10 TRAFFIC AND TRANSPORT

Introduction

10.1.1 This Chapter reports the outcome of the assessment of likely significant environmental effects arising from the Project in relation to transport. It will look at the forecasted transport movements as a result of the additional travel demand created by the construction and operation of the Project scheme.

10.1.2 The Chapter describes the scope of the assessment and associated methodology, based on a summary of the baseline transport information that has informed the assessment.

10.1.3 Where effects have been avoided in advance of the assessment and where relevant these are clearly stated. The assessment reports on the likely significant environmental effects, the mitigation measures required to prevent, reduce or offset any significant adverse effects, or further enhance beneficial effects.

10.1.4 This Chapter, and its associated figures, are intended to be read as part of the wider EIAR with particular reference to the introductory chapters of this EIAR (Sections 1 & 2), as well as the Transport Assessment (TA) accompanying the planning application, which outlines in more detail what provisions are being made to promote sustainable modes of transport and the requirements for delivering satisfactory means of access to the Project, taking into consideration road capacity and safety matters.

Assessment Methodology

Planning Policy Context

10.1.5 The following national legislation and policy has informed the assessment of effects within this Chapter:

- The National Planning Framework (NPF) for Scotland (Scottish Government, 2014a).
- Scottish Planning Policy (SPP) (Scottish Government, 2014b).
- Planning Circular 1/2017: Environmental Impact Assessment Regulations (2017).
- Second Strategic Transport Projects Review (2022).

10.1.6 The following relevant local policies have also been reviewed:

- The North Ayrshire Local Development Plan 2 (2019).
- The Hunterston PARC Development Framework (2021).

Relevant Guidance

10.1.7 The additional guidance for the proposed Development which has also been consulted is:

- Planning Advice Note 1/2013: Environmental Impact Assessment (2013).
- Guidelines for the Environmental Assessment of Road Traffic (Guidance Note No. 1) (1993).
- National Highways (2019) LA 112 Sustainability and Environment Appraisal. Population and human health (formerly DMRB Volume 11, Section 3, Part 6 (Land), Volume 11, Section 3, Part 8 (Pedestrians, cyclists, equestrians and community effects) and Volume 11, Section 3, Part 9 (Vehicle travellers)).

Study Area

10.1.8 The geographical extent of the study area, which covers the local highway network, is shown in Figure 10.1. This study area has been broadened out beyond the immediate site access and A78 corridor that has otherwise been considered in the Transport Assessment, in order to provide an appropriate context for the assessment of transport-related environmental effects.

10.1.9 In total, traffic volume and composition has been analysed for a total of 15 locations.

10.1.10 Beyond the identified study area, traffic associated with Project would be dissipated sufficiently to be indistinguishable from background traffic in terms of scale and distribution.

Baseline Methodology

Traffic Flows

10.1.11 The following Automatic Traffic Count (ATC) surveys have been consulted and have informed this Chapter:

- A78 South of Largs – Site ID 10755
- A78 South of Development Site Access – Site ID 80358
- A760 at Blairpark – Site ID 40912
- A78 at West Kilbride – Site ID 50759
- B781 Yerton Brae in West Kilbride – Site ID 811627
- B781 at Munnoch – Site ID 996074
- A78 at Loup Cottage Caravan Park – Site ID 20761
- A738 Eglinton Road – Site ID 754
- A738 High Street in Saltcoats – Site ID 30762
- A78 Dual Carriageway, East of Dalry Road – Site ID 80495
- A78 Dual Carriageway, South of Stevenston Road – Site ID 40760
- A737 Irvine Road (North) – Site ID 80401
- A737 Irvine Road (South) – Site ID 80402
- A737 at South of Dalgarven – Site 74439
- A738 Stevenston Road at Kilwinning – Site ID 10905

10.1.12 The surveys have recorded hourly directional flows covering a 12-hour period for a typical weekday, most of which involve a ‘neutral’ month.

10.1.13 The traffic survey information outlined above has been carried out on a number of historical survey dates. In order to establish a common baseline line in 2022 for traffic across the local road network, the following background growth factors shown in Table 10.1 have been applied. Given the relatively peripheral geographical study area, the ‘Low Growth’ National Road Traffic Forecast (NRTF) factors have been used.

Table 10.1: Survey Dates and NRTF Traffic Growth Factors Applied to Establish 2022 Baseline Conditions

Link No.	Road_ID	Survey_ID	Latest Data Collection Year	Survey Month	Growth Factor to 2022 (NRTF Low)
1	A78	10755	2007	April	1.160
2	A78	80358	2017	October	1.038
3	A760	40912	2008	April	1.146
4	A78	50759	2016	May	1.047
5	A781	811627	2019	June	1.022
6	A781	996074	2019	June	1.022
7	A78	20761	2017	September	1.038
8	A738	754	2008	March	1.146
9	A738	30762	2007	May	1.160
10	A78	80495	2008	June	1.146
11	A78	40760	2014	October	1.070
12	A737	80401	2013	September	1.082
13	A737	80402	2007	March	1.160
14	A737	74439	2017	June	1.038
15	A738	10905	2011	October	1.107

10.1.14 The reporting periods for this EIAR Chapter are different from those which would traditionally feature in a Transport Assessment (TA), in that both Average Annual Daily Traffic (AADT) and Average Peak Hour (APH) timeframes are used, instead of focusing on the hourly peak periods for background traffic.

10.1.15 The traffic data sourced is reported for each hour between 07:00 and 19:00 (i.e. a 12-hour period). The factors required to establish environmental flows have been derived from the values presented in 'Traffic Input to COBA' under the DMRB Volume 13 Section 1: Economic Assessment of Road Schemes (2002). These factors have been summarised in Table 10.2.

Table 10.2: Seasonal 12-hour to 24-hour AADT Factors

Factor	
January	1.457
February	1.326
March	1.428
April	1.304
May	1.265
June	1.272
July	1.268
August	1.279
September	1.243
October	1.297
November	1.409
December	1.504

10.1.16 In summary, the use of variable factors to establish the 2022 Baseline Conditions ensures that a consistent set of data can be used from which to assess the traffic conditions on the local road network.

Pedestrian Severance and Delay

10.1.17 Pedestrian severance is defined in the National Highways (1993) DMRB (Ref 5.2 Vol 11 Section 3 part 8) as *"…the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows."*

10.1.18 Several factors are considered in determining the existing level of severance, only some of which are quantitative in nature. These include road width, traffic flow and composition, traffic speeds and the availability of pedestrian crossing facilities.

10.1.19 The DMRB provides a set of measures for the identification of severance and offers guidance as to the level of pedestrian diversion that may ensue should a two-way vehicular flow present difficulties on a particular road link. Table 10.3 outlines the thresholds of pedestrian severance and delay levels, as prescribed by the DMRB.

Table 10.3: Thresholds of Severance Levels

Severance Level	Traffic Flow (AADT)	Length of Diversion
Minor	<8,000	<250m
Moderate	8-16,000	250-500m
Major	>16,000	>500m

Source: Design Manual for Roads and Bridges (Ref. 5.7 Volume 11, Section 3)

10.1.20 Where formal facilities exist or can be introduced, such as a zebra or signalised crossing, such infrastructure can reduce the effect of severance by up to 90%, particularly where this directly meets existing pedestrian desire lines.

Pedestrian and Cyclist Amenity

10.1.21 The importance of walking and cycling in contributing towards sustainable travel patterns is recognised in the NPF3 and the emerging NPF4. Both place an emphasis on the roles that walking and cycling can play as main modes of transport or as part of a longer journey by public transport.

10.1.22 The Guidelines for the Environmental Assessment of Road Traffic Guidelines (IEMA, 1993) broadly defines amenity as "*the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic*."

10.1.23 However, few quantitative methods exist for assessing amenity directly. The above guidelines (IEMA, 1993) suggest a range of pedestrian crossing times of 10 seconds (lower threshold) to 40 seconds (higher threshold) which equate to a road link with no crossing facilities exhibiting a two-way flow of approximately 1,400 vehicles in the peak periods. However, the guidance also recommends that assessments of environmental effects should be based on judgement rather than specific thresholds.

10.1.24 The definition of 'pleasantness' is therefore based on a qualitative view of the routes available adjacent to or across road links within a study area. The associated infrastructure can thus be classified as being very poor, poor, average, good or very good as a means of assessing the environment in accordance with the IEA Guidelines.

Driver Stress and Delay

10.1.25 Driver stress and delay, as outlined in the DMRB Volume 11 Section 3 Part 9, has three principal elements:

- Frustration;
- Fear of potential accidents;
- Uncertainty relating to the route being followed (e.g. contributed to by lack of signage).

10.1.26 The weight of these factors varies depending on the driver. For example, those who drive for commuting purposes will often have a higher stress 'threshold' due to their experience and knowledge of a route compared to those who may only drive occasionally for leisure or personal purposes.

The DMRB outlines the traffic flows and average journey speeds at which driver stress is perceived to change. These thresholds are summarised for single and dual carriageway roads in Table 10.4 and Table 10.5.

Table 10.4: Driver Stress Thresholds for Single Carriageway Roads

Average Peak Hourly Flow per Lane	Average Journey Speed (kph)		
	<50	50-70	>70
<600	High*	Moderate	Low
600-800	High	Moderate	Moderate
>800	High	High	High

Source: Design Manual for Roads and Bridges

Note: *Moderate if in urban area

Table 10.5: Driver Stress Thresholds for Dual Carriageway Roads

Average Peak Hourly Flow per Lane	Average Journey Speed (kph)		
	<60	60-80	>80
<1,200	High*	Moderate	Low
1,200-1,600	High	Moderate	Moderate
>1,600	High	High	High

Source: Design Manual for Roads and Bridges

Note: *Moderate if in urban area

10.1.27 Driver stress and delay will also depend on the nature of the links. For example, it is likely that vehicle drivers are more sensitive to changes in driver stress and delay along strategic routes where they expect to be able to travel uninterrupted, than for example along quiet residential roads that provide local access only or on rural roads where occasional interruptions can occur (e.g. tractors or recreational vehicles).

Consultation

Table 10.6: Consultation Responses Relevant to this Chapter

Date	Consultee and Issues Raised	How/ Where Addressed
Date	Consultee and Issues Raised	How / Where Addressed
30/11/2021	**Largs Community Council**: "*With 24/7 operations, the EIA should address the impacts on the vehicle movements, and change of shifts, will impact on A78 movements through Largs, Fairlie and West Kilbride.*"	*The impact of vehicle movements is addressed throughout this chapter in terms of any potential environmental significance. The Transport Assessment accompanying the planning application considers surrounding road network capacity and safety matters.*
30/11/2021	**North Ayrshire Council**: "*Any assessment should consider use of the rail and port linkages, particularly in relation to any abnormal loads. The following road routes are identified as unsuitable/undesirable by the Council's Active Travel and*	*Whilst there is a general commitment to goods being imported and exported from the site via Hunterston port, and this is backed up in various planning submission documents, the EIA has considered a robust case where all*

Date	Consultee and Issues Raised	How/ Where Addressed
	Transportation team for construction/delivery vehicles – the C26, the B781, the B780 (Dalry to Ardrossan), the A78 through Fairlie and all unclassified local roads."	*materials are imported and exported by road. The roads mentioned by NAC will not be used for construction or delivery vehicles and this will be controlled through a future CEMP secured by condition.*
25/11/2021	**Private Individual**: "*The proposed development will have a (very welcome) high number of site employees presumably working 24 hours on a 2 or 3 shift pattern. As the Hunterston area is not readily* accessed by public *transport, this is likely to result in significant road traffic flow at times of shift change, as occurs at present with the Hunterston power stations. The traffic survey should take account of this, including assessing how many vehicles exiting from the power stations onto the A78 go south towards West Kilbride, or north towards Fairlie, as a reasonable guide.*"	*The traffic data contained in this chapter as well as in the Transport Assessment accompanying the planning application has fully considered all employee vehicle movements at shift start and end times.*
25/11/2021	**Private Individual**: "*The suitability of the A78 through Fairlie for abnormal loads. This does require to be assessed.*"	*It is not intended to route abnormal loads through Fairlie and alternative routes from the south have been identified in this chapter.*
25/11/2021	**Private Individual**: "*In addition to assessing the traffic volume the study should include the suitability of the A78 through Fairlie for a significant increase in HGV traffic.*"	*The A78 through Fairlie is not identified as a suitable route for construction or operational HGV traffic.*
25/11/2021	**Private Individual**: "*Evening/night time road traffic through Fairlie is not at present significant. If night hours traffic is to increase, eg by shift changes, the additional night time noise should be assessed*"	*There are no shift changes that occur during night-time hours. Shifts are confirmed in this chapter as 7am to 7pm and 7pm to 7am, with general admin and management staff working a standard day.*
25/11/2021	**Private Individual**: "*Should include reference to alternative public transport to the site. At present there is not even a bus stop at the site entrance.*"	*This matter is considered within the Transport Assessment accompanying the planning application.*
25/11/2021	**Private Individual:** "*An additional bullet point required 'fuel used in movement of persons to and from the proposed development'. (suggested mitigation: provision (large number) of electric vehicle charging points within employee parking area!)"*	*This is not a criteria which is defined in EIA, however the provision of EV charging points is addressed within the Transport Assessment report which accompanies the planning application.*

Assessment Criteria and Assignment of Significance

10.1.28 In accordance with the IEA guidelines, the following thresholds are generally applied when refining down proposed locations for assessment from a wider study area:

- Links where traffic flows are expected to change by more than 30%, or where HGV flows are expected to change by more than 30% as a result of the Project; and
- Links in proximity to sensitive receptors, where traffic flows are expected to change by more than 10% as a result of the Project.

10.1.29 The categorisation above can provide an initial sequential approach in considering which road links would be affected by changes that could warrant assessment.

10.1.30 However, in the interest of comprehensiveness, this Chapter has reported the changes on all links for which traffic data was available within the study area, before then extracting the relevant information for the road links that would best represent the conditions at each of the identified sensitive receptors.

Receptor Sensitivity/Value

10.1.31 The sensitivity of affected receptors has been considered on a scale of high, medium, low or negligible. From the perspective of transport, the IEA Guidelines require the identification of groups and special interests which should be considered. Whilst it lists types of sensitive receptors, it does not provide a scale to define them.

10.1.32 For the purpose of this assessment the sensitive receptor has been identified as Highway Users, constituting of pedestrians, cyclists, motorists etc. As Highway Users are people, it is deemed that sensitivity will be affected by a qualitative assessment of conditions, using the broad definitions listed in Table 10.7.

Table 10.7: Qualitative Assessment of Sensitivity or Value

Sensitivity	Typical Descriptors
Very High	Areas where there is a significant aspect of public congregation and where the enjoyment of the streetscape is dependent the highest level of public realm (e.g. shared spaces)
High	Environment with no formal crossing locations where users are subject to desire lines that would necessitate multiple uncontrolled movements across the road. No opportunity for vehicular route diversion.
Medium	Urban areas with little opportunity to route diversion. Greater physical separation between active modes and vehicular movements (e.g. wider footway) or where there is an underlying vulnerability of existing users throughout the day (e.g. elderly or disabled)
Low	Urban or semi-urban area where formalised crossing points exists (zebra or signalised crossing) facilitating the movement of all users at certain periods of the day, including children.
Negligible	Very low importance where sufficient infrastructure is present to reduce the potential for conflict between users, or where vehicular speeds have been reduced to increase awareness.

10.1.33 As a result of the above, the following ‘sensitive’ locations have been identified in this EIAR Chapter:

- A78 Main Street, Largs: This busy high street, lying to the north of the Project is likely to be sensitive to increase in traffic, for its effects of severance and pedestrian and cycle amenity. The scale of sensitivity has therefore been judged to be high;

- A78 Main Road, Fairlie: The set-back of existing properties and the presence of barriers adjacent to the wider footway means that crossing opportunities are less frequent. The environment is likely to have a medium level of sensitivity to changes in traffic;
- A737 Dalry Road, Kilwinning: The presence of the Abbey Primary School and Kilnwinning Academy on both sides of this road could give rise to sensitivities around the movement and crossing of pupils at this location. This environment is likely to have a low level of sensitivity to changes in traffic, given the existence of specific infrastructure that facilitates safer forms of access (e.g. signalised crossing points). They remain identified sensitive receptors nonetheless because they could constitute a more vulnerable group of people.

10.1.34 All other principal roads within the study area are of a standard or are in areas which could not be classed as being subject to the presence of sensitive receptors or where sensitivity would be classed as negligible.

10.1.35 A summary of the identified receptors is shown in Table 10.8 below

Table 10.8: Sensitivity of Identified Receptors

Identified Receptors	Sensitivity
A78 Main Street, Largs	High
A78 Main Road, Fairlie	Medium
Abbey Primary and Kilwinning Academy Schools	Low

Magnitude of Impact

10.1.36 The magnitude of impact or change has been considered as the change experienced from the baseline conditions at the sensitive receptor and has been considered on a scale of high, medium, low or negligible.

10.1.37 In relation to transport, the IEA Guidelines identify thresholds for determining the magnitude of impact in traffic on road links within the study area. This is categorised in Table 10.9 as follows:

Table 10.9: Example Definitions of Magnitude

Sensitivity	Typical Descriptors
High	Change in traffic/HGV levels as a result of the Project is expected to be in excess of 90%
Medium	Change in traffic/HGV levels as a result of the Project is expected to be within the range of 60-90%
Low	Change in traffic/HGV levels as a result of the Project is expected to be within the range of 30-60%
Negligible	Change in traffic /HGV levels is less than 30%
No change	No changes in traffic / HGV levels recorded

10.1.38 The above categorisation will be applied to the assessment of the likely and significant effects in this EIAR Chapter.

Significance of Effects

10.1.39 The level of effect attributed to each effect has been assessed based on the magnitude of impact due to the Project combined with sensitivity of the affected receptor. In this respect, the matrix shown in Table 10.10 has been used as a tool to assist this process:

Table 10.10: Significance of Effect Matrix

Sensitivity	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible or minor	Minor	Moderate	Moderate or major
High	Minor	Minor or moderate	Moderate or major	Major

10.1.40 The following terms have been used to define the significance of the effects identified and these can be 'beneficial' or 'adverse':

- Major effect: where the Project is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity. This effect is considered to be 'Significant';
- Moderate effect: where the Project is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability. This effect is considered more likely to be 'Significant' but will be subject to professional judgement;
- Minor effect: where the Project is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity; or where the Project is likely to cause a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change. This effect is considered less likely to be 'Significant' but will be subject to professional judgement; and
- Negligible: where the Project is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change. This effect is 'Insignificant'.

10.1.41 The duration of the effect is assessed as either 'short-term', 'medium-term' or 'long-term'. Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years.

Limitations of the Assessment

10.1.42 To ensure transparency within the EIA process, the following limitations and assumptions have been identified.

- The IEA Guidelines have been used as the criteria against which to assess the effects of the Project in terms of traffic and transport. Where appropriate, additional criteria from the DMRB have been used to quantify and inform the professional judgement that has been applied.
- Baseline traffic flows used in estimating the impacts across the study area have been informed from the factoring of historical data using recognised and accepted factors.

Given the variability of the road network, it is recognised that this could lead to a slight over-estimation of background traffic. However, the relative changes in traffic attributable to the Project will remain the same.

Baseline Environment

Local Transport Environment

10.1.43 The general area in the vicinity of the Site is rural in nature, with the closest settlement being located at Fairlie, the edge of which lies approximately 400m to the north of the site access.

10.1.44 A 3m wide combined footway/cycleway lies on the western side of the carriageway. While this width is not continuous further south, the route runs alongside the A78(T) and forms part of the future National Cycle Route 753 (NCN753) which will extend along the coast to link NCN73 in Ardrossan with the NCN75 at Gourock.

10.1.45 The Site currently benefits from an existing multi-modal access point provided off the A78(T), which is trunk road. This access comprises a roundabout with an approx. 75m Inscribed Circle Diameter (ICD).

10.1.46 The A78(T) is a two-way 7.3m single carriageway road. It is generally of a standard that can accommodate mixed-type traffic. To the south-east of the site, the A78(T) bypasses Ardrossan and becomes a two-way dual carriageway from Dalry Road at the Chapel Hill roundabout.

Baseline 2022 Traffic Flows

10.1.47 Table 10.11 shows the baseline AADT traffic flows across the study area based on the surveys that were conducted, factored up to the 2022 Baseline scenario. These traffic flows are shown diagrammatically in Appendix 10.1.

Table 10.11: AADT Two-way Traffic flows and HGV Percentage Composition (2022 Baseline)

Link No.	Northbound / Eastbound			Southbound / Westbound			Two-Way Total		
	All Veh	HGVs	HGV%	All Veh	HGV	HGV%	All Veh	HGVs	HGV%
1	7484	404	5.40%	7573	477	6.29%	15057	880	5.85%
2	4909	228	4.64%	5133	187	3.65%	10042	415	4.13%
3	2859	259	9.05%	2754	227	8.25%	5613	486	8.66%
4	5184	266	5.13%	4895	237	4.84%	10079	503	4.99%
5	1137	14	1.26%	1601	18	1.14%	2738	32	1.19%
6	691	5	0.75%	707	12	1.65%	1398	17	1.21%
7	7142	221	3.09%	6881	223	3.24%	14024	444	3.17%
8	4875	137	2.82%	4790	155	3.25%	9664	293	3.03%
9	5745	277	4.83%	5557	254	4.57%	11301	531	4.70%
10	11589	757	6.53%	11120	723	6.50%	22709	1480	6.52%
11	20203	1012	5.01%	19811	887	4.48%	40014	1899	4.75%
12	6642	280	4.21%	5868	225	3.83%	12510	504	4.03%
13	10432	589	5.65%	4477	179	3.99%	14909	768	5.15%
14	3960	182	4.60%	4719	235	4.98%	8679	417	4.81%

15	7032	274	3.90%	6861	212	3.10%	13894	487	3.50%

10.1.48 The greatest level of traffic is reported on the A78(T) dual-carriageway section to the east of Ardrossan, which is commensurate with its role as a trunk road, forming part of the national Strategic Road Network (SRN).

Pedestrian Severance and Delay

10.1.49 Against the thresholds listed in Table 10.3 and the traffic volumes shown in Table 10.11, the baseline assessment of severance is presented in Table 10.12:

Table 10.12: Pedestrian Severance and Delay Assessment (2022 Baseline)

Link No.	Location	Severance Level
1	A78 - South of Largs	Moderate
2	A78 - Outside Site Access	Moderate
3	A760 – Blairpark	Minor
4	A78 - West Kilbride	Moderate
5	B781 - West Kilbride	Minor
6	B781 - Rural (Munnoch)	Minor
7	A78 - Loup Cottage Caravan Park	Moderate
8	A738 - Eglington Road	Moderate
9	A738 - High Road (Saltcoats)	Moderate
10	A78 - Dual (East of Dalry Road)	Major
11	A78 - Dual (South of Stevenston Road)	Major
12	A737 - Irvine Road (North)	Moderate
13	A737 - Irvine Road (South)	Moderate
14	A737 - South of Dalgarven	Moderate
15	A738 - Stevenston Road (Kilwinning)	Moderate

10.1.50 The level of severance which pedestrians are subject to across the study area is generally Minor to Moderate, with the exception of the A78(T) dual carriageway sections. However, there is little demand for crossing at this location and there are no facilities along the links that cater for pedestrian movements.

Driver Stress and Delay

10.1.51 The assessment of driver stress and delay under 2022 Baseline conditions is shown in Table 10.13.

Table 10.13: Driver Stress Assessment (2022 Baseline)

Link No.	Locations	Average Peak Hour Flow (Per Lane)	Traffic Speed	2022 Baseline
1	A78 - South of Largs	573	48	High
2	A78 - Outside Site Access	387	97	Low
3	A760 – Blairpark	210	97	Low
4	A78 - West Kilbride	352	48	High
5	B781 - West Kilbride	98	32	High
6	B781 - Rural (Munnoch)	55	97	Low
7	A78 - Loup Cottage Caravan Park	494	97	Low
8	A738 - Eglington Road	329	48	High
9	A738 - High Road (Saltcoats)	442	48	High
10	A78 - Dual (East of Dalry Road)	1004	113	Low
11	A78 - Dual (South of Stevenston Road)	1703	113	High
12	A737 - Irvine Road (North)	494	64	Moderate
13	A737 - Irvine Road (South)	531	64	Moderate
14	A737 - South of Dalgarven	351	97	Low
15	A738 - Stevenston Road (Kilwinning)	517	64	Moderate

10.1.52 The above data shows that that the level of driver stress is commensurate with the volume of traffic and vehicular speeds, with a heightened level of awareness being experienced on lower speed environments, such as in built-up areas, irrespective of the level of traffic flow.

10.1.53 Roads in non-built up areas are generally characterised by ‘Low’ or ‘Moderate’ levels of driver stress, with the exception of the A78(T) dual carriageway section south-east of Stevenston Road (Link 11) where the highest volumes of traffic are being reported.

Pedestrian and Cycle Amenity

10.1.54 The existing pedestrian and cycling isochrones are shown in Figure 10.2 and Figure 10.3. This shows the extent of the area that can be reached on foot or by cycle from the Site.

10.1.55 Figure 10.4, on the other hand, outlines the existing Core Path Network in the vicinity of the Site. This shows a relative dense network of routes.

10.1.56 Most of the roads within the study area comprise elements of pedestrian infrastructure provision, in the form of footways, but the level of provision varies greatly in terms of width and the presence of ancillary infrastructure, such as dropped kerbs or tactile paving.

10.1.57 Against the traffic volumes shown in Table 10.11, the assessment of Pedestrian and Cycle Amenity under Baseline 2022 conditions is shown in Table 10.14.

Table 10.14: Assessment of Pedestrian and Cycle Amenity (2022 Baseline)

Link No.	Locations	2022 Baseline	Comments
1	A78 - South of Largs	Good	Provision of footways flanking carriageway and dropped kerbs
2	A78 - Outside Site Access	Good	Provision of footways flanking carriageway and dropped kerbs
3	A760 – Blairpark	Very Poor	No pedestrian facilities
4	A78 - West Kilbride	Good	Provision of footways flanking carriageway and dropped kerbs
5	B781 - West Kilbride	Good	Provision of footways flanking carriageway and dropped kerbs
6	B781 - Rural (Munnoch)	Very Poor	No pedestrian facilities
7	A78 - Loup Cottage Caravan Park	Average	Segregated narrow footway/cycleway on western side only. Dropped kerbs present.
8	A738 - Eglington Road	Average	Segregated footway/cycleway on western side only. Dropped kerbs and tactile surfacing present.
9	A738 - High Road (Saltcoats)	Good	Provision of footways flanking carriageway and secondary parallel roads. Dropped kerbs and tactile surfacing present.
10	A78 - Dual (East of Dalry Road)	Very Poor	No pedestrian facilities
11	A78 - Dual (South of Stevenston Road)	Very Poor	No pedestrian facilities
12	A737 - Irvine Road (North)	Poor	Narrow footway located on western side of the road only
13	A737 - Irvine Road (South)	Average	Adequate width footway located on western side only.
14	A737 - South of Dalgarven	Poor / Good	Narrow footway located on eastern side of the road only outside of settlement boundary. Within Kilwinning, good level of provision supported by satisfactory footways and signalised pedestrian crossings
15	A738 - Stevenston Road (Kilwinning)	Good	Generally, provision of footways flanking carriageway. Dropped kerbs and tactile surfacing present.

Accidents and Road Safety

10.1.58 An analysis of Personal Injury Accident (PIA) data in relation to junctions in the study area for the last available five years is shown in Figure 10.5. This covers a 5-year period to 2020.

10.1.59 The figure mentioned above shows no discernible pattern of PIA events across the immediate areas surrounding the site access. Only one serious accident has been recorded at the site access roundabout itself over the 5-year period.

10.1.60 It is also noted that, beyond the site access, traffic to/from the development will be using the A78 (T). As a trunk road, it is able to carry a mix of traffic at higher speed and is designed to accommodate such movements.

Future Baseline Conditions

Traffic Flows

10.1.61 The data collected has been extracted to provide the 2022 Baseline traffic forecasts presented in Table 10.15. This is a suitable basis from which to establish the impact of the development during construction. For the purpose of the operational assessment, the same traffic data has been uplifted to reflect the likely end of construction and start of the activities under 2024 Forecast Baseline conditions.

10.1.62 To this end, a background traffic growth factor of 1.011 (NRTF Low) has been used to uplift the 2022 Baseline estimates to form 2024 Baseline forecasts. The resultant traffic flows are shown in Table 10.15 and are also displayed diagrammatically in Appendix 10.1.

Table 10.15: AADT Two-way Traffic flows and HGV Percentage Composition (2024 Forecast Baseline)

Link No.	Northbound / Eastbound			Southbound / Westbound			Two-Way Total		
	All Veh	HGVs	HGV%	All Veh	HGV	HGV%	All Veh	HGVs	HGV%
1	7563	408	5.40%	7654	482	6.29%	15217	890	5.85%
2	4961	230	4.64%	5187	189	3.65%	10148	419	4.13%
3	2889	261	9.05%	2783	230	8.25%	5672	491	8.66%
4	5239	269	5.13%	4947	239	4.84%	10186	508	4.99%
5	1149	14	1.26%	1618	18	1.14%	2767	33	1.19%
6	699	5	0.75%	714	12	1.65%	1413	17	1.21%
7	7218	223	3.09%	6955	226	3.24%	14173	449	3.17%
8	4927	139	2.82%	4841	157	3.25%	9767	296	3.03%
9	5806	280	4.83%	5616	256	4.57%	11422	537	4.70%
10	11713	765	6.53%	11238	731	6.50%	22951	1495	6.52%
11	20418	1023	5.01%	20021	897	4.48%	40439	1919	4.75%
12	6712	283	4.21%	5931	227	3.83%	12643	510	4.03%
13	10543	596	5.65%	4525	181	3.99%	15068	776	5.15%
14	4002	184	4.60%	4769	238	4.98%	8772	422	4.81%
15	7107	277	3.90%	6934	215	3.10%	14041	492	3.50%

Pedestrian Severance and Delay

10.1.63 Against the traffic volumes shown in Table 10.15, the 2024 Baseline assessment of pedestrian severance and delay is shown in Table 10.16.

Table 10.16: Pedestrian Severance and Delay Assessment (2034 Forecast Baseline)

Link No.	Location	Severance
1	A78 - South of Largs	Moderate
2	A78 - Outside Site Access	Moderate
3	A760 – Blairpark	Minor
4	A78 - West Kilbride	Moderate
5	B781 - West Kilbride	Minor
6	B781 - Rural (Munnoch)	Minor
7	A78 - Loup Cottage Caravan Park	Moderate
8	A738 - Eglington Road	Moderate
9	A738 - High Road (Saltcoats)	Moderate
10	A78 - Dual (East of Dalry Road)	Major
11	A78 - Dual (South of Stevenston Road)	Major
12	A737 - Irvine Road (North)	Moderate
13	A737 - Irvine Road (South)	Moderate
14	A737 - South of Dalgarven	Moderate
15	A738 - Stevenston Road (Kilwinning)	Moderate

10.1.64 Comparing the level of severance between the 2022 Baseline and the 2034 Forecast Baseline scenarios, there is no difference in the reported level of severance recorded in Table 10.12.

Pedestrian and Cycle Amenity

10.1.65 In the absence of any defined influential transport schemes that would come forward between 2022 and 2024, there is no forecast change to the amenity levels across the study area compared to the data contained in Table 10.13.

Accidents and Road Safety

10.1.66 The scale of traffic flow differences between the 2022 Baseline scenario (Table 10.11) and the situation forecasted in the 2024 Forecast Baseline situation (Table 10.15) is not significant and would fall within the typical daily fluctuations that could be experienced on the local road network.

10.1.67 The variability of traffic flows and the absence of marked areas of common causality reported in the existing PIA events (Figure 10.6), does not suggest changes that would be significant enough to affect the underlying picture.

Mitigation Measures Adopted as Part of the Project

Construction Phase

10.1.68 There is no specific transport mitigation provided as part of the Project that would classify as primary mitigation, that is to say something that is an intrinsic part of the project that has been considered in its design evolution narrative and included within the project description.

Operational Phase

10.1.69 The Project will deliver the following transport interventions:

- provision of bus stops on the A78 or u-turn facilities at entrance to the site;
- extension of the footway/cycleway on site access road to enhance accessibility for active modes of travel.

10.1.70 As secondary mitigation, the above requires additional action post-consent to be implemented beyond the core function of the development. This would be secured through a planning obligation (e.g. Section 75 legal agreement) and implemented under Section 56 of the Roads (Scotland) Act 1984, which requires any applicant carrying out any works on a public road to obtain the consent of the Roads Authority.

10.1.71 The above scheme ensures that opportunities are made available for sustainable travel, particularly for local residents of Fairlie or cyclists and rail users from Largs, in line with the modal shift allowances made in the analysis of travel demand.

10.1.72 As the secondary mitigation does not directly affect the identified sensitive receptors the residual effects are the same as that reported in the pre-mitigation scenario.

Assessment of Construction Effects

Travel Demand

10.1.73 Construction activities will be the subject of an approximately 2-year period, with construction activities ranging from site preparatory works and earthworks, through the erection of structures and the fit-out of buildings. This means that there will be some significant variability in the number of vehicle movements across the period of construction.

10.1.74 Table 10.17 shows the 'Average' as well as the 'Maximum' daily number of construction vehicle movements, split between Cars/LGVs and HGVs. A full construction programme breakdown covering anticipated vehicle movements is included in Appendix 10.1.

Table 10.17: Forecast Construction Vehicle Movements (Average Daily Traffic)

Vehicle Type	Average	Maximum
HGVs	17	159
Car / LGVs	80	173
Total	**97**	**332**

10.1.75 According to the schedule of works, the maximum volumes of traffic would be experienced in Week 5 for HGVs and Week 43 for cars/LGVs.

10.1.76 Given that the purpose of this Chapter is to look at transport impact, the 'maximum' level of change is recorded as a robust scenario. Other EIAR Chapters may more approximately deal with the average impact over the whole period of construction.

10.1.77 The resultant assignment of construction traffic on the local road network is shown in Table 10.18. The difference between the 'Average' and 'Maximum' reflects the typical and worst-case level of trips that could be expected.

Table 10.18: Two-Way Construction Traffic Assignment on Local Road Network (AADT)

Link No.	Location	Average		Maximum	
		All Vehicles	HGVs	All Vehicles	HGVs
1	A78 - South of Largs	40	0	87	0
2	A78 - Outside Site Access	112	34	242	318
3	A760 – Blairpark	8	0	17	0
4	A78 - West Kilbride	112	34	242	318
5	B781 - West Kilbride	8	0	17	0
6	B781 - Rural (Munnoch)	2	0	3	0
7	A78 - Loup Cottage Caravan Park	104	34	225	318
8	A738 - Eglington Road	32	0	69	0
9	A738 - High Road (Saltcoats)	16	0	35	0
10	A78 - Dual (East of Dalry Road)	72	34	156	318
11	A78 - Dual (South of Stevenston Road)	64	34	138	318
12	A737 - Irvine Road (North)	56	27	121	254
13	A737 - Irvine Road (South)	8	0	17	0
14	A737 - South of Dalgarven	48	27	104	254
15	A738 - Stevenston Road (Kilwinning)	8	0	17	0

Development Impact

Traffic Flow Changes

10.1.78 The following information in Table 10.19 presents an assessment of the changes in traffic flows during the construction of the Project. This information is also shown diagrammatically in Appendix 10.1.

Table 10.19: AADT Two-Way Impact of Development During Construction Phase (Maximum)

Link No.	2022 Baseline		With Construction (Maximum)		Percentage Impact	
	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
1	15057	880	15143	880	0.57%	0.00%
2	10042	415	10602	733	5.58%	76.66%
3	5613	486	5630	486	0.31%	0.00%
4	10079	503	10639	821	5.56%	63.23%
5	2738	32	2755	32	0.63%	0.00%
6	1398	17	1402	17	0.25%	0.00%

7	14024	444	14566	762	3.87%	71.64%
8	9664	293	9734	293	0.72%	0.00%
9	11301	531	11336	531	0.31%	0.00%
10	22709	1480	23183	1798	2.09%	21.49%
11	40014	1899	40470	2217	1.14%	16.74%
12	12510	504	12885	759	3.00%	50.44%
13	14909	768	14927	768	0.12%	0.00%
14	8679	417	9037	672	4.13%	60.97%
15	13894	487	13911	487	0.12%	0.00%

10.1.79 As can be seen above, the impact of construction on total vehicle movements is relatively low. The proportional impact of HGVs is much higher, in comparison, but this is from a lower 2022 Baseline position.

10.1.80 In terms of the magnitude of impact, Table 10.20 shows the expected level of effects attributable to traffic for all of the links, with specific reference to those identified sensitive receptors in Table 10.8.

Table 10.20: Changes in Traffic Forecasted as Result of the Project During Construction (2022)

Link No.	Relevant Sensitive Receptor Affected by Nearby Road Link	% Change in Total Traffic	% Change in HGVs	Magnitude of Impact / Change	Sensitivity of Identified Receptors	Level of Effect
1	A78 Main Street, Largs and A78 Main Road, Fairlie	0.57%	0.00%	Negligible	High	Minor
2	-	5.58%	76.66%	Medium	Medium	Moderate
3	-	0.31%	0.00%	Negligible	Negligible	Negligible
4	-	5.56%	63.23%	Medium	Negligible	Negligible
5	-	0.63%	0.00%	Negligible	Negligible	Negligible
6	-	0.25%	0.00%	Negligible	Negligible	Negligible
7	-	3.87%	71.64%	Medium	Negligible	Minor
8	-	0.72%	0.00%	Negligible	Negligible	Negligible
9	-	0.31%	0.00%	Negligible	Negligible	Negligible
10	-	2.09%	21.49%	Negligible	Negligible	Negligible
11	-	1.14%	16.74%	Negligible	Negligible	Negligible
12	-	3.00%	50.44%	Low	Negligible	Negligible
13	-	0.12%	0.00%	Negligible	Negligible	Negligible
14	Abbey Primary and Kilwinning Academy Schools	4.13%	60.97%	Medium	Low	Minor
15	-	0.12%	0.00%	Negligible	Negligible	Negligible

Pedestrian Severance and Delay

10.1.81 Given the magnitude of temporary change in traffic during the construction phase, alongside the sensitivity of the identified sensitive receptors at Largs and Fairlie, pedestrian severance and delay are considered to be minor adversely affected during the construction phase at these locations.

10.1.82 A minor adverse level of effect is also forecasted for the A737 at the point where the Abbey Primary and Kilwinning Schools are located.

10.1.83 In all cases, it is considered that no specific mitigation would be required in view of the level of infrastructure that exists currently.

10.1.84 The overall impact of the Project on driver stress and delay is therefore judged to not be significant during the construction phase.

Pedestrian and Cycle Amenity

10.1.85 Given the magnitude of impact in traffic during the construction phase, alongside the lack of direct influence of this traffic over the identified sensitive receptors at Largs and Fairlie, the effects on pedestrian and cycle amenity are considered to be minor adverse.

10.1.86 A minor adverse level of effect is forecasted for the A737 at the point where the Abbey Primary and Kilwinning Schools are located but it is considered that no specific mitigation would be required in view of the level of infrastructure that exists currently.

10.1.87 The overall impact of the Project on pedestrian and cycle amenity is therefore judged to not be significant during the construction phase.

Accidents and Road Safety

10.1.88 Construction activities would lead to temporary increases in traffic movements. However, these temporary movements would be concentrated on the strategic road network which is more suited to accommodating these movements safely.

10.1.89 The tertiary mitigation in the form of the Construction Environmental Management Plan (CEMP) is appropriate in managing construction movements during the construction phase, and the overall impact of the Project on road safety is therefore judged not to be significant.

Further Mitigation

10.1.90 Tertiary mitigation will include the management of construction movements, which will be covered by a CEMP. This would be implemented to control the routing and the timing of construction vehicle movements, to avoid specific unsuitable routes. The requirement for a CEMP is expected to be conditioned as part of the planning application, as it can then be produced following the appointment of a principal contractor

10.1.91 Heavy Goods Vehicles (HGVs) associated with construction are proposed to be barred from certain routes through the CEMP in order to manage these movements according to the hierarchy of the local road network, and to focus on those corridors that are more suited to accommodating these vehicle types. As a result, the use of following routes will be prohibited:

- A78, North of the Project
- A760
- Fairlie Moor Road
- B781

10.1.92 The catchment for construction staff movements made by private cars and Light Good Vehicles (LGVs) is likely to be more widespread and of lesser concern in this regard. Consequently, no restrictions are being proposed on the routing for such trips.

Future Monitoring

10.1.93 In line with the CEMP, there will be a requirement to control movements, both in terms of routeing and timing, alongside a mechanism for ensuring compliance with these restrictions.

10.1.94 These requirements will be cascaded down to the contractors through contractual arrangements.

Accidents and/or Disasters

10.1.95 As the movement of goods and staff will involve road traffic, and therefore points of conflicts, there is always a chance that accidents could occur on the local road network.

10.1.96 Without any identified causation factors, these events cannot be foreseen ahead of time and are likely to occur for a multitude of reasons, none of which can be sufficiently mitigated at this stage of the project.

10.1.97 The CEMP will cover the requirement for a Driver Toolkit, indicating those routes which are less suitable for HGVs. This will ensure that the movement of HGVs would align with the local road hierarchy.

10.1.98 In additional to the above, the CEMP will also include details of a signage strategy for the site which will eb developed in conjunction with Transport Scotland, to ensure that construction traffic is appropriately directed and that other road users are aware of the potential for an increased HGV presence locally.

Assessment of Operational Effects

Travel Demand

10.1.99 The following operational requirements have been identified in terms of on-site staffing.

Table 10.21: Operational Staff Breakdown

Employee Type	People	Shifts	Day shift	Night shift	Days/week
Exco, management and Admin staff	162	1	162	0	5
Factory staff	738	4	185	185	7
Total			**347**	**185**	

10.1.100 From the above, it is possible to establish that there would be around 350 employees on site on any weekday and 185 at night 7 days per week.

10.1.101 From a transport perspective, it is important to note that the shift patterns for factory staff will operate from 07:00-19:00 and 19:00-07:00, meaning that the movements associated with this part of the operation will occur outside of the traditional peak hours for traffic. This will be detailed in the Transport Assessment (TA) which is submitted in support of the planning application.

10.1.102 A discount has been applied for management and administrative staff to reflect the fact that around 20% of the workforce would generally be capable of working remotely on any one day.

10.1.103 A further allowance for modal shift of 10% has been made when determining the travel demand of the Project. This would be achieved by means of car sharing and public transport use and it is expected that a Travel Plan would be secured through condition to encourage the use of sustainable modes of transport.

10.1.104 In addition to staff movements, a number of LGV and HGV movements are expected to take place as part of the operations of the facility. These are detailed in Table 10.22 and the forecast number of movements assume a regular arrival profile for HGVs (based on 250 annual working days). This profile is an average approximation of vehicle movements based upon the required annualised material requirements and actual figures could vary by up to 10% on given days of the week. It is considered robust to review an average situation as volumes are not significant.

Table 10.22: Number of LGV and HGV Movements (Weekday)

Vehicle Type	Operational Requirements		Tonnes/yr	Tonnes/Unit	Unit Loads	Movements per Year	Average Per Day
LGV	M&E / Factory Services		-	-	-	10400	42
	Jetty Ship Re-supply		-	-	-	10	1**
HGV	Steel Wire*		70000	24	12	2916	12
	Lead*		60000	24	1	2500	10
	Aluminium*		20000	24	1	833	3
	XLPE*		20000	24	1	833	3
	Nitrogen tankers*		2700m3	100m^3	1	33	1**
	Waste	Scrap metal	-	-	-	25	1**
		Scrap other	-	-	-	25	1**
		Mixed Recyclables	-	-	-	52	1**
		Municipal waste	-	-	-	52	1**
	Jetty Ship Re-supply						1**
	Other		1900	50		38	1**
Total							**78**

*Note: * Assumption that deliveries would take place on 250 days of the year*

*Note: ** Rounded up to 1 to establish robust daily case assumed*

10.1.105 Based on the above information, the daily profile of vehicular movements is shown in Table 10.23.

Table 10.23: Summary of Operational Vehicular Movements Profile and AADT Total

Time Periods	Cars				LGVs		Total Cars / LGVs		Total HGVs	
	Management and Admin		Factory							
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
06:00-07:00	-	-	166	-	-	-	166	0	-	-
07:00-08:00	28	-	-	166	-	-	28	166	-	-
08:00-09:00	57	-	-	-	4	4	61	4	4	4
09:00-10:00	28	-	-	-	4	4	33	4	4	4
10:00-11:00	-	-	-	-	4	4	4	4	4	4
11:00-12:00	-	-	-	-	4	4	4	4	4	4
12:00-13:00	-	-	-	-	4	4	4	4	4	4
13:00-14:00	-	-	-	-	4	4	4	4	4	4
14:00-15:00	-	-	-	-	4	4	4	4	4	4
15:00-16:00	-	-	-	-	4	4	4	4	4	4
16:00-17:00	-	28	-	-	4	4	4	33	4	4
17:00-18:00	-	57	-	-	4	4	4	61	4	4
18:00-19:00	-	28	166	-	-	-	166	28	-	-
19:00-20:00	-	-	-	166	-	-	-	166	-	-
20:00-21:00	-	-	-	-	-	-	-	-	-	-
21:00-22:00	-	-	-	-	-	-	-	-	-	-
22:00-23:00	-	-	-	-	-	-	-	-	-	-
23:00-00:00	-	-	-	-	-	-	-	-	-	-
00:00-01:00	-	-	-	-	-	-	-	-	-	-
01:00-02:00	-	-	-	-	-	-	-	-	-	-
02:00-03:00	-	-	-	-	-	-	-	-	-	-
03:00-04:00	-	-	-	-	-	-	-	-	-	-
04:00-05:00	-	-	-	-	-	-	-	-	-	-
05:00-06:00	-	-	-	-	-	-	-	-	-	-
Total (AWT)							**488**	**488**	**35**	**35**
AADT Equivalent							**444**	**444**	**25**	**25**

10.1.106 The assignment of operational traffic on the local road network is shown in Table 10.24. This information is also shown diagrammatically in Appendix 10.1.

Table 10.24: Assignment of Operational Traffic on Local Road Network (Two-way)

Link No.	Location	Operational Traffic	
		Cars / LGV	HGVs
1	A78 - South of Largs	222	0
2	A78 - Outside Site Access	621	50
3	A760 – Blairpark	44	0

Link No.	Location	Operational Traffic	
		Cars / LGV	HGVs
4	A78 - West Kilbride	621	50
5	B781 - West Kilbride	44	0
6	B781 - Rural (Munnoch)	9	0
7	A78 - Loup Cottage Caravan Park	577	50
8	A738 - Eglington Road	177	0
9	A738 - High Road (Saltcoats)	89	0
10	A78 - Dual (East of Dalry Road)	399	50
11	A78 - Dual (South of Stevenston Road)	355	50
12	A737 - Irvine Road (North)	310	40
13	A737 - Irvine Road (South)	44	0
14	A737 - South of Dalgarven	266	40
15	A738 - Stevenston Road (Kilwinning)	44	0

Development Impact

Traffic Flow Changes

10.1.107 The operational effects of the Project are more permanent in nature than those involved in the construction phase and, therefore, the more detailed assessment criteria have been presented below.

10.1.108 Table 10.25 presents the changes in traffic on the relevant road links within the study area, expressed as a percentage for both ‘All Vehicles’ and ‘HGVs’. This information is also shown diagrammatically in Appendix 10.1.

Table 10.25: AADT Two-Way Impact of Development During Operational Phase (2024)

Link No.	2024 Baseline		2024 Operational		Percentage Impact	
	All Vehicles	HGVs	All Vehicles	HGVs	All Vehicles	HGVs
1	15217	890	15439	890	1.46%	0.00%
2	10148	419	10820	470	6.62%	12.04%
3	5672	491	5717	491	0.78%	0.00%
4	10186	508	10857	559	6.59%	9.93%
5	2767	33	2811	33	1.60%	0.00%
6	1413	17	1422	17	0.63%	0.00%
7	14173	449	14800	499	4.42%	11.25%
8	9767	296	9945	296	1.82%	0.00%
9	11422	537	11510	537	0.78%	0.00%
10	22951	1495	23400	1546	1.96%	3.38%
11	40439	1919	40845	1970	1.00%	2.63%
12	12643	510	12994	550	2.78%	7.92%
13	15068	776	15112	776	0.29%	0.00%
14	8772	422	9078	462	3.49%	9.58%
15	14041	492	14086	492	0.32%	0.00%

10.1.109 As can be seen above, none of the percentage impacts reach the level of magnitude in excess of the 30% threshold, resulting in a ‘negligible’ rating and an imperceptible outcome.

10.1.110 Table 10.26 shows the outcome of applying the matrix assessment shown in Table 10.10 to determine the level of effect attributed to the operation of the Project.

Table 10.26: Changes in Traffic Forecasted During the Operational Phase (2024)

Link No.	Relevant Sensitive Receptor Affected by Nearby Road Link	% Change in Total Traffic	% Change in HGVs	Magnitude of Impact/Change	Sensitivity of Identified Receptors	Level of Effect
1	A78 Main Street, Largs and A78 Main Road, Fairlie	1.46%	0.00%	Negligible	High	Minor
2	-	6.62%	12.04%	Negligible	Medium	Minor
3	-	0.78%	0.00%	Negligible	Negligible	Negligible
4	-	6.59%	9.93%	Negligible	Negligible	Negligible
5	-	1.60%	0.00%	Negligible	Negligible	Negligible
6	-	0.63%	0.00%	Negligible	Negligible	Negligible
7	-	4.42%	11.25%	Negligible	Negligible	Negligible
8	-	1.82%	0.00%	Negligible	Negligible	Negligible
9	-	0.78%	0.00%	Negligible	Negligible	Negligible
10	-	1.96%	3.38%	Negligible	Negligible	Negligible
11	-	1.00%	2.63%	Negligible	Negligible	Negligible
12	-	2.78%	7.92%	Negligible	Negligible	Negligible
13	-	0.29%	0.00%	Negligible	Negligible	Negligible
14	Abbey Primary and Kilwinning Academy Schools	3.49%	9.58%	Negligible	Low	Negligible
15	-	0.32%	0.00%	Negligible	Negligible	Negligible

10.1.111 The results in Table 10.26 indicate that the Project would lead to negligible effects in terms of traffic volumes for all of the road links considered in this EIAR Chapter, with the exception of Link 1 and Link 2 where the effects would be minor.

Pedestrian Severance and Delay

10.1.112 The above operational traffic changes as they relate to the thresholds of pedestrian severance and delay for the identified sensitive receptors are shown in Table 10.27.

Table 10.27: Comparison of Pedestrian Severance and Delay (2024)

Sensitive Receptors	Relevant Link No.	2024 Baseline	2024 With Operation	Level of Effects
A78 Main Street, Largs	1	Moderate	Moderate	Minor Adverse
A78 Main Road, Fairlie	1	Moderate	Moderate	Minor Adverse
Abbey Primary and Kilwinning Academy Schools	3	Moderate	Moderate	Negligible

10.1.113 From the above, despite the road links recording a moderate level of pedestrian severance and delay, the effect of the Project will be minor. Therefore, there would be no change to conditions experienced by users at sensitive receptors.

10.1.114 The impact of the operational phase of the Project on pedestrian severance and delay is therefore considered not to be significant.

Driver Stress

10.1.115 The assessment of driver stress under 2024 forecast conditions during the operation of the Project is shown below in Table 10.28.

Table 10.28: Driver Stress Assessment (2024)

Link No.	Locations	All Vehicles		Driver Stress	
		2024 Forecast Baseline	2024 Operational	2024 Baseline	2024 Operation
1	A78 - South of Largs	579	596	High	High
2	A78 - Outside Site Access	391	444	Moderate	Moderate
3	A760 – Blairpark	212	216	Low	Low
4	A78 - West Kilbride	356	409	High	High
5	B781 - West Kilbride	99	103	High	High
6	B781 - Rural (Munnoch)	55	56	Low	Low
7	A78 - Loup Cottage Caravan Park	499	549	High	High
8	A738 - Eglington Road	333	346	High	High
9	A738 - High Road (Saltcoats)	446	453	High	High
10	A78 - Dual (East of Dalry Road)	1014	1051	High	High
11	A78 - Dual (South of Stevenston Road)	1721	1754	High	High
12	A737 - Irvine Road (North)	500	528	High	High
13	A737 - Irvine Road (South)	537	540	High	High
14	A737 - South of Dalgarven	355	380	Moderate	Moderate
15	A738 - Stevenston Road (Kilwinning)	522	525	High	High

10.1.116 The above data shows that there would be no change in the level of driver stress associated with the operation of the Project.

10.1.117 In view of the minor adverse effects identified in Table 10.26 for Link 1 and 2, the conclusion drawn is the Project would not have a significant effect on pedestrian severance and delay during its operational phase.

Pedestrian and Cycle Amenity

10.1.118 Table 10.14 presented an assessment of pedestrian and cycle amenity, reflecting baseline conditions. It is also the case that Table 10.25 concluded that the level of change in traffic during the operational phase would be negligible, except for Link 1 and Link 2, where it is reported to be minor.

10.1.119 Applying both outcomes to the assessment of the level of pedestrian and cycle amenity that would be experienced, the analysis concludes there would be no significant worsening of the conditions at the identified sensitive receptors, as summarised in Table 10.29.

Table 10.29: Comparison of Pedestrian and Cycle Amenity

Sensitive Receptors	Relevant Link No	2024 Baseline	2024 With Operation	Level of Effects
A78 Main Street, Largs	1	Good	Good	Minor Adverse
A78 Main Road, Fairlie	1	Good	Good	Minor Adverse
Abbey Primary and Kilwinning Academy Schools	3	Good	Good	Negligible

10.1.120 The effect of the Project on pedestrian and cycle amenity during its operational phase is therefore considered not to be significant.

Accidents and Road Safety

10.1.121 In view of the direct relationship that exists between traffic volumes and the incidence of accidents, any changes in traffic levels are likely to point to a commensurate change in the number of PIA events.

10.1.122 However, as no underlying issues have been identified, there is nothing to suggest that the operation of the development would give rise to any significant worsening of conditions to an extent where concerns would be raised.

10.1.123 The effect of the Project on road safety during its operational phase is therefore considered not to be significant.

Further Mitigation

10.1.124 While not forming part of the Project, it is understood that Transport Scotland's National Case for Change Report: Second Strategic Transport Project Review (STPR2) makes specific reference to Hunterston.

10.1.125 Appendix D: Options Sifted Out of STPR2 (Transport Scotland, 2022) has sifted out the more generic objective to "Continuously improving the access to ports by road and rail for freight" in favour of more location specific objectives

10.1.126 Appendix E: Options Sifted In for Further Consideration through STPR2 (Transport Scotland, 2022), it is stated under 'Ayrshire & Arran 785' that:

> *"Improvement of Hunterston rail provision e.g. reopen disused rail line to facilitate access to Hunterston Port (to improve north/south connectivity and increase rail freight)"*

10.1.127 The implementation of improved rail access to Hunterston could have a positive / mitigating effect on the ability for the Project to receive some of its materials by rail. However, recognising the longer-term horizon for such an intervention, it is not considered to yet be deliverable in the context of the assessment of Traffic and Transport effects in this EIAR Chapter. The outcomes of the operational assessment are therefore robust.

10.1.128 In addition to the potential for future rail connectivity to Hunterston Port, there is also a commitment from the applicant to consider the import and export of materials by ship. Whilst there is a commitment to reduce the development's impact by making use of this mode, it is not guaranteed and thus this Chapter considered that all materials will require transportation by road as this represents a robust case for assessment.

Future Monitoring

10.1.129 As a commercial development, there is likely to be monitoring involved with the implementation of a Travel Plan. The purpose of the monitoring would be to ensure that the use of sustainable transport modes continues to be promoted, including public transport and car sharing.

10.1.130 Staff induction will include a section detailing as part of an objective to make people aware of their travel choices for travelling to the Project.

Accidents/Disasters

10.1.131 As the movement of goods and staff will involve road traffic, and therefore points of conflicts, there is always a chance that accidents could occur on the local road network. Without any identified causation factors, these events cannot be foreseen ahead of time and are likely to occur for a multitude of reasons, none of which can be sufficiently mitigated at this stage of the project.

Potential Changes to the Assessment as a Result of Climate Change

10.1.132 Transport is a significant contributor to climate change. Emissions generated by the movement of goods and people has a continued wider effect on the environment, although the decarbonisation of transport through improved vehicle technology will reduce the dependency of fossil fuels.

10.1.133 From the perspective of this EIAR Chapter, there are no direct implications of climate change on transport, other than through its consequential effects on other areas of environmental assessment, which are covered in separate chapters.

10.1.134 As a result, none of the effects reported in this EIAR Chapter would be affected, under both Baseline and Forecast conditions remain the same, when taken in the context of climate change.

Assessment of Cumulative Effects

10.1.135 No cumulative assessment has been judged to be required in connection with the Project from the perspective of transport, owing to the lack of any fixed planning commitments.

10.1.136 The Hunterston PARC Development Framework (2021) sets out a vision for an integrated approach to the development of a Masterplan for the repurposing of 320-acres to regenerate the area and bring forward investment. There are no planning commitments or consents that could be considered for the purpose of determining the cumulative transport effects of the area-wide Masterplan.

10.1.137 It is expected that this evidence would be provided in connection with this, allowing for any additional transport interventions to be planned and come forward in a proportionate manner, compliant with the normal planning obligations tests.

Inter-relationships

10.1.138 There is a direct inter-relationship between transport, acoustic and air quality which are covered separately in respective chapters.

Summary of Effects

10.1.139 A summary of the effects is shown in Table 10.30.

10.1.140 This shows that the effect of the Project during its construction phase would have a short-term minor adverse effect on all three sensitive receptors.

10.1.141 During its operational phase, long-term minor adverse effects would be experienced at the sensitive receptors in Largs and Fairlie, while the effect on the A737 would be negligible.

10.1.142 In all cases, these minor or negligible effects are such that the underlying conditions experienced, in terms of pedestrian severance, driver stress and delay and pedestrian and cycle amenity would not change as a result of the Project.

10.1.143 The impact on accidents and road safety cannot totally be negated, simply as a factor of increased vehicular movements. Therefore, while not expected to be significant, short-term (construction) and long-term (operation) minor adverse effects are forecasted in order to represent a robust assessment.

Table 10.30: Summary of Likely Environmental Effects on Traffic and Transport

Receptor	Sensitivity of receptor	Description of impact	Short / medium / long term	Magnitude of impact	Significance of effect	Significant / Not significant	Notes
Construction phase							
A78 Main Street, Largs	High	Pedestrian Severance and Delay, Driver Stress, Pedestrian and Cycle Amenity, Road Safety	Short term	Negligible	Minor Adverse	Not significant	-
A78 Main Road, Fairlie	Medium		Short term	Negligible	Minor Adverse	Not significant	-
Abbey Primary and Kilwinning Academy Schools	Low		Short term	Medium	Minor Adverse	Not significant	-
Operational phase							
A78 Main Street, Largs	High	Pedestrian Severance and Delay, Driver Stress, Pedestrian and Cycle Amenity	Long Term	Negligible	Minor Adverse	Not significant	-
A78 Main Road, Fairlie	Medium		Long Term	Negligible	Minor Adverse	Not significant	-
Abbey Primary and Kilwinning Academy Schools	Low		Long Term	Negligible	Negligible	Not significant	-
A78 Main Street, Largs	High	Accidents and Road Safety	Long Term	Negligible	Minor Adverse	Not significant	
A78 Main Road, Fairlie	Medium		Long Term	Negligible	Minor Adverse	Not significant	
Abbey Primary and Kilwinning Academy Schools	Low		Long Term	Negligible	Minor Adverse	Not significant	

References

Scottish Government (2014) Third National Planning Framework (NPF3) for Scotland

Scottish Government (2021) Fourth National Planning Framework (NPF4) for Scotland (Consultation Draft)

Scottish Government (2017) Planning Circular 1/2017: Environmental Impact Assessment Regulations (2017)

Transport Scotland (2022) Second Strategic Transport Project Review (STPR2)

North Ayrshire Council (2019) Local Development Plan 2

Peel Ports (2021) The Hunterston Parc Development Framework

Scottish Government (2013) Planning Advice Note 1/2013: Environmental Impact Assessment

The Institute of Environmental Management and Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic (Guidance Note No. 1)

National Highways (2019) LA 112 Sustainability and environment. Appraisal. Population and human health (formerly DMRB Volume 11, Section 3, Part 6 (Land), Volume 11, Section 3, Part 8 (Pedestrians, cyclists, equestrians and community effects) and Volume 11, Section 3, Part 9 (Vehicle travellers)).

Design Manual for Roads and Bridges (2002) Volume 13 Section 1 Traffic Input to COBA under the Economic Assessment of Road Schemes