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11 TRAFFIC AND TRANSPORT

11.1 Introduction

11.1.1 This chapter reports the outcome of the assessment of likely significant effects arising from the traffic and transport aspects of the Proposed Development during the construction and operation phases.

11.1.2 This chapter considers the construction phase as the most robust assessment scenario. The operational and decommissioning phases have been scoped out of this assessment due to the primary impacts of construction not anticipated to exceed the operation or decommissioning phases. The Proposed Development will be part of an already established industrial facility. Once operational, the ongoing impact on the local highway network is expected to be low as traffic associated with the Proposed Development's operation is limited.

11.1.3 Access will be required from time to time for routine maintenance, and less frequently for major maintenance and upgrades. The associated Transport Statement (provided in **Volume 4, Technical Appendix 11.1**), provides a technical assessment of operational traffic impacts. It is not expected that traffic on the existing network will change by more than 30% for all vehicle movements, nor that there are any highway links considered of 'high sensitivity', where traffic might increase by 10% or more. These are the defining thresholds for environmental effects on the local transport network (IEMA, 2023[1]), and as these are not exceeded, no further consideration of the operational and decommissioning phases is required in this chapter.

11.1.4 This chapter describes the assessment methodology that has been adopted and identifies how the baseline conditions have been established in agreement with Flintshire County Council as the Local Highway Authority. The access, traffic and transport receptors which have the potential to be impacted by the Proposed Development have been identified within a defined assessment area (hereafter referred to as the 'Study Area').

11.1.5 The assessment detailed within this chapter represents the most robust and as such, 'worst-case' assumptions, which have been made to assess the magnitude of change/impact and significance of any effects as applicable.

11.2 Relevant legislation and planning policy

11.2.1 This section sets out the planning policy frameworks that are relevant to this assessment. A full review and summary of the Proposed Development and its

[1] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

compliance with national and local planning policy is provided within the planning statement.

Relevant planning policy

11.2.2 The statutory, guidance and planning policy documents relevant to traffic and transport which have been reviewed and considered within the context of the Proposed Development are set out below:

- Institute of Environmental Management and Assessment (IEMA) (2023) Guidelines: Environmental Assessment of Traffic and Movement[2];
- Welsh Government 'Planning Policy Wales Edition 12 (2024)[3];
- North Wales Joint Local Transport Plan (2015)[4];
- Flintshire County Council Integrated Transport Strategy (2020)[5];
- Flintshire Local Development Plan 2015-2030 (2023)[6];
- Flintshire County Council, Local Plan Supplementary Planning Guidance (2015)[7];
    - Supplementary Planning Guidance Note 11 Parking Standards; and
    - Supplementary Planning Guidance Note 12 Access for All;
- Penyffordd Place Plan (2017-2030)[8]; and
- National Planning Policy Framework (2023)[9].

11.3 Consultation, Scope and Study Area

Consultation undertaken

11.3.1 **Table 11.1** provides a summary of the consultation activities undertaken in support of the preparation of this assessment.

[2] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

[3] Planning Policy Wales - Edition 12 (gov.wales)

[4] https://www.flintshire.gov.uk/en/PDFFiles/Planning/LDP-evidence-base/Local/North-Wales-Joint-Local-Transport-Plan-2015.pdf

[5] https://committeemeetings.flintshire.gov.uk/documents/s58921/Flintshire%20Integrated%20Transport%20Strategy.pdf?LLL=0#:~:text=The%20strategy%20seeks%20to%20achieve,growth%20of%20the%20Welsh%20economy

[6] FINAL LDP Written Statement English (flintshire.gov.uk)

[7] https://www.flintshire.gov.uk/en/Resident/Planning/Supplementary-planning-guidance.aspx

[8] https://www.flintshire.gov.uk/en/PDFFiles/Planning/LDP-evidence-base/Local/Penyffordd-Place-Plan-2017.pdf

[9] National Planning Policy Framework (publishing.service.gov.uk)

Table 11.1 Summary of consultation undertaken

Consultee	Key matters raised	Actions in response to consultee comments
Welsh Government (Transport)	Traffic and transport assessment Study Area should include the A55 and A494 junctions around Ewloe.	The Study Area includes the A55 and A494 junctions near Ewloe.
	The traffic impact should be presented both as Annual Average Daily Traffic (AADT) and AM/PM peak flows.	Traffic impact is presented as AADT and AM/PM peak flows and is further supported by the Transport Statement (**Volume 4, Technical Appendix 11.1**).
	Description of proposed Abnormal Indivisible Loads (AIL) including routing to avoid weak structures and pinch points on the network, where necessary.	Detail regarding AIL vehicle movements is provided in **Table 11.24** of this chapter. Some larger Heavy Goods Vehicle (HGV) loads may be required, these will be routed via the west which avoids the low bridge directly to the east. All other vehicles anticipated to be no larger than those already accessing the Site.
Planning and Environment Decisions Wales	The Environmental Statement should include details of the construction of the proposed access, including any vegetation clearance work required.	Access to the Proposed Development will be achieved via the existing access, details of which are included in this assessment pertinent to junction re-design. No vegetation clearance is anticipated for the amended access junction.
	It should be clear if any element of the temporary construction area is to stay during operation.	Details of the temporary construction area are included in this assessment.

Scope of the assessment

11.3.2 The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Volume 2, Chapter 4: Approach to EIA**.

11.3.3 This section provides an update to the scope of the assessment and summarises the evidence base for scoping out matters following further iterative assessment.

Receptors/matters scoped out of further assessment

11.3.4 **Table 11.2** presents the receptors/matters that are scoped out of further assessment, together with appropriate justification. No changes have occurred since EIA scoping.

Table 11.2 Receptor/matters scoped out of further assessment

Receptor/matter	Phase	Justification	Change since EIA Scoping?
All	Operation	The Site is already an established industrial facility. Once operational, the effect on the local road system will be minimal. Access will be required from time to time for routine maintenance, and less frequently for major maintenance and upgrades. Therefore, it is not expected that the changes in traffic on the existing network will change by more than 10% for HGVs or 30% for all vehicle movements, these being defining thresholds for environmental effects on the local transport network.	No. Planning and Environment Decisions Wales Scoping Direction agreed that this matter should be scoped out of further assessment.
All	Decommissioning	The decommissioning phase of the Proposed Development would create a low volume of traffic. It is considered that the traffic associated with decommissioning would be much lower than that of the construction of the Proposed Development, taking into account the likely decommissioning activities and associated vehicles movements. Therefore, decommissioning has been scoped out of this assessment as the construction phase of the Proposed Development presents a higher 'worst-case' traffic volume for assessment.	Yes. Planning and Environment Decisions Wales Scoping Direction did not address this matter.

Receptors/matters scoped into further assessment

11.3.5 **Table 11.3** presents the receptors/matters that are scoped into further assessment, together with appropriate justification. Where a change has occurred since EIA scoping, this is clearly stated and justified.

Table 11.3 Receptor/matters scoped into further assessment

Receptor/matter	Phase	Justification	Change since EIA Scoping?
A5118	Construction	During the construction phase, traffic will be generated by a range of activities including: • Construction workers arriving and leaving Site areas; • Supply of construction materials and plant associated with the Site establishment and main construction works; • Movement of plant; • Removal of soil resources, spoil or waste; and • Service vehicles and visitors. This phase of works has been scoped in to enable consideration of impacts on receptors within the Study Area against the Institute of Environmental Management and Assessment (IEMA) (2023) Guidelines: Environmental Assessment of Traffic and Movement[10].	No. The Planning and Environment Decisions Wales Scoping Direction agreed that this receptor should be scoped into further assessment.
A550	Construction		No. The Planning and Environment Decisions Wales Scoping Direction agreed that this receptor should be scoped into further assessment.
A541	Construction		Yes. Abnormal Load requirements and Large Goods Vehicle (LGV) worker travel routes determined input required on this assessment link.
A55 – North Wales Expressway	Construction		No. The Planning and Environment Decisions

[10] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

Receptor/matter	Phase	Justification	Change since EIA Scoping?
			Wales Scoping Direction agreed that this receptor should be scoped into further assessment.
A494	Construction		Yes. Abnormal Load requirements and LGV worker travel routes determined input required on this assessment link.
Residential properties	Construction		No. The Planning and Environment Decisions Wales Scoping Direction agreed that this receptor should be scoped into further assessment.

11.4 Existing environment

The local highway network

11.4.1 The Site has an existing priority access junction onto the A5118 at the north of the Site. The A5118 is subject to a 40-mph speed limit at the Site access.

11.4.2 The access junction has a wide bellmouth and there is a deceleration taper for westbound traffic turning into the site access. There is no right-turning refuge for vehicles turning into the Site from the eastbound carriageway.

Accident analysis

11.4.3 A review of the most recent five-year period available at the time of writing has been undertaken using data available from the Department for Transport (DfT) STATS19 dataset. This covers the Study Area across 2018-2022. A total of 37 accidents were recorded across the Study Area, two fatal, 11 serious and 24 slight. Of the fatal

accidents, on the A494 the accidents in 2022 involved a pedestrian, the other involved an LGV vehicle driver. These are not considered to be a cluster nor related in nature.

11.4.4 Further detail of the recorded accidents is provided within the Transport Statement (**Volume 4, Technical Appendix 11.1**).

11.4.5 Overall, the data does not indicate a discernible trend in the cause of accidents associated with the road layout and there were no specific accident clusters across the Study Area, aside for a higher volume of accidents at the A55 roundabouts where an increased quantity of vehicles leads to a higher number of accidents. No accidents were recorded at the Site access across the most recent period reviewed.

Extent of the Study Area

11.4.6 Following EIA scoping, the areas of the local and strategic road network that have the potential to experience effects associated with the Proposed Development have been identified as encompassing the following links. These links have been allocated as east or west, demarcating the two routes between the A55 and the Proposed Development:

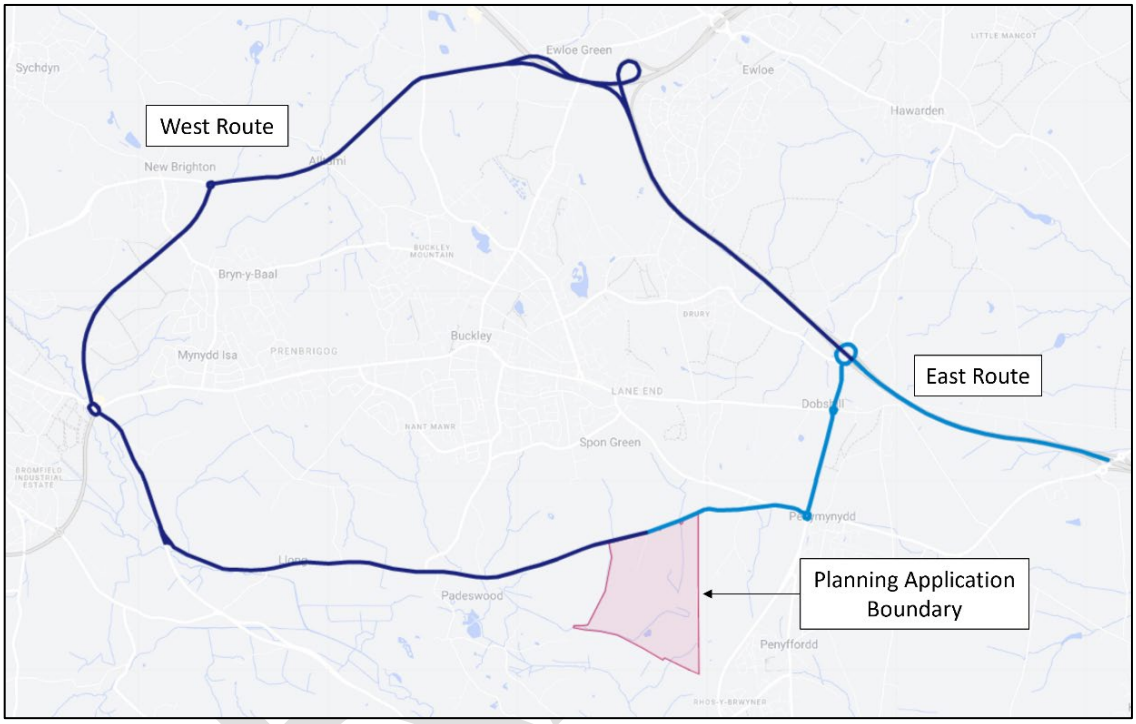
- A5118 (All routes);
- A550 (East route);
- A541 (West route);
- A494 (West route); and
- A55 (All routes).

11.4.7 These links will be considered in respect to baseline traffic and future year impact assessments with the AM/PM peak impacts of the key junctions on these routes have been considered in the Transport Statement (**Volume 4, Technical Appendix 11.1**).

11.4.8 This Study Area has been agreed through scoping discussions with Welsh Government (Transport) and Flintshire County Council as the Local Highway Authority.

11.4.9 The Study Area is illustrated in relation to the Site boundary in **Figure 11.1**.

Figure 11.1 Study Area (*Source: Google My Maps, 2023*)



11.5 Approach and methodology

Applicable guidance

11.5.1 The following guidance documents have been used during the preparation of this chapter:

- Guidelines: Environmental Assessment of Traffic and Movement (IEMA, 2023);[11]
- Overarching Principles on Travel Plans, Transport Assessments and Statements (DfT, 2014)[12]; and
- Guidance on Transport Assessments (DfT, 2007).[13]

[11] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

[12] https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements

[13] https://www.nottinghamshire.gov.uk/media/3657603/appendixcdftguidanceontransportassessments.pdf

Data sources to inform the EIA baseline characterisation

11.5.2 Available at the time of assessment, the following data sources have been used for this assessment:

- Department for Transport: Road accidents and safety statistics[14] (2017-2021);
- Department for Transport Traffic Statistics: Manual Count Points[15] (2022) – most recent available; and
- 2023 traffic survey data for A5118 as outlined below.

Surveys to inform the EIA baseline characterisation

11.5.3 The following surveys were undertaken during June 2023 and have been used for this assessment:

- Automatic Traffic Counts (ATCs) – two located on A5118; and
- Manual Classified Counts (MCCs) – five located at key junctions across the Study Area.

Assessment methodology

11.5.4 This section outlines the technical methods used and guidelines applied in the assessments to determine the anticipated increases in traffic (over and above the baseline conditions and cumulative developments) which are likely to occur as a result of the Proposed Development, and how significant any effects of associated traffic could be.

11.5.5 The methodology applied to the Proposed Development assessment follows current industry practice by assessing the potential impacts on the hierarchy of transport modes, particularly considering sensitive receptor geographical locations (as outlined in the 2023 IEMA guidance[16]): pedestrians; cyclists (non-motorised users, NMU); public transport users; and vehicle drivers and passengers. In order to consider the potential impacts, relevant guidance documents for environmental assessments have been applied.

Guidelines for assessment

11.5.6 The following section outlines the steps taken in this assessment to establish the effects on road users due to traffic associated with the construction of the Proposed Development:

- Assessment of the surrounding road network to determine its suitability to accommodate the anticipated volume of construction traffic i.e. LGVs and HGVs;
- Future traffic increases associated with the construction of the Proposed Development have been measured against baseline flows and the national Trip End Model Presentation Programme (TEMPro) traffic growth factors applied to

[14] https://www.gov.uk/government/collections/road-accidents-and-safety-statistics

[15] https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints

[16] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

baseline traffic flows from Department for Transport (DfT) traffic count point data; and

- Assessment of the increase in traffic compared to baseline traffic flows for the opening year of construction (assumed to be 2025) as Scenario 1 (HGV peak) and Scenario 2 (LGV peak) of 2026. The approach for this has been to define the level of traffic anticipated to access the Proposed Development during its construction phase utilising information provided by the client project team and distributed in line with the anticipated construction programme.

11.5.7 A critical feature of an environmental assessment is to determine whether a given impact could be significant or not. The IEMA guidelines[17] suggest two rules to be considered when assessing the impact of development traffic on a highway link:

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
- Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more.

11.5.8 At a basic level, given that the day-to-day variation of traffic on a road is frequently at least plus or minus 10%, the IEMA guidelines consider that projected changes in traffic flows of less than 10% create no discernible environmental impact, hence the second threshold as set out in Rule 2.

11.5.9 Based on the IEMA guidance, the following factors have been identified as being the potential environmental effects likely to arise from changes in traffic movements. Therefore, these are considered in the assessment which may arise from changes in traffic flows resulting from the Proposed Development:

- Road vehicle driver and passenger delay – Traffic delays impacting non-development traffic can occur at points on the road network surrounding a development site including: Site entrance, highways passing the Site, key intersections along highways and side roads where availability of gaps in traffic to avoid delay are reduced;
- Severance of communities – The perceived division that can occur within a community when it becomes separated by transport infrastructure (e.g. roads) and increased flows on these roads. The term is used to describe a complex series of factors that separate people from places and other people;
- Non-motorised user delay (NMU) – Changes in volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. This is also dependent on existing level of activity, visibility and conditions;
- Non-motorised amenity – Defined as the relative pleasantness of a journey, and is considered to be affect by traffic flow, traffic composition and pavement width/separation from traffic;

[17] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

- Fear and intimidation on and by road users – Considers the impact on road users as a result of increased vehicular traffic along a link, considering sensitivity and other parameters. This assessment also gives regard to other modes of travel including: horses, cycles, mobility scooters, e-scooters and e-cycles, if appropriate;
- Road user and pedestrian safety – Consists an approximation of the potential for road safety impacts through the consideration of collision rates (slight, serious and fatal). Collision clusters are identified by a detailed review of the baseline characteristics to determine the road safety sensitivity of discrete areas of the highway network; and
- Hazardous/large loads – Some developments may involve the transportation of hazardous/large loads by road. Such movements may involve specialist loads that might be involved in the construction phase of the development (e.g. pre-fabricated components).

11.5.10 The significance of likely effects on these receptors has been determined by considering the sensitivity of receptors to change, taking account of the specific issues relating to the Study Area, and then the magnitude of the change.

Sensitivity criteria

11.5.11 The following criteria have been used to evaluate the magnitude of identified adverse effects that may result from the Proposed Development. A summary of the general level of sensitivity is also provided and will be assessed in line with the IEMA guidelines within this chapter:

Table 11.4 Assessment criteria

Category	Negligible	Low	Medium	High	Very High
Road vehicle driver and passenger delay	Road Network not affected	Very limited amount of delay experienced (subjective assessment)	Road Network not experiencing congestion at peak times	Road Network experiencing congestion at peak times	Road Network experiencing congestion at all times
Severance of communities	No presence of existing communities severed by road	Very limited amount of community presence (subjective assessment)	Presence of existing communities with a moderate level of existing severance (subjective assessment)	Presence of communities with existing severance (subjective assessment)	Presence of communities with existing severance (subjective assessment)

Category	Negligible	Low	Medium	High	Very High
Non-motorised amenity	No presence of existing non-motorised infrastructure severed by road	Little to no presence of existing non-motorised infrastructure severed by road	Presence of existing non-motorised infrastructure with a moderate level of existing severance (subjective assessment)	Presence of communities with existing severance (subjective assessment)	Presence of communities with existing severance (subjective assessment)
Fear and intimidation on and by road users	No increase of average daily traffic of HGVs/All Vehicles (All Veh) at 0-20mph	No to low increase of average daily traffic of HGVs/All Vehicles at 0-20mph	Moderate increase of average daily traffic of HGVs/All Vehicles at 20-30mph	Significant increase of average daily traffic of HGVs/All Vehicles at 30-40mph+	Significant increase of average daily traffic of HGVs/All Vehicles at 40mph+
Road user and pedestrian safety	High sensitivity receptor				
Hazardous/large loads	No hazardous or dangerous loads on the road network	No to few hazardous or dangerous loads on the road network	Some hazardous or dangerous loads on the road network. Loads are generally permitted on UK roads	Abnormal and oversized loads to use road network	Abnormal and oversized loads to use road network in high numbers (subjective assessment) and on sensitive links

11.5.12 The sensitivity of the assessed links within this chapter has been outlined later in this report.

Magnitude of impact

11.5.13 The magnitude of impact has been considered by establishing the scope of the receptors that may be affected by the Proposed Development and quantifying these effects utilising IEMA Guidelines. The magnitude of impact or change has been considered according to the guidelines with the criteria defined in **Table 11.5**.

Table 11.5 Magnitude of impact criteria

Impact	Negligible	Low	Medium	High
Road Vehicle Driver and Passenger Delay	<10% Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		
Severance of Communities	<10% Increase in traffic	>10% and <30% Increase in traffic	30% - 60% Increase in traffic	>90% Increase in traffic
Non-Motorised Amenity	<10% Increase in traffic	>10% and <30% Increase in traffic	30% - 60% Increase in traffic	>90% Increase in traffic
Fear and Intimidation on and by road users	Negligible - No change in step changes.	Low - One step change in level, with • <400 veh increase in average 18hr AV two-way all vehicle flow; and/or • <500 HV increase in total 18hr HV flow	Medium - One step change in level, but with • >400 veh increase in average 18hr AV two-way all vehicle flow; and/or • >500 HV increase in total 18hr HV flow	High - Two step changes in level.
Road User and Pedestrian Safety	<10% Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		
Hazardous/Large Loads	<30% increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		

Significance of Effect

11.5.14 Sensitivity and magnitude of change as assessed under the detailed criteria, have then been considered collectively to determine the likely significance of effect. The collective assessment is an assessment undertaken by the assessor, based on the likely sensitivity of the receptor to the change (e.g., is receptor present which would be affected by the change), and then the magnitude of that change.

11.5.15 **Table 11.4** sets out receptor sensitivity criteria and **Table 11.5** sets out the levels of magnitude of impact criteria. The significance of effects matrix in **Table 11.6** is reached by combining the sensitivity of receptor against the magnitude of impact. The

significance of effects matrix is used as a guide to determine the level of effect. 'Major' and 'Moderate' effects are considered 'Significant' in terms of the relevant guidance.

11.5.16 Impacts are considered to be significant or not significant in environmental impact terms according to the matrix in **Table 11.6**. The shaded boxes indicate those combinations of sensitivity of a receptor plus magnitude of change' elements which are considered to be significant in effect(s).

Table 11.6 Significance of effects matrix

Magnitude of change	Sensitivity of receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

11.5.17 Further to the IEMA guidelines, the associated Transport Statement (**Volume 4, Technical Appendix 11.1**) outlines the relevant national and local planning and transport related documents, against which the Proposed Development has been assessed across network peak periods (AM and PM).

11.5.18 To assess the potential effects of the Proposed Development construction traffic in the local area, the IEMA guidelines have been considered (daily flow).

11.6 Baseline conditions

11.6.1 In order to establish a baseline to consider the possible effects of development traffic on the identified local and strategic road links, Department for Transport manual traffic count data from 2022 and Automatic Traffic Count (ATC) data collected in June 2023 has been assessed.

11.6.2 The national TEMPro traffic growth factors that have been applied to baseline traffic flows from Department for Transport traffic count points and ATC traffic flows are depicted in **Table 11.7**.

11.6.3 This enables the consideration of traffic growth to future years of 2025 and 2026, and therefore the assessment of traffic impacts associated with the Proposed Development can be completed against the anticipated construction years as the most robust scenarios.

11.6.4 No assessments relating to the operational or decommissioning phase have been considered in this chapter as set out at **Section 11.1**.

Table 11.7 TEMPro growth factors

Assessment	Years Factored	Road Type	Growth Factor
Baseline DfT data to peak HGV construction year	2022-2025	Principal	1.0332
Baseline DfT data to peak LGV construction year	2022-2026	Principal	1.0400
Baseline traffic survey data to peak HGV construction year	2023-2025	Principal	1.0150
Baseline traffic survey data to peak LGV construction year	2023-2026	Principal	1.0217

11.6.5 As indicated in **Table 11.8**, the baseline HGV traffic equates to a maximum of approximately 8-11% of all traffic along the A5118. Along the A550, the HGV percentage was found to be between 4-5%, on the A55 Expressway between 5-7% and on the A541 and A494 between 5-6%. It is against these baseline traffic flows that the Proposed Development impact will be considered as the 'worst-case' traffic assessment associated with the proposals in respect to potential environmental impacts.

Table 11.8 Future baseline traffic flows

ID	Location	2023 Baseline		2025 Future Year		2026 Future Year		% HGV
		All Veh	HGVs	All Veh	HGVs	All Veh	HGVs	
ATC	A5118: West of site access	6666	552	6766	560	6811	564	8.3%
ATC	A5118: East of site access	6495	687	6592	697	6636	702	10.6 %
20662	A5118: East of site access	6666	553	5810	571	5848	575	9.8%
20620	A550: North of Penymynydd	6495	702	13326	725	13414	730	5.4%
40621	A550: South of A55	6666	579	15982	598	16087	602	3.7%
527	A55 (East)	6495	2151	36876	2222	37119	2237	6.0%

ID	Location	2023 Baseline		2025 Future Year		2026 Future Year		% HGV
		All Veh	HGVs	All Veh	HGVs	All Veh	HGVs	
50532	A55 (West)	6666	2037	43176	2105	43461	2118	4.9%
600	A541: South of A494	6495	445	9369	460	9431	463	4.9%
40572	A494: North of A541	6666	512	9271	529	9332	532	5.7%
99779	A494: East of A5119	6495	982	17593	1015	17709	1021	5.8%

11.7 Construction phase trip generation and distribution

11.7.1 **Table 11.9** presents the anticipated number of two-way estimated trips likely as a result of the construction phase associated with the Proposed Development. Both of the peak scenarios (HGV and LGV peaks) have been included alongside the average HGVs and LGVs expected across the whole construction programme (37 months).

Table 11.9 Anticipated construction traffic

Daily Trips (Two-way)			
Construction Phase	**HGV**	**LGV**	**All Veh**
4-month HGV peak (earthworks, civils, access track and parking construction)	216	480	696
7-month LGV peak average (intensive site works)	59	372	431

11.7.2 It is anticipated that the construction phase of the Proposed Development will be undertaken over a 37-month period and two distinct peak phases have been identified: Scenario 1 (HGV peak) and Scenario 2 (LGV peak) respectively.

11.7.3 To ensure a robust assessment, two scenarios are assessed, one covering the peak HGV period and the other covering the peak LGV period. The peak HGV period covers a 4-month period (anticipated to be April and July 2025) of site setup works which includes earthworks, civils, access track construction and parking area construction. The

peak LGV period covers a seven-month period expected later in the programme (approximately August 2026 – March 2027).

11.7.4 As a robust analysis, it has been assumed that there will be on average 310 daily construction workers and that 60% of construction workers will travel to Site via car with the remainder of workers could car share, use public transport and/or travel via active travel modes (e.g. walking or cycling). Travel to the Site for LGVs and HGVs during the construction period would be governed by a Construction Traffic Management Plan (CTMP) which will be developed post-consent. This document will ensure that HGV routeing is suitable, avoiding low-bridges and pinch points where applicable and that all construction traffic would seek to avoid the AM and PM peak periods, where practicable.

11.7.5 As outlined in **Table 11.9**, whilst the LGV peak phase of the construction process is likely to generate the highest volume of total traffic, the HGV peak phase anticipates a higher volume of HGV traffic, with a lower sensitivity threshold, and as such, both scenarios have been applied to the impact assessment to present a robust analysis of effects associated with the proposals.

Construction phase traffic impacts

11.7.6 During the construction phase of the Proposed Development, transport impacts are likely to arise from an increase in traffic resulting from deliveries of construction materials and movement of workers. Although there is an intention to consolidate deliveries where practicable and maximise the use of sustainable modes for workers and encourage car sharing, there will inevitably be road-based movements. Such movements may impact the local highway network and its users.

11.7.7 It is understood that during Scenario 1, the HGV peak period of construction will generate 480 two-way LGV movements per day for staff and a maximum of 216 two-way HGV movements per day as a worst case during this period. During Scenario 2, the LGV peak period of construction, is expected to generate an average of 372 two-way LGV movements per day for staff and 59 two-way HGV movements per day. Abnormal Indivisible Load (large loads) are required however deliveries are anticipated to be infrequent and unlikely to significantly impact the local highway network and its users where appropriate management, routing and timings applied to minimise impact or disruption. Details of appropriate vehicle tracking has been provided within the planning drawing pack submitted as part of the DNS application.

11.7.8 As noted, HGV and LGV movements associated with the construction of the Proposed Development will be managed to avoid the typical peak ‘network’ periods where practicable. For both the HGV peak and LGV peak, 10% of construction traffic is assumed to travel during either peak period as an additional robust assessment sensitivity parameter.

Construction traffic distribution

11.7.9 Distribution of construction traffic has been applied as follows, based on the anticipated approach to the Site as construction materials and workers will originate from both the Chester and Deeside areas:

- 50% of all traffic will travel to the Site from the east on the A55 North Wales Expressway (from Chester); and

- 50% of all traffic will travel to the Site from the west on the A55 North Wales Expressway (from Deeside).

11.7.10 From the A55 North Wales Expressway, construction traffic has been applied as follows, with all LGVs and most HGVs taking the direct route to the Site and a small proportion of HGVs taking an alternative route to avoid the 14'6" height limit on the A5118 to the east of the Site:

- 100% of LGVs will travel to the Site from the east (via the A550, A5118);
- 80% of HGVs will travel to the Site from the east (via the A550, A5118); and
- 20% of HGVs (anticipated % of HGVs over 14'-6" height limit on eastern route) will travel to the Site from the west (via the A494, A541, A5118).

11.8 Operational phase trip generation

11.8.1 To estimate the potential number of trips that may be generated by the Proposed Development, a review of client provided data was conducted. The following assumptions and considerations have been applied to the data provided by the Applicant in order to robustly estimate operational traffic volumes for employees (i.e. LGVs):

- The Site will operate 24 hours a day, 7 days a week;
- 54 new members of staff will be employed at the Carbon Capture Plant;
    - 38 shift workers and 16 drivers; and
- 79% of shift workers are assumed to travel to site by car, as per existing staff modal share.

11.8.2 The Proposed Development will require 24/7 operation and an additional 54 employees on-site, including 38 shift workers and 16 drivers. However, the operational process of the facility will not require a high intensity of staff on-site at any one time and relies on shift work (with changeovers expected across each 24 hour period). As such, employee arrivals and departures are not expected to be significant in terms of network impact, with most movements anticipated outside of the typical network peaks.

11.8.3 It is envisaged that during the operation of the Site, the Proposed Development will generate a maximum additional 92 two-way staff movements a day. This results in a small increase in traffic flows when compared to the existing operation of the cement works on-site which currently generates approximately 488 two-way daily HGV movements and 276 two-way daily LGV movements associated with staff journeys.

11.8.4 As a result of the anticipated shift patterns, which will be split across 24 hour periods according to the end operator, trips will continue to avoid peak network periods. The new traffic movements associated with the operational phase of the Proposed Development are substantially lower than the total vehicle movements during both peaks of construction (Scenario 1 and 2), and as such, it is considered unlikely that there will be a significant impact on the local highway network as a result of the operation of the Proposed Development.

11.8.5 Supporting the application and in the interest of developing a sustainable site where staff are encouraged to travel by public transport and active travel, a Travel Plan has also

been developed (**Volume 4, Technical Appendix 11.2**) and will be submitted as part of the planning submission alongside the supporting Transport Statement (**Volume 4, Technical Appendix 11.1**).

11.9 Other committed development

11.9.1 An assessment of the cumulative effect on the Study Area of all relevant developments as provided by PEDW and Flintshire County Council planning permissions register was undertaken in **Volume 2, Chapter 15: Cumulative Effects**. The construction phasing and any available data at the time of writing was considered.

11.10 Traffic assessments

11.10.1 Using the trip generation presented in **Table 11.8**, traffic impact assessments have been produced for both construction scenarios as detailed previously.

Scenario 1: Peak HGV construction phase

11.10.2 For Scenario 1, the projected construction traffic associated with the Proposed Development for the 7-month HGV peak period has been distributed on the network as shown below in **Table 11.10**. This information is presented as a two-way daily flow which will occur within 2025 in the early stages of the construction programme.

Table 11.10 Scenario 1: HGV peak construction traffic impact distribution

DfT ID	Link	Distribution		All Veh	HGV	% HGV
		LGV	HGV			
ATC 1	A5118: West of site access	0%	20%	43	43	100.0%
ATC 2	A5118: East of site access	100%	80%	653	173	26.5%
20620	A550: North of Penymynydd	100%	80%	653	173	26.5%
40621	A550: South of A55	100%	80%	653	173	26.5%
527	Expressway (East towards Chester)	50%	50%	348	108	31.0%
50532	Expressway (West towards Deeside)	50%	50%	348	108	31.0%

DfT ID	Link	Distribution		All Veh	HGV	% HGV
		LGV	HGV			
600	A541: South of A494	0%	20%	43	43	100.0%
40572	A494: North of A541	0%	20%	43	43	100.0%
99779	A494: East of A5119	0%	20%	43	43	100.0%

11.10.3 The increase in two-way traffic flows in comparison to the baseline across the proposed HGV and LGV routes associated with the Proposed Development for Scenario 1 (peak HGV) is summarised in **Table 11.11**. For All Vehicles (all Veh) and HGVs the anticipated raw vehicle change is illustrated in the '% Change' column:

Table 11.11 Scenario 1: HGV peak construction impact assessment

Location	2025 Baseline Traffic			2025 Baseline Traffic + Development Traffic			% Change	
	All Veh	HGV	% HGV	All Veh	HGV	% HGV	All Veh	HGV
A5118 (West) ATC	6766	560	8.3%	6809	603	8.9%	**0.6%**	**7.7%**
A5118 (East) ATC	6592	697	10.6%	7245	870	12.0%	**9.9%**	**24.8%**
A5118: East of site access	5810	571	9.8%	6462	744	11.5%	**11.2%**	**30.2%**
A550: North of Penymynydd	13326	725	5.4%	13979	898	6.4%	**4.9%**	**23.8%**
A550: South of A55	15982	598	3.7%	16634	771	4.6%	**4.1%**	**28.9%**
A55 (East)	36876	2222	6.0%	37224	2330	6.3%	**0.9%**	**4.9%**
A55 (West)	43176	2105	4.9%	43524	2213	5.1%	**0.8%**	**5.1%**
A541: South of A494	9369	460	4.9%	9412	503	5.3%	**0.5%**	**9.4%**

Location	2025 Baseline Traffic			2025 Baseline Traffic + Development Traffic			% Change	
	All Veh	HGV	% HGV	All Veh	HGV	% HGV	All Veh	HGV
A494: North of A541	9271	529	5.7%	9314	572	6.1%	**0.5%**	**8.2%**

11.10.4 The IEMA guidelines[18] recognise that the day-to-day variation of traffic on any given road is frequently plus or minus 10%. As previously discussed, it should therefore be assumed that a projected change in traffic of less than 10% creates no detrimental environmental impact. A 30% change in traffic flow represents a reasonable threshold for assessing traffic flow impacts on road links which are considered to be 'sensitive'. These parameters are addressed in this chapter.

11.10.5 Considering the Scenario 1 HGV peak construction impact assessment, it is considered that the Proposed Development traffic during this period does not require further assessment (outlined in **Section 11.11**).

Scenario 2: Peak LGV construction phase

11.10.6 For Scenario 2, the projected construction traffic associated with the Proposed Development for the 7-month LGV peak period has been distributed on the network, illustrated in **Table 11.12**. This information is presented as a two-way daily flow which will occur towards the end of 2026, at a later stage in the construction programme than the HGV peak.

Table 11.12 Scenario 2: LGV peak construction traffic impact distribution

DfT ID	Link	Distribution		All Veh	HGV	% HGV
		LGV	HGV			
ATC 1	A5118: West of site access	0%	20%	12	12	100.0%
ATC 2	A5118: East of site access	100%	80%	419	47	11.3%
20620	A550: North of Penymynydd	100%	80%	419	47	11.3%
40621	A550: South of A55	100%	80%	419	47	11.3%

[18] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

DfT ID	Link	Distribution		All Veh	HGV	% HGV
		LGV	HGV			
527	Expressway (East towards Chester)	50%	50%	216	30	13.7%
50532	Expressway (West towards Deeside)	50%	50%	216	30	13.7%
600	A541: South of A494	0%	20%	12	12	100.0%
40572	A494: North of A541	0%	20%	12	12	100.0%
99779	A494: East of A5119	0%	20%	12	12	100.0%

11.10.7 In order to assess a robust scenario, the increase in traffic flows in comparison to the baseline across the proposed HGV and LGV routes associated with the Proposed Development for Scenario 2 (peak LGV) is summarised in **Table 11.13**.

Table 11.13 Scenario 2: LGV peak construction impact assessment

Location	2026 Baseline Traffic			2026 Baseline Traffic + Development Traffic			% Change	
	All Veh	HGV	% HGV	All Veh	HGV	% HGV	All Veh	HGV
A5118 (West) ATC	6811	564	8.3%	6822	576	8.4%	**0.0%**	**2.1%**
A5118 (East) ATC	6636	702	10.6%	7055	749	10.6%	**5.6%**	**6.7%**
A5118: East of site access	5848	575	9.8%	6267	622	9.9%	**0.0%**	**0.0%**
A550: North of Penymynydd	13414	730	5.4%	13833	777	5.6%	**2.8%**	**6.5%**
A550: South of A55	16087	602	3.7%	16506	649	3.9%	**2.3%**	**7.8%**
A55 (East)	37119	2237	6.0%	37334	2267	6.1%	**1.0%**	**2.1%**
A55 (West)	43461	2118	4.9%	43676	2148	4.9%	**0.4%**	**1.4%**

Location	2026 Baseline Traffic			2026 Baseline Traffic + Development Traffic			% Change	
	All Veh	HGV	% HGV	All Veh	HGV	% HGV	All Veh	HGV
A541: South of A494	9431	463	4.9%	9443	475	5.0%	**2.0%**	**6.4%**
A494: North of A541	9332	532	5.7%	9344	544	5.8%	**0.0%**	**2.2%**

11.10.8 Considering Scenario 2, the Proposed Development traffic impact during this period is not significant. The estimated impacts are below the IEMA guidance[19] significance assessment criteria triggers (Rule 1 and Rule 2).

11.11 Assessment of likely significant effects, additional mitigation and residual effects

Study Area sensitivity

11.11.1 The Study Area has been assessed to establish the sensitivity of the highway links that will be used by traffic accessing and egressing the Proposed Development. The links are classified as having 'low', 'medium', or 'high' levels of sensitivity depending on the nature of the roads and receptors present on these links.

11.11.2 The highway links within the Study Area have been allocated the following sensitivity ratings, as per the IEMA guidance (refer to **Table 11.14**):

Table 11.14 Highway Link Sensitivity

Highway Link	Receptor Sensitivity					
	Road vehicle driver and passenger delay	Severance of communities	Non-motorised amenity	Fear and intimidation on and by road users	Road user and pedestrian safety	Hazardous /large loads
A5118	Medium	Low	Low	Medium	High	High
A550		Medium – screening in situ	Low	Medium – screening in situ	High	Low
A55		Low	Low	Medium	High	High

[19] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

Highway Link	Receptor Sensitivity					
	Road vehicle driver and passenger delay	Severance of communities	Non-motorised amenity	Fear and intimidation on and by road users	Road user and pedestrian safety	Hazardous /large loads
A541		Low	Low	Low	High	High
A594		Low	Low	Low	High	High

Scenario 1 – Construction phase

Severance

11.11.3 IEMA Guidance states that both NMU delay and severance are closely related effects and can be grouped together and have been as such in these assessments. Potential impacts during the construction phase of the development include those on:

- Road vehicle driver and passenger delay;
- Severance of local communities;
- Non-motorised amenity;
- Fear and intimidation on and by road users;
- Road user and pedestrian safety; and
- Hazardous/large loads.

11.11.4 A preliminary appraisal of severance as a consequence of the construction traffic generated by the Proposed Development has been undertaken.

11.11.5 The assessment indicates that the potential increase in construction traffic does not exceed the 'Rule 1' 30% threshold for impact on links which are not considered to be sensitive within the Study Area. All links are considered a maximum of Medium sensitivity, with the magnitude of impact Minor. As a result, no significant impact is anticipated associated with severance.

11.11.6 The peak impact from construction traffic of the Proposed Development is presented in **Table 11.13**. The peak HGV flows (Scenario 1) have been used for this assessment as these present a worst-case scenario when compared to the peak LGV figures (Scenario 2) as the percentage increase in HGVs is higher than that of all vehicles across both construction periods.

11.11.7 Based on the changes in two-way traffic flow, the significance of effects of severance on the links are presented in **Table 11.15** for the peak HGV construction year of 2025 (Scenario 1).

Table 11.15 Predicted effect on severance

Highway link	Vehicle	Baseline Flow 2025	Construction flow	% Increase	Severance of communities sensitivity	Magnitude	Significance
A5118 (West) ATC	All Veh	6766	43	1%	Low	Negligible	Negligible
	HGV	560	43	8%			
A5118 (East) ATC	All Veh	5810	653	10%	Medium	Low	Minor
	HGV	571	173	25%			
A550: North of Penymynydd	All Veh	13326	653	11%	Low	Low	Negligible
	HGV	725	173	30%			
A550: South of A55	All Veh	15982	653	5%	Low	Negligible	Negligible
	HGV	598	173	24%			
A55 (East)	All Veh	36876	348	4%	Low	Negligible	Negligible
	HGV	2222	108	29%			
A55 (West)	All Veh	43176	348	1%	Low	Negligible	Negligible
	HGV	2105	108	5%			
A541: South of A494	All Veh	9369	43	0%	Low	Negligible	Negligible
	HGV	460	43	9%			
A494: North of A541	All Veh	9271	43	0%	Low	Negligible	Negligible
	HGV	529	43	8%			
A494: East of A5119	All Veh	17593	43	0%	Low	Negligible	Negligible
	HGV	1015	43	4%			

11.11.8 Based on the assessment criteria, the level of impact on severance is expected to be **Minor/Negligible** for all associated construction traffic, which is **not significant in EIA terms**.

NMU delay

11.11.9 Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility and general physical conditions of the Proposed Development.

11.11.10 Sensitive receptors in the form of residential land uses and settlements are located far from the Proposed Development, with the nearest notable settlements of Buckley and Penymynydd located outside of the Study Area reducing the opportunity for impact on non-motorised user amenity (such as cycle lanes or footpaths).

11.11.11 Pedestrian footways are provided on some local roads to one side as a minimum. However, it is unlikely that construction traffic associated with the development will impact pedestrian mobility, as predicted total traffic percentage increase is less than the 10% threshold provided in IEMA Guidance.

11.11.12 No PRoWs or National Trails are located on or intersect the local highway network and consequently, the network Study Area. The impact of construction traffic associated with the Proposed Development on non-motorised user delay is concluded to be '**not significant'** in this assessment, as the predicted total traffic percentage increase is significantly less than the 10% threshold provided in IEMA guidance.

Road vehicle driver and passenger delay

11.11.13 IEMA guidance[20] states that traffic delays to non-development traffic can occur at several points on the network surrounding a development site including:

- At the Site entrance where there will be additional turning movements;
- On the highways passing the Site where there is likely to be additional traffic and the flow might be affected by additional parked cars;
- At other key intersections along the highway which might be affected by increased traffic; and
- At side roads where the ability to find gaps in the traffic may be reduced, thereby lengthening delays.

[20] https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement

11.11.14 IEMA guidance also states that these delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.

11.11.15 IEMA guidance thresholds for measuring magnitude of impact are shared with severance and fear and intimidation and are therefore relevant to road vehicle driver and passenger delay.

11.11.16 The AM and PM typical network peaks are 08:00 to 09:00 and 17:00 to 18:00 respectively. Construction vehicle movements are anticipated throughout the working day and alongside LGV (worker) vehicle movements, these will be managed to avoid these typical network peaks, where practicable. The anticipated worst-case flows during the AM and PM peaks have been used for this assessment for robust assessment on the primary access link.

11.11.17 The existing peak hour flows and existing flows with construction traffic for the A5118 (east of the site access) are shown in **Table 11.16**.

11.11.18 This link has been assessed in detail as it is the primary vehicle access route to/from the Proposed Development to the local highway network. Due to the low level of anticipated % increase in All Vehicle traffic associated with the Proposed Development, that the impacts are not significant across the wider Study Area and therefore, have not been considered for this category.

11.11.19 The peak LGV flows (Scenario 2) have been used for this assessment as the overall traffic flow is higher with the peak LGV construction year of 2026.

Table 11.16 Predicted effect on Road Vehicle Driver and Passenger Delay

Link	Peak	2026 Weekday Baseline Flow	Predicted Construction Traffic Flow	Base Plus Construction Traffic Flow	% Increase	Road Vehicle Driver and Passenger Delay Sensitivity	Magnitude	Significance
A5118	AM	482	36	518	7.5	Low	Negligible	Negligible
	PM	584	36	620	6.2			Negligible

11.11.20 Based on the assessment criteria, the level of impact on road vehicle driver and passenger delay along the A5118 is expected to be **negligible,** which is **not significant in EIA terms**. Highway link A5118 has been assessed against the IEMA category in this instance due to the provision of all construction traffic utilising this link as part of the

journey, thereby indicating the most robust assessment scenario of delay impacts during typical network AM and PM peak periods.

Non-motorised user amenity

11.11.21 IEMA Guidance states that pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic. This definition is considered to represent a broader category, incorporating the impact of noise and pollution as a result of construction traffic and development works.

11.11.22 In regard to the impact of construction traffic associated with the Proposed Development, sensitive receptors related to non-motorised user amenity could include pedestrian footpaths, core paths, cycleways and residential land uses wherein non-motorised movements would be more frequent. In this regard, intersecting core paths have been reviewed, to which no intersections were identified, with the exception of pedestrian footpaths.

11.11.23 It is considered that in the most sensitive location from a local non-motorised user amenity perspective, is the A5118. It is anticipated that over the course of a 12-hour day, the maximum change in Scenario 1 hourly vehicle movements associated with the construction phases equates to 18 two-way HGVs and 40 LGV movements, equating to an estimated average of 5 two-way movements every 5 minutes. Therefore, the impact of the Proposed Development construction traffic is expected to be **negligible**, which is **not significant in EIA terms**.

Fear and intimidation on and by road users

11.11.24 IEMA guidance states that measuring the extent of fear and intimidation as a result of a Proposed Development, traffic is dependent on the following factors:

- The total volume of traffic;
- The heavy vehicle (HGV) composition;
- The speed these vehicles are passing; and
- The proximity of traffic to people – and/or the feeling of the inherent lack of protection created by factors such as a narrow pavement median or a narrow path

11.11.25 IEMA suggests defining the degree of hazard to pedestrians in 3 stages:

- **Stage 1:** Fear & Intimidation (F&I) Degree of Hazard - By calculating average (a) 18 hr total traffic flow, (b) 18 hr heavy vehicle flow and (c) average speed (mph). Each with suggested thresholds of traffic number flows and average vehicle speeds. These thresholds in-turn sort the assessment results into a 'degree of hazard' score of 0-30. This is calculated for baseline 2025 and 2026 (Scenario 1 and Scenario 2) traffic flows, and baseline + development traffic flows. (IEMA Guidance shown in **Table 11.17**).

Table 11.17: IEMA F&I Degree of Hazard Guidance

Stage 1: Fear and Intimidation Degree of Hazard			
Average traffic flow over 18-hour day – all vehicles/hour 2-way (a)	**Total 18-hour heavy vehicle flow (b)**	**Average vehicle speed (c)**	**Degree of hazard score**
+1800	+3000	>40	30
1200-1800	2000-3000	30-40	20
600-1200	1000-2000	20-30	10
<600	<1000	<20	0

- Levels of F&I – Levels of F&I are categorized as: 'Extreme', 'Great', 'Moderate' or 'Small' according to a total hazard score provided by combining the elements of Stage 1 - (a)+(b)+(c) demonstrated in **Table 11.18**.

Table 11.18 IEMA Level of F&I Guidance

Stage 2: Levels of Fear and Intimidation	
Level of fear and intimidation	Total hazard score (a) + (b) + (c)
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

- **Stage 2** - F&I Magnitude of Impact – The level of impact is then approximated with reference to the changes in the level of fear and intimidation from baseline conditions. Magnitude of impact is categorized according to 'change in step/traffic flows (AADT) from baseline conditions as:
    - 'high' (two step changes in level);
    - 'medium' (one step change in level with >400 vehicle increase in average 18hr all traffic flow and/or >500 increase in total 18hr HGV flow);
    - 'low' (one step change in level with <400 vehicle increase in average 18hr total vehicle flow and/or <500 HGV flow increase in total 18hr HGV flow); and
    - 'negligible' (no change in step changes).
- **Stage 3** of F&I IEMA guidance considering any step change in traffic flows is demonstrated in **Table 11.19**.

Table 11.19 IEMA F&I Magnitude of Impact

Stage 3: Fear and Intimidation Magnitude of Impact	
Magnitude of Impact	**Change in step/traffic flows (AADT) from baseline conditions**
High	Two step changes in level
Medium	**One step change in level, but with** >400 veh increase in average 18hr AV two-way all vehicle flow; and/or >500 HV increase in total 18hr HV flow
Low	**One step change in level, with** <400 veh increase in average 18hr AV two-way all vehicle flow; and/or <500 HV increase in total 18hr HV flow
Negligible	No change in step changes

11.11.26 This approach to assessment was applied to both Scenarios 1 and 2. In the absence of average vehicle speed data (as per criteria suggested in IEMA guidance), it has been assumed at this stage that all vehicles (including HGVs) will be travelling at the posted speed limit identified at each DfT count point location and based on the ATC 85% average 7-day speed at A5118 West and East of the Site access (ATC 1 & 2).

11.11.27 Application of the 85% speeds for surveyed points, and application of posted speed-limit travel speed for all vehicles, this is a robust analysis of potential impact on F & I (refer to **Table 11.20** and **Table 11.21**). Additionally, it should be noted that all traffic, including HGVs, may travel at lower speeds during a real construction phase, therefore, true level of impact on fear and intimidation is likely to be lower than identified in this assessment.

Stage 1

Scenario 1 – HGV peak assessment

11.11.28 As illustrated in **Table 11.20**, baseline average all-traffic flow 18hr/hour 2-way (a) is under <1000 across the majority of the Study Area, with the exception of on the A550 'Expressway', where flows are within the Degree of Hazard score of '30' at a maximum.

11.11.29 As such column '(a)' for baseline traffic has a degree of hazard score of '0 or 10' on each link. In column (b), total 18-hour heavy vehicle flows (HGVs) are similarly well below IEMAs lowest threshold of up to 1,000 and therefore, also provides a degree of hazard score of '0'. Lastly, an assumed average vehicle speed (based on posted speed limit) across the Study Area in column 'c' provides a degree of hazard score of '30' by being categorized within the maximum threshold of >40.

11.11.30 The degree of hazard score for each appropriate variable is outlined in brackets in **Table 11.20** and **Table 11.21**.

Table 11.20 F&I Baseline (Stage 1)

Fear and Intimidation Degree of Hazard (1) (Baseline Only)					
ID	Link	Average traffic flow over 18 hour-day – all vehicles/hour 2-way (a)	Total 18-hour heavy vehicle flow (b)	Average Vehicle Speed (mph) (c)	Degree of Hazard Score
ATC 1	A5118: West of site access	282 (0)	23 (0)	59 (30)	30
ATC 2	A5118: East of site access	275 (0)	29 (0)	45 (30)	30
20620	A550: North of Penymynydd	555 (0)	30 (0)	40 (20)	20
40621	A550: South of A55	666 (10)	25 (0)	40 (20)	30
527	Expressway (East towards Chester)	1536 (20)	93 (0)	70 (30)	50
50532	Expressway (West towards Deeside)	1799 (20)	88 (0)	70 (30)	50
600	A541: South of A494	390 (0)	19 (0)	40 (20)	20
40572	A494: North of A541	386 (0)	22 (0)	40 (20)	20
99779	A494: East of A5119	733 (10)	42 (0)	40 (20)	30

Table 11.21 F&I Baseline + Development Traffic (Stage 2)

Fear and Intimidation Degree of Hazard (1) (Baseline Only)					
ID	**Link**	**Average traffic flow over 18 hour-day – all vehicles/hour 2-way (a)**	**Total 18-hour heavy vehicle flow (b)**	**Average Vehicle Speed (mph) (c)**	**Degree of Hazard Score**
ATC 1	A5118: West of site access	284 (0)	25 (0)	59 (30)	30
ATC 2	A5118: East of site access	302 (0)	36 (0)	45 (30)	30
20620	A550: North of Penymynydd	582 (0)	37 (0)	40 (20)	20
40621	A550: South of A55	693 (10)	32 (0)	40 (20)	30
527	Expressway (East towards Chester)	1551 (20)	97 (0)	70 (30)	50
50532	Expressway (West towards Deeside)	1814 (30)	92 (0)	70 (30)	60
600	A541: South of A494	392 (0)	21 (0)	40 (20)	20
40572	A494: North of A541	388 (0)	24 (0)	40 (20)	20
99779	A494: East of A5119	735 (10)	44 (0)	40 (20)	30

11.11.31 As illustrated in **Table 11.21**, when development traffic is added to baseline flows, the baseline and development all traffic flow over 18hr/hour 2-way (a) remain under <600 threshold provided by IEMA guidance for the majority of links, with the exception of the A55 'Expressway', the A550 'South of A55' and the A484 East of A5119.

11.11.32 In column (b), total 18hr HGV traffic similarly does not exceed the <1000 lowest threshold specified at any location across the Study Area.

11.11.33 The assumed average vehicle speed (c) results in a Degree of Hazard score of 20 or 30, depending on the link in question.

Stage 2 Summary

Table 11.22 F&I Baseline + Development Traffic (Stage 2)

ID	Link	Stage 1			Stage 2	
		(a) Score	(b) Score	(c) Score	Total Hazard Score (a)+(b)+(c)	Level of F&I
ATC 1	A5118: West of site access	0	0	30	**30**	Moderate
ATC 2	A5118: East of site access	0	0	30	**30**	Moderate
20620	A550: North of Penymynydd	0	0	20	**20**	Small
40621	A550: South of A55	10	0	20	**30**	Moderate
527	Expressway (East towards Chester)	20	0	30	**50**	Great
50532	Expressway (West towards Deeside)	30	0	30	**60**	Great
600	A541: South of A494	0	0	20	**20**	Small
40572	A494: North of A541	0	0	20	**20**	Small
99779	A494: East of A5119	10	0	20	**30**	Moderate

11.11.34 When combined, (a+b+c) the Degree of Hazard scores from Baseline to Baseline+Development remains unchanged except for links A5550 South of A55; A55 Expressway and A494 East of A5119.

11.11.35 As noted in **Table 11.23**, the step change demonstrated when applying Proposed Development traffic for all links is '1'. As a result, and considering the Total Hazard Scores, anticipated All Vehicle and HGV traffic increases proposed, the Magnitude of Change is 'Low' and therefore has been assessed as **not significant** in EIA terms.

Stage 3 Summary

Table 11.23 F&I Baseline + Development Traffic (Stage 3)

ATC No.	Stage 2		Stage 3		
	Total Hazard Score (a)+(b)+(c)	Level of F&I	Vehicle Increase (All Veh) Avg 18hr	Vehicle Increase (HGV) Total 18hr	Magnitude of Impact
A5118: West of site access	30	Moderate	<400	<500	Low
A5118: East of site access	30	Moderate			Low
A550: North of Penymynydd	20	Small			Low
A550: South of A55	30	Moderate			Low
Expressway (East towards Chester)	50	Great			Low
Expressway (West towards Deeside)	60	Great			Low
A541: South of A494	20	Small			Low
A494: North of A541	20	Small			Low
A494: East of A5119	30	Moderate			Low

11.11.36 Therefore, this assessment has concluded that the pre-existing magnitude of F&I is unchanged significantly by the addition of traffic associated with the Proposed Development in Stage 1, and further changes demonstrated in Stages 2 and 3.

11.11.37 As Scenario 1 is representative of a 'worst-case' scenario, it should be noted that Scenario 2 (LGV peak) has not been represented in detail within this chapter, as the

anticipated traffic volumes are of a similar amount and as such yield the same result as that found for Scenario 1, a 'Low' Magnitude of Impact.

Road Safety

11.11.38 IEMA guidance suggests the analysis of collision clusters for the purpose of determining road safety sensitivity. In this assessment, collision clusters have been identified by a detailed review of baseline characteristics in order to determine the road safety sensitivity of roads within the Study Area (which in turn will be used by Proposed Development construction traffic). The collision cluster criterion is based on a defined number of personal injury accidents (PIAs) occurring between 2018 and 2022 (inclusive) over a 5-year period.

11.11.39 The IEMA guidelines defines road safety as a high sensitivity receptor with a magnitude of impact based on the volume of accidents along the routes used. An increase or decrease in accidents may result from changes in traffic flows and the composition of traffic on the local highway network.

11.11.40 The accidents recorded within the Study Area are set out in **Table 11.24**. A total of 37 accidents were recorded across the Study Area during the five-year period as previously outlined. For the purposes of the accident review, the Study Area has been split into the local highway network sections as outlined below.

11.11.41 This assessment has considered the following criteria:

- Number and severity of accidents;
- Common causation factors;
- Clustering (common location factor); and
- The number of new trips travelling through the link associated with the Proposed Development.

11.11.42 These sections are as follows:

- A - A5118: West of site access;
- B - A5118: East of site access;
- C - A550: North of Penymynydd;
- D - A550: South of A55;
- E - Expressway (East towards Chester);
- F - Expressway (West towards Deeside);
- G - A541: South of A494;
- H - A494: North of A541; and
- I - A494: East of A5119.

11.11.43 The number and severity of accidents recorded in the Study Area is provided in Table 11.24.

Table 11.24 Number and Severity of Accidents Summary

Section	Slight	Serious	Fatal
A	2	1	-
B	2	-	-
C	4	1	-
D	3	2	-
E	6	5	1
F	3	1	-
G	2	-	-
H	1	1	1
I	1	-	-

11.11.44 Deliveries of abnormal loads is expected to be delivered under escort. Other large components would also be moved in accordance with an agreed Construction Traffic Management Plan.

11.11.45 As stated in the IEMA guidance, "*The calculation of collision rates is still considered a relevant approach to scale a road safety assessment; however, it is more common for stakeholders to request a 'collision cluster' assessment to identify potential impacts at a more detailed level*". The assessment and identification of clusters is undertaken based on the 'baseline characteristics' of the links in question, with a cluster criterion based on the number of collisions/accidents (also referred to as 'Personal Injury Collisions' occurring within the defined period (5-years).

11.11.46 An assessment of the Study Area within the latest available STATS19 5-year period was undertaken and it is considered that as there are no discernible clusters outlined.

Impact of hazardous/large loads

11.11.47 Appropriate routes for AIL movements have been considered by the project team. It is assumed that any large or abnormal loads will route to the Site via the A5118 west, with no AILs routeing from the east due to existing rail bridge infrastructure.

11.11.48 Assessment of the proposed access junction alterations in respect to both standard HGV and AIL loads has been undertaken and is provided in the Transport Statement (**Volume 4, Technical Appendix 11.1**). .

11.11.49 As part of this assessment, the estimated number and composition of AIL loads is outlined in **Table 11.24** as per IEMA guidance.

Table 11.25 AIL vehicles

Load Types			Scenario 1	
Infrastructure			No of Loads	Two Way Movements
	Element of Works			
AIL - Plant	Max vehicle assessed 27 m x 3.2m x 7m Articulated Vehicle	Substation	16	32
		General Equipment	3	6
		Regenerator	14	28
		Stack sections	7	14
		Piperacks	42	84
		CHP Boiler components	7	14
		Ductwork	25	50
AIL - Equipment		750t Crane	20+	40
		500t Crane		
		Crawler		
		Tower crane sections		
		Piling rigs	4	8
Large Loads	Standard Articulated Vehicle (16.5m)	Vendor skids	15	30
		Absorber sections	36	72
		Cabins	90	180

11.11.50 Transportation of AIL components could lead to the following effects:

- The rolling closures of roads and footways causing temporary driver and pedestrian delay; and
- The perceived effect to pedestrians and vulnerable road users in proximity to property and infrastructure.

11.11.51 Delays due to land/road closures and the associated impacts would be inevitable, however all abnormal loads will be timed to avoid peak hours, therefore abnormal loads would have a temporary minor adverse effect. The magnitude of change of transporting the abnormal loads during the day is not anticipated to be significant where there are no hazardous loads and that the routeing assessments for AILs has been carried out by the

project team. Additionally, given the number of HGVs and AILs would be less than the 30% increase from baseline flows threshold prescribed by IEMA, that with appropriate Construction Traffic Management Plan measures and the manoeuvring of AIL vehicles, any impacts will be limited

11.12 Mitigation and monitoring of effects

11.12.1 **Table 11.25** outlines the anticipated effects of construction traffic as discussed and outlines the proposed mitigation measures associated with the construction stage of the Proposed Development.

Table 11.26 Assessment of potential effects, mitigation and monitoring during construction

Receptor	Likely significant effects, proposed mitigation and monitoring	
Study Area Highway Links	Additional (secondary and tertiary) mitigation	• A Construction Traffic Management Plan will be produced to manage construction traffic, particularly HGVs, to and from the Proposed Development; • HGV and AIL deliveries will be managed to/from the Proposed Development, seeking where practicable to avoid the typical network peaks, reducing any potential impact on severance, delay and pedestrian amenity; • A framework Travel Plan (**Volume 4, Technical Appendix 11.2**) will be implemented to encourage sustainable travel to and from the Site during the construction phase. This will complement the Construction Traffic Management Plan and will contain a series of measures to facilitate active travel, public transport use and car sharing for staff; whilst offering options to reduce private car travel; • Access into the Proposed Development will be supported by a reconfiguration of the proposed access. Detail of these alterations will be provided in the Transport Statement (**Volume 4, Technical Appendix 11.1**).
	Residual effects and monitoring	• The mitigation implemented through a Construction Traffic Management Plan and Travel Plan (**Volume 4, Technical Appendix 11.2**) is expected to reduce any negligible impacts associated with IEMA factors assessed associated with the Proposed Development. Therefore, only a temporary negligible effect is anticipated across the Study Area during the construction phase, following the implementation of the additional mitigation measures. • A Principal Contractor will be appointed who will implement the Construction Traffic Management Plan, monitor construction activities and ensure that the guidance contained within the document is adhered to by all contractors and workforce.

11.13 Assessment summary

11.13.1 This chapter has provided an assessment of the Traffic and Transport effects of the Proposed Development. It has made use of robust assumptions relating to construction practices and techniques and the likely traffic numbers and vehicle movements associated with them.

11.13.2 A robust Construction Traffic Management Plan will be implemented and a Principal Contractor appointed to monitor and enforce the Construction Traffic Management Plan alongside a complementary Transport Statement (**Volume 4, Technical Appendix 11.1**) and Travel Plan (**Volume 4, Technical Appendix 11.2)**. This will encourage and support sustainable travel to the Proposed Development for which it is expected that the vast majority of trips would be undertaken outside of the typical network peak periods where practicable. There are **no significant effects** anticipated as a consequence of the construction, operation or decommissioning of the Proposed Development.

11.13.3 Table **11.26** provides a summary of the findings of the assessment.

Table 11.27 Summary of construction traffic and transport effects

Receptor	Potential Effects	Additional (Secondary and Tertiary) Mitigation	Residual Effects	Monitoring
A5118	• Road vehicle driver and Passenger Delay – Not significant • Severance – Not significant • Pedestrian Delay -Not significant • Non-Motorised User Amenity – Not significant • Fear and Intimidation – Not significant • Road Safety – Not significant • Impact of Hazardous Loads/large Loads – Not significant	Construction traffic management for both HGVs and LGVs through the implementation of a robust Construction Traffic Management Plan. Encouragement of sustainable travel to and from the Site by construction and management workers through the implementation of a Travel Plan (**Volume 4, Technical Appendix 11.2**).	**Minor - Not Significant**	A Principal Contractor will be appointed who will implement a Construction Traffic Management Plan, monitor construction activities and ensure that the guidance contained within the document is adhered to by all contractors and workforce travelling to/from the Site. Additionally, the associated Travel Plan (**Volume 4, Technical Appendix 11.2**) provides a monitoring strategy and review process. Monitoring will ensure that there is compliance with the Travel Plan, assess the effectiveness of the measures and provide the opportunity for review. A Travel Plan Coordinator will be appointed who will maintain a monitoring table of progress of key Travel Plan targets based on results of travel surveys undertaken. This table will be published in the monitoring report for stakeholders.
A550	• Road vehicle driver and Passenger Delay – N/A • Severance – Not significant • Pedestrian Delay -Not significant • Non-Motorised User Amenity – Not significant • Fear and Intimidation – Not significant • Road Safety – Not significant		**Minor - Not Significant**	

Receptor	Potential Effects	Additional (Secondary and Tertiary) Mitigation	Residual Effects	Monitoring
	• Impact of Hazardous Loads/large Loads –Not significant			
A55	• Road vehicle driver and Passenger Delay – N.A • Severance – Not significant • Pedestrian Delay -Not significant • Non-Motorised User Amenity – Not significant • Fear and Intimidation – Not significant • Road Safety – Not significant • Impact of Hazardous Loads/large Loads – Not significant		**Minor - Not Significant**	
A494	• Road vehicle driver and Passenger Delay – N/A • Severance – Not significant • Pedestrian Delay -Not significant • Non-Motorised User Amenity – Not significant • Fear and Intimidation – Not significant • Road Safety – Not significant		**Minor - Not Significant**	

Receptor	Potential Effects	Additional (Secondary and Tertiary) Mitigation	Residual Effects	Monitoring
	• Impact of Hazardous Loads/large Loads – Not significant			

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