MHL CONSULTING ENGINEERS

**For: Cetti Ltd.**

Proposed Residential Development,
Scairt Cross.

# Traffic and Transportation Assessment

**July 2024**

**MHL & Associates Ltd.**
**Consulting Engineers**

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**Document Control Sheet**

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# 1 NON TECHNICAL SUMMARY

## 1.1 Preamble

M.H.L. & Associates Ltd. Consulting Engineers have been engaged by engaged by DOSA Engineers, on behalf of Cetti Ltd. to to prepare a Traffic and Transportation Assessment (TTA) as part of a Part 8 Planning Application, following pre-planning consultation with the Traffic Operations Department of Cork City Council.

This TTA will assess how the proposed development will impact the surrounding roads network. It will consider appropriate access arrangements and the transport choices available to future users of the application site and how the existing/proposed transport infrastructure surrounding the site will influence that choice. The impact of traffic demand generated by the proposals will be considered and quantified.

## 1.2 Report findings

The overall impact of the development on the adjoining local road is to increase traffic flows entering/exiting the development by 44no. trips in the morning peak and by 41no. trips in the evening peak in the Opening Year 2026, assuming all traffic generated by the development is new to the network.

The development traffic is expected to permeate through the local road network ensuring the impact of the generated traffic is further reduced, travelling northwest to Grange Road Junction, northeast to Douglas/ N41 and south to Carriglaine.

Development traffic typically follows the existing traffic patterns in the vicinity of the site. The distribution of development traffic has therefore been proportioned to align with existing mainline traffic patterns along Scairt Road/ Donnybrook Hill and the identified junction.

For the noted design year scenarios, the TTA assessment shows that the traffic impact from the applicant's site is negligible on the adjoining road network junctions, as the % junction traffic flows attributable to the applicant's site are low relative to existing mainline junction traffic in the area.

| ID | Junction | Impact |
|---|---|---|
| 1 | Development entrance | Low |
| 2 | Scairt Cross | Low |

**Figure 1.1 Expected Junction Impact from Proposed Development Traffic**

The TTA methodology, including the scope and means of assessment of the identified junction, has been agreed with the Local Authority as part of the pre-application process.

The traffic modelling analysis conducted for these design year scenarios for the full development schedule.

The TTA has demonstrated the following:

The proposed development is in accordance with the Local Area Plan and forms an important continuation in the delivery of planned growth in the area.

A review of the existing roads network and collision data in the vicinity of the site indicates that there are no significant problems in relation to the current safety of the existing roads network.

- Junction 1: Proposed development entrance is shown to operate within capacity up to and including the Design Year 2041.
- The impact of the development flows reduces over time with background traffic growing between 2031 and 2041, as is to be expected.
- The proposed site layout is permeable to the roads network and is well connected to existing pedestrian linkages.
- The proposed new access arrangements are safe and suitable and are in accordance with the Design Manual for Roads & Bridges (DMRB) and the Design Manual for Urban Roads & Streets (DMURS).
- No modal shift has been assumed for the assessment, ensuring that a conservative (worst-case) analysis has been conducted.

# 2 INTRODUCTION

## 2.1 Application

The applicant's is applying for permission to construct a new residential development on a greenfield site, with ancillary site development and landscaping works at:

- **Scairt Cross, Grange, Cork.**

The scheme is to comprise of 54No. residential units. The residential units consist of:

- **8 No. houses and 46 No. apartments.**

Access to the proposed development is provided to the west of the site, onto the L2462 Scairt Hill Road. Pedestrian access is also provided to the north of the scheme onto a Public Open Space alongside the existing bus stop. An existing uncontrolled crossing is also located to the north of the proposed development entrance.

## 2.2 Planning Background

The lands are zoned for ZO 01 Sustainable Residential Neighbourhoods in the Cork City Development Plan 2022-2028. On this basis the proposed development for this planning application is a plan led development that is entirely suitable at this location.

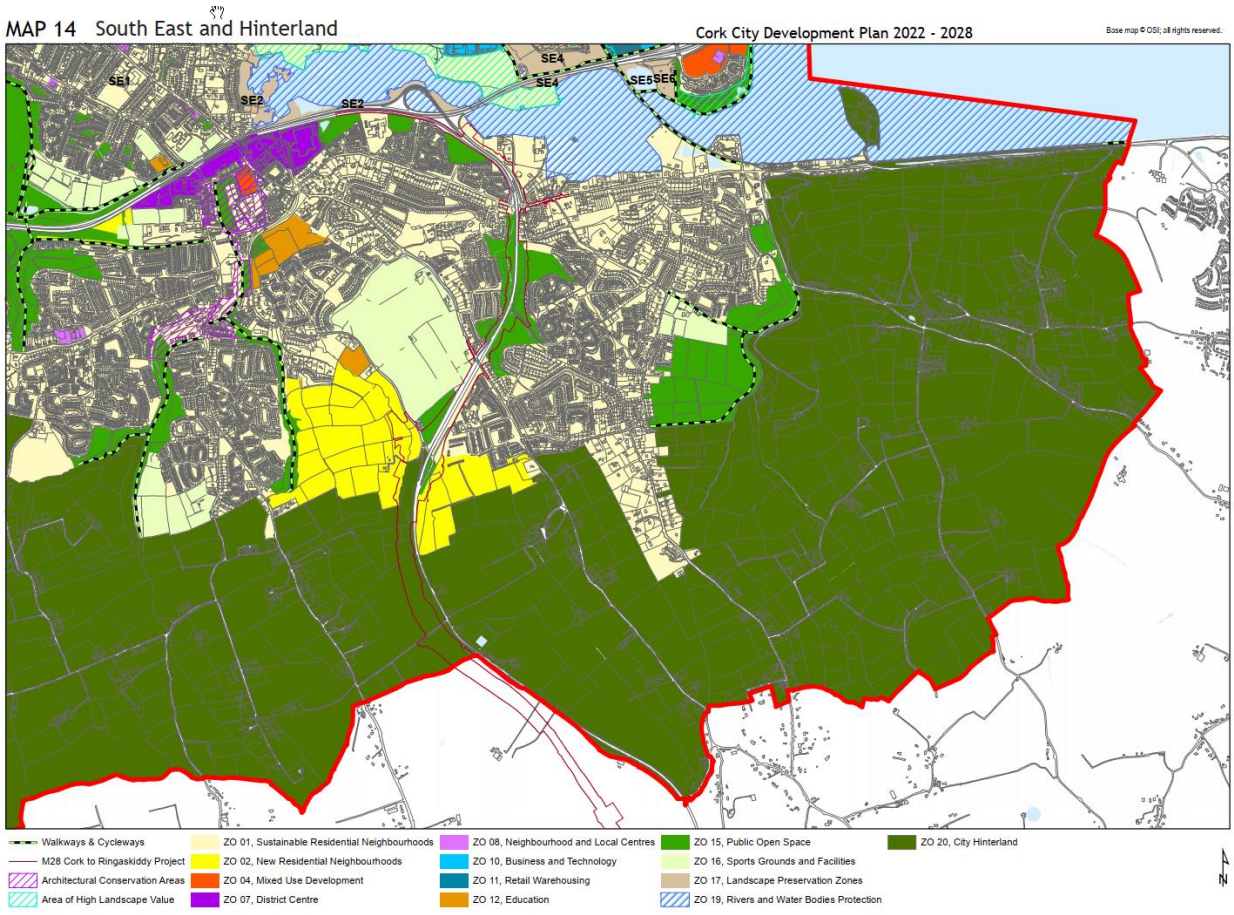


**Figure 2.1 Land use zoning**

## 2.3 Statutory Consultation

Notwithstanding ongoing consultation with the Traffic & Transportation Department of Cork City Council, the Design Team have engaged with various departments within Cork City Council with a view to consider the respective issues raised as part of the design process of the scheme. These engagements have informed the final layout of the scheme including access arrangements for vehicular, pedestrian and cycle modes of transport.

## 2.4 Document Structure

A TTA is an appropriate form of assessment for the scale of the proposed development and the scope has been agreed with the Local Authority. The structure of this TTA is in accordance with TII (Transport Infrastructure Ireland) Document, Traffic and Transport Assessment Guidelines, 2014.

The aim of this TTA is to identify the characteristics of the application site and surrounding area, examine the transport implications, ensure sustainable accessibility is maximized and appropriate infrastructure provided.

The key issues that need to be addressed within this TTA, with reference to the size and location of the development proposal, are as follows:

- Review of the site location, composition, and local roads network.
- Analysis of road safety data for the most recent five-year period available.
- Accessibility critique reviewing pedestrian, cycle, and public transport access to the site, plus any infrastructure currently available to promote travel by sustainable means.
- A review of the relevant planning and transport policy.
- Description of the development proposal.
- Description and justification for the proposed access arrangement, internal layout, parking provision, public transport provision, fire tender/service/delivery access, including all necessary swept-path assessments and visibility splays.
- Forecast multi-modal trip rates and trip generation as agreed with the Local Authority.
- Modal split assumptions used in the trip generation process.
- The use of appropriate and agreed traffic modelling software for the assessment of individual junction/s.
- Provide With/Without Development assessment for each of the critical junctions.
- Assess significance of development generated traffic upon the surrounding transport infrastructure and identify any necessary mitigation.

## 2.5 TII TTA Guideline Thresholds

The following thresholds in relation to the development of Traffic and Transport Assessments allow for identification of planned proposals that will affect National Roads. The following are notable for this application:

| ID | TII Threshold | Applicant's Site |
|---|---|---|
| 1 | Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road. | N |
| 2 | Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists, or the location is sensitive. * | Y** |
| 3 | Residential development in excess of 200 dwellings. | N |
| 4 | Retail and leisure development in excess of 1,000m2. | N |

| | | |
|---|---|---|
| 5 | Office, education, and hospital development in excess of 2,500m2. | N |
| 6 | Industrial development in excess of 5,000m2. | N |
| 7 | Distribution and warehousing in excess of 10,000m2 | N |
| ** ***At Development Entrance only.*** | | |

**Figure 2.2 Traffic Management Guidelines Thresholds For Transport Assessments (PE-PDV-02045)**

As per the Advisory Thresholds listed in Table 2.2 of (PE-PDV-02045), the following is also evident.

| ID | TII Threshold | | Applicant's Site |
|---|---|---|---|
| 1 | 100 trips in / out combined in the peak hours for the proposed development | | N |
| 2 | Development traffic exceeds 10% of turning movements at junctions with and on National Roads. | | N |
| 3 | Development traffic exceeds 5% of turning movements at junctions with National Roads if location has potential to become congested or sensitive. | | N |
| 4 | Retail | 1,000m2 Gross Floor Area. | N |
| 5 | Leisure facilities including hotels, conference centres and cinemas | 1,000m2 Gross Floor Area. | N |
| 6 | Business | 2,500m2 Gross Floor Area | N |
| 7 | Industry | 5,000m2 Gross Floor Area. | N |
| 8 | Distribution and warehousing | 10,000m2 Gross Floor Area | N |
| 9 | Hospitals and education facilities | 2,500m2 Gross Floor Area | N |
| 10 | Stadia | 1,500-person capacity | N |
| 11 | Community Facilities including places of worship, community centres. | 2,500m2 Gross Floor Area | N |
| 12 | Housing | 50 dwellings within urban areas with a population less than 30,000. 100 dwellings within urban areas with a population equal to or greater than 30,000. | N |
| 13 | Parking Provided | 100 on-site parking spaces | N |

**Figure 2.3 Traffic Management Guidelines Advisory Thresholds For Transport Assessments (PE-PDV-02045)**

The impact of traffic volumes of the proposed development is not deemed significant and can be considered sub threshold as per TII standard guidance.

The TII sub threshold criterion has been referred to and the following are noted:

| ID | TII Sub Threshold | | Applicant's Site |
|---|---|---|---|
| 1 | Vehicle Movements | The character and total number of trips in / out combined per day are such that as to cause concern | N |
| 2 | Location | The site is not consistent with national guidance or local plan policy, or accessibility criteria contained in the Development Plan | N |
| 3 | Other Considerations | The development is part of incremental development that will have significant transport implications. | N |
| 4 | Other Considerations | The development may generate traffic, particularly heavy vehicles in a residential area. | N |
| 5 | Other Considerations | There are concerns over the development's potential effects on road safety. | N |
| 6 | Other Considerations | The development is in a tourist area with potential to cause congestion. | N |
| 7 | Other Considerations | The planning authority considers that the proposal will result in a material change in trips patterns or raises other significant transport implications. | N |

**Figure 2.4 Traffic Management Guidelines Sub Thresholds For Transport Assessments (PE-PDV-02045)**

## 2.6 Assessment Specifics

### Junctions

The key junction/s identified in the area surrounding the proposed development are as follows:

- **The nearby priority T junction at Scairt Cross(J1).**

### Traffic Counts

As part of this assessment, peak hour traffic flows were recorded by manual traffic count by MHL for the nearby junction outlined above, with these traffic counts recorded in 2022. These counts been factored up to the modelling year scenarios with TII expansion factors.

**Assessment period**

The Opening Year is the year of expected completion for the development and is taken to be 2026. In accordance with the TII's "Traffic and Transport Assessment Guidelines," a traffic analysis has been undertaken.

Technical Notes have been produced to agree the key parameters relating to the traffic modelling conducted, including junction/s to be assessed, trip generation, modal shift targets, trip distribution, assessment years and the presentation of results resulting from consultation with Cork City Council's Traffic & Transportation Department.

The TTA concludes that the proposed development, in traffic and transportation terms is acceptable, and there are no traffic and transportation reasons that should prevent the Planning Authority from recommending approval of this application.

# 3 EXISTING CONDITIONS

## 3.1 Introduction

This section describes the base data used to develop the junction models, the critical links and junctions as agreed with the Local Authority, committed transport proposals to the area and other surrounding proposed development.

## 3.2 Baseline Traffic Conditions

As part of the pre-application process the extent of data collection and the critical links and junctions was agreed with the Local Authority.

A variety of different data sources have been used, including:

- AM & PM peak hour traffic counts (refer to reports Appendix).
- Background OS Mapping and aerial photography
- On-site junction measurements including saturation flows, link speeds, queue length measurements, pedestrian movements at pedestrian crossings and geometric data for each of the modelled junction/s

The peak hour traffic surveys were undertaken by MHL for the morning and peak periods at the junction location shown on June 2022, with the survey results being factored using TII Project Appraisal Guidelines (PE-PAG-02017) for use in future year scenarios. Morning Counts were undertaken from 08:00 to 09:00 and evening counts were conducted from 17:00 to 18:00. The date was chosen to ensure that it did not coincide with school holidays or dates of particularly low traffic volumes.

On-site measurements including lane widths, junction turning radii, lane lengths and saturation flows were undertaken by MHL and were incorporated in the constructed models.

For the modelling analysis, each of the peak hour traffic periods are included to obtain the worst-case traffic build-up results. This ensures a robust analysis of the road network is conducted. The percentage of classified vehicles was used within the generated traffic models to accurately reflect existing conditions.

## 3.3 Local Roads Network

The primary direction of vehicular travel to/from the site will be through the nearby Scairt Cross Junction, Scairt Hill and Donnybrook Hill.

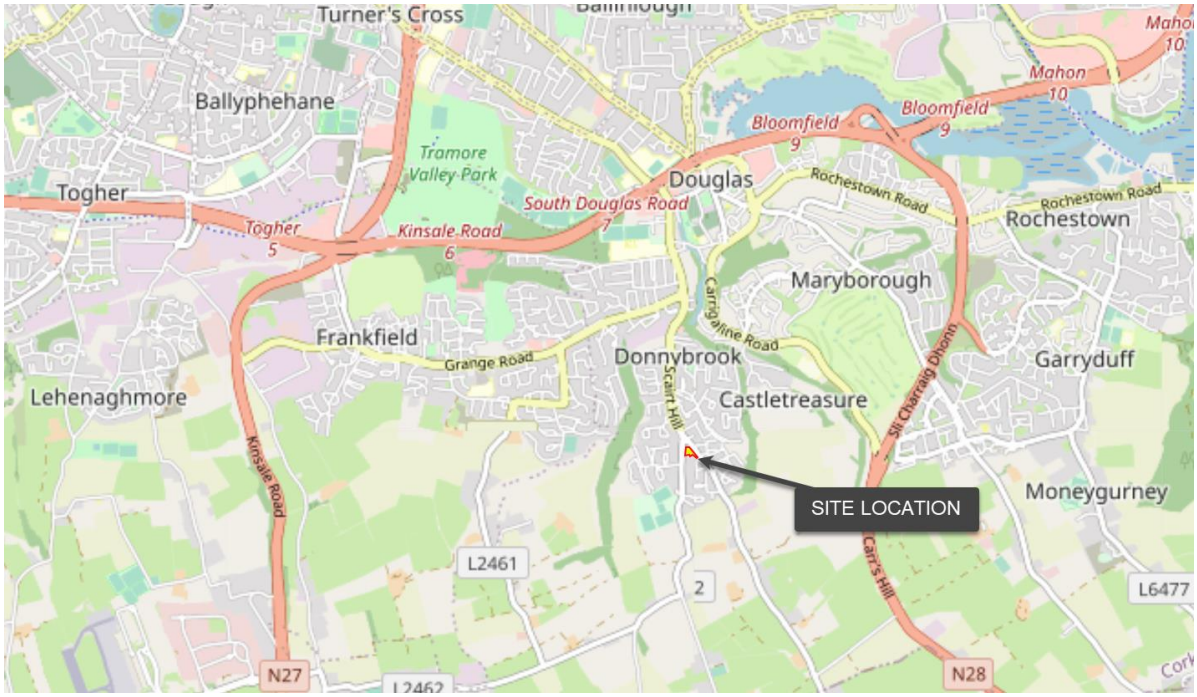


**Figure 3.1 Site Location**

## 3.4 Existing Situation

The figures below outline the existing measured traffic flows at the assessed junctions.

- The mainline traffic flows through the junction in the morning peak are quite evenly distributed. A greater portion of right turn traffic comes from the north onto Scairt Hill.
- The main morning traffic flow from the minor junction arm turns north onto Donnybrook Hill toward Grange.

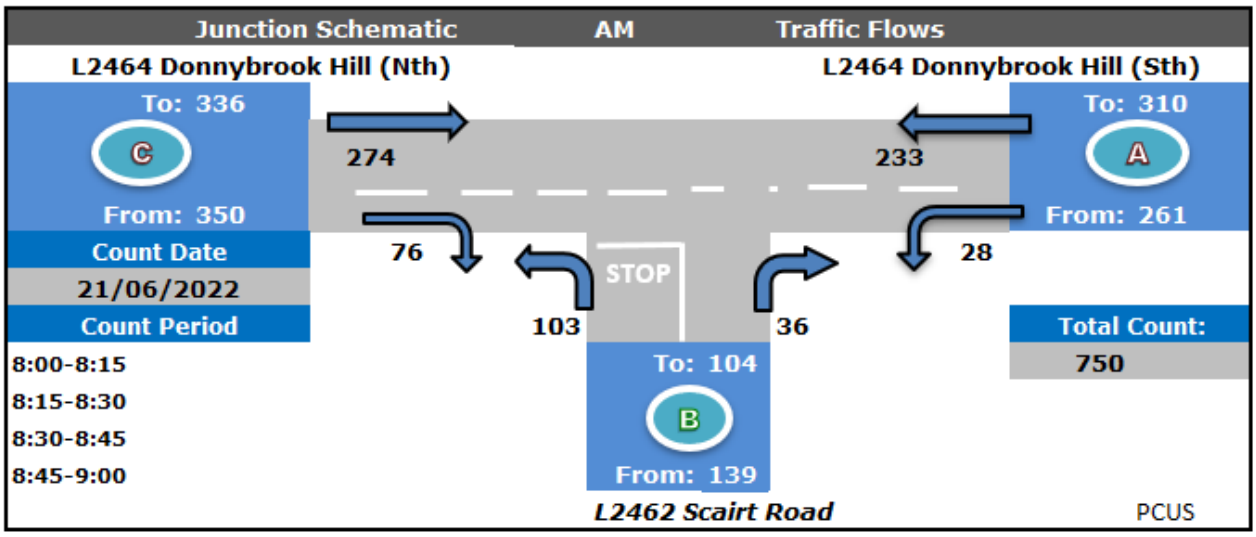


**Figure 3.2 MTC – Morning**

- As for the morning peak, the mainline traffic flows through the junction in the evening peak are quite evenly distributed. A greater portion of right turn traffic comes from the north onto Scairt Hill.
- The main evening traffic flow from the minor junction arm turns north onto Donnybrook Hill toward Grange.

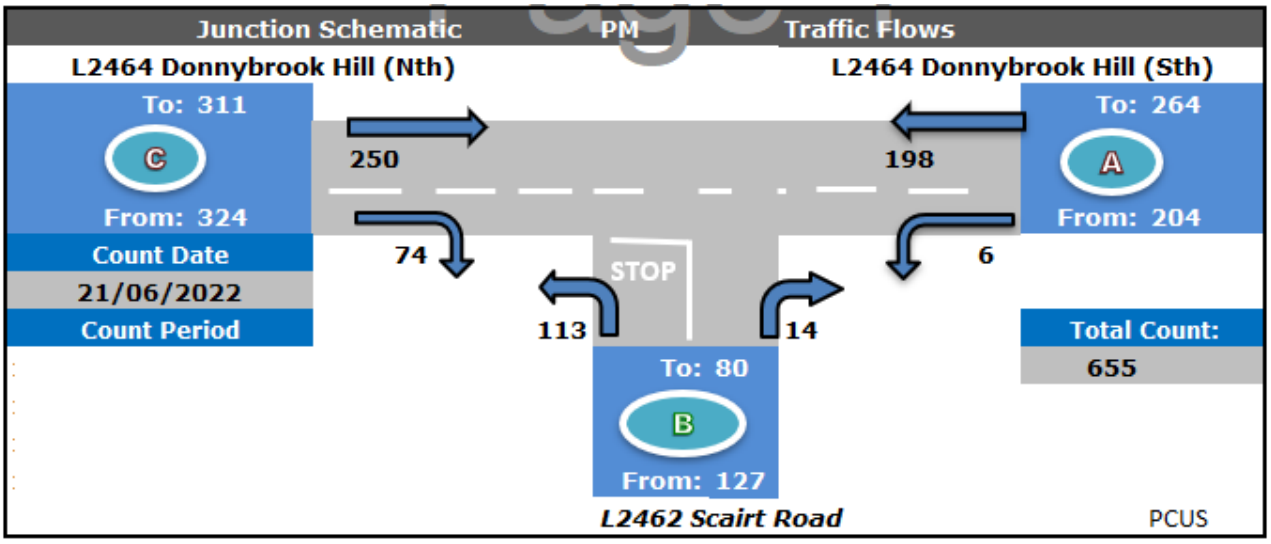


**Figure 3.3 MTC – Evening**

# 4 PROPOSED DEVELOPMENT

## 4.1 Site Details

The scheme is to comprise of 54No. residential units. The residential units consist of:

- **8 No. houses and 46No. apartments.**

Access to the proposed development is provided to the west of the site, onto the L2462 Scairt Hill Road. Pedestrian access is also provided to the north of the scheme onto a Public Open Space alongside the existing bus stop. An existing uncontrolled crossing is also located to the north of the proposed development entrance.


**Figure 4.1 Proposed Development site (O'Mahony Pike Architects)**

## 4.2 Phasing

It is expected the full number of proposed residential units are to be programmed for construction in 2025 and finish in late 2026, subject to grant of planning. The Traffic Impact Assessment includes the proposed Opening Year of 2026, the design year +5 (2031) and the design year +15 (2041).

### 4.2.1 Mode Splits

The development's traffic generation will be primarily private car with sustainable transport and active travel modes noted.

# 5 TRAFFIC

## 5.1 Traffic Generation -TRICs

Trip generation from the proposed development was garnered via the TRICS database. MHL are a licence holder for the TRICS database and employ it for traffic studies. TRICS is a well-established UK and Irish national database which holds more than 2,100 site locations and 7,000 survey counts with over 98 separate land use sub-categories. MHL & Associates Ltd. are one of over 300 worldwide licensed TRICS member organisations.

The TRICS program was used for the land-use sub-category associated with the development proposal. The "Guidelines for Traffic and Transportation Assessments" state that for residential use the busiest hours are between 08:00-09:00 and 17:00-18:00.

Trip Generation from the proposed apartment and housing units was derived using the TRICS database. The following figure presents the peak hour trip rates this development type.

| | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---|---|---|---|---|---|---|---|---|---|
| Time Range | No. Days | Ave. DWELLS | Trip Rate | No. Days | Ave. DWELLS | Trip Rate | No. Days | Ave. DWELLS | Trip Rate |
| 00:00 - 01:00 | | | | | | | | | |
| 01:00 - 02:00 | | | | | | | | | |
| 02:00 - 03:00 | | | | | | | | | |
| 03:00 - 04:00 | | | | | | | | | |
| 04:00 - 05:00 | | | | | | | | | |
| 05:00 - 06:00 | | | | | | | | | |
| 06:00 - 07:00 | | | | | | | | | |
| 07:00 - 08:00 | 2 | 178 | 0.031 | 2 | 178 | 0.244 | 2 | 178 | 0.275 |
| 08:00 - 09:00 | 2 | 178 | 0.194 | **2** | **178** | **0.612** | **2** | **178** | **0.806** |
| 09:00 - 10:00 | 2 | 178 | 0.183 | 2 | 178 | 0.230 | 2 | 178 | 0.413 |
| 10:00 - 11:00 | 2 | 178 | 0.143 | 2 | 178 | 0.191 | 2 | 178 | 0.334 |
| 11:00 - 12:00 | 2 | 178 | 0.157 | 2 | 178 | 0.230 | 2 | 178 | 0.387 |
| 12:00 - 13:00 | 2 | 178 | 0.306 | 2 | 178 | 0.275 | 2 | 178 | 0.581 |
| 13:00 - 14:00 | 2 | 178 | 0.244 | 2 | 178 | 0.253 | 2 | 178 | 0.497 |
| 14:00 - 15:00 | 2 | 178 | 0.340 | 2 | 178 | 0.331 | 2 | 178 | 0.671 |
| 15:00 - 16:00 | 2 | 178 | 0.376 | 2 | 178 | 0.222 | 2 | 178 | 0.598 |
| 16:00 - 17:00 | 2 | 178 | 0.379 | 2 | 178 | 0.236 | 2 | 178 | 0.615 |
| 17:00 - 18:00 | **2** | **178** | **0.463** | 2 | 178 | 0.289 | 2 | 178 | 0.752 |
| 18:00 - 19:00 | 2 | 178 | 0.343 | 2 | 178 | 0.272 | 2 | 178 | 0.615 |
| 19:00 - 20:00 | | | | | | | | | |
| 20:00 - 21:00 | | | | | | | | | |
| 21:00 - 22:00 | | | | | | | | | |
| 22:00 - 23:00 | | | | | | | | | |
| 23:00 - 24:00 | | | | | | | | | |
| Total Rates: | | | 3.159 | | | 3.385 | | | 6.544 |

**Figure 5.1 Trip Generation Per Housing Unit (TRICS)**

Having reviewed the existing, measured profile of traffic flows in the vicinity, combined with the TRICs data, it was determined that the most heavily trafficked peak hours were 08:00-09:00 and 17:00-18:00. A profile of AM and PM traffic flows on the at the junction is shown below.

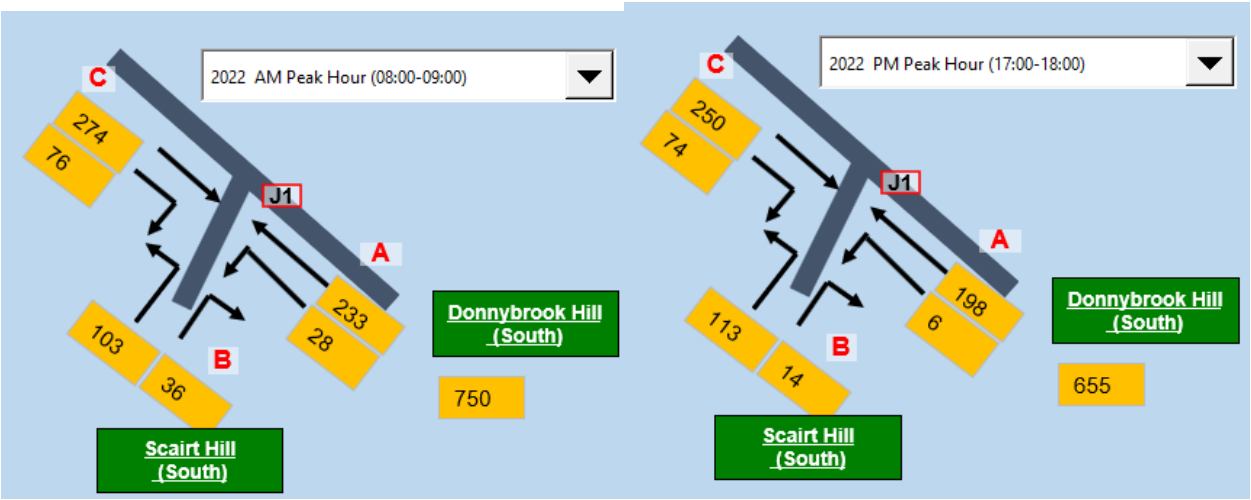


**Figure 5.2 J1 Base Year, 2022 AM /PM Peak Hour Flows**

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 08.00-09.00 and 17.00-18.00.

# 6 MODAL SPLIT

This section describes the current level of modal shift (the use of sustainable modes of travel) based on available data and compares these to national targets.

The 2022 Census online SAP data was used to assess current modal patterns in area which encompasses the site. A minor % of people in this area said they were commuting on foot, bike or using public transport.


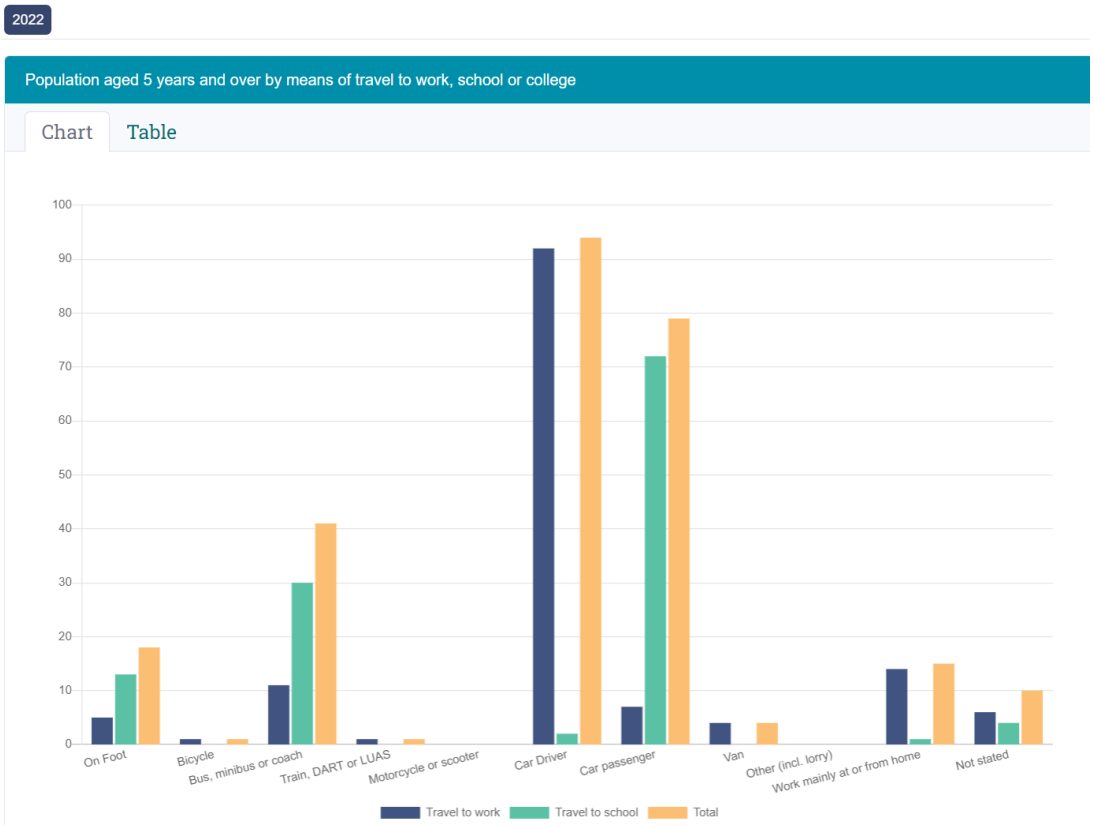


**Figure 6.1: 2022 Modal Shift by means of travel to work, school, or college.**

(Small Areas: A047132032)

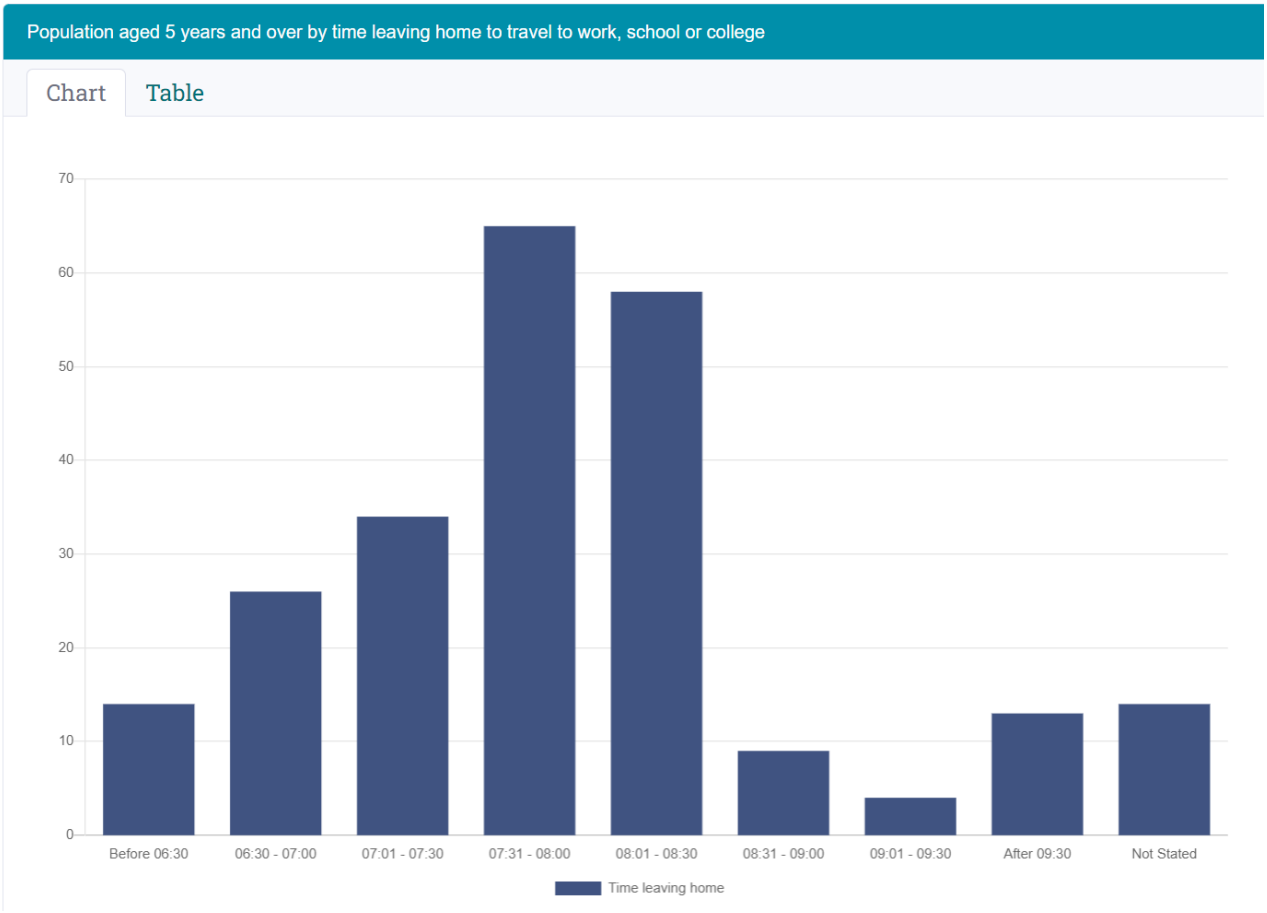


**Figure 6.2: 2022 SAP Time travel to work, school, or college.**
(Small Areas: A047132032)

Future national targets in the range of 30-45% are being pursued by all Local Authorities. Given the location of the proposed development and based on the increased density of development, a limited increase in sustainable transport is expected. A change in the local sustainable transport measures as outlined.

Modal shift anticipated due increase in public transport or active travel in the immediate area is deemed to be reasonable.

# 7 TRAFFIC GENERATION / FORECASTING

This section describes the traffic generation from the development as outlined in prior section and accounts for future modal shift targets as described previously.

Based on the above trip generation rates the following table presents development traffic for future years. This traffic has been added to existing background flows and distributed through the network to model each of the identified junctions.

| | | | | | |
|---|---|---|---|---|---|
| | Residential Units | 54 | | | |
| | | | | | |
| | | AM PEAK | | PM PEAK | |
| | | Arrivals | Departures | Arrivals | Departures |
| Residential Housing | | | | | |
| | Peak Trics Trip Rates | 0.194 | 0.612 | 0.463 | 0.289 |
| | *per unit* | | | | |
| | Peak Trips Generated: | 10 | 33 | 25 | 16 |
| | | | | | |
| | | | | | |
| Total Trips Generated | | 10 | 33 | 25 | 16 |
| | | 44 | | 41 | |

**Figure 7.1 Trip generation**

## 7.1 Site Traffic Counts

These traffic counts collated by MHL have been factored up to the modelling year scenarios with TII expansion factors. Interchange volumes were obtained by Trafficomics are noted in the Appendix. These existing junction traffic counts were growth factored as described in Chapter 5. 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 site.


**Figure 7.2 Traffic count location (Donnybrook Hill/ Scairt Hill)**

## 7.2 Modal Choice

In predicting the level of traffic that will be generated by the proposed development, the means of transport (modal choice) and quantity of traffic generated (trip attraction) must be considered. It is assumed that primary means of transport will be vehicular, due to the nature of the development. The analysis therefore assumes car will dominate the developments traffic movements.

Future public transport improvements would encourage modal shift in the future towards sustainable travel modes for residents travelling to work, as encouraged by local and National Transport Authority Policy. This would reduce the modelled impact of this development on the surrounding road network.

## 7.3 Trip Distribution

The current traffic distribution pattern was used to determine directional split to and from the proposed development. This peak hour directional split pattern is assumed to remain constant with the passage of time.

## 7.4 Trip Assignment

The proposed development will generate traffic as outlined following current flow patterns. The overall projected traffic movements at the development for the Opening Year 2026, Opening Year +5 in 2031, and Opening Year +15 in 2041 for the AM and PM peak hours are as noted. Traffic models were produced for these scenarios for the "without development" and also "with development" scenario.

# 8 TRAFFIC ASSESSMENT

Development traffic recorded background traffic was factored using TII (Transport Infrastructure Ireland) Project Appraisal Guidelines (PE-PAG-02017) for use in future year scenarios.

The following table presents the factors used on recorded vehicle counts based on Link Based Growth Rates (Central Growth) for the Cork Metropolitan Area.

The Base Year is taken as 2022, the year of the traffic count. It is anticipated that the full development build will occur in the near /medium term, subject to a positive outcome from the planning process. In accordance with the Guidelines for Traffic and Transportation Assessments as published by the TII, a traffic analysis is required to be undertaken for the Opening Year, Opening Year plus five years and Opening Year plus fifteen years.

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. The table below shows the calculated growth factors:

| | | | Cars/LGV | HGV | Combined |
|---|---|---|---|---|---|
| Count % | | | 95% | 5% | |
| **2022** | to | **2024** | 1.038 | 1.077 | **1.040** |
| **2022** | to | **2029** | 1.140 | 1.296 | **1.148** |
| **2022** | to | **2039** | 1.246 | 1.498 | **1.258** |

TII Project Appraisal Guidelines for National Roads Unit 5.3
*Travel Demand Projections (PE-PAG-0217)*

**Figure 8.1 Future Projected Growth Rates**

The effects of traffic growth on the existing network plus the additional traffic generated by the proposed development, have been compiled for this traffic assessment and are noted in the future flow projections.

## 8.1 Future Year Traffic Flows

The following figures below outline the projected traffic flows at the junction for the AM with development scenario and the PM with development scenario for all Opening Year scenarios.

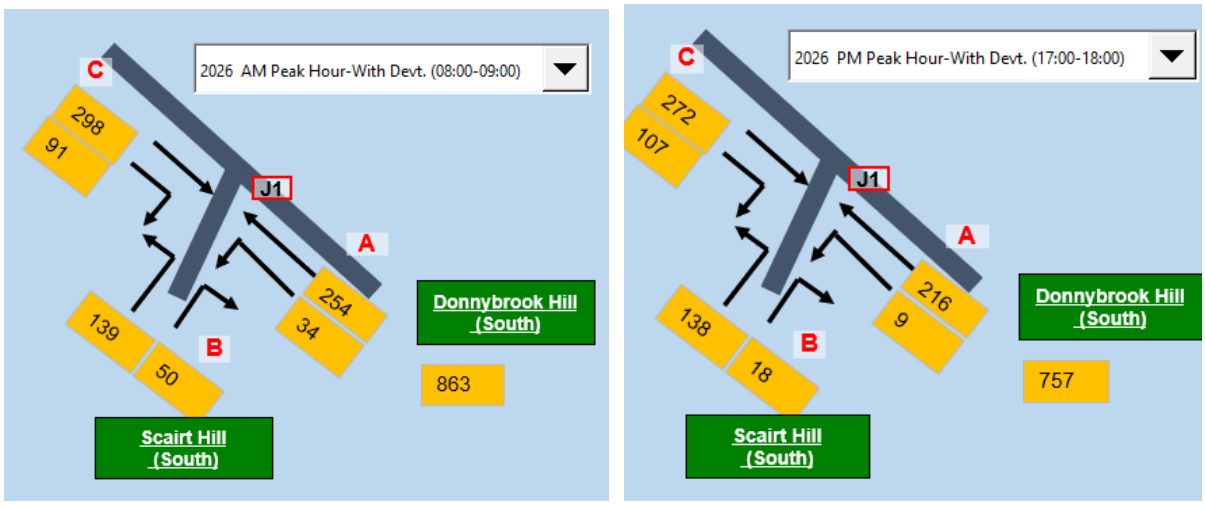


**Figure 8.2 Projected Opening Year, 2026 AM /PM Peak Hour Flows (With Development)**

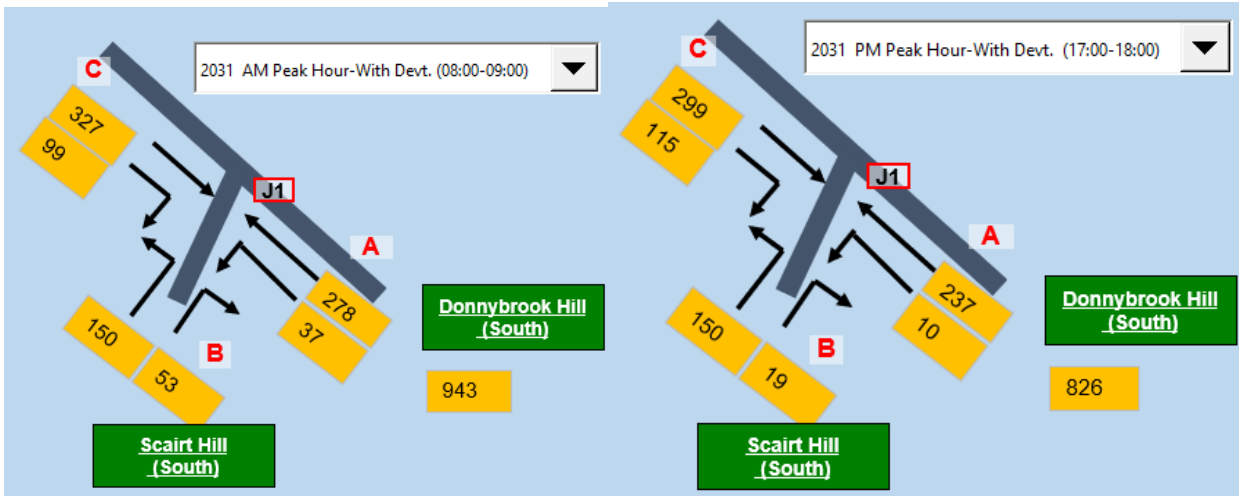


**Figure 8.3 Projected Opening Year, 2031, AM /PM Peak Hour Flows (With Development)**

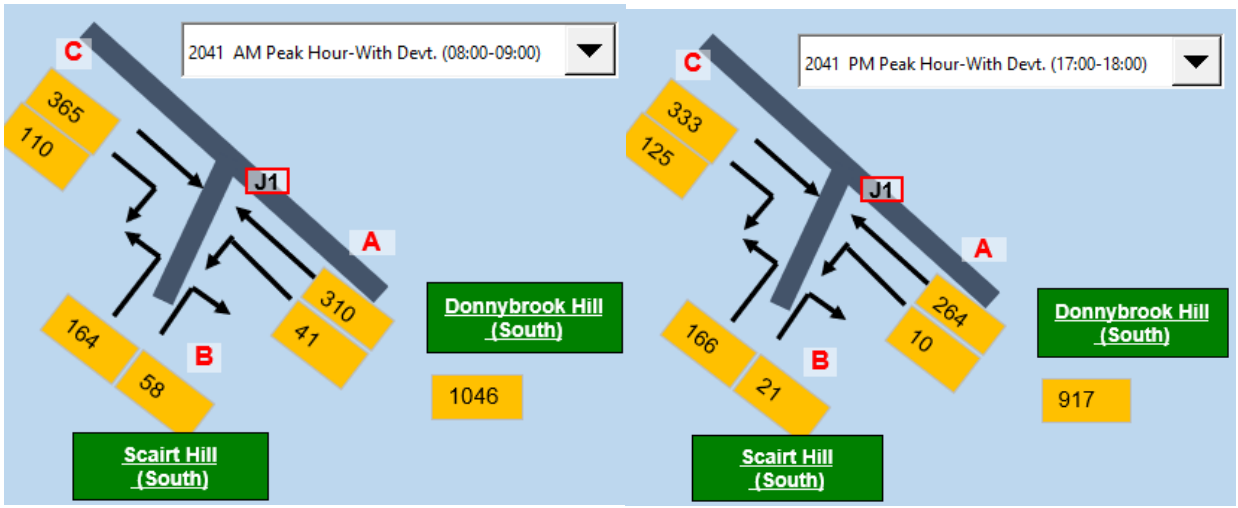


**Figure 8.4 Projected Opening Year, 2041, AM /PM Peak Hour Flows (With Development)**

# 9 TRAFFIC NETWORK MODELLING

This section presents the results of the traffic modelling of the identified junction/s as presented for AM/PM Peak both with/without development traffic for the future year scenarios. The results are presented for both morning and evening peak periods for the future year scenarios. The assessment result sheets of the generated models are provided as an Appendix.

The purpose of this Traffic and Transport Assessment is to determine if the capacity of the existing road network is sufficient to cater for the traffic generated by the proposed development.

To assess the capacity of the nearby signalised junction, traffic models were produced using traffic modelling software LinSig 3.2. LinSig is used in the assessment and design of traffic signal junctions.

The LinSig modelling software produces a PRC % (Practical Reserve Capacity) and a Delay figure which are used to compare the effects the development will have on the junction being modelled. A PRC of 10% implies that the junction has reached capacity but is still operational with delay incurred. The delay figure produced (pcuHr) is a measure of the overall delay incurred on all arms of the junction and is based on the Demand Flow per arm multiplied by the Average Delay per PCU.

The output results sheets from LinSig modelling, consisting of tables of Demand Flow, Practical Reserve Capacity, Queues and Delays for each 15-minute time segment of the peak hour analysis. These tables contain start and finish times for each arm, traffic demand, 'Ratio of Flow to Capacity' (RFC), start queue length and queuing delay.

## 9.1 Junction Assessment

The traffic modelling analysis conducted for these design year scenarios.

Junction 1: The Scairt Hill Junction is shown to operate within capacity up to and including the design year 2041.

- The junctions will not need any improvements, from a capacity point-of-view for the Base Year, Opening Year scenarios and is within junction capacity thresholds.

The increase in %Deg Saturation between "without development" and "with development" scenarios is negligible in the AM period and in the PM period.

## 9.2 Cumulative Impact

As outlined, industry standard growth rates have been applied to background traffic for future year assessments (to account for further development within the area). These growth rates make allowance for modal shift targets as set by national policy but do not take account of site-specific measures that may be implemented to mitigate against traffic generation from a particular development.

The traffic impact of the proposed development is low with an estimated increase of 5% over-and-above existing traffic volumes at the assessed priority junction in the Opening Year +15 (2041 with devt.) morning and evening peak scenarios.

# 10 ROAD SAFETY

The traffic collision statistics for the surrounding road network were assessed for this application.

Please refer to the RSA Stage 1 and 2 Audit submitted with the application.

# 11 INTERNAL LAYOUT & PARKING PROVISION

The site is to have a hard tarmac or concrete surface with adequate foundation to withstand the wheel loads involved. The overall drainage of the site should be adequate to cope with storm water. The whole site is to be well lit to ensure the safe execution of manoeuvres, the safety of passengers and the security of vehicles and their contents. The lighting should be from a high level to prevent glare during manoeuvres and reduce the potential for vandalism. The layout of the site is to be designed to reduce the need for reversing manoeuvres. Where these are unavoidable, there should be an adequate area to safely execute the reversing or turning manoeuvres necessary.

The proposed parking for the development will be facilitated with new standard parking spaces for private car, disabled parking and set down traffic.

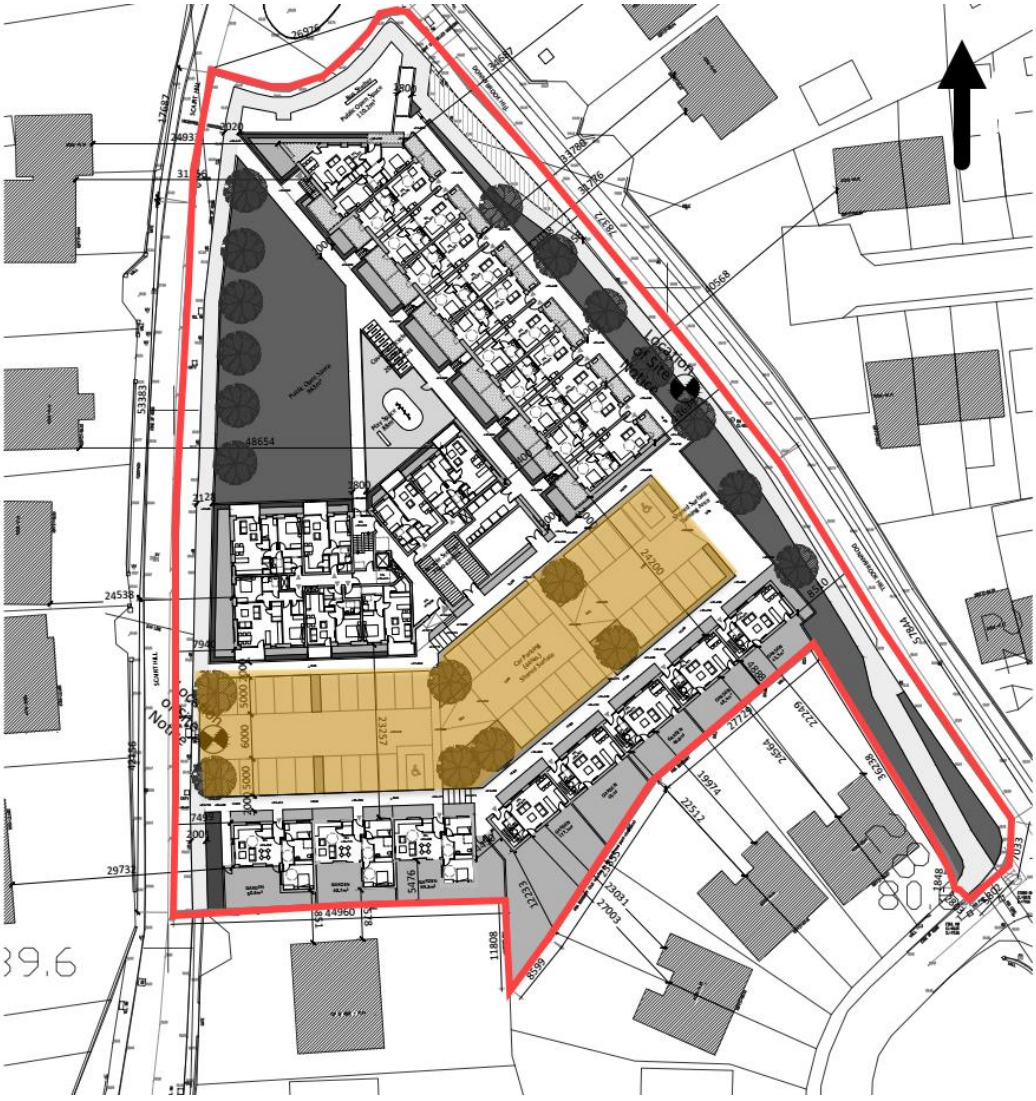

**Figure 11.1 Site layout showing parking proposals (Credit: DOSA)**

This provision is in line with the requirements set out in the Cork City Development Plan whereby the proposed maximum parking standard for the use case is dependent upon the nature and location of use. The client's intention is to provide ease of parking for visitors whilst ensuring operation and delivery is appropriate for the residential use case. Referencing the expected visitor numbers projected for the site, the proposed internal parking spaces numbers are expected to cater for the expected peak demand.

- All parking spaces are required to be a minimum 2.4m x 4.9m in size.

## 11.1 Public Transport

The Cork Metropolitan Area Transport Strategy 2040 (CMATS) proposes significant improvements to the public transport facilities over and above what is currently available. With the provision of these facilities and other incentives as part of national policy, it is anticipated that a shift to public transport will occur over the construction phase of this scheme. CMATS has provided more certainty for the delivery of these enhancements. The LAP states that is an objective of the plan to support the achievement of **high levels of modal shift** by collaborating with other agencies to improve public transport services and influence patterns of employment development to: "support use of sustainable modes and travel by public transport".

## 11.2 Accessibility and Integration

A desktop assessment of permeability for cyclists and pedestrians from the site was conducted. Presented in the following isochrone maps are the range of distances, for both pedestrians and cyclists, based on travel time. Pedestrians have the benefit of footpaths, but cyclists are required to use the existing local, regional roads and share with other vehicles.

## 11.3 Pedestrian / Cyclist / Disability

All internal footpaths should be dished at all entrances and crossings with tapered/dropped kerbs and tactile paving used on approaches in accordance with the design guidelines for use with tactile paving. This is to accommodate wheelchair access and guide the visually impaired users safely through the development. Adequate bicycle parking provision is proposed as per development schedules presented.

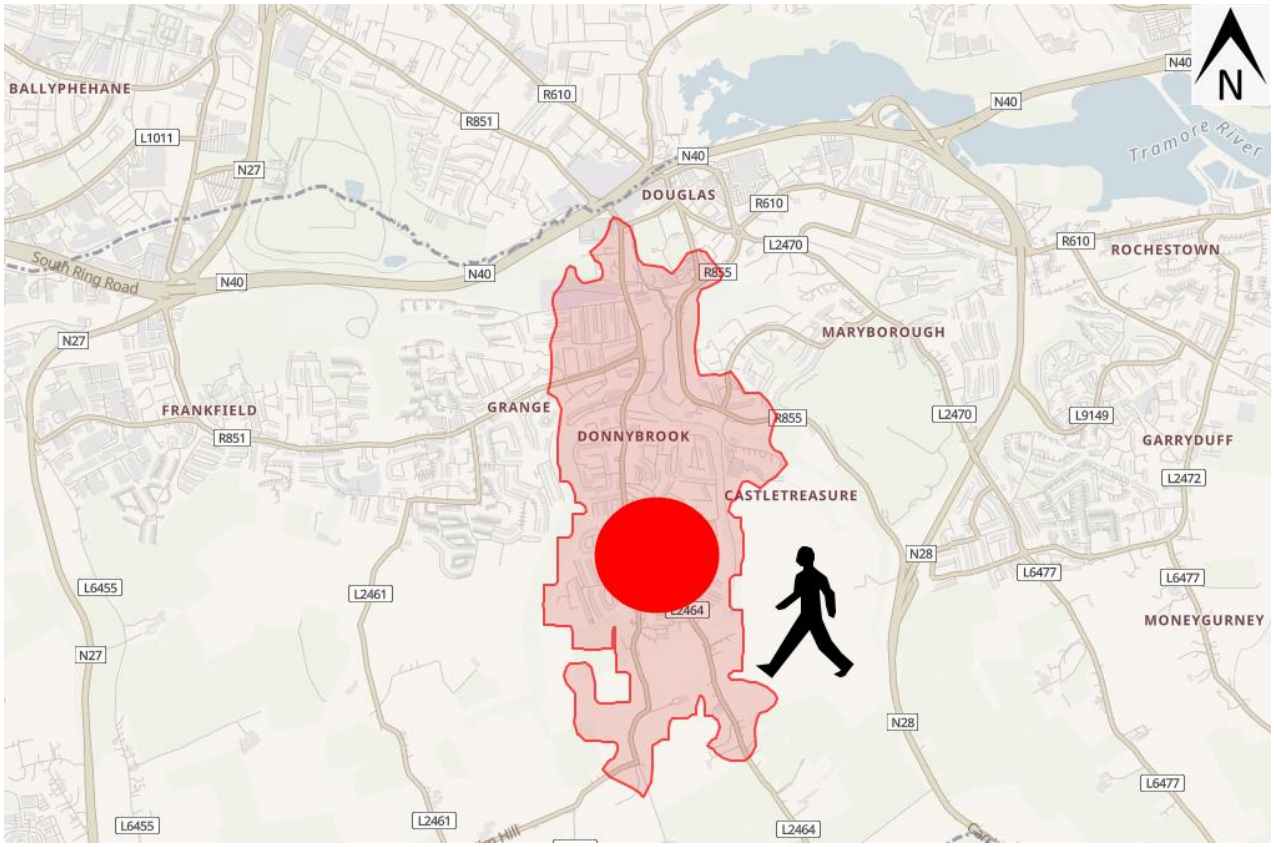


**Figure 11.2 Proximity of site to locality (20min walking time)**

- Within 20 mins walk time from the site entrance on Scairt Hill encompasses the local pubs, and nearby Primary schools.
- Within the 2-minute walk time is nearby the bus stop (207).

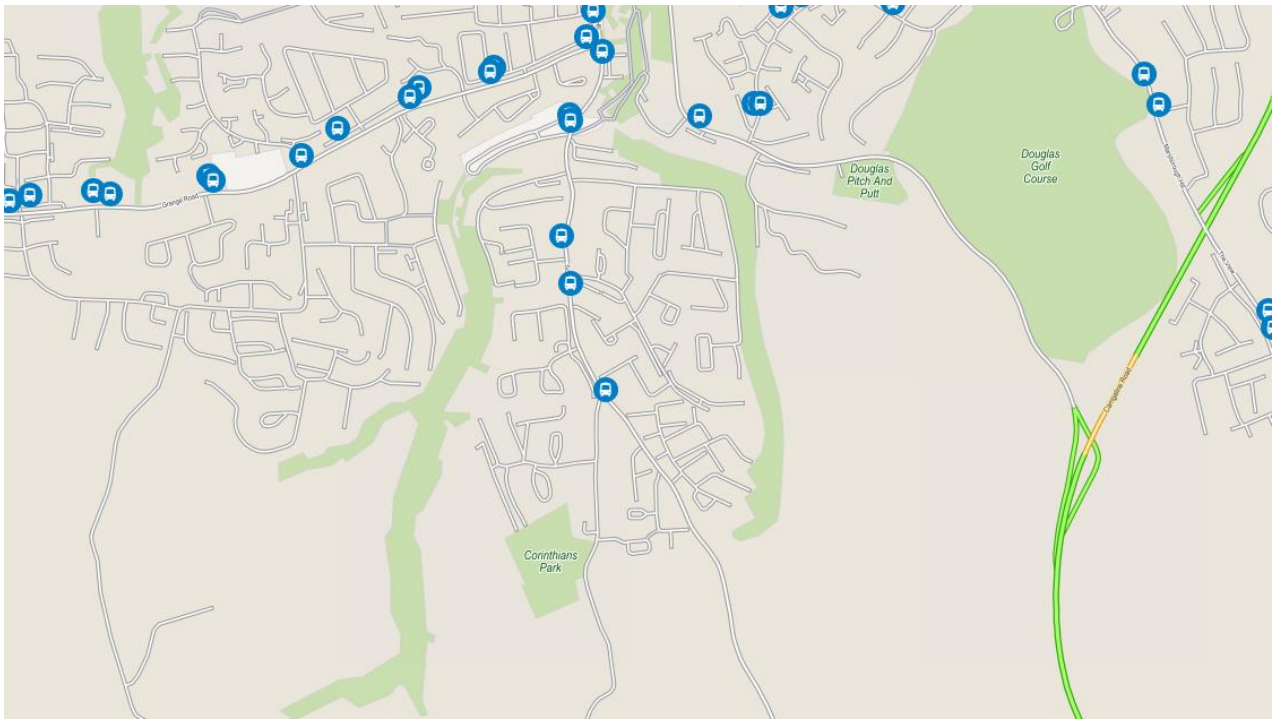


**Figure 11.3 Proximity of site to nearby bus stops (10min walking time)**

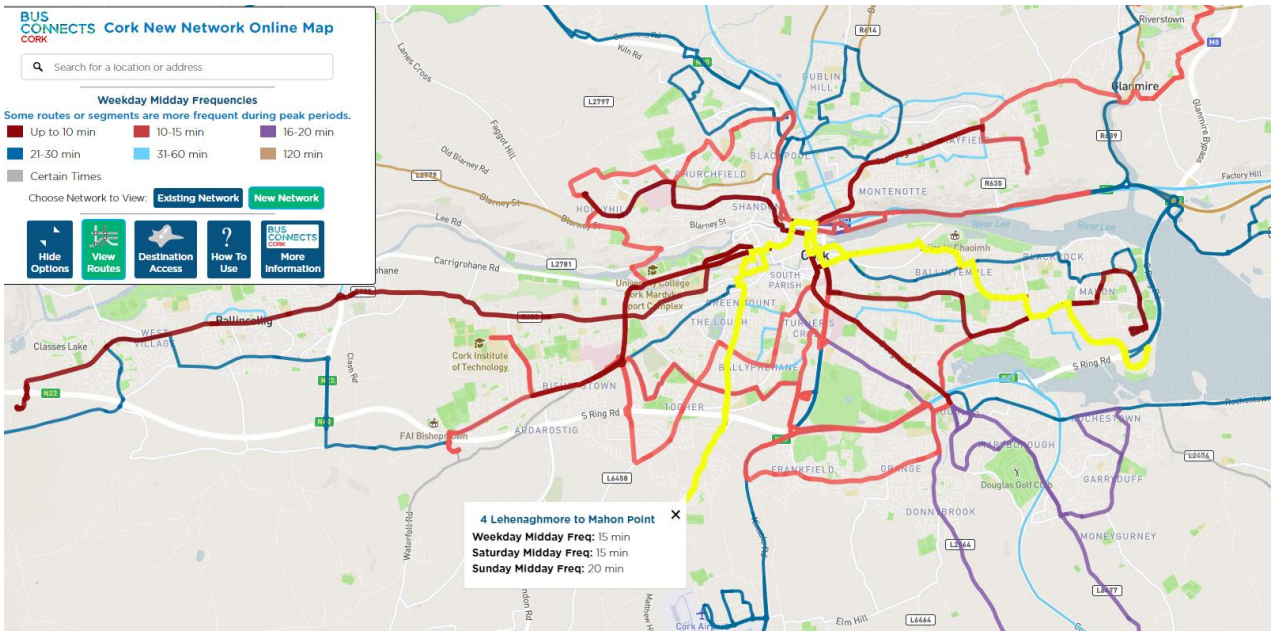


**Figure 11.4 Bus Connects Network Upgrades**

The 20-30 mins walking range includes Douglas, Frankfield and nearby shops and public amenities.

*Evident is the range of services within walking distance (taken as 20 mins at moderate pace equating to 5.0 km/hr) of the site.*

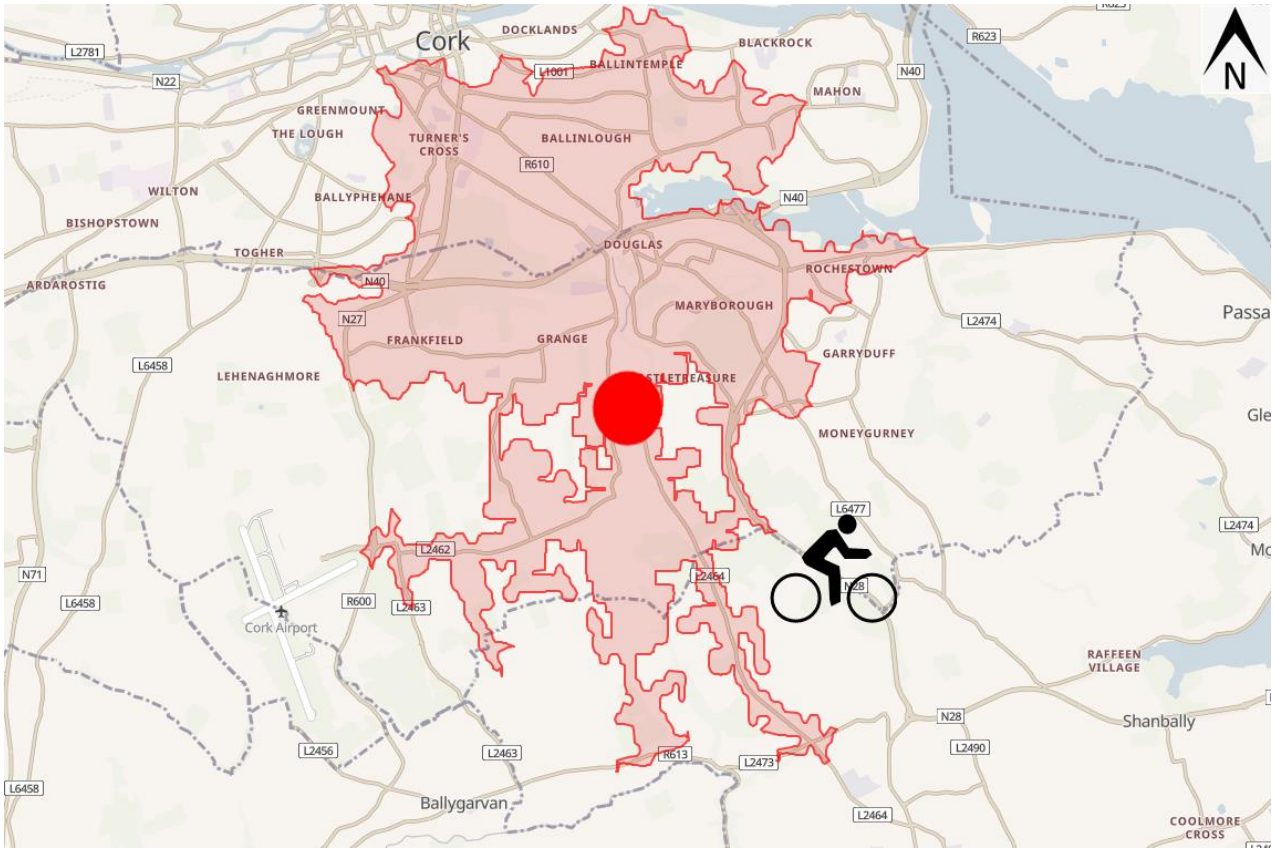


**Figure 11.5 Proximity of site to the wider area (15min cycle time)**

The cycle range presented relates to the average distance travelled in a specific time (16-19 kmph). Douglas, the Lough, Frankfield, Grange, Rochestown and near the city centre fall within the 15 min category based on unrestricted flow through junctions.

*Note: The travel speed used is on the low side, an experienced cyclist would have a 26-30kph average*

## 11.4 Access for people with disabilities

The internal layout of the development is designed to accommodate all road users and will adhere to national guidelines regarding people with disabilities.

# 12 CONSTRUCTION TRAFFIC

## 12.1 Construction Stage Traffic Impact

It is envisaged that working hours will be from 07.00 to 18:00, Monday to Friday (08:00 to 14:00 Saturday) for construction personnel through each phase of the development.

Generally, construction workers will travel to site before the measured peak hour of 08:00 – 09:00, to be on site for an 07:00 start-time. A very limited number of construction employees are likely to travel to the site during peak hours.

It is anticipated that heavy goods vehicles, HGV's, will be restricted to movements on the local road network during the off-peak periods. It is estimated that truck movements and general deliveries would arrive/leave at a steady rate during the day.

In general, the impact of construction traffic will be temporary in nature and less significant than the final development operational stage.

The successful Contractor will develop a Construction Stage Traffic Management Plan including identified haulage routes in compliance with the Preliminary Temporary Traffic Management Plan developed in consultation with Cork City Council Roads & Transportation Department.

The surrounding road network is suitable to accommodate the construction traffic associated with the proposed development and the Construction Traffic Management Plan will include a range of mitigating measures to ensure the safety of the workforce on the site and accessing the site, and the public on the surrounding roads and to minimise construction traffic generation and disruption on the surrounding road network.

Construction traffic expected to be generated by the development will be lower than the final traffic generation of the operating site.

# 13 SUMMARY CONCLUSION

In summary, the TTA assessment focused on the impact of development traffic generated by development unit/GFA schedule onto the adjoining road network.

In accordance with the TII's "Traffic and Transport Assessment Guidelines," the traffic analysis was undertaken for the **Opening Year (2026), Opening Year +5 (2031)** and fifteen years from this date i.e., the **Opening Year+15 (2041)**.

## 13.1 Junction 1 Scairt Junction

- Junction 1: Proposed Scairt Cross is shown to operate within capacity up to and including the design year 2041.

- The junction will not need any improvements, from a capacity point-of-view for all assessment scenarios.

- The increase in %Deg Saturation between "without development" and "with development" scenarios is negligible in the AM period and in the PM period.

# 14 REFERENCES


- TII. Traffic and Transport Assessment Guidelines, PE-PDV-02045
- National Roads Authority (2014) Traffic and Transport Assessment Guidelines
- Institution of Highways & Transportation (1994) Guidelines for Traffic Impact Assessment IHT, London
- National Roads Authority (2000) Road Geometry Handbook NRA, Dublin
- National Roads Authority Design Manual for Roads and Bridges NRA, Dublin
- 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 2022. Geometric Design of Junctions, DN-GEO-03060
- Transport for Ireland 2022. 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: Traffinomics Ltd.
- PCU (passenger carrying units) factors, Transport in The Urban Environment, The Institution of highways and Transportation.
- Google Maps
- Openstreetmaps
- British Parking Association, Parking Know How Bay Sizes
- RSA Ireland Road Collisions
- Cork City Development Plan 2022-2028
- http://www.rsa.ie/RSA/Road-Safety/Our-Research/Ireland-Road-Collisions/

# 15 APPENDIX

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# 16 ASSESSED JUNCTION/S

## 16.1 Junction J1

**Figure 16.1 Donnybrook Hill/ Scairt Hill (Credit: Google)**

# 17 TRAFFIC COUNT DATA

Count sheet data available on request.

# 18 JUNCTION MODELLING

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# Basic Results Summary

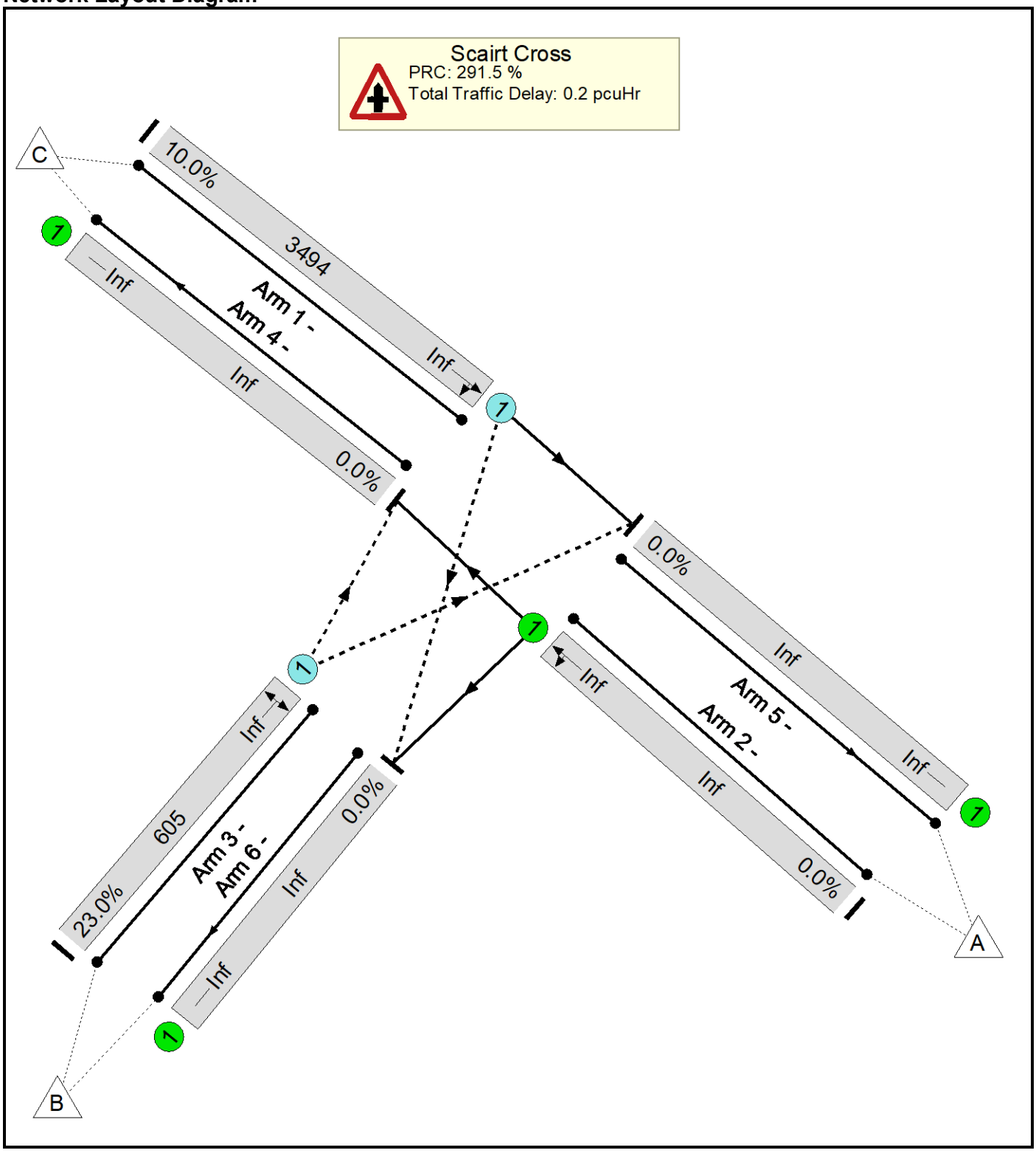
## User and Project Details

| | |
|---|---|
| **Project:** | **Residential Development** |
| **Title:** | |
| **Location:** | |
| **Client:** | CETTI Ltd. |
| **Checked By:** | DM |
| **Checked By Date:** | DM |
| **Additional detail:** | |
| **File name:** | 22087TT -MHL- (J1) Scairt Cross - 2024.lsg3x |
| **Author:** | DM |
| **Company:** | MHL & Associates Ltd. |
| **Address:** | |

Basic Results Summary

**Scenario 1: '2022 Base Year AM'** (FG1: '2022 Base Year AM', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **23.0%** | **215** | **0** | **0** | **0.2** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **23.0%** | **215** | **0** | **0** | **0.2** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 350 | Inf | 3494 | 10.0% | 76 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 139 | Inf | 605 | 23.0% | 139 | 0 | 0 | 0.1 | 3.9 | 0.1 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 291.5

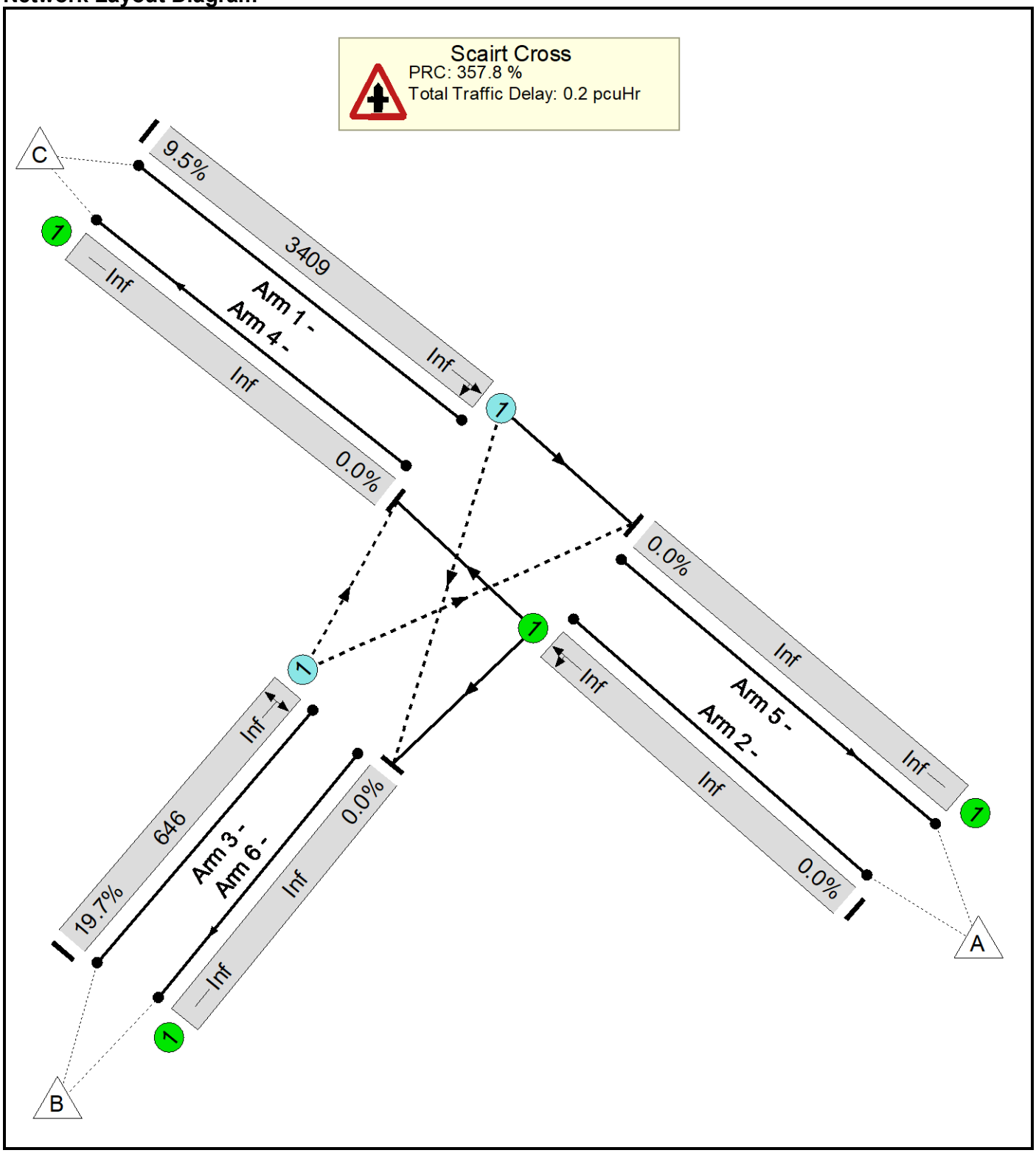
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.20

Cycle Time (s): 90

Basic Results Summary

**Scenario 2: '2022 Base Year PM'** (FG2: '2022 Base Year PM', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **19.7%** | **201** | **0** | **0** | **0.2** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **19.7%** | **201** | **0** | **0** | **0.2** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 324 | Inf | 3409 | 9.5% | 74 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 127 | Inf | 646 | 19.7% | 127 | 0 | 0 | 0.1 | 3.5 | 0.1 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 357.8

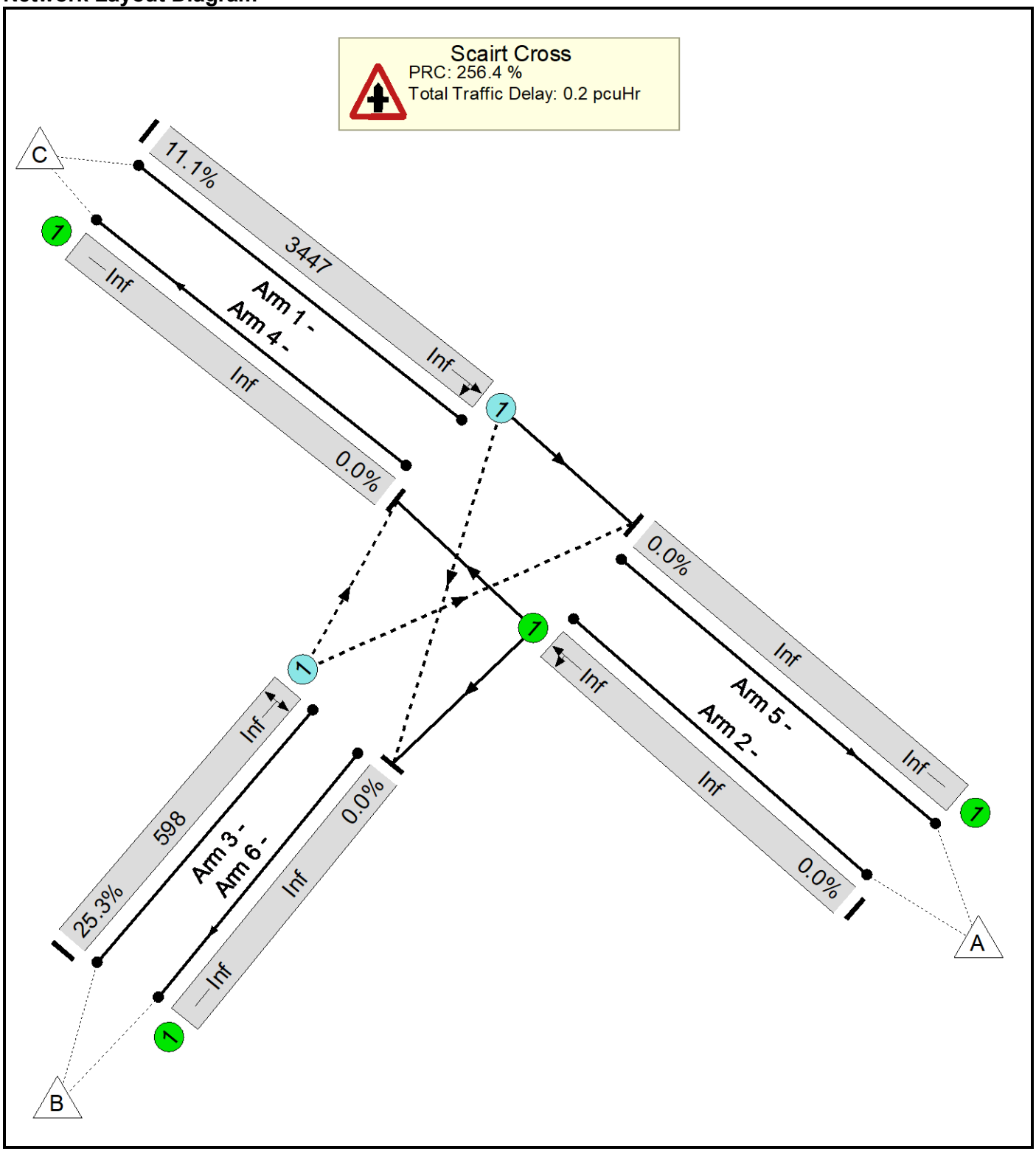
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.17

Cycle Time (s): 90

Basic Results Summary

**Scenario 3: '2026 Opening Year AM without devt.'** (FG3: '2026 Opening Year AM without devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

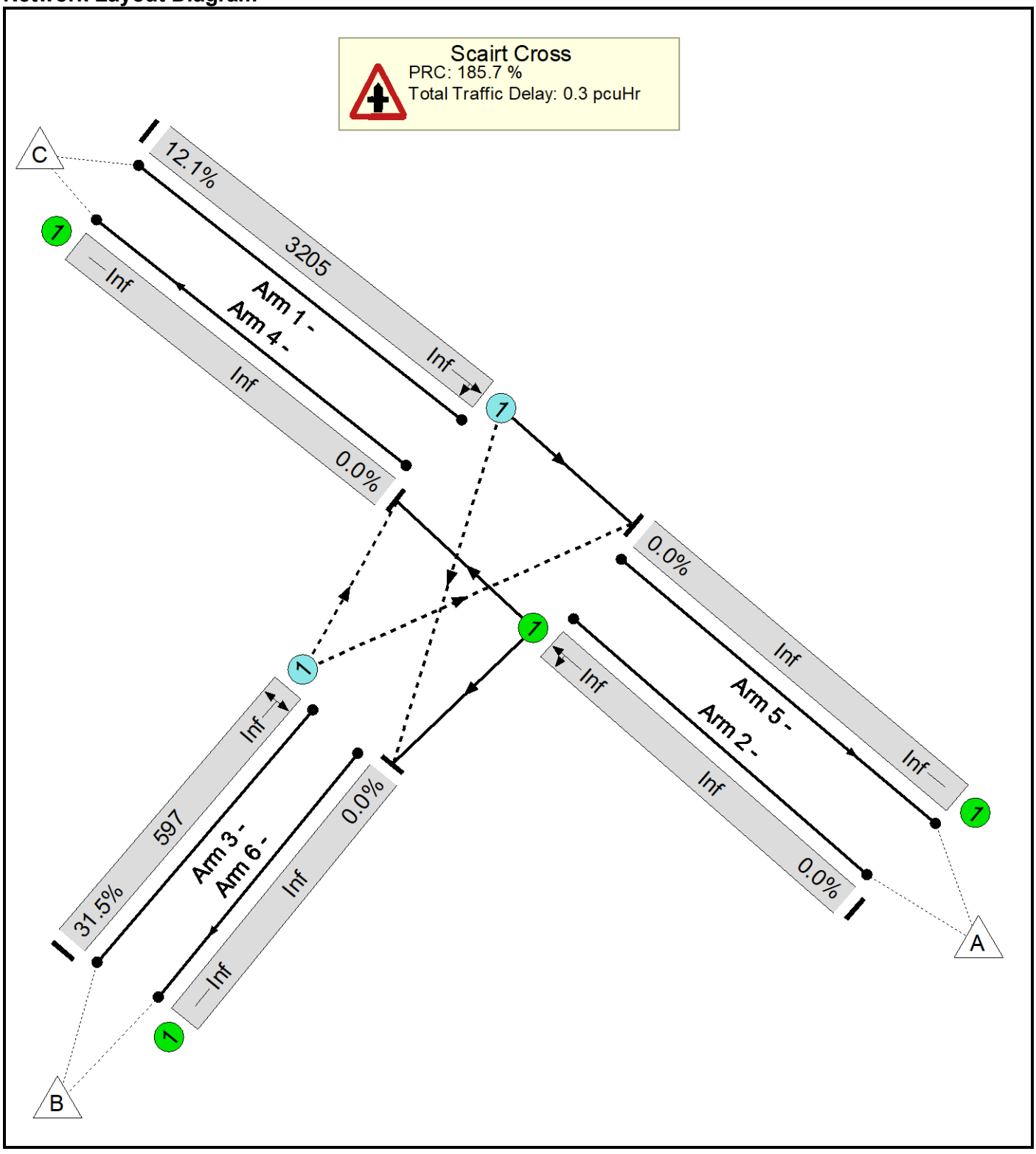
| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **25.3%** | **234** | **0** | **0** | **0.2** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **25.3%** | **234** | **0** | **0** | **0.2** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 381 | Inf | 3447 | 11.1% | 83 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 151 | Inf | 598 | 25.3% | 151 | 0 | 0 | 0.2 | 4.0 | 0.2 |

C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): 256.4 Total Delay Over All Lanes(pcuHr): 0.23

Basic Results Summary

**Scenario 4: '2026 Opening Year AM with devt.'** (FG4: '2026 Opening Year AM with devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **31.5%** | **279** | **0** | **0** | **0.3** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **31.5%** | **279** | **0** | **0** | **0.3** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 389 | Inf | 3205 | 12.1% | 91 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 188 | Inf | 597 | 31.5% | 188 | 0 | 0 | 0.2 | 4.4 | 0.2 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 185.7

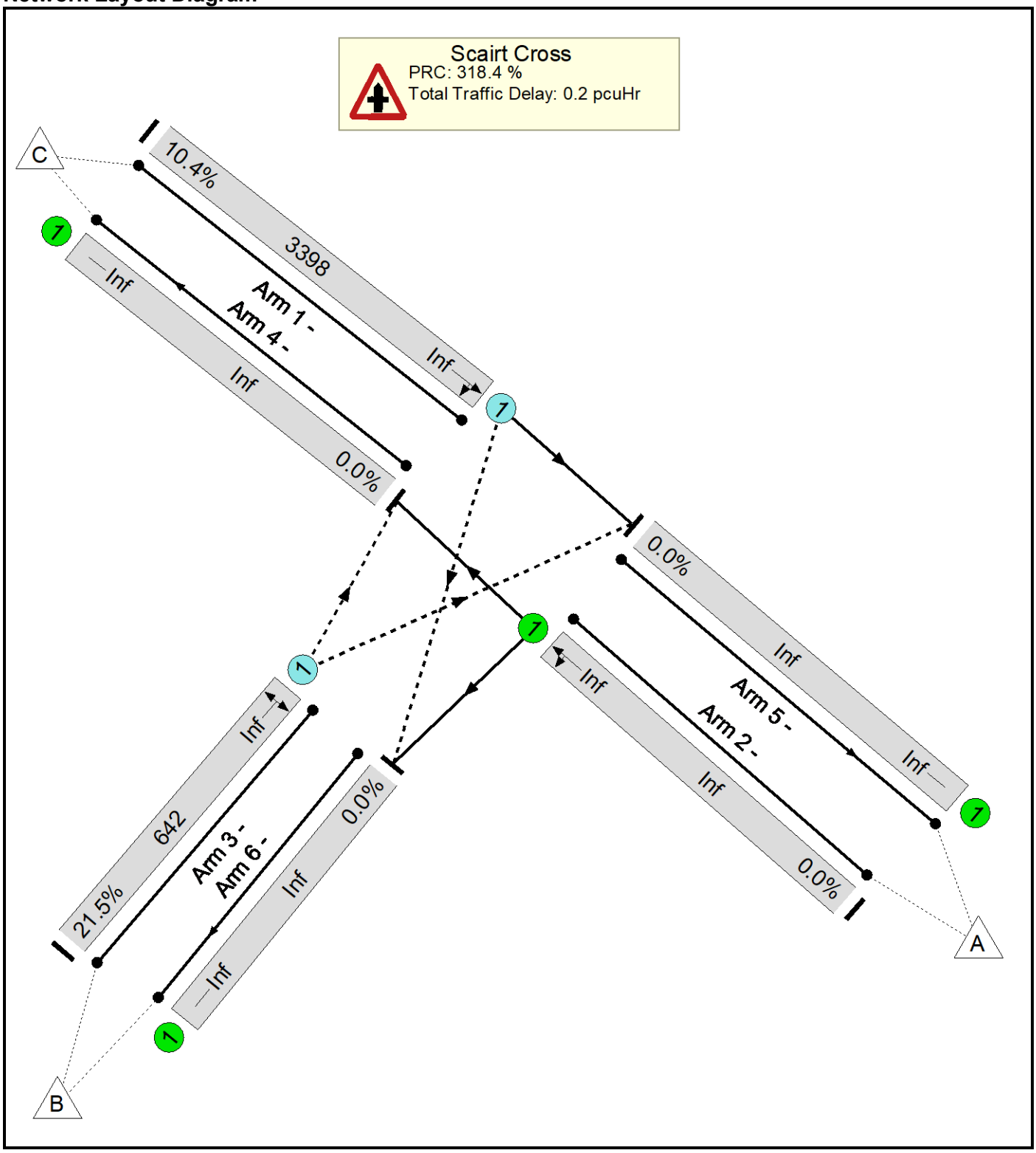
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.30

Cycle Time (s): 90

Basic Results Summary

**Scenario 5: '2026 Opening Year PM without devt.'** (FG5: '2026 Opening Year PM without devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **21.5%** | **218** | **0** | **0** | **0.2** | **-** | **-** |
| **Scairt Cross** | **-** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **21.5%** | **218** | **0** | **0** | **0.2** | **-** | **-** |
| 1/1 | Ahead Right | O | - | | - | - | - | 352 | Inf | 3398 | 10.4% | 80 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 138 | Inf | 642 | 21.5% | 138 | 0 | 0 | 0.1 | 3.6 | 0.1 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 318.4

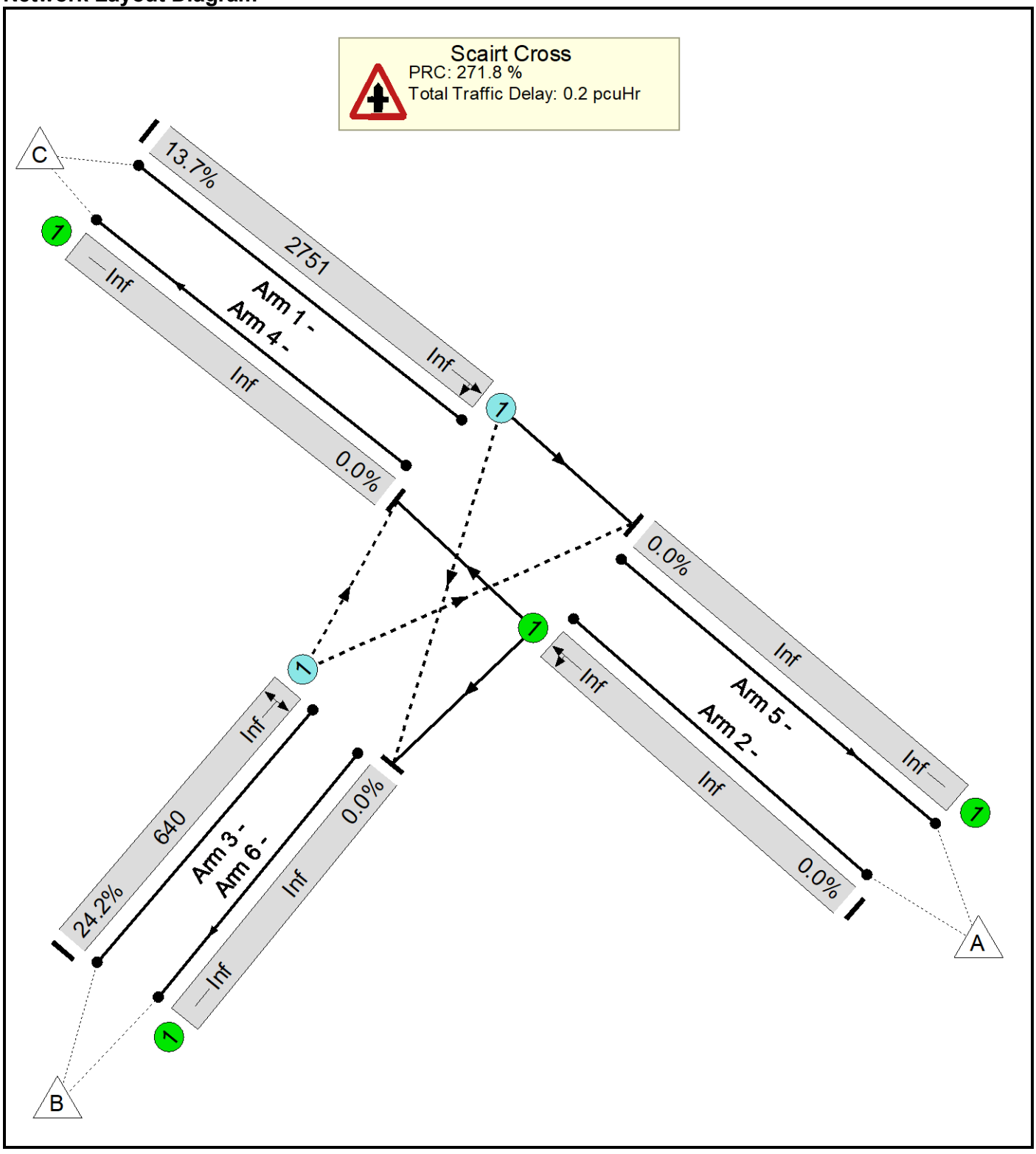
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.19

Cycle Time (s): 90

Basic Results Summary

**Scenario 6: '2026 Opening Year PM with devt.'** (FG6: '2026 Opening Year PM with devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **24.2%** | **261** | **0** | **0** | **0.2** | **-** | **-** |
| **Scairt Cross** | **-** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **24.2%** | **261** | **0** | **0** | **0.2** | **-** | **-** |
| 1/1 | Ahead Right | O | - | | - | - | - | 378 | Inf | 2751 | 13.7% | 106 | 0 | 0 | 0.1 | 0.8 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 155 | Inf | 640 | 24.2% | 155 | 0 | 0 | 0.2 | 3.7 | 0.2 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 271.8

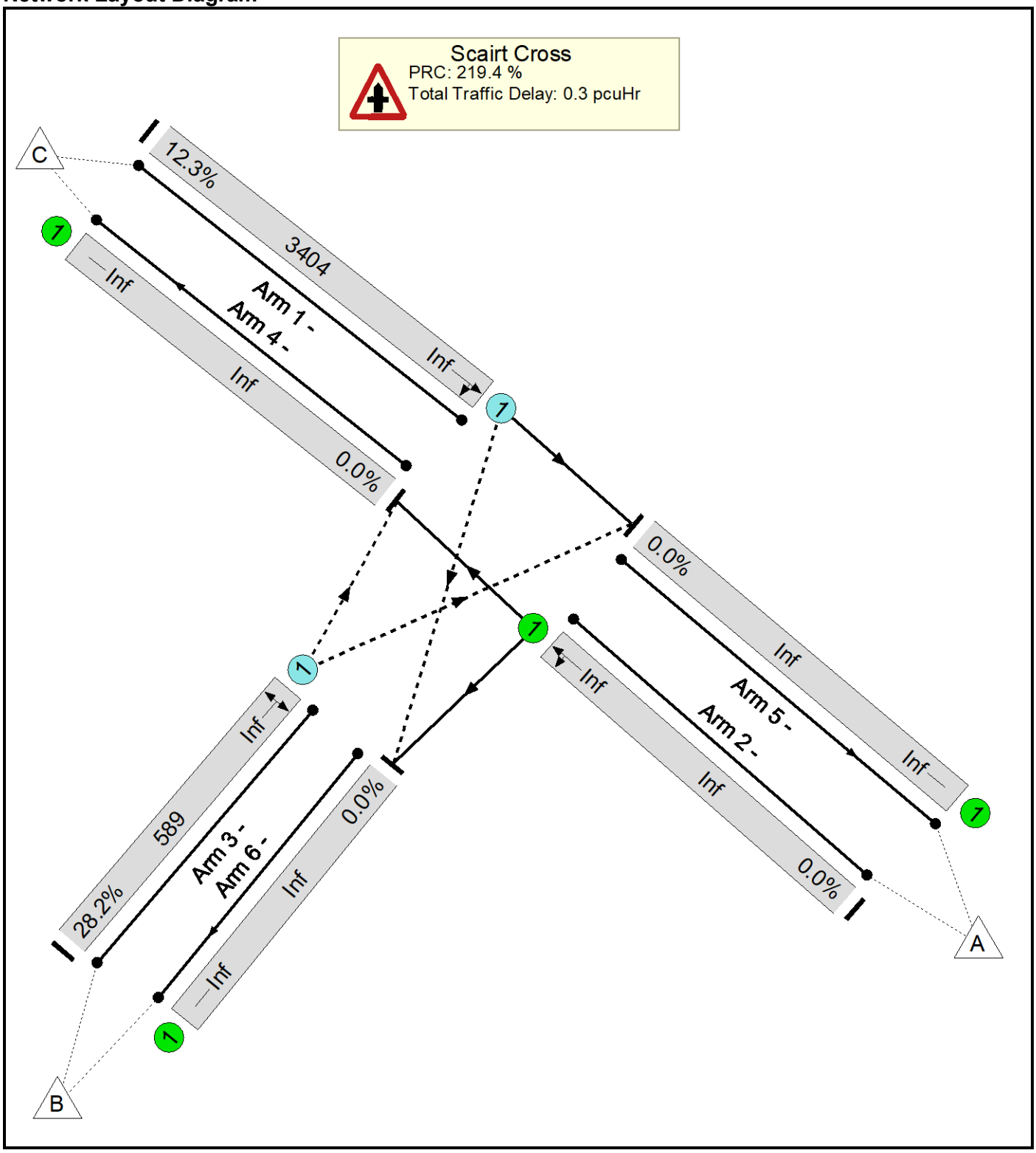
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.24

Cycle Time (s): 90

Basic Results Summary

**Scenario 7: '2031 Opening Year AM without devt.'** (FG7: '2031 Opening Year AM without devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **28.2%** | **257** | **0** | **0** | **0.3** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **28.2%** | **257** | **0** | **0** | **0.3** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 418 | Inf | 3404 | 12.3% | 91 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 166 | Inf | 589 | 28.2% | 166 | 0 | 0 | 0.2 | 4.3 | 0.2 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 219.4

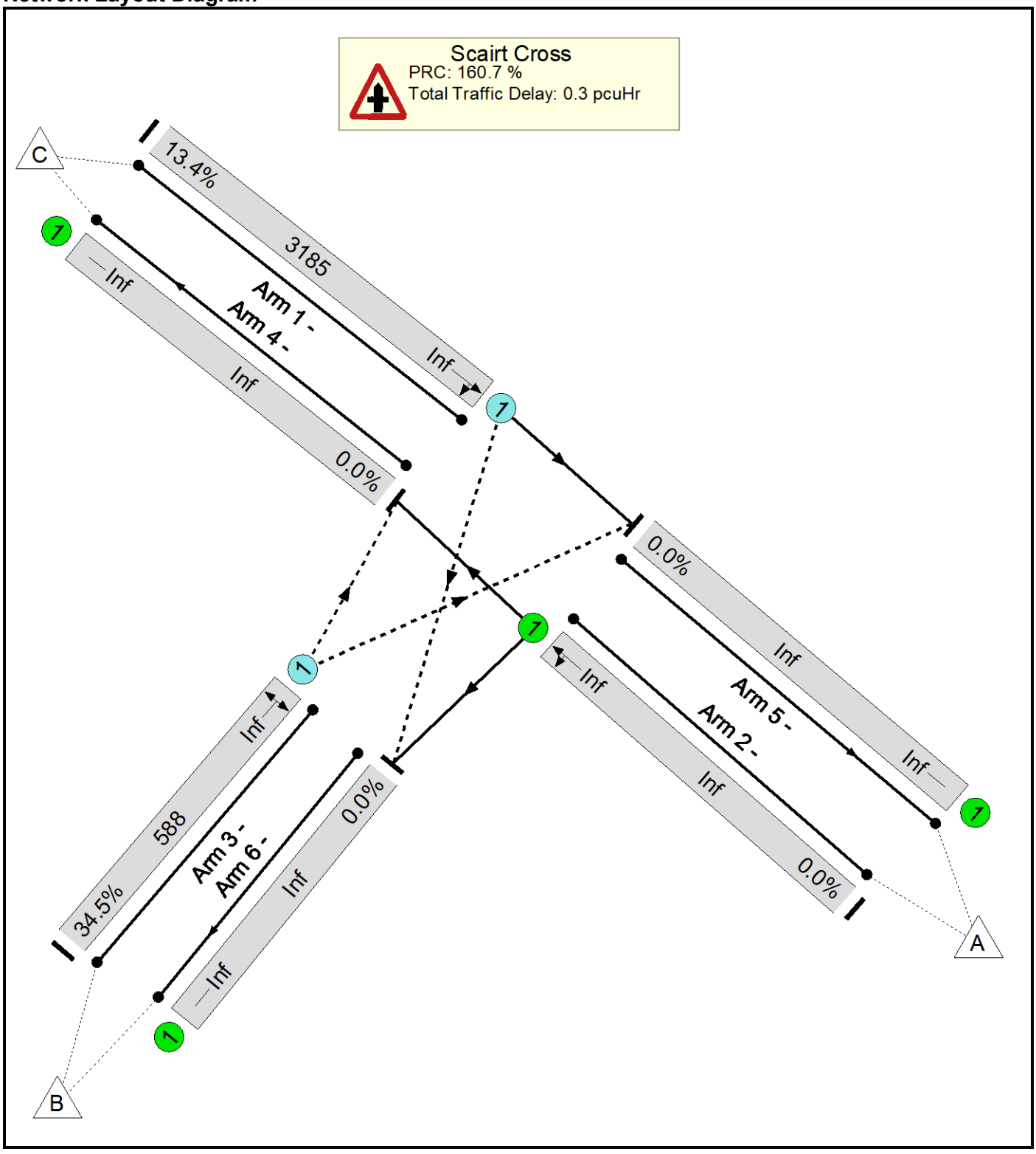
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.27

Cycle Time (s): 90

Basic Results Summary

**Scenario 8: '2031 Opening Year AM with devt.'** (FG8: '2031 Opening Year AM with devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

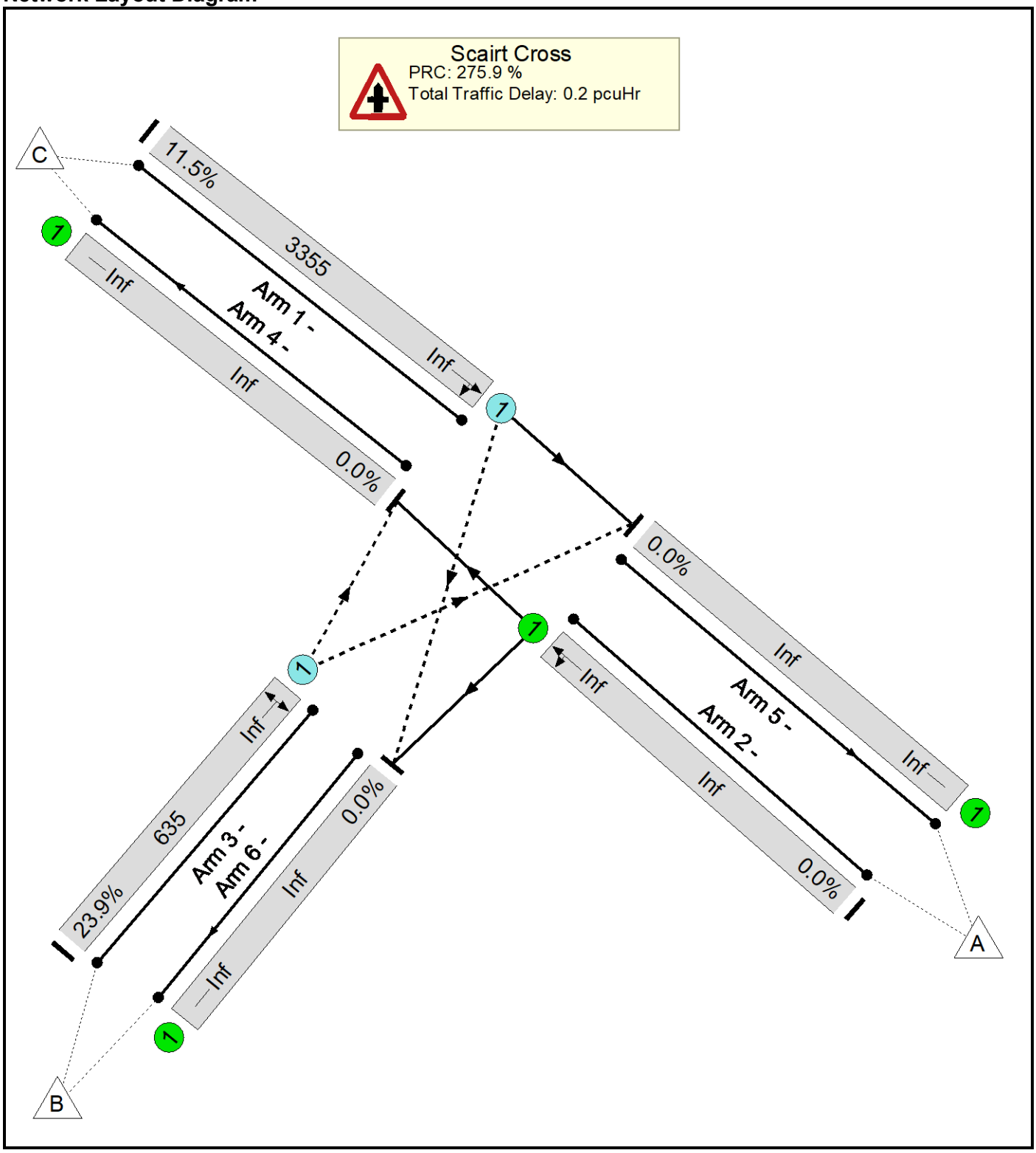
| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **34.5%** | **302** | **0** | **0** | **0.3** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **34.5%** | **302** | **0** | **0** | **0.3** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 426 | Inf | 3185 | 13.4% | 99 | 0 | 0 | 0.1 | 0.7 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 203 | Inf | 588 | 34.5% | 203 | 0 | 0 | 0.3 | 4.7 | 0.3 |

C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): 160.7 Total Delay Over All Lanes(pcuHr): 0.34

Basic Results Summary

**Scenario 9: '2031 Opening Year PM without devt.'** (FG9: '2031 Opening Year PM without devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **23.9%** | **240** | **0** | **0** | **0.2** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **23.9%** | **240** | **0** | **0** | **0.2** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 386 | Inf | 3355 | 11.5% | 88 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 152 | Inf | 635 | 23.9% | 152 | 0 | 0 | 0.2 | 3.7 | 0.2 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 275.9

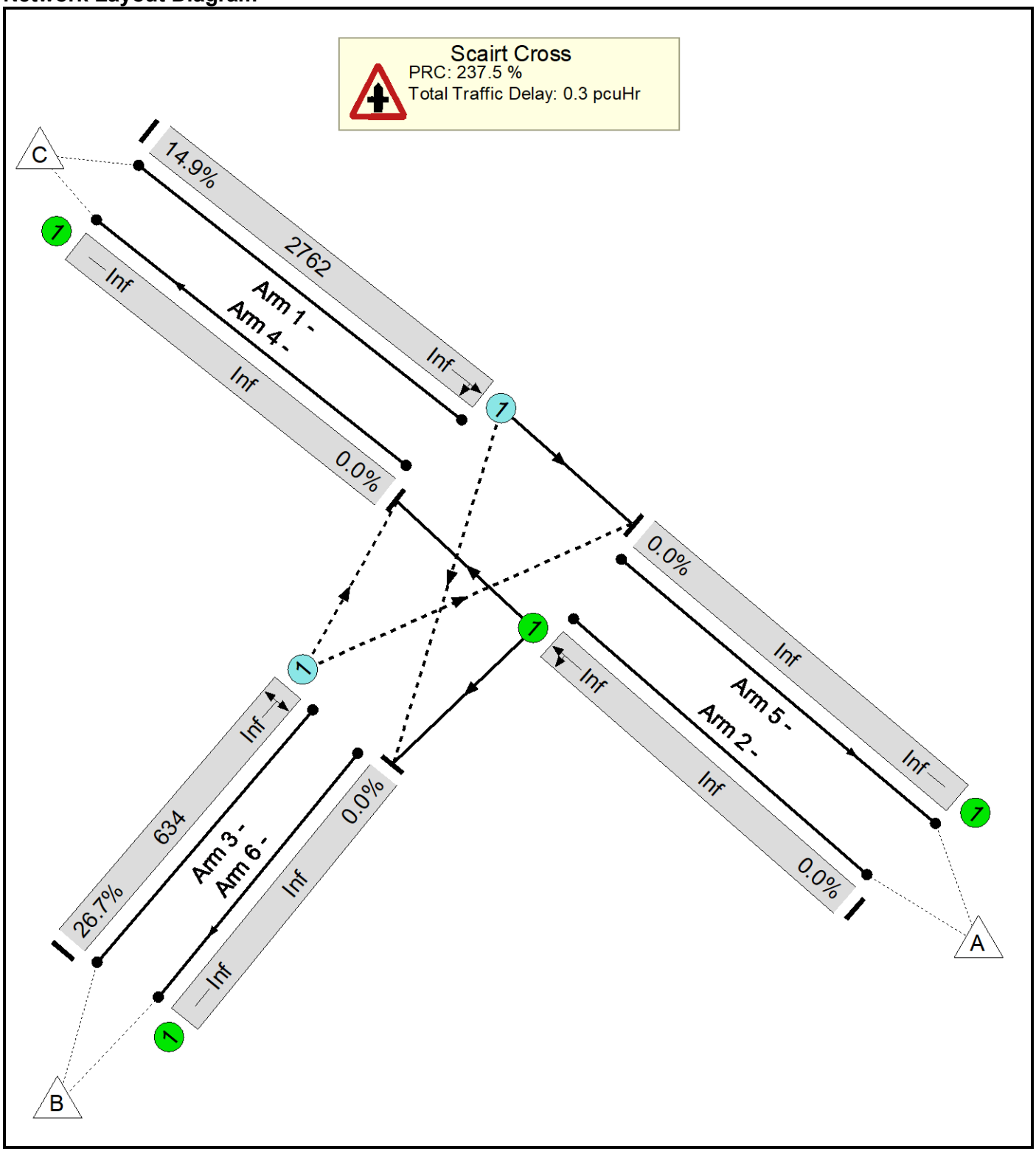
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.22

Cycle Time (s): 90

Basic Results Summary

**Scenario 10: '2031 Opening Year PM with devt.'** (FG10: '2031 Opening Year PM with devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **26.7%** | **283** | **0** | **0** | **0.3** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **26.7%** | **283** | **0** | **0** | **0.3** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 412 | Inf | 2762 | 14.9% | 114 | 0 | 0 | 0.1 | 0.8 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 169 | Inf | 634 | 26.7% | 169 | 0 | 0 | 0.2 | 3.9 | 0.2 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 237.5

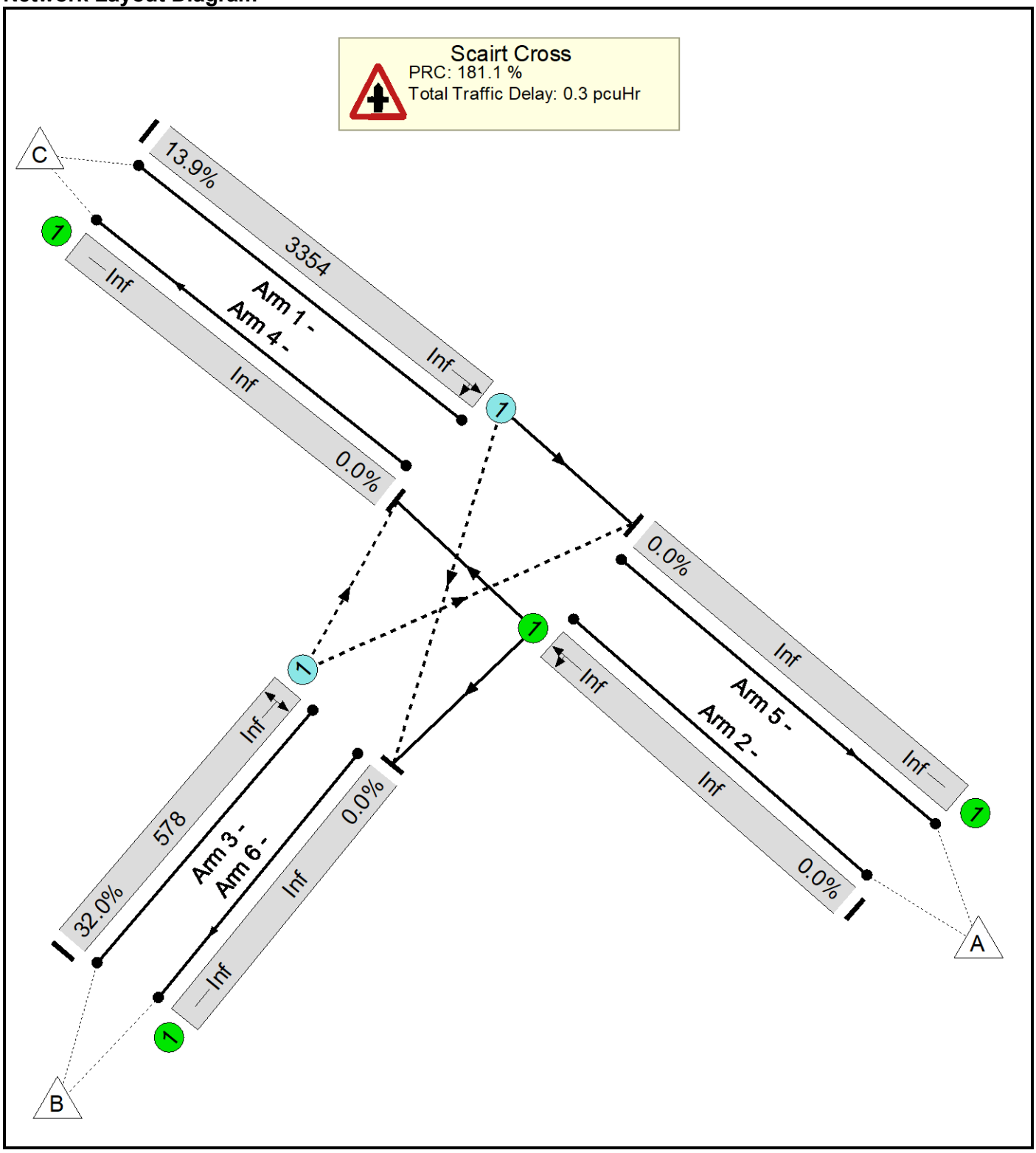
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.27

Cycle Time (s): 90

Basic Results Summary

**Scenario 11: '2041 Opening Year AM without devt.'** (FG11: '2041 Opening Year AM without devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **32.0%** | **286** | **0** | **0** | **0.3** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **32.0%** | **286** | **0** | **0** | **0.3** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 465 | Inf | 3354 | 13.9% | 101 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 185 | Inf | 578 | 32.0% | 185 | 0 | 0 | 0.2 | 4.6 | 0.2 |

C1

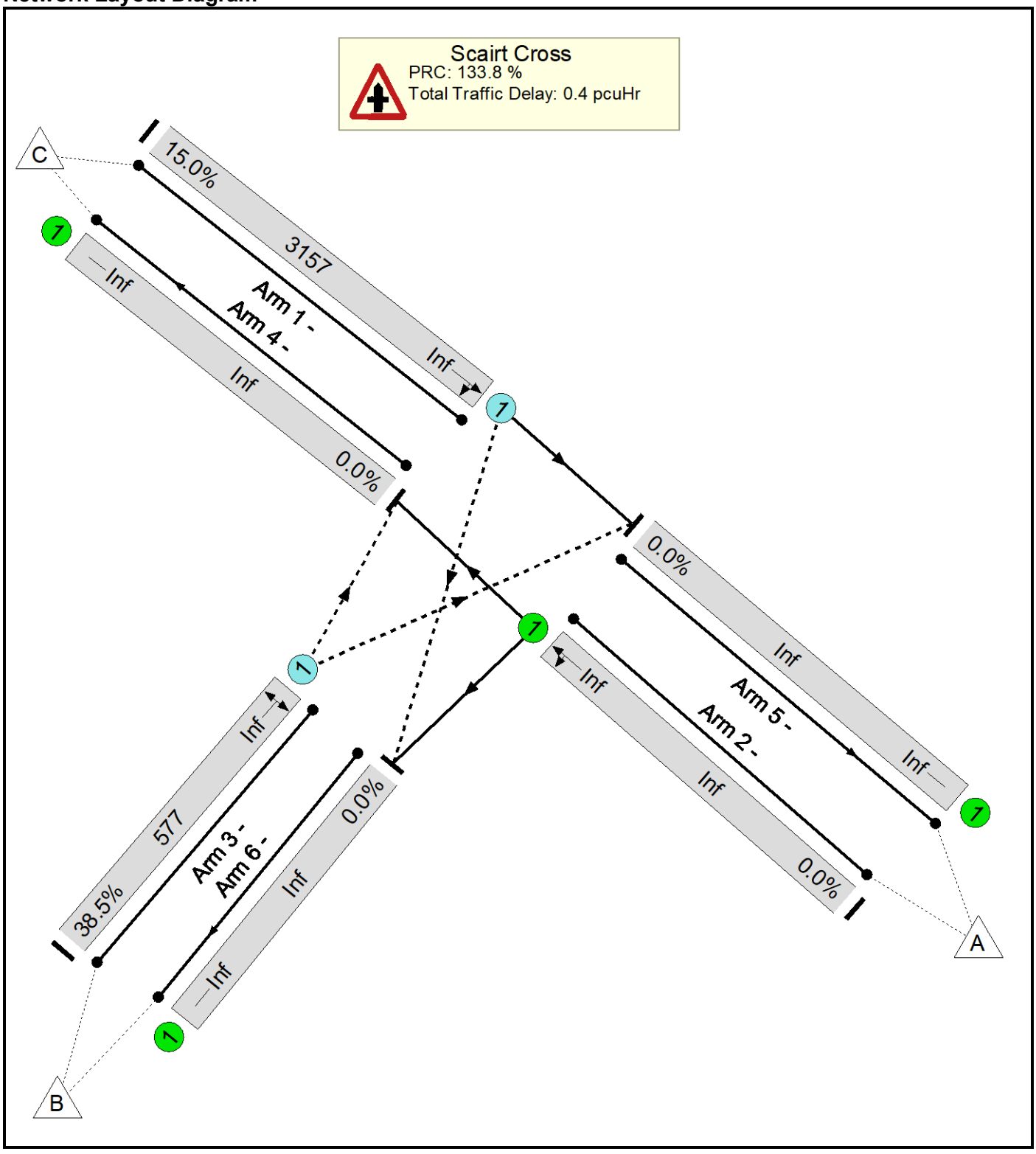
PRC for Signalled Lanes (%): 0.0 | Total Delay for Signalled Lanes (pcuHr): 0.00 | Cycle Time (s): 90

PRC Over All Lanes (%): 181.1 | Total Delay Over All Lanes(pcuHr): 0.32

Basic Results Summary

**Scenario 12: '2041 Opening Year AM with devt.'** (FG12: '2041 Opening Year AM with devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **38.5%** | **331** | **0** | **0** | **0.4** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **38.5%** | **331** | **0** | **0** | **0.4** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 473 | Inf | 3157 | 15.0% | 109 | 0 | 0 | 0.1 | 0.7 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 222 | Inf | 577 | 38.5% | 222 | 0 | 0 | 0.3 | 5.1 | 0.3 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 133.8

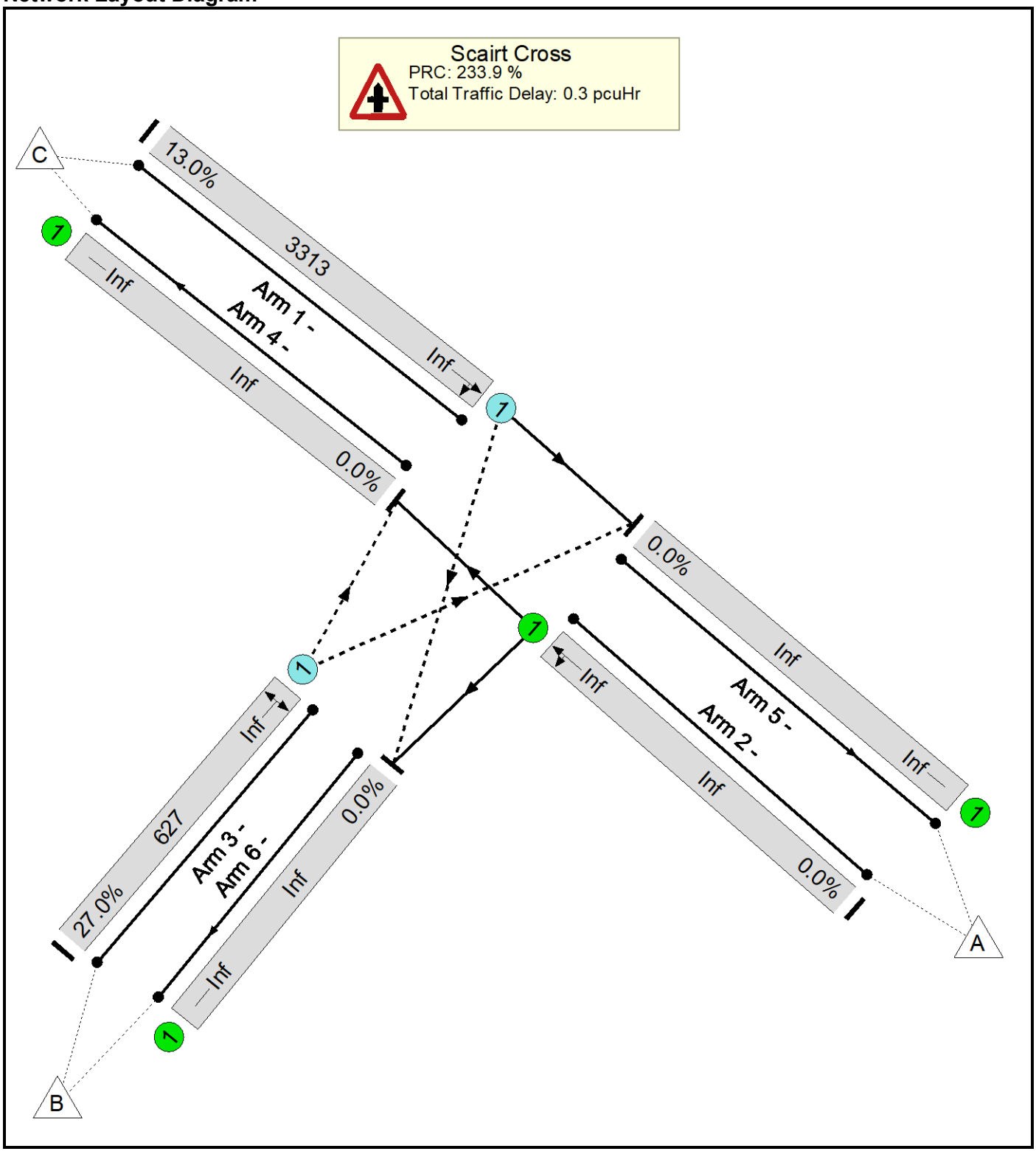
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.40

Cycle Time (s): 90

Basic Results Summary

**Scenario 13: '2041 Opening Year PM without devt.'** (FG13: '2041 Opening Year PM without devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | **-** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **27.0%** | **267** | **0** | **0** | **0.3** | **-** | **-** |
| **Scairt Cross** | **-** | **-** | **-** | | **-** | **-** | **-** | **-** | **-** | **-** | **27.0%** | **267** | **0** | **0** | **0.3** | **-** | **-** |
| 1/1 | Ahead Right | O | - | | - | - | - | 430 | Inf | 3313 | 13.0% | 98 | 0 | 0 | 0.1 | 0.6 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 169 | Inf | 627 | 27.0% | 169 | 0 | 0 | 0.2 | 3.9 | 0.2 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 233.9

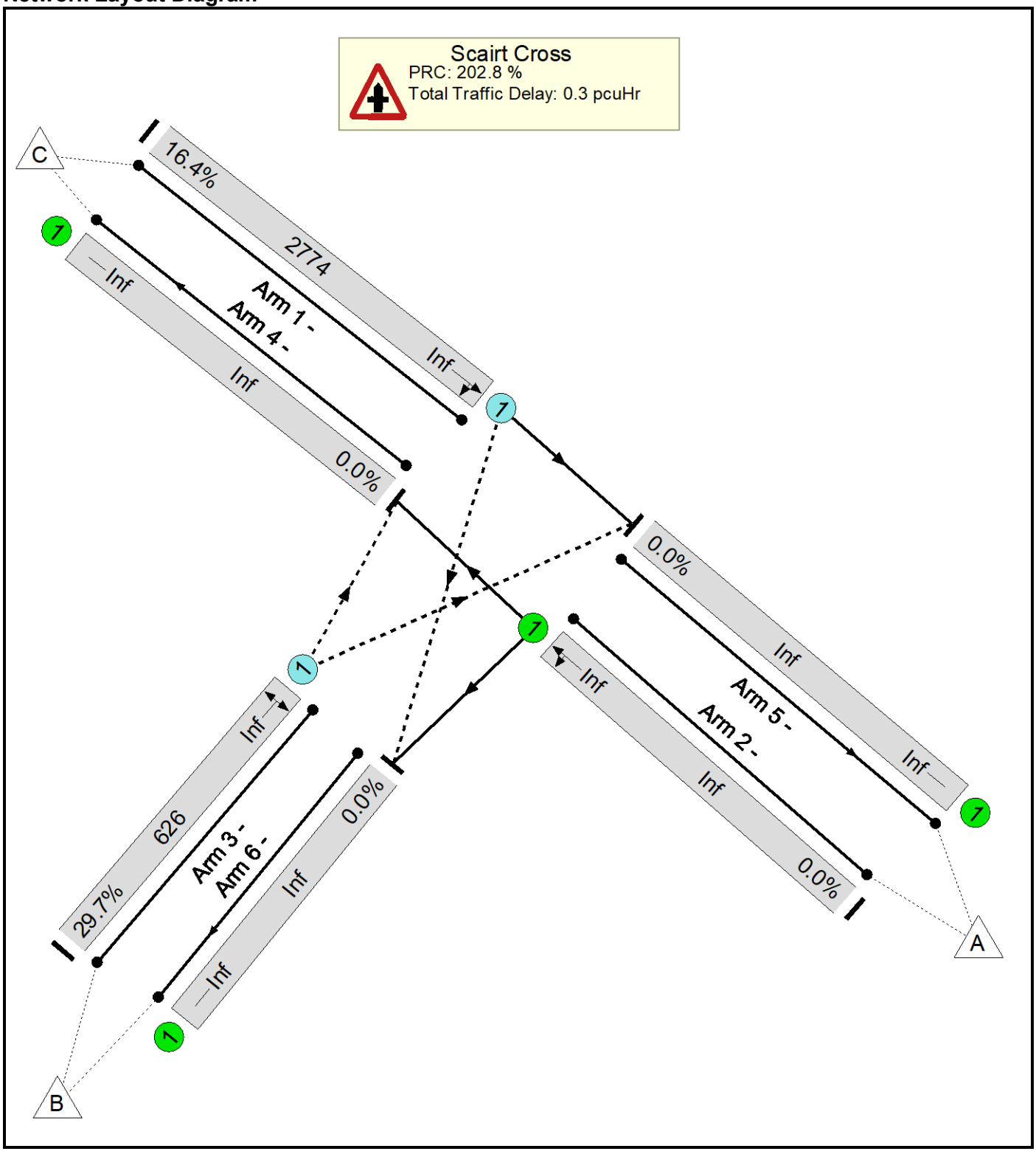
Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.26

Cycle Time (s): 90

Basic Results Summary

**Scenario 14: '2041 Opening Year PM with devt.'** (FG14: '2041 Opening Year PM with devt.', Plan 1: 'Network Control Plan 1')

**Network Layout Diagram**



Basic Results Summary

## Network Results

| Item | Lane Description | Lane Type | Full Phase | Arrow Phase | Num Greens | Total Green (s) | Arrow Green (s) | Demand Flow (pcu) | Sat Flow (pcu/Hr) | Capacity (pcu) | Deg Sat (%) | Turners In Gaps (pcu) | Turners When Unopposed (pcu) | Turners In Intergreen (pcu) | Total Delay (pcuHr) | Av. Delay Per PCU (s/pcu) | Mean Max Queue (pcu) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Network** | - | - | - | | - | - | - | - | - | - | **29.7%** | **310** | **0** | **0** | **0.3** | - | - |
| **Scairt Cross** | - | - | - | | - | - | - | - | - | - | **29.7%** | **310** | **0** | **0** | **0.3** | - | - |
| 1/1 | Ahead Right | O | - | | - | - | - | 456 | Inf | 2774 | 16.4% | 124 | 0 | 0 | 0.1 | 0.8 | 0.1 |
| 3/1 | Left Right | O | - | | - | - | - | 186 | Inf | 626 | 29.7% | 186 | 0 | 0 | 0.2 | 4.1 | 0.2 |

C1

PRC for Signalled Lanes (%): 0.0
PRC Over All Lanes (%): 202.8

Total Delay for Signalled Lanes (pcuHr): 0.00
Total Delay Over All Lanes(pcuHr): 0.31

Cycle Time (s): 90

# 19 TRICS



TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
**TOTAL VEHICLES**
**Calculation factor: 1 DWELLS**
**BOLD print indicates peak (busiest) period**

| | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---|---|---|---|---|---|---|---|---|---|
| Time Range | No. Days | Ave. DWELLS | Trip Rate | No. Days | Ave. DWELLS | Trip Rate | No. Days | Ave. DWELLS | Trip Rate |
| 00:00 - 01:00 | | | | | | | | | |
| 01:00 - 02:00 | | | | | | | | | |
| 02:00 - 03:00 | | | | | | | | | |
| 03:00 - 04:00 | | | | | | | | | |
| 04:00 - 05:00 | | | | | | | | | |
| 05:00 - 06:00 | | | | | | | | | |
| 06:00 - 07:00 | | | | | | | | | |
| 07:00 - 08:00 | 2 | 178 | 0.031 | 2 | 178 | 0.244 | 2 | 178 | 0.275 |
| 08:00 - 09:00 | 2 | 178 | 0.194 | **2** | **178** | **0.612** | **2** | **178** | **0.806** |
| 09:00 - 10:00 | 2 | 178 | 0.183 | 2 | 178 | 0.230 | 2 | 178 | 0.413 |
| 10:00 - 11:00 | 2 | 178 | 0.143 | 2 | 178 | 0.191 | 2 | 178 | 0.334 |
| 11:00 - 12:00 | 2 | 178 | 0.157 | 2 | 178 | 0.230 | 2 | 178 | 0.387 |
| 12:00 - 13:00 | 2 | 178 | 0.306 | 2 | 178 | 0.275 | 2 | 178 | 0.581 |
| 13:00 - 14:00 | 2 | 178 | 0.244 | 2 | 178 | 0.253 | 2 | 178 | 0.497 |
| 14:00 - 15:00 | 2 | 178 | 0.340 | 2 | 178 | 0.331 | 2 | 178 | 0.671 |
| 15:00 - 16:00 | 2 | 178 | 0.376 | 2 | 178 | 0.222 | 2 | 178 | 0.598 |
| 16:00 - 17:00 | 2 | 178 | 0.379 | 2 | 178 | 0.236 | 2 | 178 | 0.615 |
| 17:00 - 18:00 | **2** | **178** | **0.463** | 2 | 178 | 0.289 | 2 | 178 | 0.752 |
| 18:00 - 19:00 | 2 | 178 | 0.343 | 2 | 178 | 0.272 | 2 | 178 | 0.615 |
| 19:00 - 20:00 | | | | | | | | | |
| 20:00 - 21:00 | | | | | | | | | |
| 21:00 - 22:00 | | | | | | | | | |
| 22:00 - 23:00 | | | | | | | | | |
| 23:00 - 24:00 | | | | | | | | | |
| Total Rates: | | | 3.159 | | | 3.385 | | | 6.544 |

*This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.*

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*



**Parameter summary**

| | |
|---|---|
| Trip rate parameter range selected: | 76 - 280 (units: ) |
| Survey date date range: | 01/01/14 - 17/06/21 |
| Number of weekdays (Monday-Friday): | 2 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Surveys automatically removed from selection: | 0 |
| Surveys manually removed from selection: | 0 |

*This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.*

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