been identified as sensitive receptors for the assessment are set out as follows:

- A5156 link;
- A534 link;
- Industrial Estate Road link;
- Bryn Lane link; and
- Ridley Wood Road link.

8. Traffic and Transport

8.4. Baseline Conditions

8.4.1. Existing Baseline

Table 8.4.1 sets out the existing transport baseline conditions.

Further details of the local transport network within the vicinity of the application site can be found within the Transport Assessment included in **Appendix 8.3**. These details include information about walking, cycling, and public transport infrastructure and services. This has aided the classification of the sensitive receptors within the table below.

Table 8.4.1
Existing baseline conditions

Sensitive receptors	Description of Baseline Condition	Sensitivity	Further information
A5156 - Link	The A5156 is a 70mph dual carriageway with 2-lanes in each direction which runs in a north-west to south-east direction connecting the A483 Junction 6 to the Wrexham Golf Club / Stryt Holt / A534 roundabout junction. There are no pedestrian footways or cycleway along the A5156. The A5156 connects the A483 which then provides access to Chester to the north-east and Owestry to the south.	Low	AADT (Appendix 8.1) and AAWT (Appendix 8.2) Traffic Figures. Section 5 of the TA in Appendix 8.3
A534 - Link	The A545 is a 70mph dual carriageway with 2-lanes in each direction which runs in a west to east direction connecting the Wrexham Golf Club / Stryt Holt / A534 roundabout junction to the A534 / Industrial Estate Road / Sandy Lane / Borrass Hall Lane roundabout. There are no pedestrian footways or cycleway along the A545.	Medium	AADT (Appendix 8.1) and AAWT (Appendix 8.2) Traffic Figures. Section 5 of the TA in Appendix 8.3
Industrial Estate Road - Link	The Industrial Estate Road is a 70mph dual carriageway with 2-lanes in each direction which runs in a north-west to south-east direction connecting the A534 / Industrial Estate Road / Sandy Lane / Borrass Hall Lane roundabout to the Industrial Estate Road / Bryn Lane / Ash Road North / Abenbury Way roundabout. There are shared pedestrian footways/cycleway in both directions.	High	AADT (Appendix 8.1) and AAWT (Appendix 8.2) Traffic Figures. Section 5 of the TA in Appendix 8.3
Bryn Lane - Link	Bryn Lane is a 40mph single carriageway with 1-lane in each direction which runs in a west to east / south direction connecting the Industrial Estate Road / Bryn Lane / Ash Road North / Abenbury Way roundabout passing through the Ridley Wood Road / Bryn Lane priority junction. There is a shared pedestrian footways /cycleway on the southern side of Bryn Lane.	Medium	AADT (Appendix 8.1) and AAWT (Appendix 8.2) Traffic Figures. Section 5 of the TA in Appendix 8.3
Ridley Wood Road - Link	Ridley Wood Road is a 40mph single carriageway with 1-lane in each direction which runs in a south-west to north-east direction connecting the Ridley Wood Road / Bryn Lane priority junction to the B5130 priority junction. There are no pedestrian footways or cycleway along Ridley Wood Road.	Low	AADT (Appendix 8.1) and AAWT (Appendix 8.2) Traffic Figures. Section 5 of the TA in Appendix 8.3
Public Transport Network	The proposed site is served by public transport with the nearest bus stops located circa 550m walk away along Abbey Road (Abbey Road bus stops). The 41 bus services can be accessed from these stops providing 2 services in the morning (6-9am) and 1 per hour after 9am routing to and from Wrexham Bus Station.	Medium	Section 4 of the Transport Assessment

8.5. Potential Impacts

The impacts considered to have the potential to result in significant effects (prior to inclusion of any embedded mitigation) are reported in **Table 8.5.1**.

Table 8.5.1
Potential significant Impacts

Stage	Description of Potential Impacts	Adverse/beneficial
Construction	The potential impacts of traffic generated by the demolition and construction works on Severance, Driver Delay, Pedestrian Delay and Amenity, Fear and Intimidation, Accidents and Road Safety, and the pedestrian / cycle and public transport networks	Adverse
Operation	The potential impacts of operational traffic generated by the proposed development on Severance, Driver Delay, Pedestrian Delay and Amenity, Fear and Intimidation, Accidents and Road Safety, and the pedestrian / cycle and public transport networks	Adverse

8. Traffic and Transport

8.6. Embedded Mitigation

Table 8.6.1 identifies those design interventions that have been incorporated into the design of the proposed development, as well as any control methods that have been incorporated into the proposed development to mitigate the potential impacts identified during the course of the design evolution process. These measures are collectively referred to as embedded mitigation.

Table 8.6.1
Embedded Mitigation

Embedded Mitigation	Description	Reason for Intervention	Further information
Pedestrian and cycle enhancements	As set out in the Proposed Masterplan (Figure 4.3.2 in ES Chapter 4 Proposed Development) and described in the Design and Access Statement, The proposed development will deliver high-quality, well-signed walking and cycling routes through the application site in tandem with multiple pedestrian / cycle access points along the application site boundary.	This ensures pedestrian /cycle permeability, and will encourage trips to and from the application site to be made via these modes. It also creates an environment conducive to walking / cycling and infers priority to non-motorised users.	Section 4 of the TA in Appendix 8.3.
Vehicle access strategy	As shown in the Proposed Masterplan (Figure 4.3.2 in ES Chapter 4 Proposed Development), vehicular access to the application site will be via a new access off the Industrial Estate Road / Bryn Lane / Ash Road North / Abenbury Way roundabout and a new ghost island right turn priority access off Bryn Lane.	This ensures appropriate access into the application site.	Section 4 of the TA in Appendix 8.3.
Vehicle access strategy	As discussed in the Design and Access Statement, as well as ES Chapter 4: Proposed Development, the Industrial Estate Road / Bryn Lane / Ash Road North / Abenbury Way roundabout will be improved and enlarged to increase capacity of the junction.	This ensures appropriate access into the application site.	Section 4 of the TA in Appendix 8.3.

8. Traffic and Transport

8.7. Assessment of Effects (including Embedded Mitigation)

8.7.1. Demolition and Construction Stage

The assessment of the likely transport effects of the proposed development during the demolition and construction stage (including embedded mitigation) is set out in **Table 8.7.1**.

Table 8.7.1
Demolition and Construction Stage Assessment

Receptor(s) affected	Receptor Sensitivity	Description of Impact	2023 AADT Baseline	2023 AADT Baseline + Proposed Development	Total AADT Vehicle Change (%)	HDV Change (%)	Total HGV	Average hourly flow over 18 hour period	Average vehicles during AM peak hour	Average vehicles during PM peak hour	Expected % change in accident risk	Description of impact	Magnitude of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
A5156 - Link	Low	Severance	27617	27774	0.57%	4.2%	2248	-	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1655	2341	2235	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	27617	27774	0.57%	4.2%	2248	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1655	-	-	-	<1,800	Medium	Minor	No	
		Accidents and Severity	27617	27774	0.57%	4.2%	2248	1655	2341	2235	0%	No risk	Negligible	Negligible	No	
A534 - Link	Medium	Severance	27636	27916	10.1%	7.1%	2369	-	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1657	2238	2358	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	27636	27916	10.1%	7.1%	2369	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1657	-	-	-	<1,800	Medium	Minor	No	
		Accidents and Severity	27636	27916	10.1%	7.1%	2369	1657	2238	2358	0%	No risk	Negligible	Negligible	No	
Industrial Estate Road - Link	High	Severance	23277	25505	1.6%	10.7%	2176	-	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1396	1902	1422	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	23277	25505	1.6%	10.7%	2176	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1396	-	-	-	<1,800	Medium	Minor	No	
		Accidents and Severity	23277	25505	1.6%	10.7%	2176	1396	1902	1422	0%	No risk	Negligible	Negligible	No	
Bryn Lane - Link	Medium	Severance	5427	5811	7.1%	40.8%	568	-	-	-	-	<59%	Small	Minor	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	325	452	463	-	<1,400	Negligible	Minor	No	
		Pedestrian Amenity	5427	5811	7.1%	40.8%	568	325	452	463	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	325	-	-	-	<600	Negligible	Negligible	No	
		Accidents and Severity	5427	5811	7.1%	40.8%	568	325	452	463	0%	No risk	Minor	Minor	No	
Ridley Wood Road - Link	Low	Severance	2602	2602	0%	0%	43	-	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	133	198	151	-	<1,400	Negligible	Negligible	No	
		Pedestrian Amenity	2602	2602	0%	0%	43	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	133	-	-	-	<600	Negligible	Negligible	No	
		Accidents and Severity	2602	2602	0%	0%	43	133	198	151	0%	No risk	Negligible	Negligible	No	

8. Traffic and Transport

8.7.2. Completed Development Stage – Option 1

The assessment of the likely transport effects of the proposed Option 1 development during the completed development stage (including embedded mitigation) is set out in **Table 8.7.2**. An assessment has been made for future traffic conditions with an assessment year of 2030. The assessment of driver delay has been undertaken using the observed junction data presented in Table 5.14 of the TA (Appendix 8.3).

Table 8.7.2
Option 1 Completed Development Stage Assessment

Receptor(s) affected	Receptor Sensitivity	Description of Impact	2030 AADT Future Baseline	2030 AADT Future Baseline + Development	Total AADT Vehicle Change (%)	HDV Change (%)	Total HGV	Average hourly flow over 18 hour period	Average vehicles during AM peak hour	Average vehicles during PM peak hour	Expected % change in accident risk	Description of impact	Magnitude of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
A5156 - Link	Low	Severance	29243	29898	2.2%	2.8%	2446	-	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1790	2529	2415	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	29243	29898	2.2%	2.8%	2446	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1790	-	-	-	<1,800	Medium	Negligible	No	
		Accidents and Severity	29243	29898	2.2%	2.8%	2446	1790	2529	2415	0%	No risk	Negligible	Negligible	No	
A534 - Link	Medium	Severance	29264	30916	5.6%	6.6%	2674	-	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1846	2498	2619	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	29264	30916	5.6%	6.6%	2674	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1846	-	-	-	>1,800	Large	Moderate	No	
		Accidents and Severity	29264	30916	5.6%	6.6%	2674	1846	2498	2619	0%	No risk	Negligible	Negligible	No	
Industrial Estate Road - Link	High	Severance	24648	27142	10.1%	10.8%	2554	-	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	1.72 secs	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1616	2207	2293	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	24648	27142	10.1%	10.8%	2554	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1616	-	-	-	<1,800	Medium	Negligible	No	
		Accidents and Severity	24648	27142	10.1%	10.8%	2554	1616	2207	2293	0%	No risk	Negligible	Negligible	No	
Bryn Lane - Link	Medium	Severance	5747	8865	54.3%	51.2%	913	-	-	-	-	<59%	Small	Minor	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	3.55 secs	Negligible	Minor	No	
		Pedestrian Delay	-	-	-	-	-	518	720	722	-	<1,400	Negligible	Negligible	No	
		Pedestrian Amenity	5747	8865	54.3%	51.2%	913	-	-	-	-	>50%	Small	Minor	No	
		Fear and Intimidation	-	-	-	-	-	518	-	-	-	<600	Negligible	Minor	No	
		Accidents and Severity	5747	8865	54.3%	51.2%	913	518	720	722	0%	No risk	Negligible	Negligible	No	
Ridley Wood Road – Link	Low	Severance	2152	2152	0%	0%	42	-	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	129	210	160	-	<1,400	Negligible	Negligible	No	
		Pedestrian Amenity	2152	2152	0%	0%	42	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	129	-	-	-	<600	Negligible	Negligible	No	
		Accidents and Severity	2152	2152	0%	0%	42	129	210	160	0%	No risk	Negligible	Negligible	No	

8. Traffic and Transport

8.7.3. Completed Development Stage – Option 2

The assessment of the likely transport effects of the proposed Option 2 development during the completed development stage (including embedded mitigation) is set out in **Table 8.7.3**. An assessment has been made for future traffic conditions with an assessment year of 2030. The assessment of driver delay has been undertaken using the observed junction data presented in Table 5.8 of the TA (Appendix 8.3).

Table 8.7.3
Option 2 Completed Development Stage Assessment (AADT)

Receptor(s) affected	Receptor Sensitivity	Description of Impact	2030 AADT Future Baseline	2030 AADT Future Baseline + Development	Total AADT Vehicle Change (%)	HDV Change (%)	Total HGV	Average hourly flow over 18 hour period	Average vehicles during AM peak hour	Average vehicles during PM peak hour	Expected % change in accident risk	Description of impact	Magnitude of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
A5156 – Link	Low	Severance	29243	29929	2.3%	2.9%	2449	1791	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1791	2531	2416	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	29243	29929	2.3%	2.9%	2449	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1791	-	-	-	<1,800	Medium	Negligible	No	
		Accidents and Severity	29243	29929	2.3%	2.9%	2449	1791	2531	2416	0%	No risk	Negligible	Negligible	No	
A534 – Link	Medium	Severance	29264	30994	5.9%	6.8%	2681	1851	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1851	2504	2611	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	29264	30994	5.9%	6.8%	2681	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1851	-	-	-	>1,800	Large	Moderate	No	
		Accidents and Severity	29264	30994	5.9%	6.8%	2681	1851	2504	2622	0%	No risk	Negligible	Negligible	No	
Industrial Estate Road – Link	High	Severance	24648	28036	13.7%	12.3%	2588	1666	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	5.11 secs	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	1666	2215	2288	-	<3,500	Small	Negligible	No	
		Pedestrian Amenity	24648	28036	13.7%	12.3%	25888	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	1666	-	-	-	<1,800	Medium	Moderate	No	
		Accidents and Severity	24648	28036	13.7%	12.3%	25888	1666	2215	2288	0%	No risk	Negligible	Negligible	No	
Bryn Lane - Link	Medium	Severance	5747	6625	15.3%	16.1%	698	393	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	4.6449	Negligible	Negligible	No	
		Pedestrian Delay	-	-	-	-	-	393	630	535	-	secs	Negligible	Negligible	No	
		Pedestrian Amenity	5747	6625	15.3%	16.1%	698	-	-	-	-	<1,400	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	393	-	-	-	<50%	Negligible	Negligible	No	
		Accidents and Severity	5747	6625	15.3%	16.1%	698	393	630	535	0%	<600	Negligible	Negligible	No	
												No risk				
Ridley Wood Road - Link	Low	Severance	2152	2152	0%	0%	42	120	-	-	-	<30%	Negligible	Negligible	No	Section 5 of the TA in
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible	No	

8. Traffic and Transport

Cora IHT Limited

Receptor(s) affected	Receptor Sensitivity	Description of Impact	2030 AADT Future Baseline	2030 AADT Future Baseline + Development	Total AADT Vehicle Change (%)	HDV Change (%)	Total HGV	Average hourly flow over 18 hour period	Average vehicles during AM peak hour	Average vehicles during PM peak hour	Expected % change in accident risk	Description of impact	Magnitude of Impact	Scale of Effect and Significance	Additional Mitigation proposed?	Further information
		Pedestrian Delay	-	-	-	-	-	120	210	160	-	<1,400	Negligible	Negligible	No	Appendix 8.3
		Pedestrian Amenity	2152	2152	0%	0%	42	-	-	-	-	<50%	Negligible	Negligible	No	
		Fear and Intimidation	-	-	-	-	-	120	-	-	-	<600	Negligible	Negligible	No	
		Accidents and Severity	2152	2152	0%	0%	42	120	210	160	0%	No risk	Negligible	Negligible	No	

8.8. Additional Mitigation & Enhancement Measures

Table 8.8.1 identifies the additional mitigation and enhancement measures that have been proposed in order to minimise the effects identified in Section 8.5.1, as well as how they would be secured.

Table 8.8.1
Proposed Mitigation & Enhancement Measures

Stage	Receptor(s) affected	Possible effect being mitigated	Mitigation measure	How secured / trigger	Further information
Demolition and Construction	All receptors.	Potential for HGV movements to be uncontrolled.	Implementation of a Construction Traffic Management Plan (CTMP) and a Construction Environmental Management Plan (CEMP) to reduce the effects of HGVs and worker vehicles throughout construction. As part of this, traffic management measures specifically designed to protect vulnerable road users such as pedestrians will be implemented; these measures include clearly delineated pedestrian routes and set hours of operation to reduce the likelihood of pedestrian / vehicle interaction. It must be additionally noted that adverse effects of construction will be temporary, and closely managed and monitored throughout the construction period.	Planning condition	ES Chapter 5 <i>Construction Strategy & CEMP</i>
Operation	All receptors.	Number of vehicles generated by the development.	Implementation of a Travel Plan to reduce car vehicle trip generation and promote sustainable mode share	Planning condition	Appendix 8.4: Travel Plan.

8.9. Residual Effects

Table 8.9.1 assesses the post mitigation effects for all proposed development scenarios.

Table 8.9.1
Proposed Mitigation & Enhancement Measures

Stage	Receptor (sensitivity)	Description of Residual Impact and Any Additional Mitigation	Residual Effect						
			Magnitude post- mitigation	Scale of Effect and Significance	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible									
Demolition and Construction	Users of A5156 (Low)	Severance impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Driver delay impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian delay from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R

8. Traffic and Transport

Cora IHT Limited

Stage	Receptor (sensitivity)	Description of Residual Impact and Any Additional Mitigation	Residual Effect						
			Magnitude post-mitigation	Scale of Effect and Significance	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible									
Demolition and Construction		Impacts on pedestrian amenity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrians from fear and intimidation relating to demolition and construction traffic	Small	Minor (not significant)	ADV	ST	D	T	R
		Impacts relating to accidents & severity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
	Users of A534 (Medium)	Severance impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Driver delay impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian delay from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian amenity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrians from fear and intimidation relating to demolition and construction traffic	Small	Minor (not significant)	ADV	ST	D	T	R
		Impacts relating to accidents & severity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
Demolition and Construction	Users of Industrial Estate Road (High)	Severance impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Driver delay impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian delay from demolition and construction traffic	Small	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian amenity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrians from fear and intimidation relating to demolition and construction traffic	Small	Minor (not significant)	ADV	ST	D	T	R
		Impacts relating to accidents & severity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
Demolition and Construction	Users of Bryn Lane (Medium)	Severance impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Driver delay impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian delay from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian amenity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R

8. Traffic and Transport

Cora IHT Limited

Stage	Receptor (sensitivity)	Description of Residual Impact and Any Additional Mitigation	Residual Effect						
			Magnitude post-mitigation	Scale of Effect and Significance	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible									
Demolition and Construction	Users of Ridley Wood Road (Low)	Impacts on pedestrians from fear and intimidation relating to demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts relating to accidents & severity from demolition and construction traffic	Small	Negligible (not significant)	ADV	ST	D	T	R
		Severance impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Driver delay impacts on road users from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian delay from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrian amenity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts on pedestrians from fear and intimidation relating to demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
		Impacts relating to accidents & severity from demolition and construction traffic	Negligible	Negligible (not significant)	ADV	ST	D	T	R
Option 1 Completed Development Stage Assessment	Users of A5156 (Low)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Small	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on accidents and safety relating to operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
Option 1 Completed Development Stage Assessment	Users of A534 (Medium)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Small	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Medium	Minor (not significant)	ADV	LT	D	T	R

8. Traffic and Transport

Cora IHT Limited

Stage	Receptor (sensitivity)	Description of Residual Impact and Any Additional Mitigation	Residual Effect						
			Magnitude post-mitigation	Scale of Effect and Significance	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible									
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
Option 1 Completed Development Stage Assessment	Users of Industrial Estate Road (High)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Small	Negligible (not significant)	ADV	LT	D	T	R
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
Option 1 Completed Development Stage Assessment	Users of Bryn Lane (Medium)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
Option 1 Completed Development Stage Assessment	Users of Ridley Wood Road (Low)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R

8. Traffic and Transport

Cora IHT Limited

Stage	Receptor (sensitivity)	Description of Residual Impact and Any Additional Mitigation	Residual Effect						
			Magnitude post-mitigation	Scale of Effect and Significance	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible									
Option 2 Completed Development Stage Assessment	Users of A5156 (Low)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Small	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
Option 2 Completed Development Stage Assessment	Users of A534 (Medium)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Small	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Medium	Minor (not significant)	ADV	LT	D	T	R
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
Option 2 Completed Development Stage Assessment	Users of Industrial Estate Road (High)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Small	Minor (not significant)	ADV	LT	D	T	R
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
	Users of Bryn Lane (Medium)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R

8. Traffic and Transport

Cora IHT Limited

Stage	Receptor (sensitivity)	Description of Residual Impact and Any Additional Mitigation	Residual Effect						
			Magnitude post-mitigation	Scale of Effect and Significance	ADV / BEN	ST / MT / LT	D / IND	P / T	R / IRR
Key: ADV/BEN= Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible									
Option 2 Completed Development Stage Assessment		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
Option 2 Completed Development Stage Assessment	Users of Ridley Wood Road (Low)	Severance impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Driver delay impacts on road users from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian delay from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrian amenity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts on pedestrians from fear and intimidation relating to operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R
		Impacts relating to accidents & severity from operational stage traffic	Negligible	Negligible (not significant)	ADV	LT	D	T	R

8.10. Traffic and Transport: Inter-Development Cumulative Effects

The assessment of inter-development cumulative effects broadly takes place over two stages, the first of which is screening. The screening exercise undertaken for the cumulative schemes identified in Chapter 2 *EIA Methodology* of this volume of the ES, is included in Section 8.9.1. Those identified to have the potential to result in cumulative effects with the proposed development have been assessed in Section 8.10.2.

8.10.1. Screening of Cumulative Schemes

Table 8.10.1
Traffic and Transport Inter-development Cumulative Effects Assessment: Cumulative Scheme Screening

Cumulative scheme	Scheme Description	Potential for cumulative effects?	Considered within assessment?
Land south of Ridleywood Lane and east of Bryn Lane P/2020/0167 as amended	Erection of Storage and Distribution Warehouse	The scheme will introduce additional employment trips and HGV traffic within the local highway network, which has the potential for in-combination transport effects with the proposed development once operational. Given that the scheme became operational in January 2023, in-combination effects from construction traffic would not occur.	Yes. The scheme was operation in January 2023, therefore, traffic surveys done in March 2023 already included traffic from this development. The in-combination effects are therefore captured within the assessment presented in Table 8.7.1 and 8.7.2.

8. Traffic and Transport

Cora IHT Limited

Cumulative scheme	Scheme Description	Potential for cumulative effects?	Considered within assessment?
Unit 6, Pacific Park, Bridge Road North P/2020/0603	Erection of 2 new industrial units on land to the north of unit 6 Pacific Park	Additional employment trips and HGV traffic within local highway network. There would be additional traffic generated during construction, however, this is likely to be negligible and has not been considered further.	Yes, effect considered in Table 8.01.2 and 8.7.2.
Land off Ash Road South, Wrexham Industrial Estate P/2015/0843	Erection of industrial unit	Additional employment trips and HGV traffic within local highway network. There would be additional traffic generated during construction, however, this is likely to be negligible and as such, has not been considered further.	Yes, effect considered in Table 8.7.1 and 8.7.2.
KSS2 Site	Allocated for 1,580 homes in the plan period	As set out in Table 8.2.1, whilst the criteria for cumulative schemes is typically limited to schemes that have been granted consent, the inclusion of the KSS2 allocation for the purpose of the transport assessment has been considered within the cumulatives assessment as it is representative of a reasonable worst-case. The delivery of the KSS2 allocation would result in additional residential trips and HGV traffic within local highway network. The additional trips on the local highway network during the completed development stage are considered in Section 8.10.2 below. In respect of the demolition and construction stage, given that no applications have been submitted so far in connection with the KSS2 site, it is unlikely that there will be an overlap in construction programmes and as such, cumulative traffic impacts during the construction stage are not anticipated.	Yes, effect considered in Table 8.7.1 and 8.7.2.

8.10.2. Inter-Development Cumulative Effects Assessment (Completed Development Stage – Option 1)

The assessment of inter-development cumulative effects is presented in **Table 8.10.2** and **Table 8.10.3** below. An assessment has been made for future traffic conditions with an assessment year of 2030.

Table 8.10.2
Option 1 Completed Development Stage Assessment

Receptor(s) affected	Receptor Sensitivity	Description of Impact	2030 AADT Future Baseline	2030 AADT Future Baseline + Development + Committed	Total AADT Vehicle Change (%)	HDV Change (%)	Total HGV	Average hourly flow over 18 hour period	Average vehicles during AM peak hour	Average vehicles during PM peak hour	Expected % change in accident risk	Description of impact	Magnitude of Impact	Scale of Effect and Significance (S) – Significant (NS) – Not Significant	Additional Mitigation proposed?	Further information
A5156 - Link	Low	Severance	29243	31019	2.1%	2.7%	2450	1848	2733	2516	-	<30%	Negligible	Negligible (NS)	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible (NS)	No	
		Pedestrian Delay	-	-	-	-	-	1848	2733	2516	-	<3,500	Small	Negligible (NS)	No	
		Pedestrian Amenity	29243	31019	2.1%	2.7%	2450	-	-	-	-	<50%	Negligible	Negligible (NS)	No	
		Fear and Intimidation	-	-	-	-	-	1848	-	-	-	>1,800	Large	Minor (NS)	No	
		Accidents and Severity	29243	31019	2.1%	2.7%	2450	1848	2733	2516	0%	No risk	Negligible	Negligible (NS)	No	
A534 - Link	Medium	Severance	29264	31927	2.6%	6.2%	2684	1899	2674	2711	-	<30%	Negligible	Negligible (NS)	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible (NS)	No	
		Pedestrian Delay	-	-	-	-	-	1899	2674	2711	-	<3,500	Small	Negligible (NS)	No	
		Pedestrian Amenity	29264	31927	2.6%	6.2%	2684	-	-	-	-	<50%	Negligible	Negligible (NS)	No	
		Fear and Intimidation	-	-	-	-	-	1899	-	-	-	>1,800	Large	Minor (NS)	No	
		Accidents and Severity	29264	31927	2.6%	6.2%	2684	1899	2674	2711	0%	No risk	Negligible	Negligible (NS)	No	
Industrial Estate Road - Link	High	Severance	24648	28908	8.6%	9.7%	2569	1709	2425	2512	-	<30%	Negligible	Negligible (NS)	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	1.94 secs	Negligible	Negligible (NS)	No	
		Pedestrian Delay	-	-	-	-	-	1709	2425	2512	-	<3,500	Small	Negligible (NS)	No	

8. Traffic and Transport

Cora IHT Limited

Receptor(s) affected	Receptor Sensitivity	Description of Impact	2030 AADT Future Baseline	2030 AADT Future Baseline + Development + Committed	Total AADT Vehicle Change (%)	HDV Change (%)	Total HGV	Average hourly flow over 18 hour period	Average vehicles during AM peak hour	Average vehicles during PM peak hour	Expected % change in accident risk	Description of impact	Magnitude of Impact	Scale of Effect and Significance (S) – Significant (NS) – Not Significant	Additional Mitigation proposed?	Further information
Bryn Lane - Link	Medium	Pedestrian Amenity	24648	28908	8.6%	9.7%	2569	-	-	-	-	<50%	Negligible	Negligible (NS)	No	*For mitigation see Table 8.8.1. This would reduce the scale of effect to Minor Adverse (not significant)
		Fear and Intimidation	-	-	-	-	-	1709	-	-	-	<1,800	Medium	Moderate (S)*	Yes	
		Accidents and Severity	24648	28908	8.6%	9.7%	2569	1709	2425	2512	0%	No risk	Negligible	Negligible (NS)	No	
		Severance	5747	8865	35.2%	34.2%	913	518	720	722	-	<50%	Small	Minor (NS)	No	
		Driver Delay	-	-	-	-	-	-	-	-	-	3.09 secs	Negligible	Minor (NS)	No	
		Pedestrian Delay	-	-	-	-	-	518	720	722	-	<1,400	Minor	Minor (NS)	No	
		Pedestrian Amenity	5747	8865	35.2%	34.2%	913	-	-	-	-	<50%	Minor	Minor (NS)	No	
Ridley Wood Road - Link	Low	Fear and Intimidation	-	-	-	-	-	518	-	-	-	<600	Negligible	Minor (NS)	No	Section 5 of the TA in Appendix 8.3
		Accidents and Severity	5747	8865	35.2%	34.2%	913	518	720	722	0%	No risk	Negligible	Negligible (NS)	No	
		Severance	2152	2152	0%	0%	42	129	210	160	-	<30%	Negligible	Negligible (NS)	No	
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible (NS)	No	
		Pedestrian Delay	-	-	-	-	-	129	210	160	-	<1,400	Negligible	Negligible (NS)	No	
		Pedestrian Amenity	2152	2152	0%	0%	42	-	-	-	-	<50%	Negligible	Negligible (NS)	No	
		Fear and Intimidation	-	-	-	-	-	129	-	-	-	<600	Negligible	Negligible (NS)	No	
		Accidents and Severity	2152	2152	0%	0%	42	129	210	160	0%	No risk	Negligible	Negligible (NS)	No	

8.10.3. Inter-Development Cumulative Effects Assessment (Completed Development Stage – Option 2)

Table 8.10.3
Option 2 Completed Development Stage Assessment (AADT)

Receptor(s) affected	Receptor Sensitivity	Description of Impact	2030 AADT Future Baseline	2030 AADT Future Baseline + Development + Committed	Total AADT Vehicle Change (%)	HDV Change (%)	Total HGV	Average hourly flow over 18 hour period	Average vehicles during AM peak hour	Average vehicles during PM peak hour	Expected % change in accident risk	Description of impact	Magnitude of Impact	Scale of Effect and Significance (S) – Significant (NS) – Not Significant	Additional Mitigation proposed?	Further information
A5156 - Link	Low	Severance	29243	31049	6.2%	6.5%	2453	1854	2735	2517	-	<30%	Negligible	Negligible (NS)	No	Section 5 of the TA in Appendix 8.3
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible (NS)	No	
		Pedestrian Delay	-	-	-	-	-	1854	2735	2517	-	<3,500	Small	Negligible (NS)	No	
		Pedestrian Amenity	29243	31049	6.2%	6.5%	2453	-	-	-	-	<50%	Negligible	Negligible (NS)	No	
		Fear and Intimidation	-	-	-	-	-	1854	-	-	-	>1,800	Large	Minor (NS)	No	
		Accidents and Severity	29243	31049	6.2%	6.5%	2453	1854	2735	2517	0%	No risk	Negligible	Negligible (NS)	No	
A534 - Link	Medium	Severance	29264	32005	9.4%	7.3%	2692	1907	2680	2714	-	<30%	Negligible	Negligible (NS)	No	Section 5 of the TA in Appendix 8.3 *For mitigation see Table 8.8.1. This would reduce the scale of effect to
		Driver Delay	-	-	-	-	-	-	-	-	-	<7%	Negligible	Negligible (NS)	No	
		Pedestrian Delay	-	-	-	-	-	1907	2680	2714	-	<3,500	Small	Negligible (NS)	No	
		Pedestrian Amenity	29264	32005	9.4%	7.3%	2692	-	-	-	-	<50%	Negligible	Negligible (NS)	No	
		Fear and Intimidation	-	-	-	-	-	1907	-	-	-	>1,800	Large	Moderate (S)	No	
		Accidents and Severity	29264	32005	9.4%	7.3%	2692	1907	2680	2714	0%	No risk	Negligible	Negligible (NS)	No	

8. Traffic and Transport

11. Limited, JMP Consultants. *TRICS Research Report 14/1. Pass-By & Diverted Trips. Report.* 2014.

12. Ministry of Housing, Communities & Local Government. *National Planning Policy Framework.* s.l. : MGCLG, 2021.