

Chapter 08: Traffic and Transport

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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8. Traffic and Transport

8.1 Introduction

- 8.1.1 This chapter has been prepared by Stantec UK and sets out the likely significant effects of the Proposed Development on traffic and transport conditions.
- 8.1.2 This chapter assesses the likely environmental effects of the Proposed Development with respect to traffic and transport. This chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted.

8.2 Scope of Assessment and Consultation

- 8.2.1 A request for an EIA Scoping Opinion was submitted to Fife Council (FC) in July 2024 (planning reference 24/01927/SCO). FC stated that the assessment of Traffic and Transport was to include construction phase only. The decommissioning phase has also been included within this assessment for robustness.
- 8.2.2 This chapter therefore only assesses the impact of the construction phase and the decommissioning phase.
- 8.2.3 In relation to the underground cabling proposals which will be subject to a separate planning application, the construction traffic associated with the underground cabling works is not proposed during the peak construction period and therefore, no further traffic impact assessment has been undertaken. In addition, the underground cabling construction works does not require any additional access points and construction associated with the underground cabling shall take place within land owned by SPEN. As a result of the above, the underground cabling construction has not been included as part of this assessment.

8.3 Legislation and Policy Context

- 8.3.1 The following guidance, standards, and policy have been reviewed or referenced within this chapter:
- Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Traffic and Movement (July 2023);
 - National Planning Policy 4 (February 2023); Transport Scotland's National Transport Strategy (February 2020);
 - Fife Council Local Development Plan (2017); and
 - Fife Council Local Transport Strategy (2023 – 2033).

Institute of Environmental Management and Assessment **Guidelines for the Environmental Assessment of Traffic and** **Movement (July 2023)**

- 8.32 IEMA Guidelines for the Environmental Assessment of Traffic and Movement (July 2023) has been used to provide good practice advice on how to carry out the assessment of traffic and movement of people as part of an Environmental Impact Assessment (EIA).
- 8.33 The IEMA Guidelines set out that the impact of traffic and movement is dependent on a wide range of factors including:
- Current state of traffic and movement environment;
 - Volume of Proposed Development traffic;
 - Vehicle speeds and road network operational characteristics;
 - Traffic composition (e.g. percentage of Heavy Goods Vehicles); and
 - Future cumulative Proposed Development traffic.
- 8.34 The perception, experience and health effects of changes in traffic by humans, and the impact of traffic changes on various ecological systems, will also vary according to such factors as:
- Severance;
 - Non-Motorised User Amenity;
 - Fear and Intimidation;
 - Road Safety;
 - Driver Delay;
 - Pedestrian Delay (incorporating delay to all non-motorised users); and
 - Hazardous Loads/Large Loads.
- 8.35 The methodology utilised for the assessment of transport effects reflects the guidance contained within the IEMA Guidelines.

National Planning Framework 4 (February 2023)

- 8.36 National Planning Framework 4 was adopted in February 2023 and has been produced to set out a long-term spatial strategy including a set of national planning policies to form part of the statutory development plan. The document sets out the spatial principles, regional priorities, national developments and national planning policy. The document replaces the NPF3 and Scottish Planning Policy (2014).
- 8.37 The document sets out six spatial principles which include:
- Transition – we will empower people to shape their places and ensure the transition to net zero is fair and inclusive;

- Conserving and recycling assets – we will make productive use of existing buildings, places, infrastructure and services, locking in carbon, minimising waste, and building a circular economy;
- Local living – we will support local liveability and improve community health and wellbeing by ensuring people can easily access services, greenspace, learning, work and leisure locally;
- Compact urban growth – we will limit urban expansion so we can optimise the use of land to provide services and resources, including carbon storage, flood risk management, blue and green infrastructure and biodiversity;
- Rebalanced development – we will target development to create opportunities for communities and investment in areas for past decline, and manage development sustainably in areas of high demand; and
- Rural revitalisation – we will encourage sustainable development in rural areas, recognising the need to grow and support urban and rural communities together.

8.3.8 Through applying the spatial principles, the national spatial strategy supports the delivery of:

- Sustainable places;
- Liveable places; and
- Productive places.

Transport Scotland's National Transport Strategy (February 2020)

8.3.9 The Transport Scotland's National Transport Strategy sets out a strategy for the whole transport system in Scotland, on which it provides the strategic framework foundations for which future decisions for investment and infrastructure is to be made.

8.3.10 The strategy sets out a vision which states: *"We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, business and visitors."*

8.3.11 In order to achieve this vision, the strategy sets out four objectives including:

- Reducing inequality;
- Taking climate action;
- Helps deliver inclusive economic growth; and
- Improves our health and wellbeing.

Fife Council Local Development Plan (2017)

8.3.12 The Fife Council Local Development Plan (LDP) was adopted in September 2017 and outlines the strategies and policies associated with planning across the Fife region. The document provides the strategic framework for the years 2014 to 2026 to meet future environmental, economic, and social needs.

Fife Council Local Transport Strategy (2023–2033)

- 8.3.13 The Local Transport Strategy for Fife 2023–2033 sets out FC's vision for transport in Fife over the next ten years. The strategy is to tackle important issues and invest in the transport system.
- 8.3.14 The vision of the transport strategy is that by 2033, Fife's transport system supports communities with affordable, seamless and sustainable access to all aspects of our daily lives. To meet the vision, the strategy sets out four priorities:
- Fair access to daily activities;
 - Safe and secure travel for all;
 - A just transition to net zero; and
 - A resilient transport network.

8.4 Assessment Methodology and Significance Criteria

Assessment Methodology

Approach

- 8.4.1 The traffic and transport impacts of the Proposed Development have been assessed in line with the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Traffic and Movement (July 2023).
- 8.4.2 Within the IEMA Guidelines, two broad rules are suggested which can be used as a screening process to limit the scale and extent of the assessment which in turn assists identifying links to be assessed. These are:
- *“Rule 1: include highway links where traffic flows will increase more than 30% (or the number of heavy goods vehicles (HGVs) will increase by more than 30%); and*
 - *Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more.”*
- 8.4.3 Where the predicted increase in traffic flows is lower than the thresholds set out above, the IEMA Guidelines suggest the significance of the effects can be stated to be negligible and further detailed assessments are not warranted. Furthermore, increases in traffic flows below 10% are generally considered to be insignificant in environmental terms given that daily variations in background traffic may vary by this amount.
- 8.4.4 The extent of transport impacts has been determined using pre-defined significance criteria for each mode of travel. Those criteria have been based on the net change in journeys as a result of the Proposed Development and the infrastructure improvements delivered as part of the proposals. The significance criteria establishes the magnitude of any beneficial or adverse effects that the Proposed Development will have on the transport network.
- 8.4.5 The environmental impact criteria identified later within this section are therefore considered within the study area for the following thresholds:

- On links with All Vehicle or HGV traffic flow changes in any assessment year of +30%; and
- On links with Medium or High sensitivity receptors, with All Vehicle or HGV flow changes greater than 10%.

Receptor Sensitivity

8.4.6 The IEMA Guidelines provides a list of sensitive receptors that should be considered within the assessment. The sensitive receptor user groups are summarised below:

- Non-motorised users;
- Public Right of Way users;
- Motorists and freight vehicles;
- Public Transport; and
- Emergency Services.

8.4.7 Further to the user groups, the following sensitive receptors should also be considered:

- People at home;
- People at work;
- Sensitive and/or vulnerable groups (including young age; older age; income; health status; social disadvantage; and access and geographic factors);
- Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools);
- Retail areas;
- Recreational areas;
- Tourist attractions;
- Collision clusters and routes with road safety concerns; and
- Junctions and highway links at (or over) capacity.

8.4.8 Categories of receptor sensitivity have been defined from the principles set out in the IEMA Guidelines, and include the following:

- The need to identify particular groups or locations which may be sensitive to changes in traffic conditions;
- The list of affected groups and special interests set out in the guidance; and
- The identification of links or locations where it is felt that specific environmental problems may occur.

8.4.9 These categories have been used to outline in broad terms the sensitivity of receptors to traffic for the categories of impact assessed in this chapter, although in detail, each receptor assessed will have a different sensitivity to each specific impact. The sensitivity of receptors has been summarised in **Table 8.1**.

Table 8.1: Sensitivity of Receptors

Sensitivity	Description	Examples of Locations for Receptor Use
Negligible	No receptors to be impacted and road network not affected	Open spaces (fields), or locations with excellent footway provision where receptors are situated further away from road networks.
Low	Receptors with low sensitivity to traffic flows used minimally, relative to other receptors in the study area.	Open spaces (fields), tourist or visitor attractions, nature conservation areas, historic buildings, churches and residential areas with adequate footway provision.
Medium/Moderate	Receptors with medium sensitivity to traffic flow, relative to other receptors in the study area.	Hospitals, surgeries and clinics, parks and recreation areas, congested junctions, unsegregated cycleways, community centres, conservation areas, shopping areas, and roads with narrow footways.
High	Receptors with the greatest sensitivity to traffic flow changes and are used at a large level, relative to other links in the study area.	Schools, colleges, other educational institutions, playgrounds, retirement/care homes for the elderly, social rented accommodation, roads with no footways, and accident blackspots.

Magnitude of Change/Impact

- 8.4.10 A 'Magnitude of Impact' value is determined by considering Severance, Road Vehicle Driver and Passenger Delay, Non-motorised user Delay and Amenity, Fear and Intimidation, and Road User and Pedestrian Safety, which are the topics identified in the IEMA Guidelines for assessment. **Table 8.2** gives an overview of the topics considered in the assessment.

Table 8.2: Magnitude of Impact Assessment Topics

Assessment Topic	Typical Description
Severance	The perceived division within a community when separated by a major transport infrastructure.
Road Vehicle Driver and Passenger Delay	Assessment of junction capacity and delay is undertaken through the use of standard practice analytical tools and junction analysis programs.
Non-motorised Amenity and Delay	Changes in traffic patterns affecting pedestrians'/cyclists' ability to cross. The pleasantness of pedestrians'/cyclists' journeys encompassing other factors.
Road User and Pedestrian Safety	Assessment of existing road link records and whether there will be an increase in incidents for all road users, including pedestrians and cyclists.
Fear and Intimidation	The composition and volume of traffic and whether it would be perceived as intimidating by pedestrians and cyclists.

- 8.4.11 As part of the scoping stage, it was agreed that the only assessment topic (identified in Table 8.2) to be included as part of the Traffic and Transport Chapter was severance, subject to exceeding the threshold for a 30% increase. If the threshold was not exceeded, severance would not be required to be included as part of the final assessment.
- 8.4.12 Notwithstanding this decision, for clarity and in line with IEMA Guidelines, a summary of each assessment topic methodology has been provided below.

Severance

- 8.4.13 The IEMA Guidelines states at paragraph 3.13 that “*severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery.*” Furthermore, at paragraph 3.16 the guidance states, “*Changes in traffic flow of 30%, 60% and 90% are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance respectively*”. However, the guidance acknowledges that the measurement and prediction of severance is extremely difficult. The assessment of severance 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.
- 8.4.14 The potential effects as set out later in this chapter are based on an assessment, which takes into account the IEMA’s thresholds. **Table 8.3** summarises these thresholds.

Table 8.3: Severance Threshold

Magnitude	Traffic Flow (AADT) Increase
Major	>90%
Moderate	60 – 90%
Minor	30 – 60%
Negligible	<30%

Road Vehicle Driver and Passenger Delay

- 8.4.15 Delay to drivers can be estimated through capacity assessments at key points on the local road network. The addition of new development-generated traffic could result in an increase in the number of vehicles using key junctions. This may lead to additional delays depending on the existing operation, levels of background traffic and development-generated traffic.
- 8.4.16 Paragraph 3.19 of the IEMA Guidelines 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 development 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

- *At side roads where the ability to find gaps in the traffic may be reduced, thereby lengthening delays.”*

8.4.17 Values for delay due to these elements can be determined through the use of 'industry-standard' junction modelling software packages (the ARCADY and PICADY modules of TRL's Junctions 11 program for major/minor priority junctions and roundabout and LinSig for traffic signal control junctions), or other suitable programs. The IEMA Guidelines further states at paragraph 3.20 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"*.

8.4.18 **Table 8.4** shows the magnitude-scale applied to the category 'Road Vehicle Driver and Passenger Delay' at junctions, based on professional judgement, for the purpose of this assessment. It should be noted that **Table 8.4** is used in this assessment for advisory purposes only. The magnitude of effect of the considered links is determined in a more holistic approach to determine the likely effect of the Proposed Development on road user and passenger delay.

Table 8.4: Driver Delay at Junctions – Magnitude of Effect

Magnitude	Definition
Major	Average vehicle delay increases of more than 2 minutes as a result of the Proposed Development during the peak periods.
Moderate	Average vehicle delay increases are between 1 and 2 minutes as a result of the Proposed Development during the peak hour periods.
Minor	Average vehicle delay increases between 45 and 60 seconds as a result of the Proposed Development during the peak hour periods.
Negligible	Average vehicle delay increases are less than 45 seconds as a result of the Proposed Development during the peak hour periods.

Non-motorised User Delay and Amenity

8.4.19 Non-motorised user delay for a particular walking journey can be increased by changes to traffic flows and can affect the ability of pedestrians to cross a road. This can affect an individual's desire to make a particular walking journey and may prove to be a barrier in active travel. Changes in the volume, speed or composition of traffic are most likely to affect pedestrian delay, with the level of severity dependent on the general level of pedestrian activity and the physical condition of crossing points.

8.4.20 It is important to note that qualitative aspects such as the quality of the pedestrian and cycle environment, and the trip generators served by these environments, also influence the propensity for individuals to walk and cycle. Sense of personal security and safety, gradient, permeability, legibility and maintenance of these infrastructures aid in encouraging their use and discouraging the use of non-car modes. These, in addition to the quantitative aspects of assessment such as changing traffic flows, are therefore an important consideration in this chapter for a number of the criteria.

8.4.21 The determination of what constitutes a material impact on pedestrian delay is generally left to the judgement of the assessor and knowledge of local factors and conditions. IEMA Guidelines, paragraph 3.26 states *"Given the range of local factors and conditions that can influence pedestrian delay (e.g. a discrete delay may have a lesser impact in an urban environment than a rural setting), it is not considered wise to set down definitive thresholds. Instead, it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect"*.

8.4.22 **Table 8.5** shows the magnitude-scale applied to links with insufficient or no pedestrian facilities at desire lines and links subject to pedestrian footfall. It is noted that these levels apply where no crossing facility is provided. Professional judgement is to be used to determine the magnitude of impact where appropriate signalised crossing points are provided.

Table 8.5: Non-motorised User Delay – Magnitude of Effect

Magnitude	Definition
Major	Link subject to a change in two-way flow of 5,600+ vehicles per hour.
Moderate	Link subject to a change in two-way flow of 3,500-5,600 vehicles per hour.
Minor	Link subject to a change in two-way flow of 1,400-3,500 vehicles per hour.
Negligible	Link subject to a change in two-way flow of fewer than 1,400 vehicles per hour.

8.4.23 Pedestrian amenity is broadly defined as the relative pleasantness of a journey, which is affected by traffic flow, traffic composition and footway width/separation from traffic. The guidance suggests at paragraph 3.30 that a “...tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled”.

Road User and Pedestrian Safety

8.4.24 Road user and pedestrian safety and collision rates can be assessed using the statistical assessment of the likely increase or decrease in the number of collisions resulting from changes in traffic flows and composition, which is calculated using anticipated increase in vehicle-km on different classes of road. However, the IEMA guidelines suggest that, in paragraph 3.42 and 3.43 “...it is more common for stakeholders to request a ‘collision cluster’ assessment to identify potential impacts at a more detailed level... Collision clusters are identified by a detailed review of the baseline characteristics to determine the road safety sensitivity of discrete areas of the road network...”.

8.4.25 The IEMA Guidelines also take into account the ‘Safe System’ approach within paragraph 3.45. The approach can be taken as follows:

- *“Identify the study area using historic crash data;*
- *Undertake evidence-led, objective modelling techniques to establish a baseline road safety level for the roads within the study area on which the impact thresholds are exceeded in relation to either non-motorised users or motorised user traffic. This analysis can be carried out using tools such as the iRAP Star Rating protocols or similar tools produced by individual highways/road authorities; and*
- *Assess the effects of additional development traffic for all users (including vulnerable groups) across the whole width of the highway corridor. This model should also assess the effect of any changes to the baseline road network, such as the provision of access junctions.”*

8.4.26 The final assessment should be based upon the changes in fatal and serious injuries, and roadside hazards using the iRAP Star Rating scoring system. This system determines that 1-star roads have the highest risk, and 5-star roads have the lowest risk. An example of a 3-tier star rating assessment has been provided in **Table 8.6**, and a magnitude of effects has been presented in **Table 8.7**.

Table 8.6: iRAP Star Rating Scoring System

Star Rating	Pedestrian Safety	Cycle Safety	Vehicle Safety
1 Star	No footpath, no safe crossing points, >40mph traffic, <2.0m wide footways, a fatal accident has occurred involving a pedestrian.	No cycle path, no safe crossings, poor road surface, >40 mph traffic, a fatal accident has occurred involving a cyclist.	Undivided road, narrow centre line, trees close to the road, winding alignment, >60mph traffic, a fatal accident has occurred involving a vehicle.
3 Stars	Footway present, pedestrian refuge and uncontrolled crossings, street lighting, 30mph traffic, >/2.0m, a serious or slight accident has occurred involving a pedestrian.	On-road cycle lane, good road surfacing, street lighting, 30mph traffic, a serious accident has occurred involving a cyclist.	Wide centreline and road widths, >5m from roadside hazards, 60mph traffic, a serious accident has occurred involving a vehicle.
5 Stars	Footway present, signalised and controlled crossings, street lighting, >2.5m wide footways, <30mph traffic, a slight accident or no accident has occurred involving a pedestrian.	Off-road dedicated cycle facility, raised platform crossings, signalised or controlled crossings, advanced stop lines, street lighting, <30mph traffic, a slight accident or no accident has occurred involving a cyclist.	Safety barrier separating oncoming vehicles and protecting roadside hazards, straight alignments, <60mph traffic, a slight accident or no accident has occurred involving a vehicle.

8.4.27 In order to achieve a total iRAP score, pedestrian safety, cycle safety, and vehicle safety must be scored based on the star rating (shown in Table 8.6). Once each element has been scored and totalled, the total iRAP score can be applied to Table 8.7 below which determines the applicable magnitude of effect.

Table 8.7: Road User and Pedestrian Safety – Magnitude of Effect

Magnitude	Total iRAP Score (Pedestrian + Cycle + Vehicle)
Major	0-3 -High safety risks
Moderate	4-6 - moderate safety risks
Minor	7-10 - low safety risks
Negligible	11 - 15 - low to no safety risks

8.4.28 Liaison with the relevant authorities should be undertaken to determine the best approach for the significance of road safety effects. Additionally, a Road Safety Audit should be undertaken for any proposals engineering changes to the adopted road network.

Fear and Intimidation

- 8.4.29 A further effect of traffic flows on pedestrian and cycle movements is the element of fear and intimidation individual travellers will experience with respect to vehicular movements. The impact of this factor is dependent on the volume of traffic, the HGV content and speed, the width of footway and its proximity to the carriageway edge. As is the case with pedestrian delay, there are no commonly agreed thresholds for the measurement of this impact, with appraisal based on the judgement of the assessor.
- 8.4.30 Nevertheless, the IEMA Guidelines do suggest some thresholds, based on previous research, which could be used, and these are shown in **Table 8.8**.

Table 8.8: Fear and Intimidation Threshold

Degree of Hazard Score	Average Traffic Flow over 18-Hour Day (all vehicles/hour 2-way)	Average Vehicle Speed	Total 18 Hour Heavy Goods Flow (HGV)
30	1,800+	>40	3,000+
20	1,200-1,800	30-40	2,000-3,000
10	600-1,200	20-30	1,000-2,000
0	< 600	<20	<1000

- 8.4.31 Notwithstanding the thresholds set in **Table 8.8**, the IEMA guidelines suggest that they should be approached with a certain level of caution as the individual factors could be weighted by local circumstances to decide the overall value of intimidation. For example, a road may show higher speeds but lower flows, making crossing easier, or high flows but congested and constant traffic, therefore reducing total fear of passing vehicles but increasing crossing difficulties.
- 8.4.32 The total score from the three elements is combined to provide a 'level' of fear and intimidation for all three elements. **Table 8.9** has been presented below to demonstrate the levels of fear and intimidation.

Table 8.9: Levels of Fear and Intimidation

Level of Fear and Intimidation	Total Hazard Score
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

- 8.4.33 The magnitude of impact is approximated with reference to the changes in the level of fear and intimidation from baseline conditions. **Table 8.10** summarises the magnitude-levels applied to the category fear and intimidation' for the purpose of this assessment.

Table 8.10: Fear and Intimidation – Magnitude of Impact

Magnitude of Impact	Definition	Change in step/traffic flows (AADT) from baseline conditions
High	Increase in average traffic flow over 18 hours of 1,800+ vehicles/hour. An average 18-hour HGV flow of 3,000+.	Two step changes in level.
Medium	Increase in average traffic flow over 18 hours of 1,200-1,800 vehicles per hour. An average 18-hour HGV flow of 2,000-3,000.	One step change in level. >400 vehicle increase in average 18 hour AV two-way all vehicle flow. >500 HV increase in total 18-hour HV flow.
Low	Increase in average traffic flow over 18 hours of 600-1,200 vehicles/hour. An average 18-hour HGV flow of 1,000-2,000.	One step change in level. <400 vehicle increase in average 18 hour AV two-way all vehicle flow. <500 HV increase in total 18-hour HV flow.
Negligible	Increase in average traffic flow over 18 hours of less than 600 vehicles/hour. An average 18-hour HGV flow of less than 1,000.	No change in step changes.

Significance of Effect

- 8.4.34 Significance criteria are determined through referencing magnitude of impact with sensitivity of receptors. The significance of traffic change varies depending upon the environmental impact criteria being considered. The magnitude of impact, based on the change that the Proposed Development would have upon the receptors is considered within the range of major, moderate, minor and negligible. Table 8.11 demonstrates the Magnitude of Impact
- 8.4.35 It is noted that consideration is given to scale and duration of impact/effect (e.g. for construction, short-term for 1–2 years, medium-term for 3–5 years, long-term for 5 years and greater, and permanent, dependent upon project timeframes).

Table 8.11: Magnitude of Impact (Degree of Change)

Magnitude of Impact (degree of change)		Typical description
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.

Magnitude of Impact (degree of change)		Typical description
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No Change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

8.4.36 The predicted level of effect is based upon the consideration of magnitude of impact and sensitivity of the resource/receptor to come to a professional judgement of how important this effect is. **Table 8.12** demonstrates the Level of Significance of Effect.

Table 8.12: Level of Significance of Effect

Magnitude of Impact	Sensitivity		
	High	Moderate	Low
Major	Major	Major - Moderate	Moderate - Minor
Moderate	Major - Moderate	Moderate - Minor	Minor
Minor	Moderate - Minor	Minor	Minor - Negligible
Negligible	Negligible	Negligible	Negligible

8.4.37 A Moderate or Major level of effect is considered significant for the purposes of this EIA assessment.

8.4.38 Where the assessment demonstrates that no impacts are a result of the Proposed Development, 'negligible' has been identified and these effects are inherently not significant.

Assessment Limitations and Assumptions

8.4.39 The designated construction and decommissioning vehicle routes have not been agreed with FC at this stage. The final vehicle routes will be agreed and confirmed in a detailed Construction Traffic Management Plan (CTMP) post planning determination as part of the approval of conditions process.

8.4.40 Although the routes are yet to be agreed, two worst-case scenarios have been assessed at this stage to provide a robust assessment, and include the following:

- Scenario 1: 100% of HGV movements route west to/from Junction 5 of the M90; and
- Scenario 2: 50% of HGV movements route west to/from Junction 5 of the M90 and 50% of HGV movements route east along the B9097 and then south towards the A92.

- 8.4.41 It is envisaged that the HGVs will route from the Proposed Development towards the M90 via the following roads:
- B9097 – between the Proposed Development access and B920;
 - B920 – between the B9097 (Proposed Development Road) and B9097 (travelling west to the M90);
 - B9097 (second stretch) – between B920 and B996 (to the west);
 - B996 – adjacent to Junction 5 of the M90; and
 - Junction 5 of the M90.
- 8.4.42 Alternatively, it is envisaged that the HGVs will route from the Proposed Development towards the A92 via the following roads:
- B9097 – between the Proposed Development and B921;
 - B921 – between the B9097 and B981 (Jamphlars Road);
 - B981 (Jamphlars Road) - between B921 and Auchterderran Road;
 - B9149 – between B981 and A92 junction; and
 - A92 junction south of Lochgelly.
- 8.4.43 A detailed description of the routing has been provided within the Baseline Conditions section of this chapter.
- 8.4.44 The construction traffic flows have been based upon the peak period. It is noted that the peak period will not include Abnormal Indivisible Load (AIL) vehicles; however, it is acknowledged that these will have to access the site to transport the six proposed transformers. Given the AILs will generate negligible trips on the network and are to be outside of the construction peak period, no further assessment of AILs has been undertaken within this Traffic and Transport Chapter. Details regarding the access for AILs on the local road network are to be included within the CTMP, which the Local Planning Authority will require to approve prior to commencement.
- 8.4.45 It is anticipated that the deconstruction of the existing 275kV substation will begin in Q4 2030 and continue for approximately 12-14 months. The decommissioning phase traffic flows have been based upon the peak period noted to be between May and August 2031. Similar to the construction phase, the AILs associated with the decommissioning phase will generate negligible trips that are outside of the peak construction periods, as a result no further assessment of AILs has been undertaken within this Traffic and Transport Chapter.
- 8.4.46 Nevertheless, the decommissioning phase will also include AIL movements, and as aforementioned, details regarding the access for AILs on the local road network are to be included within the CTMP, which the Local Planning Authority will require to approve prior to commencement.

8.5 Baseline Conditions

Current Baseline (2025)

Baseline Traffic Data Collection

- 8.5.1 Baseline traffic flows are required to understand the existing flows on the local road network and along the routes towards the strategic road network.
- 8.5.2 The baseline traffic flows have been obtained through a 7-day Automatic Traffic Count (ATC). The ATC surveys were undertaken over a 7-day period (24-hours each day) between Monday 02 December and Sunday 08 December 2024 outside of school holiday periods.
- 8.5.3 Seven locations on the surrounding local road network were chosen for the survey, as part of potential routes towards the strategic road network including the M90, and routes towards the A92 in the south. The seven locations included:
- Location 1 - B9097 East of Brackley Lodge;
 - Location 2 - B920 North of Robert Braird and Sons Farm;
 - Location 3 - B9097 south of B920;
 - Location 4 - B920 Ballingry;
 - Location 5 - B921 adjacent Tillcoultry Quarry;
 - Location 6 - B981 Jamphlars Road adjacent Recycling Centre; and
 - Location 7 - B9149 between Muir Road and B981 Roundabouts.
- 8.5.4 The survey results have been included as **Technical Appendix 8.1**, where each of the locations above are referred to as “L1 - L7”. The survey results provide baseline 7-Day, 24-hour Annual Average Daily Traffic (AADT) flows for total vehicles (including HGVs). The survey results also provide baseline 7-Day 24-hour AADT flows for HGVs only. **Table 8.13** demonstrates the baseline traffic flows for all surveyed locations.

Table 8.13: 2024 Baseline Flows

Survey Location	Vehicle Type	24 hour 7-day AADT Flows
		2024 Baseline Flows (Two-Way)
Location 1 B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	All Vehicles	5372
	Heavy Goods Vehicles	838
	Heavy Goods Vehicles (%)	16%
Location 2 B920 north of Robert Baird and Sons Farm	All Vehicles	3800
	Heavy Goods Vehicles	631
	Heavy Goods Vehicles (%)	17%
Location 3 B9097 south of B920 ghost island junction	All Vehicles	2555
	Heavy Goods Vehicles	461
	Heavy Goods Vehicles (%)	18%
Location 4 B920 north of Ballingry Crescent, Ballingry	All Vehicles	4689
	Heavy Goods Vehicles	566
	Heavy Goods Vehicles (%)	12%
Location 5 B921 adjacent Tillcoultry Quarries	All Vehicles	4030
	Heavy Goods Vehicles	510
	Heavy Goods Vehicles (%)	13%
Location 6 B981 Jamphlars Road adjacent Bowhill Recycling Facility	All Vehicles	4446
	Heavy Goods Vehicles	545
	Heavy Goods Vehicles (%)	12%
Location 7 B9149 between Muir Road and B981 Roundabouts	All Vehicles	9406
	Heavy Goods Vehicles	1182
	Heavy Goods Vehicles (%)	13%

Future Baseline (2027)

Future Baseline Scenario

8.5.5 The peak construction period across the entire construction phase has been identified to occur during March – June 2027. Therefore, the baseline 2024 traffic flows have been factored to generate the baseline 2027 flows. Scotland's National Road Traffic Forecast (NRTF) calculator tool has been interrogated to derive a low growth factor. The low growth factor was applied to the 2024 baseline flows. The 2027 future baseline traffic flows have been demonstrated in **Table 8.14**.

Table 8.14: 2027 Future Baseline Flows

Survey Location	Vehicle Type	24 hour 7-day AADT Flows
		2027 Future Baseline Flows (Two-Way)
Location 1 B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	All Vehicles	5426
	Heavy Goods Vehicles	846
	Heavy Goods Vehicles (%)	16%
Location 2 B920 north of Robert Baird and Sons Farm	All Vehicles	3838
	Heavy Goods Vehicles	637
	Heavy Goods Vehicles (%)	17%
Location 3 B9097 south of B920 ghost island junction	All Vehicles	2581
	Heavy Goods Vehicles	466
	Heavy Goods Vehicles (%)	18%
Location 4 B920 north of Ballingry Crescent, Ballingry	All Vehicles	4736
	Heavy Goods Vehicles	572
	Heavy Goods Vehicles (%)	12%
Location 5 B921 adjacent Tillcoultry Quarries	All Vehicles	4070
	Heavy Goods Vehicles	515
	Heavy Goods Vehicles (%)	13%
Location 6 B981 Jamphlars Road adjacent Bowhill Recycling Facility	All Vehicles	4490
	Heavy Goods Vehicles	550
	Heavy Goods Vehicles (%)	12%
Location 7 B9149 between Muir Road and B981 Roundabouts	All Vehicles	9500
	Heavy Goods Vehicles	1194
	Heavy Goods Vehicles (%)	13%

Construction Traffic and Decommissioning Traffic

Construction Traffic

8.5.6

The proposed construction traffic has been calculated and provided by the Applicant. Although the traffic associated with the construction phase will generate trips across the entire period, the Applicant identified a peak construction period. The peak construction period was identified between March and June 2027 (during the 'Bulk Earthworks' period). As the peak period is anticipated to generate the most trips during the construction phase, these trips have been used within the assessment as they are robust.

- 8.5.7 The Applicant identified that the construction peak period anticipates a total of 78 two-way HGV trips per day. The 78 two-way trips will access and exit the site and will route towards the M90 or A92 as aforementioned.

Decommissioning Traffic

- 8.5.8 The proposed decommissioning traffic has been calculated and provided by the Applicant. The decommissioning phase is anticipated to commence in Q4-2030 and last for a period of approximately 12-14 months, with the peak decommissioning period occurring between May and August 2031.
- 8.5.9 The Applicant, using the anticipated number of vehicles for each decommissioning activity, calculated that a total of 187 vehicles is forecast over the 12-14-month period. To provide a robust forecast, the Applicant then applied a 25% margin. Including the 25% margin, the decommissioning phase is proposed to generate 234 trips, equating to a total of 468 two-way trips. This equates to an average of 39 daily two-way trips over a 12-month period, or an average of 33 daily two-way trips over a 14-month period.
- 8.5.10 The Applicant also provided that during the peak decommissioning months (May to August 2031), 60 two-way trips are anticipated per day.
- 8.5.11 Overall, it is clear that the construction phase is forecast to generate a higher quantity of vehicle trips compared to the decommissioning phase during the respective peak periods.
- 8.5.12 The following assessment will therefore only consider the construction phase trips on the local road network as this phase produced a higher, and therefore worst-case scenario, number of trips. No further assessment of the decommissioning phase has been undertaken.

Future Baseline (2027) and Construction Traffic

- 8.5.13 The 78 two-way HGV trips have been added to the 2027 baseline flows. The percentage increase was calculated for all seven survey locations and has been provided within **Table 8.15**.
- 8.5.14 Although the construction routes are yet to be agreed, two worst-case scenarios have been proposed at this stage to provide a robust assessment and include the following:
- Scenario 1: 100% of HGV movements route west to/from Junction 5 of the M90; and
 - Scenario 2: 50% of HGV movements route west to/from Junction 5 of the M90 and 50% of HGV movements route east along the B9097 and then south towards the A92.
- 8.5.15 In order to establish the impact of the proposed construction peak period traffic on the local road network, the two routing scenarios have been assessed.

Scenario 1

- 8.5.16 Scenario 1 anticipates that construction HGV routing is to travel towards the M90 during the construction peak period, and therefore does not include for Location 4, 5, 6 and 7. Table 8.15 demonstrates the percentage increase of vehicles (including all vehicles, and HGVs only) at Location 1, 2 and 3.

Table 8.15: Percentage Increase of 7-day AADT Traffic Flows (Two-Way) - Scenario 1

Survey Location	Vehicle Type	24 hour 7-day AADT Flows		
		2027 Future Baseline Flows (Two-Way)	Assessment Flows (Proposed Construction Flows and 2027 Future Base Flows) (Two-Way)	Percentage Increase
Location 1	All Vehicles	5426	5504	1.44%
B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	Heavy Goods Vehicles	846	924	9.22%
	Heavy Goods Vehicles (%)	16%	17%	-
Location 2	All Vehicles	3838	3916	2.03%
B920 north of Robert Baird and Sons Farm	Heavy Goods Vehicles	637	715	12.24%
	Heavy Goods Vehicles (%)	17%	18%	-
Location 3	All Vehicles	2581	2659	3.02%
B9097 south of B920 ghost island junction	Heavy Goods Vehicles	466	544	16.75%
	Heavy Goods Vehicles (%)	18%	20%	-

Scenario 2

8.5.17 Scenario 2 anticipates that 50% of HGVs (39) are to travel west towards Junction 5 of the M90 and 50% of HGVs (39) are to travel east to get to the A92 adjacent Lochgelly. **Table 8.16** demonstrates the percentage increase of vehicles (including all vehicles, and HGVs only) across Location 1 to Location 7.

Table 8.16: Percentage Increase of 7-day AADT Traffic Flows (Two-Way) - Scenario 2

Survey Location	Vehicle Type	24 hour 7-day AADT Flows		
		2027 Future Baseline Flows (Two-Way)	Assessment Flows (Proposed Construction Flows and 2027 Future Base Flows) (Two-Way)	Percentage Increase
Location 1	All Vehicles	5426	5465	0.72%
B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	Heavy Goods Vehicles	846	885	4.61%
	Heavy Goods Vehicles (%)	16%	16%	-

Survey Location	Vehicle Type	24 hour 7-day AADT Flows		
		2027 Future Baseline Flows (Two-Way)	Assessment Flows (Proposed Construction Flows and 2027 Future Base Flows) (Two-Way)	Percentage Increase
Location 2 B920 north of Robert Baird and Sons Farm	All Vehicles	3838	3877	1.02%
	Heavy Goods Vehicles	637	676	6.12%
	Heavy Goods Vehicles (%)	17%	17%	-
Location 3 B9097 south of B920 ghost island junction	All Vehicles	2581	2620	1.51%
	Heavy Goods Vehicles	466	505	8.38%
	Heavy Goods Vehicles (%)	18%	19%	-
Location 4 B920 north of Ballingry Crescent, Ballingry	All Vehicles	4736	4775	0.82%
	Heavy Goods Vehicles	572	611	6.82%
	Heavy Goods Vehicles (%)	12%	13%	-
Location 5 B921 adjacent Tillcoultry Quarries	All Vehicles	4070	4109	0.96%
	Heavy Goods Vehicles	515	554	7.57%
	Heavy Goods Vehicles (%)	13%	13%	-
Location 6 B981 Jamphlars Road adjacent Bowhill Recycling Facility	All Vehicles	4490	4529	0.87%
	Heavy Goods Vehicles	550	589	7.09%
	Heavy Goods Vehicles (%)	12%	13%	-
Location 7 B9149 between Muir Road and B981 Roundabouts	All Vehicles	9500	9539	0.41%
	Heavy Goods Vehicles	1194	1233	3.27%
	Heavy Goods Vehicles (%)	13%	13%	-

8.6 Assessment of Likely Significant Effects

Construction

- 8.6.1 As part of the assessment of likely significant effects, both Scenario 1 and Scenario 2 have been assessed separately. This assessment reviews the future baseline scenarios.

Scenario 1

- 8.6.2 The screening for Scenario 1 identified that across Locations 1, 2, and 3, the proposed construction traffic is significantly below the 30% increase threshold set out within Rule 1 of the IEMA guidelines for total traffic.
- 8.6.3 The screening also identified that across Locations 1, 2 and 3, the proposed construction traffic is also below the 30% increase threshold for HGVs.
- 8.6.4 Referencing Rule 2 of the IEMA guidelines, which states that the assessment must include highway links of high sensitivity where traffic flows have increased by 10% or more. An assessment of the sensitivity of the roads has been undertaken.
- 8.6.5 Using **Table 8.1**, the following road links along the routing have been reviewed on their sensitivity and summarised within **Table 8.17**.

Table 8.17: Study Area Receptor Sensitivity

Road Link	Sensitivity	Reasoning
B9097 (between the Proposed Development access and B920). Falls within survey Location 3	Low	No built-up areas surrounding the road suggesting minimal contact with receptors; however, no footways are provided along the route.
B920 (between the B9097 (Proposed Development Road) and B9097 (travelling east to the M90). Falls within survey Location 2	Low	No built-up areas surrounding the road suggesting minimal contact with receptors; however, no footways are provided along the route.
B9097 (A second stretch of the B9097, between B920 and B996). Falls within survey Location 1	Low	No built-up areas surrounding the road (suggesting minimal contact with receptors). The road is within close proximity to a Core Path (segregated from road) and adjacent Loch Leven Tourist attraction; both of which, however, are not frequently visited by large volumes of receptors.
B996 (adjacent Junction 5 of the M90)	Negligible	No built-up areas along the small section of road – limited to no receptor use.

- 8.6.6 It has been identified that all the roads within the study area and along the construction routing towards the M90 feature low or negligible receptors use and therefore have a low or negligible level of receptor sensitivity.

- 8.6.7 As aforementioned, IEMA Rule 2 requires an assessment for links with Medium or High sensitivity receptors, with All Vehicle or Heavy Vehicle flow changes greater than 10%. Based on **Table 8.16**, the study area does not apply to Rule 2.
- 8.6.8 It is concluded that, with regards to Scenario 1 (routing all HGV traffic west towards the M90), no further assessment is required and the Proposed Development during the construction peak period and decommissioning peak period is to generate a negligible impact.

Scenario 2

- 8.6.9 The screening for Scenario 2 identified that across Location 1 to Location 7, the proposed construction traffic is significantly below the 30% increase threshold set out within Rule 1 of the IEMA guidelines for total traffic.
- 8.6.10 The screening also identified that across all locations the proposed construction traffic is also below the 30% increase threshold for HGVs.
- 8.6.11 Rule 2 of the IEMA guidelines states that the assessment must include highway links of high sensitivity where traffic flows have increased by 10% or more. **Table 8.16** demonstrates that for Scenario 2, traffic flows have not increased by 10%. Therefore, it can be concluded that no further assessment is required and the Proposed Development during the construction peak period and decommissioning peak period is to generate a negligible impact.

Mitigation

- 8.6.12 No mitigation or monitoring is required based on this assessment at this stage.
- 8.6.13 As part of post planning permission, a detailed CTMP is recommended to be prepared with one of the aims to reduce the transport impacts of the construction traffic servicing the Proposed Development.

Assessment of Residual Effects

- 8.6.14 Residual effects are considered to be negligible.

8.7 Future Monitoring of Significant Environmental Effects

- 8.7.1 No mitigation or monitoring is required for the construction and decommissioning phases based on this assessment

8.8 Summary

- 8.8.1 In summary, this chapter has described the methods used to assess the impacts, the baseline conditions at the site and surroundings, the potential direct and indirect impacts of the Proposed Development during the construction phase and decommissioning phase.

- 8.8.2 Baseline traffic data on the local road network was surveyed and collected in December 2024, which has been used to inform the baseline assessment. The environmental assessment of traffic and movement uses the IEMA Guidelines (2023).
- 8.8.3 The anticipated percentage change in traffic for all survey locations did not exceed the thresholds set out by IEMA and therefore no further assessment of the impacts has been undertaken and can be considered negligible. It has been concluded that no specific mitigation is required. Nevertheless, a CTMP is recommended to be prepared to set out the aim to reduce the transport impacts of the construction traffic servicing the Proposed Development.
- 8.8.4 **Table 8.18** provides a summary of residual effects during construction and decommissioning.

Table 8.18: Summary of Residual Effects During Construction and Decommissioning

Receptor	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
B9097 (between the Proposed Development access and B920).	N/A	Negligible	N/A	N/A	N/A
B920 (between the B9097 (Proposed Development Road) and B9097 (travelling east to the M90).	N/A	Negligible	N/A	N/A	N/A
B9097 (A second stretch of the B9097, between B920 and B996).	N/A	Negligible	N/A	N/A	N/A
B996 (adjacent Junction 5 of the M90)	N/A	Negligible	N/A	N/A	N/A
B9097 (from the Development access, westward towards B920 and falls within survey Location 3)	N/A	Negligible	N/A	N/A	N/A
B921	N/A	Negligible	N/A	N/A	N/A
B981	N/A	Negligible	N/A	N/A	N/A
B9149	N/A	Negligible	N/A	N/A	N/A