CONSULTING ENGINEERS

For: Breengrove Limited in conjunction with Ivan Hemeryck and Grafton Group Plc

North Lucan

Draft FCDP Submission – Road Infrastructure

May 2022

MHL & Associates Ltd.
Consulting Engineers

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M.H.L. & Associates Ltd.
Consulting Engineers
Carraig Mór House,
10 High Street,
Douglas Road,
Cork.
Tel 021-4840214 *Fax:* 021-4840215
E-Mail: info@mhl.ie

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1 NON TECHNICAL SUMMARY

M.H.L. & Associates Ltd. Consulting Engineers has been engaged by Tom Phillips + Associates on behalf of Breengrove Limited in conjunction with Ivan Hemeryck and Grafton Group Plc to prepare a submission to the Draft Fingal County Development Plan 2023 – 2029 in support of particular proposed road infrastructure Objectives.

The site is to be situated in North Lucan, adjacent to the Laraghcon Residential development and bounded by the River Liffey and Royal Canal (See Figure 1.1 below). The lands are currently zoned as High Amenity in both the existing and Draft County Development Plans. The lands are under multiple ownerships and this submission is being made jointly to address longstanding infrastructure deficits in the area and to unlock the strategic potential of the lands in the long term.

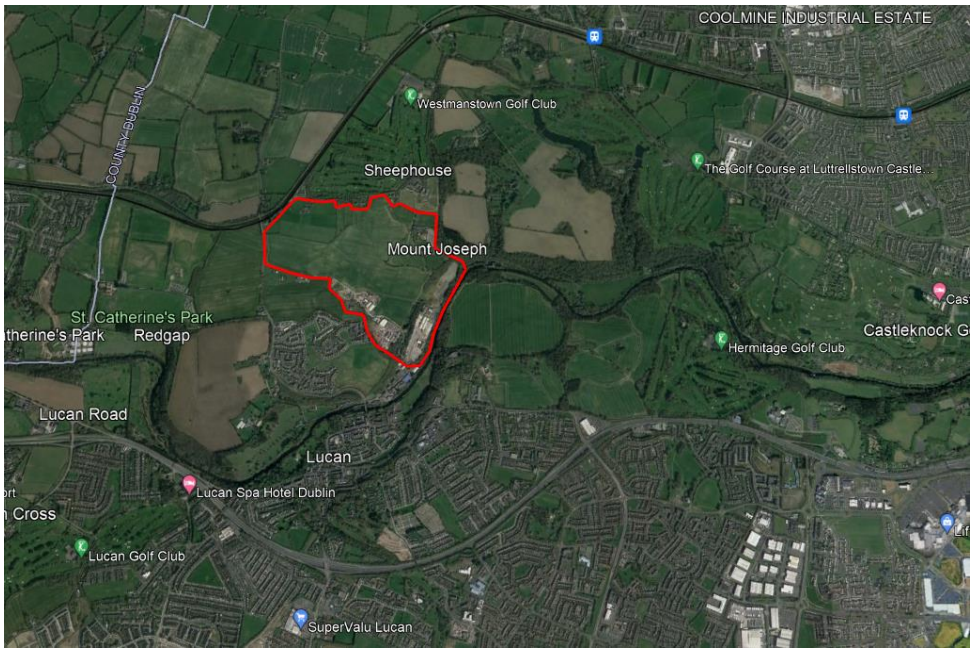


Figure 1.1 Site Location

This report considers the existing roads and traffic situation to in light of existing and future development plans, also referencing proposed zoning amendments. Reference is also made to the Draft South Dublin County Council Development Plan 2022 – 2028 which is at an advanced stage of adoption.

As part of the traffic assessment traffic models of critical junctions in Lucan Village were developed. This traffic modelling determined that a number of these junctions, including the roundabout to the south of the Lucan Bridge and signalised junction to the north of the bridge are operating significantly over capacity, in the current year scenario. The assessment also determined that the Lucan Bridge is catering for an excessive volume of traffic, more appropriate to a dual carriageway type road. Traffic congestion resultant from the large traffic volumes was found to be very extensive, to the detriment of vulnerable road users such as pedestrians and cyclists and most particularly mobility impaired road users. The village centre also provides very poor quality of facilities for these users.

The level of traffic recorded at these junctions and over the Lucan Bridge means that a supplemental crossing of the River Liffey is required. This additional river crossing would allow for improved vehicle connectivity but also provide improved active travel connectivity to intended cycle and pedestrian infrastructure. The new road, referred to as the "North Lucan Link Road" in this report, would also allow for the Lucan Village centre to be reimagined, with appropriate urban renewal measures and vulnerable road user facilities installed. The new road will also allow for additional development lands to be zoned and serviced.

2 EXISTING SITUATION

2.1 Introduction

Lucan Village is a busy suburban centre located to the east of Dublin city. Lucan serves as a commuter town to the wider City Environs. The 2016 CSO Census showed that 36% of Fingal Residents worked in Fingal and 34% worked in Dublin City.

The population of the wider Fingal Local area, as recorded in the 2016 CSO Census was 296,020. The population of Lucan Heights (which encompasses the site) was recorded to be 5,196, a relatively low density.

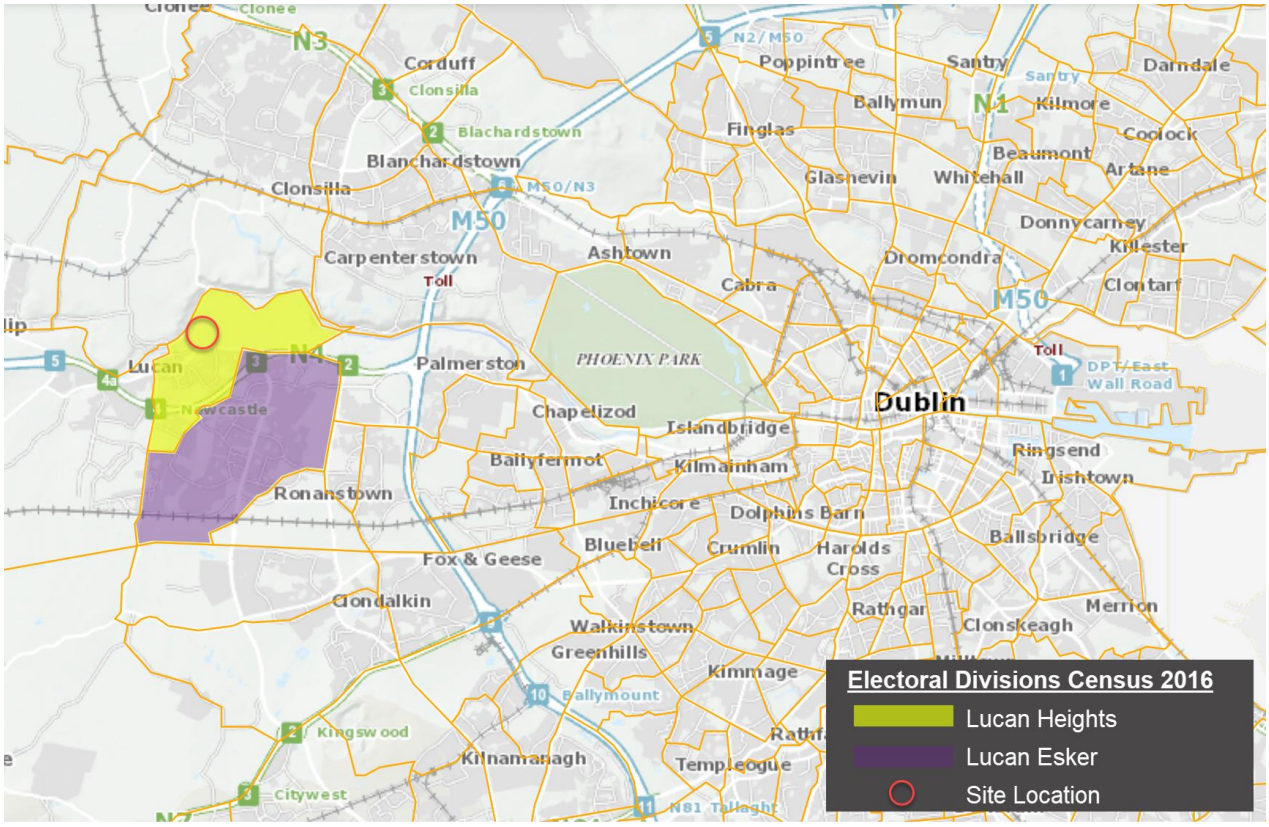


Figure 2.1 Applicant's Site Location

Lucan is designated as "Metropolitan Consolidation Town" in the RPGs Settlement Hierarchy. Metropolitan Consolidation Towns are located close to Dublin City and function as part of the Dublin Gateway. These towns are to developed at a relatively large scale as part of the consolidation of the Metropolitan Area and to continue to support key public transport corridors and be important locations for services, retail and economic activity. The RPGs long term growth target for Metropolitan Consolidation Towns is up to 100,000 people over a series of Development Plans. There is identified housing capacity for up to 24,500 units in the Metropolitan Consolidation Towns, representing 62 percent of the County's overall housing capacity.

The housing demand calculated sets a requirement for the Draft Fingal County Development Plan 2023 – 2029 to provide for approximately 16,245 housing units between 2023 and 2029. As a designated Metropolitan Consolidation Town the growth of Lucan will require particular infrastructure improvements.

2.2 Existing Road Infrastructure

The current road infrastructure provision is reflective of the historic street layout, with the Lucan Bridge (designed by George Knowles) having been constructed in 1814. Much of the major road network, including Lower Lucan Road/Main Street (R121) and Chapel Hill (L1005) are in place since that time. See figure 2.2 below which shows the local street layout in Historic 6" Mapping (1829 to 1842 Ordnance Survey Ireland Mapping) and up to date google orthophotography mapping.

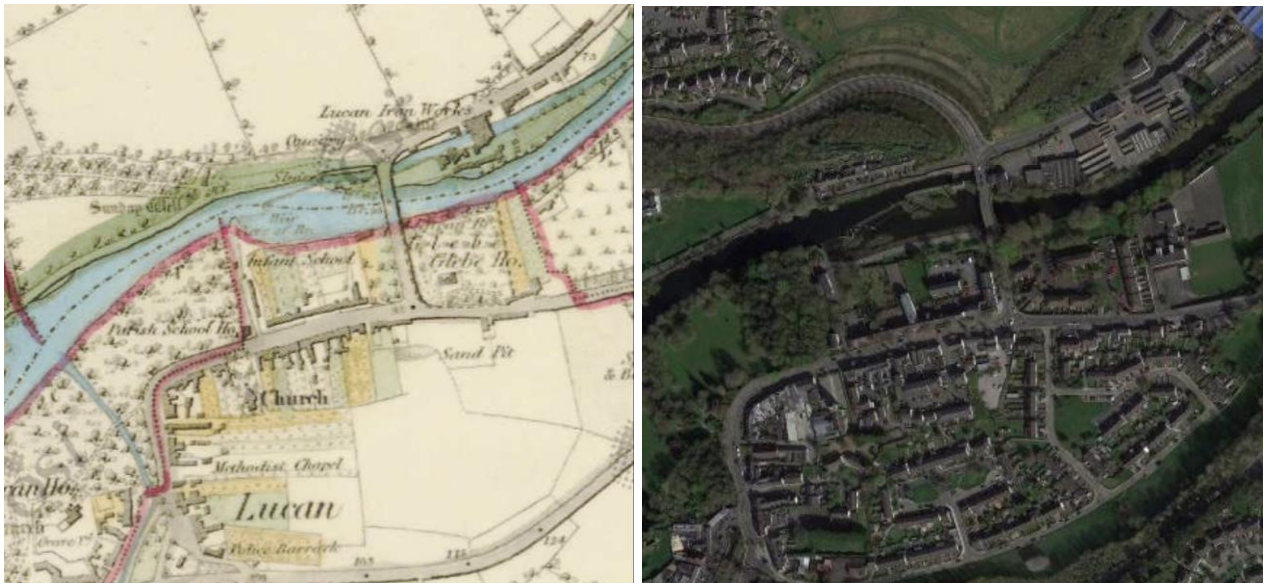


Figure 2.2 Historic (1829-1842) OS Mapping and current Google Orthophotography for Lucan village

The local road and street alignment and available road space is reflective of the historic layout, as per the maps presented in Figure 2.2. The local streets comprise of single lane carriageways, tight priority/signalised junctions and mini roundabouts. The available road space does not allow for the installation of cycle network infrastructure. Indeed the lack of cycle infrastructure in the wider Lucan area is particularly notable in the context of national modal shift trends and associated active travel infrastructure investments.

Figure 2.3 Photo of Lucan Main Street (looking eastwards toward mini-roundabout)

The Lucan Bridge provides a crossing of the River Liffey for road users. The bridge serves commuters and visitor over a wide area. To the north, the areas of Clonee, Ongar, Blanchardstown, Clonsilla, Castleknock connect to Lucan, Adamstown and Clondalkin to the south via this bridge. See figure 2.4 below which shows that the nearest vehicle bridge over the Liffey to the west is located at Leixlip (approx. 3.4km) and at Chaplelizod (9km to the east).

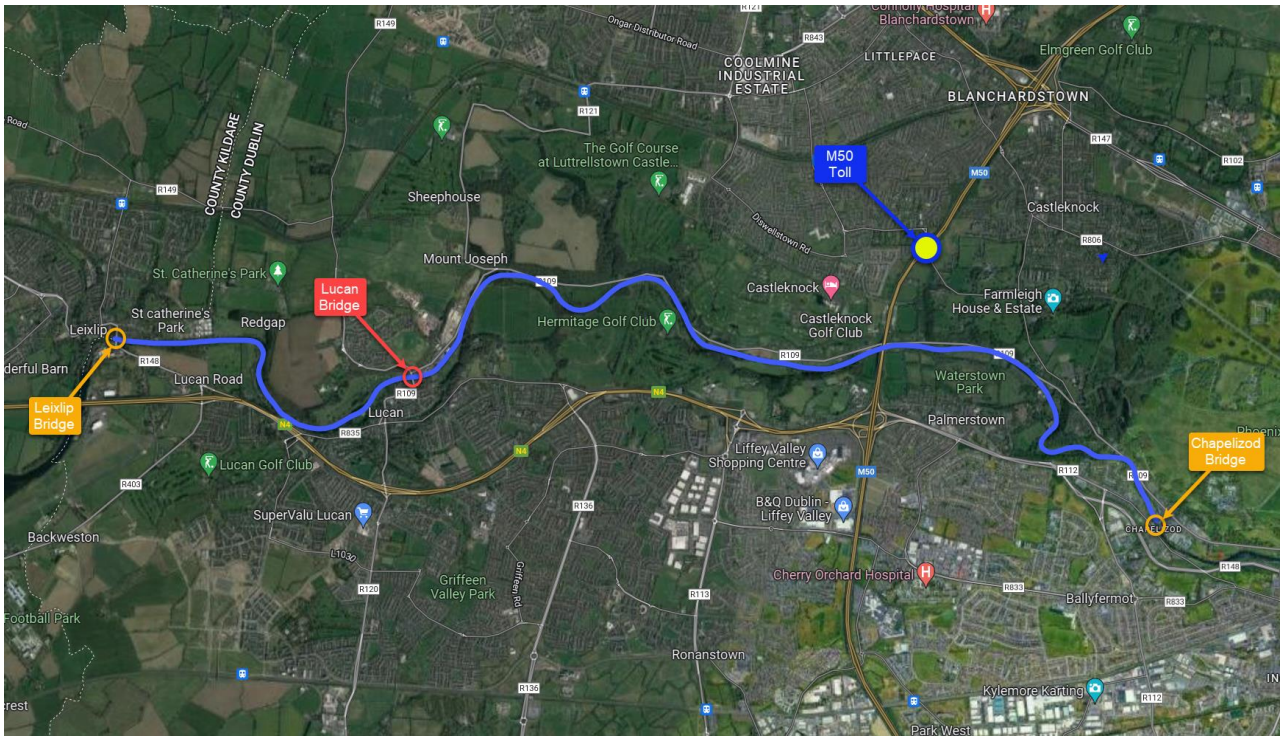


Figure 2.4 Location of Liffey River bridges in the vicinity of Lucan Village

The Lucan Bridge is a narrow stone arch bridge comprising of a c.6m wide carriageway and 1.5m wide footpaths. TII Publications DN-GEO-03031 "Rural Road Link Design" suggest that such a carriageway cross section is appropriate to an Annual Average Daily Traffic (AADT) of **5,000 vehicles**. Recent traffic counts, procured as part of this study, point to an AADT of **17,000 vehicles** crossing the Lucan Bridge in 2018.

Figure 2.5 Photo of Lucan Bridge (looking northwards toward signalised junction)

A mini roundabout is located to the south and 4-arm signalised junction to the north.

Such 4-arm mini-roundabouts are susceptible to widely variable accident rates (*Ref: Volume 6: Road Geometry: TD 54 Design of Mini Roundabouts (DMRB 6.2.2)*) and are ordinarily located at junctions where:

- traffic volumes are low;
- reasonably balanced traffic flows from all arms;
- low number of pedestrian movements.

The mini roundabout accommodates very significant traffic volumes, particularly during peak AM and PM traffic periods. Reflective of its village centre location, pedestrian movement in the vicinity are high. Traffic patterns through the junction show very obvious peak hour flow patterns.

2.3 Sustainable Travel Infrastructure

The area is poorly served by cycle infrastructure as shown in figure 2.6 below. Very limited cycleways are provided with some off road cycle tracks located along the Laraghcon link road, but not extending as far as St Catherine's Park. A lack of cycle connectivity between the urban centre and this park, and various other amenity facilities represents a very significant shortcoming in public infrastructure.

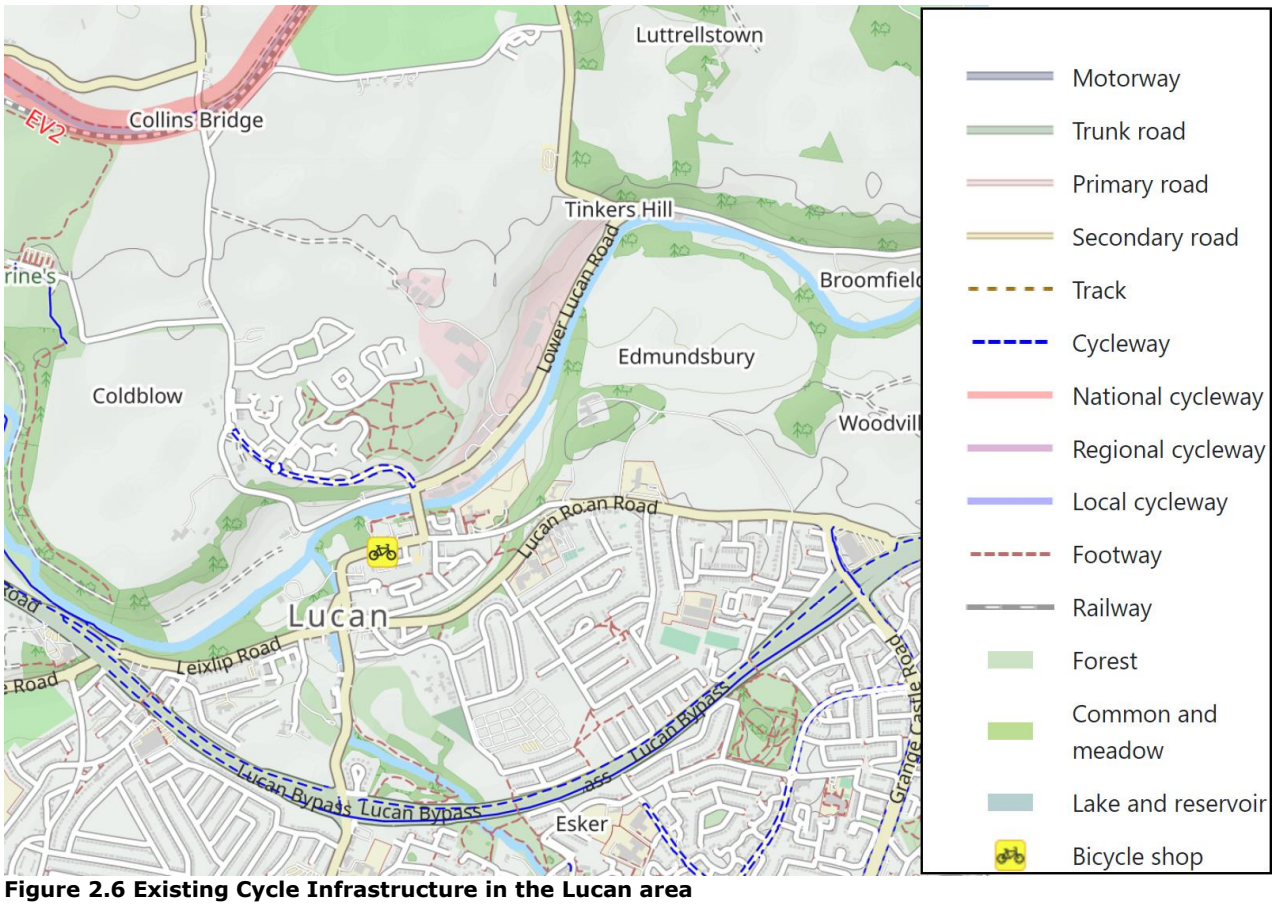


Figure 2.6 Existing Cycle Infrastructure in the Lucan area

2.4 Road Safety Assessment

As part of this Road Infrastructure assessment a review of the RSA Road Collision Statistics, in the vicinity of the subject site, was undertaken. See figure 2.7 below.

A high number collisions were recorded in the vicinity of the Lucan Bridge and the junctions either side of it between the period 2005 – 2016. These collisions are described below:

A single accident was recorded at the signalised junction to the north of Lucan Bridge:

- A Minor collision occurred at the signalised junction in 2008. The incident recorded resulted in 4 minor casualties and involved a goods vehicle.

3 No. Minor collisions occurred at the mini roundabout junction to the south of the bridge. The incident recorded resulted in 4 minor casualties and involved a goods vehicle. They comprised of:

- A Minor collision occurred at the mini roundabout junction in 2010. The incident recorded resulted in 1 minor casualty and involved a single vehicle.
- A Minor collision occurred at the mini roundabout junction in 2015. The incident recorded resulted in 1 minor casualty and involved a **bicycle**.
- A Minor collision occurred at the mini roundabout junction in 2012. The incident recorded resulted in 1 minor casualty and involved a single vehicle.

A **Fatal** collision was recorded approximately 25m east of the mini roundabout in 2007. This collision involved a **pedestrian** and a car.

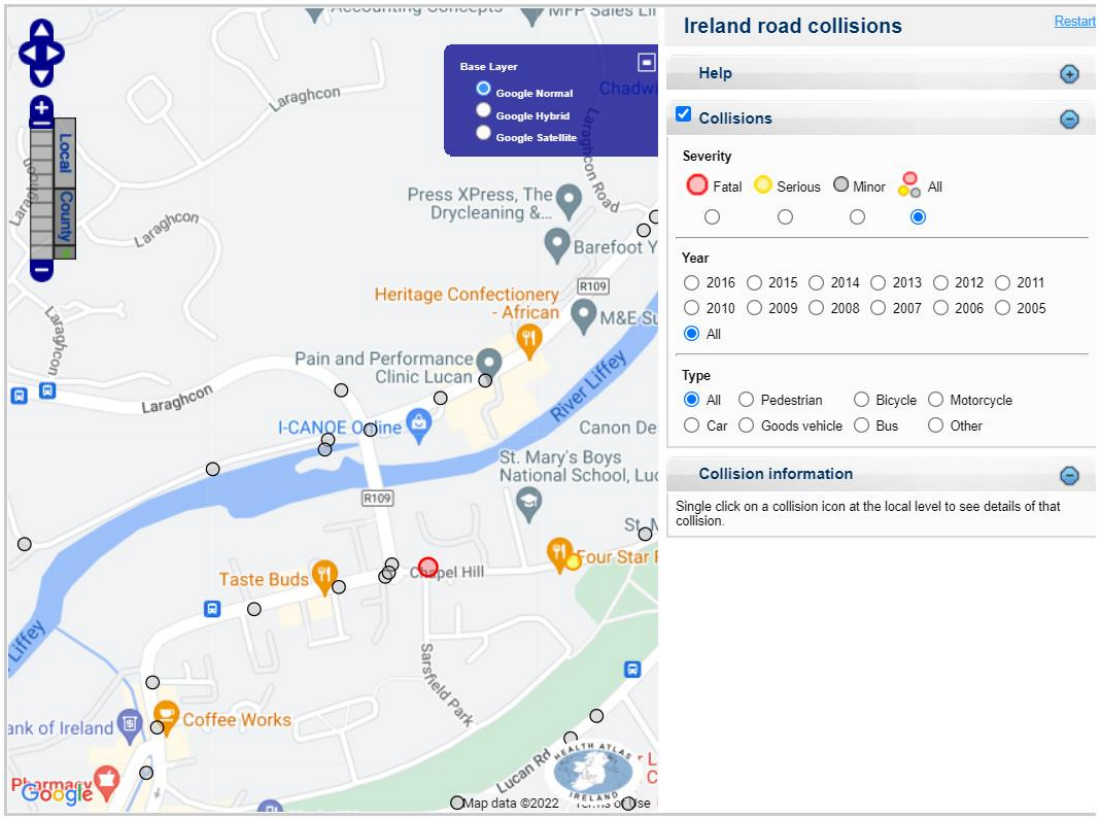


Figure 2.7 RSA Road Collision Statistics in the Lucan area

The high number of collsions in the vicnity of the Lucan Bridge points to significant road safety issues. The lack of pedestrian and cycle facilities (including appropriate road crossings) in the area represents a very significant road safety hazard.

2.5 Existing Commuter Patterns

A review of commuter patterns for the local electoral District (Lucan Heights) was undertaken in order to obtain a snapshot of how students and workers are travelling to Work, School or College. These CSO statistics (based on 2016 CSO Census information) presented the following commuter statistics:

ED Name	Lucan Heights
ED Population	5,196
Commuters Outbound from ED	1,650
Commuters Inbound to ED	989
Net Commuters	-661
Live & Work in same ED	148
Total Workers	1,137

Figure 2.8 CSO Census Commuter Travel Patterns for Lucan Heights Electoral District in 2016

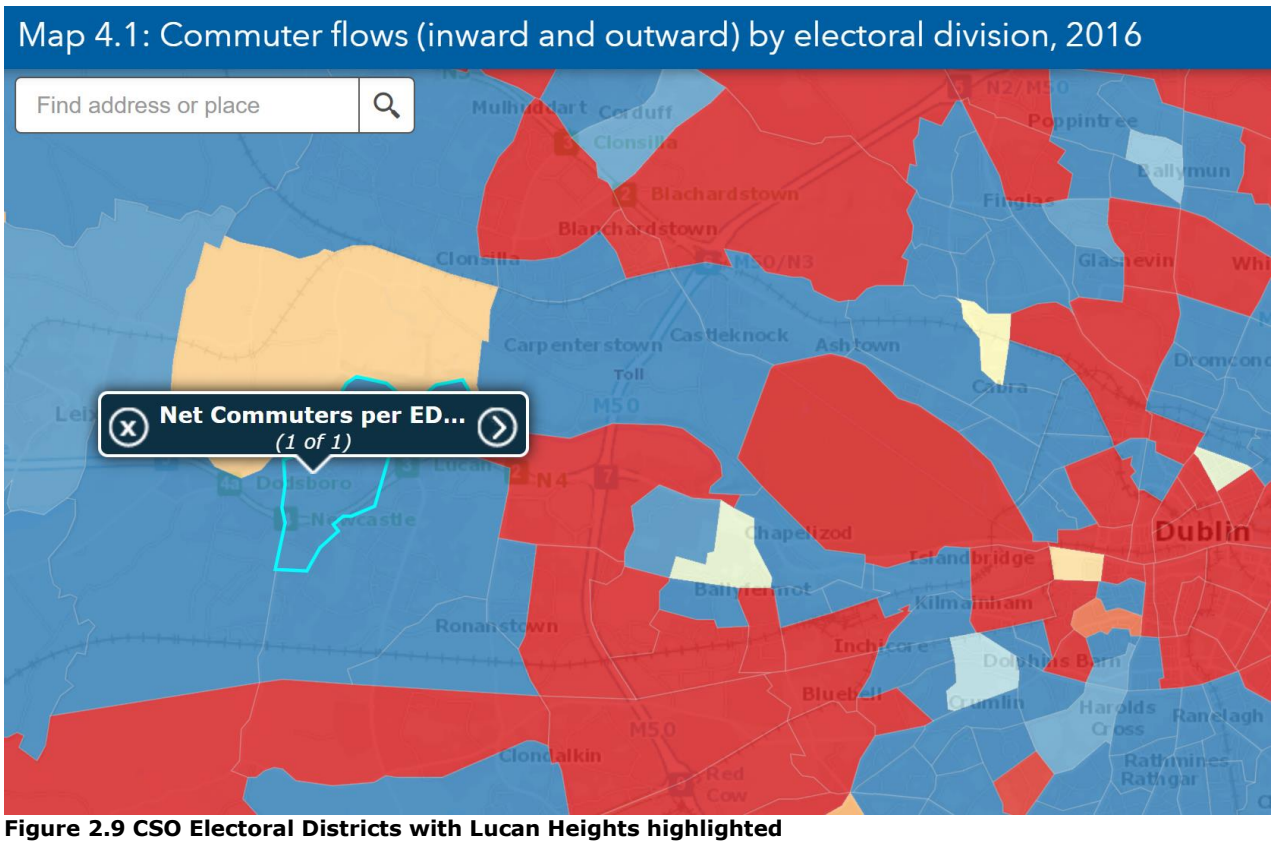


Figure 2.9 CSO Electoral Districts with Lucan Heights highlighted

Commuter travel patterns suggest that most workers travelling to work, are working in Dublin County. The level of travel inbound and outbound to/from the ED suggests that local peak hour commuter trips are high, resulting in a high volumes of traffic on local roads. Commuter mode choice is outlined in the table below:

Means of Travel	Work	School or College	Total
On foot	101	587	688
Bicycle	51	31	82
Bus, minibus or coach	423	216	639
Train, DART or LUAS	8	1	9
Motorcycle or scooter	18	2	20
Car driver	1,301	49	1,350
Car passenger	57	157	214
Van	79	3	82
Other (incl. lorry)	4	0	4
Work mainly at or from home	47	0	47
Not stated	63	31	94
Total	2,152	1,077	3,229

Figure 2.9 Lucan Heights Electoral District Means of Travel

The means of travel table shows that 23% of all commuters travel to Work/School/College by walking or cycling. This statistic is particularly notable given the lack of pedestrian and cycle facilities available in the area. Also 51% of Commuters travel by Private Car or Van.

3 TRAFFIC ASSESSMENT

A traffic assessment of the local road network in the vicinity of the subject site was undertaken to establish the baseline and predicted traffic conditions at a number of junctions surrounding the site.

The traffic assessment focussed on the following traffic junctions:

- Roundabout Junction of Main Street/Chapel Hill/R109.
- Signalized Junction of R109/Laraghcon/Lower Road
- Priority Junction of Laraghcon/Westmanstown Road

The location of each of the analysed junctions in relation to the subject lands is presented below in Figure 3.1 below.

Figure 3.1: Analysed Junctions

The traffic analysis was undertaken for the following scenarios for both the AM and PM peak hours:

- **Base Year (2019)**
- **Current Year (2022)**
- **Development Plan Extents (2029)**

The base year has been taken as 2019 as this was the year the traffic counts were undertaken. The TII publication "Project Appraisal Guidelines for National Routes Unit 5.3 – Travel Demand Projections" was used to calculate growth factors for the road network traffic. Figure 3.2 below shows the calculated growth factors:

			Cars/LGV	HGV	Combined
Count %			90%	10%	
2019	to	2022	1.041	1.073	**1.044**
2019	to	2029	1.142	1.264	**1.155**

NRA Project Appraisal Guidelines- 5.5 forecasting
Appendix 3 - Guidance on traffic modelling

Figure 3.2 Future Projected Growth Rates

It should be noted that traffic growth rates for the 2029 year scenario (**15.5%** growth) consider a conservative traffic modelling scenario. The Draft Fingal County Development Plan 2023 – 2029 estimates a population growth from 296,200 in 2016 to 359,000 in 2029. This equates to a growth rate of **21%**.

3.1 Site Traffic Counts

Traffic flow information was provided by IDASO Ltd for use in this study. The raw traffic information is included in the appendices of this report. Traffic counts were conducted at Junction 1 on Tuesday 11th December 2018 and at Junctions 2 and 3 on conducted on Thursday 14th February 2019. These counts were utilised to establish the actual AM & PM Peak traffic hours for the local road network for the purposes of this assessment. Traffic counts were undertaken between the hours of 07:00 and 10:00 and 16:00 and 19:00 to ensure both the AM and PM peak hours were covered. The morning peak hour at Junction 1 was found to be between 07:00 and 08:00 and the evening peak was between 17:00 and 18:00. The morning peak hour at Junctions 2 and 3 was found to be between 08:00 and 09:00 and the evening peak was between 17:00 and 18:00 These existing junction traffic counts were growth factored as described previously. Based on the traffic counts and considering the recommendation of the Guidelines for Traffic and Transportation Assessments, the peak hours considered in this TTA are reflective of the demand case for the subject site and wider Lucan Village area.

The effects of traffic growth on the existing network have been compiled to build junction models of the 3No. junctions.

4 TRAFFIC MODELLING

In order to assess the capacity of the local road network, traffic models of Junction 1 were produced using the Arcady, roundabout modelling software, Junction 2 using Linsig Traffic Signal Analysis software and Junction 3 using Picady, priority junction traffic modelling software.

4.1 Junction 1 Analysis

The output movements from the models are based on the assigned junction arms. The arms are designated A to C for the roundabout, as shown below.

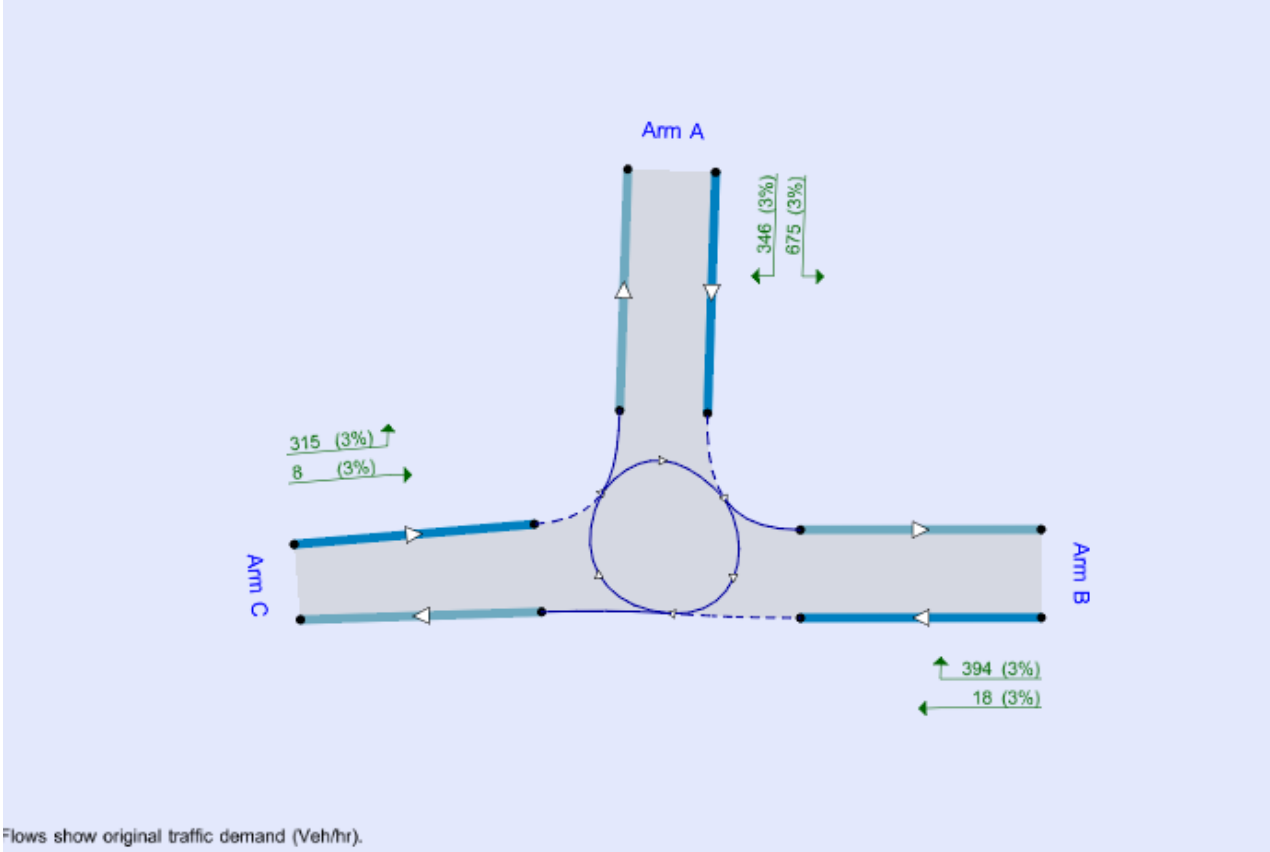


Figure 4.1: Junction 1 - Roundabout (Arm A – R109, Arm B – Chapel Hill, Arm C – Main Street

The output result sheets from the traffic modelling software consist of tables of demand flow, capacities, queues, and delays for each 15-minute time segment of the peak hour analysis.

The Arcady output table contains information on maximum queue length, delay, and Ratio of Flow to Capacity (RFC). The RFC provides the basis for judging the acceptability of junction design and the capacity of existing junctions. Generally, an RFC of 0.85 or less is considered acceptable during the peak period. An RFC of this value indicates that at peak times the junction is at 85% of its operational capacity and therefore has a practical reserve capacity at a junction required to cater for periods of unusually high traffic flow, such as bank holiday weekends, etc. The degree of saturation of a junction is a measure of the capacity of the junction. A junction with an RFC of 0.85 would be considered to be operating at a degree of saturation of 100%.

The following summary junction performance tables for J1 describes the RFC, Delay and Queue values for both morning and evening peaks for all design scenarios.

Table 4.1: Junction 1 Summary Table

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
	2018											
Arm A	D1	167.4	675.20	1.30	F	-31 %	D2	85.6	354.04	1.18	F	-24 %
Arm B		2.1	16.91	0.68	C	[Arm A]		2.6	20.86	0.73	C	[Arm A]
Arm C		0.9	8.98	0.47	A			1.6	12.31	0.62	B	
	2022											
Arm A	D3	227.0	921.88	1.38	F	-35 %	D4	123.7	528.23	1.25	F	-28 %
Arm B		2.5	19.26	0.72	C	[Arm A]		3.2	24.66	0.77	C	[Arm A]
Arm C		1.0	9.78	0.51	A			1.9	14.18	0.67	B	
	2029											
Arm A	D5	359.3	1480.86	1.52	F	-42 %	D6	223.0	927.87	1.39	F	-35 %
Arm B		3.7	26.12	0.80	D	[Arm A]		5.2	36.84	0.85	E	[Arm A]
Arm C		1.3	11.76	0.58	B			3.0	20.02	0.76	C	

Junction 1 – Roundabout Junction of R109/Chapel Hill/Main Street

A maximum RFC of **138%** occurs in the AM peak for the current year (**2022**) scenario. The RFC increases to **152%** by the **2029** scenario. This maximum RFC occurs on Arm A – R109, a delay of 921 seconds is experienced by vehicles on this arm. A maximum RFC of 125% occurs in the PM peak for the current year (2022) scenario which increases to 139% by 2029. This junction is operating far in excess of its capacity and significant delays and queuing are evident for both the AM and PM peak hours. Significant improvements are required to the local road network to address the congestion outlined in the traffic modelling.

4.2 Junction 2 Analysis

Linsig analysis software was used to assess the capacity of signalised Junction 2. The arms are designated A to D for the signalised junction, as shown below.

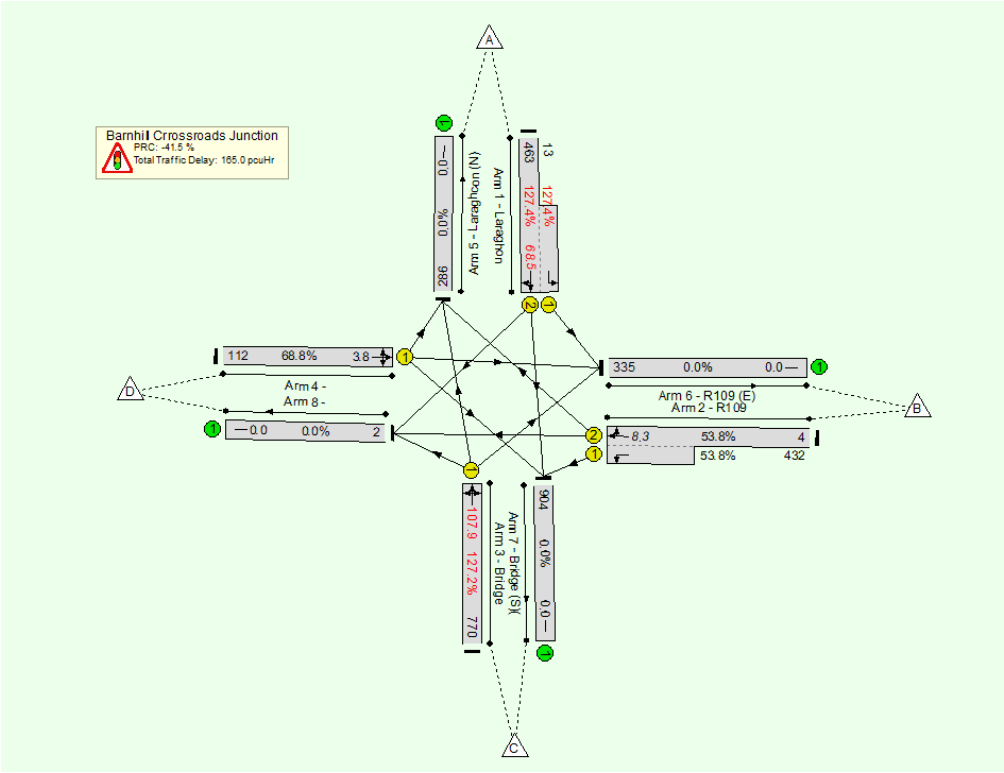


Figure 4.2: Junction 2 - Arm A: Laraghcon, Arm B: Lower Road, Arm C: R109, Arm D: Local Road

LINSIG is a computer software program dealing with capacities, mean max queue lengths (pcu) and delays at uncontrolled and signalised junctions. The output results sheets from LINSIG consist of tables of demand flow, capacities, queues and delays for the morning and evening peak hour analysis, for each arm of the junction. These tables contain start and finish times for each arm, traffic demand, Degree of Saturated Flow (DOS %), start queue length and queuing delay.

The DOS provides the basis for judging the acceptability of junction design and the capacity of existing junctions. In general, a DOS of 85% is deemed acceptable for uncontrolled junctions and a DOS of 90% is acceptable for signalised junctions.
A DOS of this value would indicate that at peak times the junction is at 85% of its operational capacity and therefore has a practical reserve capacity of 15%. This reserve capacity of 15% is considered by traffic engineers to be the level of reserve capacity at a junction required to cater for periods of unusually high traffic flows, such as bank holiday weekends, public entertainment, and sporting events etc.

Table 7.2 below shows the results of the various traffic models for Junction 2, as described previously: (See Appendices for the full LINSIG output data output).

Junction 2: Signalised junction of R109/Laraghcon/Lower Road

Table 4.2: Junction 2 Summary Table

Junction 2		DOS %	Queue (pcu)
2018	AM	127.4	107.9
	PM	104.5	41.2
2022	AM	132.9	126.3
	PM	108.9	55.7
2029	AM	147.2	172.6
	PM	120.6	96.2

Table 4.2 shows that for all scenarios the junction will be operating above the 90% acceptable DOS threshold for signalised junctions. The critical arms of the junction are traffic travelling south along Lagraghcon during the AM peak hour and traffic travelling north along the R109 during the PM peak hour. There is also significant queueing experienced at the junction with a queue length of 126 PCUs in the AM and 56 PCUs in the PM 2022 scenarios. This junction is operating far in excess of its current capacity and is unable to cater for the traffic volumes recorded.

4.3 Junction 3 Analysis

The output movements from the models are based on the assigned junction arms. The arms are designated A to C for the priority junction, as shown below.

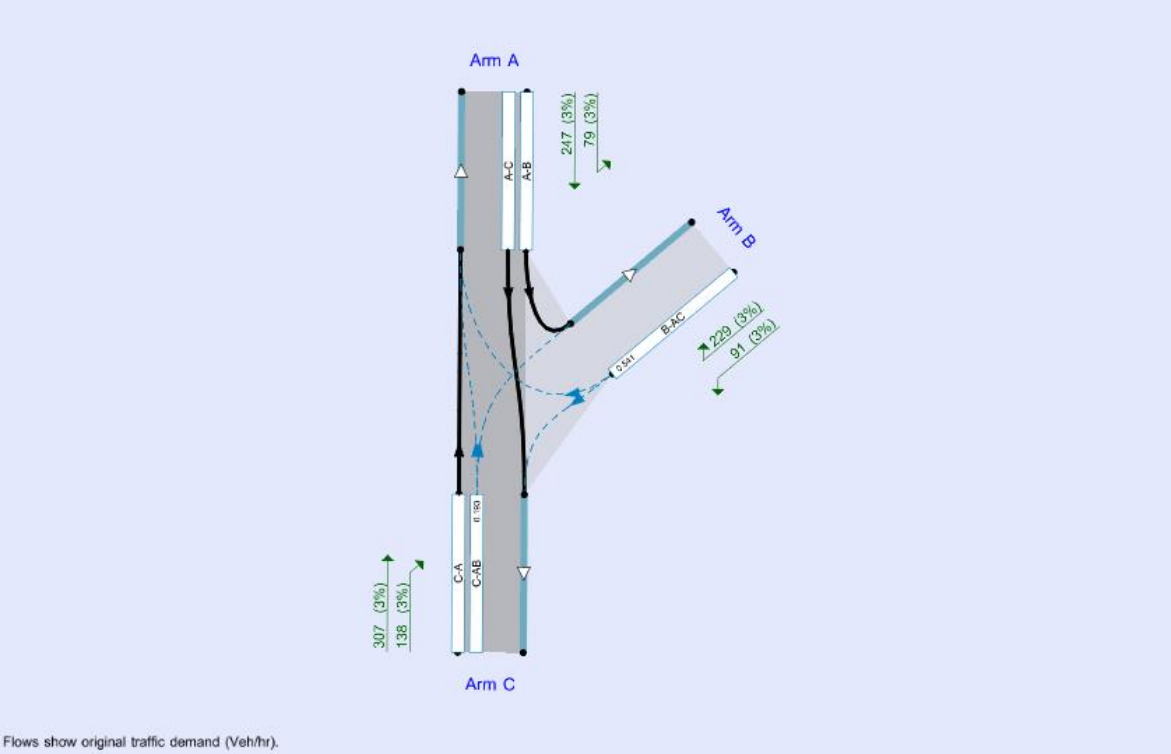


Figure 4.3: Junction 3 – Priority Junction of Laraghcon/Westmanstown Road

The output result sheets from the traffic modelling software consist of tables of demand flow, capacities, queues, and delays for each 15-minute time segment of the peak hour

analysis.

The Picady output table contains information on maximum queue length, delay, and Ratio of Flow to Capacity (RFC). The RFC provides the basis for judging the acceptability of junction design and the capacity of existing junctions. Generally, an RFC of 0.85 or less is considered acceptable during the peak period. An RFC of this value indicates that at peak times the junction is at 85% of its operational capacity and therefore has a practical reserve capacity at a junction required to cater for periods of unusually high traffic flow, such as bank holiday weekends, etc. The degree of saturation of a junction is a measure of the capacity of the junction. A junction with an RFC of 0.85 would be considered to be operating at a degree of saturation of 100%.

The following summary junction performance tables for J2 describes the RFC, Delay and Queue values for both morning and evening peaks for all design scenarios.

Table 4.3: Junction 2 Summary Table

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
	2018											
Stream B-AC	D1	0.7	17.45	0.43	C	27 %	D2	6.8	75.41	0.91	F	-12 %
Stream C-AB		0.8	11.24	0.39	B	[Stream B-AC]		0.5	8.34	0.30	A	[Stream B-AC]
	2022											
Stream B-AC	D3	0.9	19.55	0.47	C	20 %	D4	12.4	123.95	0.99	F	-17 %
Stream C-AB		0.9	11.82	0.42	B	[Stream B-AC]		0.6	8.48	0.32	A	[Stream B-AC]
	2029											
Stream B-AC	D5	1.3	25.53	0.57	D	9 %	D6	34.9	294.51	1.16	F	-25 %
Stream C-AB		1.2	13.11	0.48	B	[Stream B-AC]		0.7	8.76	0.36	A	[Stream B-AC]

Junction 2 – Priority Junction of Laraghcon/Westmanstown Road

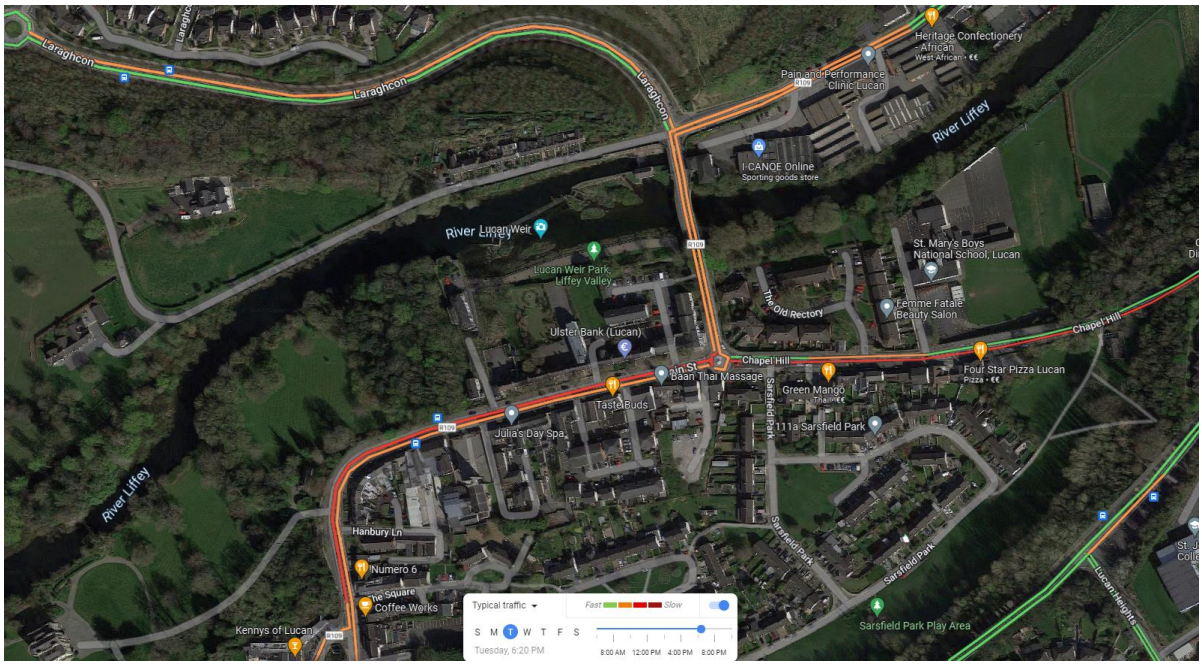
A maximum RFC of 99% occurs in the PM peak for the current year (2022) scenario. The RFC increases to 116% by the 2029 scenario. This maximum RFC occurs on Arm B – Westmanstown Road, a delay of 75 seconds is experienced by vehicles on this arm. A maximum RFC of 47% occurs in the AM peak for the current year (2022) scenario which increases to 57% by 2029. This junction is currently operating at capacity and will be above capacity in the near future. Significant delays and queuing are evident at the PM peak hour for the 2029 scenario.

4.4 Results Comparison

As can be seen in the images below the typical traffic conditions in the area are particularly congested with queueing along Laraghcon, Main Street, Chapel Hill and the R109. The typical traffic conditions outlined by Google Maps back up the results of the traffic modelling and verifies that the junctions in the vicinity of the development lands are currently operating above capacity.

Figure 44.4: Typical AM Traffic Conditions (Credit: Google Maps**)**

Figure 4.5: Typical PM Traffic Conditions (Credit: Google Maps**)**



5 PROPOSED ROAD INFRASTRUCTURE

The Traffic modelling outlined in this report presents clearly that the existing road infrastructure is not capable of accomodating current traffic volumes. The traffic modelling of the jucntions south and north of the Lucan Bridge are shown to operate far in excess of their operational capacity in the current 2022 scenario, wth a Level of Service "F" assigned to both AM and PM models. The inlcusion of increased growthed traffic volumes, to estimated 2029 traffic flows results in a further deterioration of these conditions.

5.1 Proposed Roads Objective

The lack of Liffey River bridge crossings along the wider Leixlip, Lucan, Palmerstown Chapelizon corridor has resulted in a confluence of traffic movements and associated congestion at Lucan Village. Lucan Bridge accomodates an approximate AADT of 17,000 vehciles per day. The recommended road type for this level of traffic is a Type 2 Dual Carriageway (2 x 7.0m Carriageway). *Ref: TII Publications DN-GEO-03031 Rural Road Link Design).*

Given the heritage constraints of the existing Lucan Bridge there is a clear requirement for a new bridge crossing in the vicnity. Such a new bridge would allow for the removal of significant volumes of traffic from Main Street and the adjoining local streets in the village centre. It would also allow for the implementation of extensive traffic calming and improved pedestrian and cycle facilites in the Village, by reassigning the vehicle dominated road space. These urban renewal works would align with the following Draft Fingal Development Plan 2023-2029 objectives:

- Objective CSO21 – Town Centre Regeneration
- Objective CSO25 – Promote and Enhance existing ACA's
- Objective CSO26 – Improved Sense of Identity
- Objective CSO6 – Enabling Infrastructure

The new road and associated River Liffey Bridge would need to be located in a (largely) greenfield space ensuring minimal of intrusion on residents, connect critical commuter routes cross the Liffey at an apporpriate location.

The proposed North Lucan Link Road Objective, as preented has been specifically condsidered in light of the following assessment criteria:

- Economy – Optimal route choice to ensure mimimal 3rd party CPO and optimal 3d alignment;
- Integration – Route connectivity to critical commuter routes and active travel infrastructure;
- Accessibility and Social Inclusion – Connectivity to local population centres and infrastructure;
- Safety - Optimal connectivity design and significant improvements to existing congested Lucan Village;
- Environment – Improve Lucan Village environment. Minimise impact of new bridge by design wide span strcture. Provide improved active travel connectivity. Traverse farmed agricultural land where feasible.

This road and bridge, encompassed in the proposed North Lucan Link Road Objective would comprise of a 6.5m carriageway and segregated cycle track and footpath facilities on both sides of the road. The road would also require a significant river bridge crossing spanning a significant valley width. This large span structure would ensure minimal impact on biodiversity, heritage, environment and amenity space. (To comply with Policy GINHP27 –

Howth and Liffey Valley Amenity Orders). See Appendix C for preliminary drawings of the "North Lucan Link Road" alignment.

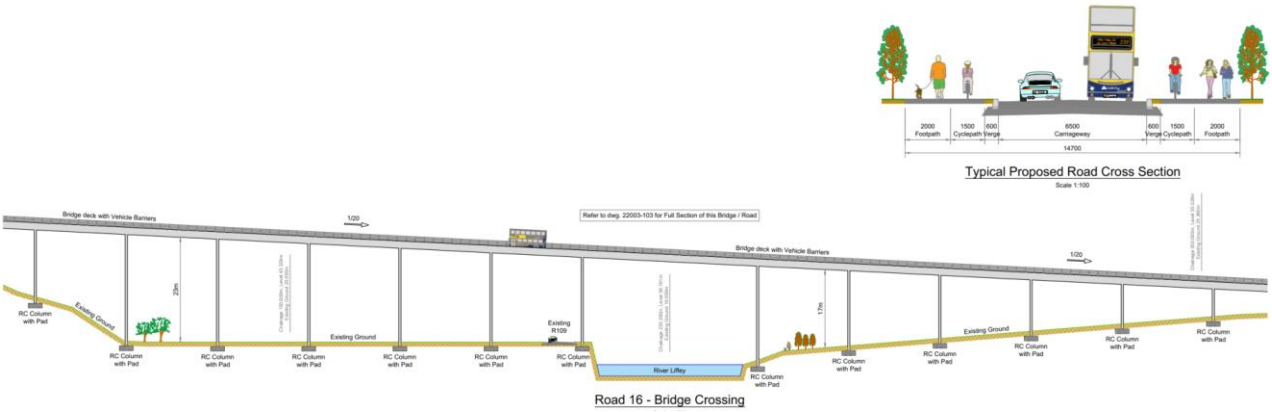


Figure 5.1 "Cycle Network Plan For The Greater Dublin Area

5.2 Proposed Active Travel Objective

The new River Liffey Bridge would also afford the Local Authority the opportunity to improve Avtive Travel connectivity in the wider Lucan area, allowing various residential, commercial and amenity spaces to be interconnected and also connecetd to adjoining cycle infrastructure projects such as the Royal Canal Greenway and Liffey Greenway. This will also provide connectivity to Inter-Urban links to Adamstown and and the wider City network.

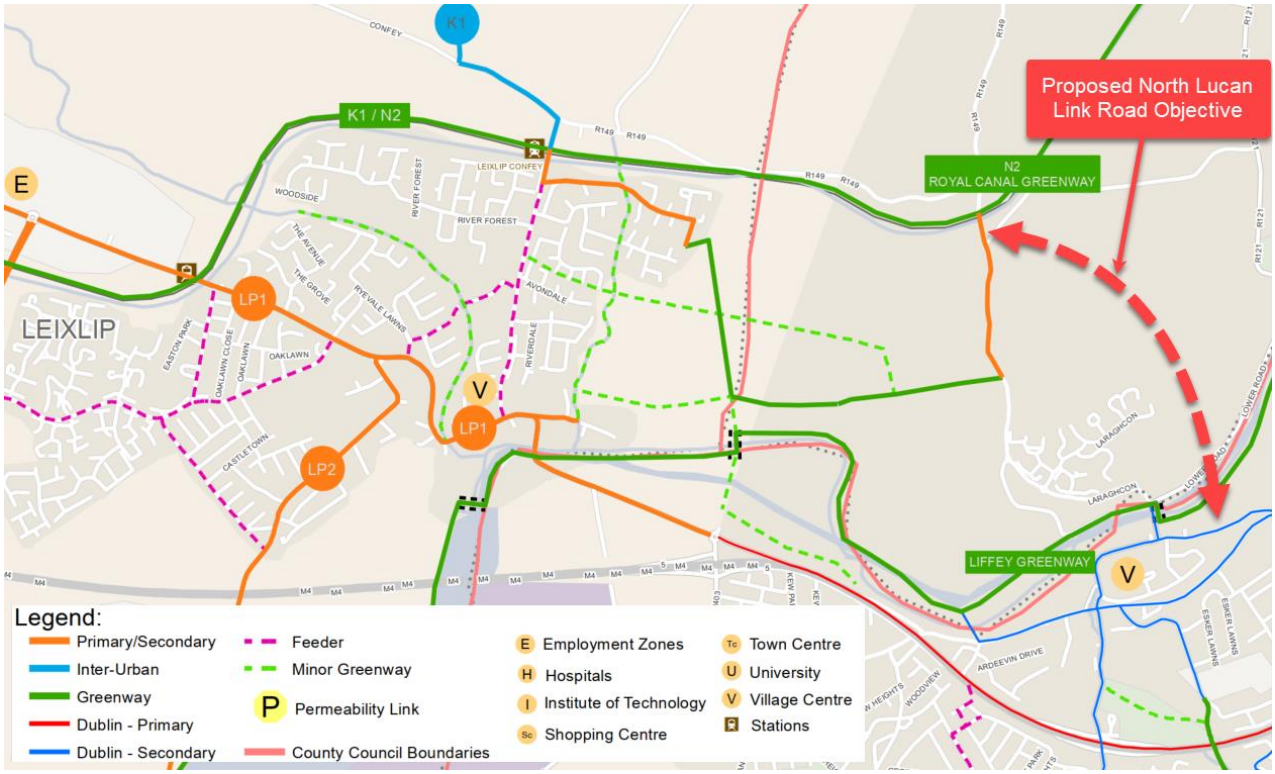


Figure 5.2 "Cycle Network Plan For The Greater Dublin Area - Proposed Cycle Network Maynooth, Celbridge & Leixlip" showing proposed North Lucan Link Road Objective

6 SUMMARY CONCLUSION

A number of traffic and road safety concerns have been outlined in this report. Specifically these include:

- Existing village centre junctions are very significantly over capacity
- Existing village centre junctions provide inadequate pedestrian (and cycle) crossing facilities
- The Lucan Bridge is not capable of accommodating the current level of traffic currently traversing it
- The Lucan Bridge cannot accommodate appropriate Active Travel infrastructure
- Lucan Village is very poorly served by Active Travel infrastructure
- A new bridge and associated new road is required to accommodate current traffic conditions and also to cater for Active Travel connectivity
- The proposed "North Lucan Link Road", as presented in this report, will address the current road network shortcomings and enable various village centre urban renewal improvements
- The proposed "North Lucan Link Road" will allow the local authority to zone future development lands, reflective of Lucan's designation as a Metropolitan Consolidation Town

It is submitted that the "North Lucan Link Road" Objective will align with a number of current Objectives set out in the Draft Fingal County Development Plan 2023 – 2029 and will be to the benefit of the wider Fingal area.

7 REFERENCES

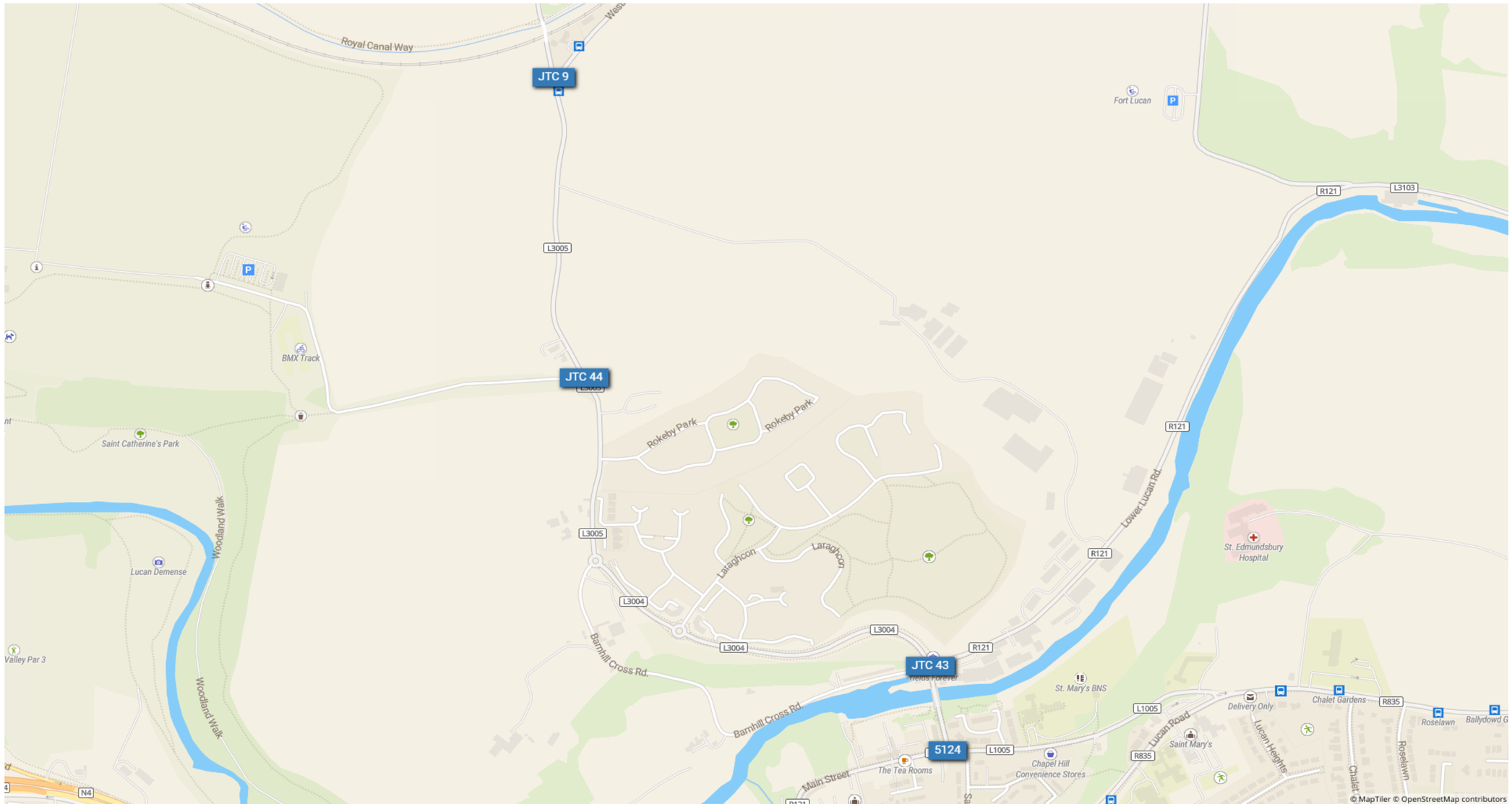
- TII. Traffic and Transport Assessment Guidelines, PE-PDV-02045
- National Roads Authority (2014) Traffic and Transport Assessment Guidelines
- Design Manual for Urban Roads and Streets
- Transport for Ireland (Oct 2016) Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts
- Transport for Ireland 2017. Geometric Design of Junctions, DN-GEO-03060
- Transport for Ireland 2017. Rural Road Link Design, DN-GEO-03031
- National Disability Authority (NDA) guidelines – Towards Best Practice in Provision of Transport Services
- TII approved junction simulation modelling program, Linsig
- Trip Rate Information Computer System (TRICS)
- Traffic Surveys: IDASO Limited
- Google Maps
- Openstreetmaps

APPENDICES

APPENDIX A TRAFFIC COUNT INFORMATION

Idaso

Survey Name: HDR 22 040 Lucan
Date: Mon 12 Nov 2018



Idaso

Survey Name: HDR 22 040 Lucan
Site: 5124
Location: R109 / Chapel Hill / Main St
Date: Tue 11-Dec-2018

	A => A										A => B									
TIME	**P/C**	**M/C**	**CAR**	**TAXI**	**LGV**	**OGV1**	**OGV2**	**PSV(BUS**	**TOT**	**PCU**	**P/C**	**M/C**	**CAR**	**TAXI**	**LGV**	**OGV1**	**OGV2**	**PSV(BUS**	**TOT**	**PCU**
07:00	0	0	0	0	0	0	0	0	0	0	1	0	162	0	32	1	0	0	196	195.7
07:15	0	0	0	0	0	0	0	0	0	0	0	0	130	0	22	2	0	0	154	155
07:30	0	0	0	0	0	0	0	0	0	0	0	0	162	1	16	2	0	0	181	182
07:45	0	0	0	0	0	0	0	0	0	0	2	1	121	3	14	0	1	1	143	142.1
H/TOT	0	0	0	0	0	0	0	0	0	0	3	1	575	4	84	5	1	1	674	674.8
08:00	0	0	0	0	0	0	0	0	0	0	0	1	107	0	24	1	0	0	133	132.9
08:15	0	0	0	0	0	0	0	0	0	0	1	0	75	1	5	2	0	0	84	84.2
08:30	0	0	0	0	0	0	0	0	0	0	0	0	89	1	8	0	0	0	98	98
08:45	0	0	0	0	0	0	0	0	0	0	2	0	67	1	7	2	0	0	79	78.4
H/TOT	0	0	0	0	0	0	0	0	0	0	3	1	338	3	44	5	0	0	394	393.5
09:00	0	0	0	0	0	0	0	0	0	0	1	2	80	0	16	0	0	0	99	97
09:15	0	0	0	0	0	0	0	0	0	0	0	0	85	1	5	0	0	1	92	92
09:30	0	0	0	0	0	0	0	0	0	0	0	0	74	0	14	2	1	0	91	93.3
09:45	0	0	0	0	0	0	0	0	0	0	0	0	63	2	14	1	0	0	80	80.5
H/TOT	0	0	0	0	0	0	0	0	0	0	1	2	302	3	49	3	1	1	362	362.8
10:00	0	0	0	0	0	0	0	0	0	0	0	0	73	0	9	3	0	0	85	86.5
10:15	0	0	0	0	0	0	0	0	0	0	1	0	55	4	15	1	0	0	76	75.7
10:30	0	0	0	0	0	0	0	0	0	0	0	1	52	2	11	4	0	0	70	71.4
10:45	0	0	0	0	0	0	0	0	0	0	0	0	58	2	13	2	1	0	76	78.3
H/TOT	0	0	0	0	0	0	0	0	0	0	1	1	238	8	48	10	1	0	307	311.9
11:00	0	0	0	0	1	0	0	0	1	1	0	0	54	2	11	4	0	0	71	73
11:15	0	0	0	0	0	0	0	0	0	0	0	0	66	2	12	3	1	0	84	86.8
11:30	0	0	0	0	0	0	0	0	0	0	0	0	61	2	10	1	0	0	74	74.5
11:45	0	0	0	0	0	0	0	0	0	0	0	0	70	0	16	2	0	0	88	89
H/TOT	0	0	0	0	1	0	0	0	1	1	0	0	251	6	49	10	1	0	317	323.3
12:00	0	0	1	0	0	0	0	0	1	1	0	0	58	4	9	2	1	0	74	76.3
12:15	0	0	0	0	0	0	0	0	0	0	0	0	57	3	17	0	0	0	77	77
12:30	0	0	0	0	0	0	0	0	0	0	1	0	71	4	14	2	0	0	92	92.2
12:45	0	0	1	0	0	0	0	0	1	1	0	0	66	3	15	0	0	0	84	84
H/TOT	0	0	2	0	0	0	0	0	2	2	1	0	252	14	55	4	1	0	327	329.5
13:00	0	0	0	0	0	0	0	0	0	0	0	0	55	1	11	1	2	0	70	73.1
13:15	0	0	0	1	2	0	0	0	3	3	0	0	76	4	10	1	1	0	92	93.8
13:30	0	0	0	0	0	0	0	0	0	0	1	0	60	4	12	0	0	0	77	76.2
13:45	0	0	0	0	0	0	0	0	0	0	0	0	57	1	10	0	2	0	70	72.6
H/TOT	0	0	0	1	2	0	0	0	3	3	1	0	248	10	43	2	5	0	309	315.7
14:00	0	0	0	0	0	0	0	0	0	0	1	0	90	6	8	3	0	0	108	108.7
14:15	0	0	1	0	0	0	0	0	1	1	0	0	69	1	11	1	1	1	84	85.8
14:30	0	0	0	0	0	0	0	0	0	0	0	0	62	1	7	2	1	0	73	75.3
14:45	0	0	0	0	0	0	0	0	0	0	0	0	60	6	5	3	0	0	74	75.5
H/TOT	0	0	1	0	0	0	0	0	1	1	1	0	281	14	31	9	2	1	339	345.3
15:00	0	0	0	0	0	0	0	0	0	0	0	1	81	3	11	1	0	0	97	96.9
15:15	0	0	1	0	0	0	0	0	1	1	0	0	70	2	10	1	0	0	83	83.5
15:30	0	0	0	0	0	0	0	0	0	0	0	1	68	2	10	3	0	0	84	84.9
15:45	0	0	0	0	0	0	0	0	0	0	0	0	110	2	9	4	0	0	125	127
H/TOT	0	0	1	0	0	0	0	0	1	1	0	2	329	9	40	9	0	0	389	392.3
16:00	0	0	0	0	0	0	0	0	0	0	2	0	71	1	10	1	0	0	85	83.9
16:15	0	0	0	0	0	0	0	0	0	0	0	1	72	1	11	1	0	2	88	87.9
16:30	0	0	0	0	0	0	0	0	0	0	0	0	88	1	15	0	0	0	104	104
16:45	0	0	1	0	0	0	0	0	1	1	0	0	84	0	14	0	1	0	99	100.3
H/TOT	0	0	1	0	0	0	0	0	1	1	2	1	315	3	50	2	1	2	376	376.1
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17:15	0	0	1	0	0	0	0	0	1	1	1	0	105	4	10	1	0	0	121	120.7
17:30	0	0	0	0	0	0	0	0	0	0	0	0	98	0	19	0	1	0	118	119.3
17:45	0	0	0	0	0	0	0	0	0	0	0	0	92	0	18	1	0	0	111	111.5
H/TOT	0	0	1	0	0	0	0	0	1	1	2	1	409	6	60	6	1	0	485	487.1
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18:15	0	0	0	0	0	0	0	0	0	0	0	0	96	1	12	0	0	0	109	109
18:30	0	0	0	0	0	0	0	0	0	0	0	0	69	1	4	1	0	0	75	75.5
18:45	0	0	0	0	0	0	0	0	0	0	1	0	69	1	5	0	1	0	77	77.5
H/TOT	0	0	0	0	1	0	0	0	1	1	3	1	297	5	30	1	1	0	338	336.8
12 TOT	0	0	6	1	4	0	0	0	11	11	18	10	3835	85	583	66	15	5	4617	4649.1

A => C										B => A									
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
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0	1	66	2	12	2	0	0	83	83.4	0	0	84	1	17	0	0	0	102	102
0	1	77	1	14	0	0	0	93	92.4	0	0	79	1	16	1	0	0	97	97.5
0	0	82	2	13	1	0	1	99	99.5	2	0	81	1	11	0	0	1	96	94.4
0	2	280	6	50	4	1	1	344	346.1	2	0	319	5	63	3	0	2	394	393.9
0	0	71	1	7	2	1	0	82	84.3	0	1	68	1	7	1	2	0	80	82.5
0	0	49	2	4	1	0	0	56	56.5	1	0	77	1	7	0	0	0	86	85.2
1	0	69	1	10	0	0	1	82	81.2	0	0	34	0	7	3	0	0	44	45.5
1	0	70	0	7	1	0	0	79	78.7	0	1	49	0	3	2	1	0	56	57.7
2	0	259	4	28	4	1	1	299	300.7	1	2	228	2	24	6	3	0	266	270.9
0	0	36	3	7	1	0	1	48	48.5	0	0	78	3	12	1	2	0	96	99.1
2	0	43	0	9	0	0	1	55	53.4	0	0	70	3	5	1	0	0	79	79.5
0	0	42	0	12	3	0	1	58	59.5	1	0	58	1	7	2	0	0	69	69.2
0	0	22	0	5	0	0	2	29	29	0	0	50	2	14	1	0	0	67	67.5
2	0	143	3	33	4	0	5	190	190.4	1	0	256	9	38	5	2	0	311	315.3
0	0	38	0	5	2	0	0	45	46	1	0	42	2	8	4	1	0	58	60.5
0	0	29	5	3	1	0	0	38	38.5	0	0	60	2	12	1	0	0	75	75.5
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0	0	35	0	6	2	0	1	44	45	0	0	56	0	7	4	1	0	68	71.3
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0	0	56	0	11	1	0	0	68	68.5	0	0	65	6	16	3	1	0	91	93.8
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0	1	62	2	7	0	0	3	75	74.4	0	0	54	0	14	2	0	0	70	71
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0	0	61	1	5	0	0	0	67	67	0	0	62	5	11	4	0	0	82	84
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2	0	214	7	23	2	3	1	252	255.3	0	0	226	10	41	8	1	0	286	291.3
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0	0	70	1	3	1	0	0	75	75.5	0	1	73	1	13	0	0	0	88	87.4
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2	0	95	3	13	0	0	0	113	111.4	2	0	70	0	13	0	0	0	85	83.4
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3	0	355	4	43	1	1	1	408	407.4	4	2	309	5	52	2	0	0	374	370.6
1	0	76	0	2	1	0	1	81	80.7	0	0	92	1	16	1	0	0	110	110.5
0	0	86	1	6	1	0	1	95	95.5	0	1	97	0	14	1	0	0	113	112.9
0	0	63	2	14	0	0	0	79	79	0	1	120	3	6	0	0	0	130	129.4
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1	0	297	4	27	3	0	2	334	334.7	0	2	389	6	42	4	0	0	443	443.8
14	6	2949	64	407	47	8	19	3514	3533.1	20	11	3278	84	540	66	13	4	4016	4043.3

B => B										B => C									
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
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0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	4	4
0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4
0	0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0	6	5.2
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0	0	9	0	0	0	0	0	9	9	1	1	105	8	5	0	0	3	123	121.6
0	0	1	0	0	0	0	0	1	1	0	0	28	1	1	1	0	0	31	31.5
0	0	0	0	0	0	0	0	0	0	0	1	23	0	1	0	0	1	26	25.4
0	0	0	0	0	0	0	0	0	0	0	0	20	1	1	0	0	0	22	22
0	0	1	0	0	0	0	0	1	1	0	0	23	1	1	0	0	0	25	25
0	0	2	0	0	0	0	0	2	2	0	1	94	3	4	1	0	1	104	103.9
0	0	1	0	0	0	0	0	1	1	0	0	16	0	2	1	0	1	20	20.5
0	0	2	0	0	0	0	0	2	2	2	0	19	0	1	0	0	0	22	20.4
0	0	3	0	0	0	0	0	3	3	0	0	30	0	1	0	0	0	31	31
0	0	9	0	0	0	0	0	9	9	0	0	37	0	1	1	0	0	39	39.5
0	0	15	0	0	0	0	0	15	15	2	0	102	0	5	2	0	1	112	111.4
0	0	4	0	0	0	0	0	4	4	0	0	13	0	0	0	0	1	14	14
0	0	5	0	0	0	0	0	5	5	0	0	29	2	1	0	0	0	32	32
0	0	6	0	0	0	0	0	6	6	0	0	33	1	3	0	0	0	37	37
0	0	4	0	0	0	0	0	4	4	0	1	45	1	0	0	0	0	47	46.4
0	0	19	0	0	0	0	0	19	19	0	1	120	4	4	0	0	1	130	129.4
0	0	0	0	0	0	0	0	0	0	0	0	30	1	5	0	0	1	37	37
0	0	0	0	0	0	0	0	0	0	0	0	14	1	1	0	0	0	16	16
0	0	0	0	0	0	0	0	0	0	0	0	13	1	3	0	0	0	17	17
0	0	1	0	0	0	0	0	1	1	0	0	18	1	0	1	0	0	20	20.5
0	0	1	0	0	0	0	0	1	1	0	0	75	4	9	1	0	1	90	90.5
0	0	0	0	0	0	0	0	0	0	0	0	24	1	1	0	0	1	27	27
0	0	0	0	0	0	0	0	0	0	0	0	13	1	3	0	0	0	17	17
0	0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0	6	5.2
0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	6	6
0	0	0	0	0	0	0	0	0	0	1	0	48	2	4	0	0	1	56	55.2
0	0	0	0	0	0	0	0	0	0	0	0	10	2	2	0	0	0	14	14
0	0	0	0	0	0	0	0	0	0	1	0	13	0	0	0	0	1	15	14.2
0	0	0	0	0	0	0	0	0	0	0	1	5	0	3	0	0	0	9	8.4
0	0	1	0	0	0	0	0	1	1	0	0	6	0	1	0	0	0	7	7
0	0	1	0	0	0	0	0	1	1	1	1	34	2	6	0	0	1	45	43.6
0	0	2	0	0	0	0	0	2	2	1	0	6	1	0	0	0	0	8	7.2
0	0	1	0	0	0	0	0	1	1	0	0	8	2	0	0	0	0	10	10
0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	1	11	11
0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	20	20
0	0	3	0	0	0	0	0	3	3	1	0	44	3	0	0	0	1	49	48.2
0	0	67	1	0	0	0	0	68	68	9	5	879	32	69	8	0	12	1014	1007.8

C => A										C => B									
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	66	1	12	0	0	0	79	79	0	0	1	0	1	0	0	0	2	2
0	0	60	1	14	0	0	0	75	75	0	0	2	0	0	0	0	1	3	3
0	0	69	0	4	1	0	0	74	74.5	1	0	0	0	0	0	0	0	1	0.2
1	0	75	0	10	1	0	0	87	86.7	0	0	2	0	1	0	0	0	3	3
1	0	270	2	40	2	0	0	315	315.2	1	0	5	0	2	0	0	1	9	8.2
2	0	78	3	4	0	0	1	88	86.4	0	0	3	0	0	0	0	1	4	4
0	0	80	1	5	0	0	0	86	86	0	0	14	0	1	0	0	0	15	15
1	0	77	2	9	1	0	0	90	89.7	0	0	28	0	2	0	0	0	30	30
1	0	88	1	7	0	1	1	99	99.5	0	0	24	0	2	1	0	0	27	27.5
4	0	323	7	25	1	1	2	363	361.6	0	0	69	0	5	1	0	1	76	76.5
1	0	77	1	3	0	0	1	83	82.2	0	0	12	0	0	0	0	0	12	12
0	0	89	0	17	1	1	0	108	109.8	0	0	14	1	2	0	0	1	18	18
1	0	69	1	7	3	0	2	83	83.7	0	0	12	0	0	0	0	0	12	12
0	0	57	2	8	1	0	1	69	69.5	0	0	7	1	1	0	0	0	9	9
2	0	292	4	35	5	1	4	343	345.2	0	0	45	2	3	0	0	1	51	51
1	0	61	0	6	2	0	0	70	70.2	0	0	17	0	2	0	0	0	19	19
0	1	65	2	11	3	1	0	83	85.2	0	0	18	0	1	0	0	1	20	20
0	0	45	0	5	2	0	1	53	54	0	0	13	0	0	1	0	0	14	14.5
0	0	52	2	10	4	0	1	69	71	0	0	30	0	4	0	0	0	34	34
1	1	223	4	32	11	1	2	275	280.4	0	0	78	0	7	1	0	1	87	87.5
0	0	40	3	5	1	0	0	49	49.5	0	0	11	0	1	0	0	0	12	12
0	0	44	0	9	2	0	0	55	56	0	0	13	2	1	1	0	1	18	18.5
0	0	57	1	4	3	0	0	65	66.5	0	0	16	0	2	0	0	0	18	18
0	1	36	2	9	1	1	0	50	51.2	0	0	30	2	0	0	0	0	32	32
0	1	177	6	27	7	1	0	219	223.2	0	0	70	4	4	1	0	1	80	80.5
1	0	34	0	8	1	1	1	46	47	0	0	18	0	1	0	0	0	19	19
0	0	43	1	8	1	0	2	55	55.5	0	1	13	0	3	0	0	1	18	17.4
0	1	52	0	8	2	0	0	63	63.4	0	0	27	0	0	1	0	0	28	28.5
0	0	51	0	3	0	0	0	54	54	0	0	26	1	1	0	0	0	28	28
1	1	180	1	27	4	1	3	218	219.9	0	1	84	1	5	1	0	1	93	92.9
0	0	50	0	4	0	0	0	54	54	0	0	14	0	3	1	0	0	18	18.5
0	0	48	1	9	2	0	0	60	61	0	0	18	1	0	0	0	1	20	20
1	0	47	1	9	0	0	1	59	58.2	0	0	21	0	2	0	0	0	23	23
0	0	57	1	7	4	0	0	69	71	0	0	18	1	1	0	0	0	20	20
1	0	202	3	29	6	0	1	242	244.2	0	0	71	2	6	1	0	1	81	81.5
1	0	48	1	11	1	0	1	63	62.7	0	1	22	1	1	0	0	0	25	24.4
0	0	40	3	5	1	0	0	49	49.5	0	0	17	0	0	2	0	1	20	21
0	0	46	2	6	2	0	2	58	59	0	2	26	0	0	1	0	0	29	28.3
1	2	61	3	5	0	1	2	75	74.3	0	1	17	0	1	0	0	0	19	18.4
2	2	195	9	27	4	1	5	245	245.5	0	4	82	1	2	3	0	1	93	92.1
0	0	41	3	6	0	0	0	50	50	0	0	19	0	2	0	0	0	21	21
1	0	62	4	11	1	0	0	79	78.7	0	0	20	0	2	0	0	1	23	23
0	0	56	2	13	1	0	0	72	72.5	0	0	11	0	2	0	0	0	13	13
0	0	40	1	12	0	0	0	53	53	0	0	19	2	1	0	0	0	22	22
1	0	199	10	42	2	0	0	254	254.2	0	0	69	2	7	0	0	1	79	79
1	1	59	2	7	0	0	1	71	69.6	0	0	10	0	0	0	0	0	10	10
0	0	80	4	11	4	0	0	99	101	0	0	9	0	3	0	0	1	13	13
0	0	83	1	11	1	0	0	96	96.5	0	0	13	0	0	0	0	0	13	13
0	0	86	2	12	1	0	0	101	101.5	0	0	16	0	0	0	0	0	16	16
1	1	308	9	41	6	0	1	367	368.6	0	0	48	0	3	0	0	1	52	52
0	0	71	0	11	0	0	1	83	83	0	0	14	0	1	0	0	0	15	15
0	0	85	2	10	1	0	0	98	98.5	0	0	8	0	0	0	0	0	8	8
0	0	97	1	8	1	0	0	107	107.5	0	0	8	0	2	0	0	1	11	11
0	0	72	1	7	1	0	0	81	81.5	0	0	18	0	1	0	0	0	19	19
0	0	325	4	36	3	0	1	369	370.5	0	0	48	0	4	0	0	1	53	53
0	0	67	1	7	1	0	1	77	77.5	1	0	14	0	0	1	0	0	16	15.7
1	0	76	0	10	2	0	0	89	89.2	0	0	14	0	1	0	0	0	15	15
1	1	60	1	11	0	0	0	74	72.6	0	0	13	0	1	0	0	0	14	14
0	0	63	1	6	0	0	0	70	70	0	0	6	0	0	0	0	0	6	6
2	1	266	3	34	3	0	1	310	309.3	1	0	47	0	2	1	0	0	51	50.7
16	7	2960	62	395	54	6	20	3520	3537.8	2	5	716	12	50	9	0	11	805	804.9

C => C									
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	0	2	2
0	0	1	0	0	0	0	0	1	1
0	0	3	0	0	0	0	0	3	3
0	0	6	0	0	0	0	0	6	6
0	0	3	0	0	0	0	0	3	3
0	0	3	0	0	0	0	0	3	3
0	0	1	0	0	0	0	0	1	1
0	0	5	0	0	0	0	0	5	5
0	0	12	0	0	0	0	0	12	12
0	0	4	0	0	0	0	0	4	4
0	0	7	0	0	0	0	0	7	7
0	0	10	0	0	0	0	0	10	10
0	0	10	0	1	0	0	0	11	11
0	0	31	0	1	0	0	0	32	32
0	0	10	0	1	0	0	0	11	11
0	0	13	0	2	0	0	0	15	15
0	0	15	0	0	0	0	0	15	15
0	0	9	0	0	0	0	0	9	9
0	0	47	0	3	0	0	0	50	50
0	0	10	0	0	0	0	0	10	10
0	0	5	0	1	0	0	0	6	6
0	0	10	0	0	0	0	0	10	10
0	0	5	0	1	0	0	0	6	6
0	0	4	0	0	0	0	0	4	4
0	0	3	1	0	0	0	0	4	4
0	0	22	1	1	0	0	0	24	24
0	0	2	0	1	0	0	0	3	3
0	0	8	1	0	0	0	0	9	9
0	0	6	0	0	0	0	0	6	6
0	0	3	0	0	1	0	0	4	4.5
0	0	19	1	1	1	0	0	22	22.5
0	0	4	0	0	0	0	0	4	4
0	0	5	0	1	0	0	0	6	6
0	0	5	0	1	0	0	0	6	6
0	0	4	0	0	0	0	0	4	4
0	0	18	0	2	0	0	0	20	20
0	0	11	0	1	0	0	0	12	12
0	0	10	0	0	0	0	0	10	10
0	0	7	0	1	0	0	0	8	8
0	0	4	0	0	0	0	0	4	4
0	0	32	0	2	0	0	0	34	34
0	0	6	0	1	0	0	0	7	7
0	0	2	0	0	0	0	0	2	2
0	0	3	0	0	0	0	0	3	3
0	0	2	1	0	0	0	0	3	3
0	0	13	1	1	0	0	0	15	15
0	0	1	1	0	0	0	0	2	2
0	0	1	0	1	0	0	0	2	2
0	0	2	0	1	0	0	0	3	3
0	0	2	0	1	0	0	0	3	3
0	0	1	0	0	0	0	0	1	1
0	0	5	1	2	0	0	0	8	8
0	0	1	0	0	0	0	0	1	1
0	0	1	0	0	0	0	0	1	1
0	0	1	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	0	3	3
0	0	208	4	13	1	0	0	226	226.5

Idaso

Survey Name: HDR 22 040 Lucan
Site: JTC 9
Location: Westmanstown Road Junction
Date: Thu 14-Feb-2019

	A => A									A => B								
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	27	1	0	0	0	28	28
07:30	0	0	0	0	0	0	0	0	0	0	0	31	1	1	0	0	33	33.5
07:45	0	0	0	0	0	0	0	0	0	0	0	52	4	0	0	1	57	57
H/TOT	0	0	0	0	0	0	0	0	0	0	0	110	6	1	0	1	118	118.5
08:00	0	0	0	0	0	0	0	0	0	0	0	67	16	0	0	0	83	83
08:15	0	0	0	0	0	0	0	0	0	0	0	58	6	0	0	0	64	64
08:30	0	0	0	0	0	0	0	0	0	0	0	61	4	1	0	0	66	66.5
08:45	0	0	0	0	0	0	0	0	0	0	0	65	3	2	0	0	70	71
H/TOT	0	0	0	0	0	0	0	0	0	0	0	251	29	3	0	0	283	284.5
09:00	0	0	0	0	0	0	0	0	0	0	0	36	5	0	0	0	41	41
09:15	0	0	0	0	0	0	0	0	0	0	0	39	6	1	0	0	46	46.5
09:30	0	0	0	0	0	0	0	0	0	0	0	16	2	1	0	0	19	19.5
09:45	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	19	19
H/TOT	0	0	0	0	0	0	0	0	0	0	0	110	13	2	0	0	125	126
3 TOT	0	0	0	0	0	0	0	0	0	0	0	471	48	6	0	1	526	529

	A => A									A => B								
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	15	2	0	0	0	17	17
16:30	0	0	0	0	0	0	0	0	0	0	0	21	3	0	0	0	24	24
16:45	0	0	0	0	0	0	0	0	0	0	0	20	2	0	0	0	22	22
H/TOT	0	0	0	0	0	0	0	0	0	0	0	56	7	0	0	0	63	63
17:00	0	0	0	0	0	0	0	0	0	1	0	17	1	0	0	0	19	18.2
17:15	0	0	0	0	0	0	0	0	0	0	0	20	3	0	0	0	23	23
17:30	0	0	0	0	0	0	0	0	0	0	0	14	2	0	0	0	16	16
17:45	0	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0	22	22
H/TOT	0	0	0	0	0	0	0	0	0	1	0	73	6	0	0	0	80	79.2
18:00	0	0	0	0	0	0	0	0	0	0	0	27	3	0	0	0	30	30
18:15	0	0	0	0	0	0	0	0	0	0	0	27	1	0	0	0	28	28
18:30	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	19	19
18:45	0	0	0	0	0	0	0	0	0	0	0	19	1	0	0	0	20	20
H/TOT	0	0	0	0	0	0	0	0	0	0	0	92	5	0	0	0	97	97
3 TOT	0	0	0	0	0	0	0	0	0	1	0	221	18	0	0	0	240	239.2

A => C									B => A								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	108	22	0	0	0	131	130.4	0	0	14	1	0	0	0	15	15
0	0	119	25	0	0	0	144	144	0	0	9	0	0	0	0	9	9
1	1	84	22	0	0	1	109	107.6	0	0	17	1	0	0	0	18	18
1	2	311	69	0	0	1	384	382	0	0	40	2	0	0	0	42	42
0	1	81	13	1	0	0	96	95.9	0	0	22	1	0	0	0	23	23
0	0	95	17	0	0	0	112	112	0	0	24	1	0	0	0	25	25
0	1	65	8	1	1	0	76	77.2	0	0	18	4	0	0	0	22	22
0	0	49	8	4	0	0	61	63	0	0	16	3	0	0	0	19	19
0	2	290	46	6	1	0	345	348.1	0	0	80	9	0	0	0	89	89
0	0	44	12	0	1	0	57	58.3	0	0	14	2	0	0	0	16	16
0	0	48	4	0	1	1	54	55.3	0	0	13	6	0	0	0	19	19
0	0	52	9	0	0	0	61	61	0	0	8	1	0	0	0	9	9
0	0	43	9	2	1	0	55	57.3	0	0	10	3	0	0	0	13	13
0	0	187	34	2	3	1	227	231.9	0	0	45	12	0	0	0	57	57
1	4	788	149	8	4	2	956	962	0	0	165	23	0	0	0	188	188

A => C									B => A								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	51	7	1	0	1	60	60.5	0	0	27	1	0	0	1	29	29
0	0	60	8	0	0	0	68	68	0	0	28	4	0	0	0	32	32
0	0	51	8	1	0	0	60	60.5	0	0	31	4	0	0	0	35	35
0	0	162	23	2	0	1	188	189	0	0	86	9	0	0	1	96	96
0	0	61	9	0	1	0	71	72.3	0	1	38	7	0	0	0	46	45.4
0	0	53	11	0	0	0	64	64	0	0	45	8	0	0	0	53	53
0	0	60	4	0	0	0	64	64	0	0	55	1	0	0	0	56	56
0	0	45	2	0	0	0	47	47	0	0	64	11	0	0	0	75	75
0	0	219	26	0	1	0	246	247.3	0	1	202	27	0	0	0	230	229.4
0	0	48	5	0	0	0	53	53	0	0	41	4	0	0	0	45	45
0	0	70	5	0	0	0	75	75	0	0	39	6	0	0	0	45	45
0	0	66	4	0	0	0	70	70	0	1	29	4	0	0	0	34	33.4
0	0	47	1	0	0	0	48	48	0	1	28	0	1	0	0	30	29.9
0	0	231	15	0	0	0	246	246	0	2	137	14	1	0	0	154	153.3
0	0	612	64	2	1	1	680	682.3	0	3	425	50	1	0	1	480	478.7

B => B									B => C								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	12	4	0	0	0	16	16
0	0	0	0	0	0	0	0	0	0	0	12	2	0	0	0	14	14
0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	1	14	14
0	0	0	0	0	0	0	0	0	0	0	37	6	0	0	1	44	44
0	0	0	0	0	0	0	0	0	1	0	10	1	0	0	0	12	11.2
0	0	0	0	0	0	0	0	0	0	0	9	1	0	0	0	10	10
0	0	0	0	0	0	0	0	0	0	0	12	5	0	0	0	17	17
0	0	0	0	0	0	0	0	0	0	0	6	5	2	0	1	14	15
0	0	0	0	0	0	0	0	0	1	0	37	12	2	0	1	53	53.2
0	0	0	0	0	0	0	0	0	0	1	6	3	1	0	1	12	11.9
0	0	0	0	0	0	0	0	0	1	0	9	1	0	0	0	11	10.2
0	0	0	0	0	0	0	0	0	0	0	11	4	0	0	0	15	15
0	0	0	0	0	0	0	0	0	0	0	16	2	1	0	1	20	20.5
0	0	0	0	0	0	0	0	0	1	1	42	10	2	0	2	58	57.6
0	0	0	0	0	0	0	0	0	2	1	116	28	4	0	4	155	154.8

B => B									B => C								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	26	4	0	0	1	31	31
0	0	0	0	0	0	0	0	0	0	0	18	3	0	0	0	21	21
0	0	0	0	0	0	0	0	0	0	0	12	4	1	0	1	18	18.5
0	0	0	0	0	0	0	0	0	0	0	56	11	1	0	2	70	70.5
0	0	0	0	0	0	0	0	0	0	0	28	5	0	0	0	33	33
0	0	0	0	0	0	0	0	0	0	0	14	7	0	1	0	22	23.3
0	0	0	0	0	0	0	0	0	0	0	13	1	0	0	0	14	14
0	0	0	0	0	0	0	0	0	0	0	18	2	0	0	1	21	21
0	0	0	0	0	0	0	0	0	0	0	73	15	0	1	1	90	91.3
0	0	0	0	0	0	0	0	0	0	0	10	3	0	0	0	13	13
0	0	0	0	0	0	0	0	0	0	0	15	2	0	0	0	17	17
0	0	0	0	0	0	0	0	0	0	0	17	4	0	0	0	21	21
0	0	0	0	0	0	0	0	0	0	0	16	2	0	0	1	19	19
0	0	0	0	0	0	0	0	0	0	0	58	11	0	0	1	70	70
0	0	0	0	0	0	0	0	0	0	0	187	37	1	1	4	230	231.8

C => A									C => B								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	51	9	0	1	0	61	62.3	0	0	14	9	0	0	0	23	23
0	0	60	10	0	0	1	71	71	0	0	25	2	0	0	1	28	28
0	0	70	9	1	0	0	80	80.5	0	0	30	5	0	0	0	35	35
0	0	181	28	1	1	1	212	213.8	0	0	69	16	0	0	1	86	86
0	0	45	4	1	0	0	50	50.5	0	0	48	3	0	0	0	51	51
0	0	47	2	0	0	0	49	49	1	1	29	4	1	0	0	36	35.1
0	0	59	3	0	0	0	62	62	0	0	29	2	1	0	1	33	33.5
0	0	46	2	0	0	1	49	49	0	0	28	3	0	0	0	31	31
0	0	197	11	1	0	1	210	210.5	1	1	134	12	2	0	1	151	150.6
0	0	32	11	0	1	0	44	45.3	0	0	17	3	0	0	0	20	20
0	0	33	11	0	1	0	45	46.3	0	0	21	3	1	1	0	26	27.8
0	0	43	9	0	0	0	52	52	0	1	22	5	1	0	2	31	30.9
0	0	30	6	2	0	0	38	39	0	0	25	6	2	0	0	33	34
0	0	138	37	2	2	0	179	182.6	0	1	85	17	4	1	2	110	112.7
0	0	516	76	4	3	2	601	606.9	1	2	288	45	6	1	4	347	349.3

C => A									C => B								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	58	15	0	0	0	75	73.6	0	0	23	2	0	0	0	25	25
0	0	68	16	2	0	1	87	88	0	0	26	3	1	0	1	31	31.5
0	0	82	25	2	0	0	109	110	0	1	33	5	0	0	0	39	38.4
1	1	208	56	4	0	1	271	271.6	0	1	82	10	1	0	1	95	94.9
0	0	59	13	0	0	0	72	72	0	0	20	7	1	0	0	28	28.5
0	0	74	15	0	1	0	90	91.3	0	0	41	3	0	0	0	44	44
0	0	61	15	0	0	0	76	76	0	0	39	2	0	0	0	41	41
0	0	61	7	0	0	0	68	68	0	0	22	1	0	0	1	24	24
0	0	255	50	0	1	0	306	307.3	0	0	122	13	1	0	1	137	137.5
0	0	71	11	0	0	0	82	82	1	1	26	4	0	0	0	32	30.6
0	1	68	12	0	0	0	81	80.4	1	0	24	3	0	0	0	28	27.2
0	0	55	14	0	0	0	69	69	0	0	34	2	0	0	1	37	37
0	0	61	9	1	0	0	71	71.5	0	0	26	2	0	0	0	28	28
0	1	255	46	1	0	0	303	302.9	2	1	110	11	0	0	1	125	122.8
1	2	718	152	5	1	1	880	881.8	2	2	314	34	2	0	3	357	355.2

C => C								
P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

C => C								
P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

Idaso

Survey Name: HDR 22 040 Lucan
Site: JTC 43
Location: Laraghcon/R109/Barnhill Cross Roads Junction
Date: Thu 14-Feb-2019

	A => A									A => B								
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	3.3
07:30	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	4	4.5
07:45	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3
H/TOT	0	0	0	0	0	0	0	0	0	0	0	6	1	1	1	0	9	10.8
08:00	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2
08:15	0	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	6	6
08:30	0	0	0	0	0	0	0	0	0	0	0	9	1	0	0	0	10	10
08:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	5
H/TOT	0	0	0	0	0	0	0	0	0	0	0	19	4	0	0	0	23	23
09:00	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4
09:15	0	0	0	0	0	0	0	0	0	0	0	5	0	2	0	0	7	8
09:30	0	0	0	0	0	0	0	0	0	0	0	7	1	0	0	0	8	8
09:45	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	4	4.5
H/TOT	0	0	0	0	0	0	0	0	0	0	0	18	2	3	0	0	23	24.5
3 TOT	0	0	0	0	0	0	0	0	0	0	0	43	7	4	1	0	55	58.3

	A => A									A => B								
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	3
16:30	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	5	5
16:45	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
H/TOT	0	0	0	0	0	0	0	0	0	0	0	8	2	0	0	0	10	10
17:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
17:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
17:30	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	8
17:45	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4	4
H/TOT	0	0	0	0	0	0	0	0	0	0	0	13	2	0	0	0	15	15
18:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
18:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
18:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
18:45	0	0	0	0	0	0	0	0	0	0	1	4	1	0	0	0	6	5.4
H/TOT	0	0	0	0	0	0	0	0	0	0	1	9	1	0	0	0	11	10.4
3 TOT	0	0	0	0	0	0	0	0	0	0	1	30	5	0	0	0	36	35.4

A => C									A => D								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	86	9	0	0	0	96	95.4	0	0	0	0	0	0	0	0	0
0	0	109	22	3	0	0	134	135.5	0	0	0	0	0	0	0	0	0
2	0	100	19	0	0	1	122	120.4	0	0	0	0	0	0	0	0	0
2	1	295	50	3	0	1	352	351.3	0	0	0	0	0	0	0	0	0
1	0	96	13	1	0	1	112	111.7	0	0	0	0	0	0	0	0	0
0	0	98	13	0	1	0	112	113.3	0	0	0	0	0	0	0	0	0
0	0	79	5	2	1	0	87	89.3	0	0	0	0	0	0	0	0	0
0	0	96	5	0	0	0	101	101	0	0	1	0	0	0	0	1	1
1	0	369	36	3	2	1	412	415.3	0	0	1	0	0	0	0	1	1
0	0	46	7	1	0	1	55	55.5	0	0	0	0	0	0	0	0	0
0	0	63	12	0	0	1	76	76	0	0	0	0	0	0	0	0	0
0	0	83	11	2	0	0	96	97	0	0	0	0	0	0	0	0	0
0	0	65	5	1	1	1	73	74.8	0	0	0	0	0	0	0	0	0
0	0	257	35	4	1	3	300	303.3	0	0	0	0	0	0	0	0	0
3	1	921	121	10	3	5	1064	1069.9	0	0	1	0	0	0	0	1	1

A => C									A => D								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	58	9	0	0	1	68	68	0	0	0	0	0	0	0	0	0
1	0	86	13	0	0	0	100	99.2	0	0	1	0	0	0	0	1	1
0	1	55	7	0	0	1	64	63.4	0	0	0	0	0	0	0	0	0
1	1	199	29	0	0	2	232	230.6	0	0	1	0	0	0	0	1	1
0	0	62	6	0	1	1	70	71.3	0	0	0	0	0	0	0	0	0
0	0	74	13	0	0	0	87	87	0	0	0	0	0	0	0	0	0
0	0	66	8	0	1	0	75	76.3	0	0	0	0	0	0	0	0	0
1	0	73	5	0	0	0	79	78.2	0	0	0	0	0	0	0	0	0
1	0	275	32	0	2	1	311	312.8	0	0	0	0	0	0	0	0	0
1	0	63	7	1	0	1	73	72.7	0	0	0	0	0	0	0	0	0
1	0	65	7	0	0	0	73	72.2	0	0	0	0	0	0	0	0	0
0	0	69	6	0	0	0	75	75	0	0	1	0	0	0	0	1	1
1	1	77	8	1	0	0	88	87.1	0	0	0	0	0	0	0	0	0
3	1	274	28	2	0	1	309	307	0	0	1	0	0	0	0	1	1
5	2	748	89	2	2	4	852	850.4	0	0	2	0	0	0	0	2	2

B => A									B => B								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	1	1.5	0	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0
0	0	1	1	1	0	0	3	3.5	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	4	0	0	1	0	5	6.3	0	0	0	0	0	0	0	0	0
0	0	1	1	2	0	0	4	5	0	0	0	0	0	0	0	0	0
0	0	5	1	2	1	0	9	11.3	0	0	0	0	0	0	0	0	0
1	0	3	0	1	0	0	5	4.7	0	0	0	0	0	0	0	0	0
0	0	1	2	0	0	0	3	3	0	0	0	0	0	0	0	0	0
0	0	3	1	2	0	0	6	7	0	0	0	0	0	0	0	0	0
0	0	1	0	1	0	0	2	2.5	0	0	0	0	0	0	0	0	0
1	0	8	3	4	0	0	16	17.2	0	0	0	0	0	0	0	0	0
1	0	14	5	7	1	0	28	32	0	0	0	0	0	0	0	0	0

B => A									B => B								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	8	3	0	0	0	11	11	0	0	0	0	0	0	0	0	0
0	0	6	3	0	0	0	9	9	0	0	0	0	0	0	0	0	0
0	0	4	2	0	0	0	6	6	0	0	0	0	0	0	0	0	0
0	0	18	8	0	0	0	26	26	0	0	0	0	0	0	0	0	0
0	0	7	1	0	0	0	8	8	0	0	0	0	0	0	0	0	0
0	0	13	2	0	0	0	15	15	0	0	0	0	0	0	0	0	0
0	0	10	4	0	0	0	14	14	0	0	0	0	0	0	0	0	0
0	0	11	2	0	0	0	13	13	0	0	0	0	0	0	0	0	0
0	0	41	9	0	0	0	50	50	0	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0
0	0	14	2	0	0	0	16	16	0	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0
0	0	10	1	1	0	0	12	12.5	0	0	0	0	0	0	0	0	0
0	0	36	3	1	0	0	40	40.5	0	0	0	0	0	0	0	0	0
0	0	95	20	1	0	0	116	116.5	0	0	0	0	0	0	0	0	0

B => C									B => D								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	72	25	4	0	0	102	103.2	0	0	0	0	0	0	0	0	0
1	0	72	12	0	0	0	85	84.2	0	0	0	0	0	0	0	0	0
0	0	108	28	0	1	0	137	138.3	0	0	0	0	0	0	0	0	0
2	0	252	65	4	1	0	324	325.7	0	0	0	0	0	0	0	0	0
0	0	90	13	2	0	0	105	106	0	0	0	0	0	0	0	0	0
0	0	78	12	1	0	0	91	91.5	0	0	0	0	0	0	0	0	0
0	1	76	11	0	1	1	90	90.7	0	0	0	0	0	0	0	0	0
0	0	67	8	0	0	1	76	76	0	0	0	0	0	0	0	0	0
0	1	311	44	3	1	2	362	364.2	0	0	0	0	0	0	0	0	0
1	0	62	10	1	0	0	74	73.7	0	0	0	0	0	0	0	0	0
0	0	60	17	1	2	0	80	83.1	0	0	0	0	0	0	0	0	0
0	1	60	12	2	0	0	75	75.4	1	0	0	0	0	0	0	1	0.2
1	1	57	11	0	0	0	70	68.6	0	0	0	0	0	0	0	0	0
2	2	239	50	4	2	0	299	300.8	1	0	0	0	0	0	0	1	0.2
4	3	802	159	11	4	2	985	990.7	1	0	0	0	0	0	0	1	0.2

B => C									B => D								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	113	18	0	0	0	132	131.4	0	0	0	0	0	0	0	0	0
0	0	94	19	0	0	0	113	113	0	0	0	0	0	0	0	0	0
0	0	117	23	1	0	0	141	141.5	0	0	0	0	0	0	0	0	0
0	1	324	60	1	0	0	386	385.9	0	0	0	0	0	0	0	0	0
1	1	132	24	2	1	0	161	161.9	0	0	0	0	0	0	0	0	0
0	0	134	15	1	1	0	151	152.8	0	0	1	0	0	0	0	1	1
0	0	147	16	0	0	0	163	163	0	0	1	0	0	0	0	1	1
2	0	132	10	0	0	0	144	142.4	0	0	0	1	0	0	0	1	1
3	1	545	65	3	2	0	619	620.1	0	0	2	1	0	0	0	3	3
0	0	100	6	2	0	0	108	109	0	0	2	0	0	0	0	2	2
1	0	115	8	0	0	0	124	123.2	0	0	1	0	0	0	0	1	1
0	0	95	6	0	0	0	101	101	0	0	0	0	0	0	0	0	0
1	1	98	9	0	0	0	109	107.6	0	0	0	0	0	0	0	0	0
2	1	408	29	2	0	0	442	440.8	0	0	3	0	0	0	0	3	3
5	3	1277	154	6	2	0	1447	1446.8	0	0	5	1	0	0	0	6	6

C => A									C => B								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	84	20	0	0	0	104	104	0	0	82	15	0	1	0	98	99.3
0	0	74	19	0	0	1	94	94	0	1	71	9	1	0	0	82	81.9
0	0	70	11	2	0	1	84	85	0	0	85	19	0	0	0	104	104
0	0	228	50	2	0	2	282	283	0	1	238	43	1	1	0	284	285.2
0	1	65	7	1	0	0	74	73.9	2	0	110	14	0	0	1	127	125.4
0	0	66	7	0	0	0	73	73	2	1	88	13	1	0	0	105	103.3
0	0	60	10	0	0	0	70	70	1	0	65	6	1	0	0	73	72.7
0	0	34	6	1	0	0	41	41.5	0	0	77	5	1	0	0	83	83.5
0	1	225	30	2	0	0	258	258.4	5	1	340	38	3	0	1	388	384.9
0	0	66	7	1	0	0	74	74.5	2	0	69	13	5	1	0	90	92.2
0	0	86	9	3	0	1	99	100.5	2	0	68	8	1	0	0	79	77.9
0	0	60	7	2	0	0	69	70	0	1	76	9	0	0	0	86	85.4
0	0	52	6	3	0	0	61	62.5	1	0	72	10	3	0	0	86	86.7
0	0	264	29	9	0	1	303	307.5	5	1	285	40	9	1	0	341	342.2
0	1	717	109	13	0	3	843	848.9	10	3	863	121	13	2	1	1013	1012.3

C => A									C => B								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	2	109	28	0	0	0	140	138	0	0	45	13	0	1	0	59	60.3
0	0	87	13	0	0	2	102	102	1	0	58	7	0	1	0	67	67.5
0	1	100	20	0	0	0	121	120.4	1	1	61	16	1	0	0	80	79.1
1	3	296	61	0	0	2	363	360.4	2	1	164	36	1	2	0	206	206.9
1	0	102	18	1	0	0	122	121.7	0	0	51	8	1	0	0	60	60.5
0	0	83	8	1	0	0	92	92.5	1	0	54	9	0	0	0	64	63.2
0	0	106	11	0	0	0	117	117	0	0	58	7	0	0	0	65	65
0	0	107	13	0	0	1	121	121	0	0	55	5	0	0	0	60	60
1	0	398	50	2	0	1	452	452.2	1	0	218	29	1	0	0	249	248.7
0	1	80	8	0	0	0	89	88.4	1	0	71	3	0	0	0	75	74.2
1	0	118	13	0	0	0	132	131.2	1	0	66	9	1	0	0	77	76.7
0	0	117	11	1	1	1	131	132.8	0	0	76	4	1	0	0	81	81.5
0	1	123	11	0	0	0	135	134.4	0	0	54	6	0	0	0	60	60
1	2	438	43	1	1	1	487	486.8	2	0	267	22	2	0	0	293	292.4
3	5	1132	154	3	1	4	1302	1299.4	5	1	649	87	4	2	0	748	748

C => C									C => D								
P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	5
0	0	0	0	0	0	0	0	0	0	0	5	2	0	0	0	7	7

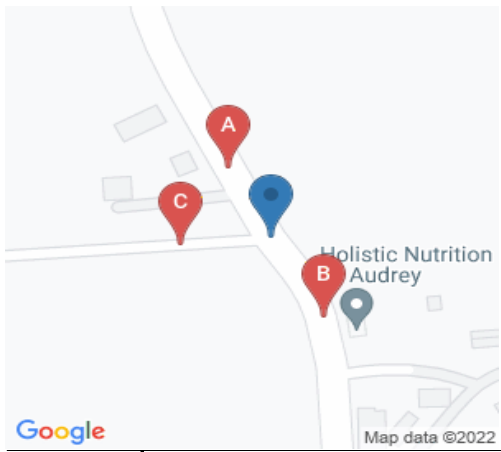
C => C									C => D								
P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	6	6
0	0	0	0	0	0	0	0	0	0	0	9	2	0	0	0	11	11

D => A									D => B								
P/C	**M/C**	**CAR**	**LGV**	**OGV1**	**OGV2**	**'SV(BUS**	**TOT**	**PCU**	**P/C**	**M/C**	**CAR**	**LGV**	**OGV1**	**OGV2**	**'SV(BUS**	**TOT**	**PCU**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
0	0	1	0	0	0	0	1	1	0	0	2	1	0	0	0	3	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	4	1	0	0	0	5	5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	3	0	0	4	1	0	0	0	5	5

D => A									D => B								
P/C	**M/C**	**CAR**	**LGV**	**OGV1**	**OGV2**	**'SV(BUS**	**TOT**	**PCU**	**P/C**	**M/C**	**CAR**	**LGV**	**OGV1**	**OGV2**	**'SV(BUS**	**TOT**	**PCU**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	1	1

D => C									D => D								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	15	0	0	0	0	15	15	0	0	0	0	0	0	0	0	0
0	1	29	7	0	0	0	37	36.4	0	0	0	0	0	0	0	0	0
0	1	26	4	0	0	0	31	30.4	0	0	0	0	0	0	0	0	0
0	2	70	11	0	0	0	83	81.8	0	0	0	0	0	0	0	0	0
0	0	21	6	0	0	0	27	27	0	0	0	0	0	0	0	0	0
0	0	24	0	0	0	0	24	24	0	0	0	0	0	0	0	0	0
0	0	13	0	0	0	0	13	13	0	0	0	0	0	0	0	0	0
0	0	11	1	0	0	0	12	12	0	0	0	0	0	0	0	0	0
0	0	69	7	0	0	0	76	76	0	0	0	0	0	0	0	0	0
0	0	5	1	0	0	0	6	6	0	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	15	1	0	0	0	16	16	0	0	0	0	0	0	0	0	0
0	2	154	19	0	0	0	175	173.8	0	0	0	0	0	0	0	0	0

D => C									D => D								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0
0	0	6	2	0	0	0	8	8	0	0	0	0	0	0	0	0	0
0	0	6	2	0	0	0	8	8	0	0	0	0	0	0	0	0	0
0	0	2	2	0	0	0	4	4	0	0	0	0	0	0	0	0	0
0	0	4	1	0	0	0	5	5	0	0	0	0	0	0	0	0	0
0	0	18	7	0	0	0	25	25	0	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0
0	0	5	1	0	0	0	6	6	0	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0
0	0	19	1	0	0	0	20	20	0	0	0	0	0	0	0	0	0
0	0	47	8	0	0	0	55	55	0	0	0	0	0	0	0	0	0



Idaso

Survey Name: HDR 22 040 Lucan
Site: JTC 44
Location: Laraghcon/Local Access road Junction
Date: Thu 14-Feb-2019

	A => A									A => B								
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	1	119	27	0	0	0	147	146.4
07:30	0	0	0	0	0	0	0	0	0	0	0	125	27	0	0	0	152	152
07:45	0	0	0	0	0	0	0	0	0	0	1	99	23	0	0	2	125	124.4
H/TOT	0	0	0	0	0	0	0	0	0	0	2	343	77	0	0	2	424	422.8
08:00	0	0	0	0	0	0	0	0	0	1	1	94	15	0	0	0	111	109.6
08:15	0	0	0	0	0	0	0	0	0	0	0	95	16	1	0	0	112	112.5
08:30	0	0	0	0	0	0	0	0	0	0	1	77	12	1	1	0	92	93.2
08:45	0	0	0	0	0	0	0	0	0	0	0	58	12	6	0	1	77	80
H/TOT	0	0	0	0	0	0	0	0	0	1	2	324	55	8	1	1	392	395.3
09:00	0	0	0	0	0	0	0	0	0	0	1	46	13	1	1	1	63	64.2
09:15	0	0	0	0	0	0	0	0	0	1	0	57	6	0	1	1	66	66.5
09:30	0	0	0	0	0	0	0	0	0	0	0	57	13	0	0	0	70	70
09:45	0	0	0	0	0	0	0	0	0	0	0	60	11	2	1	1	75	77.3
H/TOT	0	0	0	0	0	0	0	0	0	1	1	220	43	3	3	3	274	278
3 TOT	0	0	0	0	0	0	0	0	0	2	5	887	175	11	4	6	1090	1096.1

	A => A									A => B								
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	71	10	1	0	2	84	84.5
16:30	0	0	0	0	0	0	0	0	0	0	0	81	11	0	0	0	92	92
16:45	0	0	0	0	0	0	0	0	0	0	0	65	13	2	0	1	81	82
H/TOT	0	0	0	0	0	0	0	0	0	0	0	217	34	3	0	3	257	258.5
17:00	0	0	0	0	0	0	0	0	0	0	0	81	14	0	0	0	95	95
17:15	0	0	0	0	0	0	0	0	0	0	0	69	17	0	1	0	87	88.3
17:30	0	0	0	0	0	0	0	0	0	0	0	76	5	0	0	0	81	81
17:45	0	0	0	0	0	0	0	0	0	0	0	63	4	0	0	1	68	68
H/TOT	0	0	0	0	0	0	0	0	0	0	0	289	40	0	1	1	331	332.3
18:00	0	0	0	0	0	0	0	0	0	0	0	57	9	0	0	0	66	66
18:15	0	0	0	0	0	0	0	0	0	0	0	79	8	0	0	0	87	87
18:30	0	0	0	0	0	0	0	0	0	0	0	84	7	0	0	0	91	91
18:45	0	0	0	0	0	0	0	0	0	0	0	66	4	0	0	0	70	70
H/TOT	0	0	0	0	0	0	0	0	0	0	0	286	28	0	0	0	314	314
3 TOT	0	0	0	0	0	0	0	0	0	0	0	792	102	3	1	4	902	904.8

A => C									B => A								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	75	18	0	1	0	94	95.3
0	0	0	0	0	0	0	0	0	0	0	77	12	0	0	2	91	91
1	0	0	0	0	0	0	1	0.2	0	0	100	13	1	0	0	114	114.5
1	0	0	0	0	0	0	1	0.2	0	0	252	43	1	1	2	299	300.8
0	0	0	0	0	0	0	0	0	0	0	90	6	1	0	0	97	97.5
0	0	2	0	0	0	0	2	2	1	1	77	8	1	0	0	88	87.1
0	0	1	0	0	0	0	1	1	0	0	92	3	1	0	1	97	97.5
0	0	2	1	0	0	0	3	3	0	0	67	6	0	0	1	74	74
0	0	5	1	0	0	0	6	6	1	1	326	23	3	0	2	356	356.1
0	0	4	1	0	0	0	5	5	0	0	49	13	0	1	0	63	64.3
0	0	0	0	0	0	0	0	0	0	0	59	14	1	1	0	75	76.8
0	0	2	0	0	0	0	2	2	0	1	60	14	1	0	2	78	77.9
0	0	0	0	0	0	0	0	0	2	0	57	9	3	0	0	71	70.9
0	0	6	1	0	0	0	7	7	2	1	225	50	5	2	2	287	289.9
1	0	11	2	0	0	0	14	13.2	3	2	803	116	9	3	6	942	946.8

A => C									B => A								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	2	0	1	78	17	0	0	0	96	95.4
0	0	2	0	0	0	0	2	2	0	0	95	19	3	0	2	119	120.5
0	0	0	0	0	0	0	0	0	0	1	108	31	2	0	0	142	142.4
0	0	4	0	0	0	0	4	4	0	2	281	67	5	0	2	357	358.3
0	0	1	0	0	0	0	1	1	0	0	81	21	1	0	0	103	103.5
0	0	0	1	0	0	0	1	1	0	0	109	18	0	0	0	127	127
0	0	0	0	0	0	0	0	0	0	0	103	16	0	0	0	119	119
0	0	0	0	0	0	0	0	0	0	0	71	8	0	0	1	80	80
0	0	1	1	0	0	0	2	2	0	0	364	63	1	0	1	429	429.5
0	0	0	0	0	0	0	0	0	1	1	96	14	1	0	0	113	112.1
0	0	0	0	0	0	0	0	0	1	1	88	17	0	0	0	107	105.6
0	0	0	0	0	0	0	0	0	0	1	83	13	0	0	1	98	97.4
0	0	0	0	0	0	0	0	0	0	0	88	13	1	0	0	102	102.5
0	0	0	0	0	0	0	0	0	2	3	355	57	2	0	1	420	417.6
0	0	5	1	0	0	0	6	6	2	5	1000	187	8	0	4	1206	1205.4

B => B									B => C								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2
0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2
0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	3	2.2
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	1.2
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
0	0	0	0	0	0	0	0	0	1	0	3	1	0	0	0	5	4.2
0	0	0	0	0	0	0	0	0	3	0	4	2	0	0	0	9	6.6

B => B									B => C								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0.4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0.4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1	1	2	0	1	0	0	0	0	3	1.4

C => A									C => B								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.2
0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	0.6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
0	0	4	3	0	0	0	7	7	0	0	2	0	0	0	0	2	2
0	0	6	3	0	0	0	9	9	0	0	4	0	0	0	0	4	4
0	0	6	3	0	0	0	9	9	3	0	4	0	0	0	0	7	4.6

C => A									C => B								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU	P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	4	0	0	4	3	0	0	0	7	7
0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3
1	0	5	0	0	0	0	6	5.2	0	0	2	1	0	0	0	3	3
1	0	9	0	0	0	0	10	9.2	0	0	9	4	0	0	0	13	13
0	0	1	1	0	0	0	2	2	0	0	1	0	0	0	0	1	1
0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	6	1	0	0	0	7	7	0	0	1	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
1	0	16	1	0	0	0	18	17.2	0	0	10	4	0	0	0	14	14

C => C								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

C => C								
P/C	M/C	CAR	LGV	OGV1	OGV2	'SV(BUS	TOT	PCU
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

APPENDIX B TRAFFIC MODELLING RESULTS

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462

Filename: J1- Main Street Roundabout.j9
Path: N:\TIA\22054TT FingalDevPlan Submission\Traffic Modelling\05. Traffic Models\J1
Report generation date: 11/05/2022 14:14:50

Summary of junction performance

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
2018												
Arm A	D1	167.4	675.20	1.30	F	-31 % [Arm A]	D2	85.6	354.04	1.18	F	-24 % [Arm A]
Arm B		2.1	16.91	0.68	C			2.6	20.86	0.73	C	
Arm C		0.9	8.98	0.47	A			1.6	12.31	0.62	B	
2022												
Arm A	D3	227.0	921.88	1.38	F	-35 % [Arm A]	D4	123.7	528.23	1.25	F	-28 % [Arm A]
Arm B		2.5	19.26	0.72	C			3.2	24.66	0.77	C	
Arm C		1.0	9.78	0.51	A			1.9	14.18	0.67	B	
2029												
Arm A	D5	359.3	1480.86	1.52	F	-42 % [Arm A]	D6	223.0	927.87	1.39	F	-35 % [Arm A]
Arm B		3.7	26.12	0.80	D			5.2	36.84	0.85	E	
Arm C		1.3	11.76	0.58	B			3.0	20.02	0.76	C	

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	Fingal Development Plan Submission
Location	Lucan
Site number	
Date	09/05/2022
Version	
Status	
Identifier	
Client	
Jobnumber	22054TT
Enumerator	COB
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	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2018	AM	ONE HOUR	07:00	08:30	15
D2	2018	PM	ONE HOUR	17:00	18:30	15
D3	2022	AM	ONE HOUR	07:00	08:30	15
D4	2022	PM	ONE HOUR	17:00	18:30	15
D5	2029	AM	ONE HOUR	07:00	08:30	15
D6	2029	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2018, 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	R109/Chapel Hill/Main St	Standard Roundabout		A, B, C	398.21	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-31	Arm A

Arms

Arms

Arm	Name	Description
A	R109	
B	Chapel Hill	
C	Main Street	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
A	3.00	3.50	5.0	8.0	18.0	45.0	
B	3.50	4.00	10.0	3.0	18.0	45.0	
C	2.70	4.00	25.0	8.0	18.0	50.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
A	0.459	895
B	0.376	799
C	0.474	991

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)
D1	2018	AM	ONE HOUR	07:00	08:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	1021	100.000
B		✓	412	100.000
C		✓	323	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	675	346
	B	394	0	18
	C	315	8	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A	1.30	675.20	167.4	F
B	0.68	16.91	2.1	C
C	0.47	8.98	0.9	A

Main Results for each time segment

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	769	6	867	0.887	744	6.1	25.793	D
B	310	252	681	0.455	307	0.8	9.541	A
C	243	293	823	0.295	242	0.4	6.174	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	918	7	866	1.060	844	24.5	79.840	F
B	370	286	668	0.554	369	1.2	11.955	B
C	290	353	795	0.365	290	0.6	7.118	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1124	9	865	1.299	864	89.5	248.122	F
B	454	293	666	0.681	450	2.0	16.449	C
C	356	431	758	0.469	354	0.9	8.895	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1124	9	865	1.299	865	154.3	514.778	F
B	454	293	666	0.681	453	2.1	16.913	C
C	356	434	757	0.470	356	0.9	8.977	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	918	7	866	1.060	866	167.4	675.204	F
B	370	293	666	0.556	374	1.3	12.455	B
C	290	357	793	0.366	292	0.6	7.198	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	769	6	867	0.887	861	144.2	651.652	F
B	310	292	666	0.466	312	0.9	10.205	B
C	243	298	821	0.296	244	0.4	6.248	A

2018, 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	R109/Chapel Hill/Main St	Standard Roundabout		A, B, C	189.82	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-24	Arm 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)
D2	2018	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	895	100.000
B		✓	416	100.000
C		✓	432	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	1	487	407
	B	371	1	44
	C	371	53	8

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A	1.18	354.04	85.6	F
B	0.73	20.86	2.6	C
C	0.62	12.31	1.6	B

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	674	46	848	0.795	660	3.5	17.987	C
B	313	307	661	0.474	310	0.9	10.162	B
C	325	278	830	0.392	323	0.6	7.055	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	805	56	844	0.954	778	10.1	42.983	E
B	374	362	640	0.584	372	1.4	13.344	B
C	388	334	804	0.483	387	0.9	8.614	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	985	68	838	1.176	832	48.5	140.487	F
B	458	388	630	0.727	454	2.5	19.889	C
C	476	407	769	0.618	473	1.6	12.041	B

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	985	68	838	1.176	837	85.6	297.847	F
B	458	390	629	0.728	458	2.6	20.864	C
C	476	410	768	0.620	476	1.6	12.308	B

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	805	56	844	0.954	834	78.3	354.041	F
B	374	387	630	0.593	378	1.5	14.512	B
C	388	339	801	0.485	391	1.0	8.825	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	674	47	848	0.795	837	37.5	252.091	F
B	313	388	630	0.497	315	1.0	11.503	B
C	325	283	828	0.393	326	0.7	7.196	A

2022, 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	R109/Chapel Hill/Main St	Standard Roundabout		A, B, C	542.38	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-35	Arm 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)
D3	2022	AM	ONE HOUR	07:00	08:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	1081	100.000
B		✓	436	100.000
C		✓	342	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	715	366
	B	417	0	19
	C	334	8	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A	1.38	921.88	227.0	F
B	0.72	19.26	2.5	C
C	0.51	9.78	1.0	A

Main Results for each time segment

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	814	6	867	0.939	778	8.8	33.156	D
B	328	264	677	0.485	325	0.9	10.120	B
C	257	310	815	0.316	256	0.5	6.417	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	972	7	866	1.122	856	37.9	112.504	F
B	392	290	667	0.588	390	1.4	12.913	B
C	307	373	785	0.392	307	0.6	7.513	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1190	9	865	1.376	865	119.2	336.214	F
B	480	293	666	0.721	476	2.4	18.541	C
C	377	455	746	0.505	375	1.0	9.658	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1190	9	865	1.376	865	200.5	671.817	F
B	480	293	666	0.721	480	2.5	19.262	C
C	377	459	745	0.506	376	1.0	9.776	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	972	7	866	1.122	866	227.0	894.478	F
B	392	293	666	0.589	396	1.5	13.545	B
C	307	379	783	0.393	309	0.7	7.621	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	814	6	867	0.939	863	214.8	921.877	F
B	328	292	666	0.493	330	1.0	10.781	B
C	257	316	812	0.317	258	0.5	6.507	A

2022, 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	R109/Chapel Hill/Main St	Standard Roundabout		A, B, C	280.67	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-28	Arm 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)
D4	2022	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	948	100.000
B		✓	441	100.000
C		✓	457	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	1	516	431
	B	393	1	47
	C	393	56	8

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A	1.25	528.23	123.7	F
B	0.77	24.66	3.2	C
C	0.67	14.18	1.9	B

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	714	49	847	0.843	695	4.6	21.673	C
B	332	323	655	0.507	328	1.0	10.898	B
C	344	294	823	0.418	341	0.7	7.433	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	852	58	843	1.011	805	16.3	60.727	F
B	396	374	635	0.624	394	1.6	14.778	B
C	411	353	795	0.517	409	1.0	9.310	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1044	71	837	1.248	834	68.7	195.650	F
B	486	389	630	0.771	480	3.0	23.108	C
C	503	429	759	0.663	500	1.9	13.734	B

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1044	72	836	1.248	836	120.7	415.469	F
B	486	390	629	0.771	485	3.2	24.664	C
C	503	434	756	0.665	503	1.9	14.182	B

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	852	59	842	1.012	840	123.7	528.230	F
B	396	390	629	0.630	402	1.8	16.222	C
C	411	360	791	0.519	414	1.1	9.628	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	714	49	847	0.843	840	92.1	463.505	F
B	332	389	630	0.527	335	1.1	12.297	B
C	344	300	820	0.420	346	0.7	7.613	A

2029, 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	R109/Chapel Hill/Main St	Standard Roundabout		A, B, C	869.72	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-42	Arm 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)
D5	2029	AM	ONE HOUR	07:00	08:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	1196	100.000
B		✓	482	100.000
C		✓	378	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	791	405
	B	461	0	21
	C	369	9	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A	1.52	1480.86	359.3	F
B	0.80	26.12	3.7	D
C	0.58	11.76	1.3	B

Main Results for each time segment

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	900	7	866	1.039	823	19.2	55.572	F
B	363	279	671	0.541	358	1.1	11.352	B
C	285	343	800	0.356	282	0.5	6.931	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1075	8	866	1.242	863	72.2	202.433	F
B	433	292	666	0.651	431	1.8	15.131	C
C	340	412	767	0.443	339	0.8	8.393	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1317	10	865	1.523	865	185.3	543.537	F
B	531	293	666	0.797	524	3.5	24.212	C
C	416	501	725	0.574	414	1.3	11.515	B

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1317	10	865	1.523	865	298.3	1012.040	F
B	531	293	666	0.797	530	3.7	26.122	D
C	416	507	722	0.577	416	1.3	11.762	B

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1075	8	866	1.242	866	350.7	1354.901	F
B	433	293	666	0.651	440	1.9	16.422	C
C	340	421	763	0.446	342	0.8	8.602	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	900	7	866	1.040	866	359.3	1480.862	F
B	363	293	666	0.545	366	1.2	12.117	B
C	285	350	796	0.357	286	0.6	7.065	A

2029, 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	R109/Chapel Hill/Main St	Standard Roundabout		A, B, C	489.97	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-35	Arm 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)
D6	2029	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	1048	100.000
B		✓	488	100.000
C		✓	506	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	1	570	477
	B	435	1	52
	C	435	62	9

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
A	1.39	927.87	223.0	F
B	0.85	36.84	5.2	E
C	0.76	20.02	3.0	C

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	789	54	845	0.934	755	8.4	32.904	D
B	367	351	644	0.571	362	1.3	12.567	B
C	381	324	808	0.471	377	0.9	8.290	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	942	64	840	1.122	829	36.7	112.633	F
B	439	386	631	0.696	435	2.2	18.084	C
C	455	390	777	0.585	453	1.4	11.025	B

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1154	78	833	1.385	833	117.0	341.655	F
B	537	390	629	0.854	527	4.7	32.164	D
C	557	472	739	0.754	551	2.8	18.646	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	1154	79	833	1.385	833	197.2	683.952	F
B	537	390	629	0.854	536	5.2	36.842	E
C	557	479	735	0.758	557	3.0	20.024	C

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	942	66	839	1.123	839	223.0	905.039	F
B	439	391	629	0.698	450	2.5	21.123	C
C	455	402	771	0.590	461	1.5	11.813	B

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	789	55	844	0.935	840	210.1	927.872	F
B	367	390	629	0.584	371	1.5	14.170	B
C	381	333	804	0.474	383	0.9	8.593	A

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462

Filename: J3 - T junction.j9
Path: N:\TIA\22054TT FingalDevPlan Submission\Traffic Modelling\05. Traffic Models\J3
Report generation date: 11/05/2022 14:18:32

Summary of junction performance

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
	2018											
Stream B-AC	D1	0.7	17.45	0.43	C	27 %	D2	6.8	75.41	0.91	F	-12 %
Stream C-AB		0.8	11.24	0.39	B	[Stream B-AC]		0.5	8.34	0.30	A	[Stream B-AC]
	2022											
Stream B-AC	D3	0.9	19.55	0.47	C	20 %	D4	12.4	123.95	0.99	F	-17 %
Stream C-AB		0.9	11.82	0.42	B	[Stream B-AC]		0.6	8.48	0.32	A	[Stream B-AC]
	2029											
Stream B-AC	D5	1.3	25.53	0.57	D	9 %	D6	34.9	294.51	1.16	F	-25 %
Stream C-AB		1.2	13.11	0.48	B	[Stream B-AC]		0.7	8.76	0.36	A	[Stream B-AC]

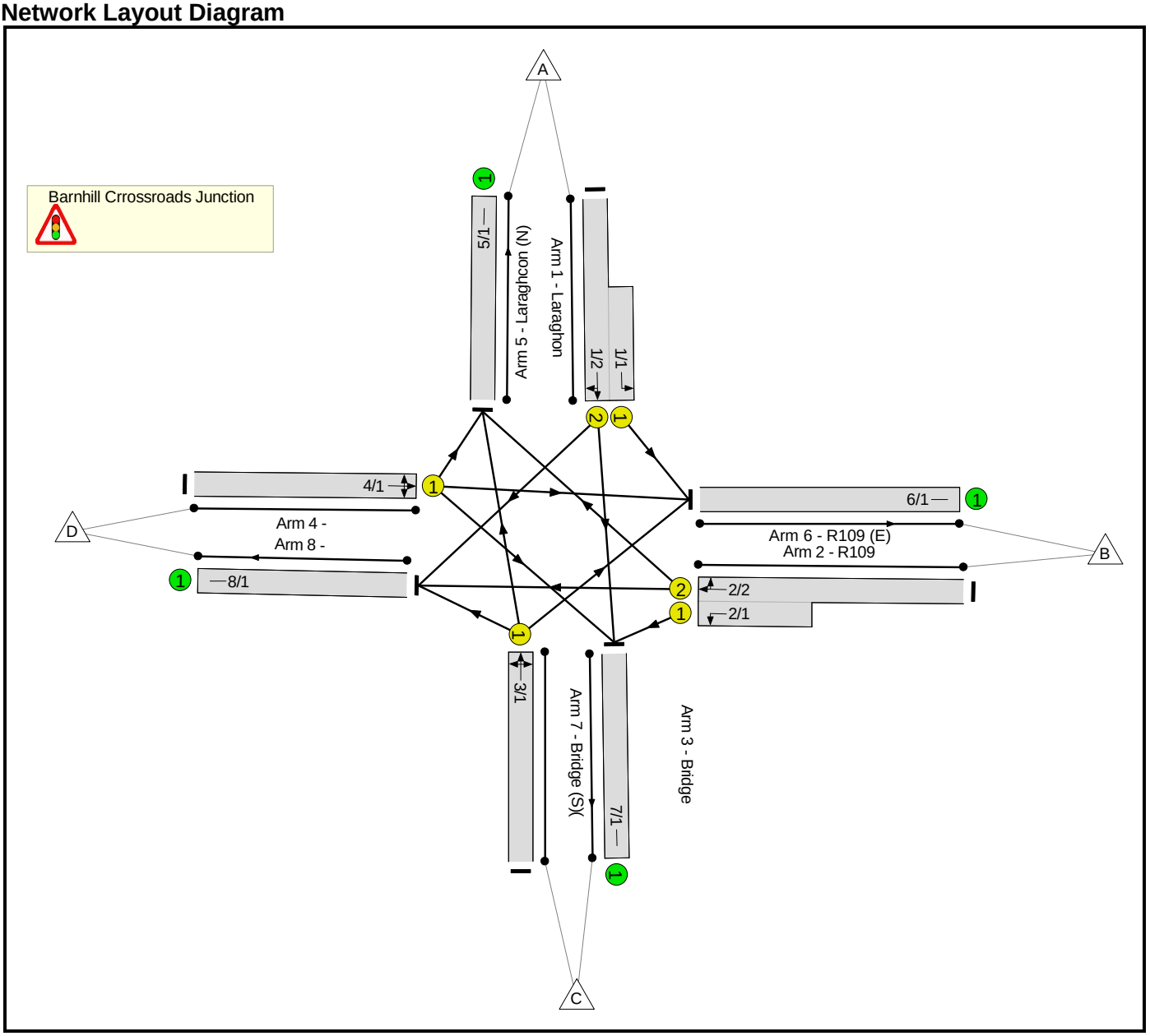
Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

Full Input Data And Results

User and Project Details

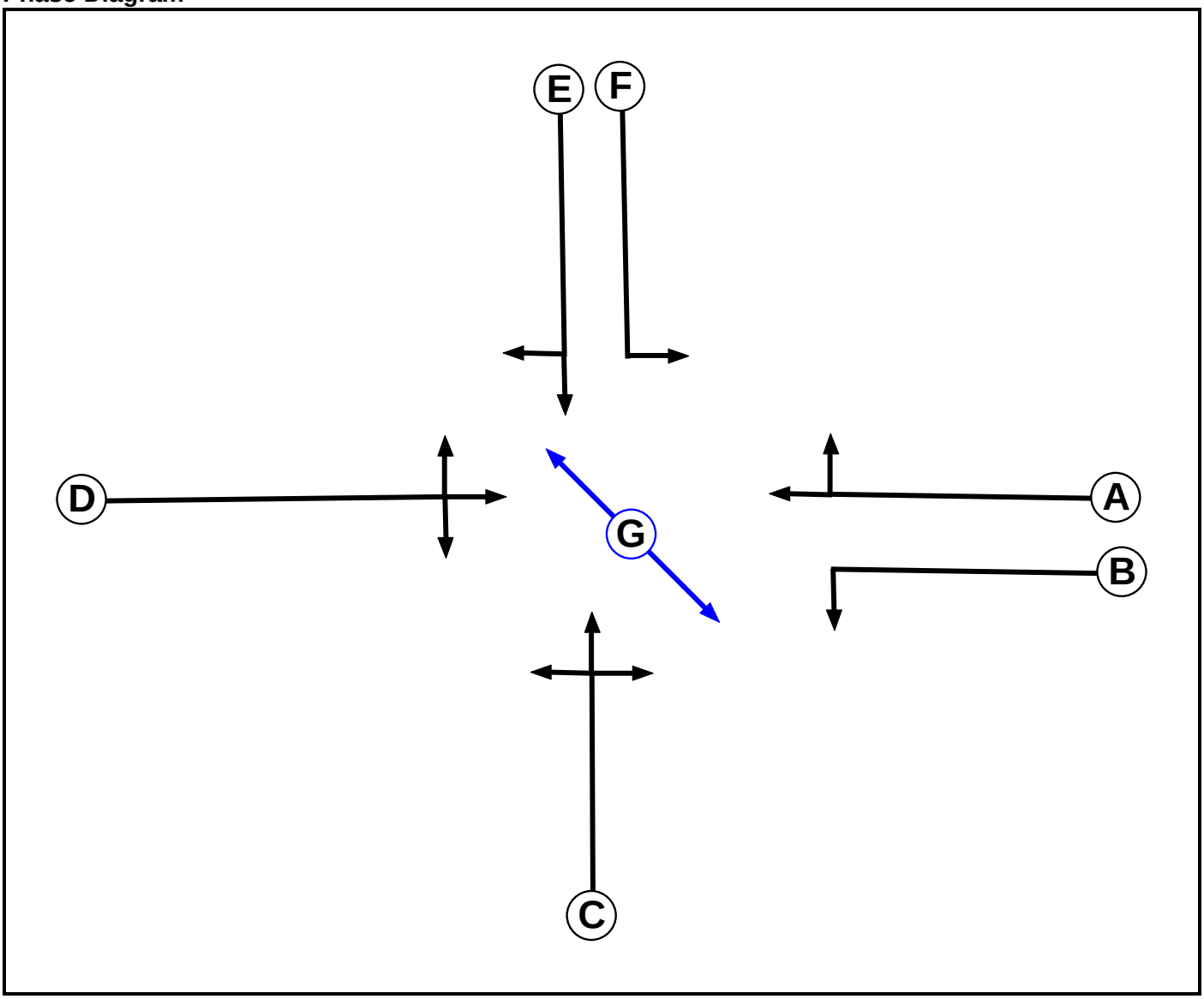
Project:	**Fingal Development Plan Submission**
Title:	**Lucan**
Location:	Lucan
Site Ref(s):	22054
Date Started:	08/05/2022
Additional detail:	
File name:	Signalised Junction.lsg3x
Author:	COB
Company:	MHL
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram

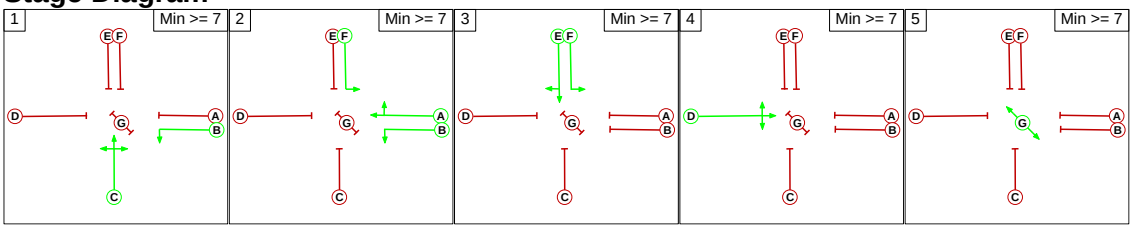


Full Input Data And Results

Phase Intergreens Matrix

Terminating Phase	Starting Phase							
		A	B	C	D	E	F	G
	A		-	5	5	5	-	5
	B	-		-	5	5	-	5
	C	5	-		5	5	5	5
	D	5	5	5		5	5	5
	E	5	5	5	5		-	5
	F	-	-	5	5	-		5
	G	5	5	5	5	5	5	

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Scenario 1: '2019 AM' (FG1: '2018 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

Origin	Destination					
		A	B	C	D	Tot.
	A	0	13	463	0	476
	B	4	0	432	0	436
	C	357	411	0	2	770
	D	1	2	109	0	112
	Tot.	362	426	1004	2	1794

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2019 AM
Junction: Barnhill Crrossroads Junction	
1/1 (short)	13
1/2 (with short)	476(In) 463(Out)
2/1 (short)	432
2/2 (with short)	436(In) 4(Out)
3/1	770
4/1	112
5/1	362
6/1	426
7/1	1004
8/1	2

Scenario 2: '2019 PM' (FG2: '2018 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	313	0	328
	B	50	0	620	3	673
	C	452	249	0	4	705
	D	1	0	25	0	26
	Tot.	503	264	958	7	1732

Traffic Lane Flows

Lane	Scenario 2: 2019 PM
Junction: Barnhill Crrossroads Junction	
1/1 (short)	15
1/2 (with short)	328(In) 313(Out)
2/1 (short)	620
2/2 (with short)	673(In) 53(Out)
3/1	705
4/1	26
5/1	503
6/1	264
7/1	958
8/1	7

Full Input Data And Results

Scenario 3: '2022 AM' (FG3: '2022 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	14	483	0	497
	B	4	0	451	0	455
	C	373	429	0	2	804
	D	1	2	114	0	117
	Tot.	378	445	1048	2	1873

Traffic Lane Flows

Lane	Scenario 3: 2022 AM
Junction: Barnhill Crrossroads Junction	
1/1 (short)	14
1/2 (with short)	497(In) 483(Out)
2/1 (short)	451
2/2 (with short)	455(In) 4(Out)
3/1	804
4/1	117
5/1	378
6/1	445
7/1	1048
8/1	2

Scenario 4: '2022 PM' (FG4: '2022 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	16	327	0	343
	B	52	0	647	3	702
	C	472	260	0	4	736
	D	1	0	26	0	27
	Tot.	525	276	1000	7	1808

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 4: 2022 PM
Junction: Barnhill Crrossroads Junction	
1/1 (short)	16
1/2 (with short)	343(In) 327(Out)
2/1 (short)	647
2/2 (with short)	702(In) 55(Out)
3/1	736
4/1	27
5/1	525
6/1	276
7/1	1000
8/1	7

Scenario 5: '2029 AM' (FG5: '2029 AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	15	535	0	550
	B	5	0	499	0	504
	C	412	475	0	2	889
	D	1	2	126	0	129
	Tot.	418	492	1160	2	2072

Traffic Lane Flows

Lane	Scenario 5: 2029 AM
Junction: Barnhill Crrossroads Junction	
1/1 (short)	15
1/2 (with short)	550(In) 535(Out)
2/1 (short)	499
2/2 (with short)	504(In) 5(Out)
3/1	889
4/1	129
5/1	418
6/1	492
7/1	1160
8/1	2

Full Input Data And Results

Scenario 6: '2029 PM' (FG6: '2029 PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

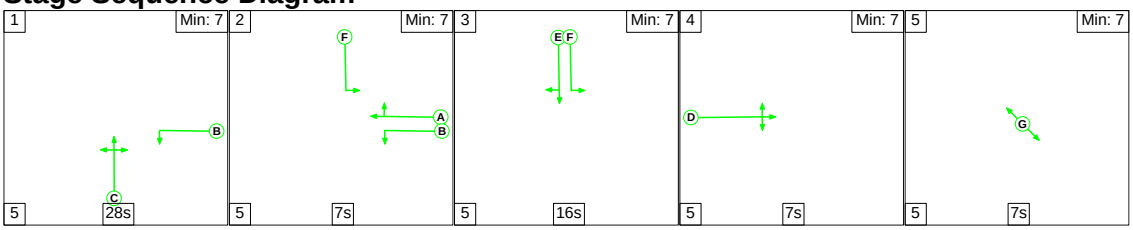
Origin	Destination					
		A	B	C	D	Tot.
	A	0	17	361	0	378
	B	58	0	716	3	777
	C	522	287	0	5	814
	D	1	0	29	0	30
	Tot.	581	304	1106	8	1999

Traffic Lane Flows

Lane	Scenario 6: 2029 PM
Junction: Barnhill Crrossroads Junction	
1/1 (short)	17
1/2 (with short)	378(In) 361(Out)
2/1 (short)	716
2/2 (with short)	777(In) 61(Out)
3/1	814
4/1	30
5/1	581
6/1	304
7/1	1106
8/1	8

Scenario 1: '2019 AM' (FG1: '2018 AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

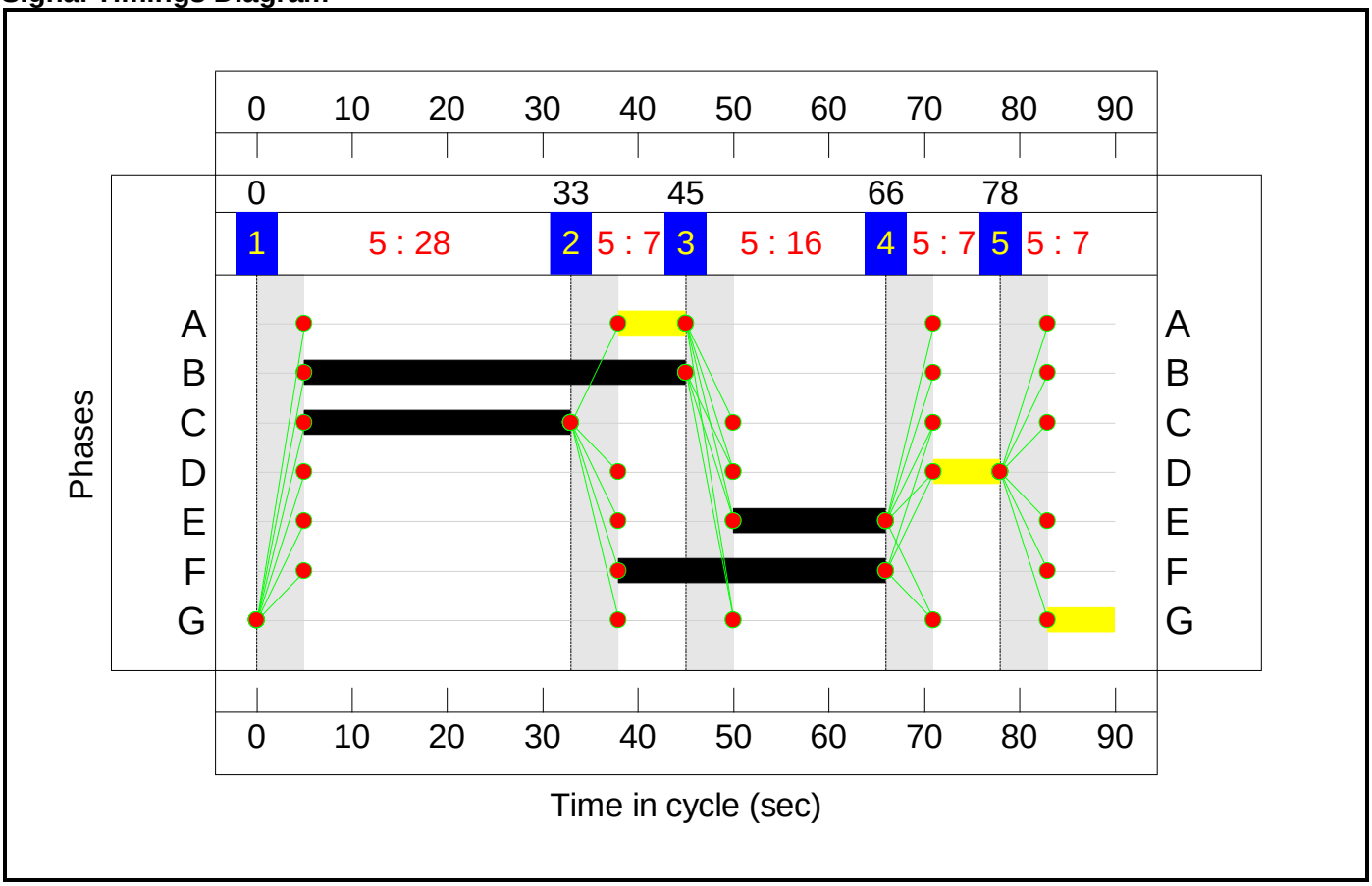


Stage Timings

Stage	1	2	3	4	5
Duration	28	7	16	7	7
Change Point	0	33	45	66	78

Full Input Data And Results

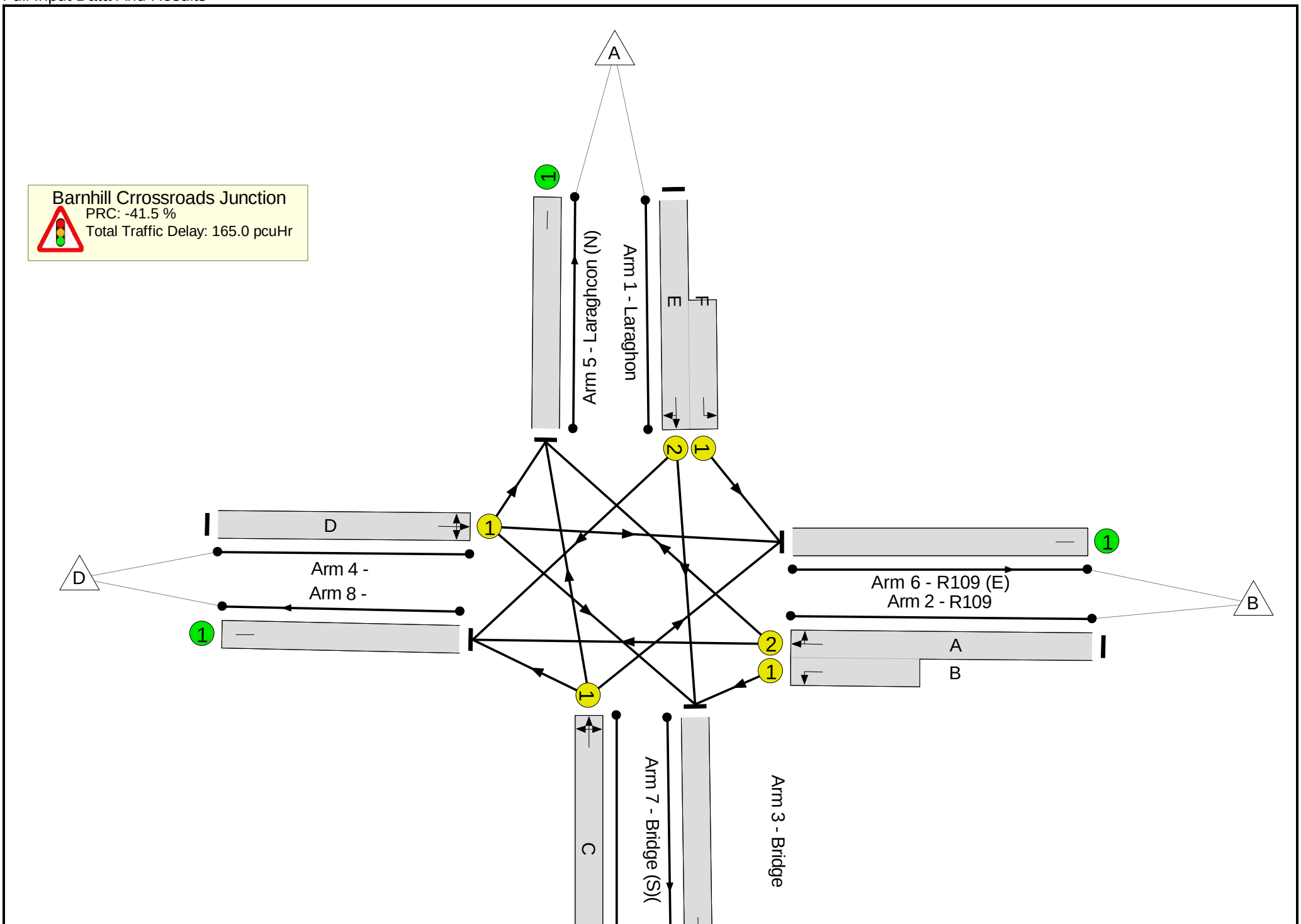
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Lucan	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**127.4%**
Barnhill Crrossroads Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**127.4%**
1/2+1/1	Laraghon Left Ahead Right	U	N/A	N/A	E F		1	16:28	-	476	1940:1634	363+10	127.4 : 127.4%
2/2+2/1	R109 Right Left Ahead	U	N/A	N/A	A B		1	7:40	-	436	1830:1764	7+804	53.8 : 53.8%
3/1	Bridge Ahead Right Left	U	N/A	N/A	C		1	28	-	770	1879	605	127.2%
4/1	Left Ahead Right	U	N/A	N/A	D		1	7	-	112	1831	163	68.8%
5/1	Laraghcon (N)	U	N/A	N/A	-		-	-	-	362	Inf	Inf	0.0%
6/1	R109 (E)	U	N/A	N/A	-		-	-	-	426	Inf	Inf	0.0%
7/1	Bridge (S)(	U	N/A	N/A	-		-	-	-	1004	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%

Full Input Data And Results

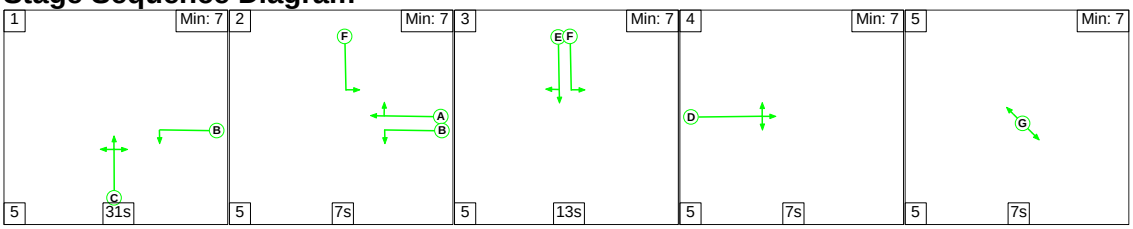
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Lucan	**-**	**-**	**0**	**0**	**0**	**25.4**	**139.6**	**0.0**	**165.0**	**-**	**-**	**-**	**-**
Barnhill Crossroads Junction	**-**	**-**	**0**	**0**	**0**	**25.4**	**139.6**	**0.0**	**165.0**	**-**	**-**	**-**	**-**
1/2+1/1	476	374	-	-	-	8.2	53.4	-	61.6	466.0	15.1	53.4	68.5
2/2+2/1	436	436	-	-	-	2.2	0.6	-	2.7	22.6	7.7	0.6	8.3
3/1	770	605	-	-	-	13.8	84.5	-	98.3	459.8	23.4	84.5	107.9
4/1	112	112	-	-	-	1.2	1.1	-	2.3	73.9	2.7	1.1	3.8
5/1	286	286	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	335	335	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	904	904	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -41.5 Total Delay for Signalled Lanes (pcuHr): 164.99 Cycle Time (s): 90
PRC Over All Lanes (%): -41.5 Total Delay Over All Lanes(pcuHr): 164.99

Full Input Data And Results

Scenario 2: '2019 PM' (FG2: '2018 PM', Plan 1: 'Network Control Plan 1')

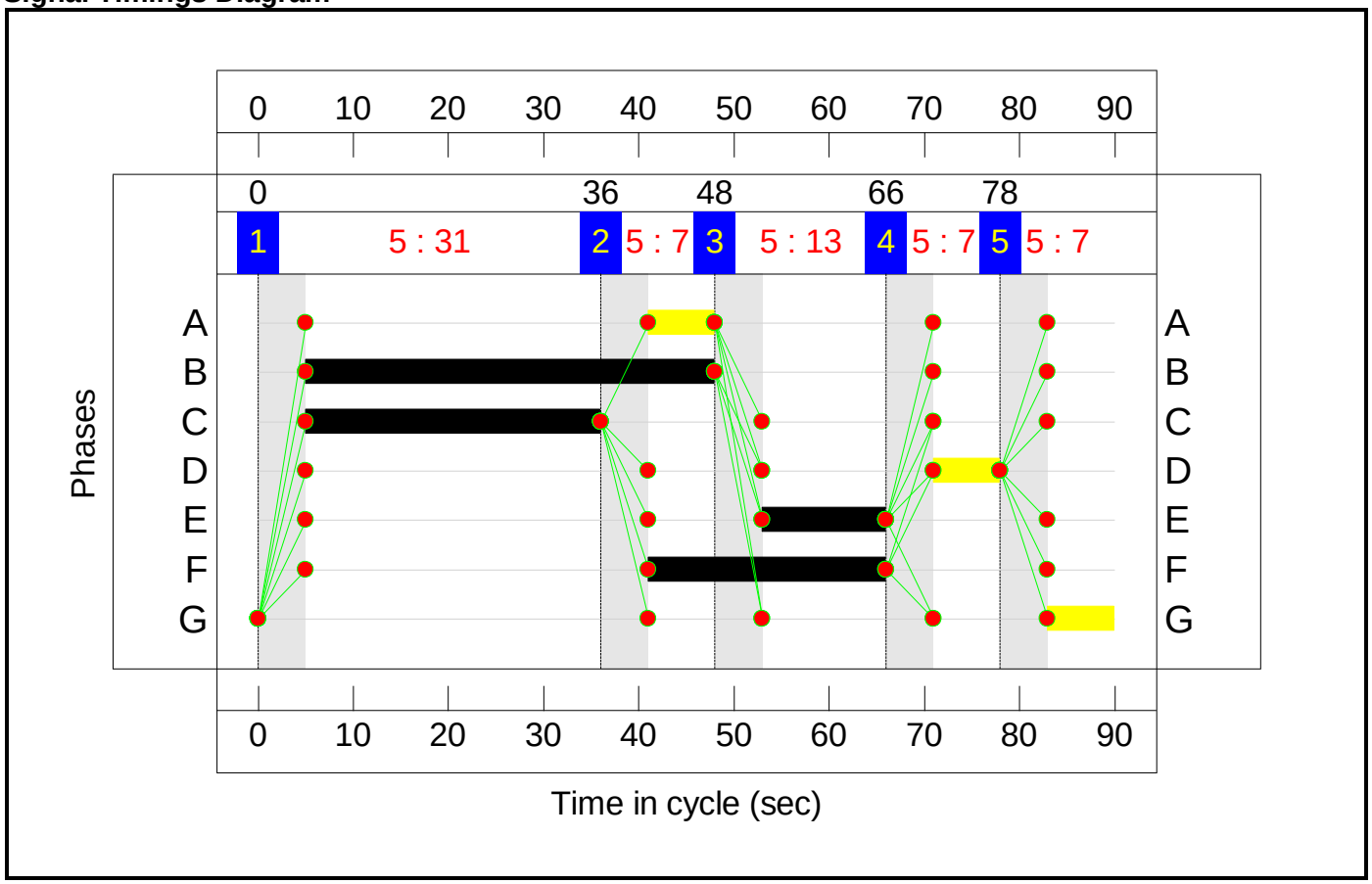
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	31	7	13	7	7
Change Point	0	36	48	66	78

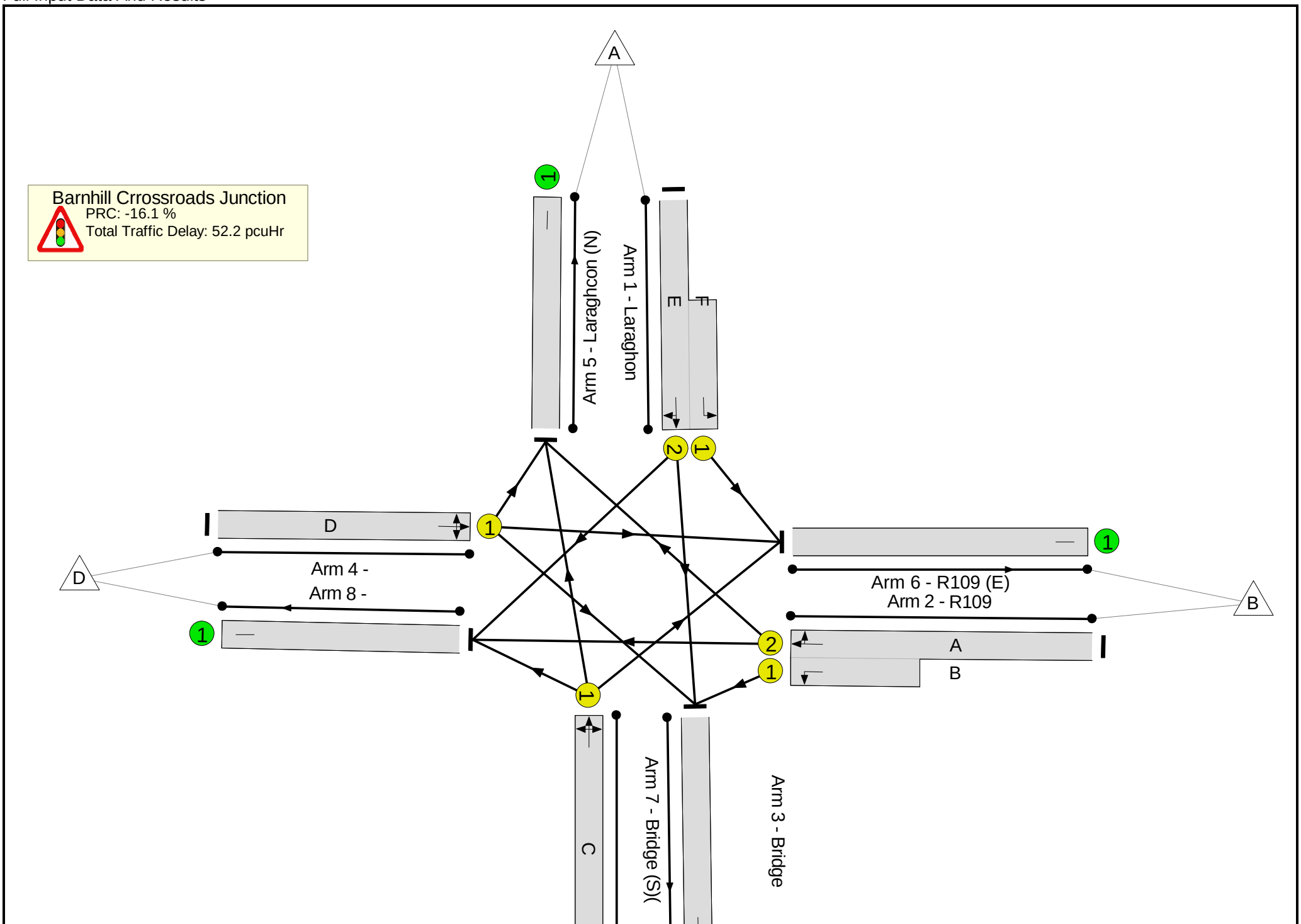
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Lucan	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.5%**
Barnhill Crrossroads Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**104.5%**
1/2+1/1	Laraghon Left Ahead Right	U	N/A	N/A	E F		1	13:25	-	328	1940:1634	300+14	104.2 : 104.2%
2/2+2/1	R109 Right Left Ahead	U	N/A	N/A	A B		1	7:43	-	673	1836:1764	70+823	75.3 : 75.3%
3/1	Bridge Ahead Right Left	U	N/A	N/A	C		1	31	-	705	1898	675	104.5%
4/1	Left Ahead Right	U	N/A	N/A	D		1	7	-	26	1824	162	16.0%
5/1	Laraghcon (N)	U	N/A	N/A	-		-	-	-	503	Inf	Inf	0.0%
6/1	R109 (E)	U	N/A	N/A	-		-	-	-	264	Inf	Inf	0.0%
7/1	Bridge (S)(	U	N/A	N/A	-		-	-	-	958	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	7	Inf	Inf	0.0%

Full Input Data And Results

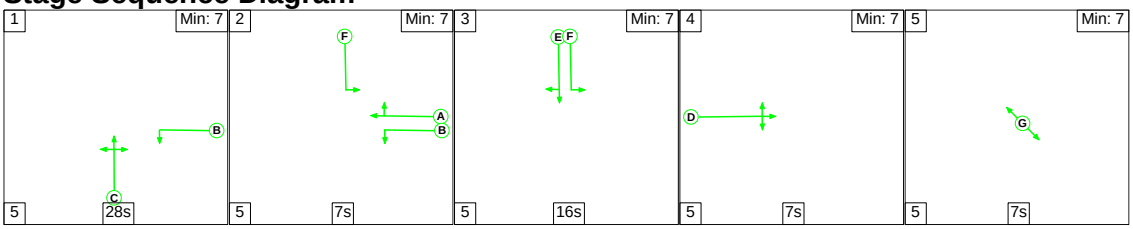
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Lucan	**-**	**-**	**0**	**0**	**0**	**14.8**	**37.3**	**0.0**	**52.2**	**-**	**-**	**-**	**-**
Barnhill Crrossroads Junction	**-**	**-**	**0**	**0**	**0**	**14.8**	**37.3**	**0.0**	**52.2**	**-**	**-**	**-**	**-**
1/2+1/1	328	315	-	-	-	3.8	12.9	-	16.8	184.2	8.4	12.9	21.3
2/2+2/1	673	673	-	-	-	3.7	1.5	-	5.2	27.8	12.7	1.5	14.2
3/1	705	675	-	-	-	7.0	22.8	-	29.8	152.2	18.4	22.8	41.2
4/1	26	26	-	-	-	0.3	0.1	-	0.4	51.2	0.6	0.1	0.7
5/1	484	484	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	253	253	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	945	945	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	7	7	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -16.1 Total Delay for Signalled Lanes (pcuHr): 52.16 Cycle Time (s): 90
PRC Over All Lanes (%): -16.1 Total Delay Over All Lanes(pcuHr): 52.16

Full Input Data And Results

Scenario 3: '2022 AM' (FG3: '2022 AM', Plan 1: 'Network Control Plan 1')

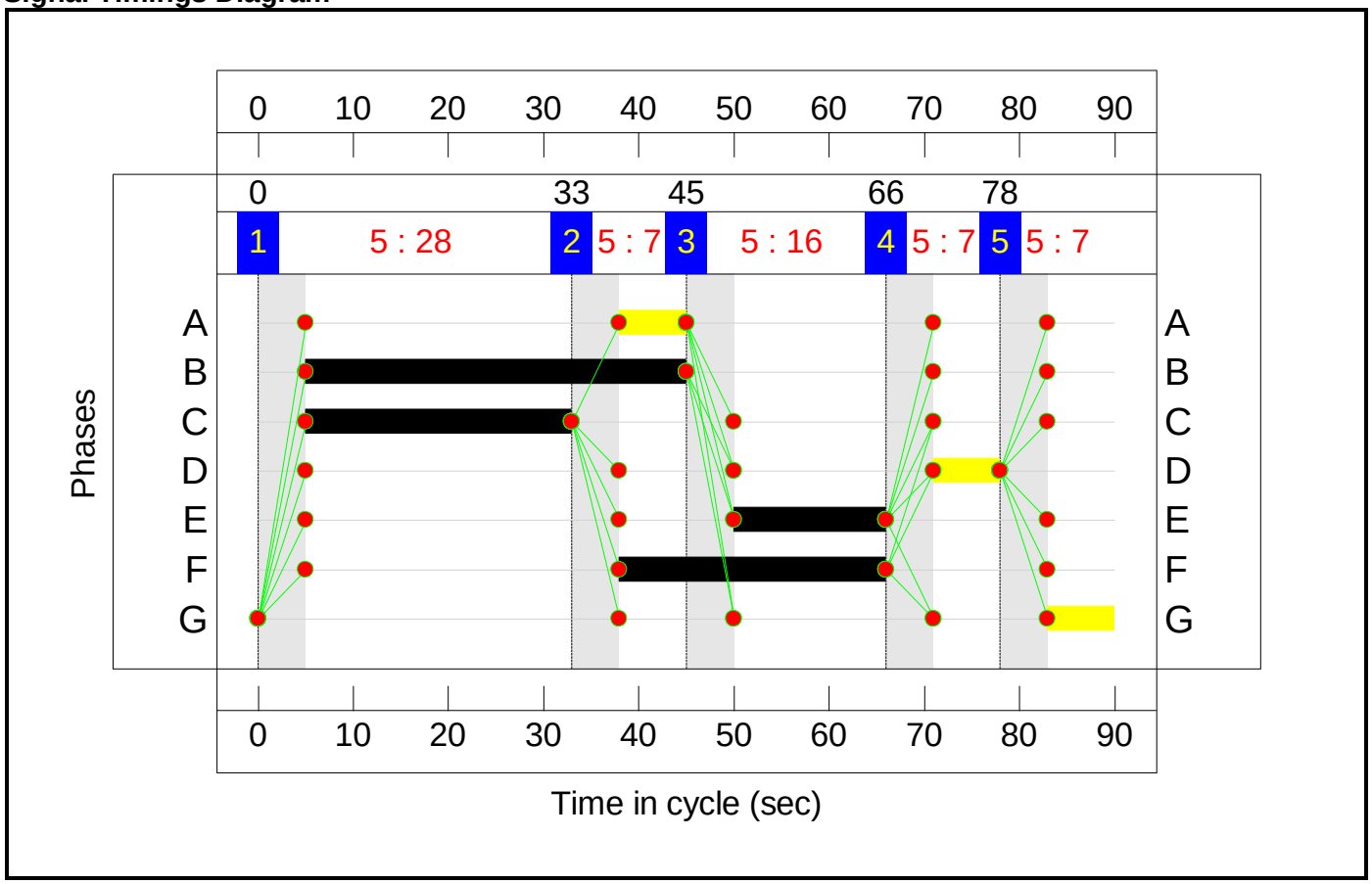
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	28	7	16	7	7
Change Point	0	33	45	66	78

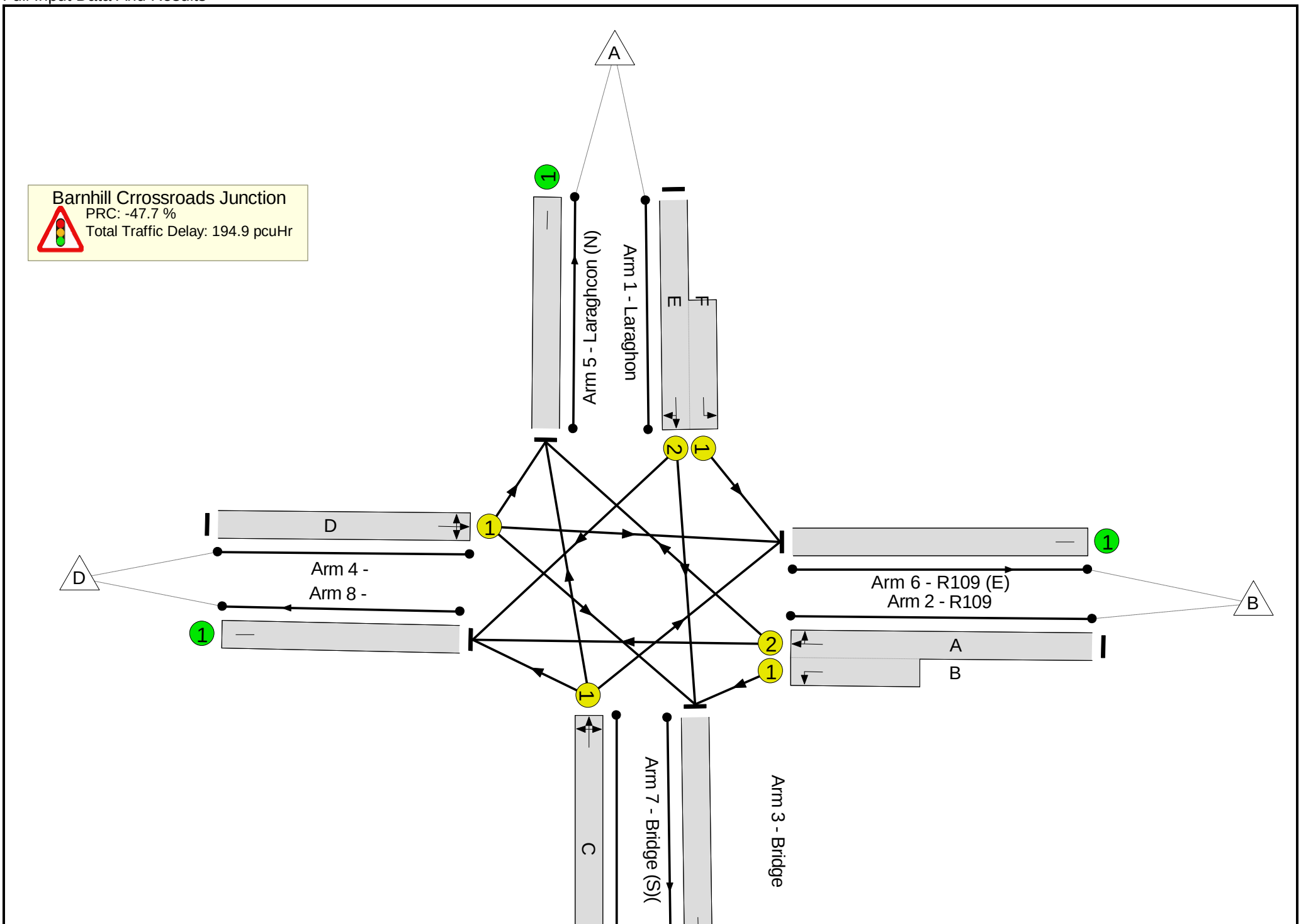
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Lucan	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**132.9%**
Barnhill Crrossroads Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**132.9%**
1/2+1/1	Laraghon Left Ahead Right	U	N/A	N/A	E F		1	16:28	-	497	1940:1634	363+11	132.9 : 132.9%
2/2+2/1	R109 Right Left Ahead	U	N/A	N/A	A B		1	7:40	-	455	1830:1764	7+804	56.1 : 56.1%
3/1	Bridge Ahead Right Left	U	N/A	N/A	C		1	28	-	804	1879	605	132.8%
4/1	Left Ahead Right	U	N/A	N/A	D		1	7	-	117	1831	163	71.9%
5/1	Laraghcon (N)	U	N/A	N/A	-		-	-	-	378	Inf	Inf	0.0%
6/1	R109 (E)	U	N/A	N/A	-		-	-	-	445	Inf	Inf	0.0%
7/1	Bridge (S)(	U	N/A	N/A	-		-	-	-	1048	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%

Full Input Data And Results

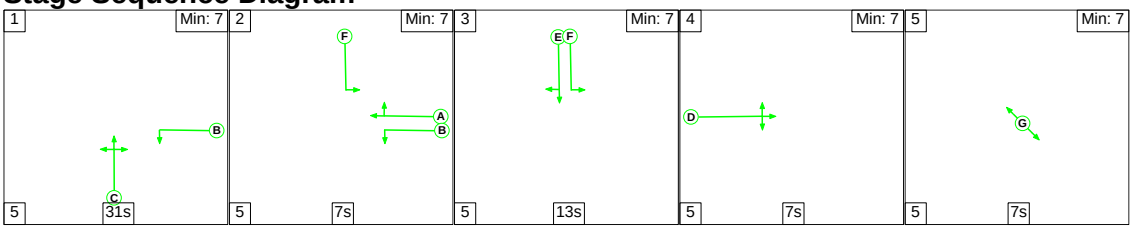
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Lucan	**-**	**-**	**0**	**0**	**0**	**28.3**	**166.6**	**0.0**	**194.9**	**-**	**-**	**-**	**-**
Barnhill Crossroads Junction	**-**	**-**	**0**	**0**	**0**	**28.3**	**166.6**	**0.0**	**194.9**	**-**	**-**	**-**	**-**
1/2+1/1	497	374	-	-	-	9.1	63.5	-	72.6	526.0	16.1	63.5	79.6
2/2+2/1	455	455	-	-	-	2.3	0.6	-	2.9	23.1	8.2	0.6	8.8
3/1	804	605	-	-	-	15.6	101.3	-	116.8	523.2	25.1	101.3	126.3
4/1	117	117	-	-	-	1.3	1.2	-	2.5	77.3	2.8	1.2	4.0
5/1	286	286	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	336	336	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	928	928	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -47.7 Total Delay for Signalled Lanes (pcuHr): 194.90 Cycle Time (s): 90
PRC Over All Lanes (%): -47.7 Total Delay Over All Lanes(pcuHr): 194.90

Full Input Data And Results

Scenario 4: '2022 PM' (FG4: '2022 PM', Plan 1: 'Network Control Plan 1')

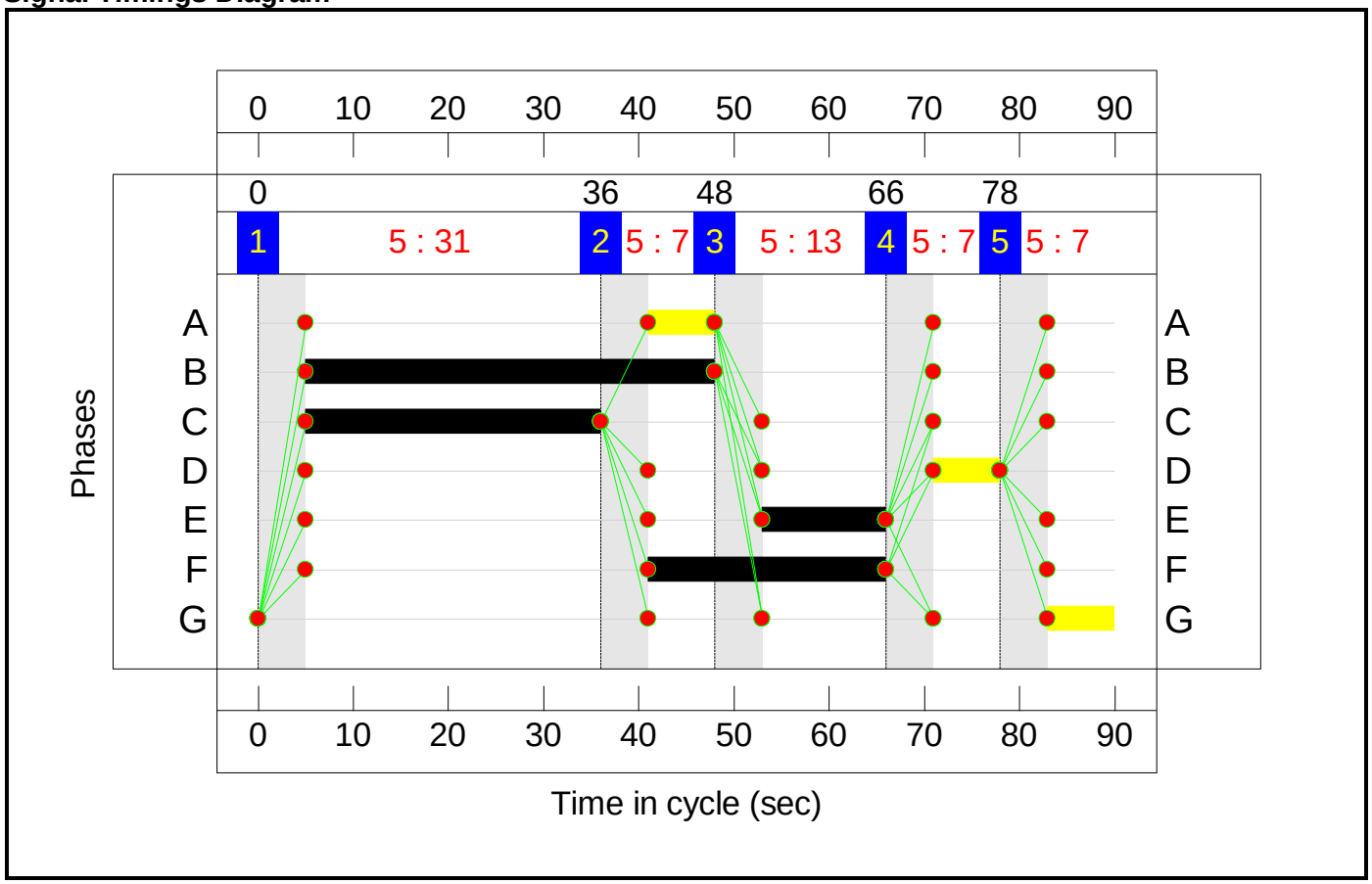
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	31	7	13	7	7
Change Point	0	36	48	66	78

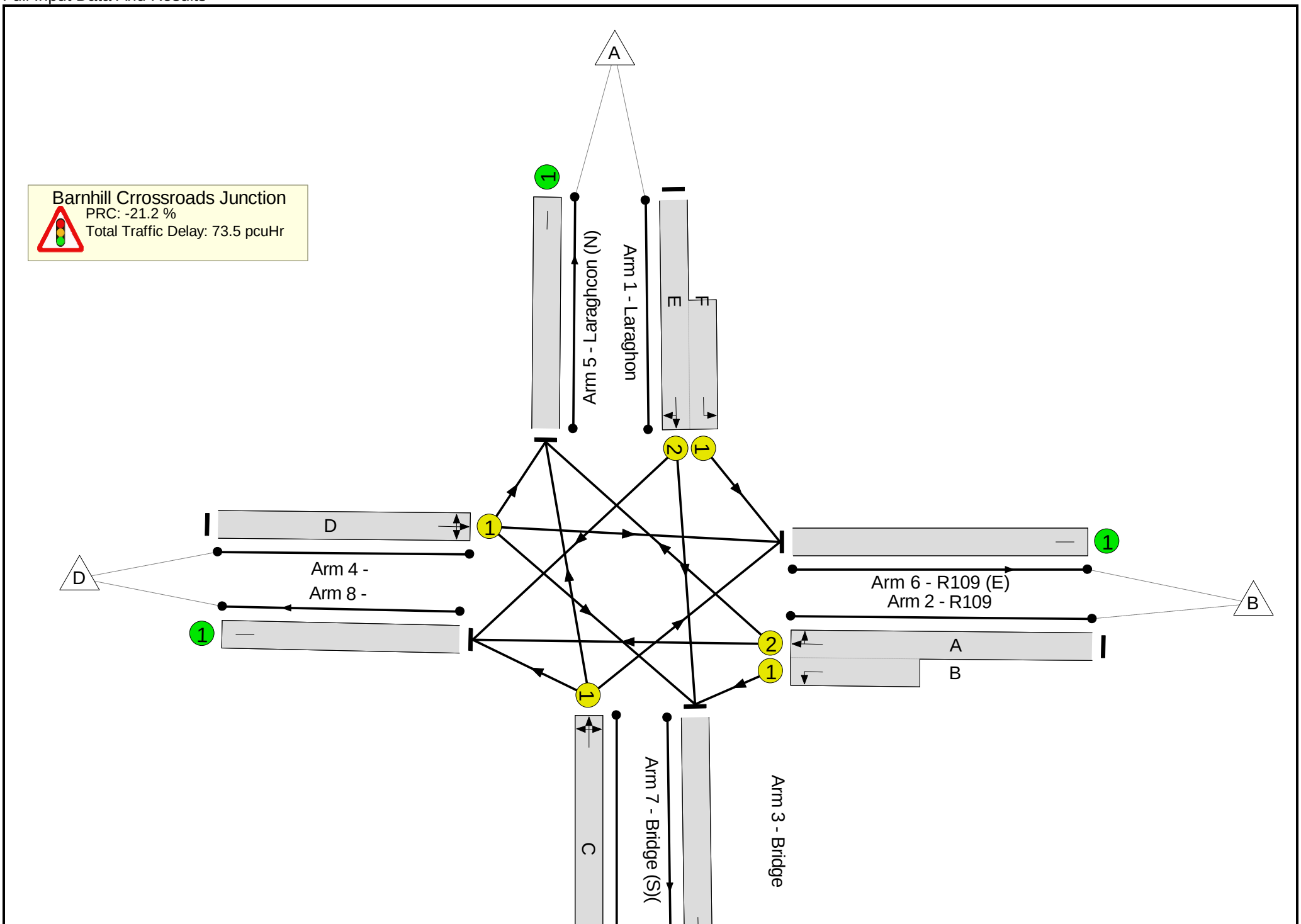
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Lucan	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**109.1%**
Barnhill Crrossroads Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**109.1%**
1/2+1/1	Laraghon Left Ahead Right	U	N/A	N/A	E F		1	13:25	-	343	1940:1634	300+15	108.9 : 108.9%
2/2+2/1	R109 Right Left Ahead	U	N/A	N/A	A B		1	7:43	-	702	1836:1764	70+824	78.6 : 78.6%
3/1	Bridge Ahead Right Left	U	N/A	N/A	C		1	31	-	736	1898	675	109.1%
4/1	Left Ahead Right	U	N/A	N/A	D		1	7	-	27	1824	162	16.7%
5/1	Laraghcon (N)	U	N/A	N/A	-		-	-	-	525	Inf	Inf	0.0%
6/1	R109 (E)	U	N/A	N/A	-		-	-	-	276	Inf	Inf	0.0%
7/1	Bridge (S)(	U	N/A	N/A	-		-	-	-	1000	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	7	Inf	Inf	0.0%

Full Input Data And Results

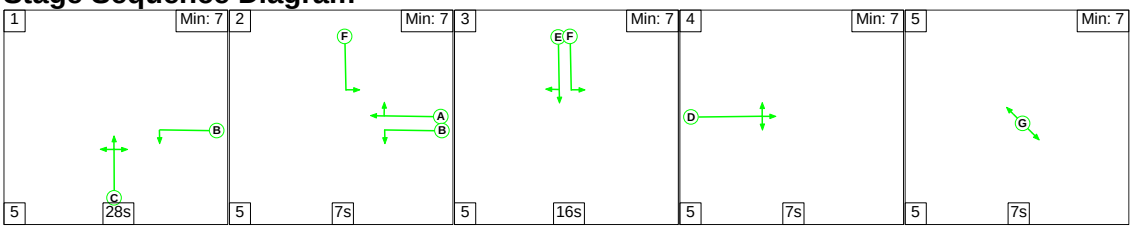
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Lucan	**-**	**-**	**0**	**0**	**0**	**17.3**	**56.2**	**0.0**	**73.5**	**-**	**-**	**-**	**-**
Barnhill Crrossroads Junction	**-**	**-**	**0**	**0**	**0**	**17.3**	**56.2**	**0.0**	**73.5**	**-**	**-**	**-**	**-**
1/2+1/1	343	315	-	-	-	4.5	18.6	-	23.1	242.0	9.2	18.6	27.8
2/2+2/1	702	702	-	-	-	3.9	1.8	-	5.7	29.4	13.6	1.8	15.4
3/1	736	675	-	-	-	8.6	35.7	-	44.3	216.8	19.9	35.7	55.7
4/1	27	27	-	-	-	0.3	0.1	-	0.4	51.3	0.6	0.1	0.7
5/1	486	486	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	253	253	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	973	973	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	7	7	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -21.2 Total Delay for Signalled Lanes (pcuHr): 73.52 Cycle Time (s): 90
PRC Over All Lanes (%): -21.2 Total Delay Over All Lanes(pcuHr): 73.52

Full Input Data And Results

Scenario 5: '2029 AM' (FG5: '2029 AM', Plan 1: 'Network Control Plan 1')

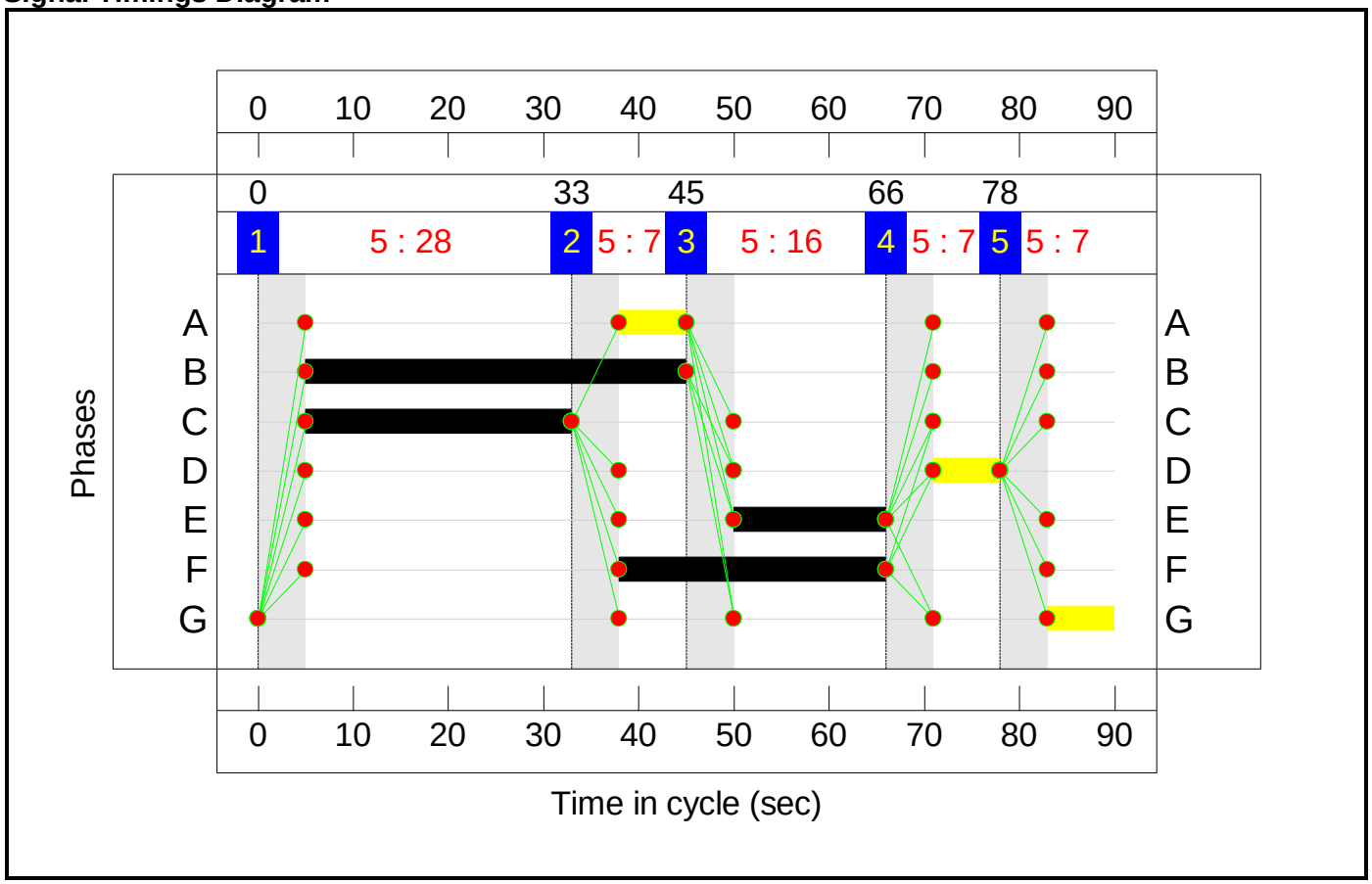
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	28	7	16	7	7
Change Point	0	33	45	66	78

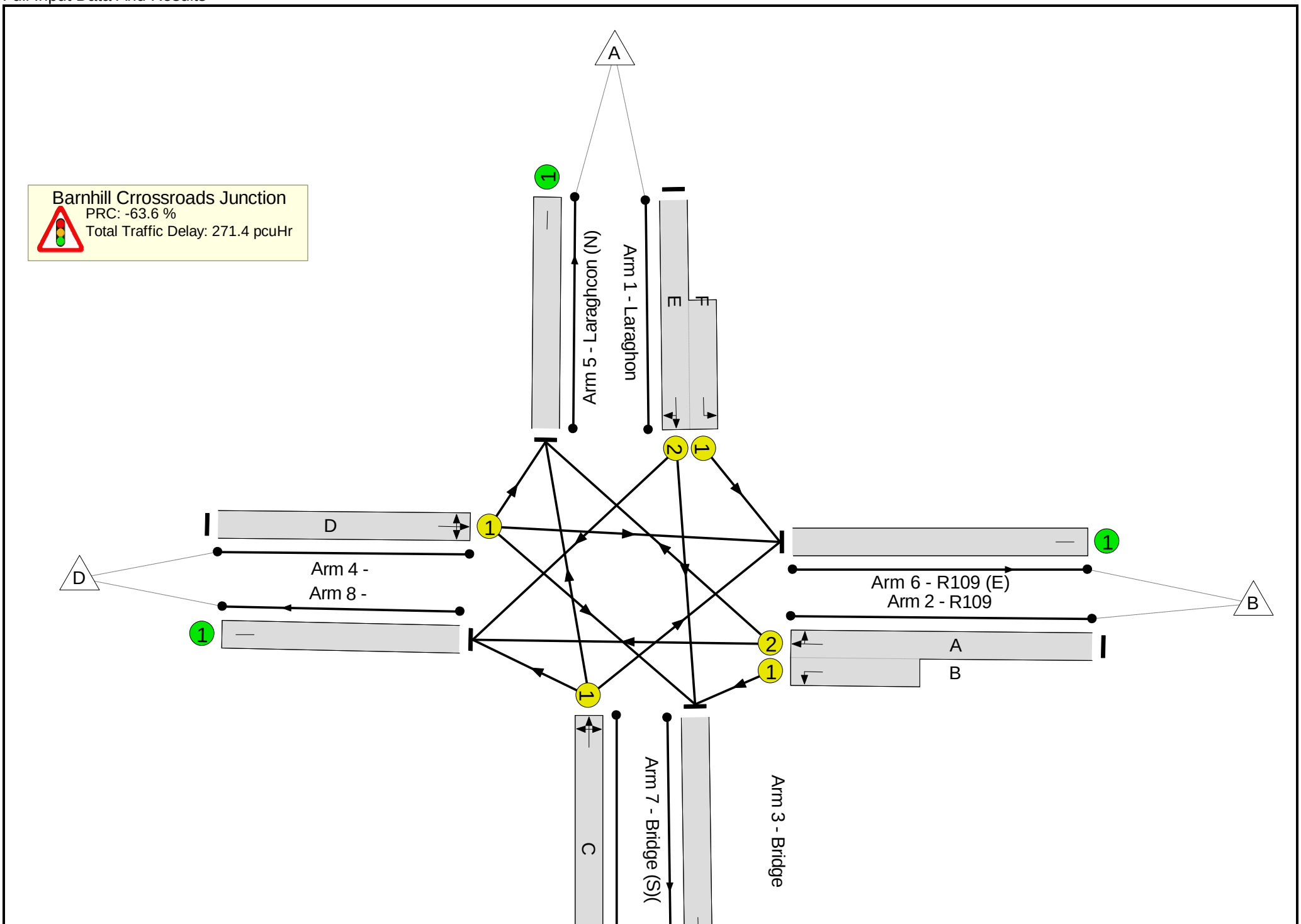
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Lucan	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**147.2%**
Barnhill Crrossroads Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**147.2%**
1/2+1/1	Laraghon Left Ahead Right	U	N/A	N/A	E F		1	16:28	-	550	1940:1634	363+10	147.2 : 147.2%
2/2+2/1	R109 Right Left Ahead	U	N/A	N/A	A B		1	7:40	-	504	1830:1764	8+804	62.1 : 62.1%
3/1	Bridge Ahead Right Left	U	N/A	N/A	C		1	28	-	889	1879	605	146.8%
4/1	Left Ahead Right	U	N/A	N/A	D		1	7	-	129	1831	163	79.3%
5/1	Laraghcon (N)	U	N/A	N/A	-		-	-	-	418	Inf	Inf	0.0%
6/1	R109 (E)	U	N/A	N/A	-		-	-	-	492	Inf	Inf	0.0%
7/1	Bridge (S)(	U	N/A	N/A	-		-	-	-	1160	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%

Full Input Data And Results

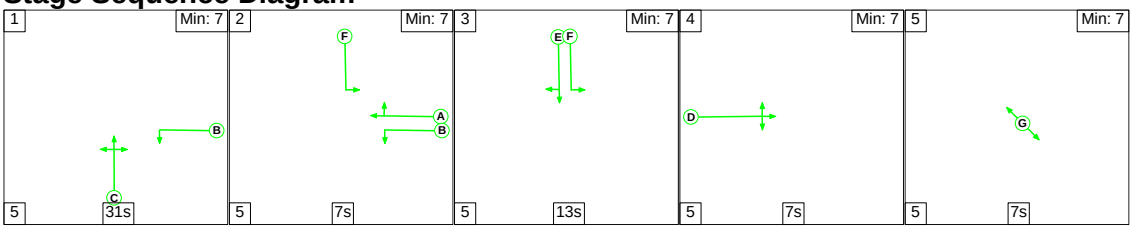
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Lucan	**-**	**-**	**0**	**0**	**0**	**35.8**	**235.6**	**0.0**	**271.4**	**-**	**-**	**-**	**-**
Barnhill Crossroads Junction	**-**	**-**	**0**	**0**	**0**	**35.8**	**235.6**	**0.0**	**271.4**	**-**	**-**	**-**	**-**
1/2+1/1	550	374	-	-	-	11.7	89.7	-	101.4	663.9	19.2	89.7	108.9
2/2+2/1	504	504	-	-	-	2.6	0.8	-	3.4	24.6	9.4	0.8	10.2
3/1	889	605	-	-	-	20.1	143.3	-	163.4	661.6	29.3	143.3	172.6
4/1	129	129	-	-	-	1.4	1.7	-	3.2	88.6	3.2	1.7	4.9
5/1	287	287	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	336	336	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	988	988	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	1	1	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -63.6 Total Delay for Signalled Lanes (pcuHr): 271.42 Cycle Time (s): 90
PRC Over All Lanes (%): -63.6 Total Delay Over All Lanes(pcuHr): 271.42

Full Input Data And Results

Scenario 6: '2029 PM' (FG6: '2029 PM', Plan 1: 'Network Control Plan 1')

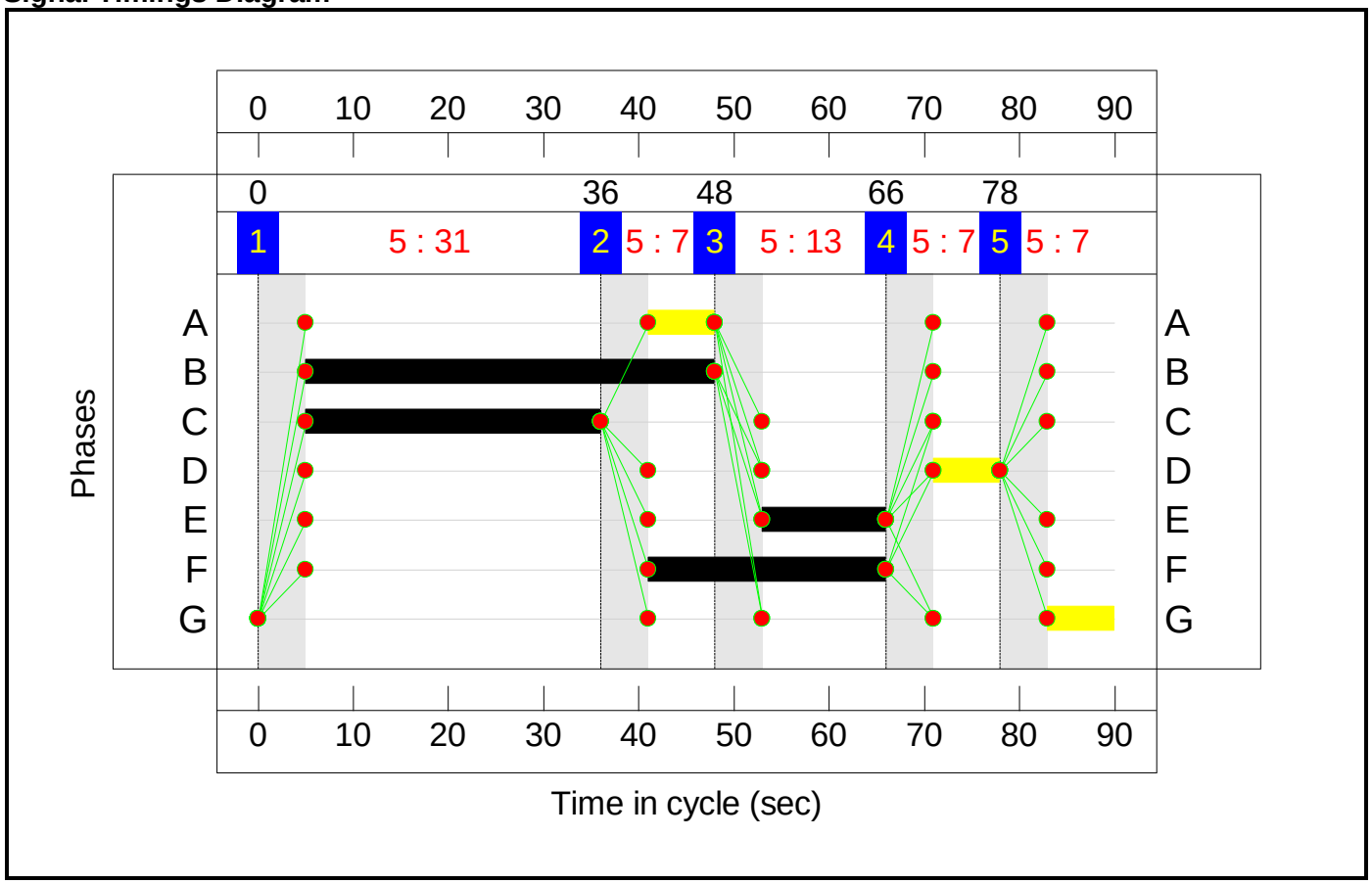
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4	5
Duration	31	7	13	7	7
Change Point	0	36	48	66	78

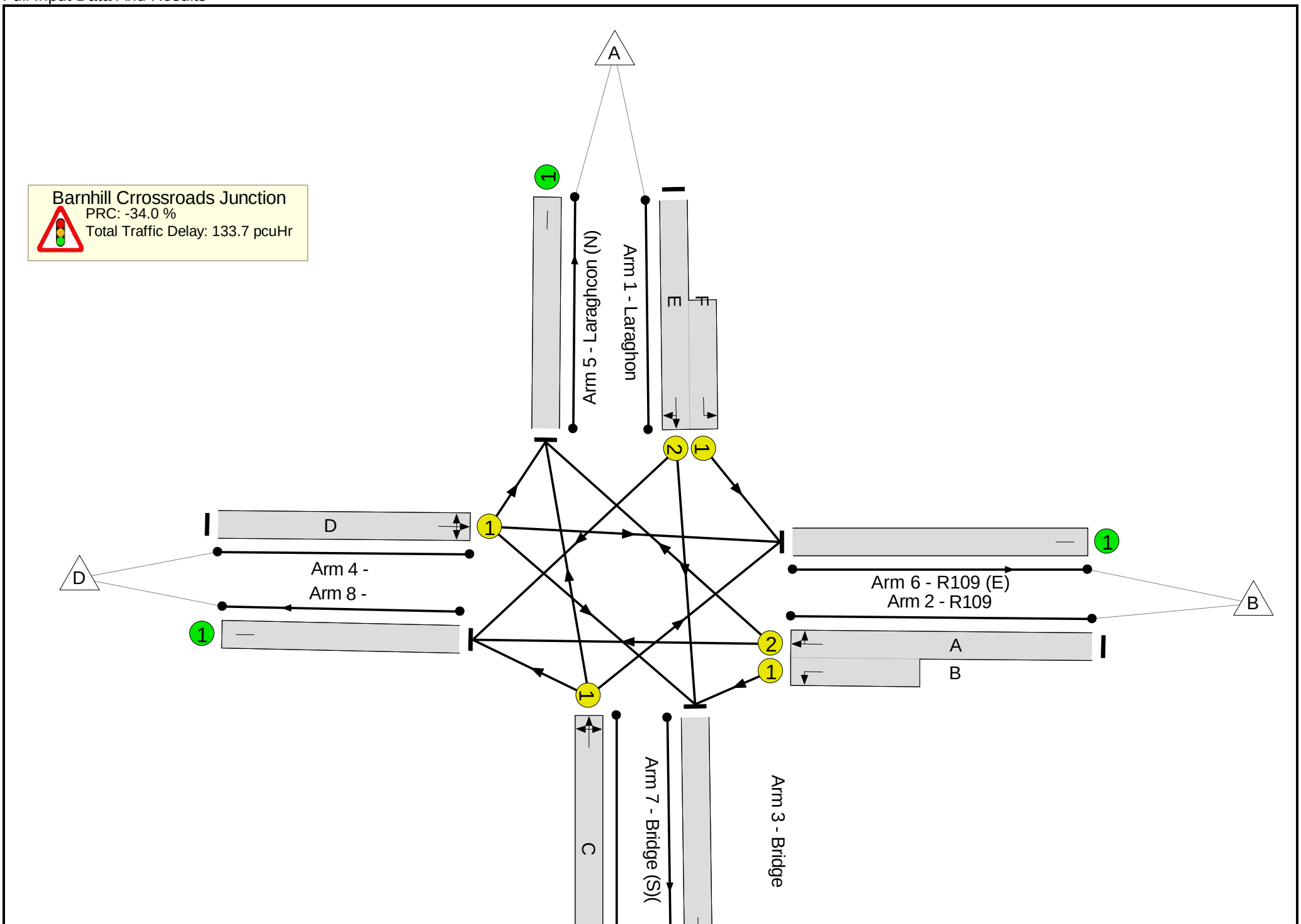
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Lucan	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**120.6%**
Barnhill Crrossroads Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**120.6%**
1/2+1/1	Laraghon Left Ahead Right	U	N/A	N/A	E F		1	13:25	-	378	1940:1634	300+14	120.2 : 120.2%
2/2+2/1	R109 Right Left Ahead	U	N/A	N/A	A B		1	7:43	-	777	1835:1764	70+823	86.9 : 86.9%
3/1	Bridge Ahead Right Left	U	N/A	N/A	C		1	31	-	814	1898	675	120.6%
4/1	Left Ahead Right	U	N/A	N/A	D		1	7	-	30	1825	162	18.5%
5/1	Laraghcon (N)	U	N/A	N/A	-		-	-	-	581	Inf	Inf	0.0%
6/1	R109 (E)	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
7/1	Bridge (S)(	U	N/A	N/A	-		-	-	-	1106	Inf	Inf	0.0%
8/1		U	N/A	N/A	-		-	-	-	8	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Lucan	**-**	**-**	**0**	**0**	**0**	**23.6**	**110.1**	**0.0**	**133.7**	**-**	**-**	**-**	**-**
Barnhill Crossroads Junction	**-**	**-**	**0**	**0**	**0**	**23.6**	**110.1**	**0.0**	**133.7**	**-**	**-**	**-**	**-**
1/2+1/1	378	315	-	-	-	6.0	34.5	-	40.5	385.5	11.3	34.5	45.8
2/2+2/1	777	777	-	-	-	4.6	3.2	-	7.8	36.1	16.5	3.2	19.6
3/1	814	675	-	-	-	12.6	72.4	-	85.0	376.1	23.8	72.4	96.2
4/1	30	30	-	-	-	0.3	0.1	-	0.4	51.6	0.7	0.1	0.8
5/1	492	492	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	252	252	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	1045	1045	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	7	7	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -34.0 Total Delay for Signalled Lanes (pcuHr): 133.74 Cycle Time (s): 90
PRC Over All Lanes (%): -34.0 Total Delay Over All Lanes(pcuHr): 133.74

File summary

File Description

Title	Fingal Development Plan Submission
Location	Lucan
Site number	
Date	09/05/2022
Version	
Status	
Identifier	
Client	
Jobnumber	22054TT
Enumerator	COB
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	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2018	AM	ONE HOUR	07:00	08:30	15
D2	2018	PM	ONE HOUR	17:00	18:30	15
D3	2022	AM	ONE HOUR	07:00	08:30	15
D4	2022	PM	ONE HOUR	17:00	18:30	15
D5	2029	AM	ONE HOUR	07:00	08:30	15
D6	2029	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2018, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Westmanstown Road Junction	T-Junction	Two-way		3.89	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	27	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	R121		Major
B	Westmanstown Road		Minor
C	R121		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00			70.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	4.00	5	25

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	541	0.098	0.249	0.157	0.356
B-C	704	0.108	0.273	-	-
C-B	615	0.238	0.238	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

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)
D1	2018	AM	ONE HOUR	07:00	08:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	633	100.000
B		✓	142	100.000
C		✓	362	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	285	348
	B	89	0	53
	C	211	151	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.43	17.45	0.7	C
C-AB	0.39	11.24	0.8	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	107	432	0.247	106	0.3	10.976	B
C-AB	123	522	0.235	122	0.3	8.963	A
C-A	150			150			
A-B	215			215			
A-C	262			262			

07:15 - 07:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	128	403	0.317	127	0.5	13.009	B
C-AB	153	519	0.294	152	0.5	9.812	A
C-A	173			173			
A-B	256			256			
A-C	313			313			

07:30 - 07:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	156	363	0.431	155	0.7	17.248	C
C-AB	202	523	0.386	201	0.7	11.169	B
C-A	197			197			
A-B	314			314			
A-C	383			383			

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	156	362	0.431	156	0.7	17.447	C
C-AB	202	523	0.386	202	0.8	11.242	B
C-A	197			197			
A-B	314			314			
A-C	383			383			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	128	403	0.317	129	0.5	13.183	B
C-AB	153	519	0.294	154	0.5	9.899	A
C-A	173			173			
A-B	256			256			
A-C	313			313			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	107	432	0.248	107	0.3	11.117	B
C-AB	123	522	0.235	123	0.3	9.046	A
C-A	150			150			
A-B	215			215			
A-C	262			262			

2018, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Westmanstown Road Junction	T-Junction	Two-way		23.33	C

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-12	Stream B-AC

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)
D2	2018	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	326	100.000
B		✓	320	100.000
C		✓	445	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	79	247
	B	229	0	91
	C	307	138	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.91	75.41	6.8	F
C-AB	0.30	8.34	0.5	A
C-A				
A-B				
A-C				

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	241	446	0.541	236	1.1	16.877	C
C-AB	113	585	0.193	112	0.3	7.595	A
C-A	222			222			
A-B	59			59			
A-C	186			186			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	288	422	0.682	284	2.0	25.525	D
C-AB	140	595	0.235	140	0.3	7.912	A
C-A	260			260			
A-B	71			71			
A-C	222			222			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	352	389	0.906	337	5.7	57.564	F
C-AB	183	615	0.297	182	0.5	8.314	A
C-A	307			307			
A-B	87			87			
A-C	272			272			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	352	389	0.906	348	6.8	75.409	F
C-AB	183	615	0.297	183	0.5	8.339	A
C-A	307			307			
A-B	87			87			
A-C	272			272			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	288	422	0.682	306	2.3	34.710	D
C-AB	140	595	0.235	141	0.4	7.945	A
C-A	260			260			
A-B	71			71			
A-C	222			222			

18:15 - 18:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	241	445	0.541	245	1.2	18.403	C
C-AB	113	585	0.193	113	0.3	7.642	A
C-A	222			222			
A-B	59			59			
A-C	186			186			

2022, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Westmanstown Road Junction	T-Junction	Two-way		4.28	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	20	Stream B-AC

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)
D3	2022	AM	ONE HOUR	07:00	08:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	671	100.000
B		✓	150	100.000
C		✓	383	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	302	369
	B	94	0	56
	C	223	160	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.47	19.55	0.9	C
C-AB	0.42	11.82	0.9	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	113	424	0.267	111	0.4	11.484	B
C-AB	132	521	0.253	130	0.4	9.195	A
C-A	157			157			
A-B	227			227			
A-C	278			278			

07:15 - 07:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	135	393	0.343	134	0.5	13.892	B
C-AB	165	519	0.318	164	0.5	10.145	B
C-A	180			180			
A-B	271			271			
A-C	332			332			

07:30 - 07:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	165	349	0.473	164	0.9	19.240	C
C-AB	220	526	0.419	219	0.9	11.712	B
C-A	201			201			
A-B	333			333			
A-C	406			406			

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	165	349	0.473	165	0.9	19.548	C
C-AB	220	526	0.419	220	0.9	11.815	B
C-A	201			201			
A-B	333			333			
A-C	406			406			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	135	392	0.344	136	0.5	14.139	B
C-AB	165	519	0.318	166	0.5	10.262	B
C-A	180			180			
A-B	271			271			
A-C	332			332			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	113	423	0.267	114	0.4	11.661	B
C-AB	132	521	0.253	132	0.4	9.297	A
C-A	157			157			
A-B	227			227			
A-C	278			278			

2022, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Westmanstown Road Junction	T-Junction	Two-way		37.60	E

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-17	Stream B-AC

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)
D4	2022	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	346	100.000
B		✓	339	100.000
C		✓	471	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	84	262
	B	243	0	96
	C	325	146	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.99	123.95	12.4	F
C-AB	0.32	8.48	0.6	A
C-A				
A-B				
A-C				

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	255	438	0.582	250	1.3	18.644	C
C-AB	121	587	0.206	120	0.3	7.683	A
C-A	234			234			
A-B	63			63			
A-C	197			197			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	305	413	0.738	300	2.5	30.596	D
C-AB	150	599	0.251	150	0.4	8.020	A
C-A	273			273			
A-B	76			76			
A-C	236			236			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	373	378	0.988	347	9.0	80.897	F
C-AB	198	623	0.318	197	0.6	8.449	A
C-A	320			320			
A-B	92			92			
A-C	288			288			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	373	378	0.988	360	12.4	123.951	F
C-AB	198	623	0.318	198	0.6	8.477	A
C-A	320			320			
A-B	92			92			
A-C	288			288			

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	305	413	0.739	341	3.3	62.287	F
C-AB	150	599	0.251	151	0.4	8.058	A
C-A	273			273			
A-B	76			76			
A-C	236			236			

18:15 - 18:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	255	438	0.583	262	1.5	21.306	C
C-AB	121	587	0.206	121	0.3	7.735	A
C-A	234			234			
A-B	63			63			
A-C	197			197			

2029, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Westmanstown Road Junction	T-Junction	Two-way		5.32	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	9	Stream B-AC

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)
D5	2029	AM	ONE HOUR	07:00	08:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	742	100.000
B		✓	166	100.000
C		✓	424	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	334	408
	B	104	0	62
	C	247	177	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.57	25.53	1.3	D
C-AB	0.48	13.11	1.2	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	125	407	0.307	123	0.4	12.610	B
C-AB	149	519	0.287	147	0.4	9.651	A
C-A	170			170			
A-B	251			251			
A-C	307			307			

07:15 - 07:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	149	372	0.401	148	0.7	16.003	C
C-AB	189	521	0.363	188	0.7	10.824	B
C-A	192			192			
A-B	300			300			
A-C	367			367			

07:30 - 07:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	183	324	0.564	180	1.2	24.720	C
C-AB	260	537	0.485	258	1.2	12.915	B
C-A	207			207			
A-B	368			368			
A-C	449			449			

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	183	323	0.565	183	1.3	25.526	D
C-AB	260	537	0.485	260	1.2	13.108	B
C-A	207			207			
A-B	368			368			
A-C	449			449			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	149	372	0.402	152	0.7	16.517	C
C-AB	189	521	0.363	191	0.7	11.025	B
C-A	192			192			
A-B	300			300			
A-C	367			367			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	125	406	0.308	126	0.5	12.887	B
C-AB	149	519	0.287	150	0.5	9.794	A
C-A	170			170			
A-B	251			251			
A-C	307			307			

2029, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Westmanstown Road Junction	T-Junction	Two-way		87.70	F

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-25	Stream B-AC

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)
D6	2029	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	382	100.000
B		✓	375	100.000
C		✓	522	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	93	289
	B	268	0	107
	C	360	162	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	3	3	3
	B	3	3	3
	C	3	3	3

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-AC	1.16	294.51	34.9	F
C-AB	0.36	8.76	0.7	A
C-A				
A-B				
A-C				

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	282	425	0.664	275	1.8	23.019	C
C-AB	137	593	0.231	136	0.3	7.847	A
C-A	256			256			
A-B	70			70			
A-C	218			218			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	337	397	0.849	327	4.3	46.237	E
C-AB	173	610	0.283	172	0.5	8.223	A
C-A	297			297			
A-B	84			84			
A-C	260			260			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	413	358	1.154	348	20.5	152.229	F
C-AB	231	643	0.359	230	0.7	8.719	A
C-A	344			344			
A-B	102			102			
A-C	318			318			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	413	357	1.155	355	34.9	294.513	F
C-AB	231	643	0.359	231	0.7	8.759	A
C-A	344			344			
A-B	102			102			
A-C	318			318			

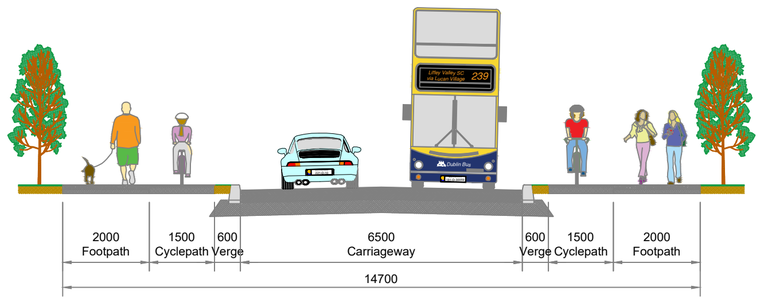
18:00 - 18:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	337	396	0.850	385	22.8	271.779	F
C-AB	173	610	0.283	173	0.5	8.279	A
C-A	297			297			
A-B	84			84			
A-C	260			260			

18:15 - 18:30

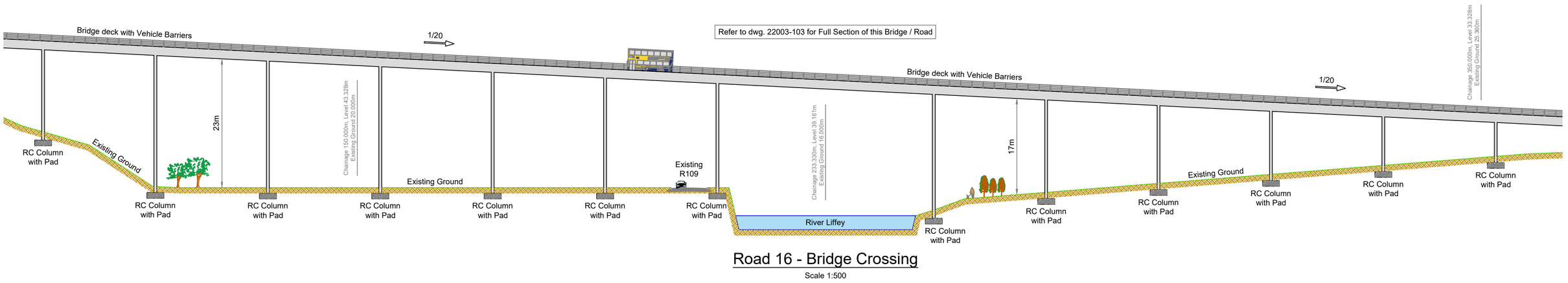
Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	282	424	0.665	364	2.3	92.723	F
C-AB	137	593	0.231	138	0.3	7.911	A
C-A	256			256			
A-B	70			70			
A-C	218			218			

APPENDIX C PROPOSED ROADS OBJECTIVE DRAWINGS



Typical Proposed Road Cross Section

Scale 1:100



Road 16 - Bridge Crossing

Scale 1:500

Rev.	Date	Description	By

Project Title
LUCAN NORTH

Architect

Date	By	Checked	Scale @ A1
JAN.2022	NMM	PM	1:2500

Drawing Title
OVERALL SITE LAYOUT & TYPICAL ROAD SECTION

Drawing Status
PLANNING

Job No.	Drawing No.	Issue
22003	100	P0

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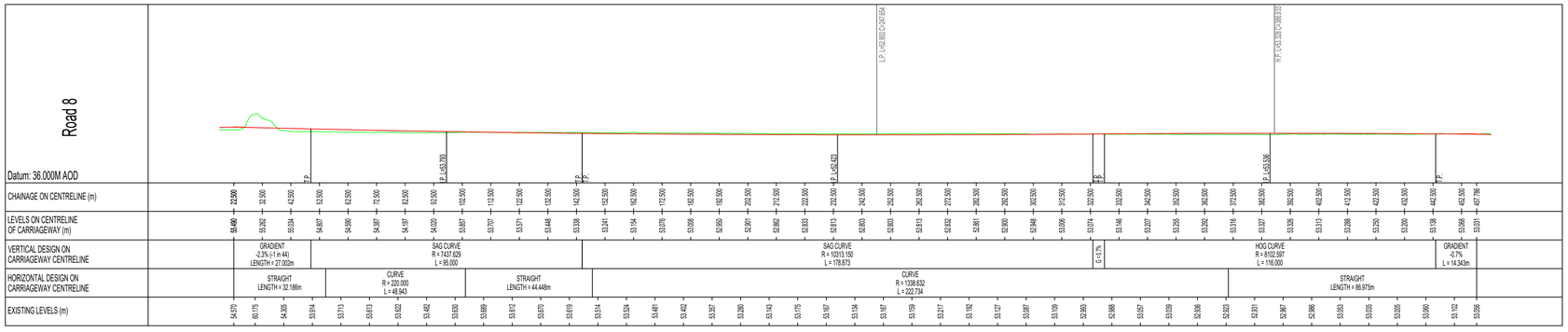
Rathfarnham
Dublin 14
D14 CR20
Tel +353 (0)1 205 1101
www.poga.ie



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Rev.	Date	Description	By

Project Title
LUCAN NORTH

Architect

Date	By	Checked	Scale @ A1
JAN.2022	NMM	PM	1:1000

Drawing Title
ROADS 1
HORIZONTAL & VERTICAL ALIGNMENT

Drawing Status
PLANNING

Job No.	Drawing No.	Issue
22003	101	P0

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Rathfarnham
Dublin 14
D14 CR20
Tel +353 (0)1 205 1101
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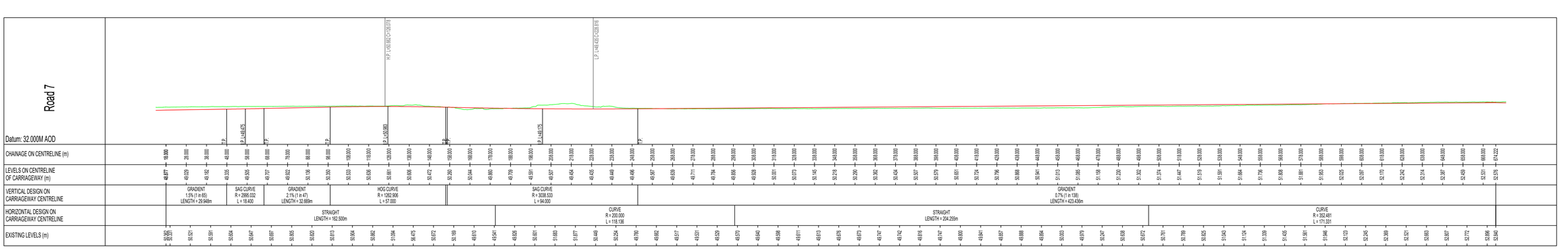

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Rev.	Date	Description	By

Project Title
LUCAN NORTH

Architect

Date	By	Checked	Scale @ A1
JAN.2022	NMM	PM	1:1000

Drawing Title
ROADS 2
HORIZONTAL & VERTICAL ALIGNMENT

Drawing Status
PLANNING

Job No.	Drawing No.	Issue
22003	102	P0

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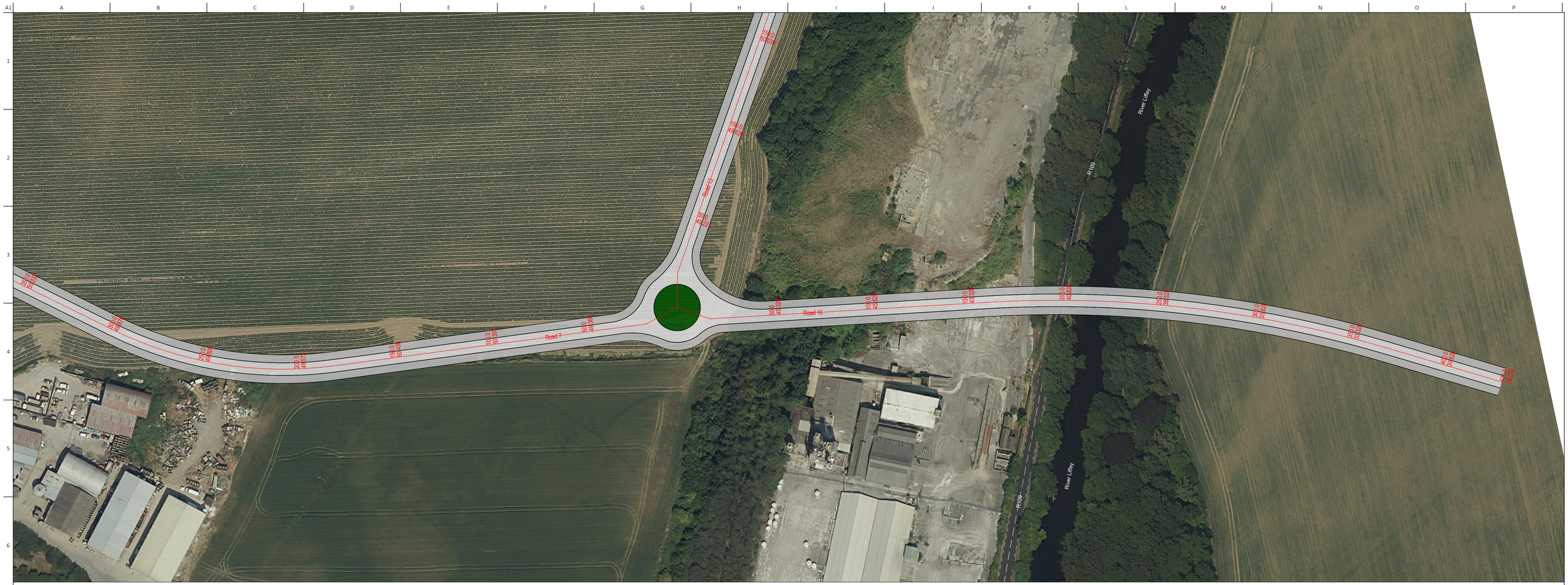
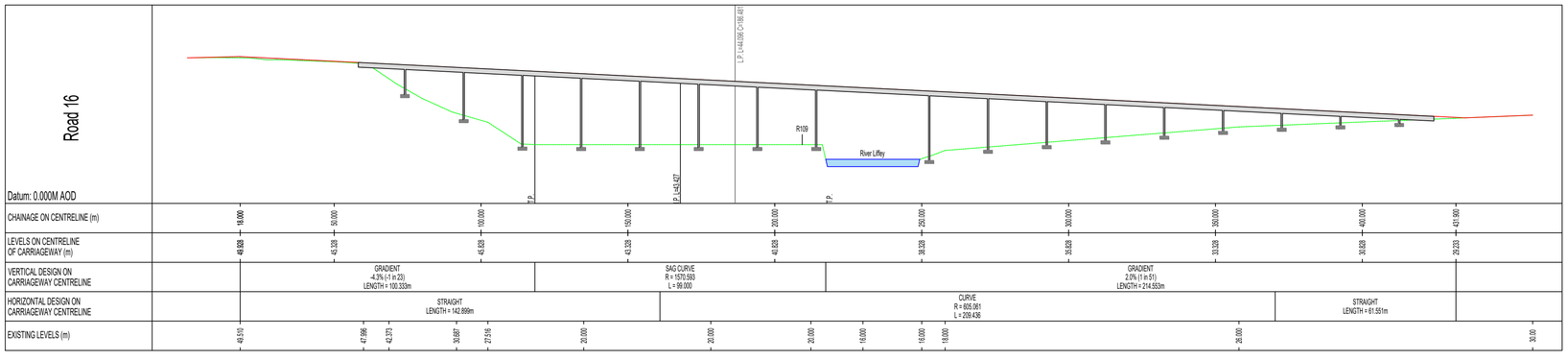
STRUCTURAL + CIVIL
Unit C2, Nutgrove Office Park
Rathfarnham
Dublin 14
D14 CR20
Tel +353 (0)1 205 1101
www.poga.ie





Rev.	Date	Description	By

Project Title
LUCAN NORTH

Architect

Date	By	Checked	Scale @ A1
JAN.2022	NMM	PM	1:1000

Drawing Title
ROADS 3
HORIZONTAL & VERTICAL ALIGNMENT

Drawing Status
PLANNING

Job No.	Drawing No.	Issue
22003	103	P0

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Unit C2, Nutgrove Office Park
Rathfarnham
Dublin 14
D14 CR20
Tel +353 (0)1 205 1101
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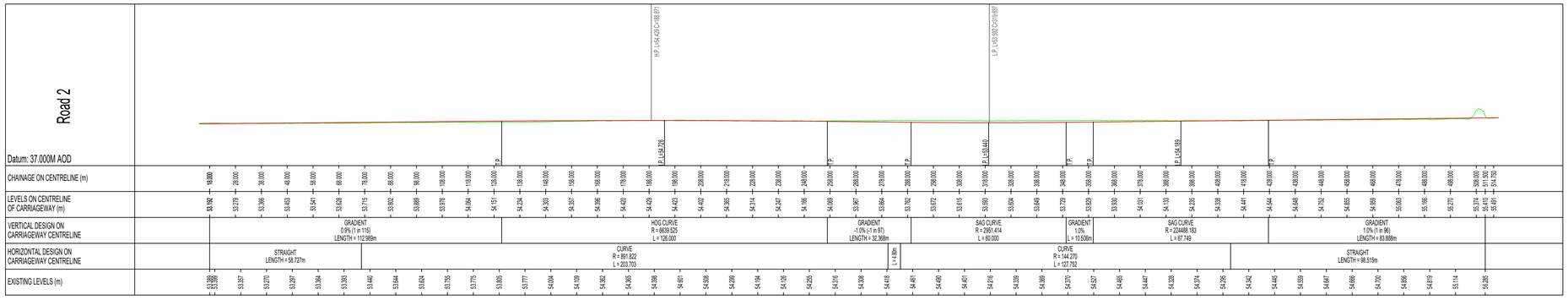

Rev.	Date	Description	By

Project Title
LUCAN NORTH

Architect

Date	By	Checked	Scale @ A1
JAN.2022	NMM	PM	1:1000

Drawing Title
ROADS 4
HORIZONTAL & VERTICAL ALIGNMENT

Drawing Status
PLANNING

Job No.	Drawing No.	Issue
22003	104	P0

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Rathfarnham
Dublin 14
D14 CR20
Tel +353 (0)1 205 1101
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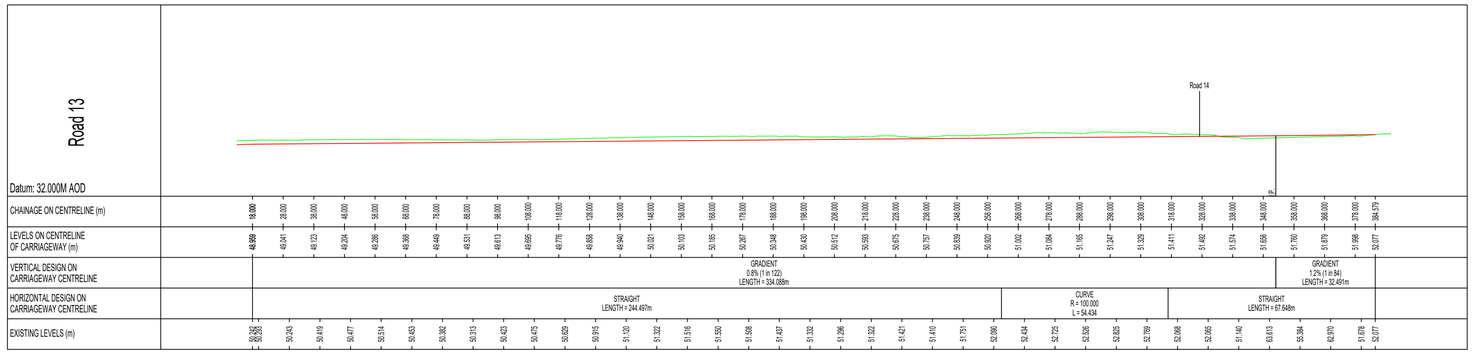

Rev.	Date	Description	By

Project Title
LUCAN NORTH

Architect

Date	By	Checked	Scale @ A1
JAN.2022	NMM	PM	1:1000

Drawing Title
ROADS 5
HORIZONTAL & VERTICAL ALIGNMENT

Drawing Status
PLANNING

Job No.	Drawing No.	Issue
22003	105	P0

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STRUCTURAL + CIVIL
Unit C2, Nutgrove Office Park
Rathfarnham
Dublin 14
D14 CR20
Tel +353 (0)1 205 1101
www.poga.ie

OFFICES:

CORK
Carraig Mór House,
10 High Street,
Douglas Road,
Cork.

KERRY
HQ Tralee,
Abbey Street,
Tralee,
Kerry
Tel: +353 (0) 214840214
E: info@mhl.ie

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