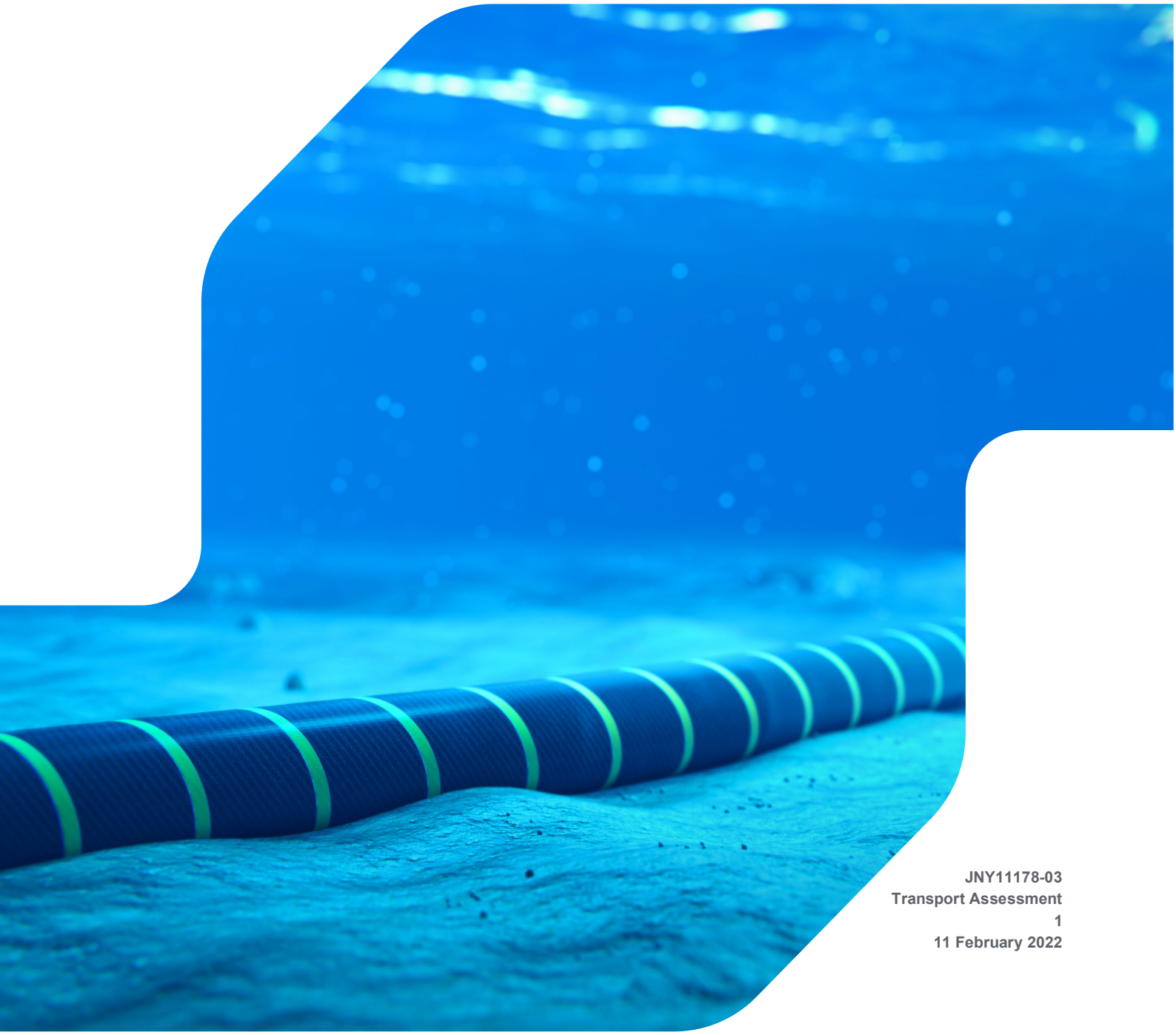
XLCC CABLE FACTORY - HUNTERSTON

Transport Assessment



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1 INTRODUCTION

Purpose

1.1 This Transport Assessment (TA) has been prepared by RPS on behalf of XLCC Ltd (the 'Applicant') for a proposed cable manufacturing facility at Hunterston, North Ayrshire (the 'Project').

1.2 From a transport perspective, the proposals would be defined by both its construction and operational phase during which the Project will generate a variable number of vehicular movements.

1.3 The purpose of this TA is to quantify the demand for travel associated with the Project and establish whether the local road network can accommodate the changes in demand, giving regard the peak times when background traffic would be at its highest.

1.4 Measures to minimise or mitigate the impact of these additional movements will be outlined, where these are judged to be required, both in physical terms but also in connection with any site-wide Construction Traffic Management Plan (CTMP) that may be secured through planning condition as part of an overall Construction Environmental Management Plan (CEMP).

1.5 The TA has been prepared in accordance with the Transport Assessment Guidance (July 2012) published by Transport Scotland.

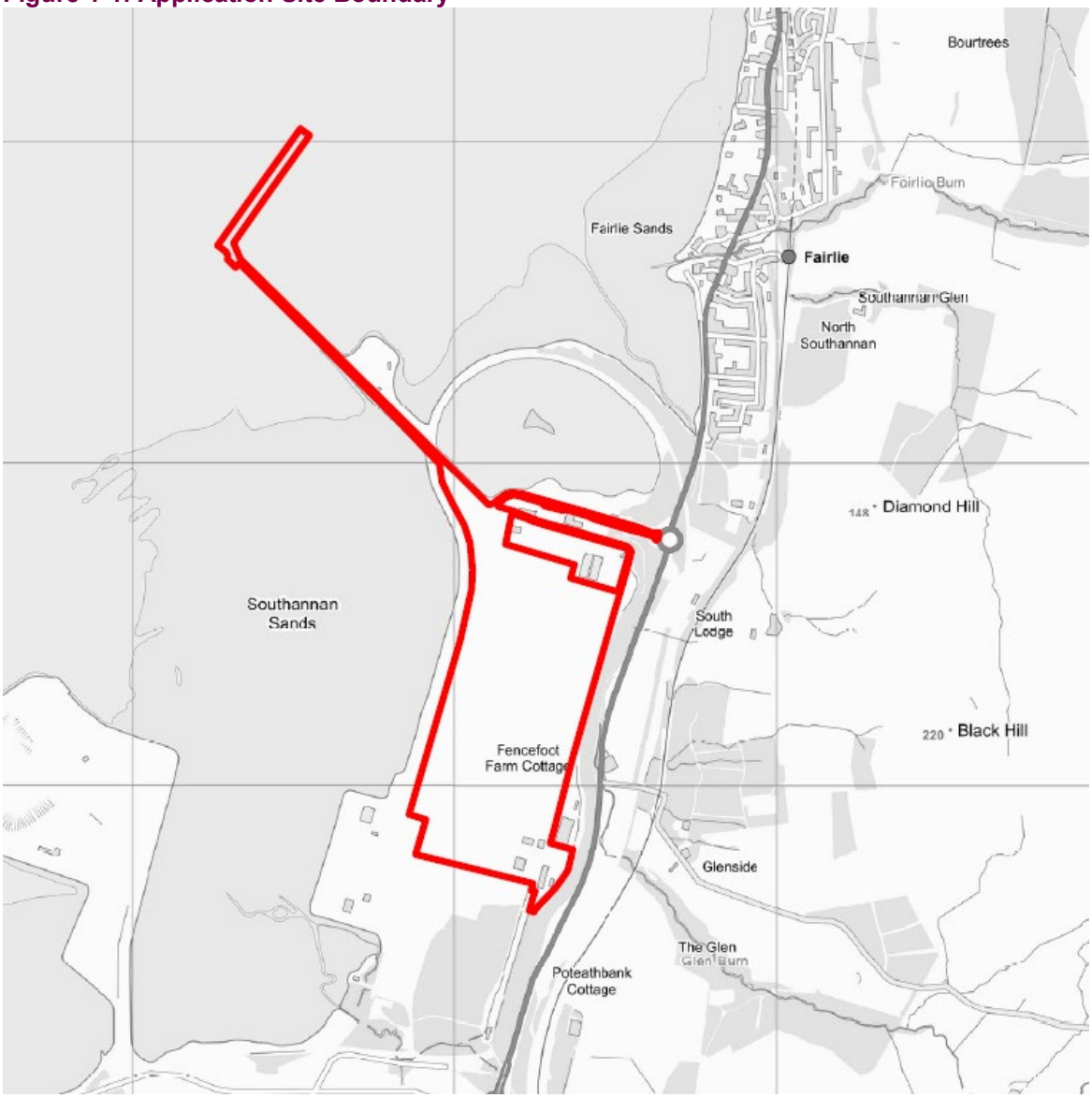
Site Context

1.6 The Project is located approximately 6km to the south of Largs, in North Ayrshire. The site is currently a brownfield site, on land known as the Hunterston Coal Yards.

1.7 It located adjacent to the coast with direct access to the Deep Water Port and Bulk Terminal and an associated existing jetty which would facilitate the loading of cable products directly onto ships. An existing rail loop also provides added resilience by offering future potential options for the movements of goods by rail.

1.8 The location and boundary of the site is shown in Figure 1-1.

Figure 1-1: Application Site Boundary



1.9 The current transport environment is characterised by a semi-rural road network which is dominated by the A78(T), a trunk road linking a string of coastal villages and towns, from Irvine and Adrossan to the south and Largs and Greenock to the north.

1.10 An existing roundabout from the A78(T) provides a means of access to the Application Site and this will be retained to serve the Project.

1.11 The local road network is generally capable of accommodating a range of different vehicle types and size meaning that the potential for conflict is low, although there will likely be a preference to manage the movements of HGVs so that these movements can avoid less suitable rural routes in the area.

The Project

1.12 The Project is a Cable Manufacturing Facility (CMF) with approx. 700,000sqft of factory floorspace. It is intended to fabricate thousands of kilometres of high-voltage subsea cables every year, which are to be used to transport renewable electricity around the world. The factory will run 24hrs and the continuous process requires certainty over material supply. Therefore, instead of using a 'just-in-time' mode of resupply, the factory will hold substantial stocks of materials on site.

Report Structure

1.13 Following this section, this TA will follow the below structure:

- **Section 2** summarises the transport policy context within which the TA has been drafted;
- **Section 3** provides an appraisal of the local transport environment, including character of the local road network and baseline conditions;
- **Section 4** describes the Project and the configuration of the Southannan Roundabout, the primary means of access;
- **Section 5** focuses on the travel demand analysis that has been carried out to quantify the number of vehicle movements forecasted during the construction and operational phase of the Project;
- **Section 6** outlines the impact of the Project, with reference to the underlying background traffic movement forecast under 2024 conditions;
- **Section 7** considers the mitigation measures that would be implemented to minimise or manage the impact(s) of the Project; and
- A summary of the outcomes from the TA is detailed in **Section 8**.

2 POLICY AND GUIDELINES

National Policy and Guidance

2.1 Scotland's National Planning Framework 3 (NPF3) sets the context for development planning in Scotland and provides a framework for the spatial development of Scotland as a whole. It sets out the Government's priorities over the next 20-30 years and identifies national developments which support the development strategy.

2.2 NPF3 was published in 2014 and the Scottish Government has now begun a process of review and preparation of a new framework. The revision of the Scottish Planning Policy in 2014 has emphasized the importance of Energy Efficiency and noted that development plans should support new developments which meets the sustainable energy challenges for Scotland (and beyond).

2.3 The Draft NPF4 (2021) considers in *Policy 2* recognises the new climate emergency. *Policy 19: Green Energy* states that new renewable projects should be supported, with some exceptions, unless the impacts are judged to be unacceptable.

2.4 Planning Advice Note (PAN) 75 - Planning for Transport (17 August 2005) provides a framework for how linkages between planning and transport can be managed. It provides good practice guidance which planning authorities, developers and others should follow in their assessment of policy, assessment of proposals and project delivery.

2.5 Transport Assessment Guidance (July 2012), published by Transport Scotland, provides information relevant to the preparation of Transport Assessments (TAs) and Transport Statements (TSs) for developments in Scotland. The guidance ensures that mechanisms are in place to specify, assess, revise, implement, monitor and review the impacts that developments will have on the transport system.

Local Policy

2.6 North Ayrshire Council (NAC) adopted its Local Development Plan in November 2019. It describes Hunterston as

> "… a key employment location within North Ayrshire and offers deep water sea port facilities and infrastructure that make it a national asset. We want the future National Planning Framework to strengthen its commitment to supporting Hunterston as national development as an energy hub and maximising the economic potential of the port's deep water access."

2.7 The North Ayrshire Local Transport Strategy (2015-2020) stated that:

> *"Any development would require a substantial public sector venture, however, it is important to ensure good transport links to and from Hunterston are maintained to allow for longer term investment plans to be accomplished."*

2.8 *Strategic Policy 3: Strategic Development Area* relating to the Hunterston area identifies its potential for maritime-based construction or decommissioning. The various site assets would lend themselves to an integrated approach, with the expectation that:

> *"Hunterston is an area where co-ordinated action and a masterplanned approach is required. We would expect all development to take account of the special environmental and safety constraints of Hunterston including detailed transport studies to identify options for enhancing port/rail/road accessibility, and management of impact of uses on nearby communities and the natural and built heritage assets in the area."*

2.9 The Draft National Planning Framework 4 also identifies Hunterston as a national development site. The policy states that it:

> *"… supports the repurposing of Hunterston port as well as the adjacent former nuclear power station site. The location and infrastructure here offer potential for electricity generation from renewables, and a variety of commercial uses including port, research and development, aquaculture, the circular economy."*

2.10 The Project lies outside of the Irvine Bay Transport Model (IBTM) area, which was first developed to support the 2014 LDP. It thus falls outside of the protocol which applies to planning applications for new development and/or change of use within the Irvine Bay area.

2.11 As a strategic development, Hunterston lies adjacent to A78(T) and thus is likely to rely on this and other strategic road corridors for the movement of materials and staff.

2.12 The Hunterston PARC Development Framework (September 2021) has been prepared in an attempt to guide investment decisions around a comprehensive Masterplan for the repurposing of 320-acres of land. This draft document is still at an early consultation stage but it provides an indication of the potential for the wider regeneration of the area.

2.13 The STPR2 process has sifted out the more generic objective to "Continuously improving the access to ports by road and rail for freight" and replaced it with more location specific scheme. In the sifted-in list, STPR2 states 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)."*

3 BASELINE CONDITIONS

Active Modes

3.1 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.

3.2 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.

3.3 Rail services can be accessed from Fairlie railway station, which is located approximately 3km from the site access. Regular buses in the form of Service 585 operates along the A78 between Largs and Ayr via Adrossan and Saltcoats, although there are currently no bus stops serving the Site directly.

3.4 The existing pedestrian and cycling isochrones are shown in Figure 3-1 and Figure 3-2. This shows the extent of the area that can be reached on foot or by cycle from the Site.

Figure 3-1. Walking Isochrone Plot

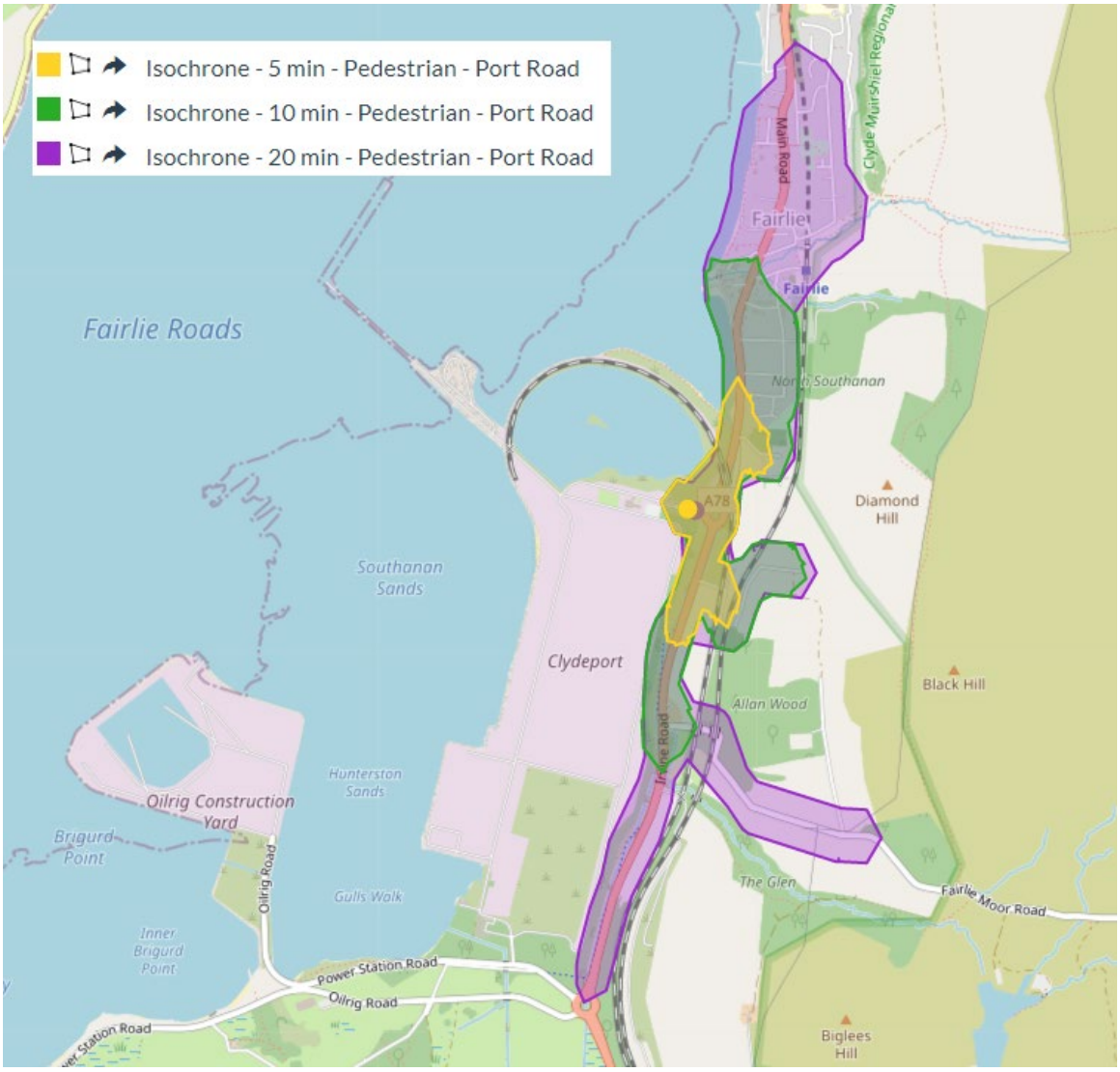
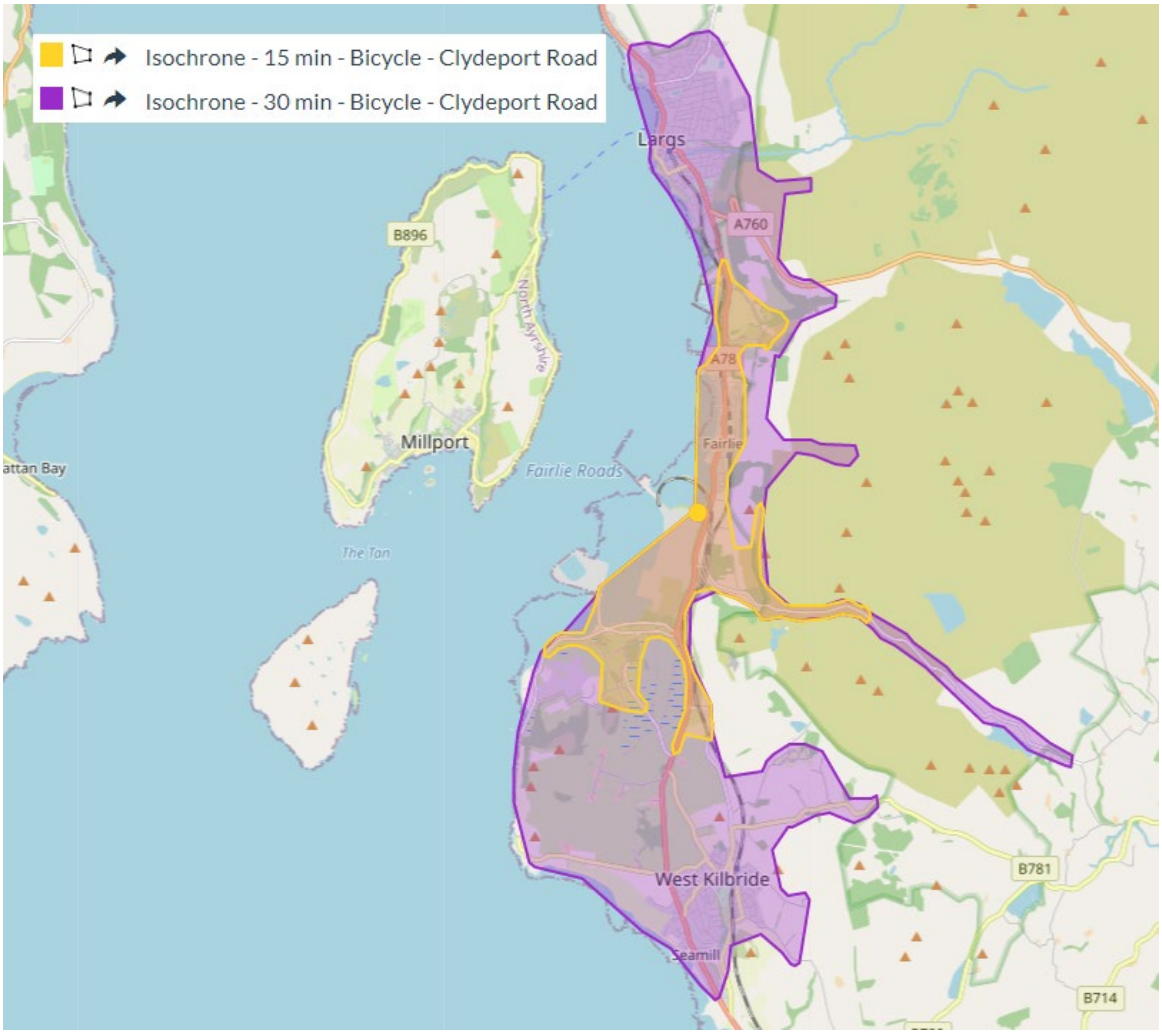
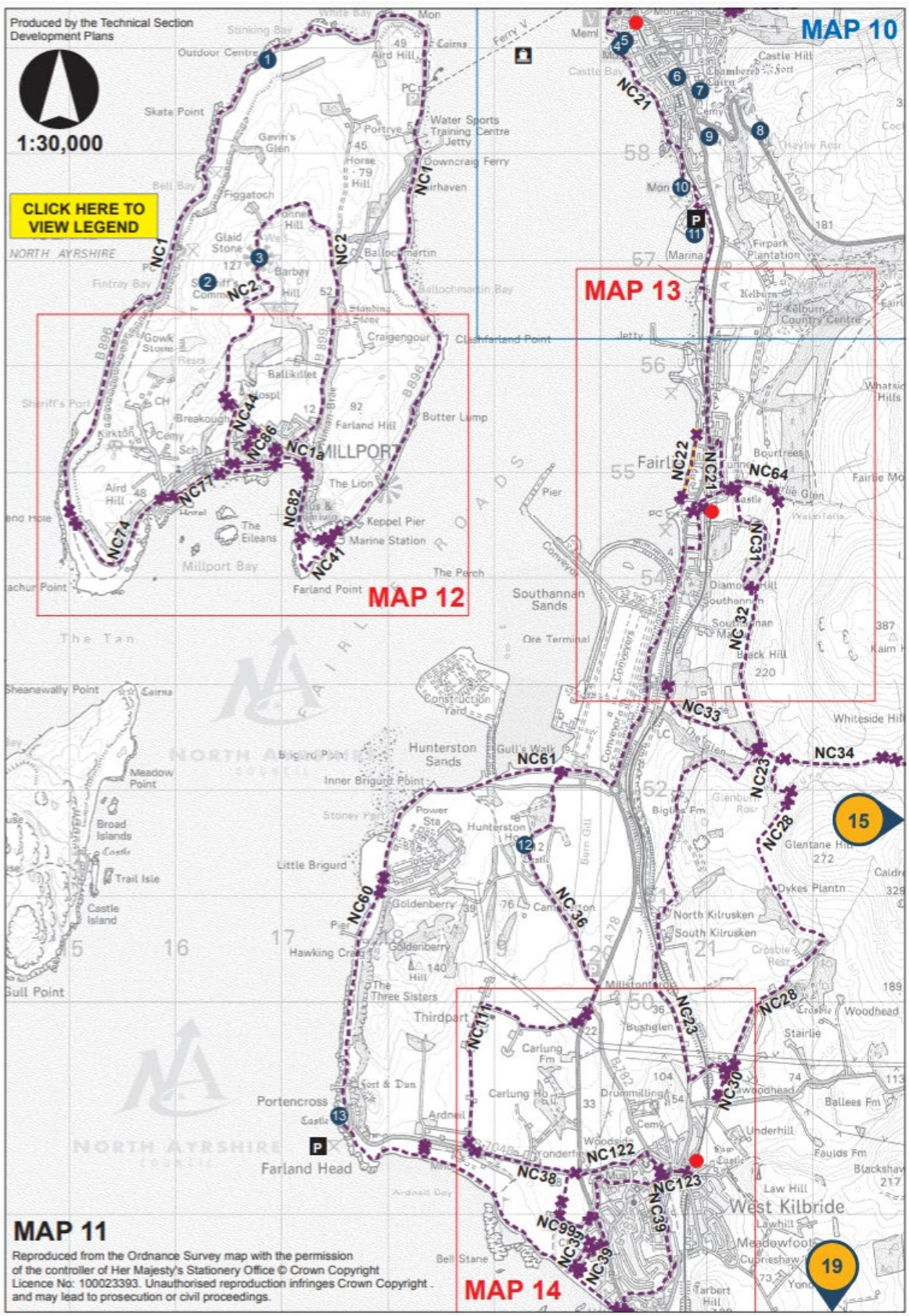


Figure 3-2. Cycling Isochrone Plot



3.5 Figure 3-3, on the other hand, outlines the existing Core Path Network in the vicinity of the Site. This shows a relative dense network of routes.

Figure 3-3. Core Path in the Vicinity of the Site



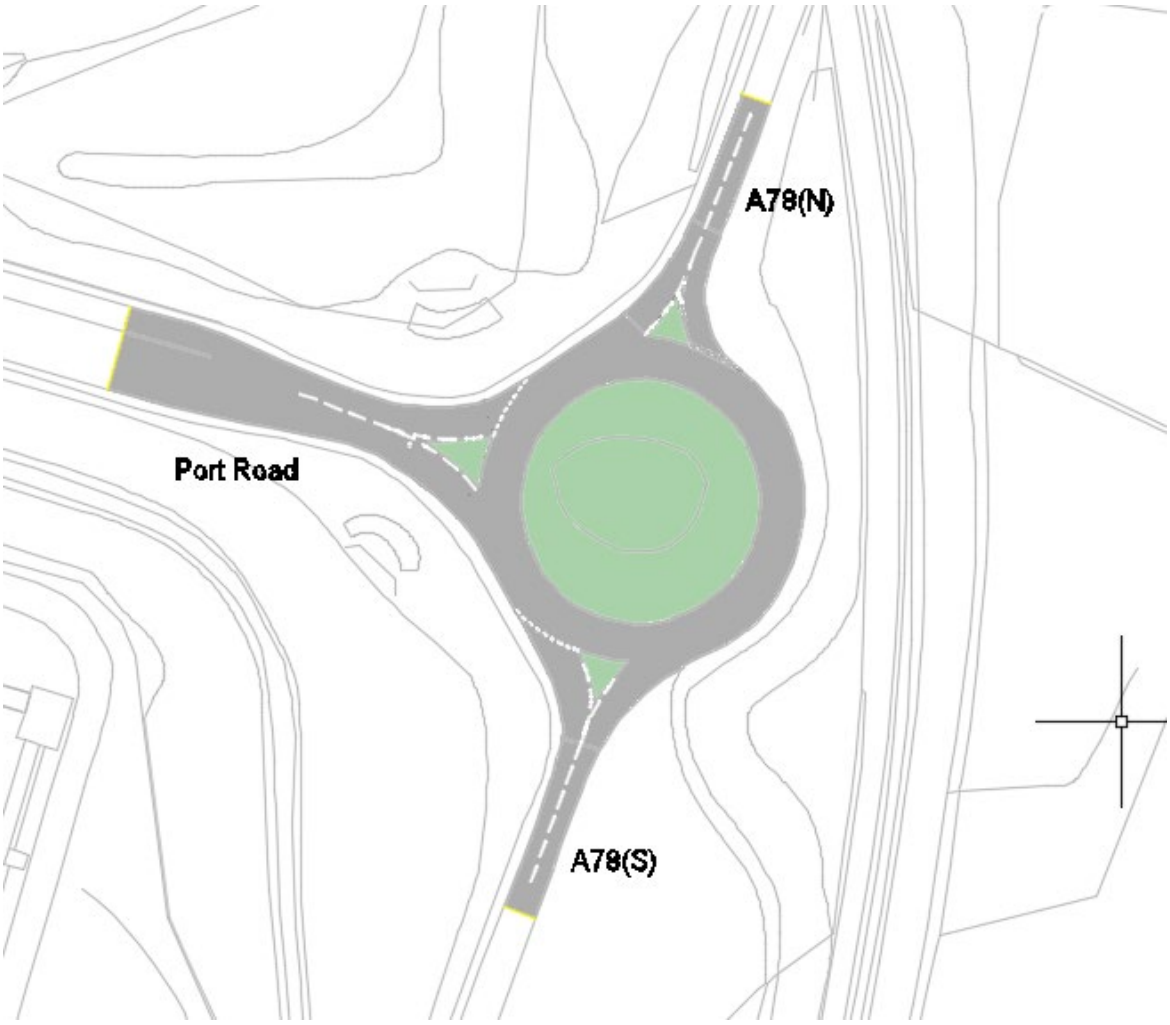
3.6 Most of the other local roads include elements of pedestrian infrastructure provision, in the form of footways, but the level of provision varies greatly in terms of width and the presence of ancillary infrastructure, such as dropped kerbs or tactile paving. The strategic road network in other areas, which continues to be defined by the A78(T), does not include footways.

Road Network

Access

3.7 The Site currently benefits from an existing multi-modal access points provided off the A78(T), which is trunk road. This access comprises a roundabout with an approximately 74m Inscribed Circle Diameter (ICD), as shown in Figure 3-4.

Figure 3-4. Existing Roundabout off A78(T)



3.8 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.

3.9 Given its status as a Trunk Road, the A78(T) is able to accommodate a larger volume and variety of vehicle types without any requirement for adaptation.

Surveys

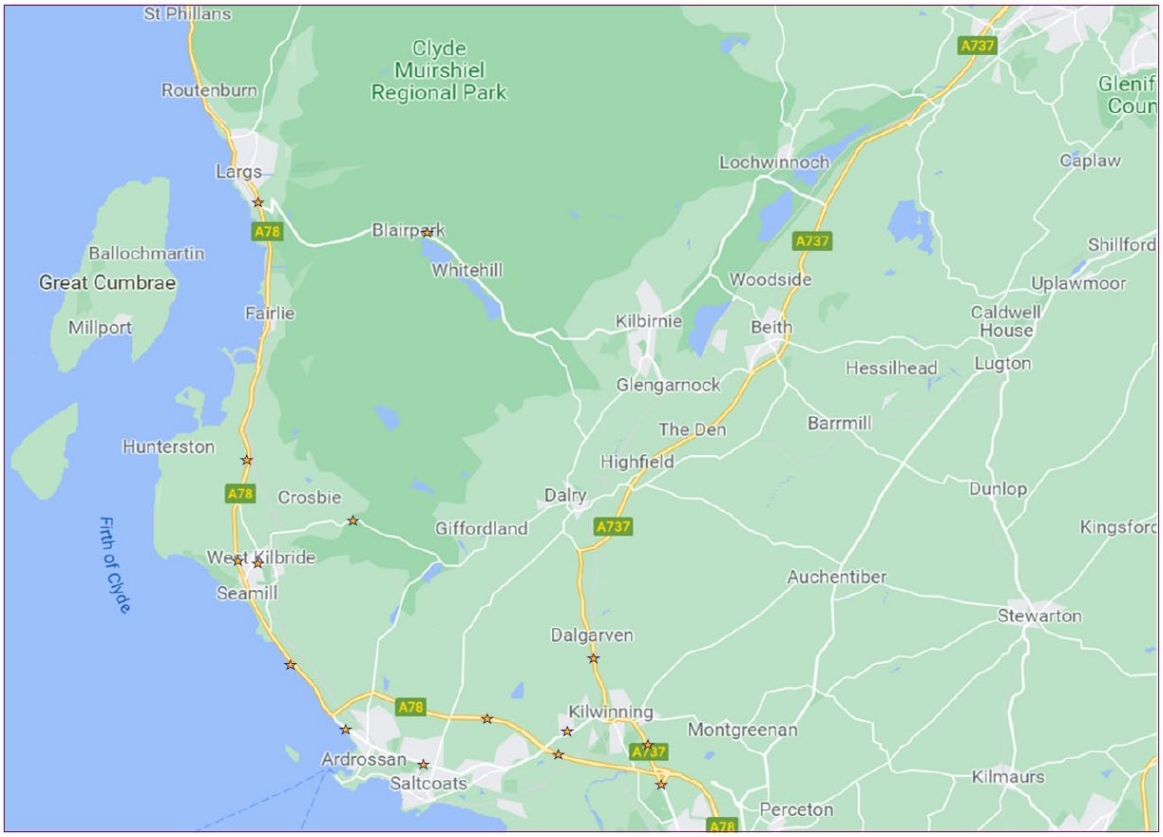
3.10 No new traffic surveys were carried out in connection with this TA. The current Covid-19 situation would lead to survey outcomes which would be considered atypical in the context of 'normal' conditions.

3.11 Existing traffic counts available on the Department for Transport (DfT) website provide a sufficient basis on which to complete this TA, with following Automatic Traffic Count (ATC) traffic surveys were sourced for the following locations:

- A78 South of Lards – 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; and
- A738 Stevenston Road at Kilwinning – Site ID 10905.

3.12 The locations of the above is shown in in Figure 3-5. The surveys have recorded hourly directional flows covering a 12-hour period for a typical weekday, most of which involve a 'neutral' month.

Figure 3-5: Traffic Survey Locations



3.13 The traffic survey information outlined above have been collected on a number of historical survey dates. In order to establish a common baseline in 2022 for traffic across the local road network, the following background growth factors shown in Table 3-1 have been applied. Given the relatively peripheral geographical study area, the 'Low Growth' National Road Traffic Forecast (NRTF) factors have been used.

Table 3-1. Survey Dates and NRTF Traffic Growth Factors Applied to Establish 2022 Baseline Conditions

Link No.	Road_ID	Location	Survey_ID	Latest Data Collection Year	Survey Month	Growth Factor to 2022 (NRTF Low)
1	A78	South of Largs	10755	2007	April	1.160
2	A78	South of Site Access	80358	2017	October	1.038
3	A760	Blairpark	40912	2008	April	1.146
4	A78	West Kilbride	50759	2016	May	1.047
5	A781	West Kilbride	811627	2019	June	1.022
6	A781	Rural (Munnoch)	996074	2019	June	1.022
7	A78	Loup Cottage Caravan Park	20761	2017	September	1.038
8	A738	Eglington Road	754	2008	March	1.146
9	A738	High Road (Saltcoats)	30762	2007	May	1.160
10	A78	Dual (East of Dalry Road)	80495	2008	June	1.146

Link No.	Road_ID	Location	Survey_ID	Latest Data Collection Year	Survey Month	Growth Factor to 2022 (NRTF Low)
11	A78	Dual (South of Stevenson Road)	40760	2014	October	1.070
12	A737	Irvine Road (North)	80401	2013	September	1.082
13	A737	Irvine Road (South)	80402	2007	March	1.160
14	A737	South of Dalgarven	74439	2017	June	1.038
15	A738	Stevenston Road (Kilwinning)	10905	2011	October	1.107

3.14 Table 3-2 shows the baseline traffic flows across the study area during the peak hours, based on the traffic surveys that were conducted, factored up to a common 2022 Baseline scenario.

Table 3-2. AM Peak 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	553	35	6.29%	595	26	4.29%	1148	60	5.25%
2	349	22	6.25%	390	11	2.93%	739	33	4.49%
3	243	16	6.60%	126	33	26.36%	369	49	13.35%
4	432	29	6.78%	368	22	5.97%	801	51	6.41%
5	93	1	1.10%	116	3	2.63%	209	4	1.95%
6	52	1	1.96%	48	0	0.00%	100	1	1.02%
7	503	29	5.79%	494	12	2.52%	997	42	4.17%
8	245	17	7.01%	412	13	3.06%	657	30	4.54%
9	447	20	4.42%	340	23	6.83%	786	43	5.46%
10	1222	32	2.63%	869	63	7.26%	2091	95	4.55%
11	1941	56	2.87%	1449	87	5.98%	3391	142	4.20%
12	541	14	2.60%	470	21	4.38%	1011	35	3.43%
13	740	42	5.64%	322	10	3.24%	1062	52	4.91%
14	330	12	3.77%	375	21	5.54%	705	33	4.71%
15	610	22	3.63%	406	15	3.81%	1016	38	3.70%

Table 3-3. PM Peak 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	564	6	1.03%	581	13	2.20%	1145	19	1.62%
2	337	1	0.31%	470	1	0.22%	808	2	0.26%
3	188	10	5.49%	283	7	2.43%	471	17	3.65%
4	309	2	0.68%	299	4	1.40%	608	6	1.03%
5	87	0	0.00%	97	0	0.00%	184	0	0.00%
6	36	0	0.00%	83	0	0.00%	119	0	0.00%
7	542	2	0.38%	438	4	0.95%	980	6	0.64%
8	362	2	0.63%	298	3	1.15%	660	6	0.87%
9	409	2	0.57%	571	2	0.41%	980	5	0.47%
10	840	36	4.23%	1083	19	1.80%	1923	55	2.86%
11	1375	59	4.28%	2046	22	1.10%	3422	81	2.38%
12	597	6	1.09%	369	8	2.05%	966	14	1.46%
13	850	13	1.50%	211	2	1.10%	1061	15	1.42%
14	260	5	2.00%	441	8	1.88%	701	13	1.93%
15	477	2	0.46%	573	3	0.58%	1050	6	0.53%

3.15 Table 3-4 and Table 3-5 apply the 2022-2024 growth rate of 1.011 to the 2022 Baseline traffic flows above to reflect a 2024 Forecast Baseline scenario, anticipated to be the year for the completion of the Proposed Development.

Table 3-4. AM Peak 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	559	35	6.29%	601	26	4.29%	1160	61	5.25%
2	353	22	6.25%	395	12	2.93%	747	34	4.49%
3	246	16	6.60%	127	34	26.36%	373	50	13.35%
4	437	30	6.78%	372	22	5.97%	809	52	6.41%
5	94	1	1.10%	118	3	2.63%	212	4	1.95%
6	53	1	1.96%	49	0	0.00%	101	1	1.02%
7	508	29	5.79%	499	13	2.52%	1007	42	4.17%
8	248	17	7.01%	416	13	3.06%	664	30	4.54%
9	451	20	4.42%	343	23	6.83%	795	43	5.46%
10	1235	32	2.63%	878	64	7.26%	2113	96	4.55%
11	1962	56	2.87%	1465	88	5.98%	3427	144	4.20%
12	547	14	2.60%	475	21	4.38%	1022	35	3.43%
13	748	42	5.64%	326	11	3.24%	1074	53	4.91%
14	334	13	3.77%	379	21	5.54%	712	34	4.71%
15	616	22	3.63%	410	16	3.81%	1027	38	3.70%

Table 3-5. PM Peak Two-way Traffic flows and HGV Percentage Composition (2024 Forecast Baseline)

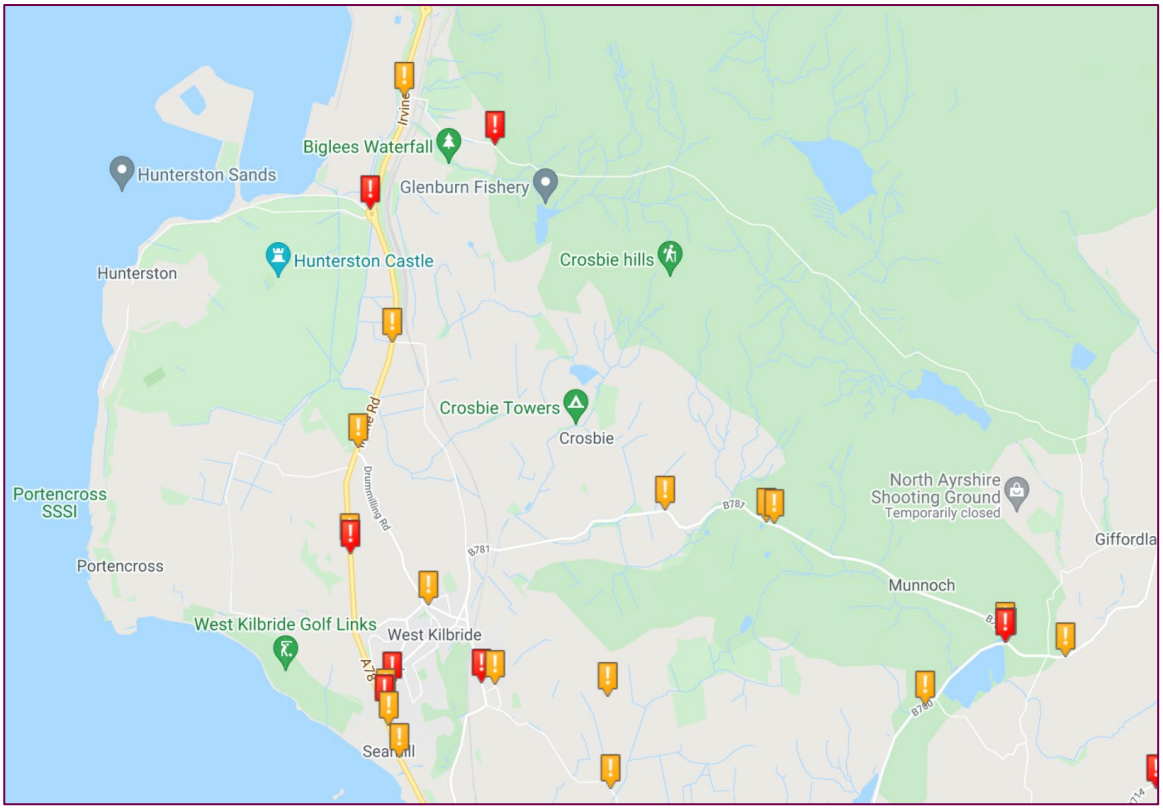
Link No.	Northbound / Eastbound			Southbound / Westbound			Two-Way Total		
	All Veh	HGVs	HGV%	All Veh	HGV	HGV%	All Veh	HGVs	HGV%
1	570	6	1.03%	587	13	2.20%	1157	19	1.62%
2	341	1	0.31%	475	1	0.22%	816	2	0.26%
3	190	10	5.49%	286	7	2.43%	476	17	3.65%
4	312	2	0.68%	303	4	1.40%	615	6	1.03%
5	88	0	0.00%	98	0	0.00%	186	0	0.00%
6	36	0	0.00%	84	0	0.00%	120	0	0.00%
7	548	2	0.38%	443	4	0.95%	991	6	0.64%
8	366	2	0.63%	301	3	1.15%	667	6	0.87%
9	414	2	0.57%	577	2	0.41%	990	5	0.47%
10	849	36	4.23%	1095	20	1.80%	1944	56	2.86%
11	1390	59	4.28%	2068	23	1.10%	3458	82	2.38%
12	604	7	1.09%	373	8	2.05%	977	14	1.46%
13	859	13	1.50%	213	2	1.10%	1072	15	1.42%
14	262	5	2.00%	446	8	1.88%	708	14	1.93%
15	482	2	0.46%	579	3	0.58%	1061	6	0.53%

3.16 The principal former use of the site was as an import terminal shipping iron ore and coal via sea-freight and rail to service the Ravenscraig Steelworks and Longannet Power Station. While Hunterston has been largely vacant since 2016, there has been a history of traffic movements to/from the Project site that is in excess of its current conditions.

Road Safety

3.17 Personal Injury Accident (PIA) statistics data for the 5-year period (2016 – 2020) has been obtained from the Crashmap online database. The data shows there has been recorded accidents over the reported period across the immediate study area shown in Figure 3-6.

Figure 3-6: Personal Injury Accident Statistics 2016-2020



3.18 While a serious event has been recorded at the Hunterston Roundabout which lies immediately to the south of the Southannan Roundabout (site access), there is no clustering of events that would otherwise suggest the presence of an underlying situation with respect of its design that the Project could be expected to either affect or worsen.

Cycle and Pedestrian Network

3.19 PAN 75, Planning for Transport states that a maximum 1600m walking distance is generally acceptable in order for a location to be considered accessible to local facilities. Transport Assessment Guidance 2012 indicates that a walking journey time of 20-30 minutes is deemed acceptable for commuter journeys which is between a 1.5km to 2.5km walking journey.

3.20 Against these thresholds, it is not considered likely that walking or cycling would form regular means of accessing the Project, either related to construction activities or operational employee commuter journeys.

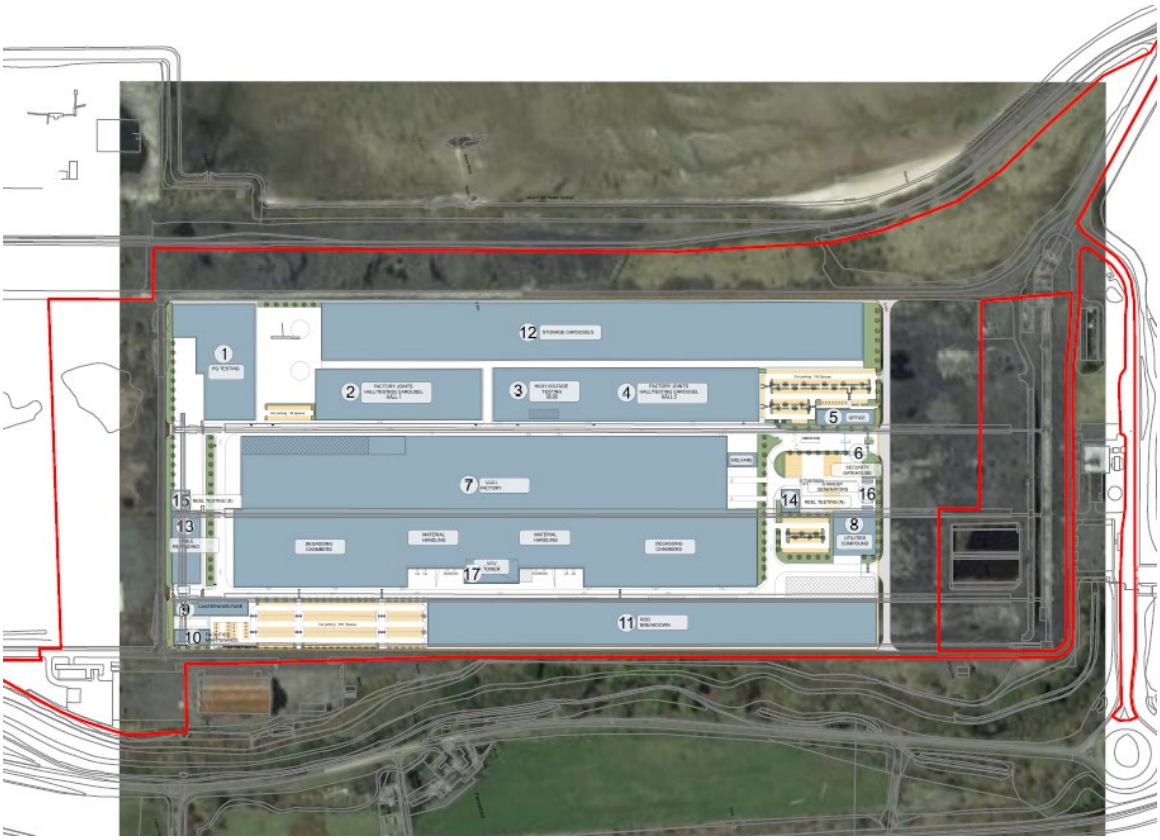
4 DEVELOPMENT PROPOSAL

Project Description

4.1 The Project is a Cable Manufacturing Facility (CMF) with approx. 700,000sqft of factory floorspace. It is intended to fabricate thousands of kilometres of high-voltage subsea cables every year, which are to be used to transport renewable electricity around the world.

4.2 Figure 4-1 shows the indicative site layout, including an example arrangement for the individual energy storage modular units.

Figure 4-1: Proposed Development Layout (Indicative)



Proposed Access Configuration

4.3 Figure 4-2 below shows in more detail the configuration of the existing Southannan Roundabout on the A78(T).

Figure 4-2: Existing Site Access Junction Configuration

Source: Google Streetmap

4.4 The Southannan roundabout has an Inscribed Circle Diameter (ICD) of 74m. Figure 4-3 shows the configuration of the junction using Ordnance Survey (OS) information.

Figure 4-3: Site Access Configuration

5 TRAVEL DEMAND

Construction Phase

Vehicle Types

5.1 The majority of the on-site construction work will be completed over an approximately 2 year period. Construction works will include:

- Mobilisation, erection of temporary construction fencing and clearance and levelling of the site;
- Construction of the internal site road, including materials and aggregate for the compound surfacing and construction equipment storage area;
- Construction of the below-ground infrastructure, such as concrete footings;
- Delivery and erection of the facility;
- M&E and commissioning.

5.2 While the composition of construction vehicles will be dependent on contractor that is being used, the typical vehicle types that would be employed in the construction of the Project will comprise the following.

Table 5-1: Typical Construction HGV Movements

Item	Vehicle Type
Modular Power Units	Articulated / Rigid HGV
Building Fabrication	Articulated / Rigid HGV
Unloading Units / Buildings	Mobile Crane
Cables	Rigid HGV
Fencing	Rigid HGV
Small Deliveries	Rigid HGV
Plant Delivery	10t-20t HGV (normally Rigid HGV)

5.3 From the vehicle types listed in Table 5.1, the majority of materials and plant delivery is to be transported to the site will be via articulated HGVs, with low-loaders being the largest vehicles which could be used for transporting prefabricated buildings or components to the site.

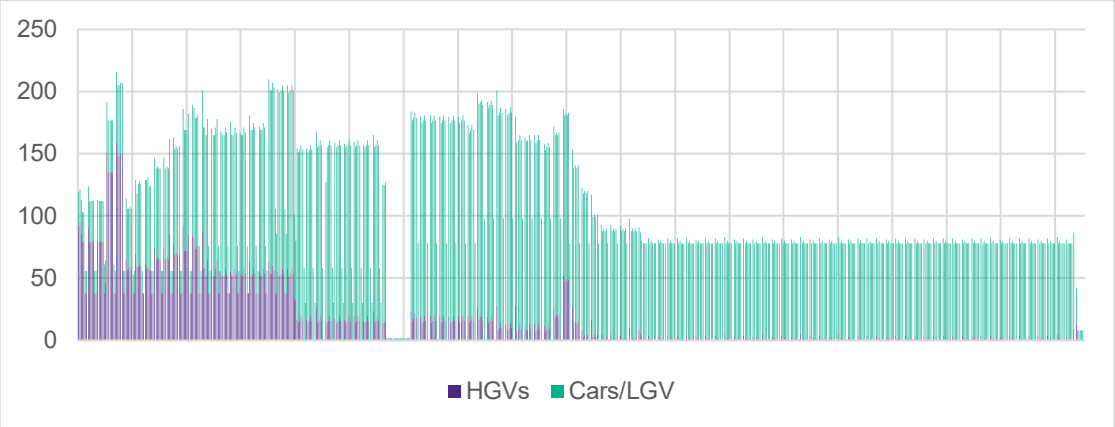
Travel Demand Assessment

Trip Generation

5.4 Construction activities will be subject to a 102 week schedule of works, 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 some significant variability in the number of vehicle movements across the period of construction.

5.5 The following **Graph 5-1** provide a visual representation of the construction vehicle volumes throughout the construction periods, separated between cars / LGVs and HGVs.

Graph 5-1: Forecast Construction Vehicle Movements (Average Daily Traffic)



5.6 Table 5-2 shows the 'Average' as well as the 'Maximum' daily number of construction vehicle movements, again split between Cars/LGVs and HGVs.

Table 5-2: Forecast Construction Vehicle Movements (Average Daily Traffic)

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

5.7 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.

Trip Distribution

5.8 The Strathclyde Freight Strategy (2018) suggested that:

> *"It is preferred that HGVs use the strategic road network or trunk roads as they are design to accommodate heavier and wider vehicles as well as high volumes of traffic. The use of the trunk road network (A76, A77, A78, A82, A80 and A71) means that HGVs are segregated from residential areas."*

5.9 The management of construction movements will be by covered by a Construction Environmental Management Plan (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 will be conditioned as part of the planning application.

5.10 Heavy Goods Vehicles (HGVs) associated with construction of the Project will be directed to avoid certain routes 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 discouraged:

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

5.11 The assumed trip distribution that reflects the above restrictions is shown in Table 5-3, as well as graphically in Appendix A.

Table 5-3: Assumed Vehicle Trip Distribution by Vehicle Type

Link No.	Location	HGVs*	Car / LGVs
1	A78 - South of Largs	0%	25%
2	A78 – South of Site Access	100%	70%
3	A760 – Blairpark	0%	5%
4	A78 - West Kilbride	100%	70%
5	B781 - West Kilbride	0%	5%
6	B781 - Rural (Munnoch)	0%	0%
7	A78 - Loup Cottage Caravan Park	100%	65%
8	A738 - Eglington Road	0%	20%
9	A738 - High Road (Saltcoats)	0%	10%
10	A78 - Dual (East of Dalry Road)	100%	45%
11	A78 - Dual (South of Stevenston Road)	100%	40%
12	A737 - Irvine Road (North)	80%	35%
13	A737 - Irvine Road (South)	0%	5%
14	A737 - South of Dalgarven	80%	30%
15	A738 - Stevenston Road (Kilwinning)	0%	5%

*Note: * subject to monitoring and enforcement through CEMP.*

5.12 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 within the CEMP.

Trip Assignment

5.13 The resultant assignment of construction traffic on the local road network is shown in Table 5-4. The difference between the 'Average' and 'Maximum' reflects the typical and worst-case level of trips that could be expected.

Table 5-4: Two-Way Construction Traffic Assignment on Local Road Network (AADT)

Site	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

5.14 The traffic volumes quoted in the above table relate to movements across an entire day, which in the case of the construction phase is likely to be focused during standard weekday working hours.

Operational Phase

Development Assumptions

Employees

5.15 Given the need to produce, cure and joint the substantial cables, the Project floorspace required is relatively large in nature. While parts of the manufacturing process are automated, it nonetheless requires the operation to run 24 hour per day, based on a day and night shift.

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

Table 5-5: 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**	

5.17 From the above, it is possible to establish that there would be around 350 employees on site on any weekday and 185 during a nightshift.

5.18 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 network peak hours for traffic.

5.19 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.

5.20 A further allowance for modal shift of 10% have been made when determining the travel demand from all employees. This would be achieved predominantly 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.

Deliveries

5.21 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 5-6. These forecast numbers of movements assume a regular arrival profile for HGVs (based on 250 working days). The quantities of materials are based on an assumption that the same specification of cable is produced for the entire year. The delivery of materials has been 'smoothed' across the year albeit the factory will not operate a 'just-in-time' mode of resupply.

Table 5-6: Number of LGV and HGV Movements (Weekdays)

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*		2700m^3	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*

Trip Generation

5.22 Based on the above information, the daily profile of vehicular movements is shown in Table 5-7.

Table 5-7: Summary Operational Vehicular Movements Profile (Weekdays)

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							**488**	**488**	**35**	**35**

5.23 Based on the above, the summary of the movements during the AM and PM peaks are shown below in Table 5-8.

Table 5-8: Summary Operational Vehicular Movements Profile (AM and PM Peaks)

Direction	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	Cars / LGVs	HGVs	All Vehicles	Cars / LGVs	HGVs	All Vehicles
Arrivals	61	4	64	4	4	8
Departures	4	4	8	61	4	64
Total	**65**	**7**	**72**	**65**	**7**	**72**

Trip Distribution

5.24 The same trip distribution has been assumed as has been listed in Table 5-3. The same restrictions on which routes would be enforced for construction HGVs would be retained during the operational

phase of the Project, secured through contractual agreement with suppliers and monitored through the Travel Plan.

Trip Assignment

5.25 The assignment of operational traffic on the local road network is shown in Table 5-9 and Table 5-10 for the AM and PM peaks, respectively.

Table 5-9: Assignment of Operational Traffic on Local Road Network (AM Peak)

Link No.	Location	N'bound/S'bound		E'bound/W'bound		Total (Two-way)	
		Cars / LGV	HGVs	Cars / LGV	HGVs	Cars / LGV	HGVs
1	A78 - South of Largs	1	0	15	0	16	0
2	A78 - Outside Site Access	43	4	3	4	46	7
3	A760 – Blairpark	0	0	3	0	3	0
4	A78 - West Kilbride	43	4	3	4	46	7
5	B781 - West Kilbride	0	0	3	0	3	0
6	B781 - Rural (Munnoch)	0	0	0	0	0	0
7	A78 - Loup Cottage Caravan Park	40	4	3	4	42	7
8	A738 - Eglington Road	12	0	1	0	13	0
9	A738 - High Road (Saltcoats)	0	0	6	0	7	0
10	A78 - Dual (East of Dalry Road)	2	4	27	4	29	7
11	A78 - Dual (South of Stevenston Road)	2	4	24	4	26	7
12	A737 - Irvine Road (North)	1	3	21	3	23	6
13	A737 - Irvine Road (South)	3	0	0	0	3	0
14	A737 - South of Dalgarven	1	3	18	3	20	6
15	A738 - Stevenston Road (Kilwinning)	0	0	3	0	3	0

Table 5-10: Assignment of Operational Traffic on Local Road Network (PM Peak)

Link No.	Location	N'bound/S'bound	E'bound/W'bound	Total (Two-way)

		Cars / LGV	HGVs	Cars / LGV	HGVs	Cars / LGV	HGVs
1	A78 - South of Largs	15	0	1	0	16	0
2	A78 - Outside Site Access	3	4	43	4	46	7
3	A760 – Blairpark	3	0	0	0	3	0
4	A78 - West Kilbride	3	4	43	4	46	7
5	B781 - West Kilbride	3	0	0	0	3	0
6	B781 - Rural (Munnoch)	0	0	0	0	0	0
7	A78 - Loup Cottage Caravan Park	3	4	40	4	42	7
8	A738 - Eglington Road	1	0	12	0	13	0
9	A738 - High Road (Saltcoats)	6	0	0	0	7	0
10	A78 - Dual (East of Dalry Road)	27	4	2	4	29	7
11	A78 - Dual (South of Stevenston Road)	24	4	2	4	26	7
12	A737 - Irvine Road (North)	21	3	1	3	23	6
13	A737 - Irvine Road (South)	0	0	3	0	3	0
14	A737 - South of Dalgarven	18	3	1	3	20	6
15	A738 - Stevenston Road (Kilwinning)	3	0	0	0	3	0

5.26 This information is also shown diagrammatically in Appendix A.

6 DEVELOPMENT IMPACTS

Construction Phase

6.1 The following information in Table 6-1 presents an assessment of the changes in traffic flows during the construction phase of the Project, based on the 'Maximum' number of vehicles. This is expressed as daily traffic volumes as the majority of these movements will take place across the day, rather than be concentrated in any one hour.

Table 6-1: AADT Two-Way Impact of Development During Construction Phase (Maximum)

Site	2022 Baseline		2022 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%

6.2 The above information is also shown diagrammatically in Appendix A.

6.3 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 from a lower 2022 Baseline position. It is also worth noting that construction impacts will be temporary in nature and will therefore not lead to any permanent changes in traffic flows on the local road network.

Operational Phase

6.4 The following information in Table 6-2 and Table 6-3 presents an assessment of the changes in traffic flows during the operational phase of the Project during the AM and PM peak hours.

Table 6-2: Operational Traffic Impact on Local Road Network (AM Peak)

Link No.	Location	2024 Baseline		2024 With Development			Total
		Cars / LGV	HGVs	Cars / LGV	HGVs	All Vehicles	HGVs
1	A78 - South of Largs	1099	61	1116	61	1177	1.48%
2	A78 - Outside Site Access	714	34	759	41	800	7.39%
3	A760 – Blairpark	323	50	326	50	376	1.01%
4	A78 - West Kilbride	757	52	803	59	862	6.96%
5	B781 - West Kilbride	208	4	211	4	215	1.57%
6	B781 - Rural (Munnoch)	100	1	100	1	101	0.00%
7	A78 - Loup Cottage Caravan Park	965	42	1008	49	1057	5.12%
8	A738 - Eglington Road	634	30	647	30	677	2.06%
9	A738 - High Road (Saltcoats)	751	43	758	43	801	0.87%
10	A78 - Dual (East of Dalry Road)	2017	96	2046	103	2149	1.81%
11	A78 - Dual (South of Stevenston Road)	3283	144	3309	151	3460	1.01%
12	A737 - Irvine Road (North)	987	35	1009	41	1050	2.89%
13	A737 - Irvine Road (South)	1021	53	1024	53	1077	0.32%
14	A737 - South of Dalgarven	679	34	698	39	738	3.71%
15	A738 - Stevenston Road (Kilwinning)	989	38	992	38	1030	0.33%

Table 6-3: Operational Traffic Impact on Local Road Network (PM Peak)

Link No.	Location	2024 Baseline		2024 With Development			Total
		Cars / LGV	HGVs	Cars / LGV	HGVs	All Vehicles	HGVs
1	A78 - South of Largs	1099	61	1116	61	1177	1.48%
2	A78 - Outside Site Access	714	34	759	41	800	7.39%
3	A760 – Blairpark	323	50	326	50	376	1.01%
4	A78 - West Kilbride	757	52	803	59	862	6.96%
5	B781 - West Kilbride	208	4	211	4	215	1.57%
6	B781 - Rural (Munnoch)	100	1	100	1	101	0.00%
7	A78 - Loup Cottage Caravan Park	965	42	1008	49	1057	5.12%
8	A738 - Eglington Road	634	30	647	30	677	2.06%
9	A738 - High Road (Saltcoats)	751	43	758	43	801	0.87%
10	A78 - Dual (East of Dalry Road)	2017	96	2046	103	2149	1.81%
11	A78 - Dual (South of Stevenston Road)	3283	144	3309	151	3460	1.01%
12	A737 - Irvine Road (North)	987	35	1009	41	1050	2.89%
13	A737 - Irvine Road (South)	1021	53	1024	53	1077	0.32%
14	A737 - South of Dalgarven	679	34	698	39	738	3.71%
15	A738 - Stevenston Road (Kilwinning)	989	38	992	38	1030	0.33%

6.5 As can be seen in the tables above, the percentage increases in traffic that would be attributable to the operation of the Project is not expected to be significant. This is because the majority of employee movements occur outside of the peak hours. The largest impact is likely to occur on the A78 (T) on the section of road lying to the south of the site access, with reported values of 6-7% of total vehicular movements.

6.6 It is worth noting that the traffic which is forecasted to use the road is much lower than the directional capacity of the A78 (T) at this location, which stands at between 1470-1590 vehicles per hour, in accordance with TA79/99 Traffic Capacity of Urban Roads. In respect, the highest reported two-way traffic level of 869 vehicles would represent 30% of the available road capacity for this section.

6.7 On the basis of the low level of impact and the capacity of the road network, there is no requirement to undertake any further analysis of performance, as there is sufficient capacity to accommodate the required movements.

6.8 However, in order to demonstrate that the configuration of the site access is suitable, a detailed junction capacity model of the roundabout has been undertaken using the JUNCTIONS 10 software, the results of which are shown in Table 6-4 for the 2024 With Development scenario. Detailed model outputs are contained in Appendix B.

Table 6-4: Southannan Roundabout Junction Assessment Results

Arm	Location	AM Peak		PM Peak	
		Queue (Veh)	RFC	Queue (Veh)	RFC
Existing Layout – 2024 Forecast Baseline					
Arm 1	A78(T) South	0.3	0.25	0.3	0.21
Arm 2	Development Access	0.0	0.00	0.0	0.00
Arm 3	A78(T) North	0.9	0.46	0.6	0.35
Existing Layout – 2024 With Development					
Arm 1	A78(T) South	0.4	0.28	0.3	0.22
Arm 2	Development Access	0.0	0.01	0.0	0.03
Arm 3	A78(T) North	0.9	0.47	0.6	0.36

6.9 The results of the detailed capacity test show that the junction operates within capacity, during the AM and PM peak. Its performance is therefore not significantly affected by the operation of the Project, with a degree of spare capacity being available to accommodate variations in traffic volumes or composition.

Cumulative Assessment

6.10 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 planning commitments.

6.11 The Hunterston PARC Development Framework (2021) itself sets out a vision for an integrated approach to the development of a Masterplan for the repurposing of 320-acres in order to regenerate the area and bring forward investment. Although the adopted framework describes a fully occupied Hunterston PARC, there are currently no other consents that could be taken into account for the purpose of determining the cumulative transport effects at the Project site.

6.12 Given that the XLCC CMF is the first major planning application to be submitted to North Ayrshire Council for approval that is accompanied by a Transport Assessment, it is expected that subsequent applications will include an assessment of the cumulative impacts (if any) of the XLCC Project.

6.13 Furthermore, should such cumulative impact assessments determine that additional mitigation in the form of transport interventions on the strategic road network are required, they will be planned in a proportionate manner compliant with the normal planning obligations tests for those projects.

7 MITIGATION PROPOSALS

Local Infrastructure

7.1 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 the footway/cycleway on site access road to enhance accessibility for active modes of travel.

7.2 The above works 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.

7.3 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.

Access Management

Signage

7.4 It is also proposed that both temporary and permanent directional signage will be located on the A78(T) itself to advise arriving drivers.

7.5 As indicated above, during both the construction and operational phase, HGV drivers will be asked to avoid routes immediately to the north and east of the site in favour of the use of the A78 and A77. These are the corridors most likely to be used in any case.

7.6 No such restrictions will apply to construction workers or operational staff, given that the employment catchment is likely to me more both more local and widespread in terms of residential origins.

Core Paths

7.7 A Core Path runs alongside the western side of the A78(T), crossing the site access by means of an uncontrolled crossing. The crossing point benefits from dropped kerbs, tactile surfacing as well as street lighting.

7.8 While this configuration is likely to be acceptable during the operational phase of the Project, come consideration will be given to additional protection measures for users during the earlier months of construction, owing to the greater concentration of HGVs during this period.

7.9 These measures could involve a temporary reduction in the speed limit on the approach to the roundabout or on the site access road. Alternatively, a temporary on-demand signalised crossing arrangement could be considered.

Management Frameworks

Construction Environment Management Plan

7.10 During the construction phase, it is also customary for a specific Construction Environment Management Plan (CEMP) to be prepared by the Principal Contractor. From a transport perspective the CEMP will cover the following:

- Routeing of traffic, giving regard to vehicle type and the hierarchy of the local road network;
- Delivery of Plant and Materials:
  - Arrangement for circulating within the site; and
  - Storage of materials on-site;

- Working Hours:
  - The CEMP is expected to outline any restrictions on working hours that would be applicable to the site; and
  - Outside of the standard hours, work at the Application Site will be limited to emergency works and dust suppression, unless otherwise approved in writing by the Local Authority;
- Measures, Management and Control Processes:
  - Core Paths diversion (if applicable);
  - Toolbox talks / driver awareness training;
  - Delivery booking system; and
  - Monitoring and routeing compliance protocol; and
- Transport Co-ordinator:
  - Appointment and responsibilities;
  - Steering group / community liaison;
  - Public information; and
  - Complaints procedures.

7.11 The Site Manager will ensure that there is adequate liaison between the following key stakeholders throughout the construction period:

- The Contractor;
- The Applicant;
- Site neighbours;
- Other local stakeholders such as emergency services or local transport providers;
- North Ayrshire Council (NAC); and
- Transport Scotland (TS).

7.12 Regular review meetings and telecommunication will be held between the Site Manager and NAC/TS as requested. It is envisaged that update meetings / telecommunication will be held on an ad-hoc basis as required.

Travel Plan

7.13 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.

7.14 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.

Rail

7.15 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.

7.16 In this respect, it is noted that 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

7.17 In 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)."

7.18 The implementation of improved rail access to Hunterston could have a positive / mitigating effects 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 contained within this Transport Assessment. The outcomes of the operational assessment are therefore robust.

8 SUMMARY AND CONCLUSIONS

8.1 RPS has been commissioned by XLCC Ltd. to prepare a Transport Assessment (TA) in support of a proposed high-voltage cable manufacturing facility at Hunterston in North Ayrshire.

8.2 The site is located on land on brownfield land originally the site for the Hunterston Coal Yards. the Project site is located adjacent to the quayside and jetty as well as the strategic access afforded by the A78 trunk road. These location factors offers a great opportunity for the manufacturing and distribution of cables that will be used in transmitting power from renewable energy sources.

8.3 This TA has been developed in accordance with Transport Scotland's Transport Assessment Guidance (2012) and has given regard to the relevant national, regional and local policies.

8.4 The impact of the Project has been quantified, as it pertains to the local road network, including the A78(T) forms part of an extensive network of strategic road corridors managed by Transport Scotland (TS).

8.5 Historical traffic data for 15 locations were collected to provide a context for the changes in traffic that Project would create, resulting from both its construction and operational phases.

8.6 An account has been made of the road safety conditions in the vicinity of the site, in order to determine if there are any underlying patterns of events that would otherwise give rise to a requirement for mitigation.

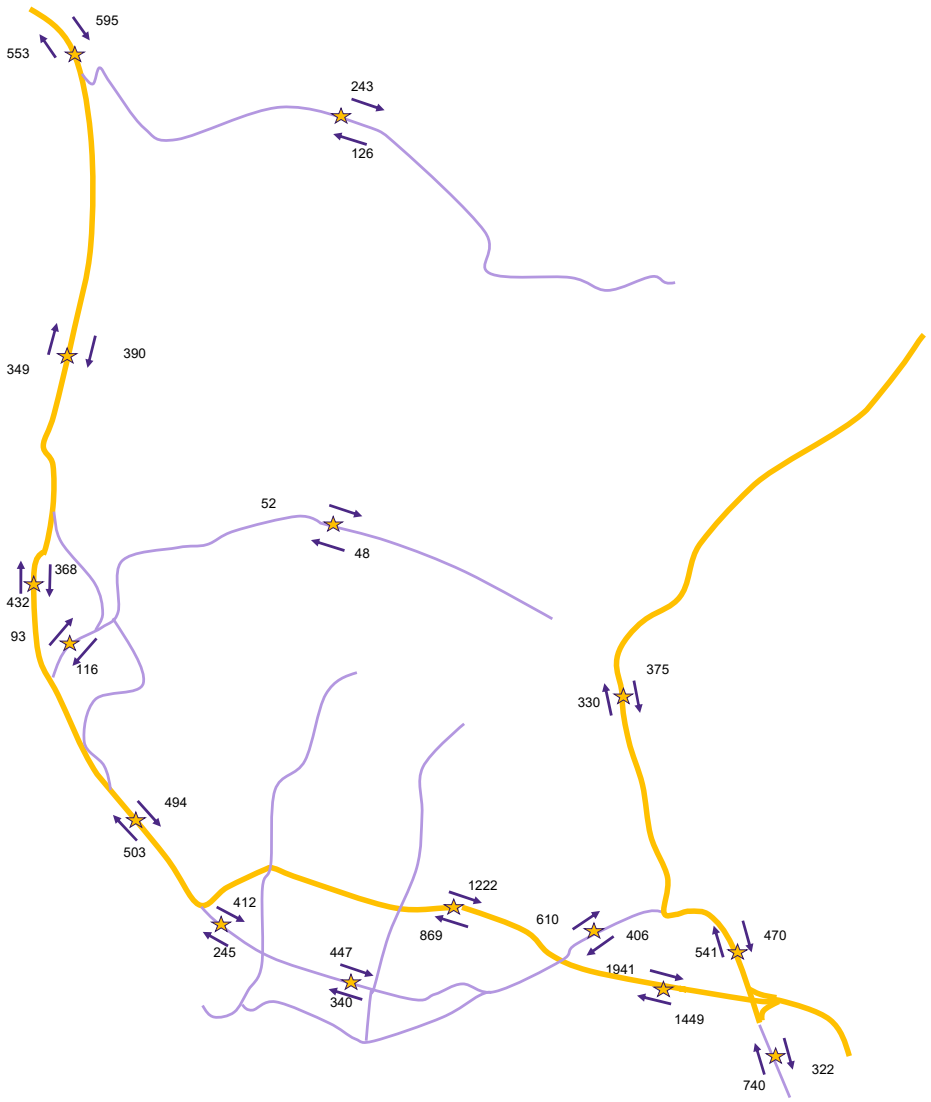
8.7 The conclusions drawn in this report are that:

- Existing pedestrian or cycle network in the vicinity of the site offers a means of securing improved access by foot and bicycle from local catchment areas, including Fairlie railway station, subject to minor upgrading of infrastructure at the site access;
- The introduction of bus stops would encourage the use of sustainable transport among employees;
- The existing point of access is capable of accommodating an increased in background traffic flows, in addition to the new movements resulting from the Project;
- The link capacity of the wider road network can accommodate the travel demand associated with the Project; and
- Restrictions on the movement of HGVs will be implemented, which will be secured through a Construction Environmental Management Plan (CEMP) and Travel Plan.

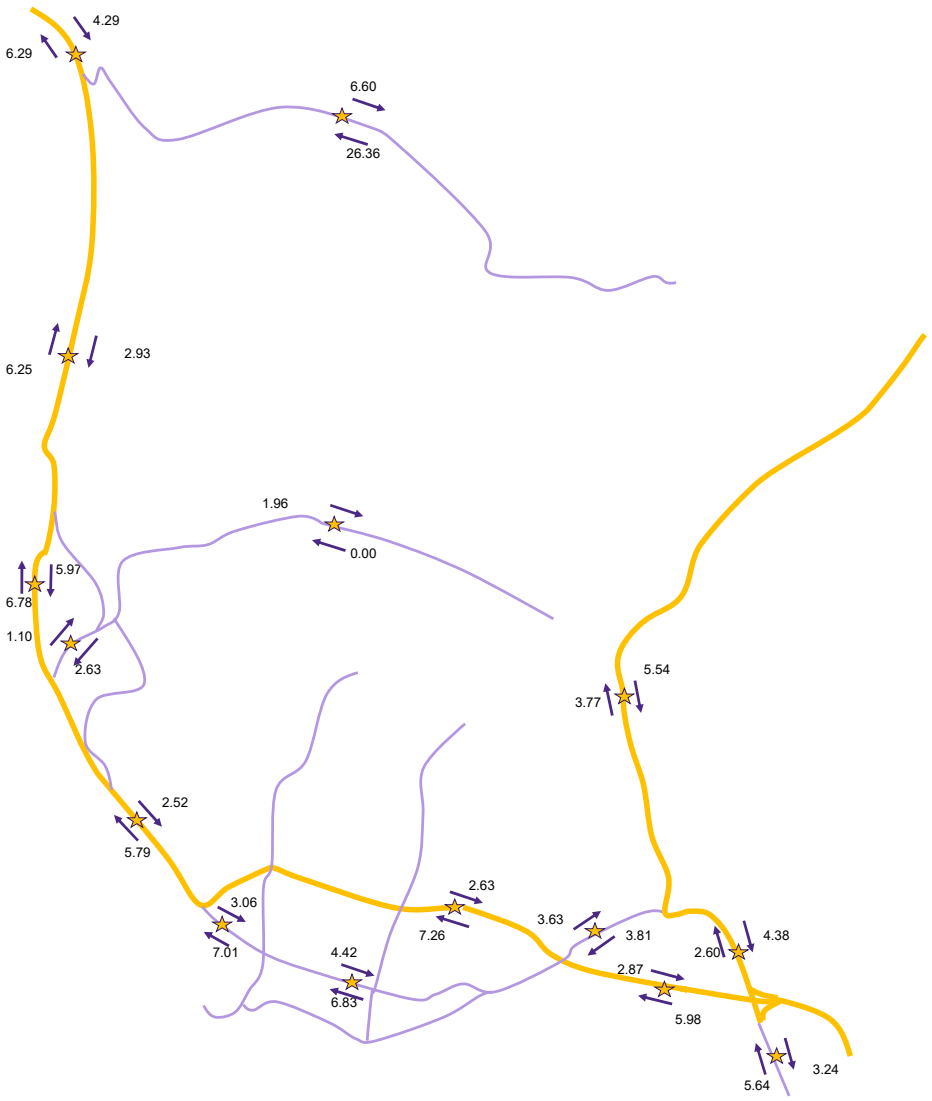
8.8 The site also offers an opportunity for integration with other complimentary facilities coming forward through the Hunterston PARC Development Framework (2021) which is expected to secure comprehensive economic growth. While there exists significant support from the Scottish Government for improved rail accessibility, this does not form part of the proposals at this stage and ensures that the assessment contained in this TA is robust.

8.9 On the basis of the above, there are no technical transport reasons that would constrain the ability of the Project to come forward as intended.

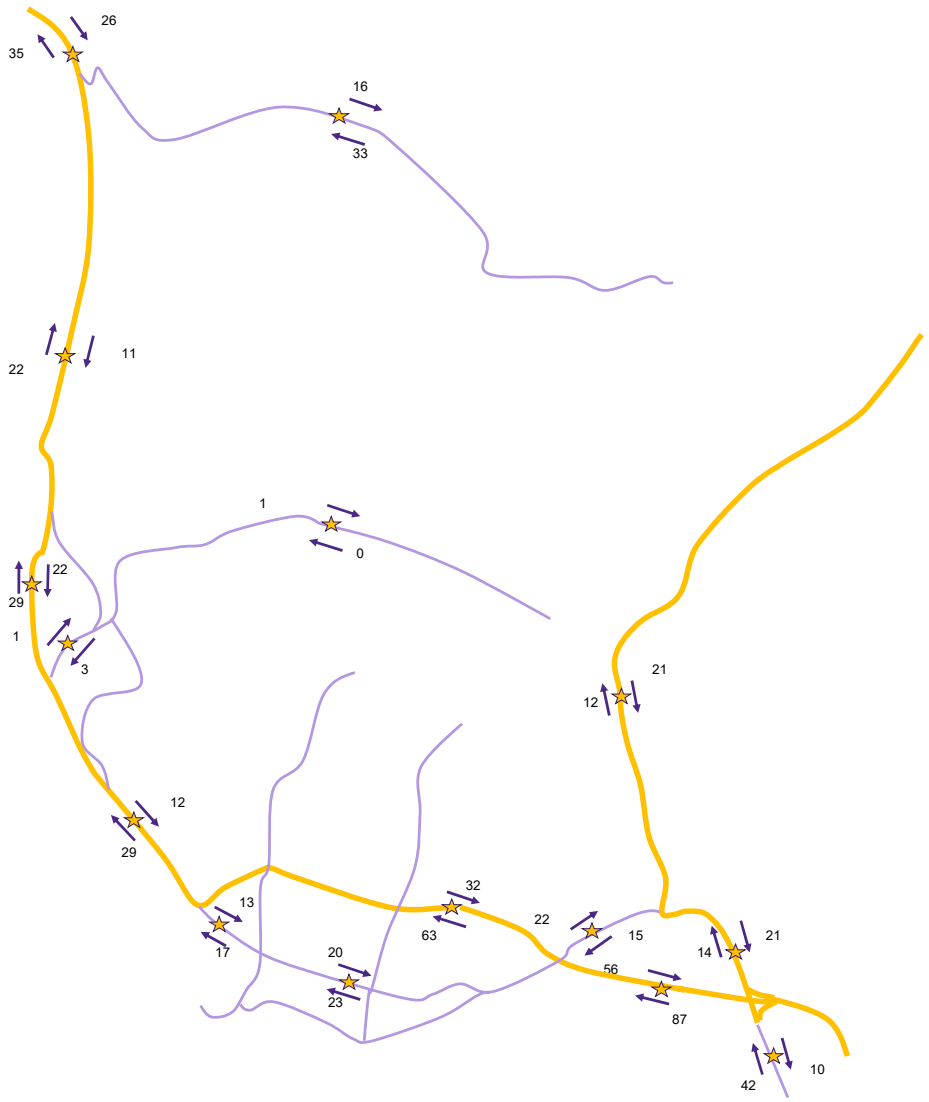
Appendix A



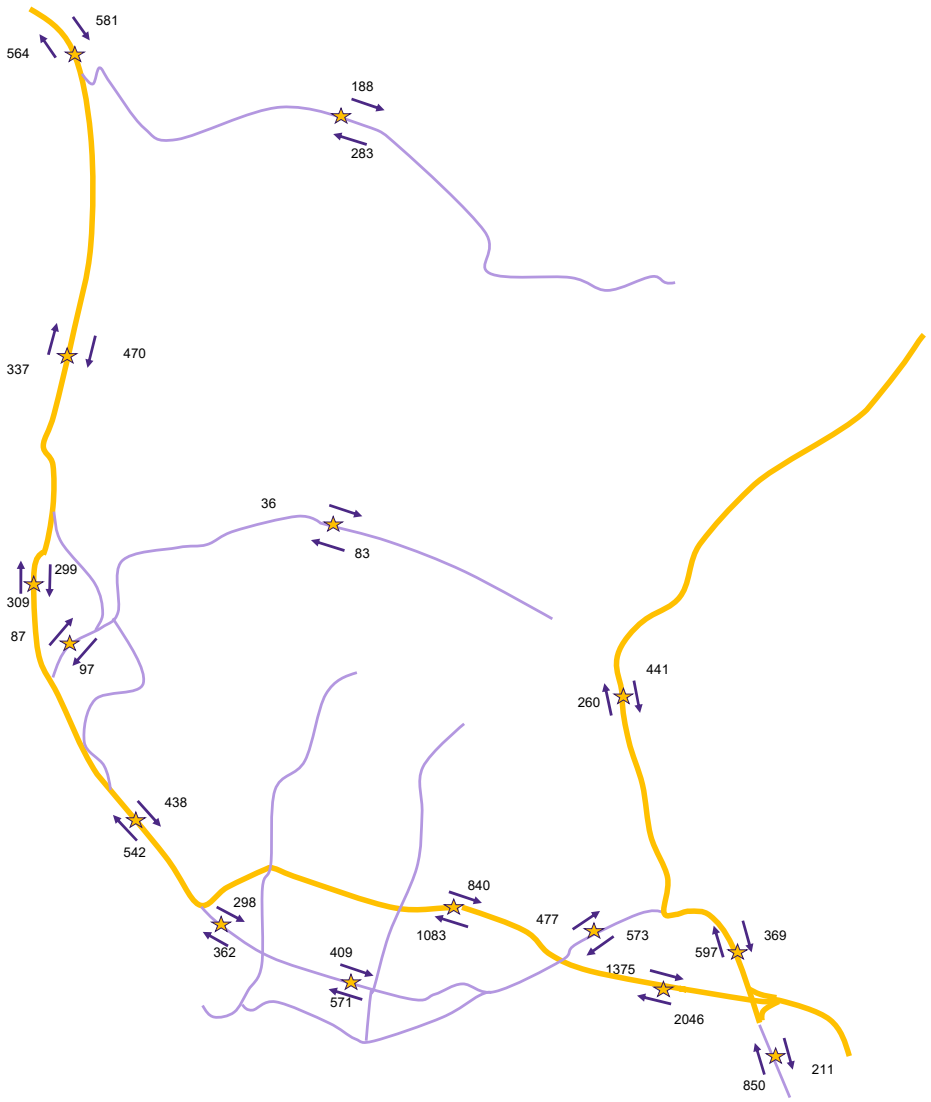
Time Period	AM Peak (08:00-09:00)
Vehicle Classification	All Vehicles
Scenario	2022 Baseline



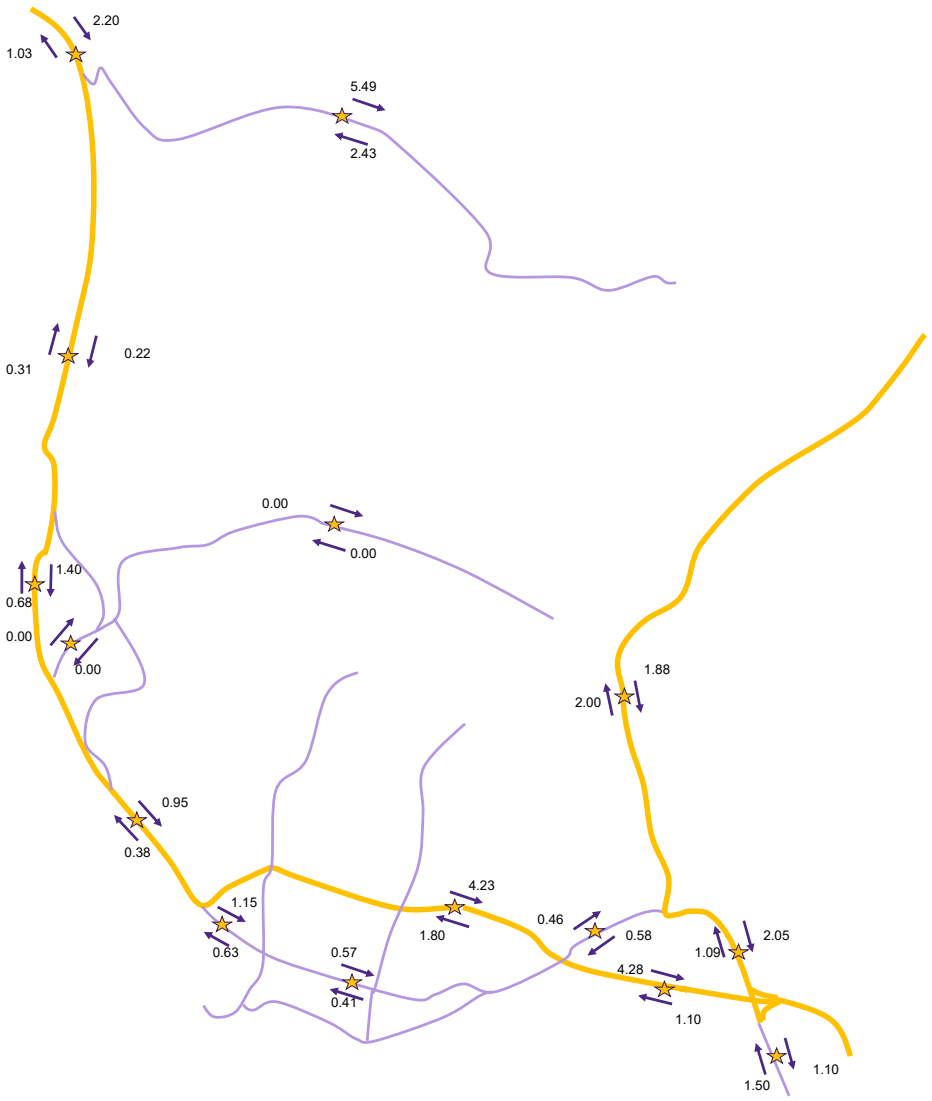
Time Period	AM Peak (08:00-09:00)
Vehicle Classification	HGV Percentage
Scenario	2022 Baseline



Time Period	AM Peak (08:00-09:00)
Vehicle Classification	HGVs
Scenario	2022 Baseline

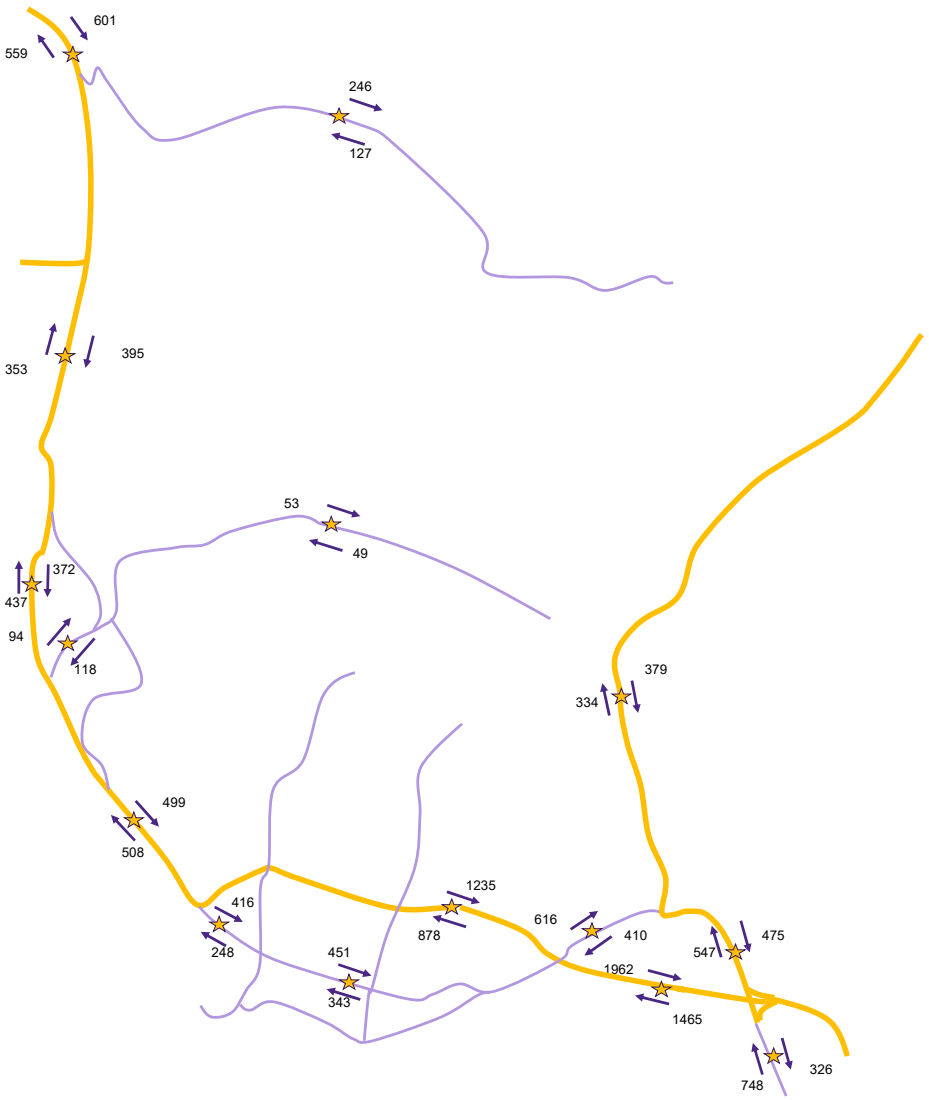


Time Period	PM Peak (17:00-18:00)
Vehicle Classification	All Vehicles
Scenario	2022 Baseline

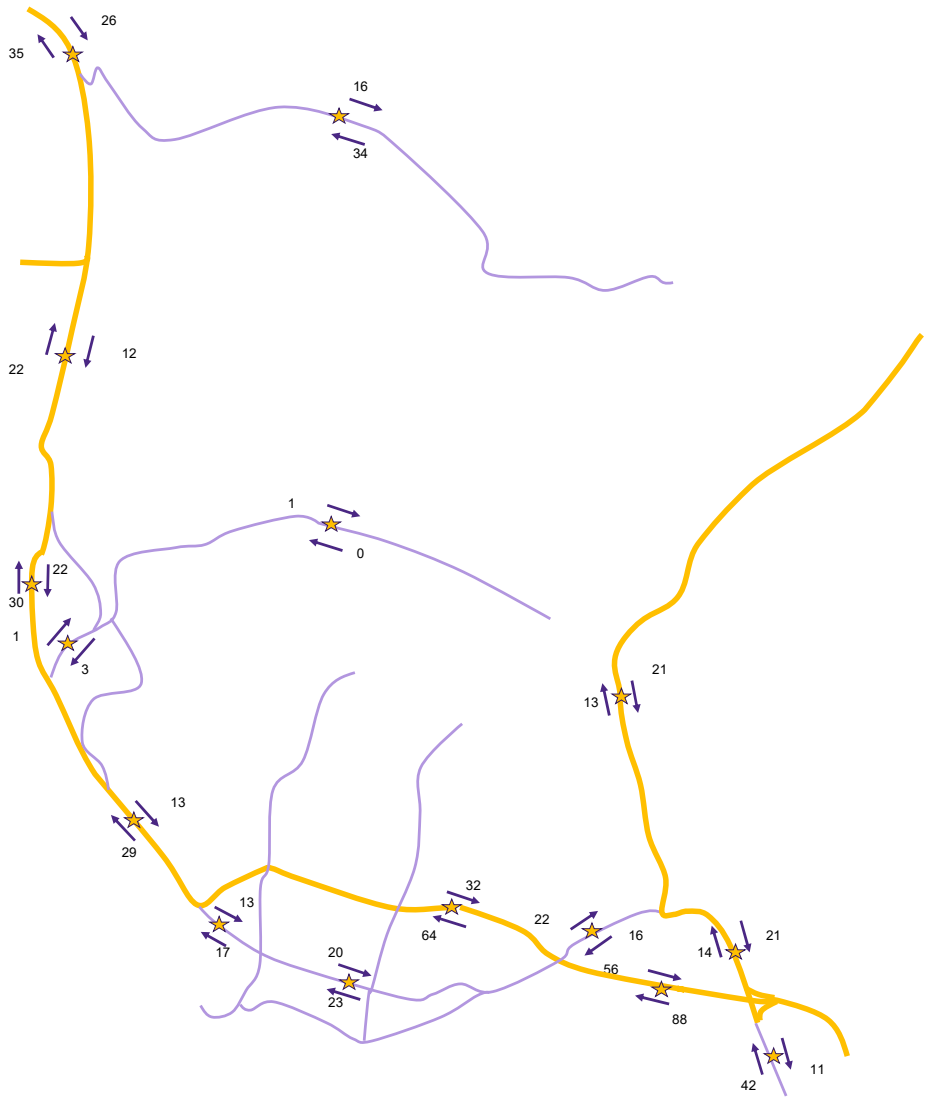


Time Period	PM Peak (17:00-18:00)
Vehicle Classification	HGV Percentage
Scenario	2022 Baseline

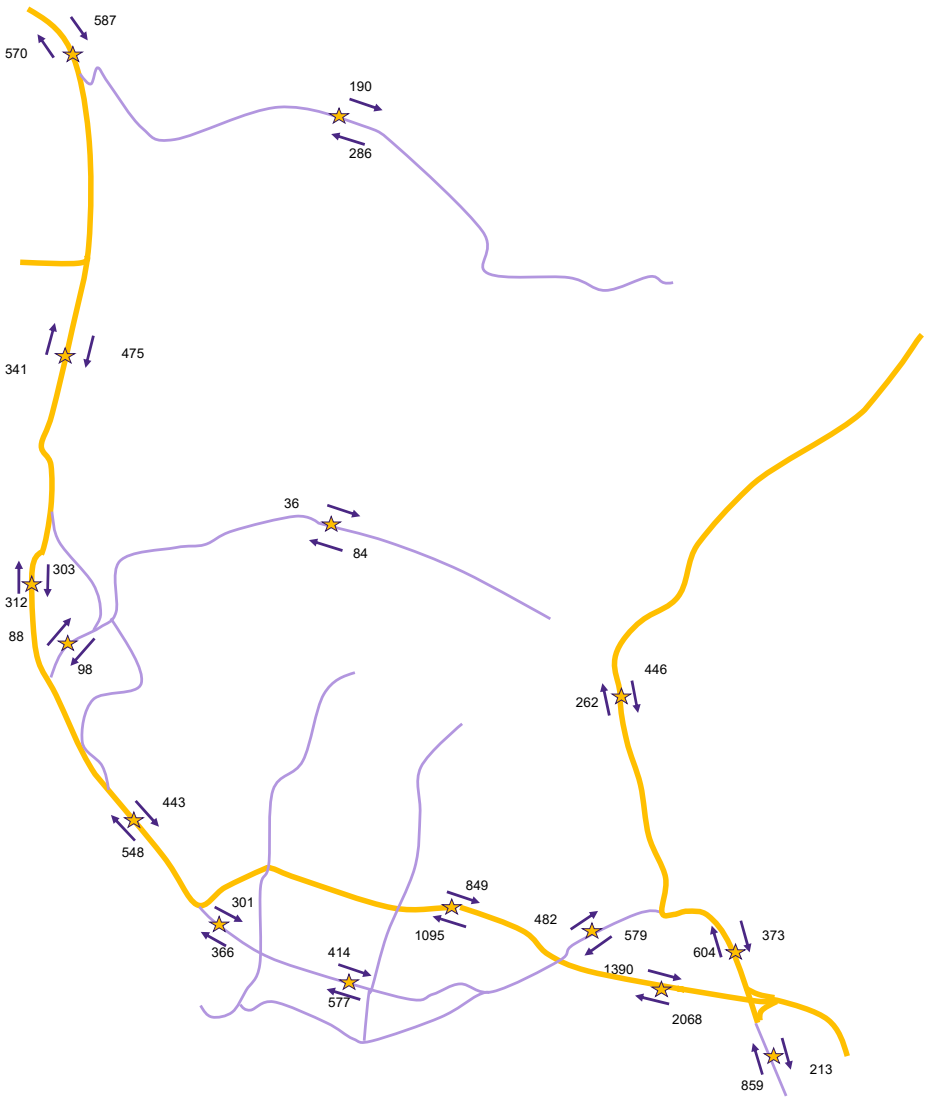
Time Period	PM Peak (17:00-18:00)
Vehicle Classification	HGVs
Scenario	2022 Baseline



Time Period	AM Peak (08:00-09:00)
Vehicle Classification	All Vehicles
Scenario	2024 Baseline

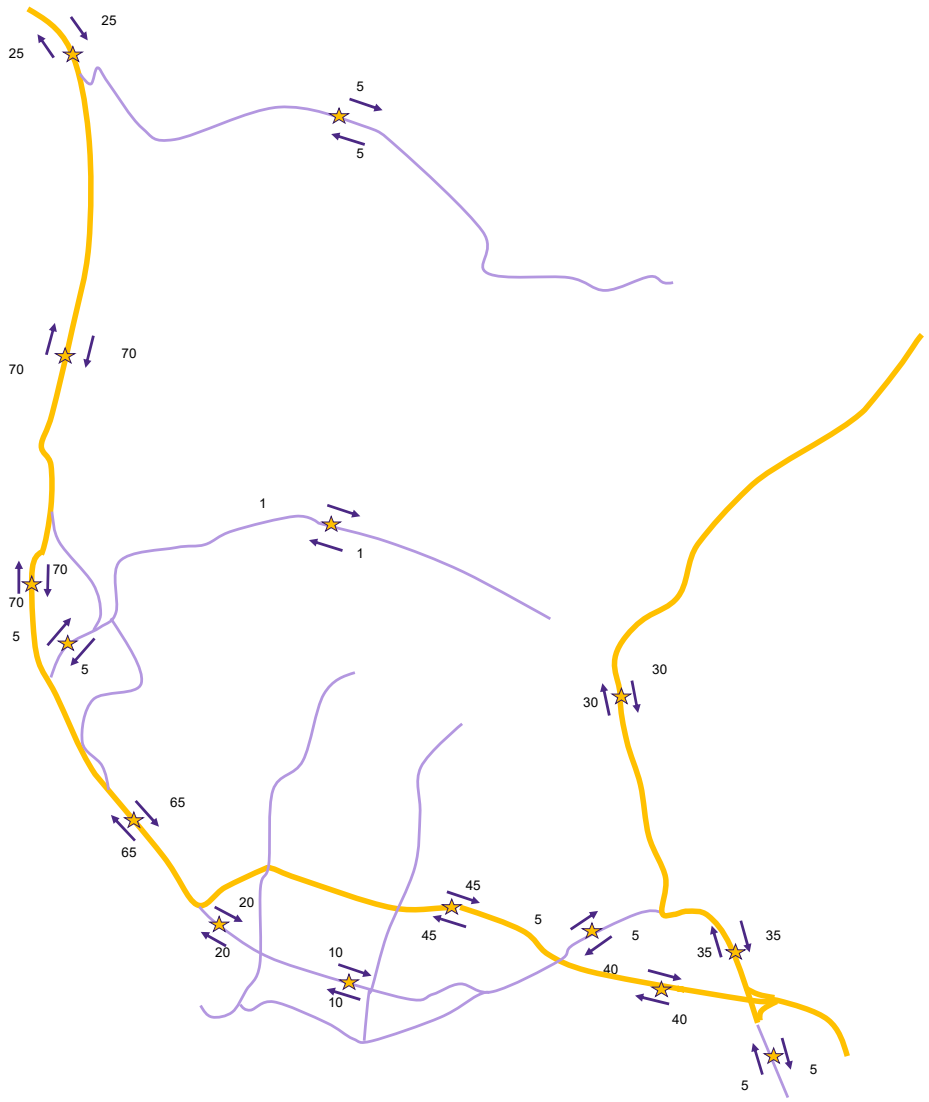


Time Period	AM Peak (08:00-09:00)
Vehicle Classification	HGVs
Scenario	2024 Baseline

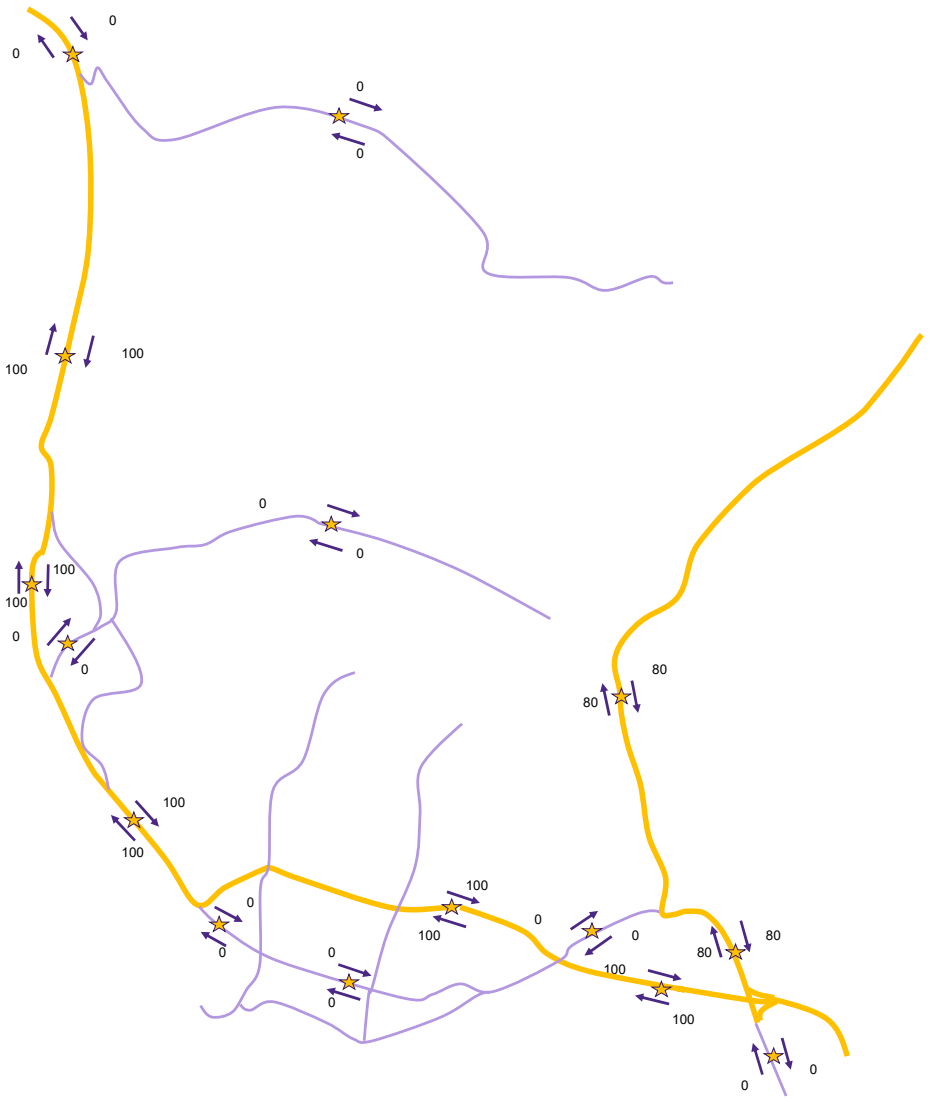


Time Period	PM Peak (17:00-18:00)
Vehicle Classification	All Vehicles
Scenario	2024 Baseline

Time Period	PM Peak (17:00-18:00)
Vehicle Classification	HGVs
Scenario	2024 Baseline



Time Period	24hr ADT
Vehicle Classification	Cars / LGVs
Scenario	Trip Distribution (Percentage)



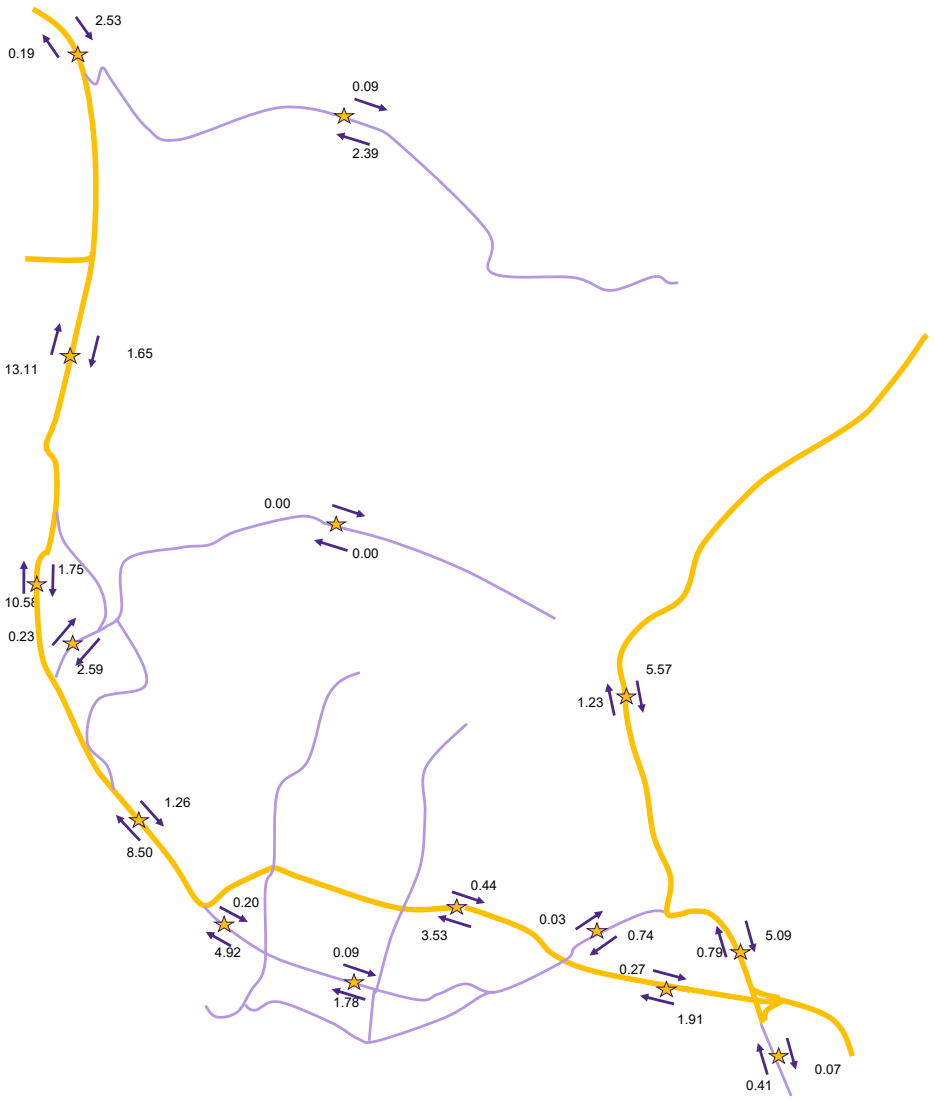
Time Period	24hr ADT
Vehicle Classification	HGVs
Scenario	Trip Distribution (Percentage)

Time Period	AM Peak (08:00-09:00)
Vehicle Classification	Cars / LGVs
Scenario	Development Operational Trips

Time Period	PM Peak (17:00-18:00)
Vehicle Classification	Cars / LGVs
Scenario	Development Operational Trips

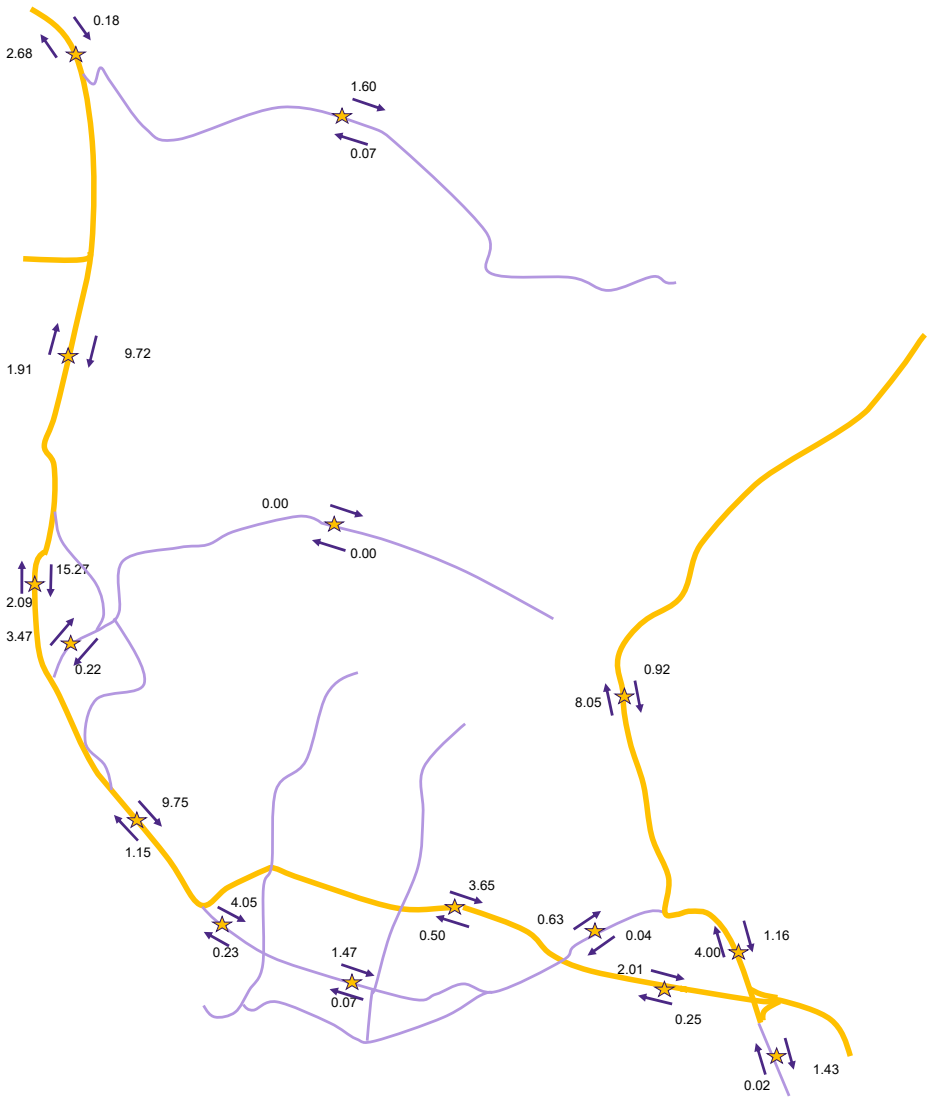
Time Period	AM Peak (08:00-09:00)
Vehicle Classification	HGVs
Scenario	Development Operational Trips

Time Period	PM Peak (17:00-18:00)
Vehicle Classification	HGVs
Scenario	Development Operational Trips



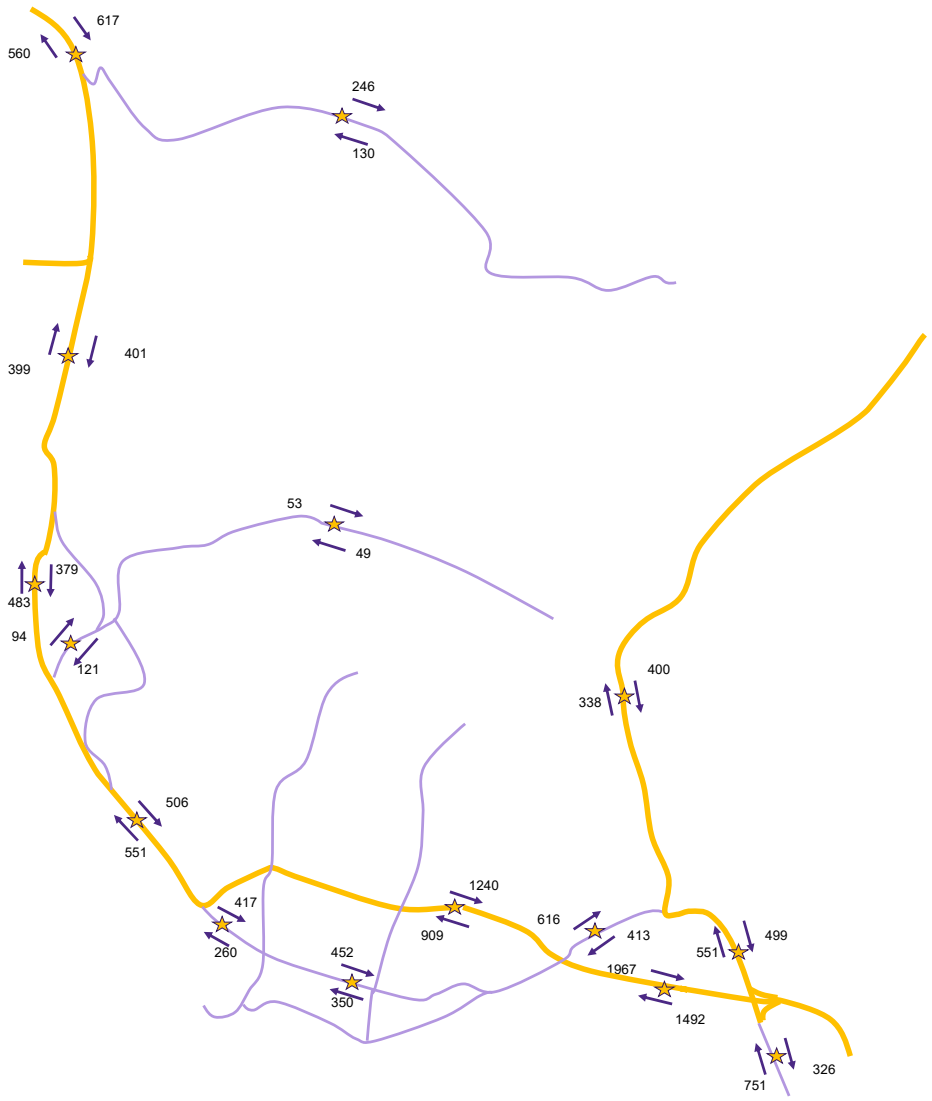
Time Period	AM Peak (08:00-09:00)
Vehicle Classification	All Vehicles
Scenario	2024 Percentage Operational Impact

Time Period	AM Peak (08:00-09:00)
Vehicle Classification	HGVs
Scenario	2024 Percentage Operational Impact

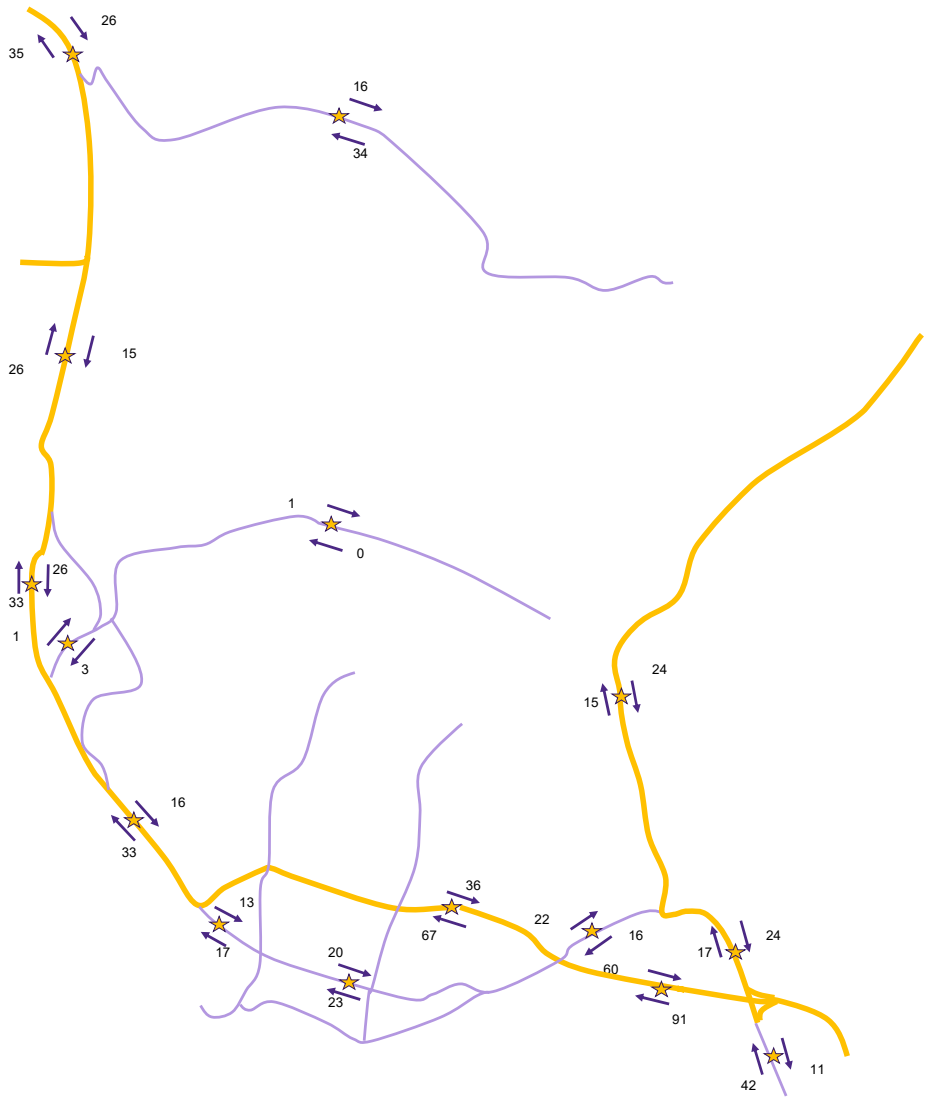


Time Period	PM Peak (17:00-18:00)
Vehicle Classification	All Vehicles
Scenario	2024 Percentage Operational Impact

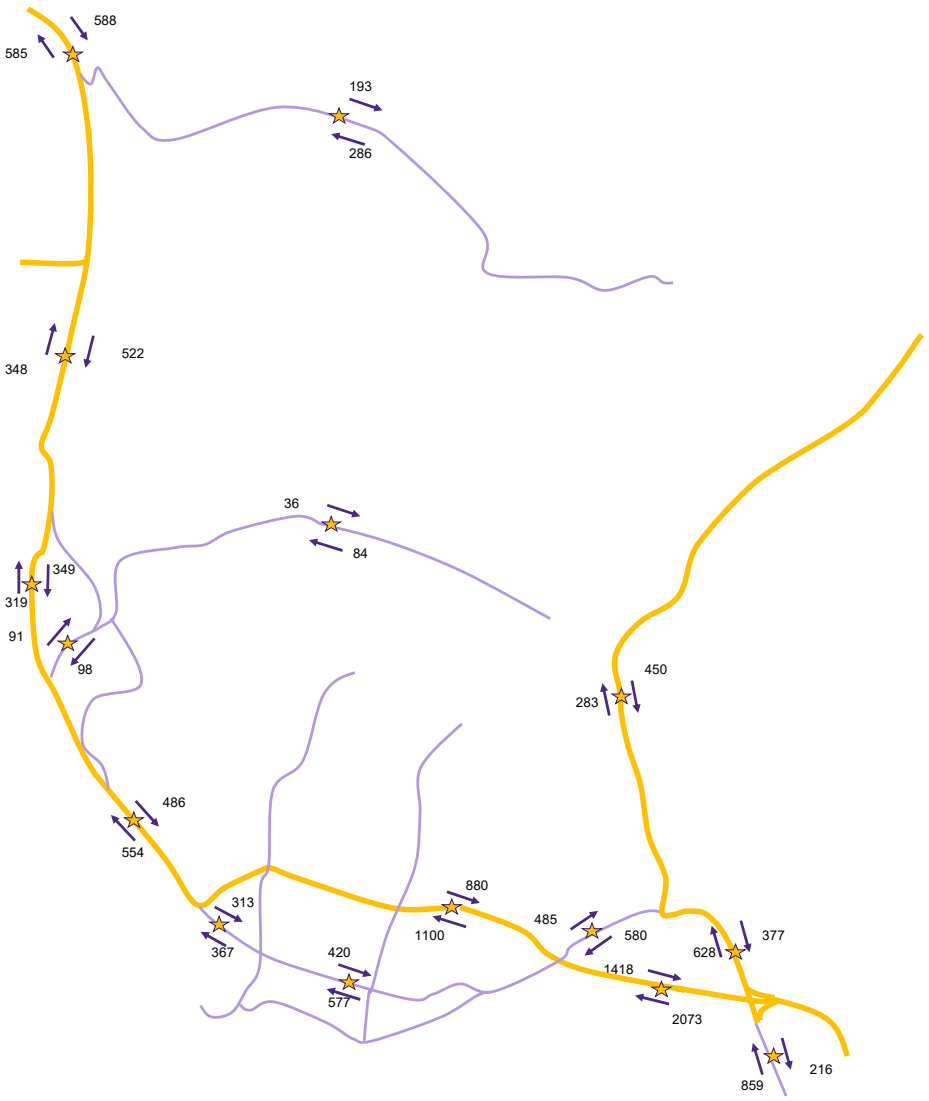
Time Period	PM Peak (17:00-18:00)
Vehicle Classification	HGVs
Scenario	2024 Percentage Operational Impact



Time Period	AM Peak (08:00-09:00)
Vehicle Classification	All Vehicles
Scenario	2024 With Operational Trips



Time Period	AM Peak (08:00-09:00)
Vehicle Classification	HGVs
Scenario	2024 With Operational Trips



Time Period	PM Peak (17:00-18:00)
Vehicle Classification	All Vehicles
Scenario	2024 With Operational Trips

Time Period	PM Peak (17:00-18:00)
Vehicle Classification	HGVs
Scenario	2024 With Operational Trips

Appendix B

NOTES

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. This drawing is to be read in conjunction with all relevant scheme drawings.

FOR INFORMATION ONLY

Rev	Description	By	CB	Date

MAKING COMPLEX EASY

Belford House, 3rd Floor, 59 Belford Road, Edinburgh EH4 3DE
T: +44(0)131 555 5011 **E:** transport@rpsgroup.com

Client XLCC

Project Hunterston

Title Existing Access Junction

Status	Drawn By	PM/Checked by
INFORMATION	AJ	RRH
Project Number	**Scale @ A3**	**Date Created**
JNY11160	1:1000	Feb 2022
RPS Drawing/Figure Number		**Rev**
JNY11160-SK001		-

rpsgroup.com

Drawing Ref: Z:\JNY11160 - Xlinks Port Based Manufacturing\Highways\Drawings\JNY11160-SK001 - Existing Site Access Roundabout.dwg

Junctions 10

ARCADY 10 - Roundabout Module

Filename: Site Access Roundabout.j10
Path: Z:\JNY11160 - Xlinks Port Based Manufacturing\Transport\Arcady
Report generation date: 04/02/2022 12:37:05

»Existing Layout - 2024 Forecast Baseline, AM
»Existing Layout - 2024 Forecast Baseline, PM
»Existing Layout - 2024 With Development, AM
»Existing Layout - 2024 With Development, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
	Existing Layout - 2024 Forecast Baseline											
Arm 1	D1	0.3	2.66	0.25	A	106 %	D2	0.3	2.51	0.21	A	168 %
Arm 2		0.0	0.00	0.00	A			0.0	0.00	0.00	A	
Arm 3		0.9	4.61	0.46	A	[Arm 3]		0.6	3.74	0.35	A	[Arm 3]
	Existing Layout - 2024 With Development											
Arm 1	D3	0.4	2.81	0.28	A	99 %	D4	0.3	2.57	0.22	A	155 %
Arm 2		0.0	2.66	0.01	A			0.0	1.90	0.03	A	
Arm 3		0.9	4.72	0.47	A	[Arm 3]		0.6	3.86	0.36	A	[Arm 3]

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

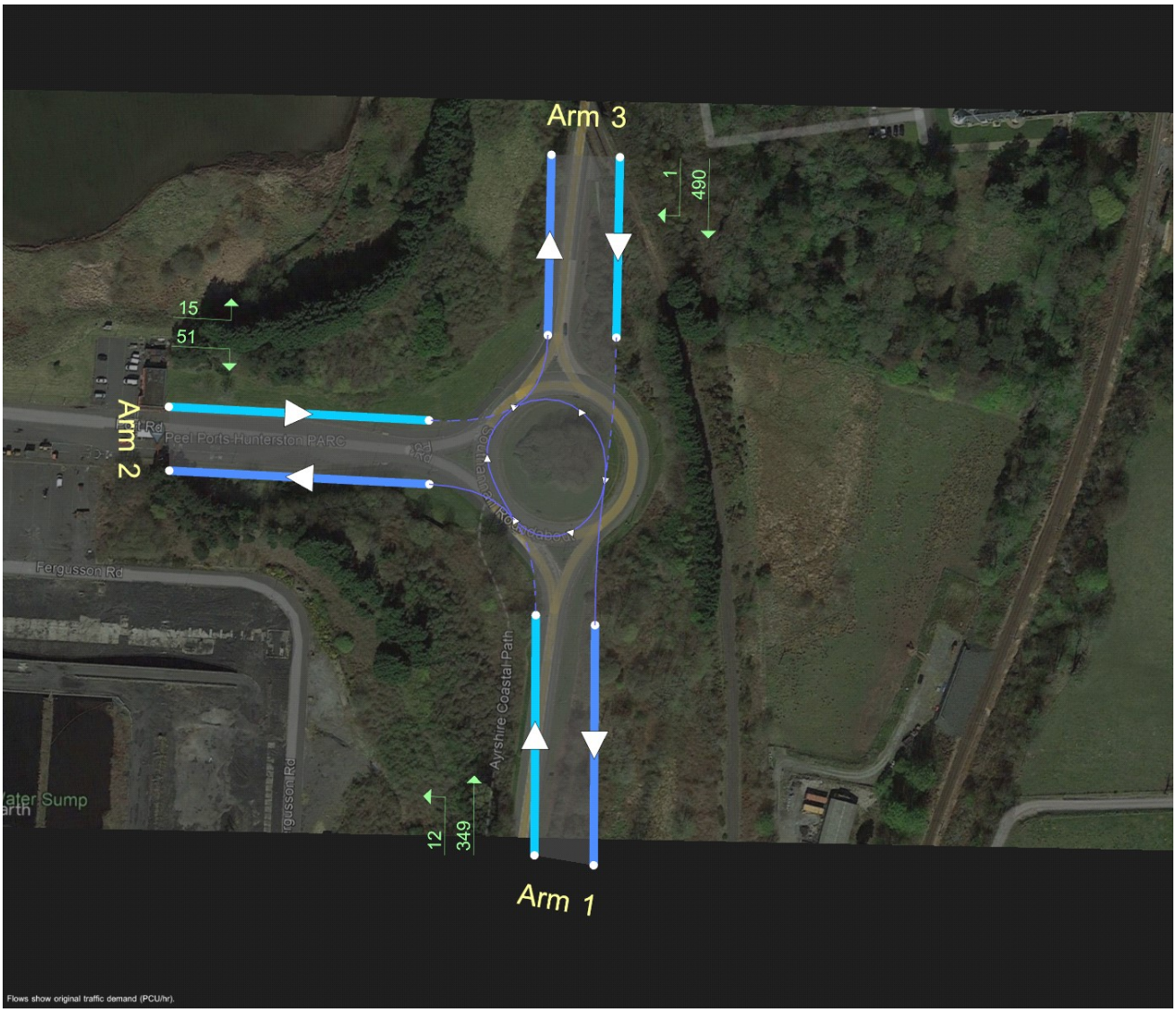
File summary

File Description

Title	Southannan Roundabout
Location	Hunterston Port
Site number	
Date	03/02/2022
Version	
Status	(new file)
Identifier	
Client	XLCC
Jobnumber	JNY11160
Enumerator	EUR\Russell.Henderson
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75					✓	Delay	0.85	36.00	20.00		500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Forecast Baseline	AM	ONE HOUR	07:45	09:15	15	✓
D2	2024 Forecast Baseline	PM	ONE HOUR	16:45	18:15	15	✓
D3	2024 With Development	AM	ONE HOUR	07:45	09:15	15	✓
D4	2024 With Development	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Existing Layout	✓	100.000	100.000

Existing Layout - 2024 Forecast Baseline, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Site Access Roundabout	Standard Roundabout		1, 2, 3	3.84	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	106	Arm 3	3.84	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A78(S)		
2	Hunterston Access		
3	A78(N)		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1	3.60	8.90	11.8	19.5	73.7	14.0		
2	6.10	8.49	6.4	31.6	74.0	16.0		
3	3.73	5.72	11.4	22.2	73.7	29.0		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.525	1845
2	0.600	2324
3	0.466	1528

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Forecast Baseline	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	411	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	635	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	0	411
	2	0	0	0
	3	635	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	3
	2	0	0	0
	3	6	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.25	2.66	0.3	A	377	565
2	0.00	0.00	0.0	A	0	0
3	0.46	4.61	0.9	A	583	874

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	309	77	0	1845	0.168	308	476	0.0	0.2	2.411	A
2	0	0	308	2139	0.000	0	0	0.0	0.0	0.000	A
3	478	119	0	1528	0.313	476	308	0.0	0.5	3.628	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	369	92	0	1845	0.200	369	570	0.2	0.3	2.511	A
2	0	0	369	2103	0.000	0	0	0.0	0.0	0.000	A
3	571	143	0	1528	0.373	570	369	0.5	0.6	3.988	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	452	113	0	1845	0.245	452	698	0.3	0.3	2.661	A
2	0	0	452	2053	0.000	0	0	0.0	0.0	0.000	A
3	699	175	0	1528	0.457	698	452	0.6	0.9	4.599	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	452	113	0	1845	0.245	452	699	0.3	0.3	2.661	A
2	0	0	452	2053	0.000	0	0	0.0	0.0	0.000	A
3	699	175	0	1528	0.457	699	452	0.9	0.9	4.610	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	369	92	0	1845	0.200	369	572	0.3	0.3	2.514	A
2	0	0	369	2103	0.000	0	0	0.0	0.0	0.000	A
3	571	143	0	1528	0.373	572	369	0.9	0.6	4.003	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	309	77	0	1845	0.168	309	479	0.3	0.2	2.414	A
2	0	0	309	2139	0.000	0	0	0.0	0.0	0.000	A
3	478	119	0	1528	0.313	479	309	0.6	0.5	3.644	A

Existing Layout - 2024 Forecast Baseline, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Site Access Roundabout	Standard Roundabout		1, 2, 3	3.23	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	168	Arm 3	3.23	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2024 Forecast Baseline	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	349	100.000
2		ONE HOUR	✓	0	100.000
3		ONE HOUR	✓	490	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	0	349
	2	0	0	0
	3	490	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	0	2
	2	0	0	0
	3	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.21	2.51	0.3	A	320	480
2	0.00	0.00	0.0	A	0	0
3	0.35	3.74	0.6	A	450	674

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	263	66	0	1845	0.142	262	368	0.0	0.2	2.312	A
2	0	0	262	2167	0.000	0	0	0.0	0.0	0.000	A
3	369	92	0	1528	0.241	368	262	0.0	0.3	3.183	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	314	78	0	1845	0.170	313	440	0.2	0.2	2.391	A
2	0	0	313	2136	0.000	0	0	0.0	0.0	0.000	A
3	440	110	0	1528	0.288	440	313	0.3	0.4	3.398	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	384	96	0	1845	0.208	384	539	0.2	0.3	2.506	A
2	0	0	384	2094	0.000	0	0	0.0	0.0	0.000	A
3	539	135	0	1528	0.353	539	384	0.4	0.6	3.735	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	384	96	0	1845	0.208	384	539	0.3	0.3	2.506	A
2	0	0	384	2094	0.000	0	0	0.0	0.0	0.000	A
3	539	135	0	1528	0.353	539	384	0.6	0.6	3.738	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	314	78	0	1845	0.170	314	441	0.3	0.2	2.393	A
2	0	0	314	2136	0.000	0	0	0.0	0.0	0.000	A
3	440	110	0	1528	0.288	441	314	0.6	0.4	3.402	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	263	66	0	1845	0.142	263	369	0.2	0.2	2.316	A
2	0	0	263	2167	0.000	0	0	0.0	0.0	0.000	A
3	369	92	0	1528	0.241	369	263	0.4	0.3	3.190	A

Existing Layout - 2024 With Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Site Access Roundabout	Standard Roundabout		1, 2, 3	3.91	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	99	Arm 3	3.91	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2024 With Development	AM	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	462	100.000
2		ONE HOUR	✓	13	100.000
3		ONE HOUR	✓	650	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	51	411
	2	12	0	1
	3	635	15	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	9	3
	2	57	0	0
	3	6	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.28	2.81	0.4	A	424	636
2	0.01	2.66	0.0	A	12	18
3	0.47	4.72	0.9	A	596	895

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	348	87	11	1839	0.189	347	485	0.0	0.2	2.498	A
2	10	2	309	2139	0.005	10	50	0.0	0.0	2.544	A
3	489	122	9	1524	0.321	487	309	0.0	0.5	3.670	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	416	104	13	1838	0.226	415	581	0.2	0.3	2.621	A
2	12	3	369	2103	0.006	12	59	0.0	0.0	2.590	A
3	584	146	11	1523	0.384	584	370	0.5	0.7	4.053	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	509	127	16	1836	0.277	509	711	0.3	0.4	2.808	A
2	15	4	452	2053	0.007	15	73	0.0	0.0	2.657	A
3	716	179	13	1522	0.470	715	453	0.7	0.9	4.712	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	509	127	17	1836	0.277	509	713	0.4	0.4	2.808	A
2	15	4	453	2053	0.007	15	73	0.0	0.0	2.657	A
3	716	179	13	1522	0.470	716	454	0.9	0.9	4.725	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	416	104	14	1838	0.226	416	583	0.4	0.3	2.622	A
2	12	3	370	2102	0.006	12	60	0.0	0.0	2.593	A
3	584	146	11	1523	0.384	585	371	0.9	0.7	4.068	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	348	87	11	1839	0.189	348	488	0.3	0.2	2.503	A
2	10	2	310	2138	0.005	10	50	0.0	0.0	2.544	A
3	489	122	9	1524	0.321	490	310	0.7	0.5	3.686	A

Existing Layout - 2024 With Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Site Access Roundabout	Standard Roundabout		1, 2, 3	3.21	A

Junction Network

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold	Network delay (s)	Network LOS
Left	Normal/unknown	155	Arm 3	3.21	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2024 With Development	PM	ONE HOUR	16:45	18:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	361	100.000
2		ONE HOUR	✓	66	100.000
3		ONE HOUR	✓	491	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	12	349
	2	51	0	15
	3	490	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1	2	3
From	1	0	57	2
	2	9	0	0
	3	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.22	2.57	0.3	A	331	497
2	0.03	1.90	0.0	A	61	91
3	0.36	3.86	0.6	A	451	676

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	272	68	0.75	1845	0.147	271	406	0.0	0.2	2.360	A
2	50	12	262	2167	0.023	50	10	0.0	0.0	1.811	A
3	370	92	38	1510	0.245	368	273	0.0	0.3	3.244	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	325	81	0.90	1845	0.176	325	486	0.2	0.2	2.444	A
2	60	15	314	2136	0.028	59	12	0.0	0.0	1.847	A
3	441	110	46	1507	0.293	441	327	0.3	0.4	3.479	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	398	99	1	1845	0.216	397	595	0.2	0.3	2.567	A
2	73	18	384	2094	0.035	73	15	0.0	0.0	1.897	A
3	541	135	56	1502	0.360	540	401	0.4	0.6	3.851	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	398	99	1	1845	0.216	398	596	0.3	0.3	2.567	A
2	73	18	384	2094	0.035	73	15	0.0	0.0	1.898	A
3	541	135	56	1502	0.360	541	401	0.6	0.6	3.856	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	325	81	0.90	1845	0.176	325	487	0.3	0.2	2.445	A
2	60	15	314	2136	0.028	60	12	0.0	0.0	1.850	A
3	441	110	46	1507	0.293	442	327	0.6	0.4	3.485	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	272	68	0.75	1845	0.147	272	408	0.2	0.2	2.362	A
2	50	12	263	2167	0.023	50	10	0.0	0.0	1.812	A
3	370	92	39	1510	0.245	370	274	0.4	0.3	3.254	A