14. Traffic and Transport

14.1 Introduction

14.1.1 This chapter of the EIA Report assesses the likely significant effects of the Proposed Development with respect to Traffic and Transportation. The chapter provides information about the proposed transport arrangements associated with the construction, operational and decommissioning phases of the Proposed Development.

14.1.2 The chapter should be read in conjunction with the development description provided in **Chapter 3 – Description of the Proposed Development** and with respect to relevant parts of **Chapter 10 – Noise** of the EIA Report, where common receptors have been considered and where there is an overlap or relationship between the assessment of effects for both technical areas.

14.2 Limitations of this assessment

14.2.1 There are no limitations relating to Traffic and Transport that affect the robustness of the assessment of the likely significant effects of the Proposed Development.

14.3 Relevant legislation, planning policy, technical guidance

Legislative context

14.3.1 There is no specific legislation that needs to be considered when determining the scope of this assessment. A Construction Traffic Management Plan ('CTMP') will be identified through planning conditions as a requirement which will need to comply with the Roads (Scotland) Act 1984.

Planning policy context

14.3.2 A summary of transport-specific national, regional, and local policies and plans is provided in **Table 14.1**. These policies and plans have been considered to help define the scope of the assessment.

Table 14.1 Planning Policy relevant to Traffic and Transport

Policy Document	Policy issue
Scotland's Fourth National Planning Framework ('NPF4')	NPF4 sets out the Scottish spatial Strategy. It contains policies, principles and regional priorities, along with three key themes: sustainability, liveable places and productive places. It includes policy to support wind farm development subject to location, impact and appropriate mitigation.
Transport Scotland Transport Assessment Guidance (2012)	The report aims to assist in the preparation of Transport Assessments for development proposals in Scotland such that the likely transport impacts can be identified and dealt with as early as possible in the planning process. The document sets out requirements according to the scale of development being proposed. The document notes that a Transport Assessment will be required where a development is likely to have significant transport impacts but that the specific scope and contents of a Transport Assessment will vary for developments, depending on location, scale and type of development.
Onshore Wind Policy Statement (2022)	The sets out the onshore wind ambitions to 2030 highlighting the benefits and considerations relating to onshore wind. This document, also, highlights the need for Abnormal Load deliveries, on Scotland's road network, to be delivered efficiently.
SPT Regional Transport Strategy for the West of Scotland (2008 - 2021)	The vision of the Regional Transport Strategy ('RTS') is 'A world-class sustainable transport system that acts as a catalyst for an improved quality of life for all'. Within this overall vision there are seven key transport objectives, as follows: • Safety and Security: To improve safety and personal security on the transport system • Modal Shift: To increase the proportion of trips undertaken by walking, cycling and public transport • Excellent Transport System: To enhance the attractiveness, reliability and integration of the transport network • Effectiveness and Efficiency: To ensure the provision of effective and efficient transport infrastructure and services to improve connectivity for people and freight • Access for all: To promote and facilitate access that recognises the transport requirements of all • Environment and Health: To improve health and protect the environment by minimising emissions and consumption of resources and energy by the transport system • Economy, Transport and Land-use Planning: To support land-use planning strategies, regeneration and development by integrating transport provision
SPT Regional Transport Strategy for the West of Scotland 2023 – 2038 (emerging)	There is an emerging Regional Transport Strategy for the West of Scotland covering the period from 2023 to 2038. This emerging document updates the RTS vision to 'The west of Scotland will be an attractive, resilient and well-connected place with active, liveable communities and accessible, vibrant centres facilitated by high quality, sustainable and low carbon transport shaped by the needs of all.' It contains five key transport objectives as follows: • To improve the accessibility, affordability, availability and safety of transport in the region. • To reduce harmful emissions of transport. • To enable active travel. • To increase desirability of public transport for all. • To improve connectivity to economic centres and key transport hubs.

Policy Document	Policy issue
	Relating to freight, policy 39 outlines a desire to increasingly move freight by rail and marine modes.
East Ayrshire Local Development Plan (2017)	This Development plan outlines policy for proposed developments in the area. It includes accessibility requirements and the need for compliance with the Ayrshire Road Alliance requirements. It states Transport Assessments may be required to determine impact on the highways network. Policy is outlined relating to wind energy proposals including the requirement for development not to cause unacceptable impacts relating to access and the transport network.
East Ayrshire Council Local Development Plan 2 (emerging)	This emerging plan outlines the policy to guide development within East Ayrshire over a 10–20-year period. Of particular relevance are Policy T1 which sets out requirements for new developments including the need for developments to identify mitigation measures for any adverse impacts on the road network and for compliance with the Ayrshire Road Alliance requirements along with national, regional and local policy. It also sets out the need for Transport Assessments and Travel Plan in some situations to ensure developments meet sustainability requirements. Policy T2 encourages rail over road freight and supports road freight routes that do not route through settlements. Policy RE1, also, highlights that the impacts of development relating to renewable energy will be considered along with its cumulative impact when considered with other concurrent developments in the area and includes impact on trunk roads and road traffic during all phases of development.
East Ayrshire Local Development Plan Supplementary Guidance Planning for Wind Energy (2017)	This document sets out the spatial approach for wind energy development in the area. It includes guidance on development considerations for proposed developments of different scales such as impacts on key pedestrian/cycle routes and core paths and Public Rights of Way, highways impacts during construction (including abnormal load movements) in terms of network constraints, route suitability and ensuring impact on local communities is minimised.

Technical guidance

14.3.3 The assessment has been conducted with reference to guidance contained in Guidance Notes No.1: Guidelines for the Environmental Assessment of Road Traffic ('GEART') (Institute of Environmental Assessment, 1993). GEART provides the framework for the environmental assessment of traffic generated by proposed developments.

14.4 Baseline conditions

Site context

14.4.1 The Development Site boundary and location are illustrated in **Figure 14.1**

14.4.2 The Development Site is located in East Ayrshire approximately 6km to the south-west of New Cumnock and approximately 9km east of Dalmellington, just to the north of the border with Dumfries and Galloway.

Access routes

14.4.3 Access to the Development Site is via an existing track off Afton Road to the east and then onto an existing access track through Pencloe Forest. The Development Site access will be used for all phases of the Proposed Development (construction, operation and decommissioning).

14.4.4 The route proposed for Abnormal Indivisible Load ('AIL') vehicles, is shown in **Figure 14.2** and, is as follows:

- Glasgow Port → Kings Inch Drive → M8 → M77 → A77 →A76 → B741 → Afton Road → Existing access track through Pencloe Forest.

14.4.5 The proposed quarry, from which it is assumed the bulk of the construction materials (stone aggregate and the materials required for the mixing of concrete) will be sourced, is located north-east of Cumnock approximately 18km from the Development Site). The proposed quarry route, is shown in **Figure 14.3** and, is as follows:

- B743 westbound → B713 → A76 → B741[81] → Afton Road → Existing access track through Pencloe Forest.

14.4.6 This assessment will consider the effect of construction traffic on the A76 south of the junction with the B713 (a route which both the quarry and AIL vehicles will travel), along with the rest of the road sections that form the quarry route (the B713, B705 and B743). The impact of AIL deliveries is not included in this chapter as there are specific Roads Authorities approvals and traffic management requirements which will be in place to manage their movement and impacts. As is further discussed within Paragraph 14.6.4 management includes escort of AIL vehicles and scheduling deliveries to times where their impact on the highway network can be minimised.

14.4.7 Furthermore, the AIL deliveries for the Proposed Development will be very few in number as they consist of turbine delivery vehicle movements. It is anticipated that 10 AIL deliveries would be required for each turbine. The Proposed Development includes two turbines and, therefore, 20 AIL deliveries (40 AIL vehicle movements) would be anticipated during the construction phase of development.

Local Road Network

Afton Road

14.4.8 From its junction with the B741, Afton Road is a single two-way carriageway road subject to a speed limit of 30mph and is fronted by agricultural land on its western side and residential dwellings on its eastern side for approximately 380m. Beyond this point, the speed limit changes to national speed limit designation and is predominantly bounded by agricultural land and woodland on both sides (with the exception of short sections adjacent to New Cumnock Afton Cemetery and Glen Afton Caravan Park). This latter section of Afton Road is rural in nature with no road markings or kerbing. A pedestrian footway routes along the eastern side of the carriageway from the B741 for approximately 900m to within the vicinity of the cemetery. Afton Road is a local road within East Ayrshire.

[81] Only a small section, approximately 80m, of the B741 forms part of the quarry route.

B741

14.4.9 From its junction with the A76, the B741 provides a single two-way carriageway highway subject to a speed limit of 30mph which routes for a short section (approximately 75m) before providing a priority junction with Afton Road. This section of the B741 is fronted by residential dwellings. The B741 is a local road within East Ayrshire.

A76

14.4.10 The A76 is a trunk road (strategic highway) connecting Kilmarnock in the north to Dumfries in the south. The highway provides a single two-way carriageway, which is subject to the national speed limit. The carriageway has a width of approximately 7m and within the context of the section on the route, is fronted predominantly by agricultural land uses, with the exception of the section in New Cumnock. New Cumnock follows a linear settlement pattern along the A76 and the B741, with low density development along the former and interspersed development clusters along the latter.

B713

14.4.11 The B713 is a single two-way carriageway subject to a 30mph speed limit through the village of Sorn and 30 and 20 mph speed limits in Catrine, before returning to the national speed limit upon leaving the settlements. The highway width is approximately 5.5m and it is bounded by grass verging and hedgerows on either side. The highway is predominantly rural in nature and routes through mostly agricultural land. When traversing the village of Catrine, the route passes Daldorch House School and Catrine Early Childhood Centre. The B713 is a local road within East Ayrshire.

B705

14.4.12 The section of the B705 on the route is a single two-way carriageway, which is subject to a 30mph speed limit within the village of Catrine. The highway width is approximately 7m and it is fronted initially by agricultural land before entering Catrine, where the land uses change to residential properties, which are set back from the highway. There are pedestrian footpaths on both sides of the carriageway with street lighting columns present within the vicinity of the village. The B705 is a local road within East Ayrshire.

B743

14.4.13 The B743 is a single two-way carriageway, along the proposed quarry route it is predominantly subject to the national speed limit. The highway has a carriageway width of approximately 6m and is afforded grass verges on either side for the most part. The highway is rural in nature and routes predominantly through agricultural land uses, with groups of dwellings interspersed along its length. It also passes through the settlement of Sorn where it is subject to a 30-mph speed limit. The B743 is a local road within East Ayrshire.

Study Area

14.4.14 The study area that has been used for this assessment is the public highway network which forms the route for construction traffic between the Development Site and the quarry. As identified in paragraph 14.4.6, AIL deliveries are not included in the assessment and therefore the study area does not include the AIL delivery route for the port of origin.

Desk Study

14.4.15 The sources of information used for the Traffic and Transportation assessment are listed below in **Table 14.2.**

Table 14.2 Sources of Information used for the Traffic and Transport Assessment

Source	Data
Google Earth/Google Maps (www.google.co.uk/maps)	Online Mapping
Crashmap Pro (www.crashmap.co.uk)	Personal Injury Accident (PIAs)
Department for Transport: Road Traffic Statistics (https://roadtraffic.dft.gov.uk)	Traffic counts
Department for Transport: Trip End Model Presentation Program ('TEMPro')	Deriving traffic growth factors
Department for Transport: Road Traffic Statistics - TRA0307 and TRA0308 (https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra)	Adjusting AADF to 12hr traffic flow

Survey Work

14.4.16 As part of this assessment, data from automatic traffic counts ('ATCs') undertaken in 2015 were used, which is the approach set out in Scoping Report.

Personal Injury Accident Data

14.4.17 Records of the personal injury accidents ('PIAs') have been obtained from the CrashMap database (https://www.crashmap.co.uk/) which uses information collected from the Police. This data is approved by the National Statistics Authority and reported on by the Department for Transport ('DfT') each year. Records have been obtained over a five-year period between January 2017 and December 2021. Recorded PIAs are identified in **Figure 14.4**.

14.4.18 'Serious' PIAs are defined as those which result in hospitalisation of one or more of the parties involved. 'Fatal' PIAs are defined as those in which one or more parties' dies within 30 days as a result of injuries sustained. The impact of casualties differs according to the severity of the injuries sustained. The three groups are usually differentiated as follows:

- Fatal: any death that occurs within 30 days from causes arising out of an accident;
- Serious: records casualties who require hospital treatment and have lasting injuries, but who do not die within 30 days of an accident; and
- Slight: where casualties have injuries that do not require hospital treatment, or, if they do, the effects of the injuries quickly subside.

14.4.19 The route between the Development Site and the quarry was assessed in relation at accidents. On the quarry route, the B471, B743, B705, B713 south of the B705 and Afton

Road all recorded no accidents between 2017 and 2021. **Table 14.3** summarises the recorded accidents within the accident assessment area.

Table 14.3 2017 - 2021 Recorded Accidents

Link/Junction	Severity			Total	Average Accident Rate per Annum	No. Accidents involving Vulnerable Road User Casualties
	Slight	Serious	Fatal			
A76 between B471 and B713	12	3	2	17	3.4	1 x pedestrian (fatal)
B713 between the B705 and the quarry	1	0	0	1	0.2	-
A76/B713	3	0	1	4	0.8	-
A76/B471	1	0	0	1	0.2	-

Source: Department for Transport Data Published by www.crashmap.co.uk

Baseline Traffic Flows

14.4.20 Baseline traffic flow data for the A76 has been established using publicly available traffic counts published by the DfT. These counts detail the annual average daily traffic ('AADT') (24-hour), and the proportion of Heavy Good Vehicles ('HGVs'), at appropriate locations on each road within the study area. **Figure 14.5** indicates the locations of each traffic count and data from 2019 (dataset year available at the time of writing prior to data that may have been impacted by the COVID-19 pandemic UK travel restriction) are presented in **Table 14.4**.

14.4.21 A factor has been applied to this count, to adjust the AADT 24-hour flow to a 12-hour traffic flow to coincide with the typical 12-hr working days which are anticipated during the construction phase of the Proposed Development and to make the assessment more robust. This results in a 12-hr baseline traffic flow to assess percentage impact of construction traffic; using a 24-hr baseline traffic flow would reduce the percentage impact of the Proposed Development construction traffic superficially, as by its nature 24-hr traffic flows are greater than 12-hr traffic flows. The factor has been derived from Table TRA0307' and Table TRA0308 'Traffic distribution on all roads by time of day and day of the week, for selected vehicle types, Great Britain: 2019'. The factor used to adjust the 2019 24 hr data to 12-hr data, using these DfT data tables, was 0.741 for HGV and 0.846 for all vehicles.

Table 14.4 DfT count points: baseline AADF and 12-hour flow (2019)

Road	Location	Figure 14.5 Ref.	2019 Baseline AADF		2019 Baseline (12-hour adjusted)	
			HGVs	All Vehicles	HGVs	All Vehicles
A76	North of New Cumnock (count id: 80520)	4	892	6,135	661	4,946
A76	Cumnock, adjacent to the B7046 (count id: 80521)	3	379	6,121	281	4,934
A76	North of Cumnock (count id: 80522)	2	766	7,834	567	6,315
A76	North of Auchinleck (count id: 80238)	1	517	10,633	383	8,571

14.4.22 Additional traffic data was sourced from Automatic Traffic Counts ('ATC') undertaken in 2015 along the survey route. **Table 14.5** presents the 2015 ATC data for the 12-hour time period for assessment.

Table 14.5 ATCs: baseline 12-hour flow (2015)

Road	2015 Baseline (12-hour adjusted)	
	HGVs	All Vehicles
B743	76	1,020
Afton Road	50	186

Future Baseline Traffic Flows

14.4.23 Background traffic growth will occur on the local road network irrespective of whether the Proposed Development is constructed. Projected baseline traffic growth flows for the expected year of construction (anticipated to be 2025) have been calculated by applying growth factors derived from the Trip End Model Presentation Program (TEMPro 7.2) for the East Ayrshire area.

14.4.24 A growth factor of 1.0516 was applied to the 2019 DfT base flows, to forecast traffic for the year 2025. A growth factor of 1.0649 was applied to the 2015 ATC base flows to forecast traffic for the year 2025. It is noted that the 2015 traffic counts are now 8 years' old, however, given the nature of the roads, and Afton Road has a dead end, it is considered that traffic flows are unlikely to have changed during the period.

14.4.25 The 2025 baseline traffic flow is summarised in **Table 14.6**.

Table 14.6 Future Baseline AADT and 12-hour Flow (2025)

Road	Location	2025 Baseline AADT		2025 Baseline (12-hour adjusted)	
		HGVs	All Vehicles	HGVs	All Vehicles
A76	North of New Cumnock (count id: 80520)	938	6,451	695	5,200
A76	Cumnock, adjacent to the B7046 (count id: 80521)	399	6,437	295	5,189
A76	North of Cumnock (count id: 80522)	805	8,238	597	6,641
A76	North of Auchinleck (count id: 80238)	544	11,181	403	9,013
B743		-	-	79	1,063
Afton Road		-	-	52	194

14.5 Consultation

14.5.1 **Table 14.7** provides a summary of the issues about the Proposed Development that have been raised by consultees and the responses given.

Table 14.7 Summary of issues raised during consultation regarding Traffic and Transport

Issue raised	Consultee(s)	Response and how considered in this chapter	Section Ref
Cumulative Traffic Impact: ***"Early contact with the Ayrshire Roads Alliance ('ARA') is advised. Any other development, not limited to wind farm development, which is likely to add to cumulative traffic volumes on the proposed delivery and access route network should be considered within the EIA Report."*** ***"The EIA Report should identify potential sources of materials (e.g., stone quarries) if these are off site and consider the impacts of these routes, including on communities along those routes. Such assessment should also include cumulative impacts with other developments."***	East Ayrshire Council (April 2020)	The cumulative traffic and transport impact is considered within **Chapter 14 - Traffic and Transport** of the EIA report.	**14.11**
Afton Road and Cumulative Traffic Impact: ***"for wind farm access via the C90 Afton Road, a condition which requires the Developer to seek the Planning Authority's written approval that their construction traffic using the Afton Road, in combination with other similar traffic associated with other nearby sites, is acceptable would be considered on any subsequent consent, if granted, for Enoch Hill 2 to minimise cumulative traffic impacts on the Afton Road."***	East Ayrshire Council (April 2020)	The cumulative traffic and transport impact is considered within **Chapter 14 - Traffic and Transport** of the EIA report, including impact on Afton Road.	**14.9, 14.10 and 14.11**
Traffic Flow Scenario: ***"The EIA Report must detail the volume of stone expected to be required for the development and detail***	East Ayrshire Council (April 2020)	The assessment of traffic and transport impacts, within this **Chapter 14 – Traffic and Transport** of the EIA report, assumes that all stone would be	**14.9**

Issue raised	Consultee(s)	Response and how considered in this chapter	Section Ref
a 'worst case scenario' of traffic volume where all stone would require to be imported from quarries off site."		imported from off-site, as a worst-case scenario and details the proposed construction vehicle routes.	
Site Access: ***"The site access details should be included as an integral part of the project and be within the application site boundary, incorporating appropriate visibility sightlines."***	East Ayrshire Council (April 2020)	As set out in section 3.8 of **Chapter 3 - Description of the Proposed Development,** of the EIA report, access to the Development Site is via an existing track off Afton Road to the east of the Development Site and then an existing access track through the Pencloe Forest. This track will be upgraded as necessary. A typical general arrangement for the upgraded junction is shown on **Figure 3.12**.	**3.8**
Traffic Management Plan: ***"The EIA Report should include an outline Traffic Management Plan as a technical appendix."***	East Ayrshire Council (April 2020)	A draft outline construction traffic management plan is presented within this chapter of the EIA Report.	**14.7**

14.6 Scope of the assessment

14.6.1 The scope of the traffic and transport assessment as set out in the following sections has been based on the proposed construction and operation of a wind farm of up to two turbines and associated infrastructure including access tracks, hard standing areas, temporary works and on-site electrical infrastructure including cabling.

Spatial scope

14.6.2 The spatial scope of the assessment of Traffic and Transport covers the area of the Development Site, together with the roads that have formed the basis of the study area described in **Section 14.4**. The Study Area roads form the proposed quarry traffic route, shown in **Figure 14.3,** and potential receptors along these roads form the basis of the scope of the traffic related assessment.

14.6.3 Beyond these roads, traffic from the Proposed Development would access the wider road network where its effect would be diluted by existing traffic on these routes or would distribute to a point where the effects from traffic would be minimal.

14.6.4 As discussed in **Paragraph 14.4.7,** the abnormal load deliveries will be relatively few in number compared to the construction traffic and will be closely managed (including escort vehicles and avoidance of peak and sensitive traffic periods). Roads Authorities approvals for the delivery of the abnormal loads will be required beforehand and done under consultation. This route is therefore not included in relation to potential traffic related effects.

Temporal scope

14.6.5 The temporal scope of the assessment of Traffic and Transport is consistent with the anticipated period over which the construction of Project would be carried out, covering an 18-month construction period commencing in 2025. The proposed construction programme is presented in **Chapter 3 – Description of the Proposed Development** of the EIA report.

14.6.6 The majority of traffic will be generated during the construction stage. As discussed further in **paragraph 14.6.11**, relatively little traffic generation anticipated during operation and, on the assumption that below ground infrastructure and access tracks will remain in situ, less traffic will be generated during decommissioning than during construction.

Potential receptors

14.6.7 Receptors are the users or beneficiaries of the road network such as pedestrians, cyclists, equestrians, and drivers who travel within the vicinity of the Proposed Development.

14.6.8 GEART identifies the groups and special interest groups that may be affected, including sensitive locations such as hospitals, churches, schools and historical buildings and locations with people walking and cycling.

14.6.9 Potential receptors along the proposed quarry route (the route that construction traffic, excluding AILs, will utilise) will form the basis of the traffic and transport impact assessment in the following sections of this chapter and are identified in **Table 14.8**.

Table 14.8 Potential Receptors: Quarry Route

Highway Link	Identified Potential Receptors on Quarry Route Link Sections
Afton Road	Short section of residential properties on the east side of the carriageway, small number of, predominantly agricultural, property accesses and New Cumnock Afton Cemetery.
B741	New Cumnock – residential properties.
A76	New Cumnock and Pathhead – residential properties, New Cumnock Primary School, New Cumnock Railway Station, retail frontage, leisure land uses. A small number of residential and/or agricultural properties.
B705	Catrine Village – residential properties.
B713	Sorn Village – residential properties. Catrine Village – residential properties, Daldorch House School and Catrine Early Childhood Centre. A number of other residential and/or agricultural properties.
B743	Sorn Village – residential properties. A small number of agricultural properties.

Likely significant effects

14.6.10 The receptors that have been taken forward for the Traffic and Transport assessment are summarised in **Table 14.9**.

Table 14.9 Traffic and Transport receptors scoped in for further assessment

Receptor	Relevant assessment criteria	Likely significant effects
Occupants (residents, workers, schools, shopping areas, etc – groups identified in GEART) alongside the roads used by construction traffic and users of the roads such as drivers, pedestrians and cyclists.	GEART**Error! Bookmark not defined.** screen rules 1 and 2 as set out in Paragraph 14.8.4.	Potential increase in traffic flows on the local road network and impact on: - severance; - driver delay; - pedestrian delay; - pedestrian amenity; - fear and intimidation; and - accident and safety.

14.6.11 The following receptors have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant:

- Potential effects on receptors as a result of traffic associated to the operational phase of the Proposed Development have been scoped out. Once the Proposed Development is operational, it is envisaged that the amount of traffic associated with the Proposed Development limited to occasional visits for maintenance checks. Therefore, it is considered that the effects of operational traffic would be negligible.
- Potential effects on receptors as a result of decommissioning traffic from the decommissioning phase of the Proposed Development have been scoped out. The traffic baseline may be different when the decommissioning is undertaken after the lifespan of the development's operational phase. Traffic impacts are anticipated to be similar in nature, but lower in magnitude i.e., fewer required vehicle movements, as during the construction phase.
- Hazardous loads, as none are expected.

14.7 Environmental measures embedded into the development proposals

14.7.1 A range of environmental measures have been embedded into the development proposals as outlined in **Section 3.3. Table 14.10** outlines how these embedded measures will influence the traffic and transport assessment.

Table 14.10 Summary of the embedded environmental measures and how these influence the Traffic and Transport assessment

Receptor	Changes and effects	Embedded measures
All	Construction vehicles could transfer mud and debris onto the carriageway, impacting on transport network users.	Measures prevent transfer of site mud and debris onto the public highway including wheel washing facility provision and sheeting installed prior to leaving the Development Site. These measures would be outlined and enforced via a Construction Environment Management Plan (CEMP).
All	Changes to traffic flows on local roads impacting on transport network users and local residents.	Construction traffic will travel to and from the Development Site via specific defined routes, which will be routed to minimise the impact on other highway users and local residents. Measures would be detailed in a, and enforced by means of, a Construction Traffic Management Plan (CTMP). Measures would include appropriate signage posted on the approach to the Development Site access points and delivery management. Likely measures are outlined in Paragraph 14.7.3.
All	Abnormal Indivisible Load movements impacting on traffic flows and the highways (transport network users).	Abnormal Indivisible Load movements would be planned and managed in consultation with/notifying the appropriate police and local highway authority.

Outline Construction Traffic Management Plan

14.7.2 The Construction Traffic Management Plan ('CTMP') will be an embedded measure and anticipated to be a planning condition requirement. Following discharge of the planning condition, further detailed discussions would be carried out with the Road Authority by the appointed construction contractor to agree any variations or additions to the approved CTMP.

14.7.3 An outline of the CTMP measures is set out as follows:

- Detailed discussions will be held with the Road Authority, by the appointed construction contractor, to agree the traffic control requirements during the construction phase.
- Police presence and assistance with traffic control will be arranged from the port of entry and along the route, as the long low-loader vehicle's manoeuvring speeds will be slow at junctions, and it would encroach onto the opposing lane on tight bends and around some roundabouts.
- Abnormal load deliveries would be planned to avoid peak periods – to leave the port mid-morning and arrive on the Development Site mid-afternoon – prior to nightfall.
- During times of abnormal load deliveries and peak construction traffic activity, trained monitors with two-way radios will be stationed at key pointed to control the flow of traffic to the Development Site to allow free-flow two-way traffic.
- The road haulier will obtain the required permits for abnormal loads from Transport Scotland, who liaise with the relevant affected councils and other interested organisations, for the total route from the port of entry to the Development Site.
- Construction traffic movements (equipment and materials, where possible, will be scheduled to avoid the peak traffic periods at the beginning and end of each day and other sensitive periods (including school drop off and pick up times), in order to minimise any potential disturbance to local traffic.
- Information will be provided by the construction contractor to the Road Authority, affected councils, and community leaders to facilitate the distribution of information relating to the construction period, including construction traffic flows. Residents on the local roads will also be kept informed by the contractor on a regular basis during the construction works, to follow good practice.
- Signage would be erected on the main routes advising of the frequency and overall period of abnormal load vehicle convoy movements to allow motorists advance warnings.
- Signage will be erected on the A76, A713 and B741 to identify the Development Site access routes and to inform motorists that the local roads are accommodating construction traffic. These signs would, also, be positioned at access points approaching the route.

- Wheel washing and road sweeping will be carried out where required to ensure that local highways are kept clear of mud and debris.

- All HGVs transferring loose material will be covered to mitigate against any spillage onto the highway or adjacent footways.

14.8 Assessment methodology

General Approach

14.8.1 The project description is set out in **Chapter 3 – Description of the Proposed Development** of this EIA Report, with the Approach to EIA set out in **Chapter 4 – Approach to Preparing the EIA Report** of the EIA report. Whilst this has informed the approach that has been used in this Traffic and Transportation assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this Traffic and Transport assessment.

14.8.2 The guidance that is followed when assessing the potential significance of road traffic effects is summarised in GEART, which states that:

"*The detailed assessment of impacts is…likely to concentrate on the period during which the absolute level of an impact is at its peak, as well as the hour at which the greatest level of change is likely to occur*." (Paragraph 3.10).

14.8.3 To assess the impact at its peak, the likely percentage increase in traffic is determined by comparing estimates of traffic generated by the Proposed Development with future predicted baseline traffic flows (the anticipated starting year of construction is 2025) on the road links in the vicinity of the Proposed Development.

14.8.4 GEART provides two rules that are used to establish whether an environmental assessment of traffic effects should be carried out on receptors:

- *"Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%)*

- *Rule 2: Include sensitive areas where traffic flows are predicted to increase by 10% or more…"*

14.8.5 It should be noted that, according to GEART, predicted traffic flow increases as a result of the Proposed Development **below 10%** are generally not considered to be significant, as daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flows below this level are, therefore, assumed not to result in significant environmental effects and have therefore not been assessed further as part of this chapter.

14.8.6 The future traffic flows presented in **Table 14.6** will be compared with the future year traffic flows with the Proposed Development. It should be noted that the assessment of the links the B713 and B705 will use the traffic flow data on B743, as proxy data. The B743 connects to the B713, with the B705 between two sections of the B713.

Receptor sensitivity

14.8.7 The sensitivity of each highway link included in the assessment has been assigned a sensitivity in accordance with GEART. This is based on the proximity of sensitive

receptors to the highway link and the highway environment. The perception of changes in traffic varies according to factors such as:

- "*existing traffic levels;*
- *the location of traffic movements;*
- *the time of day;*
- *temporal and seasonal variation of traffic;*
- *design and layout of the road;*
- *land-use activities adjacent to the route;*
- *ambient conditions of adjacent land-uses.*"

14.8.8 **Table 14.11** summarises the rationale used to determine the sensitivity, of each highway link included in the assessment, against the corresponding receptors as part of the assessment as contained in GEART. Professional judgement is also used to determine the sensitivity of the receptor.

Table 14.11 Receptor Sensitivity Rationale

Sensitivity	Description / Reason	Receptor
High	Highway links with a high sensitivity to changes in traffic flows include routes with sensitive receptors alongside them such as schools and colleges, and/or where there are land-uses which result in high volumes of pedestrian/cycle users and the road is narrow and/or footway provision is poor, existing traffic volumes are high for the type of road resulting in congestion and road safety issues.	Occupants of land-uses alongside the highway link and users of the highway link
Medium	Highway links with a medium sensitivity to changes in traffic flows include routes with some sensitive receptors alongside them, and/or where there are land-uses which result in some pedestrian/cyclist users, road design and footway provision is adequate/appropriate, existing traffic volumes can be accommodated for the type of road but approaching capacity.	Occupants of land-uses alongside the highway link and users of the highway link
Low	Highway links with low sensitivity to changes in traffic flows include routes with no sensitive receptors and some land uses alongside and no/very limited pedestrian/cyclist users, road design and footway provision is appropriate, existing traffic volumes can be accommodated for the type of road.	Occupants of land-uses alongside the highway link and users of the highway link
Negligible	Highway links with negligible sensitivity to changes in traffic flows include routes with no sensitive receptors and very few land uses alongside them, which have no direct access and no/very limited pedestrian/cyclist users and existing traffic volumes can be accommodated for the type of road.	Users of the highway link

14.8.9 Sensitivity judged as 'Low' or 'Negligible' results in GEART Rule 1 being considered for that highway link 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%. Sensitivity judged as 'High' or 'Medium' results in GEART Rule 2 (sensitive areas where traffic flows are predicted to increase by 10% or more) being considered for that highway link.

Environmental effects assessed

As outlined in **Table 14.9** the environmental effects assessed are:

- severance;
- driver delay;
- pedestrian delay;
- pedestrian amenity;
- fear and intimidation; and
- accidents and safety.

Magnitude of impact

14.8.10 In relation to traffic and transport, the significance of each effect identified in **Table 14.4** has been considered against the criteria within GEART, where possible. However, GEART states that:

"*For many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact as well as the assessment of the damage to various natural resources."* (Paragraph 4.5, IEA, 1993).

14.8.11 **Table 14.12** provides a summary of the magnitude of change for each transport effect, with the thresholds used to determine this being based on guidance within GEART and professional judgement.

Table 14.12 Magnitude of Impact Summary

Transport Effect	Magnitude of Impact			
	High	**Medium**	**Low**	**Negligible**
Severance	Change in total traffic or HGV flows over 91%	Change in total traffic or HGV flows of 61-90%	Change in total traffic or HGV flows of 31-60%	Change in total traffic or HGV flows of less than 30%
Driver Delay	High increase in queuing at junctions and/or congestion on road links.	Medium increase in queuing at junctions and/or congestion on road links.	Low increase in queueing at junctions and/or congestion on road links.	Low or no increase in queuing at junctions and/or congestion on road links.

Transport Effect	Magnitude of Impact			
	High	Medium	Low	Negligible
Pedestrian Amenity, Delay and Fear and Intimidation	Based on general level of pedestrian activity, visibility, and physical conditions such as traffic flow, traffic composition, crossing points and pavement width/separation from traffic.			
Accident and Safety	Informed by a review of existing collision patterns and trends based upon the existing personal injury accident records and the forecast increase in traffic.			

14.8.12 Further information, to the summary in **Table 14.12**, on the identification of magnitude of impact used within this Traffic and Transport impact assessment is outlined below.

Severance

14.8.13 There are no predictive formulae which give simple relationships between traffic factors and levels of severance. GEART states that changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance (equating to low, medium and high magnitude of change respectively for the purpose of this assessment). In general, marginal (slight) changes in traffic flow are, by themselves, unlikely to create or remove severance.

Driver delay

14.8.14 GEART states that delays are only likely to be significant when the traffic on the network surrounding a proposed development is already at, or close to, the capacity of the system. The capacity of a road or a particular junction can be determined by establishing the ratio of flow to capacity (RFC) or judged by traffic increase levels.

14.8.15 For this assessment, criteria from GEART has been used to assess the effects on traffic levels and driver delay, which states the need for assessment where changes in traffic flows exceed 30%.

Pedestrian delay

14.8.16 Given the range of local factors and conditions which can influence pedestrian delay, GEART does not recommend that thresholds be used as a means to establish the significance of pedestrian delay but recommend that reasoned judgements be made instead. However, GEART suggests a lower threshold of 10 seconds delay and upper threshold of 40 seconds delay which, for a link with no crossing facilities, equates to the lower threshold of a two-way flow of 1,400 vehicles per hour. For this assessment, the significance of the effects of construction traffic on pedestrian delay would be based on professional judgement and interpretation.

Pedestrian amenity

14.8.17 GEART notes that changes in pedestrian amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a positive effect and the latter a negative effect.

Fear and intimidation

14.8.18 There are no commonly agreed thresholds by which to determine the significance of this effect. GEART notes that special consideration should be given to areas where there are likely to be particular problems, such as high-speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups.

Accidents and safety

14.8.19 This is informed by a review of existing collision patterns and trends based upon the existing personal injury collision records and the forecast increase in traffic.

Significance of effect criteria

14.8.20 The classification of a likely traffic and transport effect is derived by considering the sensitivity of the receptor (derived from **Table 14.11**) against the magnitude of change (derived from **Table 14.12**) as defined in **Table 14.13** below. The shading indicates those significance ratings that are deemed to be 'significant' effects.

Table 14.13 Significance Criteria

		Magnitude of change				
		Very high	High	Medium	Low	Very low
Sensitivity	Very high	Major (Significant)	Major (Significant)	Major (Significant)	Major (Significant)	Moderate (Probably significant)
	High	Major (Significant)	Major (Significant)	Major (Significant)	Moderate (Probably significant)	Minor (Not significant)
	Medium	Major (Significant)	Major (Significant)	Moderate (Probably significant)	Minor (Not significant)	Negligible (Not significant)
	Low	Major (Significant)	Moderate (Probably significant)	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)
	Very Low	Moderate (Probably significant)	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)

14.8.21 Major and Moderate effects are considered to be significant in terms of the EIA regulations, whilst Minor and Negligible effects are considered to be neutral/not significant.

Information gaps

14.8.22 In relation to existing traffic flow information for the road network surrounding the Proposed Development, sufficient information has been obtained to allow an assessment to be made of the potential traffic effects as a result of the Proposed Development.

14.9 Assessment of Traffic and Transport Effects

Identification and evaluation of key impacts

14.9.1 This section provides an assessment of the effects arising from the traffic predicted to be generated by the Proposed Development.

14.9.2 **Table 14.14** identifies the sensitivity of the relevant highway links and the Gert Rule that applies.

Table 14.14 Locations Sensitive to Changes in Traffic Flow

Highway Link	Rationale	Receptor Sensitivity	Assessment (GEART Rule)
A76 - North of New Cumnock (count id: 80520)	Whilst count location is not especially sensitive, the location is used as a proxy for the A76 through New Cumnock. Some sensitive land uses identified including residential dwellings, retail frontage, New Cumnock Primary School. There are some narrow footways. Bus stops are present and a railway station. There is provision of both signalised (in the vicinity of the school) and unsignalised (with central pedestrian refuge) crossings.	High	Rule 2
A76 - Cumnock, adjacent to the B7046 (count id: 80521)	This section of road forms a by-pass to the settlement of Cumnock and subsequently is separated from any sensitive receptors by wide verges and wooded embankments. No footways or bus stops, good visibility.	Negligible	Rule 1
A76 - North of Cumnock (count id: 80522)	This section of road is separated from any sensitive receptors by wide verges and wooded embankments. No footways or bus stops, good visibility.	Negligible	Rule 1
A76 - North of Auchinleck (count id: 80238)	No sensitive receptors. Wide rural and open. Clear visibility. No footways or bus stops. Sufficiently distant from sensitive land uses.	Negligible	Rule 1
B743	Properties are set back from the carriageway, there are sections of footway provision where pedestrian flows would be anticipated.	Low	Rule 1
B713	Some sensitive land uses identified within Catrine including an early years centre and road access to a school. Catrine has footway and properties set back from the carriageway.	Medium	Rule 2

Highway Link	Rationale	Receptor Sensitivity	Assessment (GEART Rule)
	Sorn village properties are set back from the carriageway and there is pedestrian provision.		
B705	Properties are set back from the carriageway. Pedestrian footway is provided including section with bollards.	Low	Rule 1
B741	Only approx. 70m of the road is used as part of the construction route and the properties it passes are set back from the carriageway and footway is provided. Due to this being a very short section and of negligible sensitivity it is not assessed further.	Negligible	Rule 1
Afton Road	This road routes passed a small number of residential properties, which are set back from the carriageway with pedestrian footway provided (which extends to the cemetery).	Low	Rule 1

Construction Phase

14.9.3 Where possible, construction activities would be carried out concurrently, thus minimising the overall length of the construction programme. An indicative 18-month construction programme (commencing 2025) (presented in **Chapter 3 – Description of the Proposed Development** of the EIA Report) has been assumed for the purposes of this assessment.

14.9.4 For the vehicle movements it is assumed a worst case that all aggregates will need to be imported to the Development Site, a summary is presented in **Table 14.15**.

Table 14.15 Predicted Traffic Generation during Construction Phase – Aggregate Sourced Off-site

Activity	Total Loads	Total Trips (two-way [arrivals / departures])
Delivery of plant and equipment	30	60
Delivery of road stone for access tracks	1,687	3,374
Delivery of road stone for areas of crane operation	297	594
Delivery of road stone for control building compound	76	152
Delivery of concrete for control building and transformer / generator base	62	124

Activity	Total Loads	Total Trips (two-way [arrivals / departures])
Delivery of concrete for battery storage foundations	10	20
Delivery of road stone for construction compound	225	450
Delivery of backfill stone for turbines	126	252
Delivery of culvert and bridge materials	6	12
Delivery of geogrid	8	16
Delivery of sand	38	76
Delivery of compound general equipment	21	42
Delivery of electrical equipment	60	120
Delivery of external WTG transformers	1	2
Delivery of cabling	2	4
Concrete for WTG transformer plinth	1	2
Delivery of base rings	1	2
Delivery of shuttering	2	4
Delivery of formwork and reinforcing steel	36	72
Delivery and removal of mobile crane	2	4
Delivery of turbines	20	40
Delivery of energy storage equipment	16	32
Felling Activities	48	96
Removal of plant and equipment	30	60
Delivery of Concrete for Turbines	640	1280
Total	**3,445**	**6,890**

14.9.5 **Table 14.16** outlines the construction traffic movements across the 18-month construction period.

14.9.6 Based on the construction programme and traffic generation associated to each activity, the construction traffic results in an approximate peak of 96 HGV movements per day two-way (approximately 48 arrivals and 48 departures per day). The peak construction traffic is predicted to occur in month five of the 18-month construction programme, due to month four having deliveries for multiple construction activities and including eight days with concrete delivery. The construction programme is presented in **Figure 3.9.**

14.9.7 As outlined in paragraph 14.7.2, the construction route will be agreed with EAC as part of a CTMP at the detailed design stage. Wherever possible, construction traffic would be scheduled to avoid peak hour travel to ensure minimal disruption.

Table 14.16 Construction Traffic – monthly movements across the 18-month construction period

Activity Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
Delivery of temporary compound fencing and huts		42																	**42**
Delivery of plant and equipment	60																		**60**
Road stone for tracks and temporary compounds	765	765	765	765	765														**3,824**
Culvert and bridge materials	6	6																	**12**
Stone for crane pads				238	238	119													**594**
Stone for building compound		38	76	38															**152**
Concrete for control building compound, transformer/generator plinths				62	62														**124**
Geogrid	8	8																	**16**
Delivery of control building equipment							60	60											**120**
Cabling					1	3													**4**
Sand					25	51													**76**
Turbine bases (concrete)				320	320	320	320												**1,280**
Reinforcing steel + shuttering			11	22	22	22													**2**

Activity Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
Base rings				2															**2**
Concrete for WTG transformer foundations								2											**252**
Crane delivery						2													**40**
WTG backfill					126		126												**2**
Delivery of turbines (abnormal load deliveries)						8	16	16											**2**
Crane removal									2										**20**
Delivery of WTG transformer and externals									2										**32**
Delivery of concrete for battery storage compound plinths													7	13					**60**
Delivery of concrete for battery storage equipment															16	16			**42**
Felling Activities						96													**96**
Removal of plant and compound equipment																		60	**60**
Total movements per month (excluding AIL deliveries)	839	859	852	1,446	1,558	613	506	62	4	0	0	0	7	13	16	16	0	60	6,794
Total trips (excluding AIL deliveries) per 12-hour day, based on 22 working days per month.	39	40	39	91*	96*	54*	48*	3	1	0	0	0	1	1	1	1	0	3	.

*assuming 8 days with concrete delivery.

Construction Effects

14.9.8 **Table 14.15** shows the percentage change in traffic flows in 2025, with construction traffic on the local road network. The GEART screening exercise is also presented within this table. Percentage increases that exceed relevant GERT threshold of assessment rule would be subject to further assessment. Any increase that is below the GEART threshold would not be taken forward for assessment.

14.9.9 Given the potential receptors described in **Table 14.13, Table 14.16** identifies the highway links that are taken forward for assessment based on the percentage impacts on these links exceeding the 10% threshold (Rule 2) or 30% HGV threshold (Rule 1).

14.9.10 A further assessment of environmental effects on the following links will be undertaken based on the percentage impacts results detailed in **Table 14.16:**

- A76 – in the vicinity of New Cumnock;
- B743;
- B705;
- B713; and
- Afton Road.

14.9.11 While the A76 near Cumnock as an increase in total traffic volumes greater than 30% this location has negligible sensitivity to traffic and transport impacts (as outlined in **Table 14.14** and therefore impacts would be not significant. These section of the A76 has not been taken forward for further assessment.

14.9.12 **Section 14.11** presents the further assessment of the links for detailed assessment, with a summary of the results of the assessment of the Traffic and Transport effects is provided in **Table 14.17**.

Table 14.17 Forecast Baseline Traffic with Predicted Construction Traffic

Highway Link	GEART Rule	2025 Base (12hr Adjusted)		Construction Traffic	2025 (12hr Adjusted) + Construction		% Change		Further Assessment Required
		HGV	Total	HGV	HGV	Total	HGV	Total	
A76 - North of New Cumnock (count id: 80520)	Rule 2	695	5,200	96	791	5,296	14%	4%	Exceeds 10% in HGV traffic only - assessment required
A76 - Cumnock, adjacent to the B7046 (count id: 80521)	Rule 1	295	5,189	96	391	5,285	33%	4%	Exceeds 30% in traffic HGV only - assessment required
A76 - North of Cumnock (count id: 80522)	Rule 1	597	6,641	96	693	6,737	16%	1%	No further assessment required
A76 - North of Auchinleck (count id: 80238)	Rule 1	403	9,013	96	499	9,109	24%	1%	No further assessment required
B743 (and B705*)	Rule 1	79	1,063	96	175	1,159	122%	9%	Exceeds 30% in HGV traffic only - assessment required
B713*	Rule 2	79	1,063	96	791	5,296	122%	9%	Exceeds 10% in HGV traffic only - assessment required
Afton Road	Rule 1	52	194	96	391	5,285	184%	50%	Exceeds 30% in traffic - assessment required

*Note: the assessment of the B713 and B705 uses the traffic count on the B743.

14.10 Assessment of effects: quarry route

A76 (New Cumnock)

Change in Future Baseline Conditions

14.10.1 The A76 is assessed as being of high sensitivity, therefore the Rule 2, 10% increase threshold applies.

14.10.2 The GEART threshold of 10% for Rule 2 receptors is exceeded as the 96 two-way HGV movements result in a 30% increase in HGV flows when compared to the future on this highway link. The traffic increase is temporary: 96 HGVs is a worst-case traffic scenario which occurs during one month of the construction traffic programme and for only 8 days of that month when concrete delivery for turbine bases occurs. It is noted that 96 HGVs over the 12-hour construction period could comprise eight HGVs per hour on average, which is one every 7.5 minutes.

14.10.3 The 10% threshold is not exceeded with respect to the increase in total traffic as a result of the Proposed Development.

Predicted effects and their significance

Severance

14.10.4 The A76 in the vicinity of New Cumnock has a change in traffic flow of 2% and of HGVs of 14%. Based on the GEART guidance as summarised in **Table 14.12**, a change of traffic flow of 30% or less has a negligible magnitude of change on severance. As set out in paragraph 14.10.2 above, the hourly average would be eight HGVs which would not impact on severance. This means that it is considered that the increase in HGVs, due to the Proposed Development are unlikely to create severance within the community. The level of the effect is therefore considered negligible overall (not significant).

Driver delay

14.10.5 The total traffic percentage increase on the A76 (near New Cumnock) is only 2%, for HGVs it is 14%. Based on the criteria from GEART, as summarised in **Table 14.12**, this magnitude of HGV flow increases is unlikely to cause significant driver delay. The increase in traffic of one HGV every approximately 7.5 minutes would not affect junctions' capacity and, therefore, would result in a negligible magnitude of change in respect of driver delay. The level of the effect is therefore considered negligible overall **(Not Significant).**

Pedestrian delay

14.10.6 The A76 near New Cumnock has signalised and uncontrolled (with central pedestrian refuges) crossing points. There is also pedestrian footway provision. Therefore, an increase of 2% of total traffic flows (with the Proposed Development construction traffic) would not be considered to impact on pedestrian delay. The magnitude of change of the impact on pedestrian delay is therefore negligible.

14.10.7 The level of the effect on this high sensitivity receptor is therefore considered negligible overall **(Not Significant).**

Pedestrian amenity

14.10.8 The total traffic percentage increase on the A76 (near New Cumnock) is only 2%, for HGVs it is 14%. Based on the criteria from GEART, as summarised in **Table 14.12**, this magnitude of overall traffic, and HGV traffic, flow increases is unlikely to impact on pedestrian amenity as it is not double the anticipated base flow traffic. The level of the effect is therefore considered negligible overall **(Not Significant).**

Fear and intimidation

14.10.9 The A76 is of high sensitivity to traffic and transport impacts particularly due to the proximity to New Cumnock Primary School, retail frontage and public transport connections. However, New Cumnock has footway provision with signalised and uncontrolled (with central pedestrian refuges) crossing points. Therefore, in terms of sensitivity to fear and intimidation, this receptor is considered to be of medium sensitivity.

14.10.10 The increase of 2% of total traffic would not have a significant impact on levels of fear and intimidation. An increase of HGV traffic of 14% due to the Proposed Development construction traffic would be considered to have a low magnitude of impact on levels of fear and intimidation due to HGV movements being scheduled to avoid the peak traffic periods at the beginning and end of each day and other sensitive periods (including school drop off and pick up times), minimising overlap between movements of vulnerable road user groups and construction traffic movements. The level of the effect is therefore considered minor **(Not Significant).**

Accident and safety

14.10.11 The A76 in the accident study area in the vicinity of New Cumnock (between the B741 and Loch View has four recorded accidents between 2017 and 2021 (Department of Transport data published by www.crashmap.co.uk). This equates to an average annual accident rate of 0.8 which would not be considered significance. However, one accident was fatal in severity and the casualty was a pedestrian. Information available on Crashmap Pro identifies that the accident occurred between an HGV moving off, not in the vicinity of a pedestrian crossing point or junction, and pedestrian crossing the carriageway. Given the low average annual accident rate, lack of accident hotspot and that the Proposed Development access point is not directly off the A76 it is considered that the increase in traffic flow would have a negligible magnitude of impact on accidents and safety. The level of the effect is therefore considered negligible overall and not significant **(Not Significant).**

B743

Baseline conditions

14.10.12 The B743 is assessed as being of low sensitivity, therefore the Rule 1, 30% increase threshold applies.

14.10.13 The GEART threshold of 30% is exceeded as the 96 two-way HGV movements result in a 122% increase in HGVs movements when compared to baseline HGV traffic on this highway link. As noted previously, 96 HGVs includes concrete deliveries over 8 days, and

over the 12-hour construction period could comprise eight HGVs per hour on average, which is one every 7.5 minutes.

14.10.14 The 30% threshold is not exceeded with respect to the increase in total traffic as a result of the Proposed Development.

Predicted effects and their significance

Severance

14.10.15 The majority of the B743 on the quarry route is rural in nature with minimal pedestrian desire lines across the carriageway. Only a short section of the road has identical properties in adjacent to it, which are set back from the carriageway.

14.10.16 The increase of HGV traffic of 122% would constitute a high magnitude of impact on severance based on **Table 14.12**, however this level of increase is due to the low level of baseline HGV traffic. Due to the largely rural nature of the route, minimal pedestrian desire lines and temporary nature of the impact, this magnitude of impact, based purely on the GEART threshold is disproportionate when considering severance as the HGV traffic flows with the addition of the Proposed Development construction traffic are still low. When considering the total traffic flow change, a 9% increase, there is a negligible magnitude of impact on severity and therefore the level of effect on the receptor is considered negligible overall **(Not Significant).**

Driver delay

14.10.17 The total traffic flow increase on this section of the route is 9%, which is less than the GEART threshold of 30% for considering significant driver delay, while HGV traffic increases are 122%. The B473 on the quarry route has few junctions to be impacted by driver delay. The quarry access is located on this route however, HGV traffic would be scheduled to minimise disruption on other road users due to access/egress of HGVs from the quarry access and with appropriate signage in the vicinity of the Development Site access. Therefore, the magnitude of impact would be considered to be low and therefore the level of effect on the receptor is considered minor overall **(Not Significant).**

Pedestrian delay

14.10.18 The B743, on the study route, has footway provision where pedestrian flows would be anticipated and minimal desire lines across the carriageway and mostly routes through a rural area. The increase in total traffic flows of 9% would not be considered to impact greatly on pedestrian delay and therefore the magnitude of change of impact is low.

14.10.19 The level of the effect on this low sensitivity receptor is therefore considered minor overall **(Not Significant).**

Pedestrian amenity

14.10.20 Due to the predominantly rural nature of the land uses adjacent to the B743 along the study route, the low increase in total traffic flows (9%) but high increase in HGV flows and the provision of footway and minimal desire lines as the B743 on the study route routes through Sorn the magnitude of impact on this road section is considered to be low.

14.10.21 The level of the effect on this low sensitivity receptor is therefore considered minor overall **(Not Significant).**

Fear and intimidation

14.10.22 While HGV flow increase is high through Sorn pedestrian footway with barriers, is provided along with priority flow build outs. Through the rural areas on the quarry route there is no footway however, minimal pedestrian flows would be anticipated due to the highways environment and lack of desire lines/destinations. The magnitude of impact on this road on the quarry route is considered to be low.

14.10.23 The level of the effect on this low sensitivity receptor is therefore considered minor overall **(Not Significant).**

Accident and safety

14.10.24 The B473 on the quarry route had no recorded accidents between 2017 and 2021. The magnitude of impact of the construction traffic during the construction period on this receptor would therefore be low, due to the lack of accident hotspots on the link and considering the 9% increase in total traffic volumes occurring only during the worst-case month of construction traffic generation and the construction period as a whole, being temporary in nature. The overall level of effect is, therefore, considered to be minor **(Not Significant).**

B705

Baseline conditions

14.10.25 The B705 is assessed as being of low sensitivity, therefore the Rule 1, 30% increase threshold applies.

14.10.26 The GEART threshold of 30% is exceeded as the 96 two-way HGV movements result in a 122% increase in HGVs movements when compared to baseline HGV traffic on this highway link. As noted previously, 96 HGVs includes concrete deliveries over eight days, and over the 12-hour construction period could comprise eight HGVs per hour on average, which is one every 7.5 minutes.

14.10.27 The 30% threshold is not exceeded with respect to the increase in total traffic as a result of the Proposed Development.

14.10.28 Assessment of this link is approximate as it compares construction traffic with traffic flows on the B743 in the vicinity of the B705 and B713.

Predicted effects and their significance

Severance

14.10.29 Due to the limited information on traffic flows on the B705 it is suitable to assess the likely impact of traffic flow increases due to the Proposed Development's construction traffic with less emphasis on percentage increases in traffic flows and greater on the context of the highway environment and adjacent receptors.

14.10.30 Only a short section of the B705 is on the quarry route, connecting two sections of the B713, within Catrine. There are pedestrian desire lines across the B705 as it routes

through this urban area connecting residential areas to retail and recreation facilities and bus stops.

14.10.31 The increase in HGV and total traffic flows would, also be temporary in nature and would vary across the construction programme with 96 movements as a worst-case scenario for only 8 days of the peak construction traffic month. A total traffic flow increase of 9% would be considered a negligible increase in traffic flows when considering impact on severance

14.10.32 Therefore, the magnitude of impact of severance is assessed as being low and the overall level of effect is minor **(Not Significant).**

Driver delay

14.10.33 The total traffic flow increase on this section of the route is 9% which is less than the GEART threshold of 30% for considering significant driver delay, while HGV traffic increases are 122%. The B705 on the quarry route has very few junctions to be impacted by driver delay and HGV traffic would be scheduled to minimise disruption on other road users. Therefore, the magnitude of impact would be considered to be low and therefore the level of effect on the receptor is considered minor overall **(Not Significant).**

Pedestrian delay

14.10.34 Total traffic flow increases on the B705, in the peak construction month are only 9% which would not be anticipated to have a large impact on pedestrian delay, particularly with footway provided along the route. The magnitude of impact is therefore low.

14.10.35 The level of the effect on this low sensitivity receptor is therefore considered minor overall **(Not Significant).**

Pedestrian amenity

14.10.36 The assessment of the effects on pedestrian delay above is also applicable when considering pedestrian amenity, despite the proportional increase in HGVs, because of the pedestrian provision and temporary nature of the impact. The magnitude of impact is therefore low.

14.10.37 The level of the effect on this low sensitivity receptor is therefore considered minor overall **(Not Significant).**

Fear and intimidation

14.10.38 While HGV flow increase is relatively high, the B705 on the quarry route has pedestrian footway and the HGV increase equates to up only one HGV per 7 minutes in the peak construction month for only 8 days, and total traffic flow increases are low (9%). The magnitude of impact on this road on the quarry route is considered to be low.

14.10.39 The level of the effect on this low sensitivity receptor is therefore considered minor overall **(Not Significant).**

Accident and safety

14.10.40 The B705 on the quarry route has no recorded accident between 2017 and 2021. The magnitude of impact of the construction traffic during the construction period on this receptor would therefore be negligible, due to the lack of accident hotspots on the link and

the traffic increases associated with the construction period being temporary in nature. The overall level of effect is, therefore, considered to be negligible **(Not Significant).**

B713

Baseline conditions

14.10.41 The B713 is assessed as being of medium sensitivity, therefore the Rule 2, 10% increase threshold has been applied.

14.10.42 The GEART threshold of 10% is exceeded as the 96 two-way HGV movements result in a 122% increase in HGVs movements when compared to baseline HGV traffic on this highway link. As noted previously, 96 HGVs includes concrete deliveries over 8 days, and over the 12-hour construction period could comprise eight HGVs per hour on average, which is one every 7.5 minutes.

14.10.43 The 10% threshold is not exceeded with respect to the increase in total traffic as a result of the Proposed Development.

14.10.44 Assessment of this link is approximate as it compares construction traffic with traffic flows on the B743 in the vicinity of the B705 and B713.

Predicted effects and their significance

Severance

14.10.45 The majority of the sections of the B713 road are rural in nature and short sections of the road have residential properties. Therefore, there are minimal pedestrian desire lines across the B713. Through Catrine, there are desire lines across the B713 which are facilitated with a zebra crossing and multiple uncontrolled raised crossing points with build outs. The increase in HGV and total traffic flows would, also, be temporary in nature and would vary across the construction programme with 96 movements as a worst-case scenario for only 8 days of the peak construction traffic month. A total traffic flow increase of 9% would be considered a negligible increase in traffic flows when considering impact on severance.

14.10.46 Therefore, the magnitude of impact of severance is assessed as being low and the overall level of effect is minor **(Not Significant).**

Driver delay

14.10.47 The total traffic flow increase on this section of the route is 9%, which is less than the GEART threshold of 30% for considering significant driver delay, while HGV traffic increases are 122%. The B713 on the quarry route has few junctions to be impacted by driver delay and HGV traffic would be scheduled to minimise disruption on other road users. Therefore, the magnitude of impact would be considered to be low and therefore the level of effect on the receptor is considered minor overall **(Not Significant).**

Pedestrian delay

14.10.48 The majority of the sections of the B713 road are rural in nature. Through Catrine, there are desire lines across the B713 which are facilitated with a zebra crossing and multiple uncontrolled raised crossing points with build outs therefore, impact on pedestrian delay

would be minimal, particularly considering that the low increase in total traffic flow and that HGV trips would be scheduled to avoid peak and sensitive times for other road user movements. Pedestrian provision along the B713 in Sorn is discontinuous on the outskirts of the settlement, however only a few properties are present along the route so minimal pedestrian flows would be anticipated. The impact on pedestrian delay is therefore considered to be of low magnitude.

14.10.49 Therefore, the overall level of effect is minor **(Not Significant).**

Pedestrian amenity

14.10.50 The assessment of the effects on pedestrian delay above is also applicable when considering pedestrian amenity, despite the proportional increase in HGVs being over 50%, because of the pedestrian provision through Catrine and temporary nature of the impact. When considering the impact on pedestrian amenity in Sorn, the small increase in total traffic flows, only 9%, and minimal anticipated pedestrian flows are considered. The magnitude of impact is therefore low.

14.10.51 The level of the effect on this medium sensitivity receptor is therefore considered minor overall **(Not Significant).**

Fear and intimidation

14.10.52 The assessment of the effects on pedestrian delay above is also applicable when considering pedestrian amenity, despite the proportional increase in HGVs, because of the pedestrian provision, both footway and crossing points, through Catrine and temporary nature of the impact. Additionally, where there is no separation of traffic and pedestrian flows outside of Catrine (on the B713 on the quarry route), and on the outskirts of Sorn, minimal pedestrian flows would be anticipated due to the lack of destinations or desire lines. The magnitude of impact is therefore low.

14.10.53 The level of the effect on this medium sensitivity receptor is therefore considered minor overall **(Not Significant).**

Accident and safety

14.10.54 The B713 on the quarry route had one recorded accident between 2017 and 2021. The magnitude of impact of the construction traffic during the construction period on this receptor would therefore be negligible, due to the lack of accident hotspots on the link and the traffic increases associated with the construction period being temporary in nature. The overall level of effect is, therefore, considered to be negligible **(Not Significant).**

Afton Road

Baseline conditions

14.10.55 Afton Road is assessed as being of low sensitivity, therefore Rule 1, 30% threshold has been applied.

14.10.56 The GEART threshold is exceeded due to the ~184% increase in HGVs movements and ~50% increase in total vehicle movements when compared to baseline traffic on this highway link. The percentage increase in traffic should be treated with caution however given the low volume of existing baseline traffic (without development) as this method of comparison therefore results in a disproportionate impact.

Predicted effects and their significance

Severance

14.10.57 Whilst the magnitude of impact of the effect is high due to the increase of total traffic flows and HGV flows of over 91% is high, Afton Road is low in sensitivity, with minimal destinations along its length and residential properties along only one side of the carriageway for approximately 500m. Given Afton Road is on the western edge of New Cumnock and the properties are on the eastern side of the carriageway there is typically considered to be no need to cross the highway. The level of effect is therefore considered to be negligible overall **(Not Significant).**

Driver delay

14.10.58 Afton road is a rural road with minimal destinations and low traffic flow. The increases in traffic of one HGV every approximately 7 minutes would not affect a junctions' capacity and, therefore, would result in a negligible magnitude of change in respect of driver delay. The level of the effect is therefore considered negligible overall **(Not Significant).**

Pedestrian delay

14.10.59 Afton Road would not be expected to have high levels of pedestrian movements and minimal need for pedestrians to cross it. The increases in traffic of one vehicle in every 7 minutes would result in a negligible magnitude of change and unlikely to affect pedestrian delay and amenity. The level of the effect is therefore considered low overall **(Not Significant).**

Pedestrian amenity

14.10.60 The assessment of the effects on pedestrian amenity above is also applicable here, despite the traffic flows doubling as the percentage increase value is disproportion as a metric of assessment due to the low baseline flows on this road. The magnitude of change is considered to be negligible, and the level of the effect is negligible overall **(Not Significant).**

Fear and intimidation

14.10.61 The assessment of the effects on pedestrian amenity above is also applicable here. The magnitude of change is considered to be negligible, and the level of the effect is negligible overall **(Not Significant).**

Accident and safety

14.10.62 Afton Road does not exhibit severe accident hot spots which need to be targeted with specific casualty reduction measures. The magnitude of change as a result of the increase in traffic is therefore considered to be negligible. The level of the effect is therefore considered negligible overall **(Not Significant).**

Summary

14.10.63 A summary of the results of the assessment of the Traffic and Transport effects is provided in **Table 14.18.**

Table 14.18 Summary of potentially significant adverse effects

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor[1]	Magnitude of change[2]	Significance[3]	Summary rationale
A76 – New Cumnock	**High**			
Severance	High	Negligible	Negligible **(Not Significant)**	Traffic flow increases less than 30%.
Driver delay	High	Negligible	Negligible **(Not Significant)**	Traffic flow increase of 1 HGV per 7 minutes would not affect driver delay.
Pedestrian amenity	High	Negligible	Negligible **(Not Significant)**	Pedestrian provisions along the A76 where pedestrian flows anticipated. An increase of only 1 HGV per 7 minutes at peak construction traffic which would occur for only 8 days of 1 month.
Pedestrian delay	High	Negligible	Negligible **(Not Significant)**	
Fear and intimidation	Medium	Medium	Minor **(Not Significant)**	Proximity to a primary school and retail frontage but with pedestrian footway and crossing points. HGV movements would be scheduled to avoid peak and sensitive traffic periods, including school arrivals and departures.
Accident and safety	High	Negligible	Negligible **(Not Significant)**	Low average annual accident rate, without accident hotspot, and low traffic flow increases only 2% increase in total traffic and 14% in HGV traffic.
B743	**Low**			
Severance	Low	Negligible	Negligible **(Not Significant)**	Rural route with minimal pedestrian desire lines and only 9% total traffic flow increases.
Driver delay	Low	Low	Minor **(Not Significant)**	Traffic flow increase of 1 HGV per 7 minutes would not affect driver delay. Access to quarry would be signed appropriately and

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor[1]	Magnitude of change[2]	Significance[3]	Summary rationale
				access/egress from the quarry scheduled to minimise impact on other road users.
Pedestrian amenity	Low	Low	Minor **(Not Significant)**	Rural route with minimal pedestrian desire lines and only 9% total traffic flow increases.
Pedestrian delay	Low	Low	Minor **(Not Significant)**	
Fear and intimidation	Low	Low	Minor **(Not Significant)**	Mostly rural route with minimal pedestrian flows anticipated. Through Sorn impact on fear and intimidation is reduced due to pedestrian provisions and priority flow build-outs.
Accident and safety	Low	Low	Minor **(Not Significant)**	No accidents recorded on the B743, on the quarry route, in the last 5 years.
B713	**Medium**			
Severance	Medium	Low	Minor **(Not Significant)**	Low total traffic flow increase, 9%, with peak construction traffic present for only 8 days of one month through the construction period.
Driver delay	Medium	Low	Minor **(Not Significant)**	Low traffic flow and an increase of only 1 HGV per 7 minutes at peak construction traffic which would occur for only 8 days of 1 month.
Pedestrian amenity	Medium	Low	Minor **(Not Significant)**	Most of the B713 is rural in nature with minimal pedestrian desire lines and destinations. Through Catrine there is pedestrian footway and crossing points of various forms. Total traffic increases are low, 9%, and HGV construction traffic trips would be scheduled to avoid peak and sensitive times for other road user movements.
Pedestrian delay	Medium	Low	Minor **(Not Significant)**	

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor[1]	Magnitude of change[2]	Significance[3]	Summary rationale
Fear and intimidation	Medium	Low	Minor **(Not Significant)**	
Accident and safety	Medium	Negligible	Negligible **(Not Significant)**	Only 1 accident on the B713 on the quarry route in the last 5 years and low traffic volume increases, only 9% increase in total traffic due to construction traffic.
B705	**Low**			
Severance	Low	Low	Minor **(Not Significant)**	Low total traffic flow increase, 9%, with peak construction traffic present for only 8 days of one month through the construction period.
Driver delay	Low	Low	Minor **(Not Significant)**	Low traffic flow and an increase of only 1 HGV per 7 minutes at peak construction traffic which would occur for only 8 days of 1 month.
Pedestrian amenity	Low	Low	Minor **(Not Significant)**	Pedestrian footway is provided, and total traffic flow increases are low and only occur for 8 days during the peak month of construction.
Pedestrian delay	Low	Low		
Fear and intimidation	Low	Low	Minor **(Not Significant)**	
Accident and safety	Low	Negligible	Negligible **(Not Significant)**	No accidents recorded on the B705 on the quarry route in last 5 years and low total traffic volume increases, only 9% increase in total traffic due to construction traffic.
Afton Road	**Low**			
Severance	Negligible	High	Negligible **(Not Significant)**	Minimal desire lines for pedestrians across Afton Road.

Receptor and summary of predicted effects	Sensitivity/ importance/ value of receptor[1]	Magnitude of change[2]	Significance[3]	Summary rationale
Driver delay	Low	Negligible	Negligible **(Not Significant)**	Minimal destinations, low traffic flow and an increase of only 1 HGV per 7 minutes at peak construction traffic which would occur for only 8 days of 1 month.
Pedestrian amenity	Low	Negligible	Negligible **(Not Significant)**	Minimal desire lines for pedestrians across Afton Road. An increase of only 1 HGV per 7 minutes at peak construction traffic which would occur for only 8 days of 1 month.
Pedestrian delay	Low	Negligible	Negligible **(Not Significant)**	
Fear and intimidation	Low	Negligible	Negligible **(Not Significant)**	
Accident and safety	Low	Negligible	Negligible **(Not Significant)**	No accidents recorded on Afton Road in last 5 years.