



Carmanhall Road SHD 2022

Traffic & Transport Assessment (T&TA)

August 2022

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Comments

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- B. Traffic Survey 2022
- C. TRANSYT Output
- D. PICADY Output

1. Introduction

1.1 Introduction

This Traffic and Transport Assessment (T&TA) has been prepared by Waterman Moylan on behalf of Atlas GP Limited to accompany an SHD planning application for a residential development on a brownfield site Carmanhall Road / Blackthorn Road, Sandyford, Dublin 18. See Figure 1.

The subject site is located at Sandyford in south County Dublin at the junction of Carmanhall Road and Blackthorn Road. The site has an area of 0.73ha (1.82 acre) but for the purpose of encompassing the proposed access junctions, services connections and landscaping, the area within the red line for the planning application has been extended to 0.99 ha (2.48 acre).

The site was formerly occupied by Avid Technology but at the time of writing in August 2022, it was unoccupied.

The adjoining site to the west at the junction of Carmanhall Road and Ravens Rock Road was formerly occupied by Tack Packaging. It extends to 0.57 ha ((1.42 acre). See Figure 2.

During the preparation of the T & TA for this development, two alternative scenarios were considered as part of the assessment of the traffic impact of this development. Firstly, to assess the traffic impact of a residential development on the subject site. Secondly, to assess the subject site in conjunction with the adjoining site as a single development for traffic purposes. For reasons of this latter option was selected and the developments on the two sites assessed as a single development on a single site.

1.2 Threshold for Traffic and Transport Assessment

Section 12.4.2 and Appendix 2 of the Dun Laoghaire Rathdown County Development Plan 2022 – 2028 specifies that that a Traffic & Transport Assessment is required where an existing or proposed development has significant car trip potential and meets one or more of the following thresholds: -

- Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road or 100 trips in the peak hours
- Residential development of 200 residential units or more

1.3 Standards

This T & TA has been prepared in accordance with Traffic and Transport Assessment Guidelines (2014) issued by Transport Infrastructure Ireland (TII).

It includes a projection forward 5 years and 15 years after the opening date in accordance with the TII Traffic and Transport Assessment Guidelines and the UK's Institution of Highways and Transportation Guidelines and in its analysis considers all major new road and traffic schemes and existing and proposed developments in the area.

The Traffic and Transport Assessment (T&TA) for this development is expected to be accompanied by a Travel Plan prepared in accordance with Section 12.4.3 of Dun Laoghaire Rathdown County Development Plan 2022 – 2028.

1.4 Program

At the time of writing in August 2022, it is likely that construction of the proposed development could commence in 2023 for completion in 2026.

Projections are included in this T & TA for a Design Year 2031 (Opening Year + 5) and a Future Year 2041 (Opening Year + 15).



Figure 1 Location Map

2. Proposed Development

2.1 Site

For the purpose of the planning application, the red line site boundary has been extended from 0.73 ha (1.82 acres) to 0.99 ha (2.48 acres) to encompass all of the various connections to the surrounding utilities and services. See Figure 2.

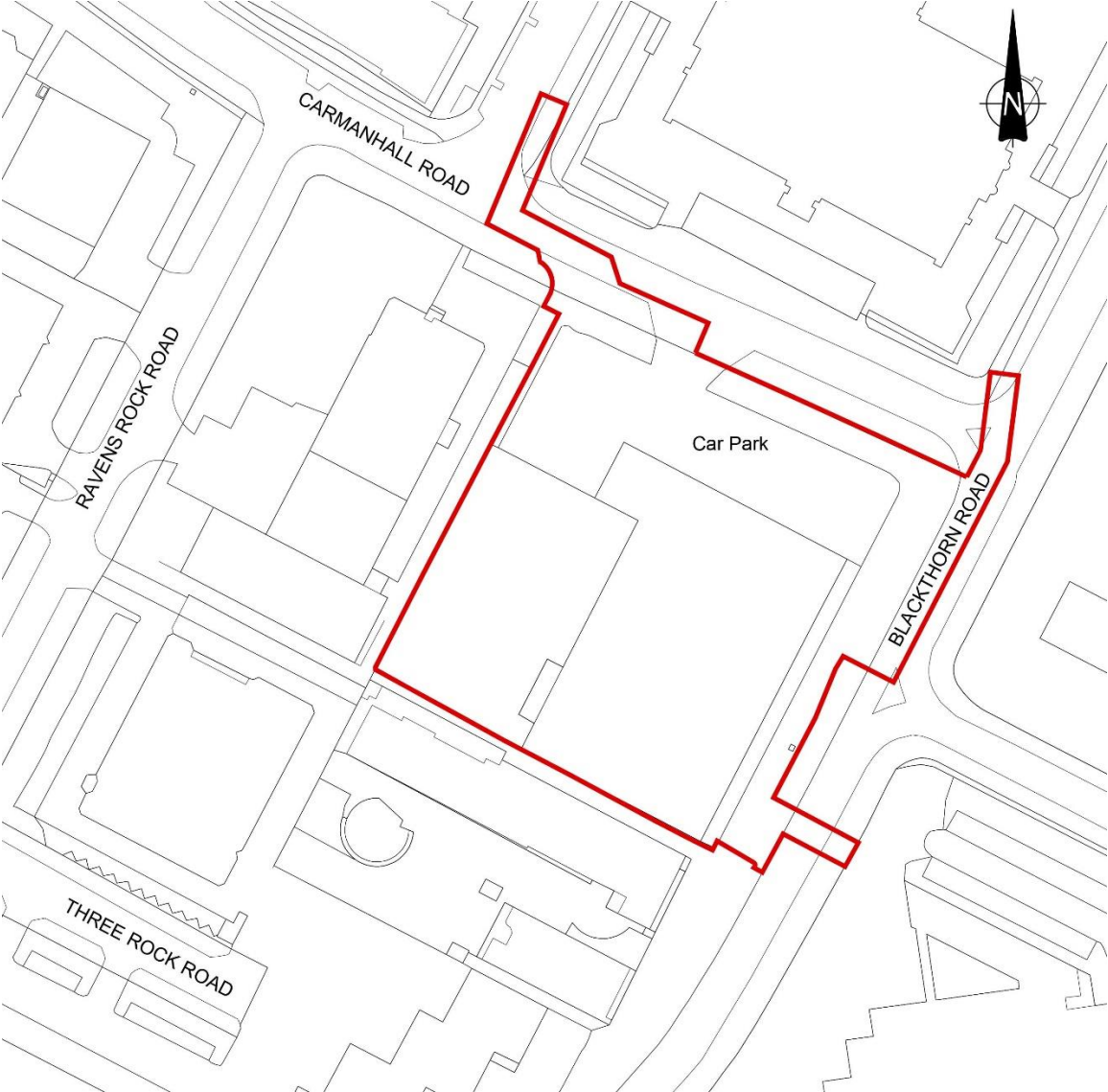


Figure 2 Site Location Map

2.2 Description

The proposed development will comprise some 334 Build-to-Rent residential units on the former Avid Technology site. See Figure 3.

Car parking with a total of 125 car spaces will be provided at Lower Ground and Basement. Cycle parking with 447 spaces will be provided at Lower Ground Level. Access is proposed from Carmanhall Road and egress to Blackthorn Road. The public realm around the site will incorporate an upgrade of the pedestrian and cycle environment.

The development includes all associated infrastructure to service the development including access junctions, footpaths and cycle paths together with a network of watermains, foul water drains and surface water drains.

A concurrent development with its own Construction Management Plan is also expected to be developed on the former Tack Packaging site to the west. It will comprise 207 Build-to-Rent residential units and 79 car parking and 288 cycle parking spaces at Lower Ground Level and Basement. Access will be from Ravens Rock Road and egress onto Carmanhall Road. See Figure 4.

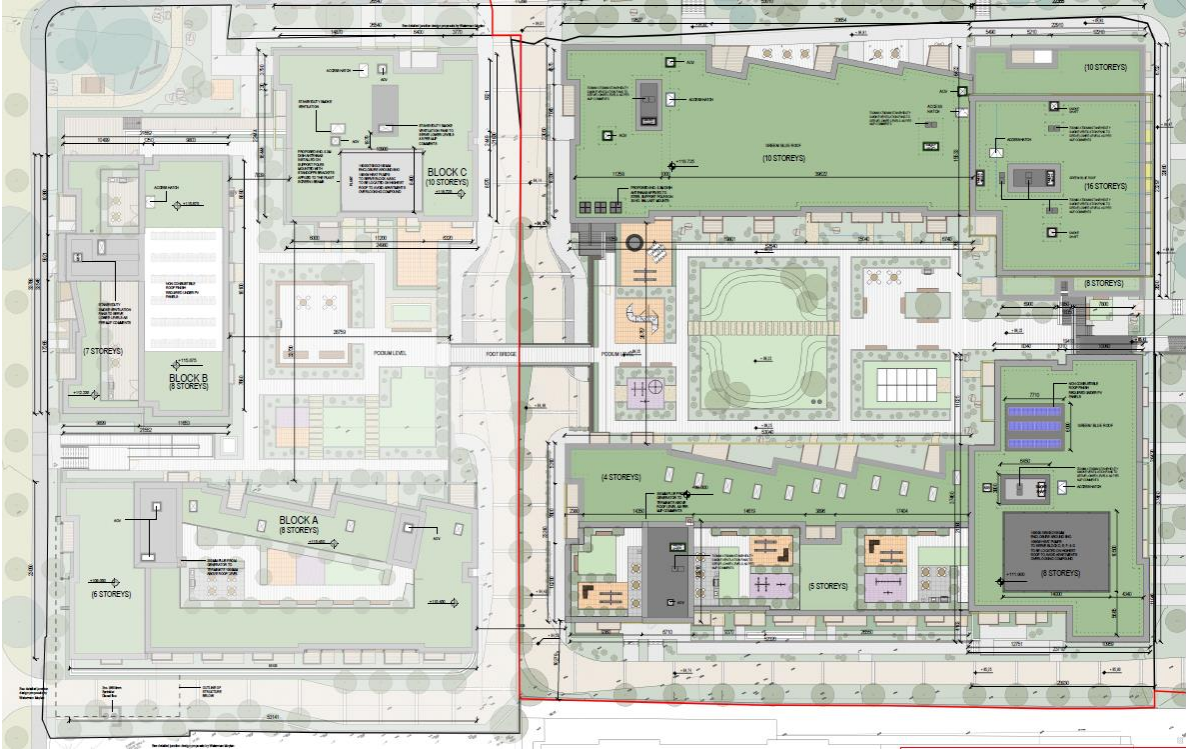


Figure 3 Proposed Site Layout

2.3 Contiguous Development

A concurrent development with a separate Traffic & Transport Assessment on the former Tack Packaging site to the west will comprise 207 Build-to-Rent residential units and 79 car parking and 288 cycle parking spaces at Lower Ground Level and Basement. Vehicular access is proposed from Ravens Rock Road and egress onto Carmanhall Road (Reg Ref: ABP-313338-22).

The traffic impact from this contiguous development has been incorporated into this T&TA.

2.4 Access

Access to the proposed development is proposed from Carmanhall Road and egress onto Blackthorn Road. See Figure 4.

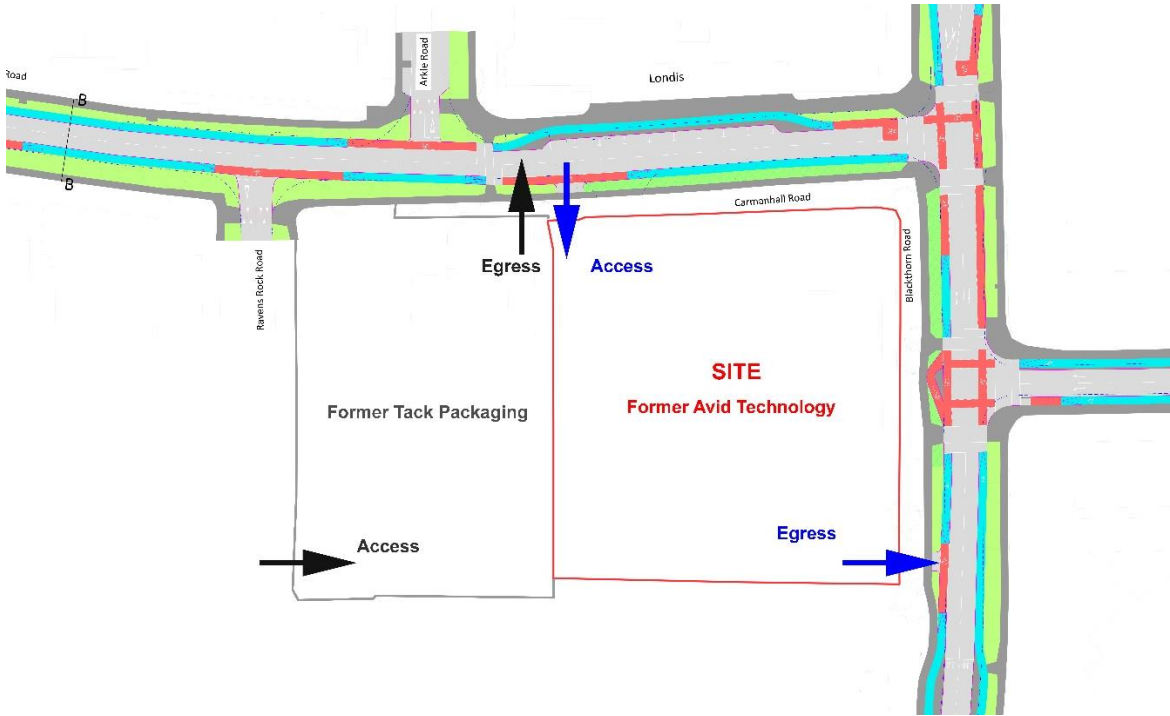


Figure 4 Proposed Access

2.4.1 Proposed Egress onto Blackthorn Road

The proposed egress onto Blackthorn Road would be for all vehicles and located at the southeast corner of the site to the south of the signalised junction with Burton Hall Road. It would be a one way out with left turn only onto Blackthorn Road. See Figures 3 and 4.

2.4.2 Proposed Access on Carmanhall Road

An entrance is proposed on Carmanhall Road for cars, service deliveries, refuse freighter and emergency vehicles. In the contiguous development, an exit is also proposed at this location. See Figures 3 and 4.

No constraint is expected from the existing signalised pedestrian crossing which is located immediately to the west of the existing access. It is proposed that this crossing be relocated to the west as part of the Sandyford Business District Pedestrian and Cycle Scheme. See Figure 5.

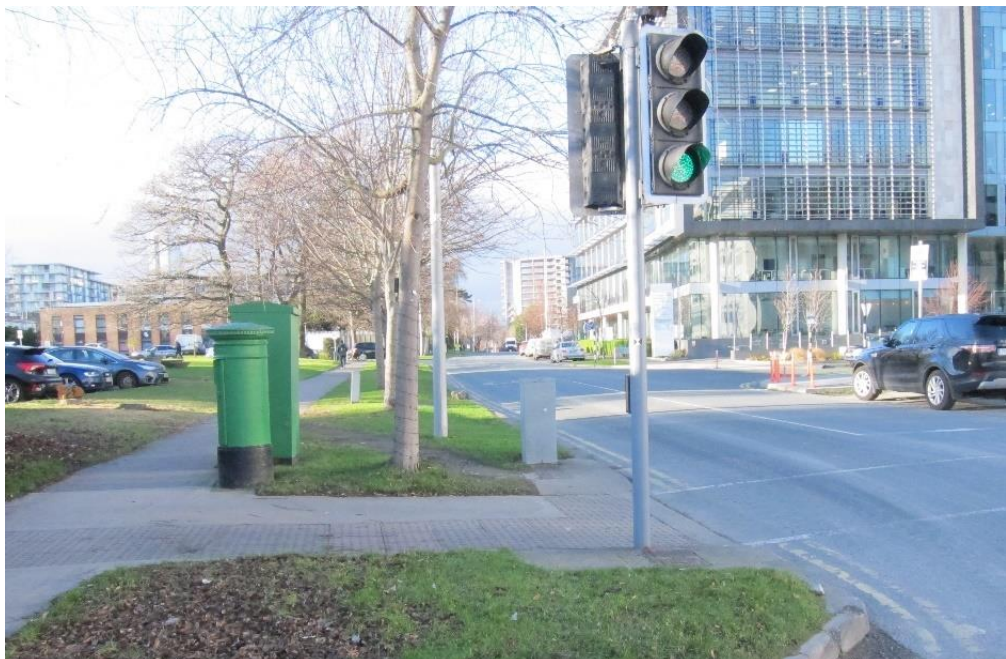


Figure 5 Pedestrian Crossing and Trees at Carmanhall Road

2.6 Sightlines on Blackthorn Road

The sightlines for the proposed exit from this development onto Blackthorn Road have been based on Section 4.4.5 of the Design Manual for Urban Roads and Streets (DMURS) which requires

- A setback of 2.4m from the edge of the carriageway at the junction.
- Sightlines of 49m for roads on bus routes with a 50kph design speed such as Blackthorn Road.
- Sight distance to the left to the centreline of the road and sight distance to the right to the nearside kerb line.

There are no existing trees in the sightline at this location. See Figures 7 and 14.

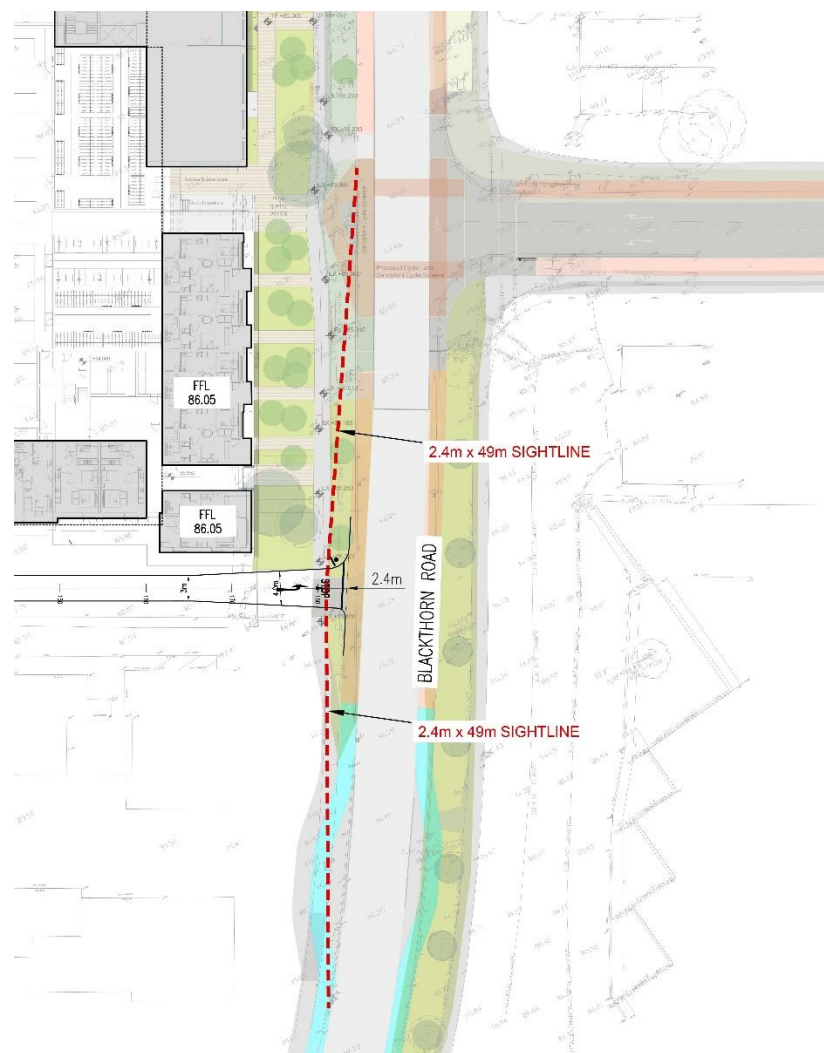


Figure 7 Sightlines at Blackthorn Road
(Waterman Moylan Drg No 21-118/P278)

2.7 Design Population

It is estimated that the number of residents in the proposed development on the subject site and the contiguous development on the Tack site will be some 1,228 persons as calculated in Table 1.

Table 1 Development Population

Unit Size	Avid		Tack		Total	
	Units	Persons	Units	Persons	Units	Persons
Studios (1-person)	79	79	48	48	127	127
1-Bed (2 persons)	175	350	103	206	278	556
2-Bed (4 persons)	80	320	55	220	135	540
3-Bed (5 persons)	0	0	1	5	1	5
Total	334	749	207	479	541	1,228

2.8 Car Parking

The proposed provision of car parking will be 125 spaces equivalent to 0.375 space per unit for 334 units.

The provision of 125 spaces will include 25 spaces with charging facilities for electric vehicles (20%), 5 spaces for disabled drivers (4%) and 7 spaces for car sharing (GoCar).

A total of 45 spaces will be located at lower ground level as shown in Figure 8 with 56 spaces on the adjoining site.

A total of 80 spaces will be provided at basement level as shown in Figure 9 with 23 spaces on the adjoining site. No interconnection is proposed between the car parks at this level.

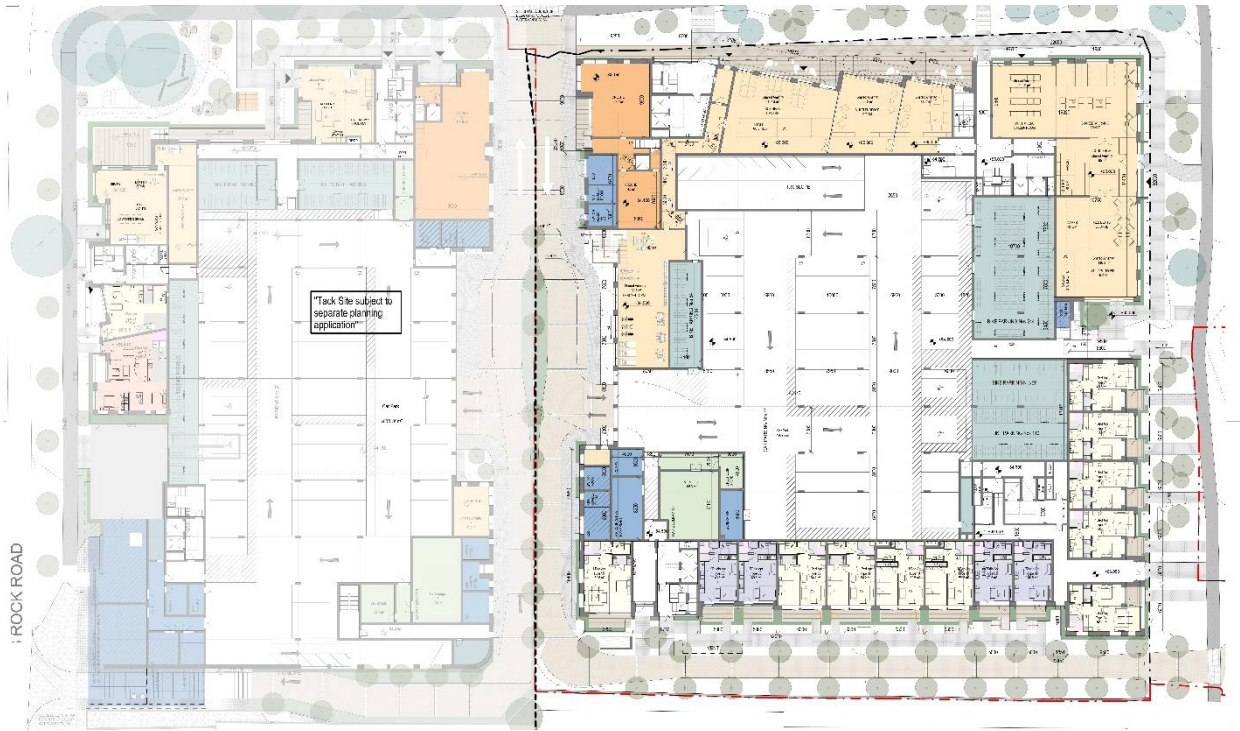


Figure 8 Parking Layout at Lower Ground Level (45 spaces)

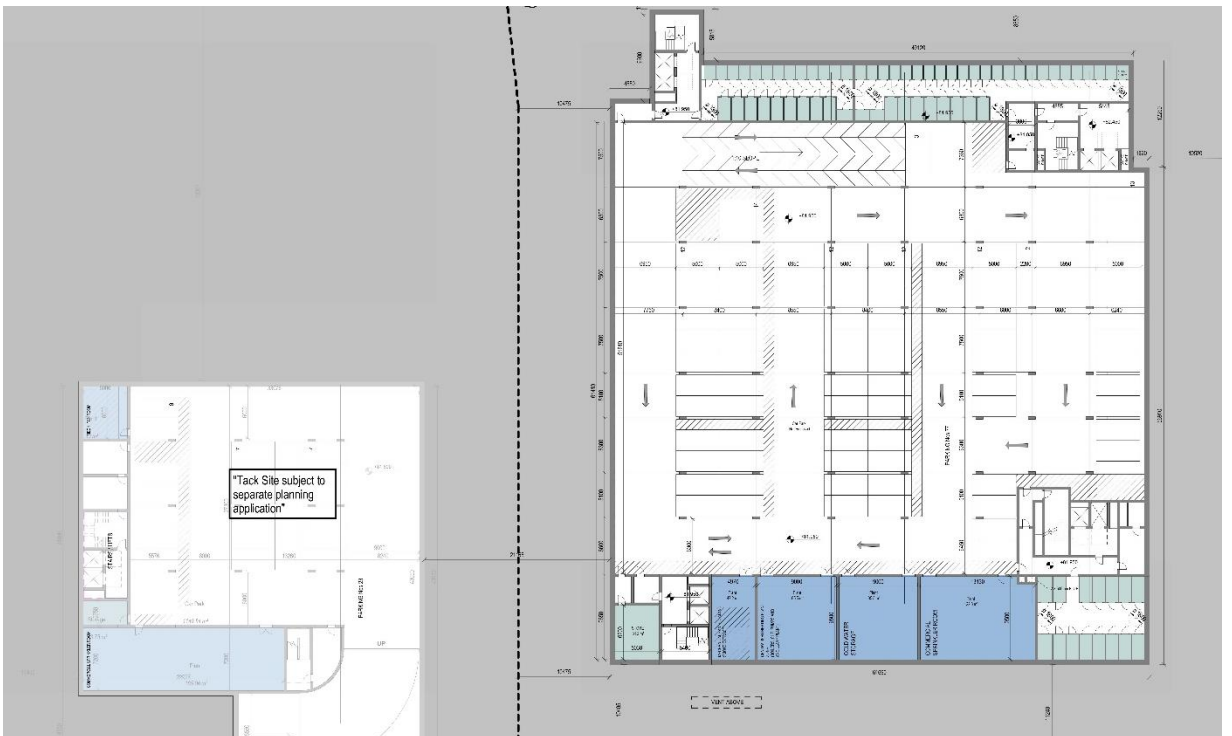


Figure 9 Parking Layout at Basement Level (80 spaces)

2.9 Motorcycle Parking

The parking provision for motorcycles within the proposed development will be 6 spaces (4% of the car parking provision).

2.10 Pedestrians and Cyclists

The pedestrian and cycle access to the proposed development have been integrated with the proposals for the DLR Sandyford Cycle Improvement Scheme. 2022.

This scheme provides for upgraded footpaths and cycle tracks on the Blackthorn and Carmanhall Road frontages of the subject site together with the signalisation of the Blackthorn Road / Carmanhall Road junction.

2.11 Cycle Parking

It is proposed that a total of 447 cycle parking spaces be provided within the proposed development.

A total of 383 long term spaces will be provided for residents and a total of 64 short term spaces will be provided for visitors.

Provision for future additional demand for cycle parking of +10% equivalent to 49 spaces has been included in the cycle parking provision for this development .

2.12 Future Road and Cycle Schemes

During the preparation of this T & TA, consultations were held with the project engineers for two schemes. The two schemes which are being developed by Dun Laoghaire Rathdown County Council are: -

- (a) ESB Link Road – Junction 14 Roundabout to Blackthorn Road.
- (b) Sandyford Cycle Improvement Scheme 2022.

Both schemes and their impact on the road network in the area of the subject site are described in this T & TA. It is understood at the time of writing in August 2022, that the Sandyford Cycle Improvement Scheme is progressing to the tender stage for completion in 2023.

2.13 Travel Plan (formerly Mobility Management Plan)

The Traffic and Transport Assessment (T&TA) for the proposed development is expected to be accompanied by a Travel Plan prepared in accordance with Section 12.4.3 of Dun Laoghaire Rathdown County Development Plan 2022 – 2028.

A separate Travel Plan is also expected to be prepared for the proposed development on the adjoining former Tack Packaging site to the west.

2.15 Emergency Access

An Autotrack analysis has been undertaken on the proposed layout to demonstrate that an 8.4m long Class B fire tender can access the proposed development from Ravens Rock Road, drive through the development and exit onto Carmanhall Road.

The Autotracking which is illustrated in Figure 11 confirms that the selected vehicles can access the proposed development.

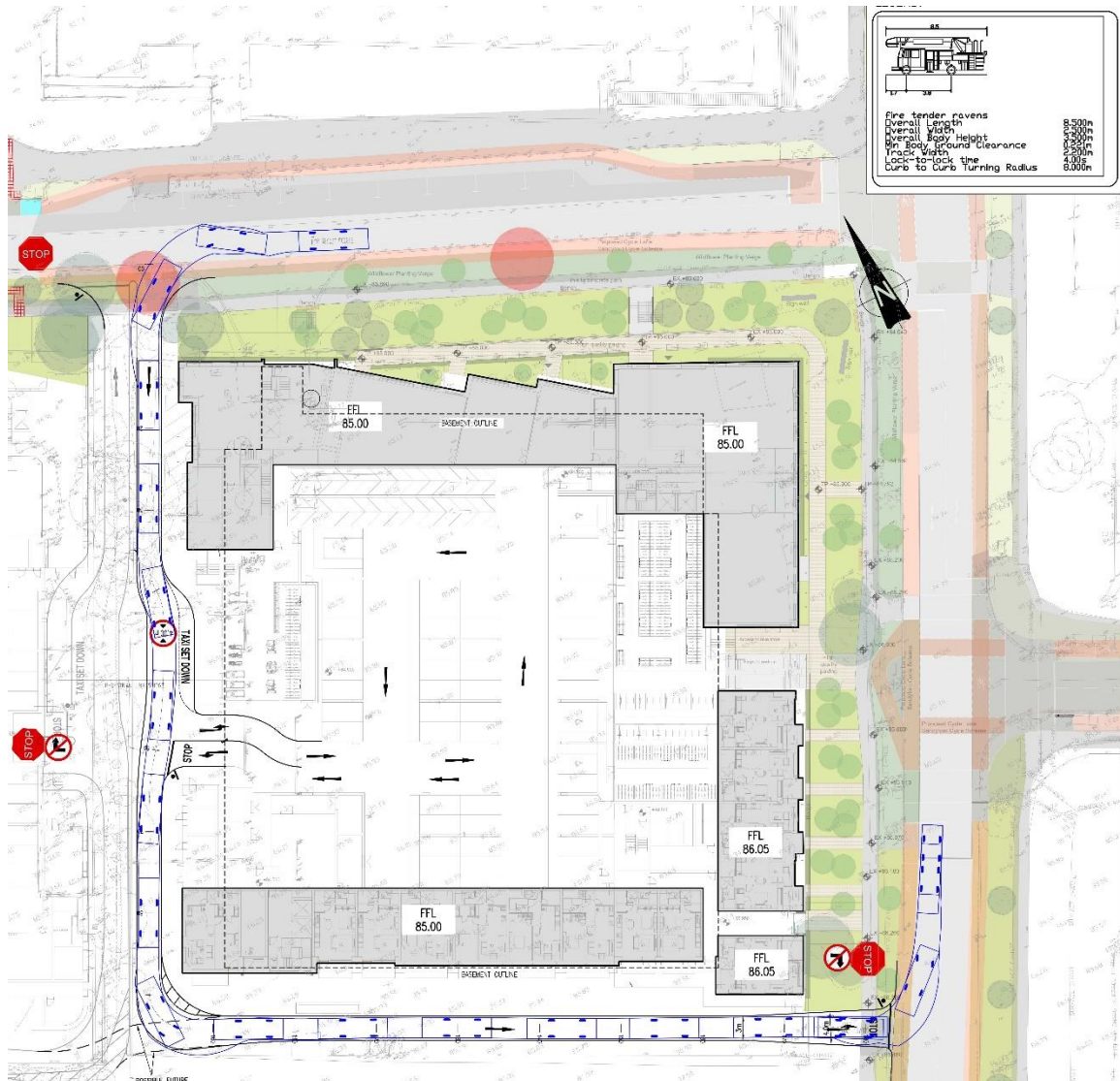


Figure 11 Autotrack Tracking for Fire Tender
(Waterman Moylan Drg No 21-118/P270)

3. Receiving Environment

3.1 Site Layout – Existing

The existing site layout is illustrated in Figure 12.

The subject the site extending to 0.73 ha (1.82 acre) was formerly occupied by Avid Technology. The existing access is from Carmanhall Road.

At the time of writing in August 2022, the site was unoccupied.

The adjoining site to the east on which a concurrent development is expected extends to 0.57 ha ((1.42 acre) and was formerly occupied by Tack Packaging. The existing access is from Ravens Rock Road.

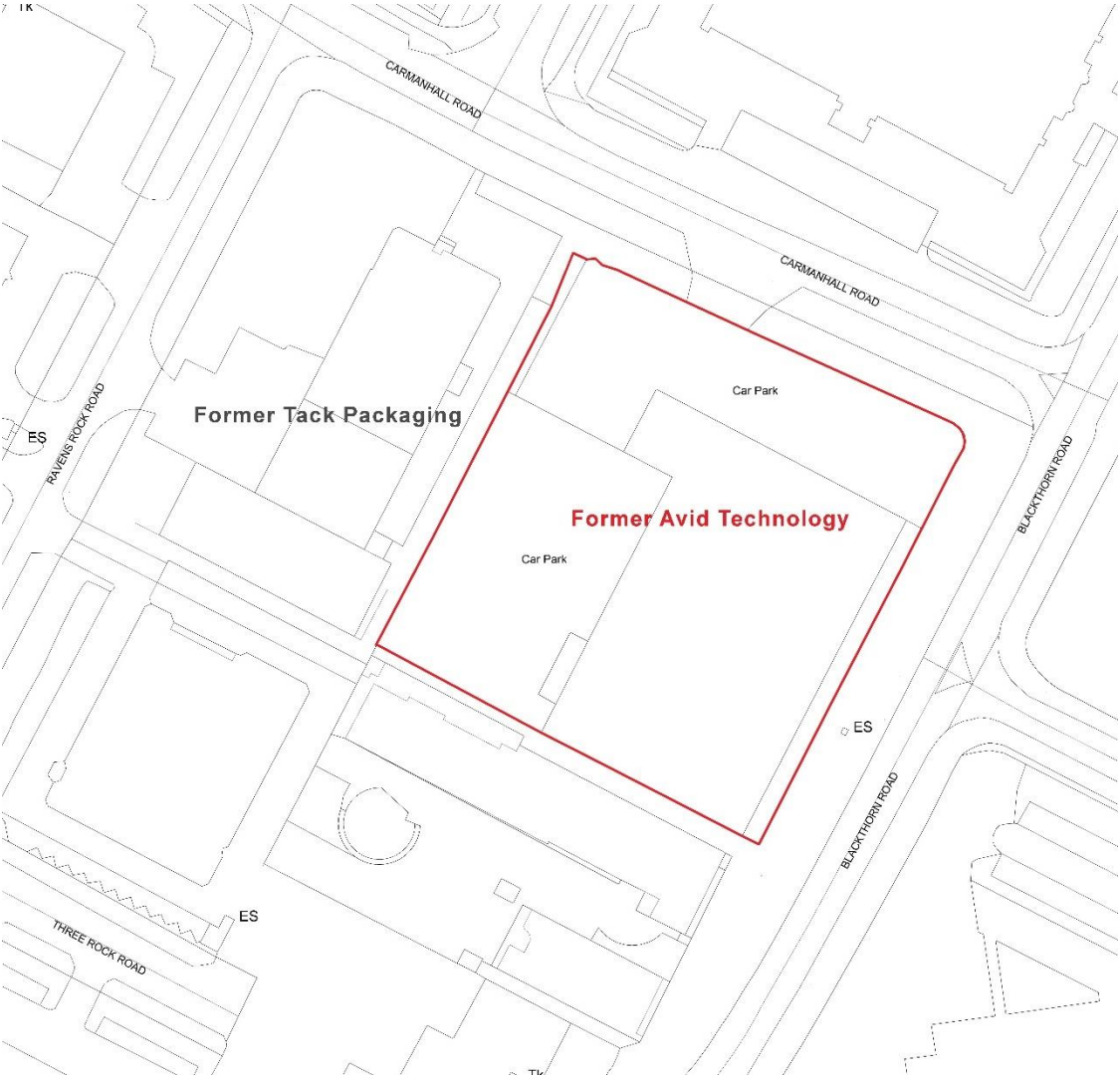


Figure 12 Site Layout – Existing

3.2 Existing Roads

The primary roads in the area of the subject site are shown on Figure 13. The roads which form its eastern and northern boundaries of the site are:

- Blackthorn Road (Level 1)
- Carmanhall Road (Level 4)



Figure 13 Sandyford Business Estate Road Hierarchy (SUFPA Drawing No 7)

(Level 1 Roads (50 kph) in yellow and Level 4 Roads (30 kph) in pink)

Blackthorn Road is a Level 1 Local Road with a posted speed limit of 50 kph. It has a single carriageway 9.0 metres wide with grass verges and footpaths on both sides. There is a signalised junction with pedestrian facilities at Burton Hall Road and a priority junction at Carmanhall Road. See Figure 14.

The Average Annual Daily Traffic (AADT) on Blackthorn Road is some 17,500 vehicles per day. The two-way traffic flow on Blackthorn Road is some 1,230 vehicles per hour (vph) during the AM peak hour reducing to 450 vph during the PM peak hour.

Only very limited access and no parking is provided off Blackthorn Road.



Figure 14 Blackthorn Road

Carmanhall Road is a Level 4 Local Road with a proposed speed limit of 30 kph. It has a single carriageway 7.5 metres wide with grass verges and footpaths on both sides. There are priority junctions with Blackthorn Road and Ravens Rock Road. There is also a signalised pedestrian crossing to the east junction with Ravens Rock Road. See Figure 15.

The Average Annual Daily Traffic (AADT) on Carmanhall Road is some 9,600 vehicles per day. The two-way traffic flow on Carmanhall Road is some 650 vehicles per hour (vph) during the AM peak hour, reducing marginally to 600 vph during the PM peak hour.

Parking on Carmanhall Road is limited to 1 hour controlled by Pay & Display 08h00-17h00 Monday – Saturday. Parking demand is high on weekdays.



Figure 15 Carmanhall Road

Ravens Rock Road is a Level 4 Local Road with a proposed speed limit of 30 kph. It has a single carriageway 7.5 metres wide with grass verges and footpaths on both sides. There are priority junctions at both ends with Carmanhall Road and Three Rock Road. See Figure 16.

Parking on Ravens Rock Road is controlled by Pay & Display 08h00-17h00 Monday – Saturday. Parking demand is high on weekdays.

The Average Annual Daily Traffic (AADT) on Ravens Rock Road is some 1,900 vehicles per day. The two-way traffic flow on Ravens Rock Road is some 150 vehicles per hour (vph) during the AM peak hour, reducing marginally to 100 vph during the PM peak hour.



Figure 16 Ravens Rock Road

3.3 Site Access - Existing

There is a single vehicular access to the subject site from Carmanhall Road.

There is also a single access to the adjoining former Tack Packaging site from Ravens Rock Road.

3.4 Pedestrian Linkage

3.4.1 Existing Environment – Pedestrians

Pedestrian facilities in the area surrounding the subject site are in the ownership of DLR and are generally of high standard.

Street lighting and tactile paving are provided at most crossing points and footways are free of street clutter caused by inappropriately located street furniture.

3.4.2 Proposed Pedestrian Routes

In addition to the existing pedestrian facilities, the pedestrian environment in the area of the subject will be enhanced by the implementation of the Sandyford and Cycle Improvement Scheme. See Figure 16.

3.5 Cycle Linkage

3.5.1 Existing Environment – Cycles

There are very limited cycle facilities on the road network in the area around the subject site.

This deficiency will be remedied by the implementation of the Sandyford Cycle Improvement Scheme.

3.5.2 Proposed Cycle Routes

The Council Cycling Policy, adopted in June 2010, provides local guidelines on the delivery of the aims and objectives of the National Cycle Policy Framework 2009-2020.

The Cycling Policy includes guidance and standards for the provision of cycle parking and associated cycling facilities for all new developments. Developments in the Sandyford Business District will be required to adhere to the Council Cycling Policy as part of their Travel Plan.

In addition to the existing pedestrian facilities, the cycle environment in the area of the subject will be enhanced by the implementation of the Sandyford Cycle Improvement Scheme. See Figure 17.

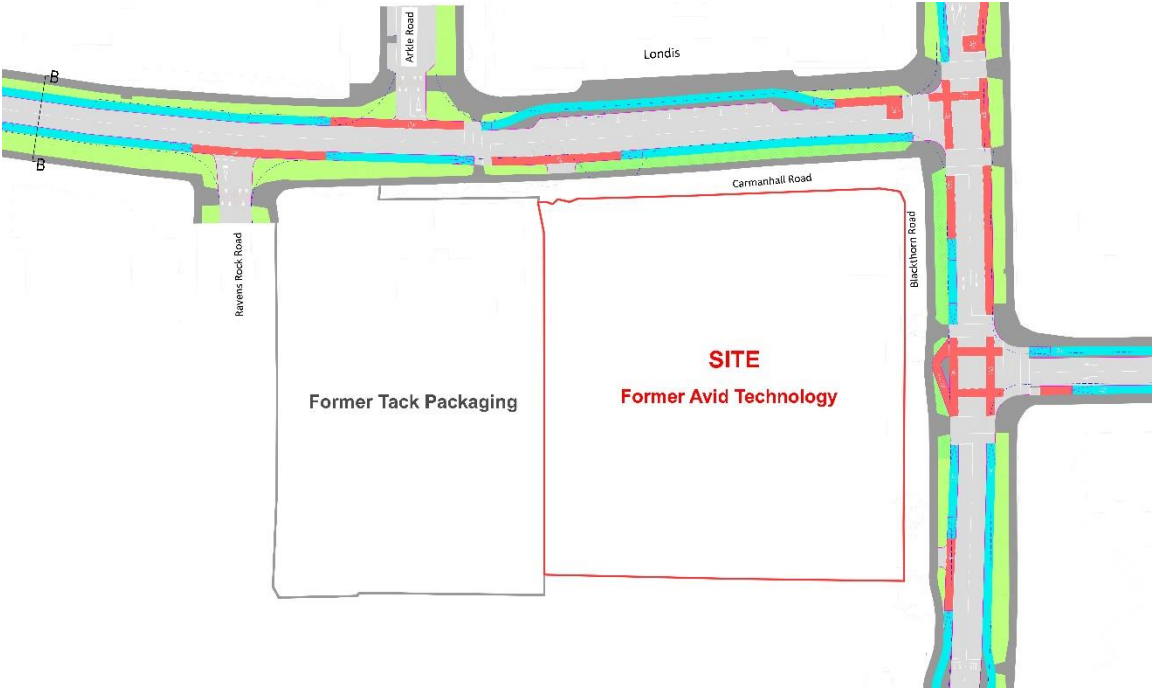


Figure 17 Sandyford Cycle Improvement Scheme

3.6 Car Sharing

Table 12.6 of the DLR County Development Plan 2022 – 2028 sets out a requirement for 0.02 car sharing spaces per residential unit.

A total of 7 spaces equivalent to 140 standard car parking spaces are proposed within this development to be operated by a company such as GoCar.

GoCar bases in the area around the subject site are located within a short walking distance at the following locations illustrated in Figure 18.

- Carmanhall Road
- Blackthorn Avenue
- Blackthorn Road
- Heather Road

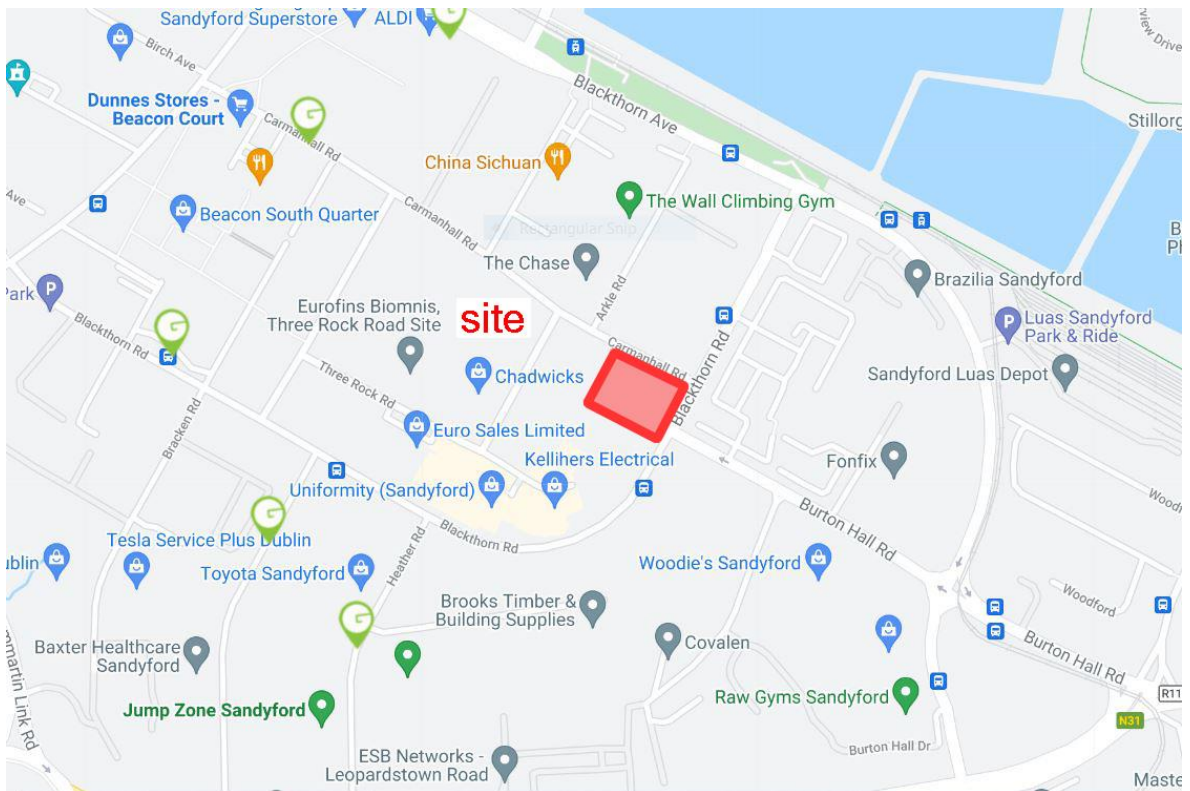


Figure 18 GoCar Bases in Sandyford Area.

3.7 Road Collision Statistics

Road traffic statistics for the area around the subject site were reviewed in the Road Safety Authority (RSA) website www.rsa.ie.

This website details traffic collision data for the years 2005 – 2016. The records detail only those occasions where the incident was officially recorded such as the Garda being present to formally record details of the incident.

The incidents are classified as fatal, serious or minor. An extract from the RSA collision map is presented in Figure 19.

None of the collisions were fatal or reoccurring or raise any concerns in relation to the existing road network.

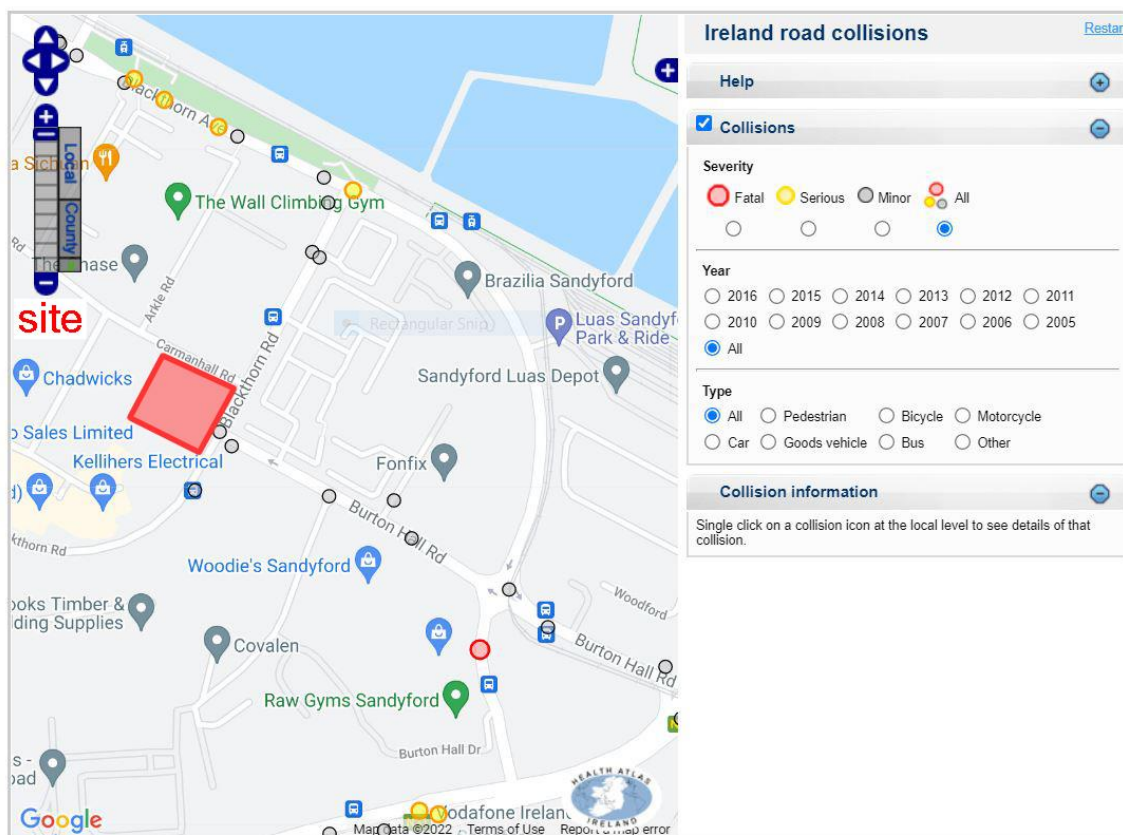


Figure 19 Road Traffic Collisions 2005 - 2016.

4. Planning Background

4.1 Former Avid Technology Site

The SHD planning application lodged by Atlas GP Limited in April 2021 comprised a build-to-rent residential development with 428 no. Apartments, childcare facility, resident's amenities, and associated siteworks on the Former Avid Technology Site, Carmanhall Road, Sandyford Industrial Estate, Dublin 18 (Reg Ref: SHD 310104).

The application incorporated a single vehicular access from Carmanhall Road with 145 on-site car parking spaces equivalent to 0.34 spaces per unit.

The report on the application submitted by DLR to ABP in June 2021 set out the planning authority's recommendations as to whether the application should be granted or refused. This report also incorporated an internal report from DLR Transportation Planning dated 10th June 2021.

One of the primary transportation conclusions of both reports related to car parking:

"Transportation Planning recommends the provision of 1 car parking space per apartment unit. This would equate to 428 spaces for this development. A typical alternative to this requirement would be to provide compensatory club-car parking".

The Inspector's report from An Bord Pleanala dated 29th July 2021 assessed the car parking elements of the proposed development as follows:

10.8.7. While the concerns of the Planning Authority are acknowledged, I consider the subject site to be suitable for the accommodation of reduced car-parking standards in accordance with the outlined national policies, while also having regard to Objective TAM1 of the SUFP, which is to require all future development in the Sandyford Business District to achieve a peak hour transport mode split of 45% trips by car drivers (maximum) and 55% trips by walking, cycling and public transport and other sustainable modes (minimum targets). The implementation of a Mobility Management Plan will encourage alternative transport modes and the development will be centrally managed via a management company that will make prospective occupiers clearly aware of the parking management strategy. Furthermore, the development will incorporate dedicated car club spaces which have the potential to replace a significant number of private car journeys. In this context, the reduction in provision can be justified and I consider that proposals are generally acceptable.

4.2 Infrastructure Capacity

On 18th May 2022, BKC Solicitors on behalf of John Conway lodged a submission to An Bord Pleanala on respect of the SHD Application for the former Tack Packaging site at the junction of Ravens Rock Road and Carmanhall Road (Reg Ref 313338).

Section (xii) of the submission indicated that

'The applicant has not demonstrated that there is sufficient infrastructure capacity to support the proposed development, including by reference to public transport, drainage, water services and flood risk'.

The contrary is the case and the engineering documentation prepared by Waterman Moylan to accompany this application clearly demonstrates that the infrastructure is more than adequate to support the proposed development on the subject site.

The capacities of the various elements of infrastructure are summarised below.

Road Network

This Traffic and Transport Assessment demonstrates that the existing road network has adequate spare capacity to cater for the proposed development and that the traffic impact of the proposed development will be nominal resulting in effects that are imperceptible.

Pedestrian Network

Pedestrian facilities in the area surrounding the subject site are generally of high standard.

Street lighting and tactile paving are provided at most crossing points and footways are free of street clutter caused by inappropriately located street furniture.

The pedestrian environment around the site will be further improved by the Sandyford Cycle Improvement Scheme for which tenders are expected to be sought by DLR in Autumn 2022.

Cycle Network

There are very limited cycle facilities on the road network in the area around the subject site. This deficiency will be remedied by the implementation of the Sandyford Cycle Improvement Scheme for which tenders are expected to be sought by DLR in Autumn 2022.

Public Transport – Luas

The proposed development will be located within 6 minutes' walk of two stops on the Luas Green Line.

The projected demand for Luas services during the AM Peak will be well within the capacity of the existing Luas services which currently has spare capacity of 24% of total capacity greater by a factor of 10 than the predicted passenger demand from the proposed development.

Public Transport – Bus

The combined development will be well served by stage bus services operated by a number of companies from a number of stops within 6 minutes' walk from the proposed development.

The projected demand for bus services during the AM Peak will be well within the capacity of the existing bus services being 6% of the capacity provided on the bus services in the surrounding area.

Summary

In the various documents which accompany the planning application, the applicants and the project team have clearly demonstrated that there is spare capacity in the existing infrastructure at Sandyford which is more than adequate to support the proposed development on subject site (former Avid Technology) and on the adjoining former Tack Packaging site.

5. Transportation Response to PAC Opinion (SHD 312265-21)

5.1 Documents Reviewed

The following documents are reviewed in this chapter and responses to the transportation issues raised are set out.

- Report of DLR Chief Executive dated 24th June 2021.
- Report from DLR Transportation Planning 10th June 2021.
- Record of Consultation Meeting dated 27th April 2022.
- ABP Inspectors Report dated 16th May 2022.
- ABP Board Direction dated May 2022.
- ABP Pre-application Consultation Opinion dated May 2022.

5.2 Report of DLR Chief Executive dated 24th June 2022

Issue Raised

The primary engineering issue raised in this report related to car parking:

“Transportation Planning recommends the provision of 1 car parking space per apartment unit. This would equate to 428 spaces for this development. A typical alternative to this requirement would be to provide compensatory club-car parking”.

Response

The proposed provision of car parking will be 125 spaces equivalent to 0.375 space per unit for 334 units.

The provision of 125 spaces will include 88 standard spaces, 25 spaces with charging facilities for electric vehicles (20%), 5 spaces for disabled drivers (4%) and 7 spaces for car sharing (GoCar).

Each car sharing spaces will be the equivalent of 20 standard spaces.

The effective provision of car parking at the proposed development would be the equivalent of 258 spaces comprising 118 standard spaces and 140 car sharing spaces compared to a maximum allowable provision of 278 spaces under the current Development Plan.

Compliance has also been demonstrated in this T &TA with Section 8.2.4.5 *Car Parking Standards* of the DLR County Development Plan 2022 – 2028 which provides for reduced car parking standards for any development (residential and non-residential) complying with certain criteria.

5.3 Report from DLR Transportation Planning dated 10th June 2021

Issue Raised

This report from DLR Transport Planning formed Appendix B of the Report by the DLR Chief Executive dated 24th June 2021.

The primary engineering issues raised in this report related to the access proposals and the Sandyford Urban Framework Plan (SUFP).

- *The location of the proposed new vehicular entrance at Carmanhall Road conflicts with the existing signalised pedestrian crossing at Carmanhall Road. The existing access to this site would be more favourable as an access point as it ties in with the design incorporated for the Sandyford cycle improvement scheme due to commence and agreed access point for this development from the SUFP.*
- *The double entrance off Ravens Rock Road appears unnecessary. Why no vehicular exit proposals via Raven's Rock Road?*
- *The exit onto Blackthorn Road is in close proximity to Burton Hall Road. Transportation and Traffic consider this exit point unnecessary and with the improved access into this area from the ESB Link Road M50 link for vehicles and cyclists, this may be more viable as an access point only.*

Response - Masterplan

The Masterplan for the former Avid Technology site and the former Tack Packaging site provides for the separate but integrated development of both sites.

To this end, separate access and exit is provided for both sites. See Figure 20.

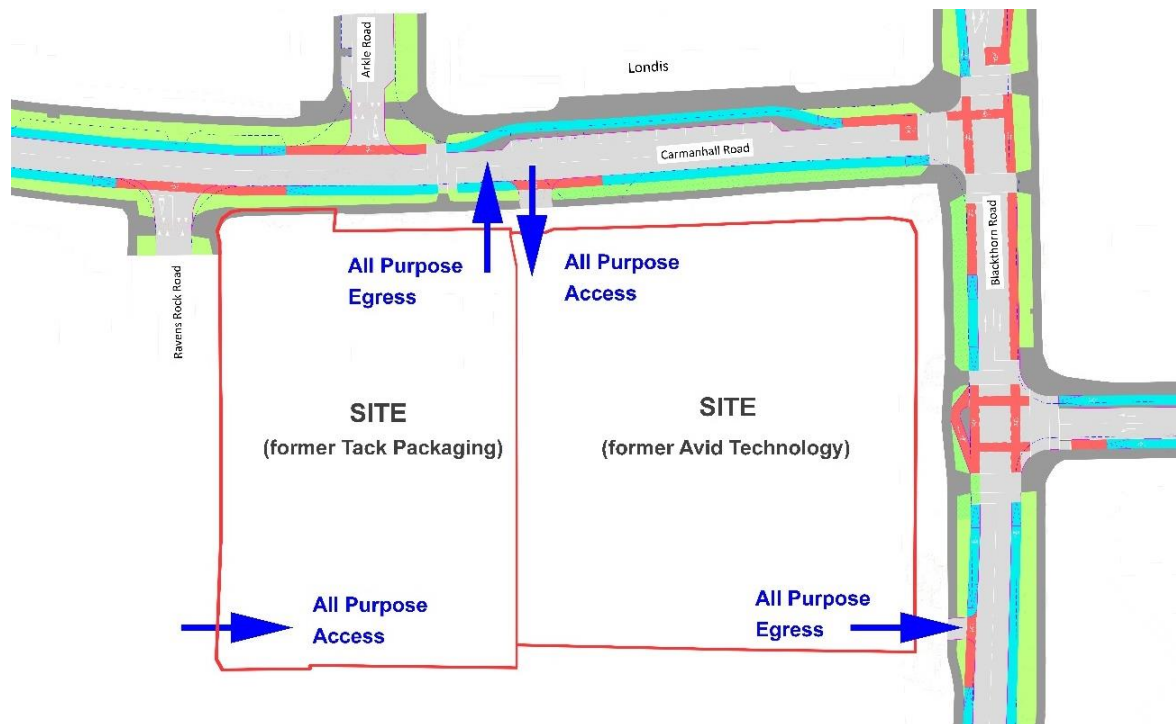


Figure 20 Masterplan Access and Egress

Site Access

An entry only for all vehicles is proposed from Carmanhall Road immediately to the west of the boundary between the subject site and the adjoining Avid Technology site to the east. Provision for a site access at this location is included in the current proposals for the Sandyford Cycle Improvement Scheme (Rev 08). See Figure 21.

No constraint is expected from the existing signalised pedestrian crossing which is located immediately to the west of the existing access as this crossing is being relocated by DLRCC as part of the Sandyford Cycle Improvement Scheme.

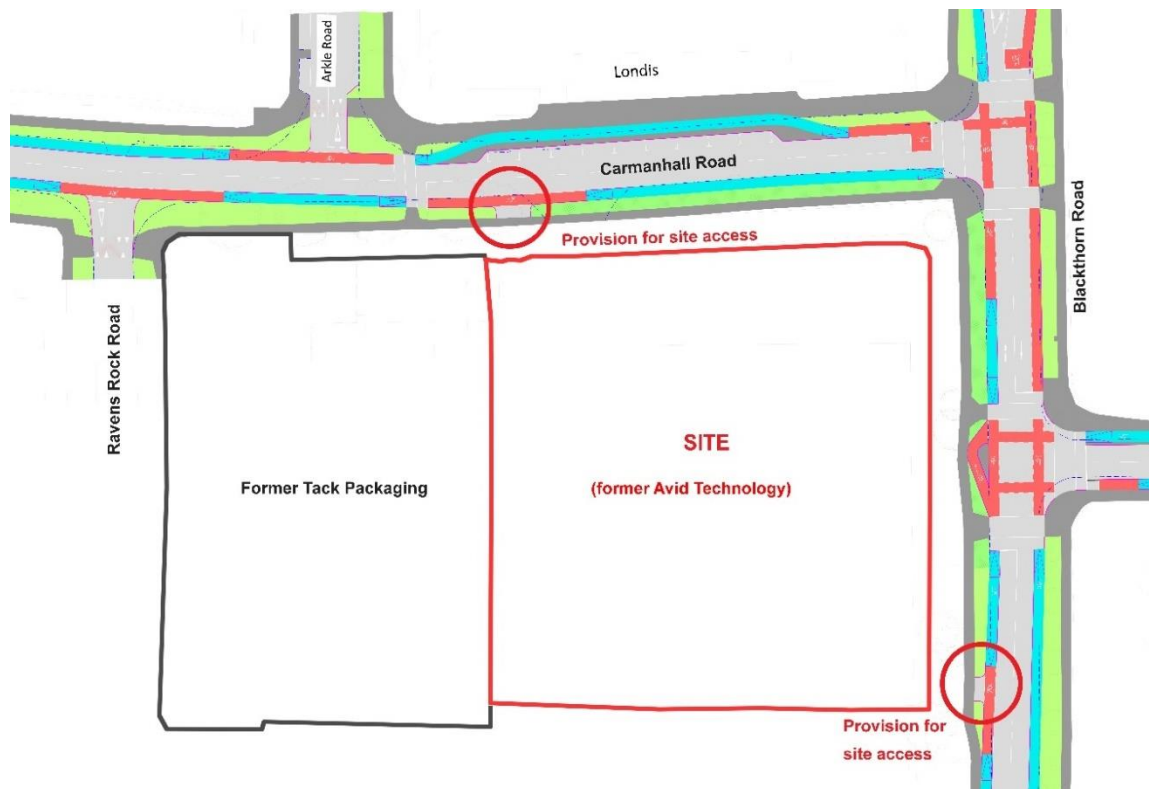


Figure 21 Site Access and the Sandyford Cycle Improvement Scheme (Rev 08)

Site Access – Ravens Rock Road

An entry only for all vehicles was included in the planning application for the adjoining former Tack Packaging site (Reg Ref: ABP-313338-22).

The second access originally proposed from Ravens Rock Road has been omitted as part of the design development for the combined site.

Site Access – Blackthorn Drive

The proposed access on Blackthorn Road would be located at the southeast corner of the site to the south of the signalised junction with Burton Hall Road. It would be a one way out with left turn only onto Blackthorn Road. There are no existing obstructions to the provision of the required 49 metre sightlines at a setback of 2.4 metres in both directions.

A number of options were considered for this junction, two way, entry only as suggested by DLRCC and exit only. Having regard to the fact that the exit is close to the junction with Burton Hall Road and the fact that the average traffic speed appears to exceed the posted speed limit by up to 40%, a left out only exit was considered the most appropriate layout for this access provision for which is included in the current proposals for the Sandyford Cycle Improvement scheme (Rev 08). See Figure 21.

The provision of this access could be accompanied by speed reduction measures on Blackthorn Road to be implemented by DLRCC.

Car Parking

All of the issues in relation to car park layout, length of cul-de-sacs and drainage have been addressed in the design of the proposed car parking at Lower Ground Level and Basement – 1.

The proposed car parking layouts, access, circulation, headroom and drainage are shown on the architectural and engineering drawings accompanying the planning application.

5.4 The Consultation Meeting

The Pre-application Consultation Meeting with An Bord Pleanála was held remotely on 27th April 2022.

The Record of the Meeting noted that An Bord Pleanála had no specific comments on the transportation aspects of the current proposal, previous refusal or compliance with the DLR Development Plan 2016 – 2022.

The comments by the Planning Authority related to

- Regard to be had to reports from parks and transportation departments.
- Concerns with public transport flagged in report
- Traffic must exit at Carmanhall Road to avoid excess exit points at Tack Packaging site.
- Prospective applicant to liaise with traffic department to alleviate concerns
- Alternative arrangements need to be in place, however, to demonstrate that both applications can be delivered independently and are compatible.

5.5 ABP Inspectors Report dated 16th May 2022.

Issues Raised by Planning Authority

The Inspector noted the following engineering issues raised by the Planning Authority

- *Car parking ratio of 0.32:1 too low.*

- *Transportation issues (access points tie in with Sandyford cycle improvements scheme, cycle access and way finding, cycle stands) RSA, Access Audit, Cycle Audit and Walking Audit required*

Issues Raised by ABP

In respect of Infrastructure (transportation, movement, carparking and access and water infrastructure), An Bord Pleanála representatives sought further elaboration / discussion / consideration on the following:

- *Further detail and consideration of works required to the public realm.*
- *Clarification that all items raised by drainage department in their report submitted to the Board are addressed, further meetings should be sought to resolve outstanding issues.*
- *Further consideration of the proposal in respect to level of detail provided, particularly in relation to surface water drainage proposals and relating to site specific flood risk assessment and movement of overland flow rates.*
- *Clarity that issues raised by the IW report are addressed, in particular with regard to infrastructure on the site, sets backs or diversions and that a flow rate to meet fire flow requirements can be guaranteed.*
- *Consideration that each application stands on its own merits and that should issues or disagreements arise with respect to infrastructure deficits the Board precedent is to uphold the opinion of the planning authority, given their responsibility and authority on such matters.*
- *Clarification that all items raised by the PA in their report submitted to the Board are addressed, further meetings should be sought to resolve outstanding issues.*

Again, the applicants' response to all of the issues raised at the Consultation Meeting is set out in this T & TA and in the other documentation included with the planning application .

5.6 ABP Pre-application Consultation Opinion dated May 2022.

The Pre-application Consultation Opinion advised that the following engineering issues need to be addressed in the documents submitted.

1(a) Independent Development

Further consideration/justification of the documents to clearly set out how the Avid site can be developed independently of the Tack Packaging site, given the linked nature of the overpass pedestrian walkway, communal open space and access to undercroft car parking also the requirement for a creche. Clear justification that each scheme, which it is submitted are to comprise two separation planning applications can be deliver independently of one another, in particular, with

respect of access, drainage and engineering technical matters, given the Masterplan for an overall scheme, the recent SHD pre application 308186-20 on the Tack Packaging site and land ownership.

Response

All of the engineering elements of the proposed development have been designed on the basis of separate but integrated development of both sites.

- Separate vehicular access from the public road
- Separate vehicular egress onto the public road
- Separate but integrated internal circulation
- Separate car parking with separate access control.
- Separate cycle parking with separate access from the cycle tracks to be provided by DLRCC as part of the Sandyford Cycle Improvement Scheme.
- Separate substructures with the option to include a party wall between the two developments.
- Independent superstructures.
- Separate water supply networks with separate connections to the Irish Water mains.
- Separate foul drainage networks with separate connections to the Irish Water sewers.
- Separate stormwater collection, treatment attenuation and connections to the public sewer.

The only engineering element common to both sites is the overpass pedestrian walkway which is an optional feature of the combined development and can be omitted or phased by planning condition if either site is developed independently.

6. Public Transport – Light Rail

6.1 Background

Services on the Luas Green Line between St Stephens Green and Sandyford commenced in 2004. Subsequently, the line was extended south to Cherrywood in 2010 (Line B1) and north to Broombridge in 2017 (Line BX).

Luas services operate at 2 – 15 minute intervals in both directions.

Both the Sandyford Stop and the Stillorgan Stop on Blackthorn Avenue will serve the proposed development with both stops being 6 minutes' walk time from the subject site.

6.2 Operation

There are some 200 services per day in each direction between Sandyford and the City Centre. See Tables 2 and 3.

Table 2 Green Line Service Frequency – Sandyford to City Centre - Northbound

Time	Average No of Trams per Hour	Total Number of Trams
05:30-07:00	6	9
07:00-08:00	13	13
08.00-0900	20	20
09.00-10.00	12	12
10:00-16:00	10	60
16:00-19:00	12	36
19:00-00.25	8	41
Total		192

Table 3 Green Line Service Frequency – City Centre to Sandyford – Southbound

Time	Average No of Trams per Hour	Total Number of Trams
06.00-07:00	5	5
07:00-10:00	15	45
10:00-16:00	10	60
16:00-19:00	15	45
19:00-01.00	7.5	45
Total		200

6.3 Green Line Capacity

The Green Line Capacity Enhancement Scheme was launched in 2017 and completed by TII in 2021 at a cost of €100m. Earlier surveys by the NTA of passenger demand and conditions on the Luas Green Line indicated that the line was operating at capacity during peak periods, with crowding experienced between the Balally and Ranelagh stops. This crowding resulted in passengers being unable or unwilling to board at these stops.

The Capacity Enhancement Scheme provided for the replacement of the original 44 metre long trams each with a nominal capacity of 319 passengers with 55 metre long trams each with a capacity of nominal capacity of 408 passengers. Following completion of the Green Line Capacity Enhancement Scheme in 2019, the passenger capacity on the Green Line comfortably exceeds passenger demand in the AM and PM Peak as set out in the Table 1 above.

6.4 Future Increase in Line Capacity

In March 2019, the National Transport Authority confirmed that notwithstanding the ongoing increase in passenger demand, the next increase in capacity on the Luas Green Line would not be required before 2040.

6.5 Passenger Demand

Based on a modal split of 28%, the peak demand from the proposed development is expected to be 344 passengers during the AM Peak of which 50% can be expected to travel during the AM Peak Hour. This demand of 172 passengers per hour is equivalent to 1.3% of the Green Line Capacity of 12,600 passengers per hour.

6.6 Access to Luas Stops

Walking distances to Luas stops in the area of the proposed development are set out in Table 4.

The nearest Luas stops are Stillorgan and Sandyford both located on Blackthorn Avenue less than 0.5km to the north of the proposed development. Both stops are within 6 minutes walking distance.

The locations of the Sandyford and Stillorgan Luas Stops are shown in Figure 22.

Other stops within 20 minutes walking distance are Kilmacud and Central Park.

Table 4 Walking Time to Luas Stops

Luas Stop	Services	Walk Time from Development
Kilmacud	Blackthorn Avenue	17 minutes
Stillorgan	Blackthorn Avenue	4 minutes
Sandyford	Blackthorn Avenue	6 minutes
Central Park	Leopardstown Road	16 minutes

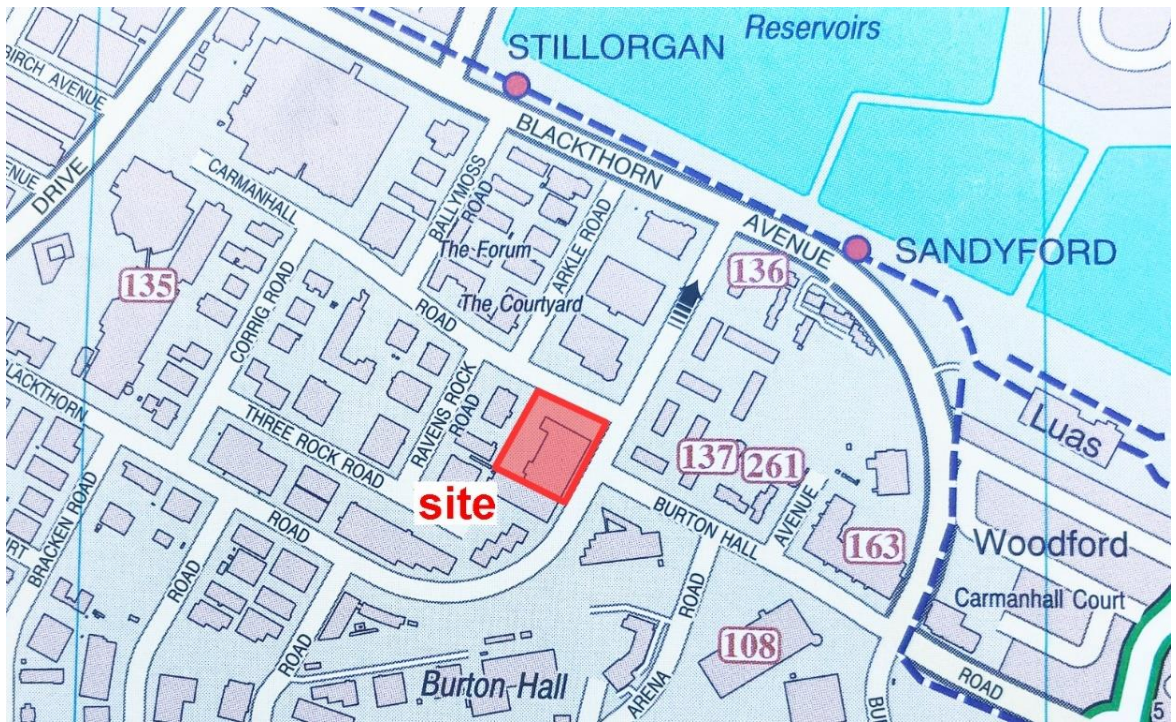


Figure 22 Locations of Stillorgan and Sandyford Stops

7. Public Transport – Bus

7.1 Dublin Bus

Details of the bus services operated by Dublin Bus in the area of the proposed development are presented in Table 5 below.

Table 5 Dublin Bus Services

Bus Route	From	To	AM Peak Hour Frequency (08h00 – 09h00)	PM Peak Hour Frequency (17h00 – 18h00)
11	Ballymun	Sandyford Industrial Estate	3 in each direction	3 in each direction
47	City Centre	Belarmine	2 in each direction	2 in each direction
75	Dun Laoghaire	Tallaght	2 in each direction	3 in each direction

7.2 GoAhead Bus Services

Details of the bus services operated by GoAhead in the area of the proposed development are presented in Table 6 below.

Table 6 GoAhead Bus Services

Bus Route	From	To	AM Peak Hour Frequency (08h00 – 09h00)	PM Peak Hour Frequency (17h00 – 18h00)
114	Blackrock DART	Ticknock	1 in each direction	1 in each direction

7.3 Aircoach Services

Aircoach operate a 24-hour coach service between Clayton Hotel (formerly Bewleys Hotel) at Central Park and Dublin Airport.

Services on Route 700 to and from Central Park operate at the following frequencies:

From	00h00 - 04h00	:	Every Hour
From	04h00 - 06h00	:	Every 20 minutes
From	06h00 – 20h00	:	Every 10 minutes
From	20h00 – 00h00	:	Every 20 minutes

7.4 Future Bus Services

Objective TAM 3 of the Sandyford Urban Framework Plan 2022 – 2028 sets out the objectives for the expansion of bus services in the Sandyford area including

- Fast and frequent shuttle bus service from the DART to the Stillorgan Luas and Sandyford Business Park. This service shall open up public transport as an option to the vast hinterland of the DART line from Greystones to Malahide and Howth.
- Coordination with Bus Connects Network review.
- An internal shuttle bus service. This service will provide a more sustainable travel opportunity and provide a campus feel to the area. It will also aid in the transporting of people from the Luas/Bus Interchange to their destination within the Sandyford Business District

7.5 Bus Connects

Future bus services in the area of the proposed development are set out in Table 7 and illustrated in Figure 23.

The proposed timetable provides for a total of 10 buses in each direction during the AM Peak.

Table 7 Bus Connects Services

Route No	Route	Type	Frequency AM Peak
S8	Dun Laoghaire – City West	Orbital	15 minutes
86	Ticknock – City Centre	Other City Bound Route	30 minutes
L13	Kilternan – City Centre	Local Route	60 minutes
P13	Kilternan - UCD	Peak Time Route	30 minutes
P16	Ballyboden – UCD	Peak Time Route	60 minutes

8. County Development Plan 2022 - 2028

8.1 Road Objectives

Map 6 from the Dun Laoghaire Rathdown County Development Plan 2022 – 2028 shows the following 6-year Road Proposals in the area of the subject site: -

- E.S.B. Roundabout on Leopardstown Road to Arena Road and Blackthorn Road.

No Long-Term Road Proposals are shown on Map 6, an extract from which is presented in Figure 24.

Specific Local Objective 52 on the former Avid Technology site is *‘To facilitate the provision of community infrastructure at ground floor along the eastern outer edge of the Carmanhall residential neighbourhood along Blackthorn Road, to create active street frontage and to ensure the appropriate provision of social and community infrastructure to serve the needs of the resident and employee population’.*

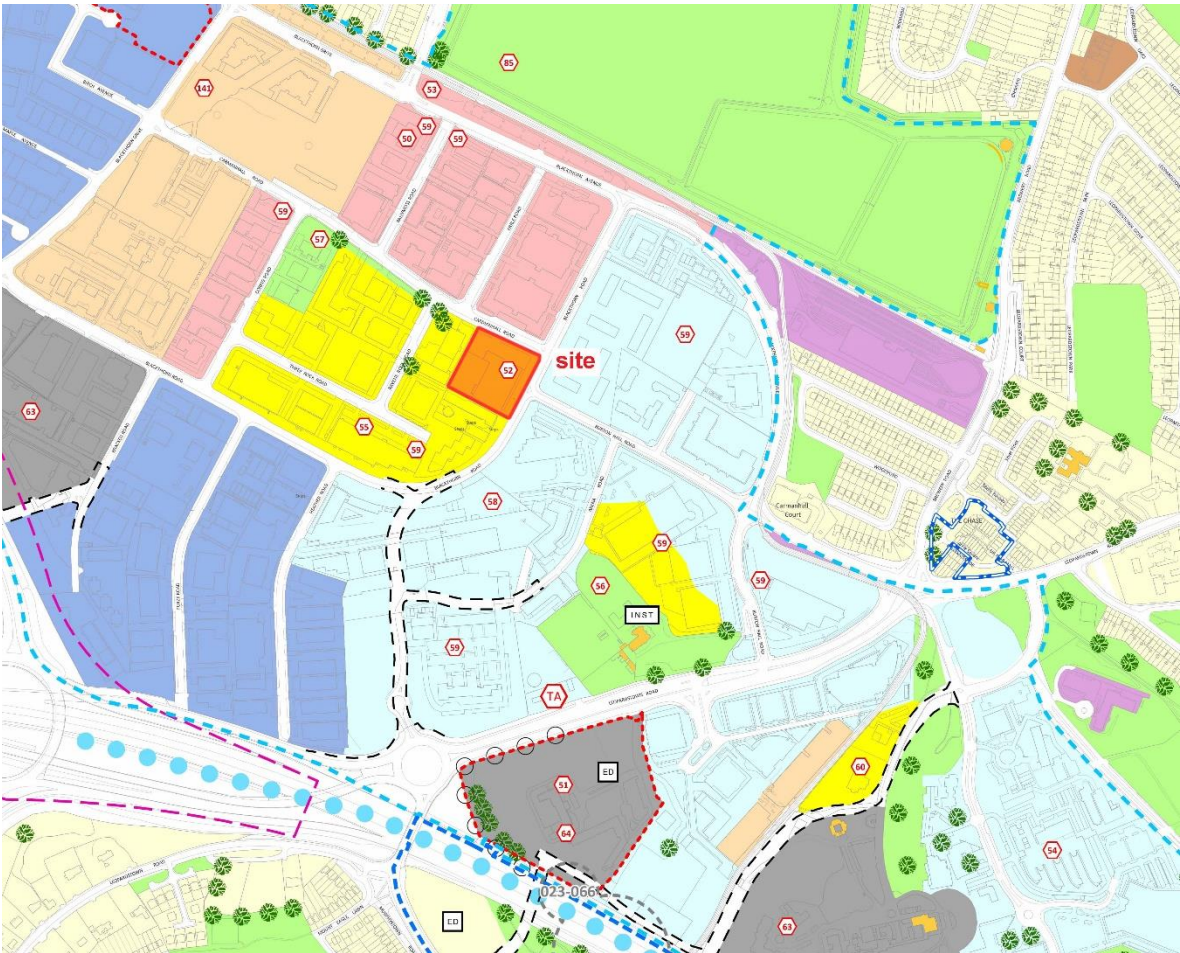


Figure 24 Map 6 DLR County Development Plan 2022-2028

8.2 Public Transport

Specific Local Objective 53 illustrated on Map 6 is

- To provide a Public Transport Interchange in the vicinity of the Stillorgan Luas Stop.

8.3 Cycling Objectives

Cycling policies and objectives are set out in Section 5.6 of the County Development Plan 2022 - 2028.

No specific mention of the Sandymount Cycle Improvement Scheme was noted in the DLR County Development Plan 2022 – 2028.

8.4 Cycle Parking Standards

Standards for cycle parking are set out in Section 12.4.6 of the Dun Laoghaire Rathdown County Development Plan 2022 – 2028 and in the '*Standards for Cycle Parking and Associated Cycling Facilities for New Developments*', published by DLRCC in July 2017.

Long stay (resident) cycle parking for the proposed development is required to be provided at the rate of 1 space per unit.

Short stay (visitor) cycle parking for the proposed development is required to be provided at the rate of 1 space per 5 units.

8.5 Motorcycle Parking Standards

Section 12.4.7 of the County Development Plan 2022 – 2028 requires the provision of motorcycle parking at the rate of 4 spaces per 100 car parking spaces.

8.6 Electric Cars

Section 12.4.11 of the DLR County Development Plan 2022 – 2028 requires the provision of charging for electric cars at the rate of 10 spaces per 100 car parking spaces.

8.7 Walking Objectives

Policies and objectives for walking are set out in Section 5.6 of the DLR County Development Plan 2022 – 2028

No specific objectives relevant to the proposed development were noted.

8.8 Sustainable Travel and Transportation

Policies and objectives for Sustainable Travel and Transportation are set out in Section 5.5.1 of the DLR County Development Plan 2022 – 2028.

Policy Objective T17 requires *'the submission of Travel Plans for developments that generate significant trip demand. Travel Plans should seek to reduce reliance on car based travel and encourage more sustainable modes of transport over the lifetime of a development.'*

9. Sandyford Urban Framework Plan 2022 - 2028

9.1 Background

The Sandyford Urban Framework Plan 2022 – 2028 is included in Appendix 16 of the County Development Plan 2022 – 2028.

Section 4.2 of Appendix 16 sets out the policies and objectives for *Sustainable Transport Infrastructure*.

9.2 Objectives Smarter Travel Targets

Objective TAM1 in Section 4.2.1 of the Sandyford Urban Framework Plan advises as follows:

It is an objective of the Council to require all future development in the Sandyford Business District to achieve a peak hour transport mode split of 45% trips by car drivers (maximum) and 55% trips by walking, cycling and public transport and other sustainable modes (minimum targets) as per Government policy stated in the document published by the Department of Transport entitled, 'Smarter Travel, A Sustainable Transport Future 2009-2020'

9.3 Objectives Cycling and Walking

The 6 Year Objectives for Cycling and Walking in TAM 4 of Section 4.2 of the SUFP are illustrated in Figure 25. It is an objective of the Council to implement the cycling and walking access routes designated in green by upgrading existing routes and as part of the provision of new road proposals.



Figure 25 SUFP Walking and Cycling Routes (SUFP Drawing No 3)

9.4 Road Objectives

Six-Year

The Six-Year Road Objectives for Sandyford are set out in Objective TAM 16 and Drawing No 5 of the SUFF. These objectives which are illustrated in Figure 26 include:

- ESB Link Road and Link to Arena Road (No.6)

Long-Term

The long-term road objectives for Sandyford are set out in Objective TAM 17 and Drawing No 9 of the SUFF. See Figure 27.

They do not include any objectives for long term road objectives in the area of the proposed development.

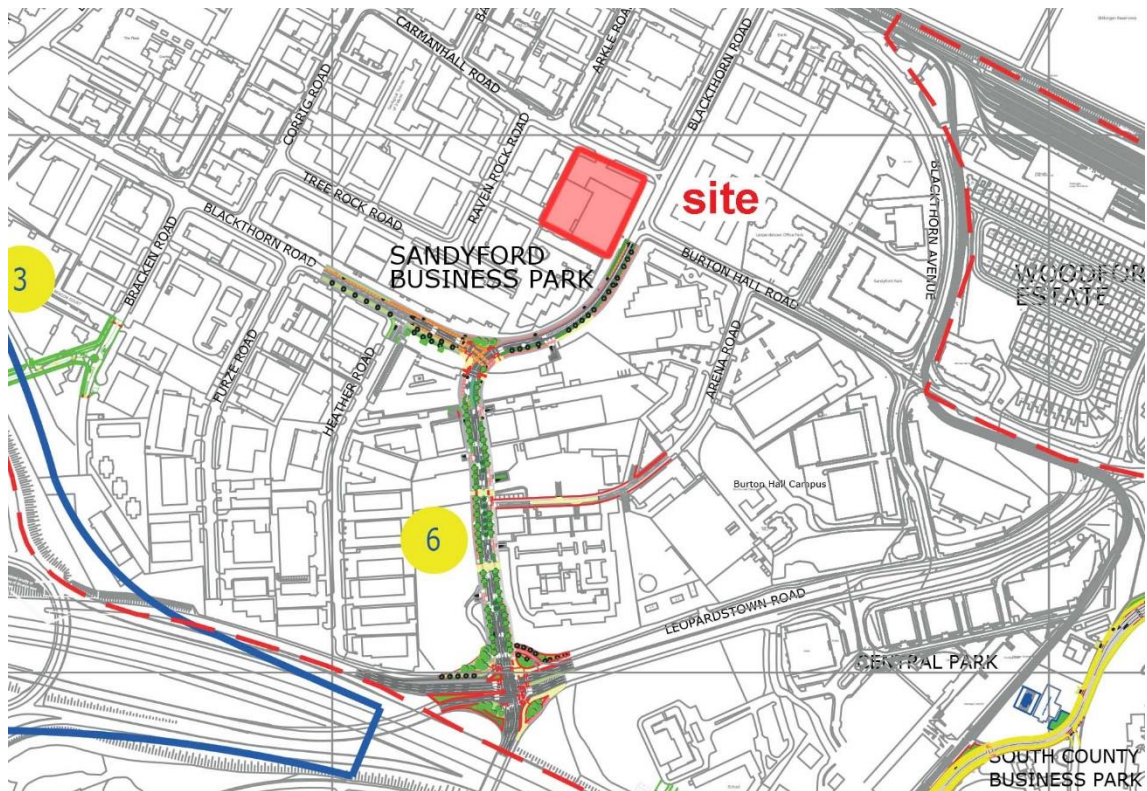


Figure 26 SUFF Six Year Road Objectives (SUFF Drawing No. 5)

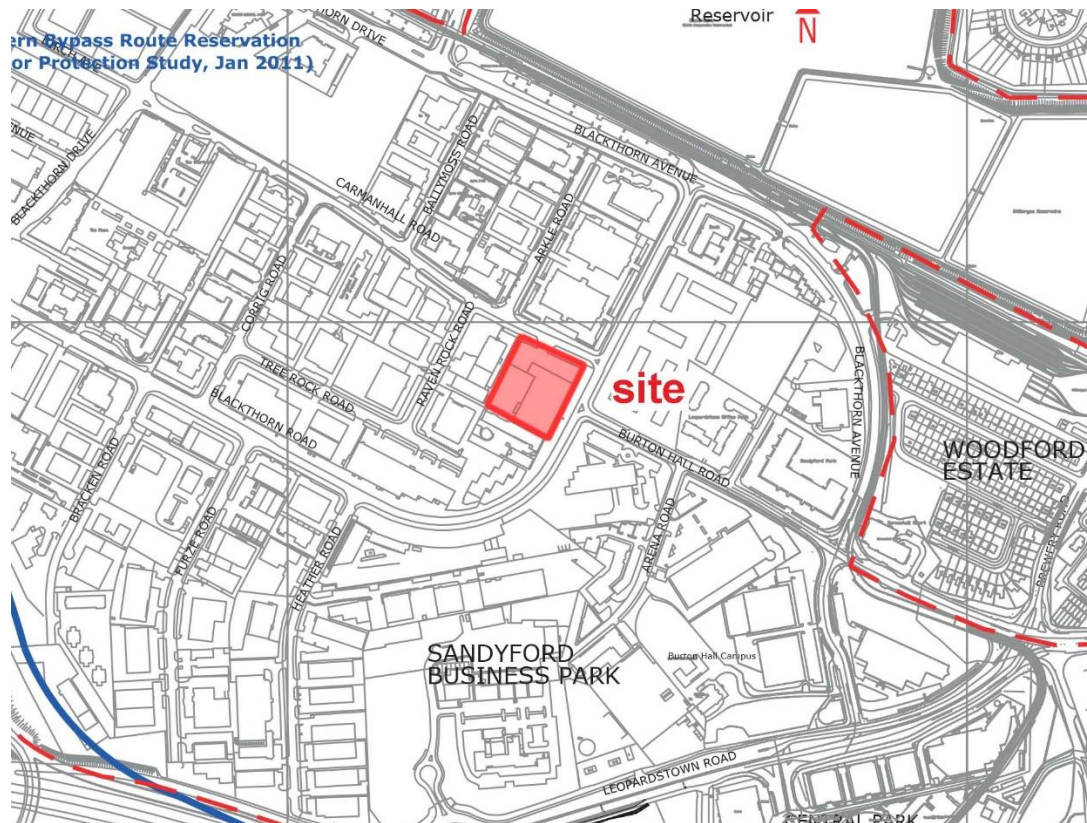


Figure 27 SUFP Long Term Road Objectives (SUFP Drawing No. 6)

9.5 Bus Services

Objective TAM 3 of the Sandyford Urban Framework Plan sets out the expansion of bus services in the Sandyford area including

- Fast and frequent shuttle bus service from the DART to the Stillorgan Luas and Sandyford Business Park. This service shall open up public transport as an option to the vast hinterland of the DART line from Greystones to Malahide and Howth.
- Coordination with Bus Connects Network review.
- An internal shuttle bus service. This service will provide a more sustainable travel opportunity and provide a campus feel to the area. It will also aid in the transporting of people from the Luas/Bus Interchange to their destination within the Sandyford Business District

10. Road and Cycle Schemes

10.1 Consultations with DLRCC

During the preparation of this T & TA and in response to the recommendation from An Bord Pleanála at the meeting on 27th April 2022 that the applicants should liaise with *'the DLR project engineers for both the Sandyford Cycle Improvement Scheme and the ESB Link Road Scheme to Junction 14.'* consultations were held with the project engineers for two schemes which are being developed by Dun Laoghaire Rathdown County Council in the area of the subject site.

Consultations in relation to the *ESB Link Road – Junction 14 Roundabout to Blackthorn Road* were with Mark Freeman, DLRCC in May 2022. Mr Freeman confirmed the details of the scheme and advised that the Council were in the process of selecting a consultant to develop the scheme. The appointment of the consultant is not expected until later in 2022.

Consultations in relation to Sandyford Cycle Improvement Scheme 2022 were held with Mr Gerard Flaherty, also in May 2022. Mr Flaherty supplied general layout drawings (Rev P08) for the Sandyford Cycle Improvement Scheme. These layouts were incorporated in the site layout drawings for the subject application.

Both schemes and their impact on the road network in the area of the subject site are described in this T & TA. It is understood at the time of writing in August 2022, that the Sandyford Cycle Improvement Scheme is progressing towards the tender stage in Autumn 2022.

10.2 ESB Link Road

10.2.1 Background

A Part 8 planning application for the 0.5 km long ESB Link Road between Junction 14 at the M50 and Blackthorn Road was registered by Dun Laoghaire Rathdown County Council on 20th November 2013. See Figure 28.

The application included a Part 8 Planning Environmental Report prepared by Aecom Roughan O'Donovan in October 2013.

The current status is that the design has not been progressed beyond the Part 8 Planning pending the appointment of a consulting engineer for the project.

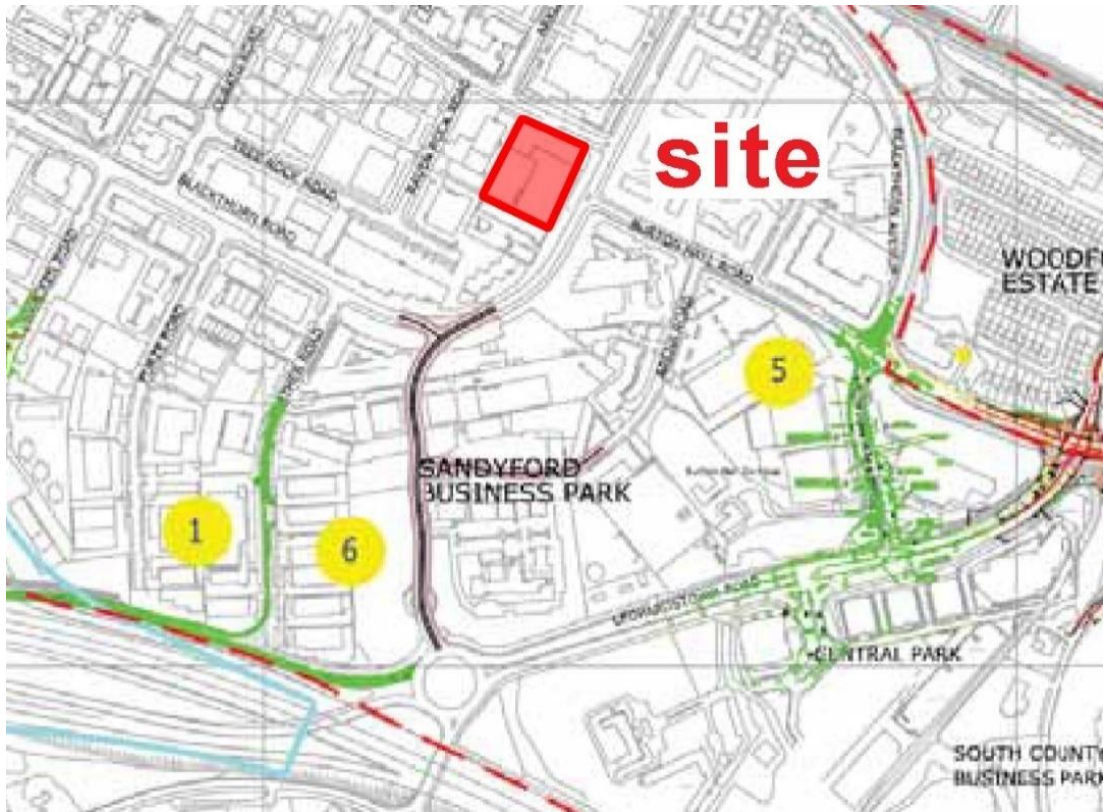


Figure 28 ESB Link Road

10.2.2 Traffic Impact

The primary traffic impact of the Scheme will be to divert traffic between Junction 14 on the M50 and Sandyford Business District from its present long route via Leopardstown Road and Burton Hall Road to the shorter ESB Link Road.

In terms of the roads surrounding the proposed development, the major impact will be at the Blackthorn Road / Burton Hall Road junction where a significant volume of traffic will be diverted from Burton Hall Road to Blackthorn Road.

10.2.3 Junction ESB Link Road and Blackthorn Road

The 2019 Forecast Junction Flows reproduce from Figure 5.2 of the Part 8 Planning Environmental Report prepared by Aecom Roughan O'Donovan in October 2013 are presented in Figure 29.

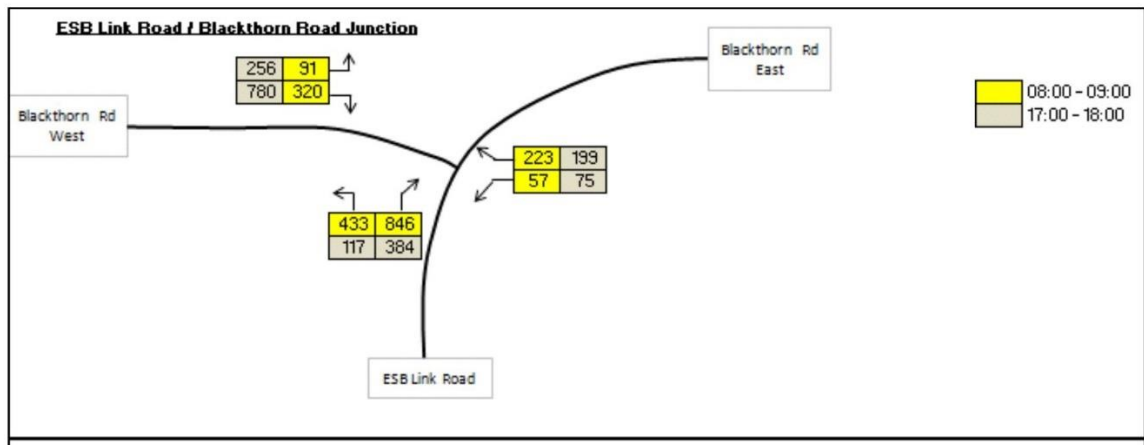


Figure 29 Junction Flows ESB Link Road and Blackthorn Road

10.3 Sandyford Cycle Improvement Scheme

10.3.1 Background

Dun Laoghaire Rathdown County Council, in conjunction with the National Transport Authority, is in the process of carrying out walking and cycling improvements in the Sandyford Business District on Burton Hall Road, Blackthorn Road and Carmanhall Road. See Figures 30 and 31.

The Council's Traffic & Road Safety Section undertook a Non-Statutory Public Consultation for the Sandyford Business District Pedestrian and Cycle Scheme during August and September 2021 after which a post consultation report was prepared for the Dundrum Area Committee.

The consultation process included a Preliminary Design Report and drawings prepared by Barry Transportation in August 2021.

The writer is not aware of any decision on the application at the time of writing in August 2022. It is understood nonetheless that the Scheme is progressing towards the tender stage in Autumn 2022.

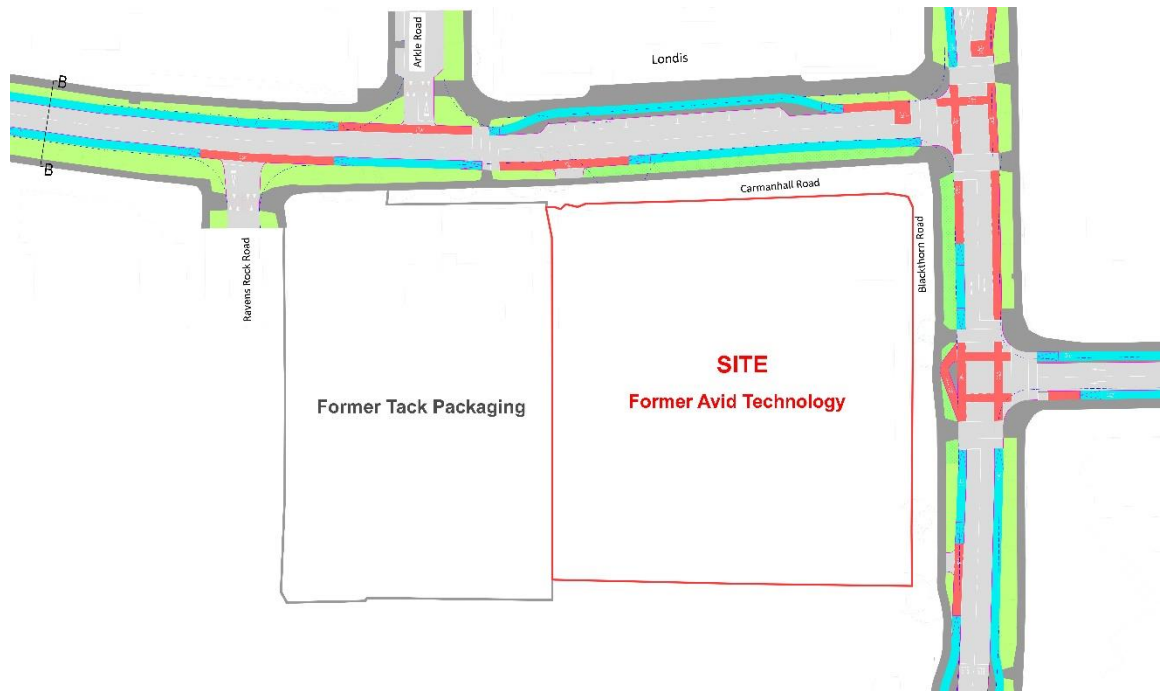


Figure 30 Sandyford Business District Pedestrian and Cycle Improvement Scheme

10.3.2 Description of Scheme

The Scheme comprises

- The provision of raised and adjacent cycle tracks on both sides of Burton Hall Road, Blackthorn Road and Carmanhall Road in accordance with the NCM.
- The provision of a traffic signalised junction at Carmanhall Road and Blackthorn Road junction.
- Crossings at some junctions are to be upgraded to toucan crossings to allow bicycles to use the signalised crossings where appropriate.
- Tightened corner radii at junctions and side roads.
- Left turn slips and pedestrian refuge islands removed in accordance with DMURS.
- Widened footpaths and increased pedestrian space.
- Increased area available for landscaping and retention of as many existing trees as possible. Areas have been identified for potential new tree planting to compensate for any losses.
- The existing on-street car parking spaces will be maintained where possible, with some car parking to be removed on Carmanhall Road.

Public consultation closed on 17th September 2021.

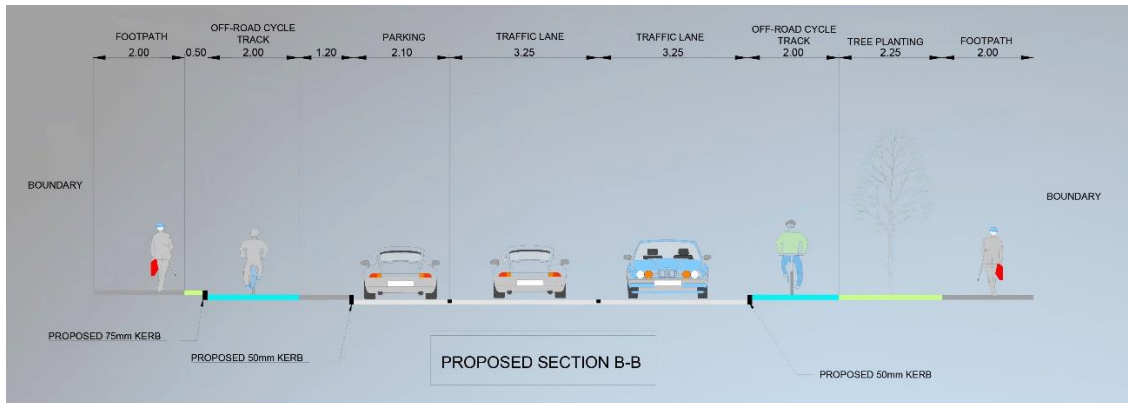


Figure 31 Crosssection Sandyford Business District Pedestrian and Cycle Improvement Scheme.

10.3.3 Impact on Subject Site

The pedestrian and cycle access to the proposed development have been integrated with the proposals for the Sandyford and Cycle Improvement Scheme. 2022 in terms of

- Footpaths and pedestrian facilities
- Cycle tracks and access to cycle parking (1.75 m wide)
- Landscape
- Carmanhall Road / Blackthorn Road junction.

The pedestrian and cycle layout on the Blackthorn Road and Carmanhall Road frontages of the site are shown in Figures 30 and 31.

11. Traffic Surveys

11.1 Traffic Survey 2020

As part of the planning application for a residential development on the former Avid Technology site (Ref ABP 310104 21), a traffic survey covering nine junctions in the surrounding area was carried out by Irish Traffic Surveys (ITS) on Tuesday 25th February 2020 over a 12-hour period between 07h00 and 19h00. The survey was carried out in the month before the first Covid lockdown which started in March 2020. The results for the AM Peak Hour are presented in Figure 32.

From the results of the 2020 survey, it would appear that the Average Annual Daily Traffic (AADT) on Blackthorn Road is some 15,800 vehicles per day. The two-way traffic flow on Blackthorn Road is some 1,230 vehicles per hour (vph) during the AM peak hour reducing to 450 vph during the PM peak hour.

Similarly, the Average Annual Daily Traffic (AADT) on Carmanhall Road is some 8,800 vehicles per day. The two-way traffic flow on Carmanhall Road is some 600 vehicles per hour (vph) during the AM peak hour increasing marginally to 650 vph during the PM peak hour.

No flows were recorded on Ravens Rock Road.

The full results of the traffic survey carried out in February 2020 are included in Appendix A.

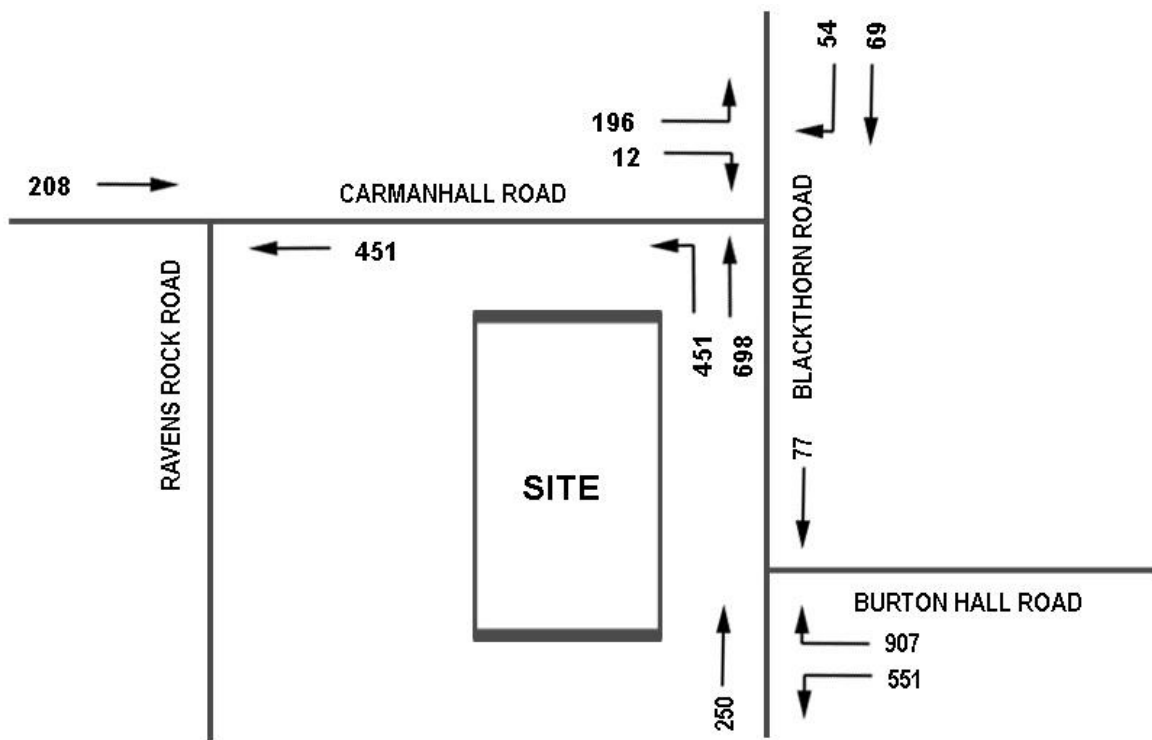


Figure 32 Surveyed Junction Movements February 2020

11.2 Impact of Covid Restrictions 2020 - 2022

At the time of writing in August 2022, there has not been a full return to work for most of the businesses in the Sandyford area. As a result, traffic volumes have not recovered to pre-Covid levels and any traffic surveys that might have been undertaken by the applicants in early 2022 were unlikely to provide results at or near pre-Covid levels.

However, a supplementary traffic survey was carried out on a weekday over a 12-hour period between 07h00 and 19h00 in January 2022 at the junction of Carmanhall Road and Ravens Rock Road as this junction had not been included in the 2020 survey. The 2022 survey also included the junction of Carmanhall Road and Blackthorn Road for control purposes.

11.3 Traffic Survey 2022

A 12-hour traffic survey of the two junctions on Carmanhall Road was carried out in January 2022. The results of the survey for the AM Peak Hour are presented in Figure 33.

When compared with the 2020 survey, the total approach flow to the Carmanhall Road / Blackthorn Road junction was only some 65% of the 2020 surveyed flow indicating the major reduction resulting from the Covid travel and working restrictions.

The full results of the traffic survey carried out in January 2022 are included in Appendix B.

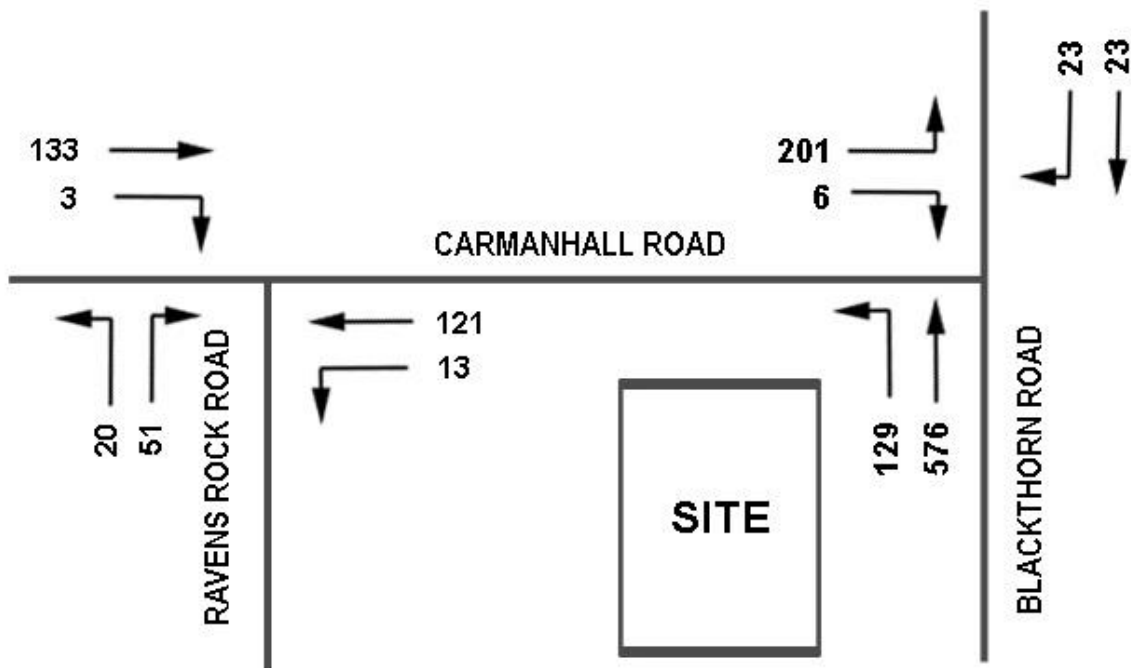


Figure 33 Surveyed Junction Movements January 2022

11.4 Base Flows 2022

The base flows for the two junctions on Carmanhall Road have been calculated on the basis that

- There was no growth in traffic between February 2020 and January 2022 due to working restrictions imposed to limit the spread of Covid-19.
- The traffic movements surveyed in February 2020 for the Blackthorn Drive / Carmanhall Road junction were unchanged in January 2022.
- The traffic movements on Ravens Rock Road surveyed in January 2022 should be increased by a factor of 50% to reflect pre-Covid levels.

The Base Flows for the three junctions in 2022 are presented in Figure 34.

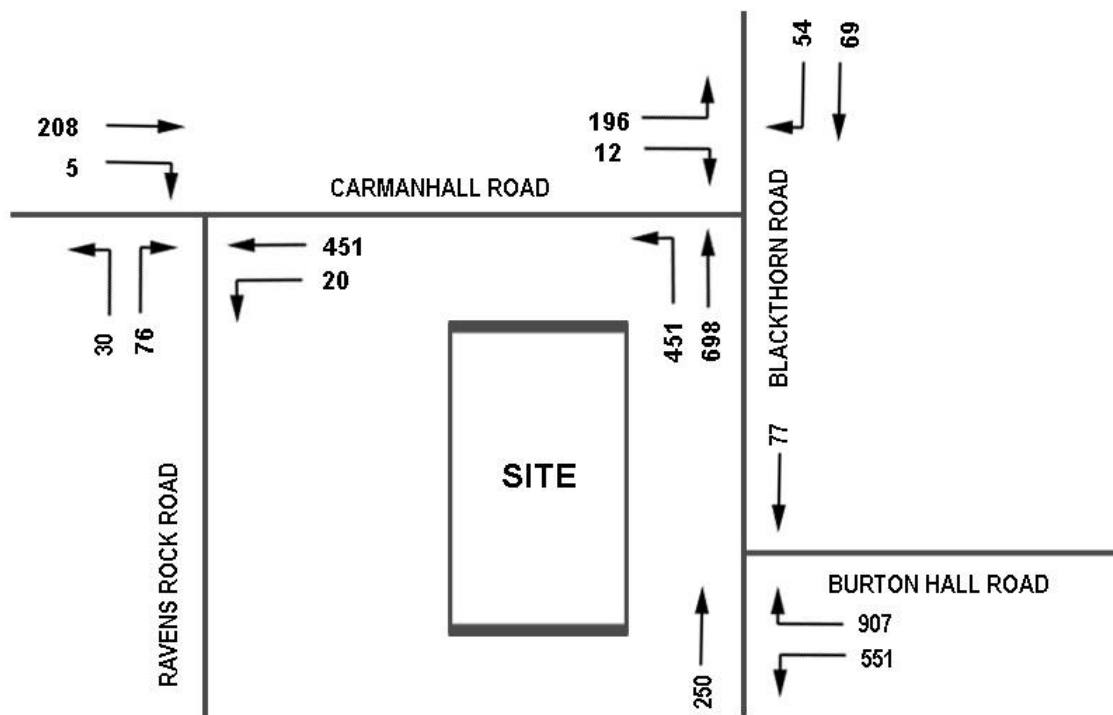


Figure 34 Base Flows 2022.

11.5 Growth Factors

To account for future traffic growth after 2022, Annual Growth Factors based on the Project Appraisal Guidelines: Unit 5.5 Traffic Growth Forecasting, TII, 2011, have been applied to the 2022 Base Flows to calculate the projected flows for 2026 (Opening Year), 2031 (Opening Year + 5) and 2041 (Opening Year + 15).

The annual growth rates used for each of the periods 2022– 2026, 2022 - 2031 and 2027 – 2041 were the LV Central Growth rates from Table 5.3.2 for the Dublin of 1.0134 per annum for the period 2013 – 2030 and 1.0038 for the period 2030- 2050.

The overall growth factors for the Opening Year 2026, Design Year 2031, and Future Year 2041 are set out in Table 9.

Table 9 Overall Traffic Growth Factors

Period	Overall Growth Factor
2022 - 2026	1.054
2022 - 2031	1.116
2022 - 2041	1.159

11.6 Base Flows Opening Year 2026

The junction movements for the Opening Year 2026 were obtained by increasing the Base Flows for 2022 by the factor of 1.054 from Table 7. The Base Flows for the Opening Year 2026 are presented in Figure 35.

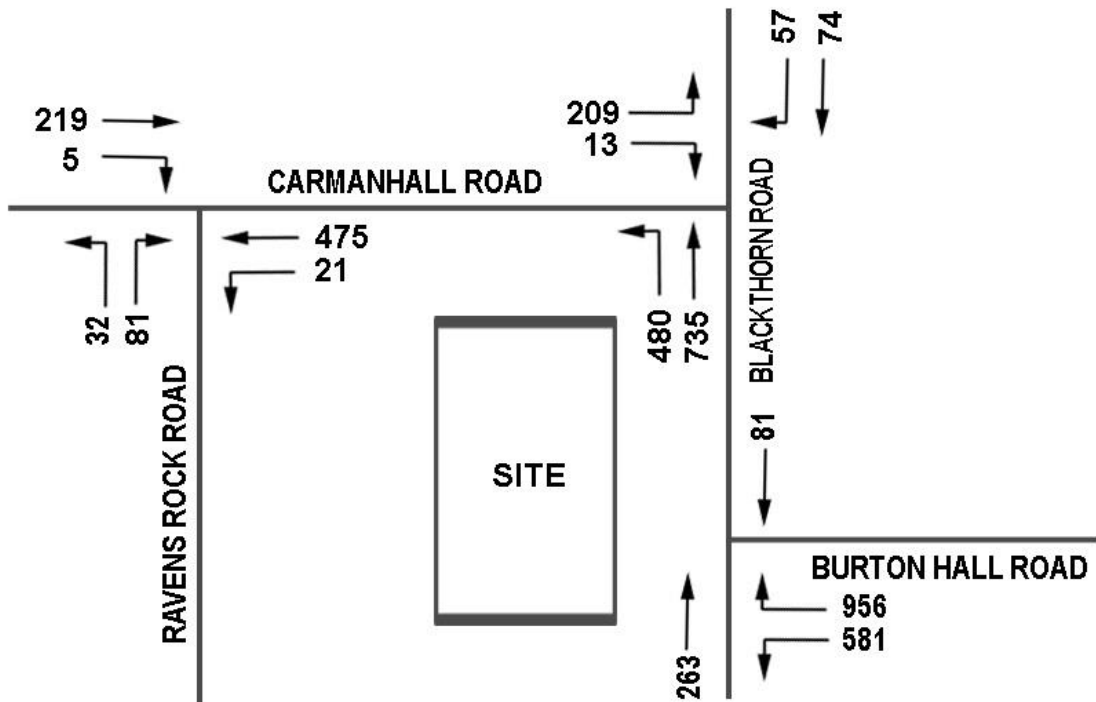


Figure 35 Base Flows - Opening Year 2026

11.7 Base Flows for Design Year 2031 (Opening Year + 5)

The junction movements for the Design Year 2031 were obtained by increasing the Base Flows for 2022 by the factor of 1.116 from Table 7. The Base Flows for the Design Year 2031 are presented in Figure 36.

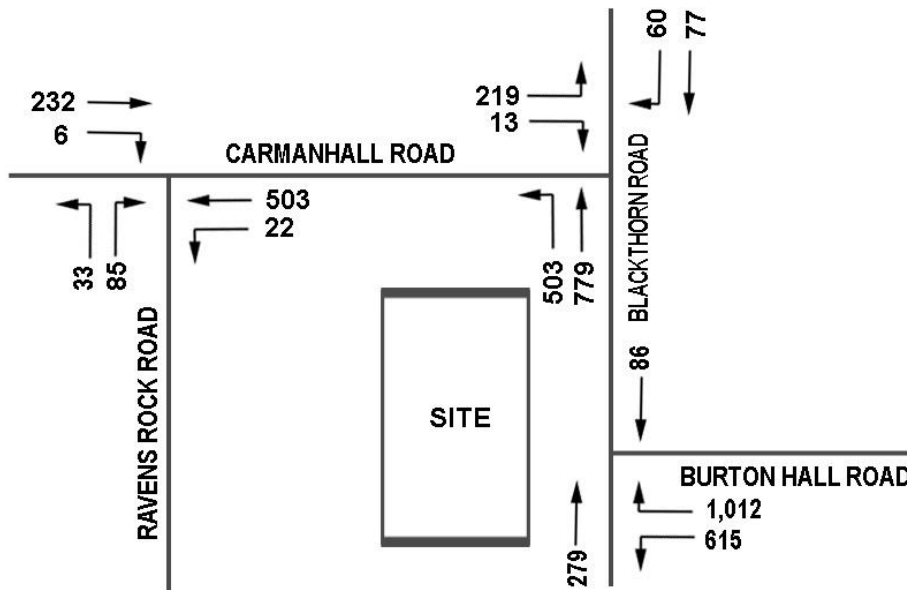


Figure 36 Base Flows - Design Year 2031

11.8 Base Flows for Future Year 2041 (Opening Year + 15)

The junction movements for the Future Year 2041 were obtained by increasing the Base Flows for 2022 by the factor of 1.159 from Table 8.

The Base Flows for the Future Year 2041 are presented in Figure 37.

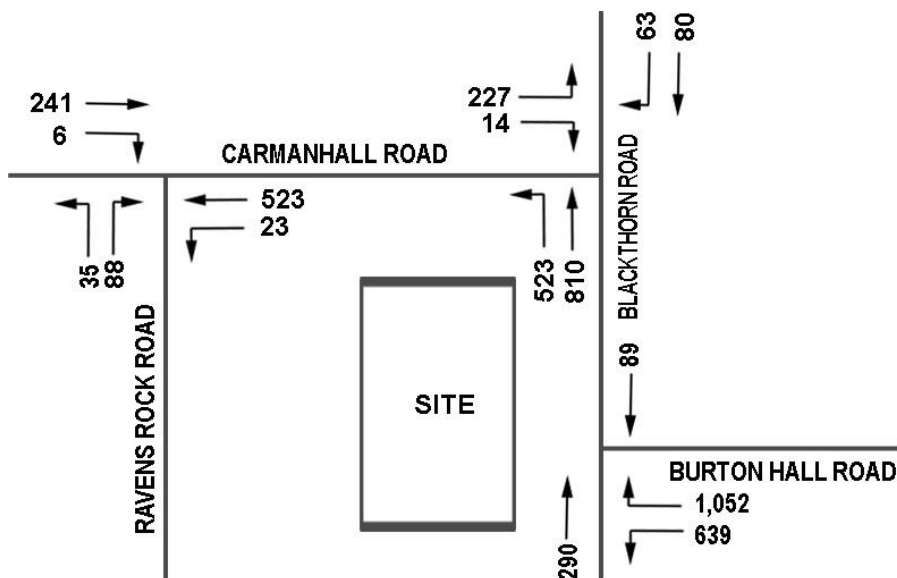


Figure 37 Base Flows - Future Year 2041

11.9 ESB Link Road

As described in Section 8.2 of this T & TA, the major impact of this Scheme will be at the Blackthorn Road / Burton Hall Road junction where a significant volume of traffic will be diverted from Burton Hall Road to Blackthorn Road.

The traffic impact during the AM Peak Hour 08.00 – 09.00 is expected to be: -

- (a) A diversion of 699 vehicles per hour from the right turn on Burton Hall Road to the ESB Link Road and then northbound on Blackthorn Road (east). The rate of diversion will increase to 780 vehicles in 2031 and 810 vehicles in 2041.
- (b) A diversion of 338 vehicles per hour from the left turn on Burton Hall Road to the ESB Link Road and then on to local destinations. The rate of diversion will increase to 377 vehicles in 2031 and 392 vehicles in 2041.

On the basis of a projected completion in 2023, the ESB Link Road will have no impact on the Base Flow for 2022 but will have an impact on the Base Flows for 2026, 2031 and 2041.

The Base Flows including the ESB Link Road for the Opening Year 2026, Design Year 2031 and Future Year 2041 are presented in Figures 38, 39 and 40.

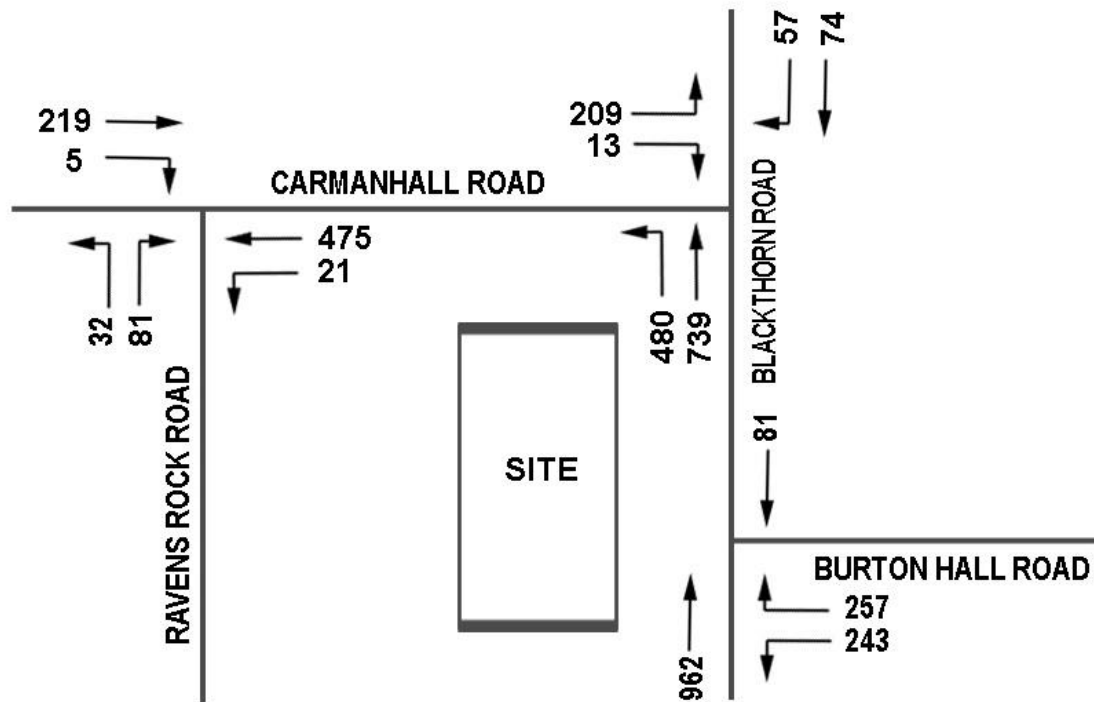


Figure 38 Base Flow Opening Year 2026 including ESB Link Road

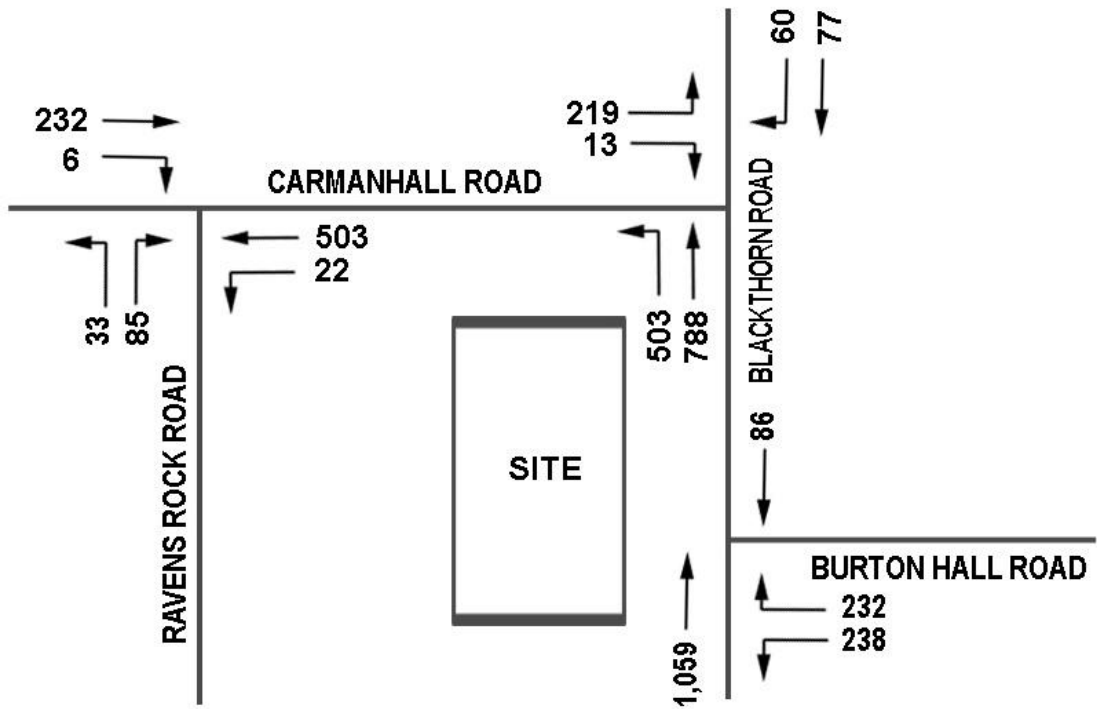


Figure 39 Base Flow for Design Year 2031 including ESB Link Road

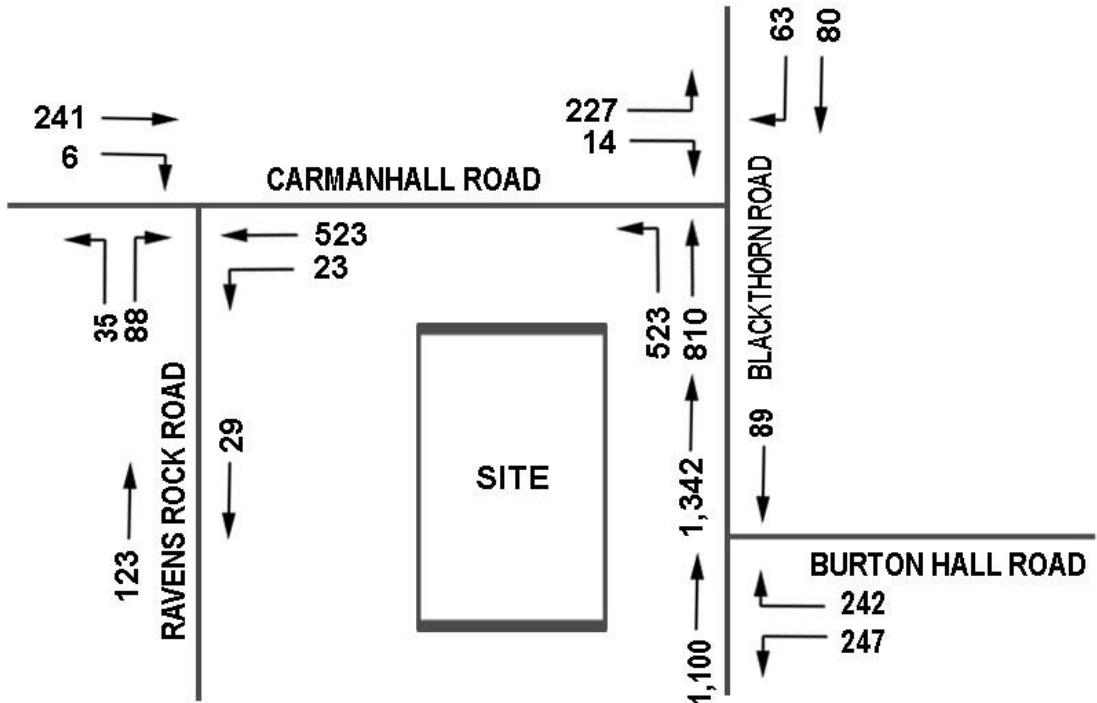


Figure 40 Base Flow Future Year 2041 including ESB Link Road

12. Car Parking

12.1 County Development Plan 2022-2028

Table 12.6 of the DLR County Development Plan 2022-2028 prescribes the maximum car parking provision for apartment developments within the Sandyford Urban Framework Plan Area as follows

- 0.6 space per 1-bed unit
- 0.8 spaces per 2-bed unit
- 1.0 spaces per 3-bed+ unit
- Minimum of 0.02 car sharing spaces for all units.

Section 12.4.5.6 in relation to residential parking that

For the purposes of the parking standards set out in Table 12.5 below Built to Rent development are considered to be residential apartments. Where a Built to Rent scheme avails of lower car parking based on the nature of the use a condition should be attached to any grant of permission to state that planning permission shall be sought for a change of tenure to another tenure model following the period specified in the covenant.

12.2 Car Parking Calculation

If the standards set out in Table 12.6 the current Development Plan were to be applied to the proposed development, the car parking requirement would be 278 spaces as calculated in Table 10 equivalent to 0.83 spaces per unit (278 spaces for 334 units).

Table 10 Car Parking Requirement Development Plan 2022 – 2028

Type	No	Standard	Spaces
Studio	79	0.6 space per unit	47
1-bed	175	0.8 space per unit	140
2-bed	80	1.0 space per unit	80
3-bed	0	2.0 space per unit	0
Creche	272 sqm	1.0 space per 60 sqm	4
Car Sharing	334	0.02 spaces per unit	7
Total	334	1.11 spaces per unit	278

12.3 Design Standards for New Apartments, 2018

A revised version of the document “Sustainable Urban Housing: Design Standards for New Apartments” was published by the Department of Housing Planning and Local Government in December 2020.

The parking standards set out in this document see to achieve a considerably lower parking ratio for new residential apartments than those prescribed in the Dun Laoghaire-Rathdown County Development Plan 2022-2028.

The guidelines for parking are summarised in the following extracts from that document:

Car Parking

4.18 *The quantum of car parking or the requirement for any such provision for apartment developments will vary, having regard to the types of location in cities and towns that may be suitable for apartment development, broadly based on proximity and accessibility criteria.*

1) Central and/or Accessible Urban Locations

4.19 *In larger scale and higher density developments, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be minimised, substantially reduced or wholly eliminated in certain circumstances. The policies above would be particularly applicable in highly accessible areas such as in or adjoining city cores or at a confluence of public transport systems such rail and bus stations located in close proximity.*

4.20 *These locations are most likely to be in cities, especially in or adjacent to (i.e. within 15 minutes walking distance of) city centres or centrally located employment locations. This includes 10 minutes walking distance of DART, commuter rail or Luas stops or within 5 minutes walking distance of high frequency (min 10 minute peak hour frequency) bus services.*

2) Intermediate Urban Locations

4.21 *In suburban/urban locations served by public transport or close to town centres or employment areas and particularly for housing schemes with more than 45 dwellings per hectare net (18 per acre), planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum car parking standard.*

4.22 *As a benchmark guideline for apartments in relatively peripheral or less accessible urban locations, one car parking space per unit, together with an element of visitor parking, such as one space for every 3-4 apartments, should generally be required.*

3) Peripheral and/or Less Accessible Urban Locations

4.22 *As a benchmark guideline for apartments in relatively peripheral or less accessible urban locations, one car parking space per unit, together with an element of visitor parking, such as one space for every 3-4 apartments, should generally be required.*

4.23 *For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure, where possible, the provision of an appropriate number of drop off, 25 service, visitor parking spaces and parking for the mobility impaired. Provision is also to be*

made for alternative mobility solutions including facilities for car sharing club vehicles and cycle parking and secure storage. It is also a requirement to demonstrate specific measures that enable car parking provision to be reduced or avoided.

4.24 As well as showing that a site is sufficiently well located in relation to employment, amenities and services, it is important that access to a car sharing club or other non-car based modes of transport are available and/or can be provided to meet the needs of residents, whether as part of the proposed development, or otherwise. 'Car free' development is permissible and if developed, must be fully communicated as part of subsequent apartment sales and marketing processes.

4.25 Where any underground car parking is proposed, such facilities must be well lit and adequately ventilated. Where surface parking is provided, it should be clearly accessible to the entrance to, and where appropriate, overlooked by, the units it serves. Car parking may be provided on-street at the edge(s) of a development site in some locations.

4.26 Decked or multi-storey car parking may also be considered but should not be compromise the quality of amenity space, building design or streetscape. At least one principal façade of multi-storey car parks should be fronted by development, for example a south-facing elevation and such structures may also provide an opportunity for rooftop amenity space. In all cases, designated parking spaces for disabled drivers should be provided.

4.27 For building refurbishment schemes on sites of any size or urban infill schemes on sites of up to 0.25ha, car parking provision may be relaxed in part or whole, on a case-by-case basis, subject to overall design quality and location.

The recommendation in the Design Standards that car parking 'be minimised, substantially reduced or wholly eliminated in certain circumstances' can be applied to the subject site which is located in an *Intermediate Urban Location* within 10 minutes walking distance of Luas.

12.4 The SHD Experience

In a number of recent decisions, An Bord Pleanála has approved a much-reduced provision of car parking when compared with the maximum standards set out in the various Development Plans.

A summary of the parking provision in similar residential developments approved under the SHD provision is set out in Table 11.

The contents of Table 11 are in broad agreement with the experience of existing BTR schemes where the demand for car parking is approximately 0.3 spaces per unit.

Table 11 Car Parking Ratios – Strategic Housing Development Residential Projects

Ref No	Scheme	Units	Parking	Ratio
300520	Blakes Stillorgan	282 units	143 spaces	0.50
301909	Belgard Gardens, Tallaght	428 units	129 spaces	0.30
303435	Dulux Factory, Davitt Road	265 units	109 spaces	0.41
305176	Stillorgan Leisureplex	232 units	95 spaces	0.41
305345	The Grange, Brewery Road	287 units	100 spaces	0.35
305725	Fourth Avenue, Cookstown	245 units	79 spaces	0.32
306167	Rathoath Road, Pelletstown	435 units	196 spaces	0.45
306506	Gort Muire, Dundrum	730 units	296 spaces	0.40
306705	Gallaher Factory, Greenhills Road	502 units	202 spaces	0.40
306987	Swiss Cottage, Swords Road, Santry	112 units (BTR)	36 spaces	0.30
307011	Omni Park, Swords Road, Santry	324 units	152 spaces	0.47
307092	Palmerstown Retail Park, Palmerstown	250 units (BTR)	125 spaces	0.50

12.5 Car Parking Proposed – Current Application

Having regard to the location of the subject site within a 10-minute walk of Luas in a high density commercial / business area with on-street parking controls, the site is considered to be a Central and Accesible location as defined by the New Partment Guidelines 2020 and a car parking provision of 0.375 space per apartment (125 spaces for 334 apartments) is proposed

DRCC have indicated that the planning authority could accept some reduction in Development Plan standards due to proximity to public transport infrastructure but that the proposed number of car parking spaces is an insufficient provision

The Council concerns could be mitigated in part by the provision of compensatory club parking where one GoCar space is deemed to be the equivalent of 20 standard car parking spaces.

12.6 Details of Car Parking

The 125 spaces to be provided within the proposed development will be allocated as shown in Table 12.

Some 45 spaces will be located at Lower Ground Level and 80 spaces at Basement Level.

Table 12 Allocation of Car Parking

Use	Standard	Spaces
General Residential	0.38 spaces per unit	84 spaces
Creche		4 spaces
Electric Charging	20% of total	25 spaces
Disabled	4% of total	5 spaces
Car Club (GoCar)	None	7 spaces
	Total	125 spaces

12.7 Compliance with Development Plan

The compliance of the car parking provision at the proposed development with Section 12.4.5 *Car Parking Standards* of the DLR County Development Plan 2022 – 2028 is demonstrated below and in Table 13 .

The maximum allowable parking provision under the Development Plan is 278 spaces as calculated in Table 9 (0.84 spaces per unit).

The proposed provision of car parking is 125 spaces as Table 11 (0.375 spaces per unit).

The total of 125 spaces to be provided includes 7 car sharing spaces each of which is equivalent to 20 standard spaces. (Source: www.gocar.ie).

On this basis, the effective provision of car parking at the proposed development would be the equivalent of 258 spaces comprising 118 standard spaces and 140 car sharing spaces compared to a maximum allowable provision of 278 spaces under the current Development Plan.

Table 13 Parking Compliance with DLR County Development Plan 2022-2028

Criterion	Compliance
The location of the proposed development and specifically its proximity to Town Centres and District Centres and high density commercial/business areas.	The Sandyford Business District in which the development is to be located is described primarily as <i>'an employment area but with complementary mixed-uses including residential, commercial, retail and open space. The Sandyford Urban Framework Plan will ensure that development takes place in a manner that will attract investment and employment and provide for sustainable living'</i>
The proximity of the proposed development to public transport	The proposed development is located within 10 minutes' walk of two stops on the Luas Green Line and a number of city bus services.
The precise nature and characteristics of the proposed development	The proposed development is a build -to-rent of 334 apartments in a number of blocks.
Appropriate mix of land uses within and surrounding the proposed development.	The surrounding area includes residential, commercial, retail and open space in addition to high capacity public transport.
The availability of on-street parking controls in the immediate area.	Pay and Display car parking under the auspices of Dun Laoghaire Rathdown County Council is operational on the surrounding streets
The implementation of a Travel Plan for the proposed development where a significant modal shift towards sustainable travel modes can be achieved.	The proposed development includes a Travel Plan prepared in accordance with in accordance with Section 12.4.3 of Dun Laoghaire Rathdown County Development Plan 2022 – 2028.
Other agreed special circumstances where it can be justified on sustainability grounds	Car parking is being provided at the same rate as other SHD developments.

13. Cycle Parking

13.1 Cycle Parking Required

Standards for residential cycle parking are set out 'Standards for Cycle Parking and associated Cycling Facilities for New Developments, Dun Laoghaire Rathdown County Council, January 2018.

The cycle parking standards for residential developments are reproduced below.

Table 4.1 Cycle parking for residential development		
Residential Development type	1 short stay (visitor) parking space per: (Minimum of 2 spaces)	1 long stay parking space per: (Minimum of 2 spaces)
Apartments, Flats, Sheltered housing	5 units	1 unit
Houses - 2 bed dwelling	5 units	1 unit
Houses - 3+ bed dwelling	5 units	1 unit
Sheltered housing	5 units	1 unit
Student Accommodation	5 bedrooms	2 bedrooms

Calculations for the quantum of cycle parking both short-term (visitor) and long-term (residents) required for the proposed development are set out in Tables 14 and 15.

Table 14 Cycle Parking Required – Short Stay (visitor)

Land Use	Units	Standard	Required
Studio	79	1 per 5 units	16
1 - Bed	175	1 per 5 units	35
2 - Bed	80	1 per 5 units	16
3 - Bed	0	1 per 5 units	0
Sub-Total Units	334		67
Creche	52 children	1 per 10 children	5
Total			67

Table 15 Cycle Parking - Long Stay (Residents)

Land Use	Units	Standard	Required
Studio	79	1 per unit	79
1 - Bed	175	1 per unit	175
2 - Bed	80	1 per unit	80
3 - Bed	0	1 per unit	0
Sub-Total Units	334 units		334
Creche	12 staff	1 per 5 staff	2
Total			336

13.2 Cycle Parking Provided

Total cycle parking required is 408 spaces.

Cycle parking provided at Lower Ground Level is 447 spaces as follows:

Short Stay (Visitor)	64 spaces
Long Stay (Residents)	383 spaces
Total	447 spaces

13.3 Access to Cycle Parking

Access to the cycle parking at Lower Ground Level on the subject site will be from a 1.75 metre wide dedicated access directly off Blackthorn Road contiguous to the new cycle track to be provided by DLRCC on Carmanhall Road and Blackthorn Road as part of the Sandyford Cycle Improvement Scheme. See Figure 6.

14. Trip Generation and Assignment

14.1 Scenario Assessed

During the preparation of this T & TA, two alternative scenarios were considered as part of the assessment of the traffic impact of this development.

Firstly, to assess the traffic impact of a residential development on the subject site.

Secondly, to assess the subject site in conjunction with the adjoining site as a single development for traffic purposes. For reasons of this latter option was selected and the developments on the two sites assessed as a single development on a single site.

Accordingly, the development assessed in terms of traffic impact comprised

- A total of 541 residential units with a population of 1,228 residents.
- A total of 204 car parking spaces.
- Entrances from Ravens Rock Road and from Carmanhall Roads.
- Exits onto Carmanhall Road and onto Blackthorn Road.
- Internal road layout connecting both developments.

14.2 Modal Split

The target modal split for the combined development reproduced from the Travel Plans for the two individual developments is presented in Table 16 for 2026 and 2031.

A total of 151 persons are predicted to drive to work in 2026 reducing to 122 persons in 2031 compared to 589 persons travelling by public transport in 2026 increasing to 593 persons in 2031.

Table 16 Predicted Modal Split for the Combined Developments

Mode	2026		2031	
	Modal Split	Persons	Modal Split	Persons
Walk	20.0%	246	21.0%	258
Cycle	6.0%	73	7.0%	86
Bus	20.0%	246	19.3%	237
Luas	28.0%	343	29.0%	356
Motorcycle	0.3%	4	0.3%	4
Car Driver	12.3%	151	10.0%	122
Car Passenger	3.0%	37	3.0%	37
Go Car (Car Share)	0.4%	5	0.4%	5
Work at Home	10.0%	123	10.0%	123
Total	100.0%	1,228	100.0%	1,228

14.3 Trip Generation

The assumed trip generation for the proposed development is presented in Table 17. The trip rates are based on the TRICS database adjusted for projected modal split, reduced provision of car parking and high availability of public transport services.

Table 17 Trip Generation

Time	Size	Trip Rate per Unit		Trips	
		Arrivals	Departures	Arrivals	Departures
AM Peak	541 units	0.057	0.182	31	99
PM Peak		0.140	0.068	76	37

The totals of arrivals and departures is predicted to be 130 vehicles per hour in the AM Peak and 113 vehicles per hour in the PM Peak.

14.4 Trip Assignment

The assumed trip distribution and assignment for the proposed development for this development is set out below and illustrated in Figure 41.

Arrivals

Carmanhall Road Entrance: 61%
 51% from Blackthorn Road and 10% from Carmanhall Road (west).

Ravens Rock Road Entrance: 39%
 32% from Carmanhall Road and 6% from Three Rock Road.

Departures

Carmanhall Road Entrance: 38%
 28% to Blackthorn Road and 10% to Carmanhall Road (west).

Blackthorn Road Entrance: 62%
 62% to Blackthorn Road (north).

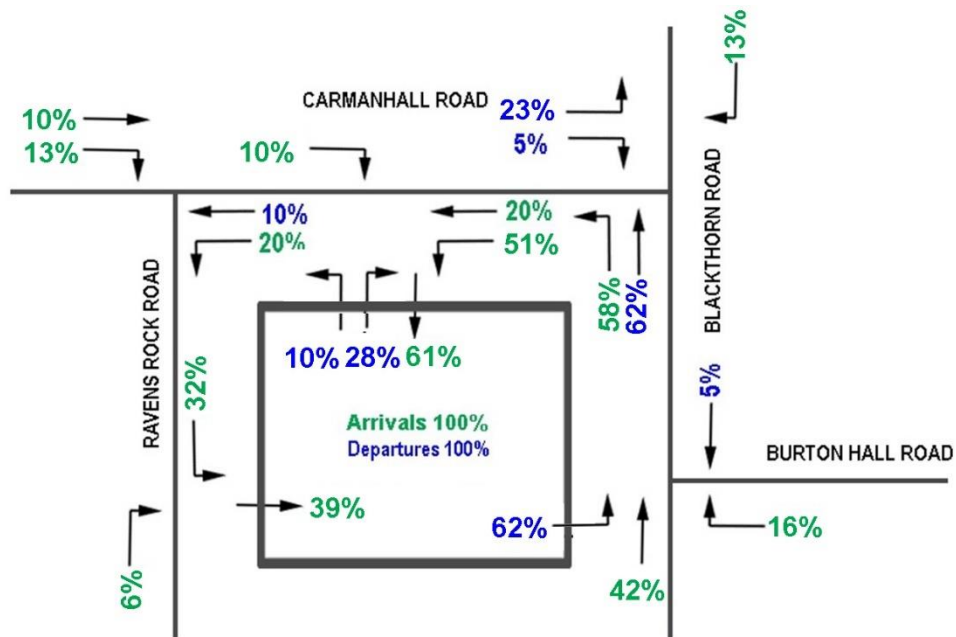


Figure 41 Trip Distribution and Assignment

14.5 Development Generated Trips

The development generated trips from Table 16 for the AM Peak Hour allocated to the surrounding road network in accordance with the trip distribution for arrivals and departures illustrated in Figure 41 are presented in Figure 42.

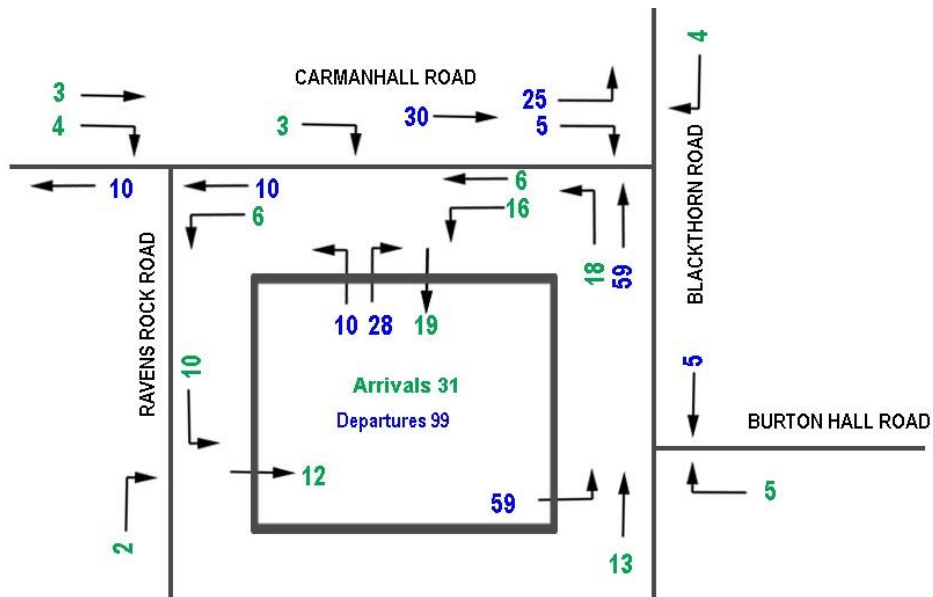


Figure 42 Development Generated Trips – AM Peak Hour

14.6 Junction Flows Post Development excluding ESB Link Road

The junction movements post development excluding the traffic diversion impact of the ESB Link Road are presented in Figures 43, 44 and 45 for the Opening Year 2026, Design Year 2031 and Future Year 2041.

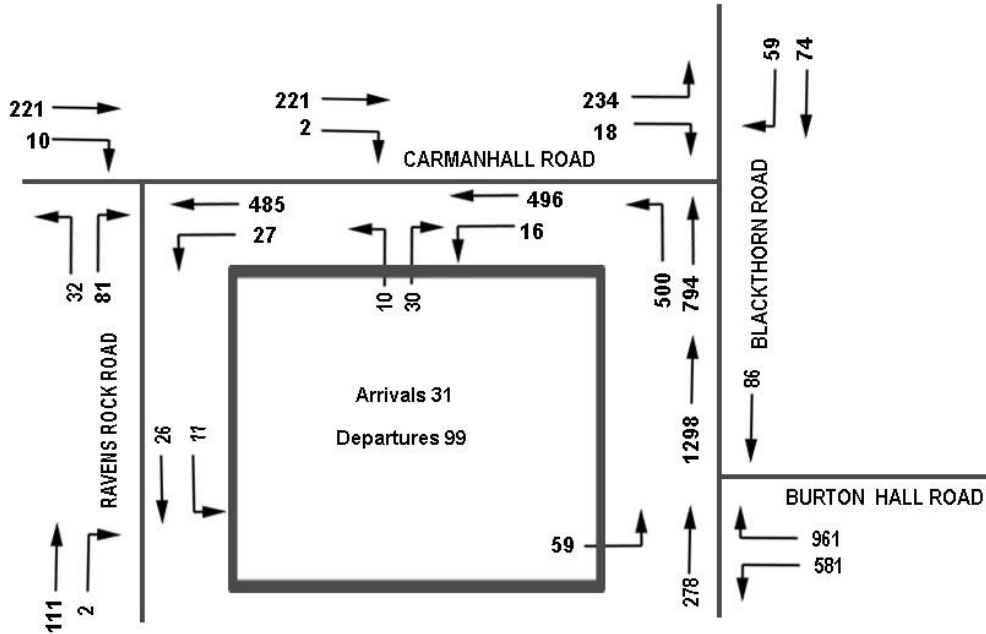


Figure 43 Junction Flows Post Development 2026 excluding ESB Link Road

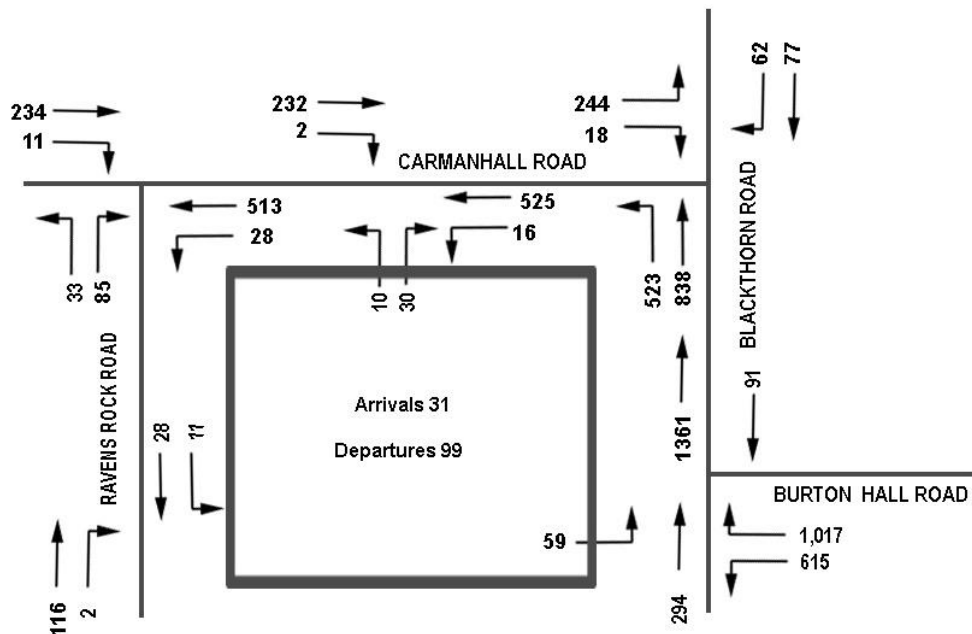


Figure 44 Junction Flows Post Development 2031 excluding ESB Link Road

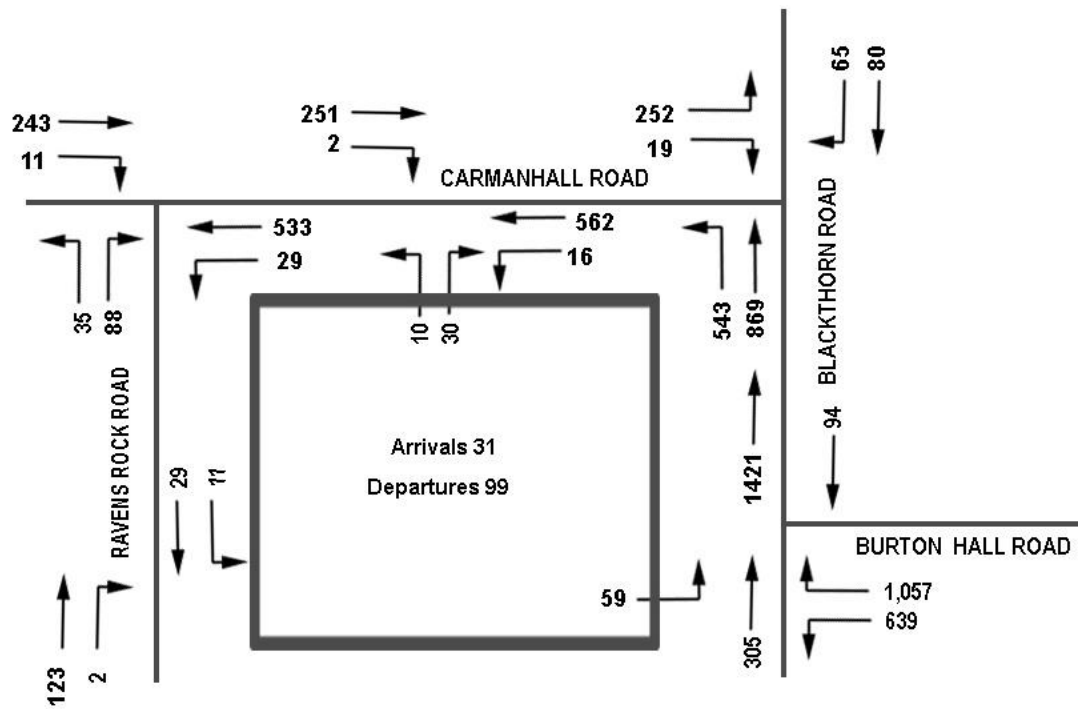


Figure 45 Junction Flows Post Development 2041 excluding ESB Link Road

15. Junction Assessment

15.1 Junctions Assessed

The junctions assessed for traffic movements post development in the Opening Year 2026, Design Year 2031 and Future Year 2041 were:

- Junction 1: Ravens Rock Road / Carmanhall Road
- Junction 2: Carmanhall Road / Blackthorn Road
- Junction 3: Blackthorn Road / Burton Hall Road
- Junction 4: Site Access – Ravens Rock Road
- Junction 5: Site Access – Carmanhall Road
- Junction 6: Site Access – Blackthorn Road

15.2 Junction Layouts

The layouts for the six junctions assessed are presented in Figures 46 - 50 below.

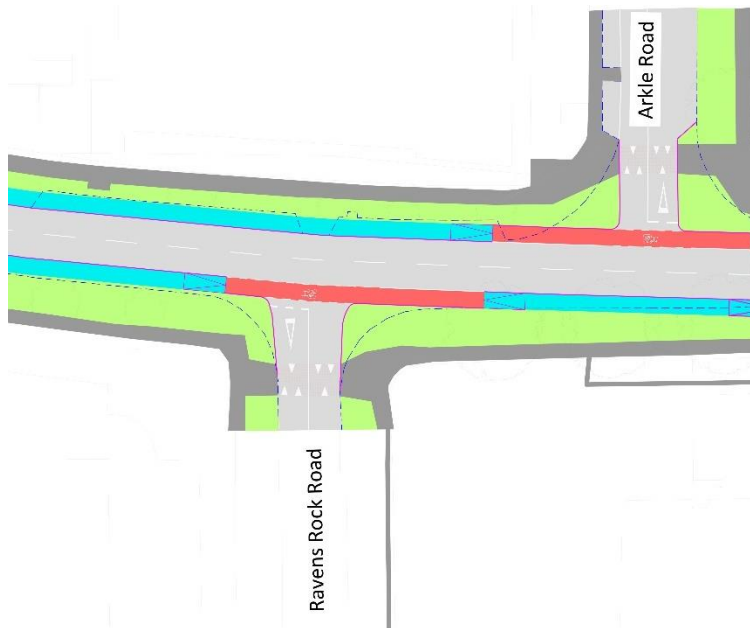


Figure 46 Junction 1: Ravens Rock Road / Carmanhall Road
(Priority junction with traffic lane width of 3.25 m)

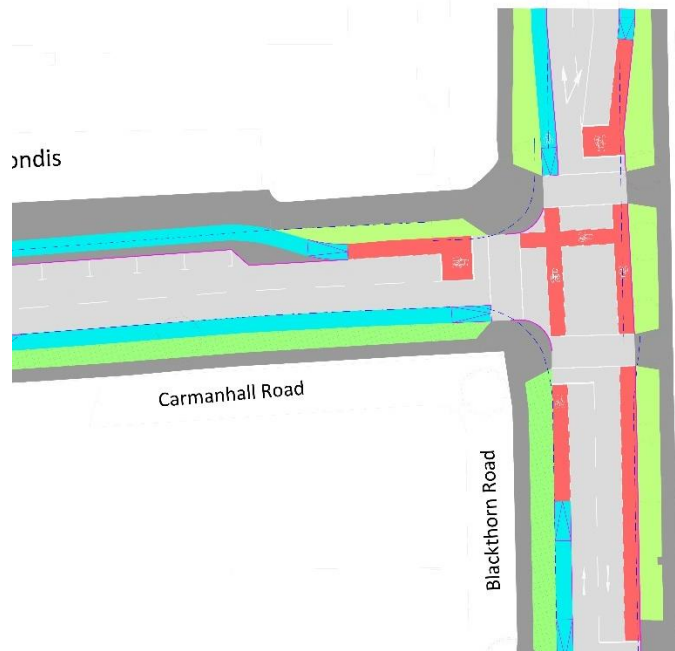


Figure 47 Junction 2: Carmanhall Road / Blackthorn Road
 (Signalised junction with traffic lane width of 3.25 m)

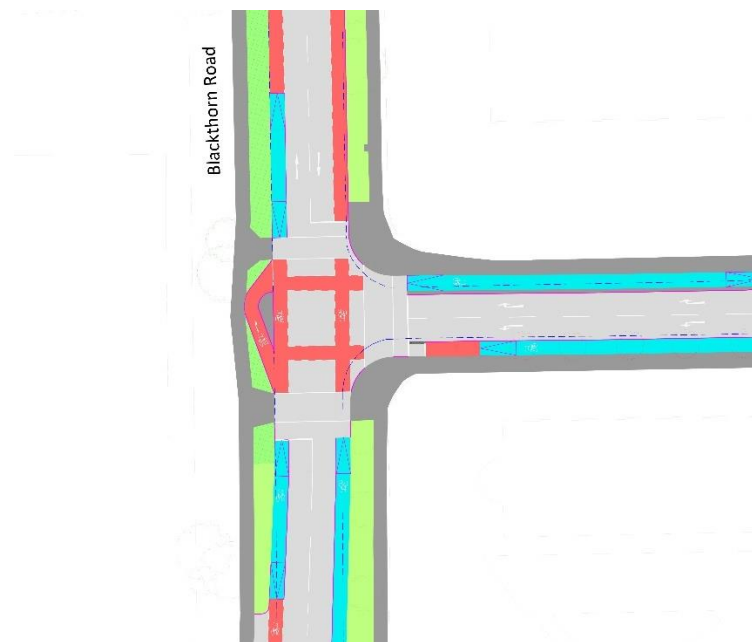


Figure 48 Junction Blackthorn Road / Burton Hall Road
 (Signalised Junction with traffic lane width of 3.25 m)

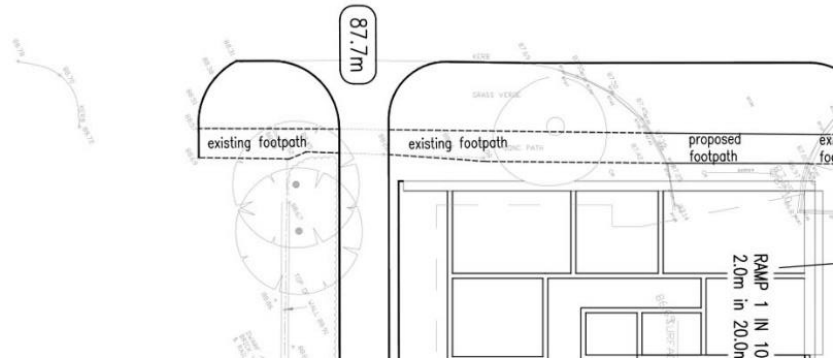


Figure 49 Junction 4: Site Access - Ravens Rock Road

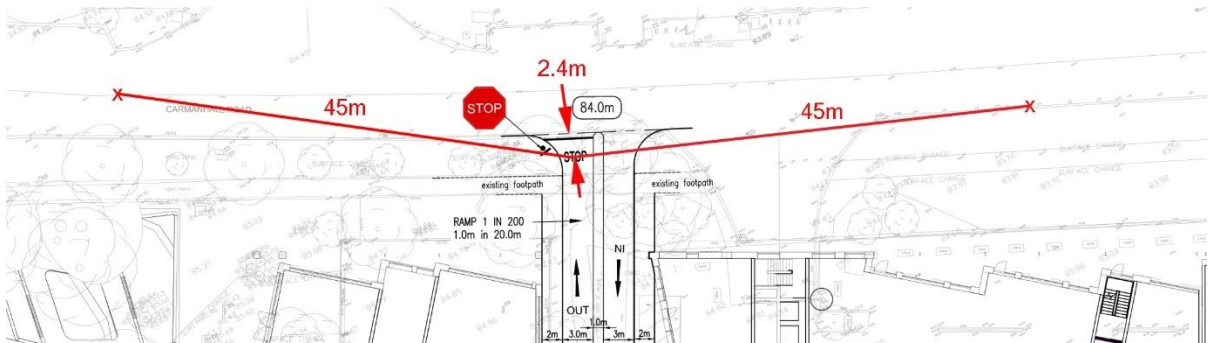


Figure 50 Junction 5: Site Access – Carmanhall Road
(Traffic lane widths 3.0m internal and 3.25m external)

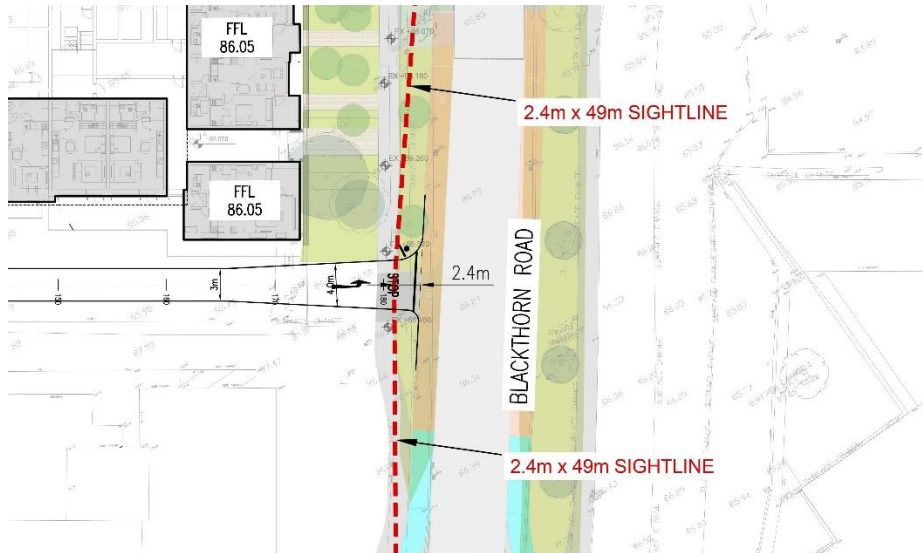


Figure 51 Junction 6: Site Access – Blackthorn Road
(Traffic lane widths 3.0m internal and 3.25m external)

15.3 Junction Movements

The junction movements for the junctions in the Opening Year 2026, Design Year 2031 and Future Year 2041 are presented in Figures 52 – 54 below.

These movements were obtained by adding the development generated flows from Figure 42 to the base flows from Figures 38 – 40.

Figures 38- 40 and 52 - 44 include the traffic diversion impact of the ESB Link Road

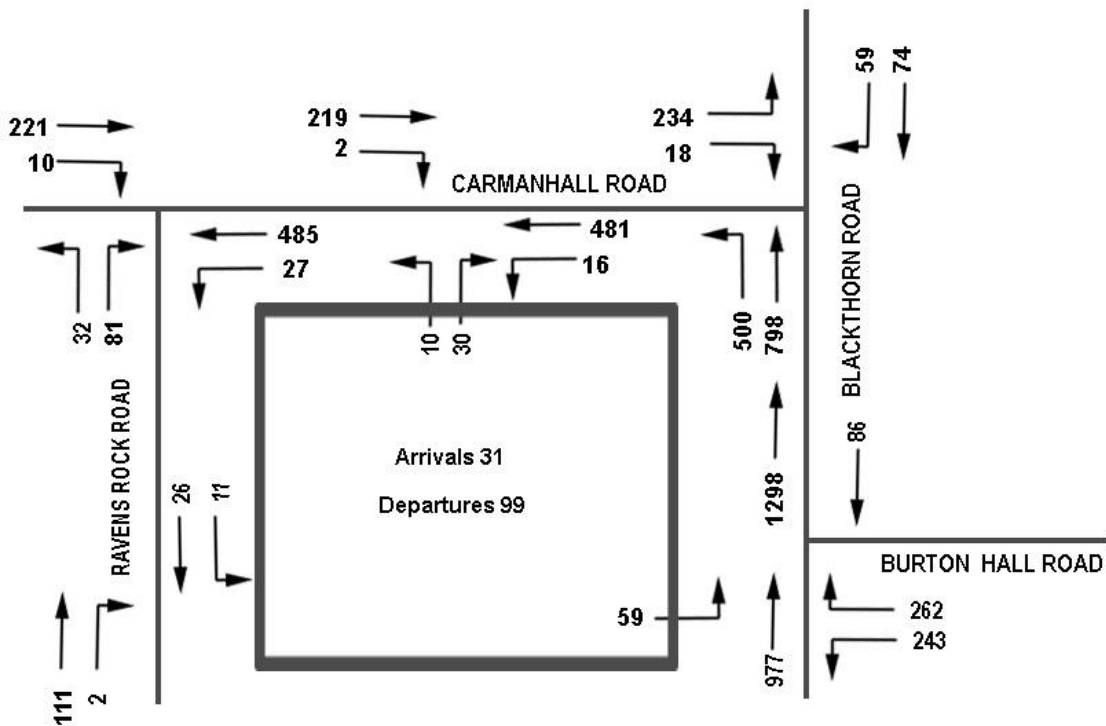


Figure 52 Traffic Flows Post Development - AM Peak - Opening Year 2026

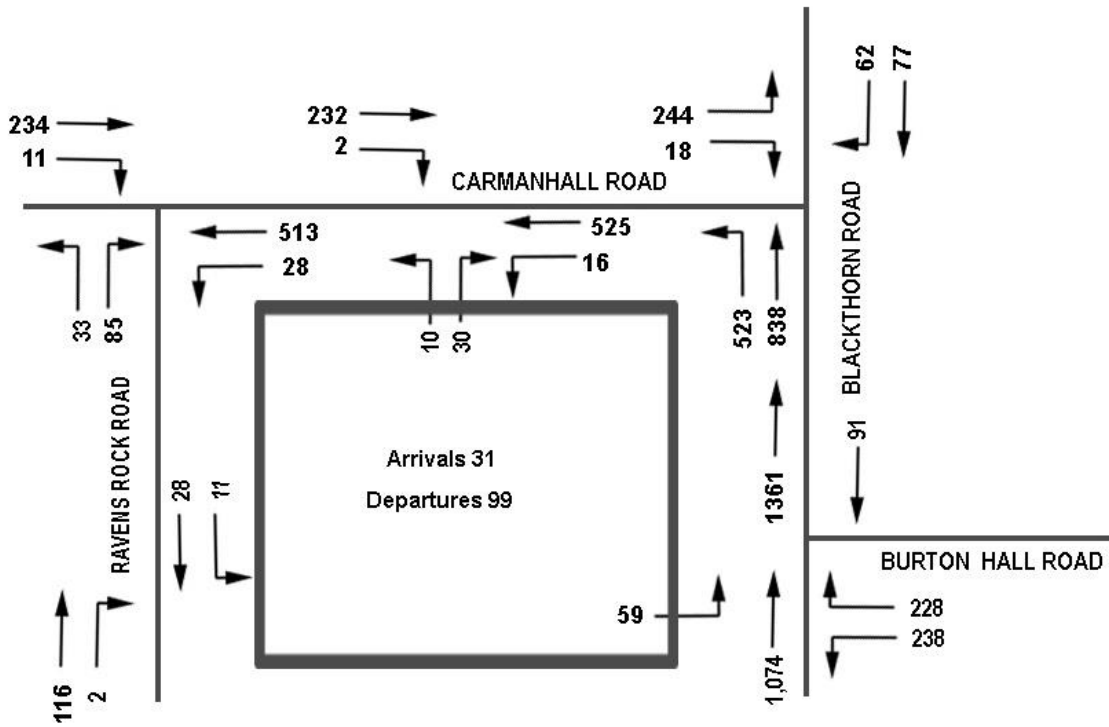


Figure 53 Traffic Flows Post Development - AM Peak – Design Year 2031

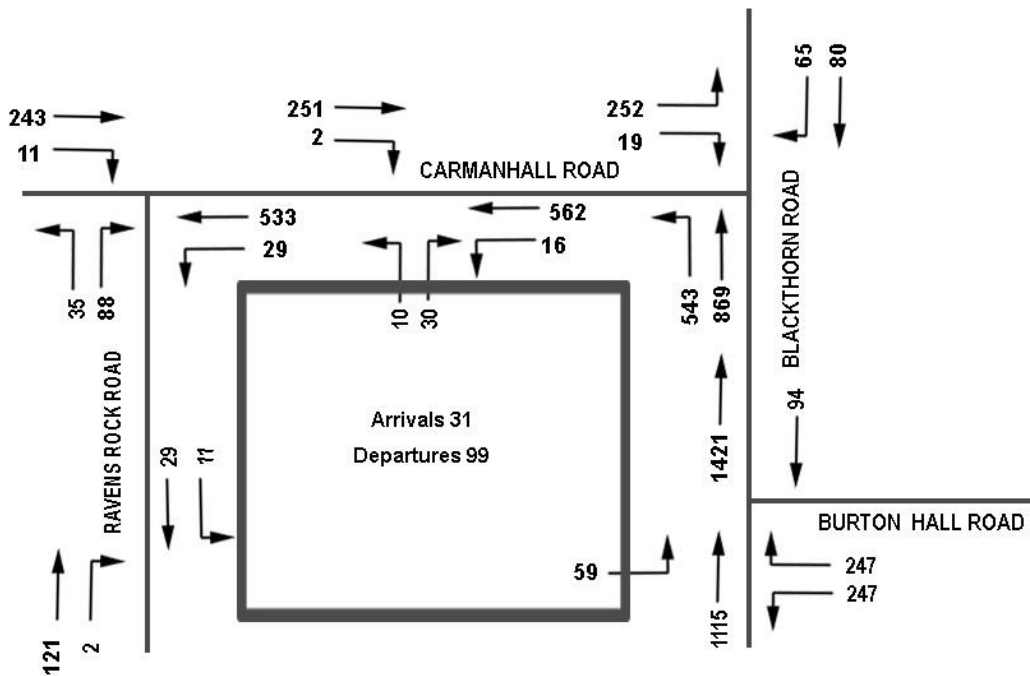


Figure 54 Traffic Flows Post Development - AM Peak – Future Year 2041

15.4 Junction Assessment – Priority Junctions

15.4.1 Priority Junctions

The operation of the priority junctions was modelled using the computer program PICADY.

The input comprised the junction layout for Junctions 1, 4, 5, and 6 from Figures 46 and 49 - 50 together with the traffic movements from Figures 52 - 54.

PICADY (Priority Intersection CApacity and DelaY) is a software package for predicting capacities, queue lengths and delays (both queueing and geometric) at non-signalised major/minor priority junctions. It models three and four-arm unsignalised give-way intersections using well-established capacity relationships which take into account key geometries such as road widths, visibility, the space available for traffic making an offside turn, and so on.

The output report from a PICADY model includes a number of results to evaluate an assessed junction, such as Ratio of Flow to Capacity (RFC), Queue and Delay for each lane approaching the junction.

15.4.2 Signalised Junctions

The operation of signalised junction assessed using the computer program TRANSYT.

The input comprised the junction layout for Junctions 2 and 3 from Figures 47 and 48 together with the traffic movements from Figures 52 - 54.

The output report of a TRANSYT model includes a number of results to evaluate an assessed junction, such as Degree of Saturation percentage (DOS%) figure, Mean Maximum Queue (MMQ) and Mean Delay per Vehicle for each lane approaching the junction.

Degree of Saturation (DOS):

DOS is a measure of performance which represents the capacity of a junction/traffic lane/link to accommodate the vehicular demand and indicates how near the network is to the maximum capacity available. A DOS less than 85% generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the DOS approaches 100%, traffic flow may become unstable, and delay and queuing conditions may occur.

Mean Maximum Queue (MMQ):

MMQ is the highest estimated mean number of Passenger Car Units (pcu) queued in any lane of a junction approach link, averaged over the entire analysis period.

Mean Delay per Vehicle (seconds):

Mean Delay per vehicle is the average delay experienced by a vehicle on a junction traffic stream as a result of having to queue at signals. 12.4.2 Signalised Junction at Junction Blackthorn Road and Carmanhall Road.

15.5 Results of Junction Assessment

15.5.1 Priority Junction 1 (Junction Carmanhall Road and Ravens Rock Road)

Junction 1 is an existing priority junction between Ravens Rock Road and Carmanhall Road. The junction has been modelling in its current configuration using PICADY. The arms of the junction were labelled as follows:

- Arm A: Carmanhall Road (West)
- Arm B: Raven Rock Road
- Arm C: Carmanhall Road (East)

The results of the assessment are presented in Table 18. From this table, it will be seen that, post development, the junction will remain under capacity from the Opening Year of 2026 through to the Future Year of 2041 with the development in place. The maximum RFC predicted in 2041 some 19 years ahead was 0.27 with a corresponding maximum queue of 14 vehicles.

Table 18 Junction 1 - PICADY Results

Junction 1 – Ravens Rock Road / Carmanhall Road			
Stream	Queue (PCU)	Delay (s)	RFC
	Baseline 2022		
Stream B-C	0.1	7.76	0.07
Stream B-A	0.3	11.49	0.21
Stream C-AB	0.0	5.37	0.01
	Baseline 2026		
Stream B-C	0.1	7.97	0.07
Stream B-A	0.3	12.04	0.23
Stream C-AB	0.0	5.37	0.01
	Baseline 2031		
Stream B-C	0.1	8.19	0.08
Stream B-A	0.3	12.68	0.25
Stream C-AB	0.0	5.36	0.01
	Baseline 2041		
Stream B-C	0.1	8.39	0.08
Stream B-A	0.4	13.18	0.26
Stream C-AB	0.0	5.36	0.02
	Baseline 2026 with Development		
Stream B-C	0.1	8.04	0.07

Stream B-A	0.3	12.28	0.23
Stream C-AB	0.0	5.42	0.02
Baseline 2031 with Development			
Stream B-C	0.1	7.87	0.07
Stream B-A	0.3	11.81	0.22
Stream C-AB	0.0	5.38	0.02
Baseline 2041 with Development			
Stream B-C	0.1	8.46	0.08
Stream B-A	0.4	13.47	0.27
Stream C-AB	0.0	5.42	0.03

15.5.2 Signalised Junction 2 (Junction Carmanhall Road / Blackthorn Road)

Junction 2 is an existing priority junction between Carmanhall Road and Blackthorn Road.

As part of the Sandyford Business District Pedestrian and Cycle Priority Scheme being developed by DLRCC for 2023, it is proposed that this junction would be upgraded to a signalised junction.

Priority Option

In this T&TA, the junction was first modelled in its current priority configuration using PICADY. The arms of the junction were labelled out as follows:

- Arm A: Blackthorn Road (South)
- Arm B: Carmanhall Road
- Arm C: Blackthorn Road (North)

The results of the assessment are presented in Table 19. From this table, it will be seen that, post development under priority control, the junction will remain under capacity from the Opening Year of 2026 through to the Future Year of 2041 with the development in place. The maximum RFC predicted in 2041 some 19 years ahead was 0.56 with a corresponding maximum queue of 19 vehicles.

Table 19 Junction 2 - PICADY Results

Junction 2 – Carmanhall Road/Blackthorn Road			
Stream	Queue (PCU)	Delay (s)	RFC
Baseline 2022			
Stream B-C	0.7	12.62	0.42
Stream B-A	0.1	15.63	0.05
Stream C-AB	0.3	11.17	0.18
Baseline 2026			
Stream B-C	1.0	15.57	0.49
Stream B-A	0.1	18.82	0.07
Stream C-AB	0.3	12.54	0.21
Baseline 2031			
Stream B-C	0.7	12.62	0.42
Stream B-A	0.1	15.63	0.05
Stream C-AB	0.3	11.17	0.18
Baseline 2041			
Stream B-C	1.3	19.10	0.56
Stream B-A	0.1	22.39	0.08
Stream C-AB	0.4	13.91	0.25

Signalised Option

The junction was also assessed using the layout proposed in the Sandyford Business District Pedestrian and Cycle Improvement Scheme.

As part of the proposed the Sandyford Business District Pedestrian and Cycle Improvement Scheme, the priority junction between Carmanhall Road and Blackthorn Road is proposed to be upgraded to a signalised T-junction. Accordingly, the junction was modelled as a signalised T-junction using TRANSYT software and the layout proposed in the Scheme. The signalised junction was labelled as follows:

- Arm A: Blackthorn Road (South)
- Arm B: Carmanhall Road
- Arm C: Blackthorn Road (North)

The results of the modelling which are presented in Table 20 show that the junction will remain within capacity with a maximum DOS of 96% in 2041, on the basis that a right turn lane on Arm C is provided.

It is understood at the time of writing in February 2022, that the detailed design of the signalisation of this junction is being undertaken by the project engineers for the Sandyford Business District Pedestrian and Cycle Improvement Scheme.

Table 20 Junction 2 - TRANSYT Results

Junction 2 – Carmanhall Road/Blackthorn Road			
2026 and Development			
Arm	Direction	DOS %	Queue (Vehicles)
A	S/L	90	40.78
B	R/L	79	10.09
C	S	6	0.80
	R	53	2.36
2031 and Development			
Arm	Direction	DOS %	Queue (Vehicles)
A	S/L	88	37.89
B	R/L	79	9.77
C	S	5	0.74
	R	51	2.24
2041 and Development			
Arm	Direction	DOS %	Queue (Vehicles)
A	S/L	96	55.54
B	R/L	89	12.48
C	S	6	0.85
	R	59	2.67

15.5.3 Signalised Junction 3 (Junction Blackthorn Road / Burton Hall Road)

Junction 3 is an existing signalised T-junction between Blackthorn Road and Burton Hall Road. This junction was modelled using TRANSYT with the arms labelled as follows.

- Arm A: Blackthorn Road (North)
- Arm B: Burton Hall Road
- Arm C: Blackthorn Road (South)

The results of the assessment are presented in Table 21. From this table, it will be seen that, post development, the junction will remain under capacity from the Opening Year of 2026 through to the Future Year of 2041 with the development. The maximum DOS predicted was 86% in 2026, xx% in 2031 and 94% in 2041.

Table 21 Junction 3 - TRANSYT Results

Junction 3 – Blackthorn Road / Burton Hall Road			
Baseline 2022			
Arm	Direction	DOS %	Queue (Vehicles)
A	S	64	3.03
B	L	48	9.55
	R	79	9.35
C	S	79	23.08
Baseline 2026			
Arm	Direction	DOS %	Queue (Vehicles)
A	S	68	3.29
B	L	68	8.11
	R	84	27.32
C	S	71	8.79
Baseline 2041			
Arm	Direction	DOS %	Queue (Vehicles)
A	S	74	3.85
B	L	82	9.64
	R	94	38.84
C	S	81	9.29
2026 and Development			
Arm	Direction	DOS %	Queue (Vehicles)
A	S	72	3.63
B	L	68	8.11
	R	86	28.52
C	S	73	9.09
2041 and Development			
Arm	Direction	DOS %	Queue (Vehicles)
A	S	78	4.31
B	L	87	10.43
	R	94	39.36
C	S	87	10.43

15.5.4 Priority Junction 4 (Site Access – Ravens Rock Road)

Junction 4 is the proposed site access point on Ravens Rock Road. This is proposed to be a one-way access point into the proposed development and the configuration is based on the proposed layout of the junction. The layout was labelled as follows:

- Arm A: Raven’s Rock Road (North)
- Arm B: Site Access Road
- Arm C: Raven’s Rock Road (South)

The results of this assessment are presented in Table 22. From this table, it will be seen that, post development, the junction will remain under capacity from the Opening Year of 2026 through to the Future Year of 2041 with the development.

Table 22 Junction 4 - PICADY Results

Junction 4 – Raven’s Rock Road Site Access			
Stream	Queue (PCU)	Delay (s)	RFC
2026 and Development			
Stream B-AC	0.0	0.00	0.00
Stream C-AB	0.0	5.64	0.00
2031 and Development			
Stream B-AC	0.0	0.00	0.00
Stream C-AB	0.0	5.26	0.00
2041 and Development			
Stream B-AC	0.0	0.00	0.00
Stream C-AB	0.0	5.21	0.00

15.5.5 Priority Junction 5 (Site Access Carmanhall Road)

Junction 4 is the proposed site access point on Carmanhall Road and the configuration is based on the proposed layout of the junction. The layout was labelled as follows:

- Arm A: Carmanhall Road (East)
- Arm B: Site Access Road
- Arm C: Carmanhall Road (West)

The results of this assessment are presented in Table 23. From this table, it will be seen that this junction will remain within capacity from 2026 through to 2041 with the development in place. The max RFC is predicted to be 0.13 with a corresponding queue of 0.1 vehicles.

Table 23 Junction 5 - PICADY Results

Junction 5 – Carmanhall Site Access Road			
Stream	Queue (PCU)	Delay (s)	RFC
	2026 and Development		
Stream B-AC	0.1	11.33	0.12
Stream C-AB	0.0	5.40	0.00
2031 and Development			
Stream B-AC	0.1	11.31	0.12
Stream C-AB	0.0	5.42	0.00
2041 and Development			
Stream B-AC	0.1	12.27	0.13
Stream C-AB	0.0	5.37	0.01

15.5.6 Priority Junction 6 (Site Access – Blackthorn Road)

Junction 4 is the proposed site access point on Carmanhall Road. This is a proposed site access, and the configuration is based on the proposed layout of the junction. The layout was labelled as follows:

- Arm A: Blackthorn Road (South)
- Arm B: Site Access Road
- Arm C: Blackthorn Road (North)

The results of this assessment are presented in Table 24. From this table, it will be seen that the junction will remain under capacity in 2026 through to 2041 with the development in place. The max with an RFC predicted is 0.18 with a corresponding queue of 0.2 vehicles.

Table 24 Junction 6 - PICADY Results

Junction 6 – Blackthorn Road – Site Access			
Stream	Queue (PCU)	Delay (s)	RFC
	2026 and development		
Stream B-AC	0.2	11.04	0.17
Stream C-AB	0.0	0.00	0.00
2031 and development			
Stream B-AC	0.2	11.19	0.17
Stream C-AB	0.0	0.00	0.00
2041 and development			
Stream B-AC	0.2	12.22	0.18
Stream C-AB	0.0	0.00	0.00

16. Traffic Impact

16.1 Road Junctions

The results of the assessment in Section 15 confirm that the three junctions on the surrounding road network will remain within capacity with the combined development in place in the Opening Year 2026 through the Design Year in 2031 to the Future Year 2041.

The three junctions are

- Junction 1: Ravens Rock Road / Carmanhall Road
- Junction 2: Carmanhall Road / Blackthorn Road
- Junction 3: Blackthorn Road / Burton Hall Road

It is understood that Junction 2 at Carmanhall Road / Blackthorn Road is to be signalised by DLRCC as part of the Sandyford Cycle Improvement Scheme.

It is also understood at the time of writing in August 2022 that the detailed design of the signalisation of this junction is being undertaken by the project engineers for the Sandyford Cycle Improvement Scheme.

This junction was demonstrated to work satisfactorily under priority control or signal control up to and including 2041 with the development in place.

16.2 Public Transport – Luas

Following completion of the Green Line Capacity Enhancement Scheme in 2019, the passenger capacity on the Green Line comfortably exceeds passenger demand in the AM and PM Peak

Following completion of the Green Line Capacity Enhancement Scheme in 2019, the current capacity of the Green Line during the AM Peak is 6,300 passengers per hour in both directions compared to a peak loading of 4,648 passengers per hour inbound between Milltown and Cowper.

Based on a modal split of 28%, the peak demand from the proposed development is expected to be 344 passengers during the AM Peak of which 50% can be expected to travel during the AM Peak Hour. This demand of 172 passengers per hour is equivalent to 1.3% of the Green Line Capacity of 12,600 passengers per hour.

16.3 Public Transport - Bus Services

The projected demand for bus services during the AM Peak generated by the proposed development is some 245 persons in the Opening Year 2026 decreasing to 236 persons six years later in 2031. Of these, 50% can be expected to travel during the AM Peak Hour 08.00 – 09.00

This demand of 111 – 109 passengers per hour is well within the capacity of the existing bus services being 6% of the capacity of 1,840 persons per hour provided on the bus services in the surrounding area.

The capacity of 1,840 persons after the implementation of the Bus Connects service improvements is based on

- (a) 10 x double deck buses per hour in each direction x 80 passengers per bus (1,600 passengers)
- (b) 3 coaches per hour in each direction x 40 passengers per coach (240 passengers).

16.4 Public Transport

The overall impact of the proposed development on the public transport services in the surrounding area is an increase of 1.3% on Luas services and 6% on bus services. These increases are well within the capacity of both services.

17. Summary

Introduction

This Traffic and Transport Assessment (T&TA) has been prepared by Waterman Moylan on behalf of Atlas GP Limited to accompany a planning for a residential development on a brownfield site at the junction of Carmanhall Road and Ravens Rock Road, Sandyford, Dublin 18.

Description of Site

The subject site is located at Sandyford in south County Dublin. The site which has an area of 0.73 ha (1.82 acre) is located at the junction of Carmanhall Road and Ravens Rock Road, Sandyford, Dublin 18. The existing vehicular access to the site is from Carmanhall Road.

The site was formerly occupied by Avid Technology but at the time of writing in August 2022, it was unoccupied

The adjoining site to the west at the junction of Carmanhall Road and Ravens Rock Road was formerly occupied by Tack Packaging. It extends to 0.57 ha ((1.42 acre).

Proposed Development

The proposed development will comprise some 334 Build-to-Rent residential units. See Figure 3.

Car parking with a total of 125 car spaces including 7 car sharing spaces will be provided at Lower Ground and Basement. Access is proposed from Carmanhall Road with egress onto Blackthorn Road.

Cycle parking with 447 spaces will be provided at Lower Ground Level. Access is proposed from Blackthorn Road.

The public realm around the site will incorporate an upgrade of the pedestrian and cycle environment.

The development includes all associated infrastructure to service the development including access junctions, footpaths and cycle paths together with a network of watermains, foul water drains and surface water drains.

Contiguous Development

A concurrent development with a separate Traffic & Transport Assessment on the former Tack Packaging site to the west will comprise 207 Build-to-Rent residential units and 79 car parking spaces at Lower Ground Level and Basement. Access is proposed from Ravens Rock Road and egress onto Carmanhall Road.

The traffic impact from this contiguous development has been incorporated into this T&TA.

Program

At the time of writing in August 2022, it is likely that construction of the proposed development could commence in 2023 for completion in 2026.

Projections are included for Design Year 2031 (Opening Year + 5) and Future Year 041 (Opening Year + 15).

Future Road and Cycle Schemes

During the preparation of this T & TA, consultations were held with the project engineers for two future schemes in the area of the subject site. The two schemes which are being developed by Dun Laoghaire Rathdown County Council are: -

- (a) ESB Link Road – Junction 14 Roundabout to Blackthorn Road.
- (b) Sandyford Business District Pedestrian and Cycle Improvement Scheme.

Both schemes and their impact on the road network in the area of the subject site are described in this T & TA.

It is understood at the time of writing in August 2022, that both schemes are progressing to the tender stage for completion in 2023.

DLR County Development Plan 2022 – 2028

The requirements of the DLR County Development Plan in relation to Sustainable Travel and Transportation including roads, car parking, cycling and walking are identified in this report and their application in relation to the proposed development clarified.

Likewise, the requirements of the Sandyford Urban Framework Plan in relation to Sustainable Infrastructure Policies and Objectives.

Car Parking

The proposed provision of car parking will be 125 spaces calculated at the rate of 0.375 space per unit per unit for 334 units.

The provision of 125 spaces will include 88 standard spaces, 25 spaces with charging facilities for electric vehicles (20%), 5 spaces for disabled drivers (4%) and 7 spaces for car sharing (GoCar).

Each car sharing spaces will be the equivalent of 20 standard spaces.

The effective provision of car parking at the proposed development would be the equivalent of 258 spaces comprising 118 standard spaces and 140 car sharing spaces compared to a maximum allowable provision of 278 spaces under the current Development Plan.

Compliance has also been demonstrated in this T &TA with Section 8.2.4.5 *Car Parking Standards* of the DLR County Development Plan 2022 – 2028 which provides for reduced car parking standards for any development (residential and non-residential) complying with certain criteria.

Public Transport - Luas

The proposed development will be located adjacent to the Luas Green Line. The nearest Luas stops are Stillorgan and Sandyford both located on Blackthorn Avenue less than 0.5km to the north of the proposed development. Both stops are within 6 minutes walking distance.

Following completion of the Green Line Capacity Enhancement Scheme in 2019, the current capacity of the Green Line during the AM Peak is 6,300 passengers per hour in both directions compared to a peak loading of 4,648 passengers per hour inbound between Milltown and Cowper.

Based on a modal split of 28%, the peak demand from the proposed development is expected to be 344 passengers during the AM Peak of which 50% can be expected to travel during the AM Peak

Hour. This demand of 172 passengers per hour is equivalent to 1.3% of the Green Line Capacity of 12,600 passengers per hour.

Public Transport - Bus

The combined development will be well served by stage bus services operated by a number of companies in the surrounding area. Bus stops are located on Burton Hall Road, Blackthorn Road, and Blackthorn Avenue less than 6 minutes' walk from the proposed development.

The projected demand for bus services during the AM Peak is some 110 passengers per hour. This demand is well within the capacity of the existing bus services being 6% of the capacity of 1,840 persons per hour provided on the bus services in the surrounding area.

Traffic Impact

During the preparation of this T & TA, two alternative scenarios were considered as part of the assessment of the traffic impact of this development.

Firstly, to assess the traffic impact of a residential development on the subject site.

Secondly, to assess the subject site in conjunction with the adjoining site as a single development for traffic purposes. For reasons of this latter option was selected and the developments on the two sites assessed as a single development on a single site.

The results of the assessment confirmed that the junctions on the surrounding road network would remain within in capacity post development in in the Opening Year 2026 through the Design Year in 2031 to the Future Year 2041.

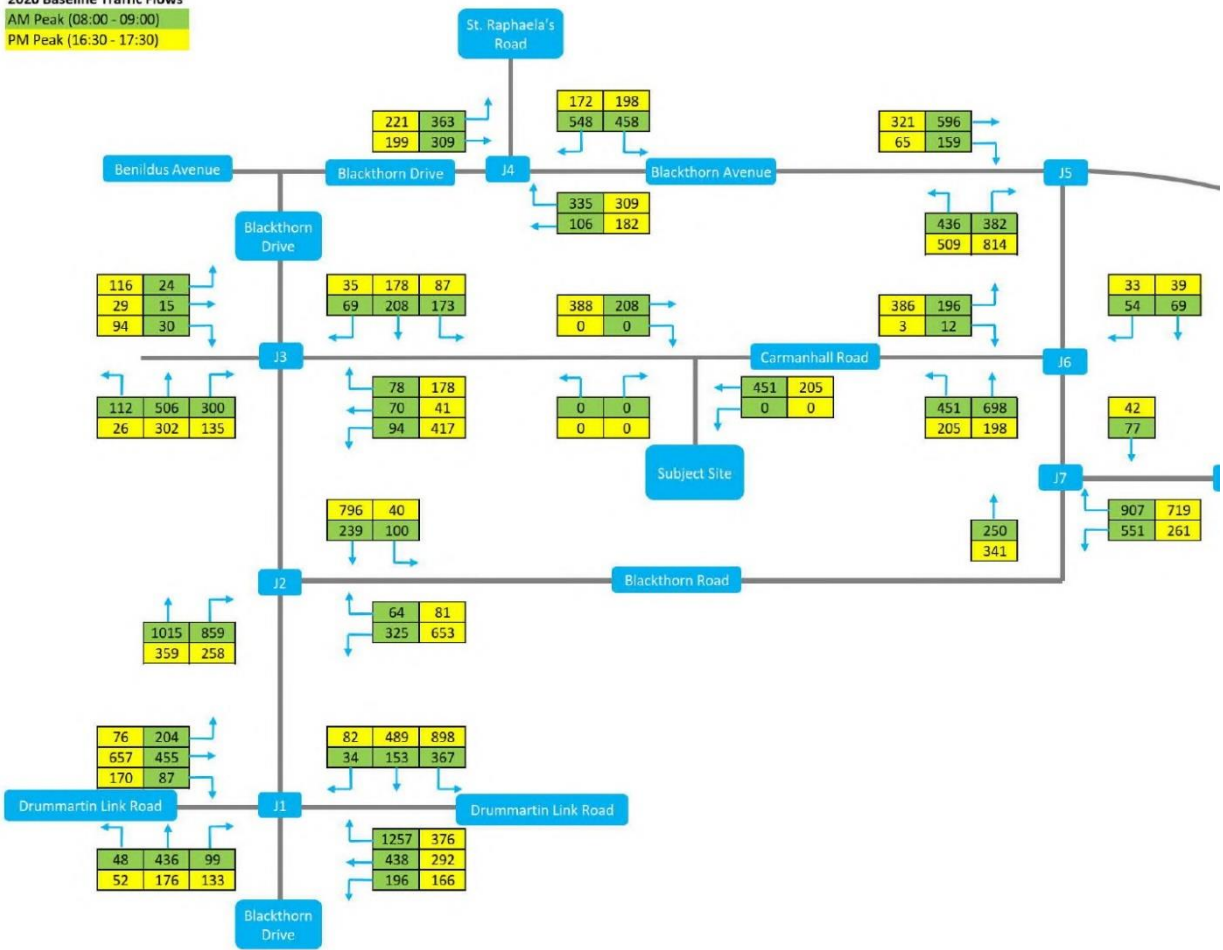
Summary

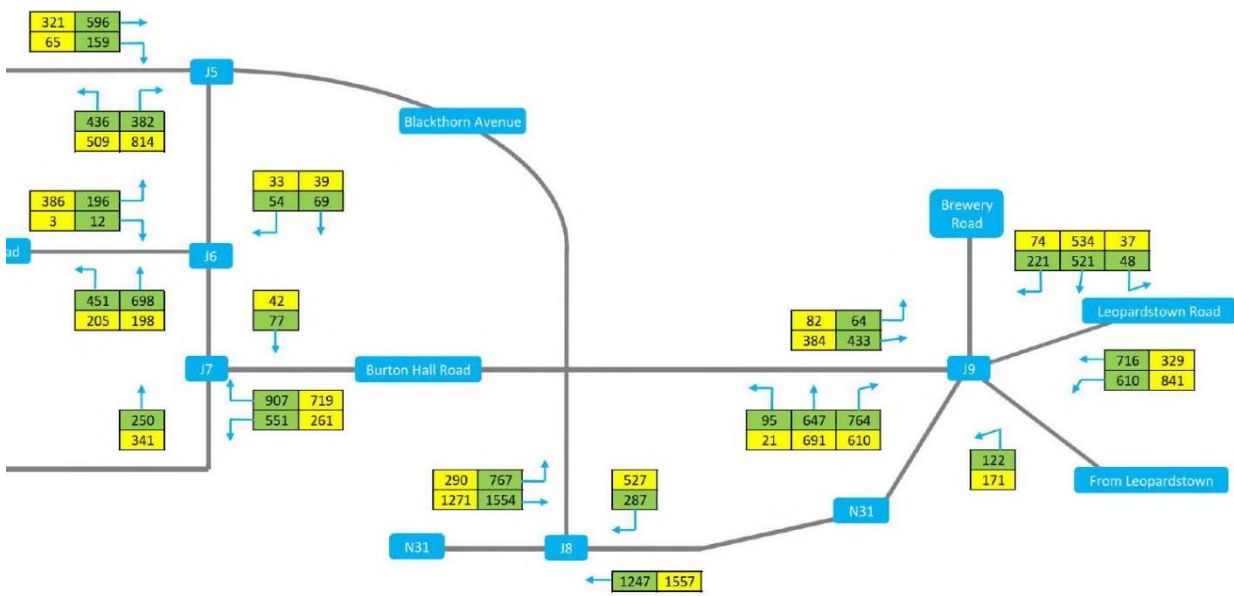
This T & TA demonstrates that the proposed development will be consistent with the objectives for Sustainable Travel and Transport set out in the DLR County Development Plan 2022 – 2028 and the Sandyford Urban Framework Plan 2022 - 2028.

APPENDICES

A. Traffic Survey 2020

2020 Baseline Traffic Flows
 AM Peak (08:00 - 09:00)
 PM Peak (16:30 - 17:30)





B. Traffic Survey 2022



Data Analysis Services
Traffic · Transportation · Commercial Innovation

012 21459 Avid & TAC Packaging Site - Traffic Surveys

with compliments

IDASO

Survey Name:
Date:

012 21459 Avid & TAC Packaging Site - Traffic Surveys
Tue 11 Jan 2022





IDASO

Survey Name: 012 21459 Avid & TAC Packaging Site - Traffic Surveys
 Site: Site 1
 Location: Blackthorn Road/Carmanhall Road
 Date: Tue 11-Jan-2022

TIME	A => A										A => B										A => C									
	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	3	0	0	1	0	1	1	0	0	3	3.5
07:15	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	4	4	0	0	5	0	1	0	0	0	6	6
07:30	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	0	6	6	0	0	1	0	1	0	0	0	2	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	7	7	1	0	8	0	1	0	0	0	10	9.2
N/TOT	0	0	0	0	0	0	0	0	0	0	0	0	17	0	3	0	0	0	20	20	1	0	15	0	4	1	0	0	21	20.7
08:00	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	12	12	1	0	7	0	0	0	0	0	8	7.2
08:15	0	0	0	0	0	0	0	0	0	0	0	0	12	0	1	0	0	0	13	13	0	0	10	0	2	0	0	0	12	11
08:30	0	0	0	0	0	0	0	0	0	0	0	0	13	0	2	0	0	0	15	15	0	0	5	0	1	0	0	0	6	6
08:45	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	18	18	0	1	7	1	1	1	0	0	11	10.9
N/TOT	0	0	0	0	0	0	0	0	0	0	0	0	55	0	3	0	0	0	58	58	1	1	29	1	4	1	0	0	37	36.1
09:00	0	0	0	0	0	0	0	0	0	0	0	0	11	0	2	0	0	0	13	13	0	1	8	0	0	0	0	0	9	8.4
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N/TOT	0	0	0	0	0	0	0	0	0	0	0	1	24	0	4	1	0	0	30	29.9	0	1	26	1	5	2	0	0	35	35.4
10:00	0	0	0	0	0	0	0	0	0	0	0	1	4	0	1	1	0	0	7	6.9	0	0	1	0	3	1	0	0	5	5.5
10:15	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	4	4	0	0	5	0	0	1	0	0	6	6.5
10:30	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	3	3	0	0	1	0	2	0	0	0	3	3
10:45	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	1	0	0	6	6.5	0	0	4	0	2	0	0	0	6	6
N/TOT	0	0	0	0	0	0	0	0	0	0	0	1	11	1	5	2	0	0	20	20.4	0	0	11	0	7	2	0	0	20	21
11:00	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	5	5	0	0	3	0	0	0	0	0	3	3
11:15	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	5	5	0	0	6	0	1	0	0	0	7	7
11:30	0	0	0	0	1	0	0	0	1	1	0	0	3	0	0	0	0	0	3	3	0	0	0	0	1	0	0	0	1	1
11:45	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	5	5	0	0	5	0	0	0	0	0	5	5
N/TOT	0	0	0	0	1	0	0	0	1	1	0	0	17	0	1	0	0	0	18	18	0	0	14	0	2	0	0	0	16	16
12:00	0	0	0	0	0	0	0	0	0	0	1	0	5	0	1	1	0	0	8	7.7	0	0	6	1	0	0	0	0	7	7
12:15	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	0	6	6	0	0	3	0	1	1	0	0	5	5.5
12:30	0	0	0	0	0	0	0	0	0	0	0	0	6	1	3	0	0	0	10	10	0	0	4	0	1	0	0	0	5	5
12:45	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	4	1	0	8	1	3	0	0	0	13	12.2
N/TOT	0	0	0	0	0	0	0	0	0	0	1	0	20	1	5	1	0	0	28	27.7	1	0	21	2	5	1	0	0	30	29.7
13:00	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3	0	0	5	0	3	0	0	0	8	8
13:15	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	4	4	0	0	1	0	0	0	0	0	1	1
13:30	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	0	6	6	0	0	9	0	3	0	0	0	12	12
13:45	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	0	9	9	0	0	4	0	1	0	0	0	5	5
N/TOT	0	0	0	0	0	0	0	0	0	0	0	0	19	2	1	0	0	0	22	22	0	0	19	0	7	0	0	0	26	26
14:00	0	0	0	0	0	0	0	0	0	0	0	0	5	0	3	0	0	0	8	8	0	0	2	0	1	0	0	0	3	3
14:15	0	0	0	0	0	0	0	0	0	0	0	0	5	0	2	0	0	0	7	7	0	0	2	0	0	0	0	0	2	2
14:30	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	1	0	0	6	6.5	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	8	0	2	0	0	0	10	10	0	0	6	1	1	0	0	0	8	8
N/TOT	0	0	0	0	0	0	0	0	0	0	0	0	23	0	7	1	0	0	31	31.5	0	0	10	1	2	0	0	0	13	13
15:00	0	0	0	0	0	0	0	0	0	0	0	1	7	1	0	0	0	0	9	8.4	0	0	4	0	2	0	0	0	6	6
15:15	0	0	0	0	0	0	0	0	0	0	0	0	7	0	3	0	0	0	10	10	1	0	3	0	3	0	0	0	7	6.2
15:30	0	0	0	0	0	0	0	0	0	0	0	0	11	0	2	0	0	0	13	13	0	1	8	0	0	0	0	0	9	8.4
15:45	0	0	0	0	0	0	0	0	0	0	0	0	7	0	1	0	0	0	8	8	0	0	3	0	1	0	0	0	4	4
N/TOT	0	0	0	0	0	0	0	0	0	0	0	1	32	1	6	0	0	0	40	39.4	1	1	18	0	6	0	0	0	26	24.8
16:00	0	0	0	0	0	0	0	0	0	0	0	0	6	0	1	0	0	0	7	7	0	0	9	0	1	0	0	0	10	10
16:15	0	0	0	0	0	0	0	0	0	0	0	1	4	1	2	0	0	0	8	7.4	0	0	4	0	6	0	1	0	11	12.3
16:30	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	5	5	0	0	3	0	1	0	0	0	4	4
16:45	0	0	0	0	0	0	0	0	0	0	0	0	4	0	2	1	0	0	7	7.5	0	0	6	0	1	0	0	0	7	7
N/TOT	0	0	0	0	0	0	0	0	0	0	0	1	19	1	5	1	0	0	27	26.9	0	0	22	0	9	0	1	0	32	33.3
17:00	0	0	0	0	0	0	0	0	0	0	0	1	13	0	0	0	0	0	14	13.4	0	0	10	0	1	0	0	0	11	11
17:15	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	8	0	2	0	0	0	10	10	0	0	6	0	0	0	0	0	6	6
17:45	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3	3	0	0	5	1	0	0	0	0	6	6
N/TOT	0	0	0	0	0	0	0	0	0	0	0	1	27	1	4	0	0	0	33	32.4	0	0	21	1	1	0	0	0	23	23
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	0	0	0	6	6
18:15	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	1	0	4	1	0	0	0	0	6	5.2
18:30	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	4	4	0	0	2	0	0	0	0	0	2	2
18:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	3	3	0	0	3	0	0	0	0	0	3	3
N/TOT	0	0	0	0	0	0	0	0	0	0	0	0	6	0	3	0	0	0	9	9	1	0	13	2	1	0	0	0	17	16.2

B ==> A										B ==> B										B ==> C											
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU		
0	1	34	1	2	1	0	5	44	48.9	0	0	0	0	0	0	0	0	0	0	0	0	22	1	8	1	2	0	34	37.1		
1	0	43	1	9	3	0	3	60	63.7	0	0	0	0	0	0	0	0	0	0	0	2	0	26	0	10	1	0	0	39	37.9	
1	0	74	1	7	3	0	5	91	96.7	0	0	0	0	0	0	0	0	0	0	0	0	0	28	0	12	1	2	0	43	46.1	
1	0	126	2	15	1	1	5	151	157	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0	10	1	0	0	52	52.5	
3	1	277	5	33	8	1	18	346	366.3	0	0	0	0	0	0	0	0	0	0	0	2	0	117	1	40	4	4	0	168	173.6	
2	0	133	2	10	5	0	4	156	160.9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	49	1	5	5	1	0	62	65
2	0	95	3	10	0	0	3	113	114.4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	58	0	10	3	0	0	72	72.7
0	1	93	4	8	3	0	3	112	115.9	0	0	0	0	0	0	0	0	0	0	0	2	1	64	2	9	3	1	0	82	82.6	
2	0	81	4	8	3	0	2	100	101.9	0	0	0	0	0	0	0	0	0	0	0	0	1	1	54	1	9	0	3	0	69	71.5
6	1	402	13	36	11	0	12	481	493.1	0	0	0	0	0	0	0	0	0	0	0	5	2	225	4	33	11	5	0	285	291.8	
3	0	65	5	14	4	0	3	94	96.6	0	0	0	0	0	0	0	0	0	0	0	1	0	50	1	16	2	1	0	71	72.5	
1	1	73	7	15	4	0	3	104	107.6	0	0	0	0	0	0	0	0	0	0	0	2	0	31	4	8	4	2	0	51	54	
0	1	74	2	13	3	0	2	95	97.9	0	0	0	0	0	0	0	0	0	0	0	0	0	25	1	16	5	0	0	47	49.5	
2	1	68	3	10	2	2	2	90	93.4	0	0	0	0	0	0	0	0	0	0	0	0	0	44	1	13	3	1	0	62	64.8	
6	3	280	17	52	13	2	10	383	395.5	0	0	0	0	0	0	0	0	0	0	0	3	0	150	7	53	14	4	0	231	240.8	
0	0	60	2	16	1	0	1	80	81.5	0	0	0	0	0	0	0	0	0	0	0	1	0	24	1	13	1	0	0	40	39.7	
1	0	75	3	14	2	0	2	97	99.2	0	0	0	0	0	0	0	0	0	0	0	1	0	31	1	8	2	3	0	46	50.1	
1	1	71	9	13	4	1	2	102	105.9	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	12	4	1	0	50	53.3	
0	1	99	5	12	7	1	2	127	133.2	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	15	0	1	0	50	51.3	
2	2	305	19	55	14	2	7	406	419.8	0	0	0	0	0	0	0	0	0	0	0	2	0	122	2	48	7	5	0	186	194.4	
0	2	93	3	10	3	1	1	113	115.6	0	0	0	0	0	0	0	0	0	0	0	0	2	35	0	12	4	2	0	55	58.4	
0	2	90	7	15	2	0	1	117	117.8	0	0	0	0	0	0	0	0	0	0	0	1	0	33	2	7	3	0	0	46	46.7	
0	1	80	3	10	2	0	2	98	100.4	0	0	0	0	0	0	0	0	0	0	0	1	1	34	0	12	2	1	0	51	51.9	
1	0	96	3	13	3	0	2	118	120.7	0	0	0	0	0	0	0	0	0	0	0	0	1	35	1	19	2	1	0	59	60.7	
1	3	329	16	48	10	1	6	446	454.5	0	0	0	0	0	0	0	0	0	0	0	2	4	137	3	50	11	4	0	211	217.7	
1	1	88	5	13	2	0	1	111	111.6	0	0	0	0	0	0	0	0	0	0	0	2	1	38	0	9	5	0	0	55	55.3	
2	1	103	4	14	5	0	1	130	131.3	0	0	0	0	0	0	0	0	0	0	0	1	1	25	1	9	5	1	0	43	45.4	
2	0	95	2	14	4	0	1	118	119.4	0	0	0	0	0	0	0	0	0	0	0	0	0	26	2	10	5	0	0	43	45.5	
0	2	107	7	8	4	1	2	131	135.1	0	0	0	0	0	0	0	0	0	0	0	1	0	35	0	13	6	2	0	57	61.8	
5	4	393	18	49	15	1	5	490	497.4	0	0	0	0	0	0	0	0	0	0	0	4	2	124	3	41	21	3	0	198	208	
1	1	130	3	11	5	1	2	154	158.4	0	0	0	0	0	0	0	0	0	0	0	2	2	37	5	12	0	1	0	59	57.5	
3	6	117	4	13	7	0	1	151	149.5	0	0	0	0	0	0	0	0	0	0	0	1	0	32	2	9	1	0	0	45	44.7	
0	1	105	2	10	1	0	1	120	120.9	0	0	0	0	0	0	0	0	0	0	0	0	1	32	3	12	2	1	0	51	52.7	
0	1	90	1	9	0	1	2	104	106.7	0	0	0	0	0	0	0	0	0	0	0	0	0	28	3	12	1	2	0	46	49.1	
4	9	442	10	43	13	2	6	529	535.5	0	0	0	0	0	0	0	0	0	0	0	3	3	129	13	45	4	4	0	201	204	
1	2	98	2	11	5	0	1	120	121.5	0	0	1	0	0	0	0	0	0	1	1	1	0	38	2	11	1	0	0	42	42.5	
0	0	96	5	14	0	1	3	119	123.3	0	0	0	0	0	0	0	0	0	0	0	0	0	29	3	7	0	1	0	40	41.3	
1	1	98	3	12	5	1	1	122	125.4	0	0	1	0	0	0	0	0	0	1	1	0	0	24	5	8	2	0	0	39	40	
0	1	112	4	19	2	0	2	140	142.4	0	0	0	0	0	0	0	0	0	0	0	0	0	21	2	5	1	0	0	29	29.5	
2	4	404	14	56	12	2	7	501	512.6	0	0	2	0	0	0	0	0	0	2	2	0	0	102	12	31	4	1	0	150	153.3	
0	1	115	3	10	2	2	2	135	140	0	0	0	0	0	0	0	0	0	0	0	1	1	32	1	8	1	1	0	45	45.4	
1	2	99	8	17	2	1	2	132	134.3	0	0	0	0	0	0	0	0	0	0	0	0	0	26	1	13	2	0	0	42	43	
2	1	97	3	15	2	0	2	122	122.8	0	0	0	0	0	0	0	0	0	0	0	0	0	32	6	9	5	0	0	52	54.5	
1	0	108	5	19	3	0	5	141	146.7	0	0	0	0	0	0	0	0	0	0	0	1	0	30	0	11	3	0	0	45	45.7	
4	4	419	19	61	9	3	11	520	543.8	0	0	0	0	0	0	0	0	0	0	0	2	1	120	8	41	11	1	0	184	188.6	
1	1	139	1	16	0	0	3	161	162.6	0	0	0	0	0	0	0	0	0	0	0	0	0	38	2	6	0	0	0	46	46	
3	0	100	4	11	1	0	2	121	121.1	0	0	0	0	0	0	0	0	0	0	0	1	1	27	2	3	0	0	0	34	32.6	
5	2	117	2	7	0	0	4	137	135.8	0	0	0	0	0	0	0	0	0	0	0	0	1	25	1	2	1	0	0	30	29.9	
1	1	109	1	6	1	1	2	122	124.4	0	0	0	0	0	0	0	0	0	0	0	0	0	40	3	2	1	0	0	46	46.5	
10	4	463	8	40	2	1	11	541	543.9	0	0	0	0	0	0	0	0	0	0	0	1	2	130	8	13	2	0	0	156	155	
4	0	148	3	9	0	0	6	170	172.8	0	0	0	0	0	0	0	0	0	0	0	1	0	36	1	0	0	0	0	38	37.2	
0	0	131	2	7	2	0	2	144	147	0	0	0	0	0	0	0	0	0	0	0	1	0	25	1	1	0	0	0	28	27.2	
1	0	127	4	5	2	0	3	142	145.2	0	0	0	0	0	0	0	0	0	0	0	0	0	30	2	2	0	0	0	34	34	
3	2	109	2	4	2	0	0	122	119.4	0	0	0	0	0	0	0	0	0	0	0	1	0	24	2	1	1	0	0	29	28.7	
8	2	515	11	25	6	0	11	578	584.4	0	0	0	0	0	0	0	0	0	0	0	3	0	115	6	4	1	0	0	129	127.1	
0	0	88	1	4	0	0	7	100	107	0	0	0	0	0	0	0	0	0	0	0	0	0	22	3	3	0	0	0	28	28	
2	3	84	1	6	0	0	3	99	98.6	0	0	0	0	0	0	0	0	0	0	0	1	0	24	0	0	0	0	0	25	24.2	
2	1	78	0	0	0	0	4	85	86.8	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0	1	0	1	0	25	26.3	
0	0	71	6	2	0	0	3	82	85	0	0	0	0	0	0	0	0	0	0	0	2	0	25	2	1	0</					

C=>A										C=>B										C=>C									
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU
0	0	6	1	1	0	0	0	8	8	0	0	1	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	0	7	0	3	0	0	0	10	10	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	0	10	2	6	0	0	0	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	17	1	6	0	0	0	24	24	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	0	40	4	16	0	0	0	60	60	0	0	2	0	3	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0
0	0	16	1	8	5	0	0	30	32.5	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	1	1
0	0	21	1	10	0	0	0	32	32	0	0	1	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	0	22	0	4	2	0	0	28	29	1	0	1	0	0	0	0	0	2	1.2	0	0	0	0	0	0	0	0	0	0
0	0	17	1	1	2	1	0	22	24.3	1	0	0	0	0	0	0	0	1	0.2	0	0	0	0	0	0	0	0	0	0
0	0	76	3	23	9	1	0	112	117.8	2	0	3	0	1	0	0	0	6	4.4	0	0	1	0	0	0	0	1	1	1
0	0	15	1	7	0	0	0	23	23	0	0	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	0	20	2	6	0	0	0	28	28	0	0	4	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0
0	0	17	1	5	2	0	0	25	26	0	0	5	1	3	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0
0	0	25	2	18	2	1	0	48	90.3	0	0	2	0	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
0	0	77	6	36	4	1	0	124	127.3	0	0	13	1	4	0	0	0	18	18	0	0	0	0	0	0	0	0	0	0
0	1	8	0	6	5	1	0	21	24.2	0	0	1	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	1	20	0	13	3	0	0	37	37.9	0	0	2	0	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
0	0	16	2	8	5	0	0	31	33.5	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	0	19	0	9	2	0	0	30	31	0	0	1	0	2	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
0	2	63	2	36	15	1	0	119	126.6	0	0	5	0	4	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0
0	2	25	2	14	2	0	0	45	44.8	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	1	25	1	6	1	1	0	35	36.2	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	1	23	3	8	3	0	0	38	38.9	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	1	24	2	10	4	0	0	41	42.4	1	0	4	0	0	0	0	0	5	4.2	0	0	0	0	0	0	0	0	0	0
0	5	97	8	38	10	1	0	159	162.3	1	0	4	0	4	0	0	0	9	8.2	0	0	0	0	0	0	0	0	0	0
0	0	22	2	7	0	0	0	31	31	1	0	2	0	0	0	0	0	3	2.2	0	0	0	0	0	0	0	0	0	0
0	1	21	1	8	4	0	0	35	36.4	0	0	1	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	1	32	2	13	3	0	0	51	51.9	0	0	3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
0	0	26	2	13	3	0	0	44	45.5	0	0	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	2	101	7	41	10	0	0	161	164.8	1	0	8	0	1	0	0	0	10	9.2	0	0	0	0	0	0	0	0	0	0
0	1	29	0	13	1	1	0	45	46.2	1	0	4	0	1	0	0	0	6	5.2	0	0	0	0	0	0	0	0	0	0
0	2	42	3	9	3	0	0	59	59.3	3	0	1	0	1	0	0	0	5	2.6	0	0	0	0	0	0	0	0	0	0
0	0	29	1	13	2	1	0	46	48.3	0	0	3	0	1	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0
0	2	38	1	13	1	0	0	55	54.3	0	0	3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
0	5	138	5	48	7	2	0	205	208.1	4	0	11	0	3	0	0	0	18	14.8	0	0	0	0	0	0	0	0	0	0
0	0	31	2	7	0	1	0	41	42.3	0	0	0	0	0	1	0	0	1	1.5	0	0	0	0	0	0	0	0	0	0
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0	2	25	1	12	1	0	0	41	40.3	1	0	0	0	1	0	0	0	2	1.2	0	0	0	0	0	0	0	0	0	0
1	1	24	7	9	4	0	0	56	56.6	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	1	1
1	4	122	14	32	6	1	0	180	181.1	1	0	4	1	1	1	0	0	8	7.7	0	0	1	0	0	0	0	1	1	1
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0	0	23	3	17	0	0	0	43	43	0	0	3	0	1	0	1	0	5	6.3	0	0	0	0	0	0	0	0	0	0
0	0	37	3	17	1	0	0	58	58.5	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	0	30	1	8	0	0	0	39	39	1	0	2	0	0	0	0	0	3	2.2	0	0	0	0	0	0	0	0	0	0
0	0	111	12	47	2	0	0	172	173	2	0	7	0	2	0	1	0	12	11.7	0	0	0	0	0	0	0	0	0	0
1	1	43	1	9	6	0	0	61	62.6	1	0	2	0	2	0	0	0	5	4.2	0	0	0	0	0	0	0	0	0	0
0	0	47	2	5	1	0	0	55	55.5	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
1	1	48	2	9	1	0	0	62	61.1	1	0	1	0	0	0	0	0	2	1.2	0	0	0	0	0	0	0	0	0	0
0	0	38	0	9	1	0	0	48	48.5	1	0	2	1	2	0	0	0	6	5.2	0	0	0	0	0	0	0	0	0	0
2	2	176	5	32	9	0	0	226	227.7	3	0	6	1	4	0	0	0	14	11.6	0	0	0	0	0	0	0	0	0	0
0	0	48	1	4	1	0	0	54	54.3	1	0	0	1	0	0	0	0	2	1.2	0	0	0	0	0	0	0	0	0	0
0	1	47	2	6	0	0	0	56	55.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	45	1	0	0	0	0	47	46.4	0	0	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
0	1	38	2	3	0	0	0	44	43.4	2	0	0	0	0	0	0	0	2	0.4	0	0	0	0	0	0	0	0	0	0
0	3	178	6	13	1	0	0	201	199.7	3	0	2	1	0	0	0	0	6	3.6	0	0	0	0	0	0	0	0	0	0
0	1	33	0	2	0	0	0	36	35.4	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	0	35	3	2	0	0	0	40	40	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	0	24	1	1	0	0	0	26	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	26	1	2	0	1	0	30	31.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	118	5	7	0	1	0	132	132.7	0	0	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
3	24	1297	77	369	73	8	0	1851	1881.1	17	0	67	4	27	1	1	0	117	105.2	0	0	2	0	0	0	0	2	2	2

B => A										B => B										B => C											
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU		
0	0	9	1	7	0	0	0	17	17	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	3	3.5		
0	0	9	0	0	0	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1		
0	0	10	2	2	0	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	2		
0	0	12	2	1	0	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	3	2.2		
0	0	40	5	10	0	0	0	55	55	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	0	2	1	0	9	8.7	
0	0	18	1	0	2	0	0	21	22	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	5	5		
0	0	20	0	5	0	0	0	25	25	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	6	6		
1	0	23	0	5	1	0	0	30	29.7	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	6	6		
2	1	16	0	3	1	0	0	23	21.3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	4	4		
3	1	77	1	13	4	0	0	99	98	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	5	0	0	21	21		
0	0	13	1	5	0	0	0	19	19	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	1	0	5	5.5		
0	0	18	1	2	1	2	0	24	27.1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	3	3		
1	0	18	1	4	1	0	0	25	24.7	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	3	3.5		
0	0	15	0	6	3	2	0	26	30.1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	5	5.5		
1	0	64	3	17	5	4	0	94	100.9	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	7	3	0	16	17.5		
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0	1	16	0	5	4	0	0	26	27.4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	1	0	6	6.5		
0	0	11	1	2	1	0	0	15	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	4	4		
1	0	9	1	9	1	0	0	21	20.7	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	1	0	7	7.5		
1	2	44	2	17	10	2	0	78	83.6	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	11	3	0	22	23.5		
1	2	13	2	7	2	0	0	27	28	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	3	0	0	7	7		
0	0	16	0	2	0	1	0	19	20.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	1	0	5	4.7	
0	1	15	1	2	2	0	0	21	21.4	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	1	0	6	7.3	
1	1	14	1	4	2	0	0	23	22.6	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	2	0	0	6	6		
2	4	58	4	15	6	1	0	90	90.3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	12	0	9	1	1	0	24	25
1	0	13	1	2	0	0	0	17	16.2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	6	0	0	10	10		
0	1	22	0	5	0	0	0	28	27.4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	4	5		
0	1	20	2	8	3	0	0	34	34.9	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	4	4		
0	0	16	1	4	1	0	0	22	22.5	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	1	0	5	5.5		
1	2	71	4	19	4	0	0	101	101	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	9	3	0	23	24.3		
1	1	17	1	9	0	1	0	30	29.9	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	6	6		
2	2	26	2	4	3	0	0	39	37.7	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	3	0	0	7	7		
0	1	27	1	6	1	1	0	37	38.2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0	0	6	6		
0	2	27	1	7	1	0	0	38	37.3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	4	4		
3	6	97	5	26	5	2	0	144	143.1	0	0	0	0	0	0	0	0	0	0	0	0	0	11	1	11	0	0	23	23		
0	0	20	2	2	0	1	0	25	26.3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	1	0	6	6.5		
0	0	25	3	0	0	0	0	28	28	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	1	0	5	5.5		
0	2	17	2	1	1	0	0	23	22.3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	4	5		
1	1	23	5	5	2	0	0	37	36.6	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	3	3		
1	3	85	12	8	3	1	0	113	113.2	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1	4	4	0	18	20		
0	1	16	4	0	1	0	0	22	21.9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	2		
0	0	16	2	6	0	1	0	25	26.3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	4	5.8	
0	0	18	3	3	0	0	0	24	24	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4		
1	0	25	1	4	0	0	0	31	30.2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1		
1	1	75	10	13	1	1	0	102	102.4	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	1	1	1	0	11	12.8	
1	0	22	2	1	0	0	0	26	25.2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	2	2		
0	0	23	1	3	0	0	0	27	27	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4	0	0	6	6		
2	1	36	0	4	1	0	0	44	42.3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	2		
1	0	28	0	2	0	0	0	31	30.2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	4	4		
4	1	109	3	10	1	0	0	128	124.7	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	0	0	14	14		
1	1	31	2	1	1	0	0	37	36.1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	2		
0	0	29	0	3	0	0	0	32	32	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	
0	0	30	1	2	0	0	0	33	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	1	27	0	1	0	0	0	31	28.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	2	117	3	7	1	0	0	133	129.9	0	0	1	0	0	0	0	0	1	1	0	0	1	0	1	0	1	0	0	2	2	
1	1	23	0	0	0	0	0	25	23.6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1		
1	0	24	2	1	0	0	0	28	27.2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1		
3	0	12	0	0	0	0	0	15	12.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	22	0	3	0	0	0	25	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	1	81	2	4	0	0	0	93	88.4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2		
25	23	918	54	159	40	11	0	1230	1230.5	0	0	1	0	0	0	0	0	1	1	2	0	95	3	67	16	2	0	185	184		

C=>A										C=>B										C=>C									
P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU	P/C	M/C	CAR	TAXI	LGV	OGV1	OGV2	PSV	TOT	PCU
0	0	3	0	0	0	0	0	3	3	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0		
0	0	2	0	2	0	0	0	4	4	0	0	2	0	3	3	0	0	8	9.5	0	0	0	0	0	0	0	0		
0	0	3	0	6	0	0	0	9	9	0	0	1	1	0	1	0	0	3	3.5	0	0	0	0	0	0	0	0		
1	0	3	0	3	0	0	0	7	6.2	0	0	2	0	1	0	0	0	3	3	0	0	0	0	0	0	0	0		
1	0	11	0	11	0	0	0	23	22.2	0	0	6	1	4	4	0	0	15	17	0	0	0	0	0	0	0	0		
0	0	2	0	6	3	0	0	11	12.5	0	0	0	0	0	2	0	0	2	3	0	0	0	0	0	0	0	0		
0	0	2	0	4	0	0	0	6	6	0	0	3	1	1	0	0	0	5	5	0	0	0	0	0	0	0	0		
0	0	2	0	1	1	0	0	4	4.5	0	0	2	0	3	0	0	0	5	5	0	0	0	0	0	0	0	0		
0	0	4	1	0	1	0	0	6	6.5	0	0	1	0	2	0	0	0	3	3	0	0	0	0	0	0	0	0		
0	0	10	1	11	5	0	0	27	29.5	0	0	6	1	6	2	0	0	15	16	0	0	0	0	0	0	0	0		
0	0	4	1	2	0	0	0	7	7	0	0	2	0	0	1	0	0	3	3.5	0	0	0	0	0	0	0	0		
0	0	10	0	5	0	0	0	15	15	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0		
0	0	6	0	5	1	0	0	12	12.5	0	0	1	0	6	0	0	0	7	7	0	0	0	0	0	0	0	0		
1	0	4	2	7	2	0	0	16	16.2	0	0	7	1	1	2	0	0	11	12	0	0	0	0	0	0	0	0		
1	0	24	3	19	3	0	0	50	50.7	0	0	10	1	9	3	0	0	23	24.5	0	0	0	0	0	0	0	0		
1	0	3	0	6	1	0	0	11	10.7	0	0	0	0	1	1	0	0	2	2.5	0	0	0	0	0	0	0	0		
0	0	8	0	6	1	0	0	15	15.5	0	0	2	0	3	0	0	0	5	5	0	0	0	0	0	0	0	0		
0	0	4	1	6	2	0	0	13	14	0	0	2	0	6	0	0	0	8	8	0	0	0	0	0	0	0	0		
0	0	4	0	3	1	0	0	8	8.5	0	0	3	0	2	2	0	0	7	8	0	0	0	0	0	0	0	0		
1	0	19	1	21	5	0	0	47	48.7	0	0	7	0	12	3	0	0	22	23.5	0	0	0	0	0	0	0	0		
0	0	8	0	9	0	0	0	17	17	0	0	5	0	1	0	0	0	6	6	0	0	0	0	0	0	0	0		
0	1	8	0	2	1	0	0	12	11.9	0	0	2	1	3	1	0	0	7	7.5	0	0	0	0	0	0	0	0		
0	0	7	1	5	2	0	0	15	16	0	0	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0		
0	0	13	0	8	0	0	0	21	21	0	0	3	0	3	0	1	0	7	8.3	0	0	0	0	0	0	0	0		
0	1	36	1	24	3	0	0	65	65.9	0	0	10	1	10	1	1	0	23	24.8	0	0	0	0	0	0	0	0		
0	0	8	0	5	0	0	0	13	13	0	0	2	0	4	0	0	0	6	6	0	0	0	0	0	0	0	0		
0	0	6	0	2	2	0	0	10	11	0	0	1	0	3	0	0	0	4	4	0	0	0	0	0	0	0	0		
0	0	15	0	6	2	0	0	23	24	0	0	3	0	2	1	0	0	6	6.5	0	0	0	0	0	0	0	0		
0	0	11	1	4	2	0	0	18	19	0	0	5	0	4	1	0	0	10	10.5	0	0	0	0	0	0	0	0		
0	0	40	1	17	6	0	0	64	67	0	0	11	0	13	2	0	0	26	27	0	0	0	0	0	0	0	0		
0	0	12	0	4	1	1	0	19	20.8	0	0	3	0	1	0	0	0	4	4	0	0	0	0	0	0	0	0		
0	0	18	0	6	1	0	0	22	22.5	0	0	3	1	1	0	0	0	5	5	0	0	0	0	0	0	0	0		
0	0	8	0	5	0	0	0	13	13	0	0	4	0	4	0	0	0	8	8	0	0	0	0	0	0	0	0		
0	0	5	0	4	0	0	0	9	9	0	0	3	1	3	0	0	0	7	7	0	0	0	0	0	0	0	0		
0	0	41	0	19	2	1	0	63	65.3	0	0	13	2	9	0	0	0	24	24	0	0	0	0	0	0	0	0		
0	0	13	0	5	0	0	0	18	18	0	0	1	1	1	0	0	0	3	3	0	0	0	0	0	0	0	0		
0	0	8	2	2	1	0	0	13	13.5	0	0	5	0	3	1	0	0	9	9.5	0	0	0	0	0	0	0	0		
0	0	7	1	6	0	0	0	14	14	0	0	1	1	0	1	0	0	3	3.5	0	0	0	0	0	0	0	0		
1	0	10	2	5	4	0	0	22	23.2	0	0	3	0	2	0	0	0	5	5	0	0	0	0	0	0	0	0		
1	0	38	5	18	5	0	0	67	68.7	0	0	10	2	6	2	0	0	20	21	0	0	0	0	0	0	0	0		
1	0	10	0	3	0	0	0	14	13.2	0	0	5	0	1	0	0	0	6	6	0	0	0	0	0	0	0	0		
0	0	5	0	8	0	0	0	13	13	0	0	3	0	1	0	0	0	4	4	0	0	0	0	0	0	0	0		
0	0	11	0	5	1	0	0	17	17.5	0	0	6	0	3	0	0	0	9	9	0	0	0	0	0	0	0	0		
1	0	5	1	2	2	0	0	11	11.2	0	0	1	0	3	1	1	0	6	7.8	0	0	0	0	0	0	0	0		
2	0	31	1	18	3	0	0	55	54.9	0	0	15	0	8	1	1	0	25	26.8	0	0	0	0	0	0	0	0		
2	1	11	0	4	1	0	0	19	17.3	0	0	3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0		
0	0	14	0	2	0	0	0	16	16	0	0	4	0	1	0	0	0	5	5	0	0	0	0	0	0	0	0		
0	0	18	0	4	1	0	0	23	23.5	0	0	4	0	1	0	0	0	5	5	0	0	0	0	0	0	0	0		
0	0	8	0	8	0	0	0	16	16	1	0	7	0	1	1	0	0	10	9.7	0	0	0	0	0	0	0	0		
2	1	51	0	18	2	0	0	74	72.8	1	0	18	0	3	1	0	0	23	23.7	0	0	0	0	0	0	0	0		
1	0	20	0	0	0	0	0	21	20.2	2	0	5	0	2	0	0	0	9	7.4	0	0	0	0	0	0	0	0		
0	0	11	0	0	0	0	0	11	11	0	0	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0		
0	0	8	0	0	0	0	0	8	8	0	0	1	3	1	0	0	0	5	5	0	0	0	0	0	0	0	0		
0	0	9	1	1	0	0	0	11	11	0	0	3	1	0	0	0	0	4	4	0	0	0	0	0	0	0	0		
1	0	48	1	1	0	0	0	51	50.2	2	0	11	4	3	0	0	0	20	18.4	0	0	0	0	0	0	0	0		
0	0	6	0	1	0	0	0	7	7	1	0	2	0	0	0	0	0	3	2.2	0	0	0	0	0	0	0	0		
0	0	6	0	1	0	0	0	7	7	1	0	3	0	1	0	0	0	5	4.2	0	0	0	0	0	0	0	0		
0	0	9	0	1	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0	0	4	0	0	0	1	0	5	6.3	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0		
0	0	25	0	3	0	1	0	29	30.3	2	0	5	0	2	0	0	0	9	7.4	0	0	0	0	0	0	0	0		
9	2	374	14	180	34	2	0	615	626.2	5	0	122	12	85	19	2	0	245	253.1	0	0	0	0	0	0	0	0		

C. TRANSYT Output

TRANSYT 15
Version: 15.5.2.7994 © Copyright TRL Limited, 2018
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trisoftware.co.uk
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 2 (Two Lanes) - Carmanhall Road - Blackthorn Road.t15
Path: M:\Projects\21\21-118 - Ravens Rock\Design\Traffic
Report generation date: 10/02/2022 14:26:55

- »A5 - Baseline 2026 and Development : D5 - Baseline 2026 and Development* :
- »A6 - Baseline 2031 and Development : D6 - Baseline 2031 and Development* :
- »A7 - Baseline 2041 and Development : D7 - Baseline 2041 and Development* :

File summary

File description

File title	(untitled)
Location	
Site number	
UTCRegion	
Driving side	Left
Date	06/12/2011
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DOMAINI.byrne
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber
			✓		✓	✓	✓	✓	✓	✓	✓		

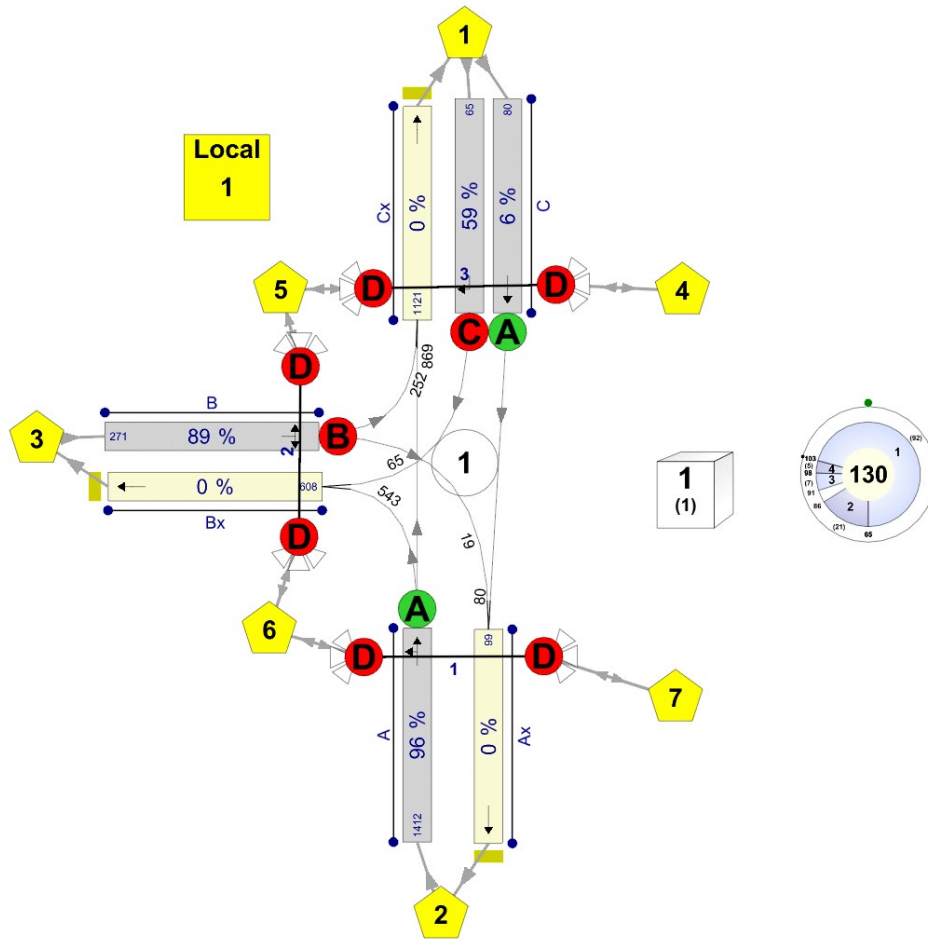
Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	mpg	l/h	kg	Veh	Veh	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Network Diagrams



(untitled)
 Cycletime 0s / 130s , Timesteps 129 / 130
 7, 7
 Diagram produced using TRANSYT 15.5.2.7994

A5 - Baseline 2026 and Development D5 - Baseline 2026 and Development*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (Veh-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
5	10/02/2022 14:26:36	10/02/2022 14:26:36	08:00	130	238.17	15.49	89.60	A/1	0	0	A/1	Bx/1	A/

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2026 and Development		D5	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2026 and Development				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
130		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
Bx	(untitled)		
C	(untitled)		1
Cx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			112.50	✓	Sum of lanes	2047	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Bx	1	(untitled)			100.00						Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
	2	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	1	1	(untitled)		✓	N/A	N/A	2	4.00	✓	39	50.00		2047
Ax	1	1	(untitled)											
B	1	1	(untitled)											1800
Bx	1	1	(untitled)											
C	1	1	(untitled)											1800
	2	2	(untitled)											1800
Cx	1	1	(untitled)											

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	130

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (Veh/hr)	Normal Flow (Veh/hr)
A	1	1298	1298
Ax	1	92	92
B	1	252	252
Bx	1	559	559
C	1	74	74
	2	59	59
Cx	1	1032	1032

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	1	1	B	
C	1	1	A	
	2	1	C	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	13.50	30.00
B	1	12.00	30.00
C	1	12.00	30.00
	2	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Bx	1	1	A/1	Bx/1	12.00	30.00	✓	Nearside	50.00
Cx	1	1	B/1	Cx/1	12.00	30.00	✓	Nearside	51.66
Ax	1	2	B/1	Ax/1	12.00	30.00	✓	Offside	89.16
Bx	1	2	C/2	Bx/1	12.00	30.00	✓	Offside	77.49
Cx	1	2	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (Veh/hr)	Calculated sat flow (Veh/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (Veh)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	90	0	1298	2047	91	25.28	40.78	208.42	129.41	13.67	143.08
	Ax	1	0	Unrestricted	92	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00
	B	1	79	14	252	1800	22	71.31	10.09	58.00	70.88	3.45	74.33
	Bx	1	0	Unrestricted	559	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00
	C	1	6	1449	74	1800	91	5.90	0.80	4.62	1.72	0.27	1.99
		2	53	69	59	1800	7	77.15	2.36	13.57	17.95	0.81	18.76
	Cx	1	0	Unrestricted	1032	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (Veh/hr)	Calculated flow out (Veh/hr)	Flow discrepancy (Veh/hr)	Adjusted flow warning	Calculated sat flow (Veh/hr)	Calculated capacity (Veh/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	A	1	1298	1298	0		2047	1449	90		0	0.00	91	92
	Ax	1	92	92	0		Unrestricted	Unrestricted	0		Unrestricted	0.46	130	13
	B	1	252	252	0		1800	318	79		14	0.00	22	23
	Bx	1	559	559	0		Unrestricted	Unrestricted	0		Unrestricted	0.43	130	13
	C	1	74	74	0		1800	1274	6		1449	0.00	91	92
		2	59	59	0		1800	111	53		69	0.00	7	8
	Cx	1	1032	1032	0		Unrestricted	Unrestricted	0		Unrestricted	0.33	130	13

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	13.50	25.28	5.47	3.64	129.41	129.41	83.97	991.01	98.89	13.67	13.67
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	1	12.00	71.31	3.58	1.41	70.88	70.88	109.18	237.63	37.50	3.45	3.45
	Bx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C	1	12.00	5.90	0.12	0.00	1.72	1.72	29.16	21.53	0.05	0.27	0.27
		2	12.00	77.15	0.97	0.29	17.95	17.95	109.26	56.59	7.87	0.81	0.81
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (Veh)	Mean max queue (Veh)	Max queue storage (Veh)	Utilised storage (%)	Average storage excess queue (Veh)	Average limit excess queue (Veh)	Excess queue penalty (£ per hr)	Max end of green queue (Veh)	Max end of red queue (Veh)	Wasted time starvation (s per cycle)	Wasted time blocking back (s per cycle)	Wasted time total (s per cycle)	Estimated blocking	
08:00-09:00	A	1	0.00	40.78	19.57	208.42	4.88	0.00	0.00	3.64	17.34	0.00	0.00	0.00		
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			18.00	0.00	18.00		
	B	1	0.00	10.09	17.39	58.00	0.00	0.00	0.00	1.41	8.90	0.00	0.00	0.00		
	Bx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			18.00	0.00	18.00		
	C	1	0.00	0.80	17.39	4.62	0.00	0.00	0.00	0.00	0.78	0.00	0.00	0.00	0.00	
		2	0.00	2.36	17.39	13.57	0.00	0.00	0.00	0.29	2.29	3.00	0.00	3.00		
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			8.00	0.00	8.00		

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	A	1	146.03	13.98	10.44	38.78
	Ax	1	9.20	0.31	30.00	12.00
	B	1	25.20	5.83	4.32	83.31
	Bx	1	55.90	1.86	30.00	12.00
	C	1	7.40	0.37	20.11	17.90
		2	5.90	1.46	4.04	89.15
	Cx	1	103.20	3.44	30.00	12.00

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (Veh)	Max End of Green Queue EoTS (Veh)	Max End of Red Queue EoTS (Veh)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	40.88	3.74	17.45	1.00	0.00	143.08	143.08
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	1	0.00	0.00	✓	10.13	1.45	8.94	1.00	0.00	74.33	74.33
	Bx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	C	1	0.00	0.00	✓	0.80	0.00	0.78	1.00	0.00	1.99	1.99
		2	0.00	0.00	✓	2.36	0.30	2.30	1.00	0.00	18.76	18.76
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s (per cycle))	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	11000	5	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity	Mean modulus of error	Actual green (s (per cycle))	Eff gr (c)
08:00-09:00	(ALL)	(ALL)	0	0	0		11000	423	0		Unrestricted	0.00	5	

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (Veh-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
5	10/02/2022 14:26:36	10/02/2022 14:26:36	08:00	130	238.17	15.49	89.60	A/1	0	0	A/1	Bx/1	A/

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (Veh/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	90	0	3366	601	16.57	219.98	18.19	238.17

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	30	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (Veh/hr)	Calculated flow out (Veh/hr)	Flow discrepancy (Veh/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	3366	3366	0		90		0	631	635

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.58	16.57	10.15	5.34	219.98	219.98	43.11	1306.75	144.32	18.19	18.19

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s per cycle)	Wasted time blocking back (s per cycle)	Wasted time total (s per cycle)
08:00-09:00	208.42	0.00	47.00	0.00	47.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	352.83	27.25	12.95

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	238.17	238.17

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

From	To						
	1	2	3	4	5	6	7
1	0.0	29.9	101.1	0.0	0.0	0.0	0.0
2	50.8	0.0	50.8	0.0	0.0	0.0	0.0
3	95.3	95.3	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (Veh/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (Veh/hr)	Avg journey time (s)
2	1	2	74		29.90		74	29.90
3	2	3	500		50.78		500	50.78
4	2	1	798		50.78		798	50.78
6	3	1	234		95.31		234	95.31
7	6	7		0		0.00	0	0.00
8	7	6		0		0.00	0	0.00
9	5	6		0		0.00	0	0.00
10	6	5		0		0.00	0	0.00
11	4	5		0		0.00	0	0.00
12	5	4		0		0.00	0	0.00
13	1	3	59		101.15		59	101.15
14	3	2	18		95.31		18	95.31

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
				Controller stream	Phase	Calculated flow entering (Veh/hr)	Calculated sat flow (Veh/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Me of qu (V)
A	1	(untitled)	1	1	A	1298 <	2047	91	0.00	90	0	38.78	25.28	83.97	40.78 +	17
Ax	1	(untitled)				92	Unrestricted	130	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	1	(untitled)	1	1	B	252	1800	22	0.00	79	14	83.31	71.31	109.18	10.09	8.
Bx	1	(untitled)				559	Unrestricted	130	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	
C	1	(untitled)	1	1	A	74	1800	91	0.00	6	1449	17.90	5.90	29.16	0.80	0.
	2	(untitled)	1	1	C	59	1800	7	3.00	53	69	89.15	77.15	109.26	2.36	2.
Cx	1	(untitled)				1032	Unrestricted	130	8.00	0	Unrestricted	12.00	0.00	0.00	0.00	

Pedestrian Crossing Results

Pedestrian	Side	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	P
				Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	(
(ALL)	(ALL)	(untitled)		1	D	0	11000	5	0	Unrestricted	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	352.83	27.25	12.95	10.15	5.34	219.98	18.19	0.00	238.17
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	352.83	27.25	12.95	10.15	5.34	219.98	18.19	0.00	238.17

- | < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- | * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- | ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- | + = average link/traffic stream excess queue is greater than 0
- | **P.I. = PERFORMANCE INDEX**

A6 - Baseline 2031 and Development D6 - Baseline 2031 and Development*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (Veh-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
6	10/02/2022 14:26:37	10/02/2022 14:26:37	08:00	130	218.87	14.21	87.57	A/1	0	0	A/1	Bx/1	A/

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2031 and Development		D6	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2031 and Development				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
130		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
Bx	(untitled)		
C	(untitled)		1
Cx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			112.50	✓	Sum of lanes	2048	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Bx	1	(untitled)			100.00						Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
	2	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	1	1	(untitled)		✓	N/A	N/A	2	4.00	✓	37	50.00		2048
Ax	1	1	(untitled)											
B	1	1	(untitled)											1800
Bx	1	1	(untitled)											
C	1	1	(untitled)											1800
	2	2	(untitled)											1800
Cx	1	1	(untitled)											

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	130

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (Veh/hr)	Normal Flow (Veh/hr)
A	1	1283	1283
Ax	1	87	87
B	1	242	242
Bx	1	536	536
C	1	70	70
	2	57	57
Cx	1	1029	1029

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	1	1	B	
C	1	1	A	
	2	1	C	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	13.50	30.00
B	1	12.00	30.00
C	1	12.00	30.00
	2	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Bx	1	1	A/1	Bx/1	12.00	30.00	✓	Nearside	50.00
Cx	1	1	B/1	Cx/1	12.00	30.00	✓	Nearside	51.66
Ax	1	2	B/1	Ax/1	12.00	30.00	✓	Offside	89.16
Bx	1	2	C/2	Bx/1	12.00	30.00	✓	Offside	77.49
Cx	1	2	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (Veh/hr)	Calculated sat flow (Veh/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (Veh)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	88	3	1283	2048	92	22.40	37.89	193.64	113.37	12.71	126.08
	Ax	1	0	Unrestricted	87	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00
	B	1	79	13	242	1800	21	73.16	9.77	56.17	69.83	3.34	73.18
	Bx	1	0	Unrestricted	536	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00
	C	1	5	1556	70	1800	92	5.58	0.74	4.26	1.54	0.25	1.79
		2	51	75	57	1800	7	75.86	2.24	12.90	17.06	0.77	17.83
	Cx	1	0	Unrestricted	1029	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (Veh/hr)	Calculated flow out (Veh/hr)	Flow discrepancy (Veh/hr)	Adjusted flow warning	Calculated sat flow (Veh/hr)	Calculated capacity (Veh/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	A	1	1283	1283	0		2048	1465	88		3	0.00	92	93
	Ax	1	87	87	0		Unrestricted	Unrestricted	0		Unrestricted	0.46	130	13
	B	1	242	242	0		1800	305	79		13	0.00	21	22
	Bx	1	536	536	0		Unrestricted	Unrestricted	0		Unrestricted	0.43	130	13
	C	1	70	70	0		1800	1288	5		1556	0.00	92	93
		2	57	57	0		1800	111	51		75	0.00	7	8
	Cx	1	1029	1029	0		Unrestricted	Unrestricted	0		Unrestricted	0.34	130	13

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	13.50	22.40	5.02	2.96	113.37	113.37	79.00	932.86	80.68	12.71	12.71
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	1	12.00	73.16	3.48	1.43	69.83	69.83	110.17	228.49	38.11	3.34	3.34
	Bx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C	1	12.00	5.58	0.11	0.00	1.54	1.54	28.38	19.82	0.04	0.25	0.25
		2	12.00	75.86	0.94	0.27	17.06	17.06	107.72	54.29	7.11	0.77	0.77
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (Veh)	Mean max queue (Veh)	Max queue storage (Veh)	Utilised storage (%)	Average storage excess queue (Veh)	Average limit excess queue (Veh)	Excess queue penalty (£ per hr)	Max end of green queue (Veh)	Max end of red queue (Veh)	Wasted time starvation (s per cycle)	Wasted time blocking back (s per cycle)	Wasted time total (s per cycle)	Estimated blocking	
08:00-09:00	A	1	0.00	37.89	19.57	193.64	3.69	0.00	0.00	2.96	16.15	0.00	0.00	0.00		
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			18.00	0.00	18.00		
	B	1	0.00	9.77	17.39	56.17	0.00	0.00	0.00	1.43	8.69	0.00	0.00	0.00		
	Bx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			18.00	0.00	18.00		
	C	1	0.00	0.74	17.39	4.26	0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0.00	
		2	0.00	2.24	17.39	12.90	0.00	0.00	0.00	0.27	2.20	4.00	0.00	4.00		
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			8.00	0.00	8.00		

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	A	1	144.34	12.80	11.28	35.90
	Ax	1	8.70	0.29	30.00	12.00
	B	1	24.20	5.72	4.23	85.16
	Bx	1	53.60	1.79	30.00	12.00
	C	1	7.00	0.34	20.47	17.58
		2	5.70	1.39	4.10	87.86
	Cx	1	102.90	3.43	30.00	12.00

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (Veh)	Max End of Green Queue EoTS (Veh)	Max End of Red Queue EoTS (Veh)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	37.95	3.02	16.21	1.00	0.00	126.08	126.08
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	1	0.00	0.00	✓	9.82	1.48	8.74	1.00	0.00	73.18	73.18
	Bx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	C	1	0.00	0.00	✓	0.74	0.00	0.72	1.00	0.00	1.79	1.79
		2	0.00	0.00	✓	2.25	0.27	2.20	1.00	0.00	17.83	17.83
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s (per cycle))	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	11000	5	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity	Mean modulus of error	Actual green (s (per cycle))	Eff gr (c)
08:00-09:00	(ALL)	(ALL)	0	0	0		11000	423	0		Unrestricted	0.00	5	

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (Veh-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
6	10/02/2022 14:26:37	10/02/2022 14:26:37	08:00	130	218.87	14.21	87.57	A/1	0	0	A/1	Bx/1	A/

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (Veh/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	88	0	3304	602	15.48	201.80	17.07	218.87

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	30	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (Veh/hr)	Calculated flow out (Veh/hr)	Flow discrepancy (Veh/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	3304	3304	0		88		3	632	636

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.58	15.48	9.55	4.66	201.80	201.80	41.21	1235.47	125.94	17.07	17.07

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s per cycle)	Wasted time blocking back (s per cycle)	Wasted time total (s per cycle)
08:00-09:00	193.64	0.00	48.00	0.00	48.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	346.44	25.76	13.45

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	218.87	218.87

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

From	To						
	1	2	3	4	5	6	7
1	0.0	29.6	99.9	0.0	0.0	0.0	0.0
2	47.9	0.0	47.9	0.0	0.0	0.0	0.0
3	97.2	97.2	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (Veh/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (Veh/hr)	Avg journey time (s)
2	1	2	70		29.58		70	29.58
3	2	3	479		47.90		479	47.90
4	2	1	804		47.90		804	47.90
6	3	1	225		97.16		225	97.16
7	6	7		0		0.00	0	0.00
8	7	6		0		0.00	0	0.00
9	5	6		0		0.00	0	0.00
10	6	5		0		0.00	0	0.00
11	4	5		0		0.00	0	0.00
12	5	4		0		0.00	0	0.00
13	1	3	57		99.86		57	99.86
14	3	2	17		97.16		17	97.16

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
				Controller stream	Phase	Calculated flow entering (Veh/hr)	Calculated sat flow (Veh/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Me of qu (V)
A	1	(untitled)	1	1	A	1283 <	2048	92	0.00	88	3	35.90	22.40	79.00	37.89 +	16
Ax	1	(untitled)				87	Unrestricted	130	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	1	(untitled)	1	1	B	242	1800	21	0.00	79	13	85.16	73.16	110.17	9.77	8.
Bx	1	(untitled)				536	Unrestricted	130	18.00	0	Unrestricted	12.00	0.00	0.00	0.00	
C	1	(untitled)	1	1	A	70	1800	92	0.00	5	1556	17.58	5.58	28.38	0.74	0.
	2	(untitled)	1	1	C	57	1800	7	4.00	51	75	87.86	75.86	107.72	2.24	2.
Cx	1	(untitled)				1029	Unrestricted	130	8.00	0	Unrestricted	12.00	0.00	0.00	0.00	

Pedestrian Crossing Results

Pedestrian	Side	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	P
				Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	(
(ALL)	(ALL)	(untitled)		1	D	0	11000	5	0	Unrestricted	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	346.44	25.76	13.45	9.55	4.66	201.80	17.07	0.00	218.87
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	346.44	25.76	13.45	9.55	4.66	201.80	17.07	0.00	218.87

- | < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- | * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- | ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- | + = average link/traffic stream excess queue is greater than 0
- | **P.I. = PERFORMANCE INDEX**

A7 - Baseline 2041 and Development D7 - Baseline 2041 and Development*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (Veh-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
7	10/02/2022 14:26:37	10/02/2022 14:26:38	08:00	130	370.47	24.40	96.38	A/1	1	8	A/1	Bx/1	A/

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2041 and Development		D7	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2041 and Development				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
130		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ⁻²)	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ⁻²)	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
Bx	(untitled)		
C	(untitled)		1
Cx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			112.50	✓	Sum of lanes	2048	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Bx	1	(untitled)			100.00						Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
	2	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	1	1	(untitled)		✓	N/A	N/A	2	4.00	✓	38	50.00		2048
Ax	1	1	(untitled)											
B	1	1	(untitled)											1800
Bx	1	1	(untitled)											
C	1	1	(untitled)											1800
	2	2	(untitled)											1800
Cx	1	1	(untitled)											

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	130

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (Veh/hr)	Normal Flow (Veh/hr)
A	1	1412	1412
Ax	1	99	99
B	1	271	271
Bx	1	608	608
C	1	80	80
	2	65	65
Cx	1	1121	1121

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	1	1	B	
C	1	1	A	
	2	1	C	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	13.50	30.00
B	1	12.00	30.00
C	1	12.00	30.00
	2	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Bx	1	1	A/1	Bx/1	12.00	30.00	✓	Nearside	50.00
Cx	1	1	B/1	Cx/1	12.00	30.00	✓	Nearside	51.66
Ax	1	2	B/1	Ax/1	12.00	30.00	✓	Offside	89.16
Bx	1	2	C/2	Bx/1	12.00	30.00	✓	Offside	77.49
Cx	1	2	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (Veh/hr)	Calculated sat flow (Veh/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (Veh)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	96	-7	1412	2048	92	40.55	55.54	283.85	225.83	18.56	244.39
	Ax	1	0	Unrestricted	99	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00
	B	1	89	1	271	1800	21	91.66	12.48	71.79	97.98	4.22	102.20
	Bx	1	0	Unrestricted	608	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00
	C	1	6	1349	80	1800	92	5.62	0.85	4.87	1.77	0.28	2.06
		2	59	53	65	1800	7	81.54	2.67	15.38	20.91	0.92	21.82
	Cx	1	0	Unrestricted	1121	Unrestricted	130	0.00	0.00	0.00	0.00	0.00	0.00

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (Veh/hr)	Calculated flow out (Veh/hr)	Flow discrepancy (Veh/hr)	Adjusted flow warning	Calculated sat flow (Veh/hr)	Calculated capacity (Veh/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	A	1	1412	1412	0		2048	1465	96	✓	-7	0.00	92	93
	Ax	1	99	99	0		Unrestricted	Unrestricted	0		Unrestricted	0.43	130	13
	B	1	271	271	0		1800	305	89		1	0.00	21	22
	Bx	1	608	608	0		Unrestricted	Unrestricted	0		Unrestricted	0.39	130	13
	C	1	80	80	0		1800	1288	6		1349	0.00	92	93
		2	65	65	0		1800	111	59		53	0.00	7	8
	Cx	1	1121	1121	0		Unrestricted	Unrestricted	0		Unrestricted	0.26	130	13

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	13.50	40.55	6.65	9.25	225.83	225.83	104.83	1235.26	244.97	18.56	18.56
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	1	12.00	91.66	3.98	2.92	97.98	97.98	124.08	261.05	75.22	4.22	4.22
	Bx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	C	1	12.00	5.62	0.12	0.00	1.77	1.77	28.39	22.66	0.06	0.28	0.28
		2	12.00	81.54	1.07	0.40	20.91	20.91	112.33	62.41	10.61	0.92	0.92
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (Veh)	Mean max queue (Veh)	Max queue storage (Veh)	Utilised storage (%)	Average storage excess queue (Veh)	Average limit excess queue (Veh)	Excess queue penalty (£ per hr)	Max end of green queue (Veh)	Max end of red queue (Veh)	Wasted time starvation (s per cycle)	Wasted time blocking back (s per cycle)	Wasted time total (s per cycle)	Estimated blocking	
08:00-09:00	A	1	0.00	55.54	19.57	283.85	12.83	0.00	0.00	9.25	23.77	0.00	0.00	0.00		
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			16.00	0.00	16.00		
	B	1	0.00	12.48	17.39	71.79	0.00	0.00	0.00	2.92	11.05	0.00	0.00	0.00		
	Bx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			17.00	0.00	17.00		
	C	1	0.00	0.85	17.39	4.87	0.00	0.00	0.00	0.00	0.82	0.00	0.00	0.00	0.00	
		2	0.00	2.67	17.39	15.38	0.00	0.00	0.00	0.40	2.60	0.00	0.00	0.00	0.00	
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			6.00	0.00	6.00		

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	A	1	158.85	21.20	7.49	54.05
	Ax	1	9.90	0.33	30.00	12.00
	B	1	27.10	7.80	3.47	103.66
	Bx	1	60.80	2.03	30.00	12.00
	C	1	8.00	0.39	20.43	17.62
		2	6.50	1.69	3.85	93.54
	Cx	1	112.10	3.74	30.00	12.00

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (Veh)	Max End of Green Queue EoTS (Veh)	Max End of Red Queue EoTS (Veh)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	56.81	10.53	25.04	1.00	0.00	244.39	244.39
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	1	0.00	0.00	✓	12.76	3.20	11.33	1.00	0.00	102.20	102.20
	Bx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	C	1	0.00	0.00	✓	0.85	0.00	0.82	1.00	0.00	2.06	2.06
		2	0.00	0.00	✓	2.68	0.41	2.61	1.00	0.00	21.82	21.82
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s (per cycle))	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	11000	5	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity	Mean modulus of error	Actual green (s (per cycle))	Eff gr (c)
08:00-09:00	(ALL)	(ALL)	0	0	0		11000	423	0		Unrestricted	0.00	5	

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (Veh-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
7	10/02/2022 14:26:37	10/02/2022 14:26:38	08:00	130	370.47	24.40	96.38	A/1	1	8	A/1	Bx/1	A/

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (Veh/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	96	-7	3656	602	24.03	346.49	23.98	370.47

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	30	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (Veh/hr)	Calculated flow out (Veh/hr)	Flow discrepancy (Veh/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	3656	3656	0		96	✓	-7	632	636

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.58	24.03	11.82	12.58	346.49	346.49	52.30	1581.38	330.85	23.98	23.98

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s per cycle)	Wasted time blocking back (s per cycle)	Wasted time total (s per cycle)
08:00-09:00	283.85	0.00	39.00	0.00	39.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	383.25	37.18	10.31

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	370.47	370.47

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To							
	1	2	3	4	5	6	7	
From	1	0.0	29.6	105.5	0.0	0.0	0.0	0.0
	2	66.0	0.0	66.0	0.0	0.0	0.0	0.0
	3	115.7	115.7	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (Veh/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (Veh/hr)	Avg journey time (s)
2	1	2	80		29.62		80	29.62
3	2	3	543		66.05		543	66.05
4	2	1	869		66.05		869	66.05
6	3	1	252		115.66		252	115.66
7	6	7		0		0.00	0	0.00
8	7	6		0		0.00	0	0.00
9	5	6		0		0.00	0	0.00
10	6	5		0		0.00	0	0.00
11	4	5		0		0.00	0	0.00
12	5	4		0		0.00	0	0.00
13	1	3	65		105.54		65	105.54
14	3	2	19		115.66		19	115.66

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
				Controller stream	Phase	Calculated flow entering (Veh/hr)	Calculated sat flow (Veh/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Me of qu (V)
A	1	(untitled)	1	1	A	1412 <	2048	92	0.00	96	-7	54.05	40.55	104.83	55.54 +	23
Ax	1	(untitled)				99	Unrestricted	130	16.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	1	(untitled)	1	1	B	271	1800	21	0.00	89	1	103.66	91.66	124.08	12.48	11
Bx	1	(untitled)				608	Unrestricted	130	17.00	0	Unrestricted	12.00	0.00	0.00	0.00	
C	1	(untitled)	1	1	A	80	1800	92	0.00	6	1349	17.62	5.62	28.39	0.85	0.
	2	(untitled)	1	1	C	65	1800	7	0.00	59	53	93.54	81.54	112.33	2.67	2.
Cx	1	(untitled)				1121	Unrestricted	130	6.00	0	Unrestricted	12.00	0.00	0.00	0.00	

Pedestrian Crossing Results

Pedestrian	Side	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	P
				Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	(
(ALL)	(ALL)	(untitled)		1	D	0	11000	5	0	Unrestricted	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (Veh-hr/hr)	Random plus oversat delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	383.25	37.18	10.31	11.82	12.58	346.49	23.98	0.00	370.47
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	383.25	37.18	10.31	11.82	12.58	346.49	23.98	0.00	370.47

- | < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- | * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- | ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- | + = average link/traffic stream excess queue is greater than 0
- | **P.I. = PERFORMANCE INDEX**



TRANSYT 15
Version: 15.5.2.7994 © Copyright TRL Limited, 2018
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Filename: Junction 3 - Blackthorn Road - Burton Hall Road.t15
Path: M:\Projects\21\21-118 - Ravens Rock\Design\Traffic
Report generation date: 07/02/2022 09:32:39

- »A1 - Baseline 2022 : D1 - Baseline 2022* :
- »A2 - Baseline 2026 : D2 - Baseline 2026* :
- »A3 - Baseline 2031 : D3 - Baseline 2031* :
- »A4 - Baseline 2041 : D4 - Baseline 2041* :
- »A5 - Baseline 2026 and Development : D5 - Baseline 2026 and Development* :
- »A6 - Baseline 2031 and Development : D6 - Baseline 2031 and Development* :
- »A7 - Baseline 2041 and Development : D7 - Baseline 2041 and Development* :

File summary

File description

File title	(untitled)
Location	
Site number	
UTCRegion	
Driving side	Left
Date	06/12/2011
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DOMAINI.byrne
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display level of service results	Display blocking and starvation results	Display end of red and green queue results	Display excess queue results	Display separate uniform and random results	Display unweighted results	Display TRANSYT 12 style timings	Display effective greens in results	Display Red-With-Amber	Display End-Of-Green Amber
			✓		✓	✓	✓	✓	✓	✓	✓		

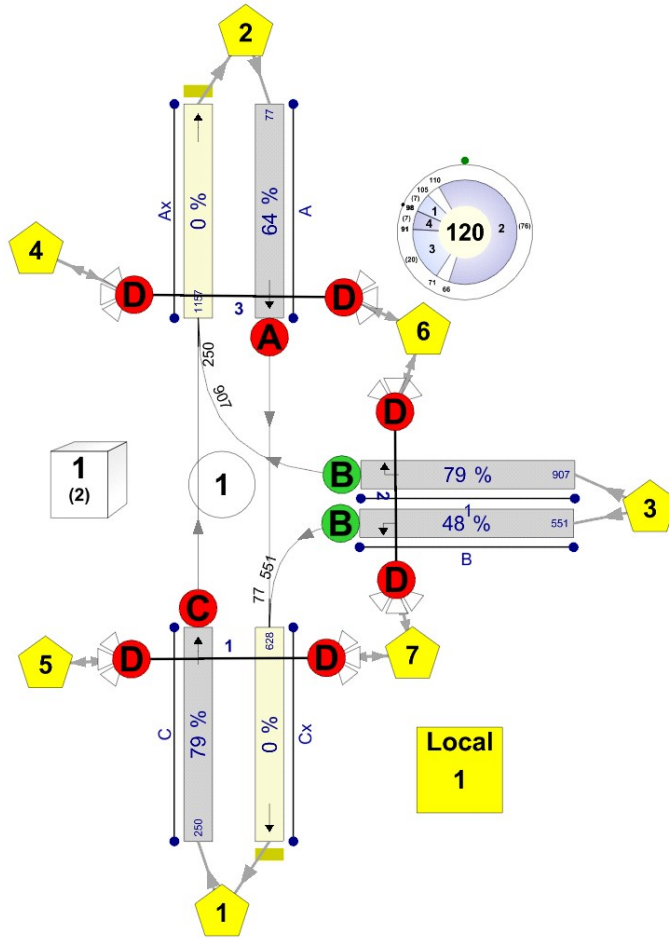
Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	mpg	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

Show names instead of IDs	Sorting direction	Sorting type	Ignore prefixes when sorting	Analysis/demand set sorting	Link grouping	Source grouping	Colour Analysis/Demand Sets
	Ascending	Numerical		ID	Normal	Normal	✓

Network Diagrams



(untitled)
 Cycle time 0s / 120s , Timesteps 119 / 120
 1, 1
 Diagram produced using TRANSYT 15.5.2.7994

A1 - Baseline 2022

D1 - Baseline 2022*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
1	07/02/2022 09:22:12	07/02/2022 09:22:12	08:00	120	210.68	13.67	79.37	C/1	0	0	C/1	Ax/1	C/

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2022		D1	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2022				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
120		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
C	(untitled)		1
Cx	(untitled)		
1	(untitled)		1

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	2			✓	112.50	✓	Sum of lanes	1800	✓		Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	
1	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Saturation flow (PCU/hr)
A	1	1	(untitled)			1800
Ax	1	1	(untitled)			
B	2	1	(untitled)			1800
C	1	1	(untitled)			1800
Cx	1	1	(untitled)			
1	1	1	(untitled)			1800

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	120

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	1	77	77
Ax	1	1157	1157
B	2	551	551
C	1	250	250
Cx	1	628	628
1	1	907	907

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	2	1	B	
C	1	1	C	
1	1	1	B	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	12.00	30.00
B	2	13.50	30.00
C	1	12.00	30.00
1	1	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement
Ax	1	2	1/1	Ax/1	12.00	30.00	✓	Offside	82.28
Cx	1	2	B/2	Cx/1	12.00	30.00	✓	Nearside	47.35

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	64	40	77	1800	7	80.06	3.03	17.40	24.32	1.12	25.44
	Ax	1	0	Unrestricted	1157	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	48	89	551	1800	76	12.52	9.55	48.83	27.21	3.50	30.72
	C	1	79	13	250	1800	20	68.00	9.35	53.74	67.05	3.46	70.52
	Cx	1	0	Unrestricted	628	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	79	15	907	1800	76	21.13	23.08	132.70	75.60	8.42	84.01

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s (per cycle))	Effective green (pc cycle)
08:00-09:00	A	1	77	77	0		1800	120	64		40	0.00	7	8
	Ax	1	1157	1157	0		Unrestricted	Unrestricted	0		Unrestricted	0.44	120	12
	B	2	551	551	0		1800	1155	48		89	0.00	76	77
	C	1	250	250	0		1800	315	79		13	0.00	20	21
	Cx	1	628	628	0		Unrestricted	Unrestricted	0		Unrestricted	0.59	120	12
	1	1	907	907	0		1800	1155	79		15	0.00	76	77

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	12.00	80.06	1.17	0.54	24.32	24.32	115.87	73.72	15.50	1.12	1.12
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	13.50	12.52	1.70	0.22	27.21	27.21	50.70	272.87	6.49	3.50	3.50
	C	1	12.00	68.00	3.29	1.43	67.05	67.05	110.41	234.95	41.08	3.46	3.46
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	12.00	21.13	3.91	1.41	75.60	75.60	74.01	629.46	41.84	8.42	8.42

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Average storage excess queue (PCU)	Average limit excess queue (PCU)	Excess queue penalty (£ per hr)	Max end of green queue (PCU)	Max end of red queue (PCU)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))	Estimated blocking
08:00-09:00	A	1	0.00	3.03	17.39	17.40	0.00	0.00	0.00	0.54	2.94	0.00	0.00	0.00	
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			9.00	0.00	9.00	
	B	2	0.00	9.55	19.57	48.83	0.00	0.00	0.00	0.22	6.80	0.00	0.00	0.00	
	C	1	0.00	9.35	17.39	53.74	0.00	0.00	0.00	1.43	8.30	0.00	0.00	0.00	
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			23.00	0.00	23.00	
	1	1	0.00	23.08	17.39	132.70	0.56	0.00	0.00	1.41	12.24	0.00	0.00	0.00	

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	A	1	7.70	1.97	3.91	92.06
	Ax	1	115.70	3.86	30.00	12.00
	B	2	61.99	3.98	15.56	26.02
	C	1	25.00	5.56	4.50	80.00
	Cx	1	62.80	2.09	30.00	12.00
	1	1	90.70	8.35	10.87	33.13

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	3.04	0.56	2.95	1.00	0.00	25.44	25.44
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	2	0.00	0.00	✓	9.55	0.22	6.80	1.00	0.00	30.72	30.72
	C	1	0.00	0.00	✓	9.39	1.47	8.35	1.00	0.00	70.52	70.52
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	1	1	0.00	0.00	✓	23.09	1.42	12.26	1.00	0.00	84.01	84.01

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle))	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	11000	7	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity	Mean modulus of error	Actual green (s per cycle))	Eff gr (c)
08:00-09:00	(ALL)	(ALL)	0	0	0		11000	642	0		Unrestricted	0.00	7	

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
1	07/02/2022 09:22:12	07/02/2022 09:22:12	08:00	120	210.68	13.67	79.37	C/1	0	0	C/1	Ax/1	C/

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s per cycle))	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	79	0	3570	419	13.79	194.18	16.50	210.68

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle))	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	42	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	3570	3570	0		79		13	461	465

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.23	13.79	10.07	3.60	194.18	194.18	36.86	1211.00	104.91	16.50	16.50

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))
08:00-09:00	132.70	0.00	32.00	0.00	32.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	363.89	25.80	14.10

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	210.68	210.68

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To							
	1	2	3	4	5	6	7	
From	1	0.0	92.0	0.0	0.0	0.0	0.0	0.0
	2	104.1	0.0	0.0	0.0	0.0	0.0	0.0
	3	38.0	45.1	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
2	1	2	250		92.00		250	92.00
4	2	1	77		104.06		77	104.06
7	5	7		0		0.00	0	0.00
8	7	5		0		0.00	0	0.00
9	6	7		0		0.00	0	0.00
10	7	6		0		0.00	0	0.00
11	4	6		0		0.00	0	0.00
12	6	4		0		0.00	0	0.00
13	3	2	907		45.13		907	45.13
14	3	1	551		38.02		551	38.02

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Me of qu (P
A	1	(untitled)	1	1	A	77	1800	7	0.00	64	40	92.06	80.06	115.87	3.03	2.
Ax	1	(untitled)				1157	Unrestricted	120	9.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	2		1	1	B	551	1800	76	0.00	48	89	26.02	12.52	50.70	9.55	6.
C	1	(untitled)	1	1	C	250	1800	20	0.00	79	13	80.00	68.00	110.41	9.35	8.
Cx	1	(untitled)				628	Unrestricted	120	23.00	0	Unrestricted	12.00	0.00	0.00	0.00	
1	1	(untitled)	1	1	B	907 <	1800	76	0.00	79	15	33.13	21.13	74.01	23.08 +	12

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	P
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	(
(ALL)	(ALL)	(untitled)		1	D	0	11000	7	0	Unrestricted	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	363.89	25.80	14.10	10.07	3.60	194.18	16.50	0.00	210.68
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	363.89	25.80	14.10	10.07	3.60	194.18	16.50	0.00	210.68

- 1 < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- 1 * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- 1 ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- 1 + = average link/traffic stream excess queue is greater than 0
- 1 P.I. = PERFORMANCE INDEX

A2 - Baseline 2026

D2 - Baseline 2026*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
2	07/02/2022 09:22:12	07/02/2022 09:22:13	08:00	120	251.28	16.47	84.39	C/1	0	0	1:1	Ax/1	1:

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2026		D2	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2026				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
120		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
C	(untitled)		1
Cx	(untitled)		
1	(untitled)		1

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	2			✓	112.50	✓	Sum of lanes	1800	✓		Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	
1	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Saturation flow (PCU/hr)
A	1	1	(untitled)			1800
Ax	1	1	(untitled)			
B	2	1	(untitled)			1800
C	1	1	(untitled)			1800
Cx	1	1	(untitled)			
1	1	1	(untitled)			1800

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	120

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	1	81	81
Ax	1	1219	1219
B	2	243	243
C	1	962	962
Cx	1	324	324
1	1	257	257

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	2	1	B	
C	1	1	C	
1	1	1	B	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	12.00	30.00
B	2	13.50	30.00
C	1	12.00	30.00
1	1	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement
Ax	1	2	1/1	Ax/1	12.00	30.00	✓	Offside	82.28
Cx	1	2	B/2	Cx/1	12.00	30.00	✓	Nearside	47.35

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	68	33	81	1800	7	83.92	3.29	18.91	26.81	1.21	28.02
	Ax	1	0	Unrestricted	1219	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	68	33	243	1800	23	54.54	8.11	41.45	52.28	3.01	55.29
	C	1	84	7	962	1800	75	25.58	27.32	157.11	97.06	9.95	107.01
	Cx	1	0	Unrestricted	324	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	71	26	257	1800	23	56.90	8.79	50.53	57.68	3.26	60.95

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s (per cycle))	Effective green (per cycle)
08:00-09:00	A	1	81	81	0		1800	120	68		33	0.00	7	8
	Ax	1	1219	1219	0		Unrestricted	Unrestricted	0		Unrestricted	0.42	120	12
	B	2	243	243	0		1800	360	68		33	0.00	23	24
	C	1	962	962	0		1800	1140	84		7	0.00	75	76
	Cx	1	324	324	0		Unrestricted	Unrestricted	0		Unrestricted	1.34	120	12
	1	1	257	257	0		1800	360	71		26	0.00	23	24

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	12.00	83.92	1.23	0.66	26.81	26.81	119.37	78.15	18.54	1.21	1.21
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	13.50	54.54	3.00	0.69	52.28	52.28	98.93	220.29	20.12	3.01	3.01
	C	1	12.00	25.58	4.63	2.20	97.06	97.06	82.51	728.77	65.02	9.95	9.95
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	12.00	56.90	3.20	0.86	57.68	57.68	101.32	235.10	25.28	3.26	3.26

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Average storage excess queue (PCU)	Average limit excess queue (PCU)	Excess queue penalty (£ per hr)	Max end of green queue (PCU)	Max end of red queue (PCU)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))	Estimated blocking
08:00-09:00	A	1	0.00	3.29	17.39	18.91	0.00	0.00	0.00	0.66	3.18	0.00	0.00	0.00	
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			6.00	0.00	6.00	
	B	2	0.00	8.11	19.57	41.45	0.00	0.00	0.00	0.69	7.17	0.00	0.00	0.00	
	C	1	0.00	27.32	17.39	157.11	1.58	0.00	0.00	2.20	13.96	0.00	0.00	0.00	
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			77.00	0.00	77.00	
	1	1	0.00	8.79	17.39	50.53	0.00	0.00	0.00	0.86	7.72	0.00	0.00	0.00	

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	A	1	8.10	2.16	3.75	95.92
	Ax	1	121.90	4.06	30.00	12.00
	B	2	27.34	4.59	5.95	68.04
	C	1	96.20	10.04	9.58	37.58
	Cx	1	32.40	1.08	30.00	12.00
	1	1	25.70	4.92	5.22	68.90

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	3.31	0.68	3.20	1.00	0.00	28.02	28.02
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	2	0.00	0.00	✓	8.12	0.69	7.17	1.00	0.00	55.29	55.29
	C	1	0.00	0.00	✓	27.36	2.24	14.00	1.00	0.00	107.01	107.01
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	1	1	0.00	0.00	✓	8.80	0.88	7.73	1.00	0.00	60.95	60.95

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	0	0	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	(ALL)	(ALL)	0	0	0		0	0	0		-100	0.00	0	0

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
2	07/02/2022 09:22:12	07/02/2022 09:22:13	08:00	120	251.28	16.47	84.39	C/1	0	0	1:1	Ax/1	1:

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	84	0	3086	368	19.21	233.83	17.44	251.28

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	0	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	3086	3086	0		84		-100	368	372

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.12	19.21	12.06	4.41	233.83	233.83	45.08	1262.31	128.97	17.44	17.44

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))
08:00-09:00	157.11	0.00	83.00	0.00	83.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	311.64	26.86	11.60

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	251.28	251.28

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To							
	1	2	3	4	5	6	7	
From	1	0.0	49.6	0.0	0.0	0.0	0.0	0.0
	2	107.9	0.0	0.0	0.0	0.0	0.0	0.0
	3	80.0	80.9	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
2	1	2	962		49.58		962	49.58
4	2	1	81		107.92		81	107.92
7	5	7		0		0.00	0	0.00
8	7	5		0		0.00	0	0.00
9	6	7		0		0.00	0	0.00
10	7	6		0		0.00	0	0.00
11	4	6		0		0.00	0	0.00
12	6	4		0		0.00	0	0.00
13	3	2	257		80.90		257	80.90
14	3	1	243		80.04		243	80.04

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Me of qu (P)
A	1	(untitled)	1	1	A	81	1800	7	0.00	68	33	95.92	83.92	119.37	3.29	3.
Ax	1	(untitled)				1219	Unrestricted	120	6.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	2		1	1	B	243	1800	23	0.00	68	33	68.04	54.54	98.93	8.11	7.
C	1	(untitled)	1	1	C	962 <	1800	75	0.00	84	7	37.58	25.58	82.51	27.32 +	13
Cx	1	(untitled)				324	Unrestricted	120	77.00	0	Unrestricted	12.00	0.00	0.00	0.00	
1	1	(untitled)	1	1	B	257	1800	23	0.00	71	26	68.90	56.90	101.32	8.79	7.

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	PEN
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	C tr pe (£)
(ALL)	(ALL)	(untitled)		1	D	0	0	0	0	-100	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	311.64	26.86	11.60	12.06	4.41	233.83	17.44	0.00	251.28
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	311.64	26.86	11.60	12.06	4.41	233.83	17.44	0.00	251.28

- 1 < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- 1 * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- 1 ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- 1 + = average link/traffic stream excess queue is greater than 0
- 1 P.I. = PERFORMANCE INDEX

A3 - Baseline 2031

D3 - Baseline 2031*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
3	07/02/2022 09:22:13	07/02/2022 09:22:13	08:00	120	287.73	18.89	89.37	C/1	0	0	1:1	Ax/1	1:

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2031		D3	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2031				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
120		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
C	(untitled)		1
Cx	(untitled)		
1	(untitled)		1

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	2			✓	112.50	✓	Sum of lanes	1800	✓		Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	
1	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Saturation flow (PCU/hr)
A	1	1	(untitled)			1800
Ax	1	1	(untitled)			
B	2	1	(untitled)			1800
C	1	1	(untitled)			1800
Cx	1	1	(untitled)			
1	1	1	(untitled)			1800

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	120

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	1	86	86
Ax	1	1291	1291
B	2	238	238
C	1	1059	1059
Cx	1	324	324
1	1	232	232

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	2	1	B	
C	1	1	C	
1	1	1	B	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	12.00	30.00
B	2	13.50	30.00
C	1	12.00	30.00
1	1	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement
Ax	1	2	1/1	Ax/1	12.00	30.00	✓	Offside	82.28
Cx	1	2	B/2	Cx/1	12.00	30.00	✓	Nearside	47.35

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	72	26	86	1800	7	89.70	3.63	20.85	30.43	1.33	31.76
	Ax	1	0	Unrestricted	1291	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	76	19	238	1800	20	63.91	8.65	44.21	60.00	3.19	63.19
	C	1	89	1	1059	1800	78	28.95	32.63	187.64	120.92	11.86	132.78
	Cx	1	0	Unrestricted	324	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	74	22	232	1800	20	62.22	8.27	47.56	56.94	3.07	60.01

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s (per cycle))	Effective green (per cycle)
08:00-09:00	A	1	86	86	0		1800	120	72		26	0.00	7	8
	Ax	1	1291	1291	0		Unrestricted	Unrestricted	0		Unrestricted	0.39	120	12
	B	2	238	238	0		1800	315	76		19	0.00	20	21
	C	1	1059	1059	0		1800	1185	89		1	0.00	78	79
	Cx	1	324	324	0		Unrestricted	Unrestricted	0		Unrestricted	1.36	120	12
	1	1	232	232	0		1800	315	74		22	0.00	20	21

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	12.00	89.70	1.31	0.83	30.43	30.43	123.50	83.00	23.21	1.33	1.33
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	13.50	63.91	3.11	1.11	60.00	60.00	106.98	222.34	32.27	3.19	3.19
	C	1	12.00	28.95	5.01	3.51	120.92	120.92	89.31	843.01	102.73	11.86	11.86
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	12.00	62.22	3.02	0.99	56.94	56.94	105.48	215.98	28.72	3.07	3.07

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Average storage excess queue (PCU)	Average limit excess queue (PCU)	Excess queue penalty (£ per hr)	Max end of green queue (PCU)	Max end of red queue (PCU)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))	Estimated blocking
08:00-09:00	A	1	0.00	3.63	17.39	20.85	0.00	0.00	0.00	0.83	3.51	0.00	0.00	0.00	
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			5.00	0.00	5.00	
	B	2	0.00	8.65	19.57	44.21	0.00	0.00	0.00	1.11	7.66	0.00	0.00	0.00	
	C	1	0.00	32.63	17.39	187.64	3.35	0.00	0.00	3.51	15.57	0.00	0.00	0.00	
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			79.00	0.00	79.00	
	1	1	0.00	8.27	17.39	47.56	0.00	0.00	0.00	0.99	7.37	0.00	0.00	0.00	

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	A	1	8.60	2.43	3.54	101.70
	Ax	1	129.10	4.30	30.00	12.00
	B	2	26.78	5.12	5.23	77.41
	C	1	105.90	12.05	8.79	40.95
	Cx	1	32.40	1.08	30.00	12.00
	1	1	23.20	4.78	4.85	74.22

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	3.66	0.87	3.54	1.00	0.00	31.76	31.76
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	2	0.00	0.00	✓	8.68	1.14	7.68	1.00	0.00	63.19	63.19
	C	1	0.00	0.00	✓	32.75	3.63	15.69	1.00	0.00	132.78	132.78
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	1	1	0.00	0.00	✓	8.29	1.01	7.39	1.00	0.00	60.01	60.01

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	0	0	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	(ALL)	(ALL)	0	0	0		0	0	0		-100	0.00	0	0

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
3	07/02/2022 09:22:13	07/02/2022 09:22:13	08:00	120	287.73	18.89	89.37	C/1	0	0	1:1	Ax/1	1:

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	89	0	3230	365	21.06	268.28	19.45	287.73

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	0	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	3230	3230	0		89		-100	365	369

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.11	21.06	12.45	6.44	268.28	268.28	48.03	1364.33	186.93	19.45	19.45

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))
08:00-09:00	187.64	0.00	84.00	0.00	84.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	325.98	29.76	10.95

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	287.73	287.73

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To							
	1	2	3	4	5	6	7	
From	1	0.0	52.9	0.0	0.0	0.0	0.0	0.0
	2	113.7	0.0	0.0	0.0	0.0	0.0	0.0
	3	89.4	86.2	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
2	1	2	1059		52.95		1059	52.95
4	2	1	86		113.70		86	113.70
7	5	7		0		0.00	0	0.00
8	7	5		0		0.00	0	0.00
9	6	7		0		0.00	0	0.00
10	7	6		0		0.00	0	0.00
11	4	6		0		0.00	0	0.00
12	6	4		0		0.00	0	0.00
13	3	2	232		86.22		232	86.22
14	3	1	238		89.41		238	89.41

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Me of qu (P)
A	1	(untitled)	1	1	A	86	1800	7	0.00	72	26	101.70	89.70	123.50	3.63	3.
Ax	1	(untitled)				1291	Unrestricted	120	5.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	2		1	1	B	238	1800	20	0.00	76	19	77.41	63.91	106.98	8.65	7.
C	1	(untitled)	1	1	C	1059 <	1800	78	0.00	89	1	40.95	28.95	89.31	32.63 +	15
Cx	1	(untitled)				324	Unrestricted	120	79.00	0	Unrestricted	12.00	0.00	0.00	0.00	
1	1	(untitled)	1	1	B	232	1800	20	0.00	74	22	74.22	62.22	105.48	8.27	7.

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	PEN
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	C tr pe (£)
(ALL)	(ALL)	(untitled)		1	D	0	0	0	0	-100	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	325.98	29.76	10.95	12.45	6.44	268.28	19.45	0.00	287.73
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	325.98	29.76	10.95	12.45	6.44	268.28	19.45	0.00	287.73

- 1 < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- 1 * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- 1 ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- 1 + = average link/traffic stream excess queue is greater than 0
- 1 P.I. = PERFORMANCE INDEX

A4 - Baseline 2041

D4 - Baseline 2041*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
4	07/02/2022 09:22:14	07/02/2022 09:22:14	08:00	120	364.67	24.09	94.02	C/1	1	8	C/1	Ax/1	C/

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2041		D4	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2041				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
120		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ⁻²)	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ⁻²)	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
C	(untitled)		1
Cx	(untitled)		
1	(untitled)		1

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	2			✓	112.50	✓	Sum of lanes	1800	✓		Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	
1	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Saturation flow (PCU/hr)
A	1	1	(untitled)			1800
Ax	1	1	(untitled)			
B	2	1	(untitled)			1800
C	1	1	(untitled)			1800
Cx	1	1	(untitled)			
1	1	1	(untitled)			1800

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	120

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	1	89	89
Ax	1	1342	1342
B	2	247	247
C	1	1100	1100
Cx	1	336	336
1	1	242	242

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	2	1	B	
C	1	1	C	
1	1	1	B	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	12.00	30.00
B	2	13.50	30.00
C	1	12.00	30.00
1	1	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement
Ax	1	2	1/1	Ax/1	12.00	30.00	✓	Offside	82.28
Cx	1	2	B/2	Cx/1	12.00	30.00	✓	Nearside	47.35

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	74	21	89	1800	7	93.82	3.85	22.15	32.94	1.41	34.35
	Ax	1	0	Unrestricted	1342	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	82	9	247	1800	19	73.79	9.64	49.27	71.89	3.56	75.45
	C	1	94	-4	1100	1800	77	39.01	38.84	223.32	169.25	14.13	183.38
	Cx	1	0	Unrestricted	336	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	81	12	242	1800	19	71.30	9.29	53.40	68.06	3.43	71.49

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s (per cycle))	Effective green (per cycle)
08:00-09:00	A	1	89	89	0		1800	120	74		21	0.00	7	8
	Ax	1	1342	1342	0		Unrestricted	Unrestricted	0		Unrestricted	0.38	120	12
	B	2	247	247	0		1800	300	82		9	0.00	19	20
	C	1	1100	1100	0		1800	1170	94	✓	-4	0.00	77	78
	Cx	1	336	336	0		Unrestricted	Unrestricted	0		Unrestricted	1.36	120	12
	1	1	242	242	0		1800	300	81		12	0.00	19	20

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	12.00	93.82	1.36	0.96	32.94	32.94	126.39	85.90	26.59	1.41	1.41
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	13.50	73.79	3.31	1.75	71.89	71.89	114.96	234.17	49.78	3.56	3.56
	C	1	12.00	39.01	5.78	6.14	169.25	169.25	102.44	949.99	176.82	14.13	14.13
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	12.00	71.30	3.24	1.56	68.06	68.06	113.11	229.21	44.51	3.43	3.43

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Average storage excess queue (PCU)	Average limit excess queue (PCU)	Excess queue penalty (£ per hr)	Max end of green queue (PCU)	Max end of red queue (PCU)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))	Estimated blocking
08:00-09:00	A	1	0.00	3.85	17.39	22.15	0.00	0.00	0.00	0.96	3.73	0.00	0.00	0.00	
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			7.00	0.00	7.00	
	B	2	0.00	9.64	19.57	49.27	0.00	0.00	0.00	1.75	8.61	0.00	0.00	0.00	
	C	1	0.00	38.84	17.39	223.32	6.36	0.00	0.00	6.14	18.98	0.00	0.00	0.00	
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			79.00	0.00	79.00	
	1	1	0.00	9.29	17.39	53.40	0.00	0.00	0.00	1.56	8.28	0.00	0.00	0.00	

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Journey Time (s)
08:00-09:00	A	1	8.90	2.62	3.40	105.82
	Ax	1	134.20	4.47	30.00	12.00
	B	2	27.79	5.99	4.64	87.29
	C	1	110.00	15.59	7.06	51.01
	Cx	1	33.60	1.12	30.00	12.00
	1	1	24.20	5.60	4.32	83.30

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	3.90	1.01	3.78	1.00	0.00	34.35	34.35
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	2	0.00	0.00	✓	9.72	1.83	8.69	1.00	0.00	75.45	75.45
	C	1	0.00	0.00	✓	39.36	6.66	19.50	1.00	0.00	183.38	183.38
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	1	1	0.00	0.00	✓	9.35	1.62	8.34	1.00	0.00	71.49	71.49

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	11000	7	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity	Mean modulus of error	Actual green (s per cycle)	Eff gr (c)
08:00-09:00	(ALL)	(ALL)	0	0	0		11000	642	0		Unrestricted	0.00	7	

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
4	07/02/2022 09:22:14	07/02/2022 09:22:14	08:00	120	364.67	24.09	94.02	C/1	1	8	C/1	Ax/1	C/

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	94	-4	3356	362	25.85	342.14	22.53	364.67

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	42	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	3356	3356	0		94	✓	-4	404	408

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.11	25.85	13.68	10.41	342.14	342.14	53.54	1499.27	297.69	22.53	22.53

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))
08:00-09:00	223.32	0.00	86.00	0.00	86.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	338.69	35.38	9.57

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	364.67	364.67

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To							
	1	2	3	4	5	6	7	
From	1	0.0	63.0	0.0	0.0	0.0	0.0	0.0
	2	117.8	0.0	0.0	0.0	0.0	0.0	0.0
	3	99.3	95.3	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
2	1	2	1100		63.01		1100	63.01
4	2	1	89		117.82		89	117.82
7	5	7		0		0.00	0	0.00
8	7	5		0		0.00	0	0.00
9	6	7		0		0.00	0	0.00
10	7	6		0		0.00	0	0.00
11	4	6		0		0.00	0	0.00
12	6	4		0		0.00	0	0.00
13	3	2	242		95.30		242	95.30
14	3	1	247		99.29		247	99.29

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Me of qu (P
A	1	(untitled)	1	1	A	89	1800	7	0.00	74	21	105.82	93.82	126.39	3.85	3.
Ax	1	(untitled)				1342	Unrestricted	120	7.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	2		1	1	B	247	1800	19	0.00	82	9	87.29	73.79	114.96	9.64	8.
C	1	(untitled)	1	1	C	1100 <	1800	77	0.00	94	-4	51.01	39.01	102.44	38.84 +	18
Cx	1	(untitled)				336	Unrestricted	120	79.00	0	Unrestricted	12.00	0.00	0.00	0.00	
1	1	(untitled)	1	1	B	242	1800	19	0.00	81	12	83.30	71.30	113.11	9.29	8.

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	P
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	(
(ALL)	(ALL)	(untitled)		1	D	0	11000	7	0	Unrestricted	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	338.69	35.38	9.57	13.68	10.41	342.14	22.53	0.00	364.67
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	338.69	35.38	9.57	13.68	10.41	342.14	22.53	0.00	364.67

- 1 < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- 1 * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- 1 ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- 1 + = average link/traffic stream excess queue is greater than 0
- 1 P.I. = PERFORMANCE INDEX

A5 - Baseline 2026 and Development D5 - Baseline 2026 and Development*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
5	07/02/2022 09:22:14	07/02/2022 09:22:15	08:00	120	263.63	17.29	85.70	C/1	0	0	1:1	Ax/1	1:

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2026 and Development		D5	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2026 and Development				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
120		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
C	(untitled)		1
Cx	(untitled)		
1	(untitled)		1

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	2			✓	112.50	✓	Sum of lanes	1800	✓		Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	
1	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Saturation flow (PCU/hr)
A	1	1	(untitled)			1800
Ax	1	1	(untitled)			
B	2	1	(untitled)			1800
C	1	1	(untitled)			1800
Cx	1	1	(untitled)			
1	1	1	(untitled)			1800

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	120

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	1	86	86
Ax	1	1239	1239
B	2	243	243
C	1	977	977
Cx	1	329	329
1	1	262	262

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	2	1	B	
C	1	1	C	
1	1	1	B	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	12.00	30.00
B	2	13.50	30.00
C	1	12.00	30.00
1	1	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement
Ax	1	2	1/1	Ax/1	12.00	30.00	✓	Offside	82.28
Cx	1	2	B/2	Cx/1	12.00	30.00	✓	Nearside	47.35

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	72	26	86	1800	7	89.70	3.63	20.85	30.43	1.33	31.76
	Ax	1	0	Unrestricted	1239	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	68	33	243	1800	23	54.54	8.11	41.45	52.28	3.01	55.29
	C	1	86	5	977	1800	75	26.74	28.52	164.00	103.04	10.36	113.40
	Cx	1	0	Unrestricted	329	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	73	24	262	1800	23	57.87	9.09	52.28	59.81	3.37	63.18

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	A	1	86	86	0		1800	120	72		26	0.00	7	8
	Ax	1	1239	1239	0		Unrestricted	Unrestricted	0		Unrestricted	0.42	120	12
	B	2	243	243	0		1800	360	68		33	0.00	23	24
	C	1	977	977	0		1800	1140	86		5	0.00	75	76
	Cx	1	329	329	0		Unrestricted	Unrestricted	0		Unrestricted	1.34	120	12
	1	1	262	262	0		1800	360	73		24	0.00	23	24

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	12.00	89.70	1.31	0.83	30.43	30.43	123.50	83.00	23.21	1.33	1.33
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	13.50	54.54	3.00	0.69	52.28	52.28	98.93	220.29	20.12	3.01	3.01
	C	1	12.00	26.74	4.79	2.47	103.04	103.04	84.58	753.72	72.65	10.36	10.36
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	12.00	57.87	3.27	0.94	59.81	59.81	102.60	241.32	27.48	3.37	3.37

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Average storage excess queue (PCU)	Average limit excess queue (PCU)	Excess queue penalty (£ per hr)	Max end of green queue (PCU)	Max end of red queue (PCU)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))	Estimated blocking
08:00-09:00	A	1	0.00	3.63	17.39	20.85	0.00	0.00	0.00	0.83	3.51	0.00	0.00	0.00	
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			6.00	0.00	6.00	
	B	2	0.00	8.11	19.57	41.45	0.00	0.00	0.00	0.69	7.17	0.00	0.00	0.00	
	C	1	0.00	28.52	17.39	164.00	1.95	0.00	0.00	2.47	14.41	0.00	0.00	0.00	
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			77.00	0.00	77.00	
	1	1	0.00	9.09	17.39	52.28	0.00	0.00	0.00	0.94	7.93	0.00	0.00	0.00	

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	A	1	8.60	2.43	3.54	101.70
	Ax	1	123.90	4.13	30.00	12.00
	B	2	27.34	4.59	5.95	68.04
	C	1	97.70	10.51	9.29	38.74
	Cx	1	32.90	1.10	30.00	12.00
	1	1	26.20	5.09	5.15	69.87

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	3.66	0.87	3.54	1.00	0.00	31.76	31.76
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	2	0.00	0.00	✓	8.12	0.69	7.17	1.00	0.00	55.29	55.29
	C	1	0.00	0.00	✓	28.57	2.52	14.46	1.00	0.00	113.40	113.40
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	1	1	0.00	0.00	✓	9.11	0.96	7.94	1.00	0.00	63.18	63.18

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	0	0	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	(ALL)	(ALL)	0	0	0		0	0	0		-100	0.00	0	0

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
5	07/02/2022 09:22:14	07/02/2022 09:22:15	08:00	120	263.63	17.29	85.70	C/1	0	0	1:1	Ax/1	1:

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	86	0	3136	368	19.85	245.55	18.08	263.63

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	0	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	3136	3136	0		86		-100	368	372

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.12	19.85	12.37	4.92	245.55	245.55	45.98	1298.33	143.46	18.08	18.08

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))
08:00-09:00	164.00	0.00	83.00	0.00	83.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	316.64	27.85	11.37

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	263.63	263.63

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To							
	1	2	3	4	5	6	7	
From	1	0.0	50.7	0.0	0.0	0.0	0.0	0.0
	2	113.7	0.0	0.0	0.0	0.0	0.0	0.0
	3	80.0	81.9	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
2	1	2	977		50.74		977	50.74
4	2	1	86		113.70		86	113.70
7	5	7		0		0.00	0	0.00
8	7	5		0		0.00	0	0.00
9	6	7		0		0.00	0	0.00
10	7	6		0		0.00	0	0.00
11	4	6		0		0.00	0	0.00
12	6	4		0		0.00	0	0.00
13	3	2	262		81.87		262	81.87
14	3	1	243		80.04		243	80.04

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Me of qu (P)
A	1	(untitled)	1	1	A	86	1800	7	0.00	72	26	101.70	89.70	123.50	3.63	3.
Ax	1	(untitled)				1239	Unrestricted	120	6.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	2		1	1	B	243	1800	23	0.00	68	33	68.04	54.54	98.93	8.11	7.
C	1	(untitled)	1	1	C	977 <	1800	75	0.00	86	5	38.74	26.74	84.58	28.52 +	14
Cx	1	(untitled)				329	Unrestricted	120	77.00	0	Unrestricted	12.00	0.00	0.00	0.00	
1	1	(untitled)	1	1	B	262	1800	23	0.00	73	24	69.87	57.87	102.60	9.09	7.

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	PEN
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	C tr pe (£)
(ALL)	(ALL)	(untitled)		1	D	0	0	0	0	-100	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	316.64	27.85	11.37	12.37	4.92	245.55	18.08	0.00	263.63
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	316.64	27.85	11.37	12.37	4.92	245.55	18.08	0.00	263.63

- 1 < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- 1 * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- 1 ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- 1 + = average link/traffic stream excess queue is greater than 0
- 1 P.I. = PERFORMANCE INDEX

A6 - Baseline 2031 and Development D6 - Baseline 2031 and Development*

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Local Matrix	Local Matrix 1	Local Matrix 1: Resultant Flows have warnings in one or more time segments - see the Resultant Flows tab of the OD Matrix screen.

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
6	07/02/2022 09:22:15	07/02/2022 09:22:15	08:00	120	240.69	15.76	84.05	A/1	0	0	1:1	Ax/1	1:

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2031 and Development		D6	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2031 and Development				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
120		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
C	(untitled)		1
Cx	(untitled)		
1	(untitled)		1

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	2			✓	112.50	✓	Sum of lanes	1800	✓		Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	
1	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Saturation flow (PCU/hr)
A	1	1	(untitled)			1800
Ax	1	1	(untitled)			
B	2	1	(untitled)			1800
C	1	1	(untitled)			1800
Cx	1	1	(untitled)			
1	1	1	(untitled)			1800

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	120

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	1	996	996
Ax	1	307	307
B	2	217	217
C	1	83	83
Cx	1	1213	1213
1	1	224	224

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	2	1	B	
C	1	1	C	
1	1	1	B	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	12.00	30.00
B	2	13.50	30.00
C	1	12.00	30.00
1	1	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement
Ax	1	2	1/1	Ax/1	12.00	30.00	✓	Offside	82.28
Cx	1	2	B/2	Cx/1	12.00	30.00	✓	Nearside	47.35

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	84	7	996	1800	78	23.44	27.32	157.11	92.09	9.95	102.05
	Ax	1	0	Unrestricted	307	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	69	31	217	1800	20	58.74	7.49	38.29	50.28	2.78	53.06
	C	1	69	30	83	1800	7	86.09	3.42	19.66	28.18	1.26	29.44
	Cx	1	0	Unrestricted	1213	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	71	27	224	1800	20	60.24	7.88	45.30	53.23	2.91	56.14

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s (per cycle))	Effective green (per cycle)
08:00-09:00	A	1	996	996	0		1800	1185	84		7	0.00	78	79
	Ax	1	307	307	0		Unrestricted	Unrestricted	0		Unrestricted	1.35	120	12
	B	2	217	217	0		1800	315	69		31	0.00	20	21
	C	1	83	83	0		1800	120	69		30	0.00	7	8
	Cx	1	1213	1213	0		Unrestricted	Unrestricted	0		Unrestricted	0.42	120	12
	1	1	224	224	0		1800	315	71		27	0.00	20	21

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	12.00	23.44	4.34	2.15	92.09	92.09	79.71	730.49	63.38	9.95	9.95
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	13.50	58.74	2.80	0.74	50.28	50.28	102.24	200.19	21.67	2.78	2.78
	C	1	12.00	86.09	1.26	0.72	28.18	28.18	120.95	80.11	20.28	1.26	1.26
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	12.00	60.24	2.90	0.85	53.23	53.23	103.59	207.35	24.68	2.91	2.91

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Average storage excess queue (PCU)	Average limit excess queue (PCU)	Excess queue penalty (£ per hr)	Max end of green queue (PCU)	Max end of red queue (PCU)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))	Estimated blocking
08:00-09:00	A	1	0.00	27.32	17.39	157.11	1.53	0.00	0.00	2.15	13.49	0.00	0.00	0.00	
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			78.00	0.00	78.00	
	B	2	0.00	7.49	19.57	38.29	0.00	0.00	0.00	0.74	6.71	0.00	0.00	0.00	
	C	1	0.00	3.42	17.39	19.66	0.00	0.00	0.00	0.72	3.30	0.00	0.00	0.00	
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			9.00	0.00	9.00	
	1	1	0.00	7.88	17.39	45.30	0.00	0.00	0.00	0.85	7.01	0.00	0.00	0.00	

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Journey Time (s)
08:00-09:00	A	1	99.60	9.81	10.16	35.44
	Ax	1	30.70	1.02	30.00	12.00
	B	2	24.41	4.35	5.61	72.24
	C	1	8.30	2.26	3.67	98.09
	Cx	1	121.30	4.04	30.00	12.00
	1	1	22.40	4.50	4.98	72.24

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	27.36	2.18	13.52	1.00	0.00	102.05	102.05
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	2	0.00	0.00	✓	7.50	0.75	6.72	1.00	0.00	53.06	53.06
	C	1	0.00	0.00	✓	3.44	0.75	3.33	1.00	0.00	29.44	29.44
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	1	1	0.00	0.00	✓	7.89	0.86	7.02	1.00	0.00	56.14	56.14

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	0	0	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s per cycle)	Effective green (s per cycle)
08:00-09:00	(ALL)	(ALL)	0	0	0		0	0	0		-100	0.00	0	0

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
6	07/02/2022 09:22:15	07/02/2022 09:22:15	08:00	120	240.69	15.76	84.05	A/1	0	0	1:1	Ax/1	1:

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	84	0	3040	365	18.66	223.78	16.90	240.69

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	0	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	3040	3040	0		84		-100	365	369

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.11	18.66	11.30	4.46	223.78	223.78	44.35	1218.14	130.01	16.90	16.90

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))
08:00-09:00	157.11	0.00	87.00	0.00	87.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	306.71	25.98	11.80

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	240.69	240.69

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To							
	1	2	3	4	5	6	7	
From	1	0.0	110.1	0.0	0.0	0.0	0.0	0.0
	2	47.4	0.0	0.0	0.0	0.0	0.0	0.0
	3	84.2	84.2	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
2	1	2	83		110.09		83	110.09
4	2	1	996		47.44		996	47.44
7	5	7		0		0.00	0	0.00
8	7	5		0		0.00	0	0.00
9	6	7		0		0.00	0	0.00
10	7	6		0		0.00	0	0.00
11	4	6		0		0.00	0	0.00
12	6	4		0		0.00	0	0.00
13	3	2	224		84.24		224	84.24
14	3	1	217		84.24		217	84.24

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Me of qu (P)
A	1	(untitled)	1	1	A	996 <	1800	78	0.00	84	7	35.44	23.44	79.71	27.32 +	13
Ax	1	(untitled)				307	Unrestricted	120	78.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	2		1	1	B	217	1800	20	0.00	69	31	72.24	58.74	102.24	7.49	6.
C	1	(untitled)	1	1	C	83	1800	7	0.00	69	30	98.09	86.09	120.95	3.42	3.
Cx	1	(untitled)				1213	Unrestricted	120	9.00	0	Unrestricted	12.00	0.00	0.00	0.00	
1	1	(untitled)	1	1	B	224	1800	20	0.00	71	27	72.24	60.24	103.59	7.88	7.

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	PEN
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	C tr pe (£)
(ALL)	(ALL)	(untitled)		1	D	0	0	0	0	-100	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	306.71	25.98	11.80	11.30	4.46	223.78	16.90	0.00	240.69
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	306.71	25.98	11.80	11.30	4.46	223.78	16.90	0.00	240.69

- 1 < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- 1 * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- 1 ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- 1 + = average link/traffic stream excess queue is greater than 0
- 1 P.I. = PERFORMANCE INDEX

A7 - Baseline 2041 and Development D7 - Baseline 2041 and Development*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
7	07/02/2022 09:22:16	07/02/2022 09:22:16	08:00	120	394.91	26.16	94.09	C/1	1	8	C/1	Ax/1	C/

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
Baseline 2041 and Development		D7	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
Baseline 2041 and Development				08:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
120		60	1	60

Signals options

Start displacement (s)	End displacement (s)
2	3

Advanced

Phase minimum broken penalty (£)	Phase maximum broken penalty (£)	Intergreen broken penalty (£)	Starting Red-with-Amber (s)
10000.00	10000.00	10000.00	2

Traffic options

Traffic model	Vehicle flow scaling factor (%)	Pedestrian flow scaling factor (%)	Cruise times or speeds
Platoon Dispersion (PDM)	100	100	Cruise Speeds

Advanced

Resolution	DOS Threshold (%)	Cruise scaling factor (%)	Use link stop weightings	Use link delay weightings	Exclude pedestrians from results calculation	Random delay mode	Type of Vehicle-in-Service	Type of random parameter	PCU Length (m)	Calculate results for Path Segments	Generate PDM Profile Data
1	90	100	✓	✓		Complex	Uniform (TRANSYT)	Uniform (TRANSYT)	5.75		✓

Normal Traffic parameters

Dispersion type	Dispersion coefficient	Travel time coefficient
Default	35	80

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Bus	1.00	Default	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion type	Acceleration (ms ^{^-2})	Stationary time coefficient	Cruise time coefficient
Tram	1.00	Default	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

Enable optimisation	Auto redistribute	Optimisation level	Enable OUT Profile accuracy
✓	✓	Offsets And Green Splits	✓

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to master controller	Master controller offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

Vehicle Monetary Value Of Delay (£ per PCU-hr)	Vehicle Monetary Value Of Stops (£ per 100 stops)	Pedestrian monetary value of delay (£ per Ped-hr)
14.20	2.60	14.20

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
1	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	(untitled)		1
Ax	(untitled)		
B	(untitled)		1
C	(untitled)		1
Cx	(untitled)		
1	(untitled)		1

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Ax	1	(untitled)			100.00						Normal	
B	2			✓	112.50	✓	Sum of lanes	1800	✓		Normal	
C	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	
Cx	1	(untitled)			100.00						Normal	
1	1	(untitled)			100.00	✓	Sum of lanes	1800	✓		Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Saturation flow (PCU/hr)
A	1	1	(untitled)			1800
Ax	1	1	(untitled)			
B	2	1	(untitled)			1800
C	1	1	(untitled)			1800
Cx	1	1	(untitled)			
1	1	1	(untitled)			1800

Modelling

Arm	Traffic Stream	Traffic model	Stop weighting multiplier (%)	Delay weighting multiplier (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (PCU)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	NetworkDefault	100	100	100		0.00		

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	(ALL)	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	120

Normal traffic - Modelling

Arm	Traffic Stream	Stop weighting (%)	Delay weighting (%)
(ALL)	(ALL)	100	100

Normal traffic - Advanced

Arm	Traffic Stream	Dispersion type for Normal Traffic
(ALL)	(ALL)	NetworkDefault

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	1	94	94
Ax	1	1362	1362
B	2	247	247
C	1	1115	1115
Cx	1	341	341
1	1	247	247

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	1	1	A	
B	2	1	B	
C	1	1	C	
1	1	1	B	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	12.00	30.00
B	2	13.50	30.00
C	1	12.00	30.00
1	1	12.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
Ax	1	1	C/1	Ax/1	12.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	12.00	30.00	✓	Straight	Straight Movement
Ax	1	2	1/1	Ax/1	12.00	30.00	✓	Offside	82.28
Cx	1	2	B/2	Cx/1	12.00	30.00	✓	Nearside	47.35

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
(ALL)	(untitled)				Farside	3.00	2.00	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
(ALL)	1	D	

Pedestrian Crossings - Sides

Crossing	Side	Saturation flow (Ped/hr)
(ALL)	(ALL)	11000

Pedestrian Crossings - Modelling

Crossing	Side	Delay weighting (%)	Assignment Cost Weighting (%)	Exclude from results calculation	Max queue storage (Ped)	Has queue limit	Has degree of saturation limit
(ALL)	(ALL)	100	100		0.00		

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	78	15	94	1800	7	102.16	4.31	24.77	37.88	1.56	39.44
	Ax	1	0	Unrestricted	1362	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	87	4	247	1800	18	84.30	10.43	53.32	82.13	3.81	85.94
	C	1	94	-4	1115	1800	78	38.49	39.36	226.33	169.30	14.28	183.58
	Cx	1	0	Unrestricted	341	Unrestricted	120	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	87	4	247	1800	18	84.30	10.43	59.98	82.13	3.81	85.94

Traffic Stream Results: Flows and signals

Time Segment	Arm	Traffic Stream	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Calculated sat flow (PCU/hr)	Calculated capacity (PCU/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Mean modulus of error	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	A	1	94	94	0		1800	120	78		15	0.00	7	8
	Ax	1	1362	1362	0		Unrestricted	Unrestricted	0		Unrestricted	0.36	120	12
	B	2	247	247	0		1800	285	87		4	0.00	18	19
	C	1	1115	1115	0		1800	1185	94	✓	-4	0.00	78	79
	Cx	1	341	341	0		Unrestricted	Unrestricted	0		Unrestricted	1.36	120	12
	1	1	247	247	0		1800	285	87		4	0.00	18	19

Traffic Stream Results: Stops and delays

Time Segment	Arm	Traffic Stream	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	A	1	12.00	102.16	1.44	1.23	37.88	37.88	132.77	91.37	33.44	1.56	1.56
	Ax	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	B	2	13.50	84.30	3.38	2.40	82.13	82.13	123.01	236.73	67.10	3.81	3.81
	C	1	12.00	38.49	5.70	6.22	169.30	169.30	102.16	960.08	179.05	14.28	14.28
	Cx	1	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1	1	12.00	84.30	3.38	2.40	82.13	82.13	123.01	236.73	67.10	3.81	3.81

Traffic Stream Results: Queues and blocking

Time Segment	Arm	Traffic Stream	Initial queue (PCU)	Mean max queue (PCU)	Max queue storage (PCU)	Utilised storage (%)	Average storage excess queue (PCU)	Average limit excess queue (PCU)	Excess queue penalty (£ per hr)	Max end of green queue (PCU)	Max end of red queue (PCU)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))	Estimated blocking
08:00-09:00	A	1	0.00	4.31	17.39	24.77	0.00	0.00	0.00	1.23	4.15	0.00	0.00	0.00	
	Ax	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			7.00	0.00	7.00	
	B	2	0.00	10.43	19.57	53.32	0.00	0.00	0.00	2.40	9.33	0.00	0.00	0.00	
	C	1	0.00	39.36	17.39	226.33	6.59	0.00	0.00	6.22	18.92	0.00	0.00	0.00	
	Cx	1	0.00	0.00	17.39	0.00	0.00	0.00	0.00			79.00	0.00	79.00	
	1	1	0.00	10.43	17.39	59.98	0.00	0.00	0.00	2.40	9.33	0.00	0.00	0.00	

Traffic Stream Results: Journey times

Time Segment	Arm	Traffic Stream	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Journey Time (s)
08:00-09:00	A	1	9.40	2.98	3.15	114.16
	Ax	1	136.20	4.54	30.00	12.00
	B	2	27.79	6.71	4.14	97.80
	C	1	111.50	15.64	7.13	50.49
	Cx	1	34.10	1.14	30.00	12.00
	1	1	24.70	6.61	3.74	96.30

Traffic Stream Results: Advanced

Time Segment	Arm	Traffic Stream	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	Mean Max Queue EoTS (PCU)	Max End of Green Queue EoTS (PCU)	Max End of Red Queue EoTS (PCU)	PCU Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	A	1	0.00	0.00	✓	4.39	1.31	4.24	1.00	0.00	39.44	39.44
	Ax	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	B	2	0.00	0.00	✓	10.61	2.58	9.51	1.00	0.00	85.94	85.94
	C	1	0.00	0.00	✓	39.89	6.75	19.45	1.00	0.00	183.58	183.58
	Cx	1	0.00	0.00	✓	0.00			1.00	0.00	0.00	0.00
	1	1	0.00	0.00	✓	10.61	2.58	9.51	1.00	0.00	85.94	85.94

Pedestrian Crossing Results

Pedestrian Crossings: Pedestrian summary

Time Segment	Crossing	Side	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Mean max queue (Ped)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0	0	11000	7	0.00	0.00	0.00	0.00

Pedestrian Crossings: Flows and signals

Time Segment	Crossing	Side	Calculated flow entering (Ped/hr)	Calculated flow out (Ped/hr)	Flow discrepancy (Ped/hr)	Adjusted flow warning	Calculated sat flow (Ped/hr)	Calculated capacity (Ped/hr)	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity	Mean modulus of error	Actual green (s per cycle)	Eff gr (c)
08:00-09:00	(ALL)	(ALL)	0	0	0		11000	642	0		Unrestricted	0.00	7	

Pedestrian Crossings: Stops and delays

Time Segment	Crossing	Side	Mean Cruise Time per Ped (s)	Mean Delay per Ped (s)	Uniform delay (Ped-hr/hr)	Random plus oversat delay (Ped-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)
08:00-09:00	(ALL)	(ALL)	1.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Queues and blocking

Time Segment	Crossing	Side	Mean max queue (Ped)	Max queue storage (Ped)	Utilised storage (%)	Average storage excess queue (Ped)	Average limit excess queue (Ped)	Excess queue penalty (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	10.00	0.00	0.00	0.00	0.00

Pedestrian Crossings: Journey times

Time Segment	Crossing	Side	Distance travelled (Ped-km/hr)	Time spent (Ped-hr/hr)	Mean journey speed (kph)	JourneyTime (s)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	0.00

Pedestrian Crossings: Advanced

Time Segment	Crossing	Side	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Mean Max Queue EoTS (Ped)	Ped Factor	Cost of traffic penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	(ALL)	(ALL)	0.00	0.00	0.00	1.00	0.00	0.00	0.00

Network Results

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst over PR
7	07/02/2022 09:22:16	07/02/2022 09:22:16	08:00	120	394.91	26.16	94.09	C/1	1	8	C/1	Ax/1	C/

Network Results: Vehicle summary

Time Segment	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Actual green (s per cycle)	Mean Delay per Veh (s)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
08:00-09:00	94	-4	3406	361	27.65	371.44	23.47	394.91

Network Results: Pedestrian summary

Time Segment	Degree of saturation (%)	Calculated Flow Entering (Ped/hr)	Actual green (s per cycle)	Mean Delay Per Ped (s)	Weighted cost of delay (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0	0	42	0.00	0.00	0.00

Network Results: Flows and signals

Time Segment	Calculated flow entering (PCU/hr)	Calculated flow out (PCU/hr)	Flow discrepancy (PCU/hr)	Adjusted flow warning	Degree of saturation (%)	DOS Threshold exceeded	Practical reserve capacity (%)	Actual green (s (per cycle))	Effective green (s (per cycle))
08:00-09:00	3406	3406	0		94	✓	-4	403	407

Network Results: Stops and delays

Time Segment	Mean Cruise Time per Veh (s)	Mean Delay per Veh (s)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Unweighted cost of delay (£ per hr)	Weighted cost of delay (£ per hr)	Mean stops per Veh (%)	Uniform stops (Stops per hr)	Random stops (Stops per hr)	Unweighted cost of stops (£ per hr)	Weighted cost of stops (£ per hr)
08:00-09:00	12.11	27.65	13.90	12.26	371.44	371.44	54.95	1524.91	346.69	23.47	23.47

Network Results: Queues and blocking

Time Segment	Utilised storage (%)	Excess queue penalty (£ per hr)	Wasted time starvation (s (per cycle))	Wasted time blocking back (s (per cycle))	Wasted time total (s (per cycle))
08:00-09:00	226.33	0.00	86.00	0.00	86.00

Network Results: Journey times

Time Segment	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)
08:00-09:00	343.69	37.61	9.14

Network Results: Advanced

Time Segment	Degree of saturation penalty (£ per hr)	Ped gap accepting penalty (£ per hr)	Warmed up	PCU Factor	Cost of traffic penalties (£ per hr)	Controller stream penalties (£ per hr)	Unweighted performance index (£ per hr)	Performance Index (£ per hr)
08:00-09:00	0.00	0.00	✓	1.00	0.00	0.00	394.91	394.91

Point to Point Journey Time

Average Journey Time (s) for Local Matrix: 1

	To							
	1	2	3	4	5	6	7	
From	1	0.0	62.5	0.0	0.0	0.0	0.0	0.0
	2	126.2	0.0	0.0	0.0	0.0	0.0	0.0
	3	109.8	108.3	0.0	0.0	0.0	0.0	0.0
	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Path Journey Time

Path	From Location	To Location	Normal Calculated Flow (PCU/hr)	Pedestrian calculated flow (Ped/hr)	Normal journey time (s)	Pedestrian journey time (s)	Calculated Total Flow (PCU/hr)	Avg journey time (s)
2	1	2	1115		62.49		1115	62.49
4	2	1	94		126.16		94	126.16
7	5	7		0		0.00	0	0.00
8	7	5		0		0.00	0	0.00
9	6	7		0		0.00	0	0.00
10	7	6		0		0.00	0	0.00
11	4	6		0		0.00	0	0.00
12	6	4		0		0.00	0	0.00
13	3	2	247		108.30		247	108.30
14	3	1	247		109.80		247	109.80

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUE	
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	Wasted time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	e of q (P)
A	1	(untitled)	1	1	A	94	1800	7	0.00	78	15	114.16	102.16	132.77	4.31	4
Ax	1	(untitled)				1362	Unrestricted	120	7.00	0	Unrestricted	12.00	0.00	0.00	0.00	
B	2		1	1	B	247	1800	18	0.00	87	4	97.80	84.30	123.01	10.43	9
C	1	(untitled)	1	1	C	1115 <	1800	78	0.00	94	-4	50.49	38.49	102.16	39.36 +	1
Cx	1	(untitled)				341	Unrestricted	120	79.00	0	Unrestricted	12.00	0.00	0.00	0.00	
1	1	(untitled)	1	1	B	247	1800	18	0.00	87	4	96.30	84.30	123.01	10.43	9

Pedestrian Crossing Results

				SIGNALS		FLOWS		PERFORMANCE			PER PED		QUEUES	WEIGHTS	P
Pedestrian	Side	Name	Traffic node	Controller stream	Phase	Calculated Flow Entering (Ped/hr)	Calculated sat flow (Ped/hr)	Actual green (s per cycle)	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Ped (s)	Mean max queue (Ped)	Delay weighting (%)	(
(ALL)	(ALL)	(untitled)		1	D	0	11000	7	0	Unrestricted	0.00	0.00	0.00	100	

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	343.69	37.61	9.14	13.90	12.26	371.44	23.47	0.00	394.91
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	343.69	37.61	9.14	13.90	12.26	371.44	23.47	0.00	394.91

- 1 < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- 1 * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- 1 ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
- 1 + = average link/traffic stream excess queue is greater than 0
- 1 P.I. = PERFORMANCE INDEX



D. PICADY Output

<h1>Junctions 9</h1>
<h2>PICADY 9 - Priority Intersection Module</h2>
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk
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Filename: Junction 1 - Ravens Rock Road-Carmanhall Road.j9

Path: M:\Projects\21\21-118 - Ravens Rock\Design\Traffic

Report generation date: 03/02/2022 15:41:04

-
- »Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2022, AM
 - »Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2026, AM
 - »Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2031, AM
 - »Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2041, AM
 - »Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2026 with Development, AM
 - »Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2031 with Development, AM
 - »Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2041 with Development, AM

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2022			
Stream B-C	0.1	7.76	0.07
Stream B-A	0.3	11.49	0.21
Stream C-AB	0.0	5.37	0.01
Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2026			
Stream B-C	0.1	7.97	0.07
Stream B-A	0.3	12.04	0.23
Stream C-AB	0.0	5.37	0.01
Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2031			
Stream B-C	0.1	8.19	0.08
Stream B-A	0.3	12.68	0.25
Stream C-AB	0.0	5.36	0.01
Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2041			
Stream B-C	0.1	8.39	0.08
Stream B-A	0.4	13.18	0.26
Stream C-AB	0.0	5.36	0.02
Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2026 with Development			
Stream B-C	0.1	8.04	0.07
Stream B-A	0.3	12.28	0.23
Stream C-AB	0.0	5.42	0.02
Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2031 with Development			
Stream B-C	0.1	7.87	0.07
Stream B-A	0.3	11.81	0.22
Stream C-AB	0.0	5.38	0.02
Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2041 with Development			
Stream B-C	0.1	8.46	0.08
Stream B-A	0.4	13.47	0.27
Stream C-AB	0.0	5.42	0.03

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

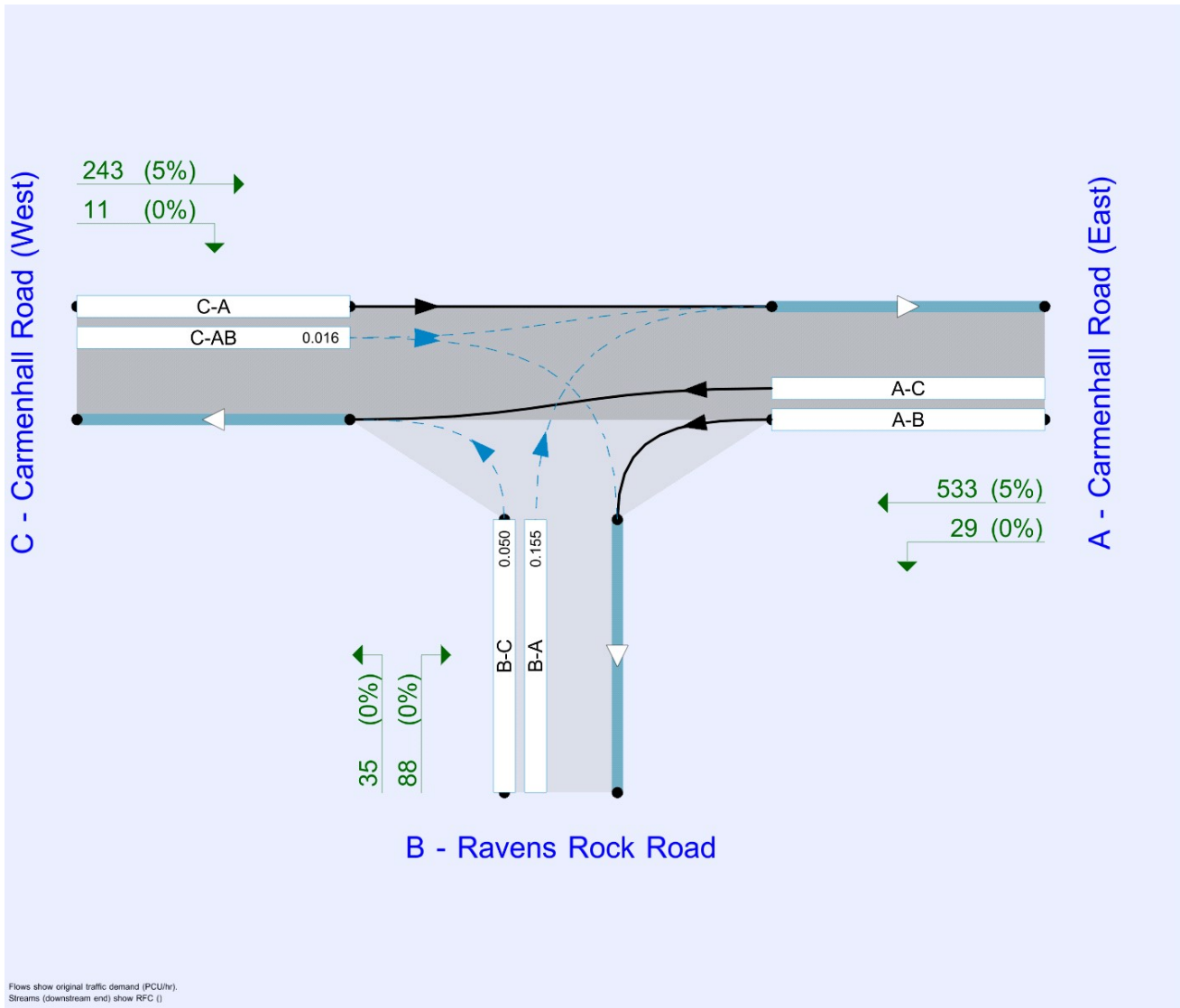
File summary

File Description

Title	
Location	
Site number	
Date	02/02/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DOMAIN\l.byrne
Description	

Units

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



Flows show original traffic demand (PCU/hr).
Streams (downstream end) show RFC ()
The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				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)	Run automatically
D1	Baseline 2022	AM	ONE HOUR	00:00	01:30	15	✓
D2	Baseline 2026	AM	ONE HOUR	00:00	01:30	15	✓
D3	Baseline 2031	AM	ONE HOUR	00:00	01:30	15	✓
D4	Baseline 2041	AM	ONE HOUR	00:00	01:30	15	✓
D5	Baseline 2026 with Development	AM	ONE HOUR	00:00	01:30	15	✓
D6	Baseline 2031 with Development	AM	ONE HOUR	00:00	01:30	15	✓
D7	Baseline 2041 with Development	AM	ONE HOUR	00:00	01:30	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Ravens Rock Road / Carmanhall Road - Junction Analysis	✓	100.000	100.000

Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 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	Ravens Rock Road / Carmanhall Road	T-Junction	Two-way		1.45	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Carmanhall Road (East)		Major
B	Ravens Rock Road		Minor
C	Carmanhall Road (West)		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 - Carmanhall Road (West)	6.50			160.0	✓	0.00

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	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Ravens Rock Road	One lane plus flare	8.00	4.00	3.50	3.50	3.50		1.00	49	49

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	564	0.101	0.254	0.160	0.363
B-C	655	0.098	0.248	-	-
C-B	667	0.253	0.253	-	-

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)	Run automatically
D1	Baseline 2022	AM	ONE HOUR	00:00	01:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Carmenhall Road (East)		ONE HOUR	✓	471	100.000
B - Ravens Rock Road		ONE HOUR	✓	106	100.000
C - Carmenhall Road (West)		ONE HOUR	✓	213	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Carmenhall Road (East)	B - Ravens Rock Road	C - Carmenhall Road (West)
From	A - Carmenhall Road (East)	0	20	451
	B - Ravens Rock Road	76	0	30
	C - Carmenhall Road (West)	208	5	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Carmenhall Road (East)	B - Ravens Rock Road	C - Carmenhall Road (West)
From	A - Carmenhall Road (East)	0	0	5
	B - Ravens Rock Road	0	0	0
	C - Carmenhall Road (West)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.07	7.76	0.1	A	28	41
B-A	0.21	11.49	0.3	B	70	105
C-AB	0.01	5.37	0.0	A	6	10
C-A					189	284
A-B					18	28
A-C					414	621

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	23	6	550	0.041	22	0.0	0.0	6.822	A
B-A	57	14	450	0.127	57	0.0	0.1	9.139	A
C-AB	5	1	683	0.007	5	0.0	0.0	5.363	A
C-A	155	39			155				
A-B	15	4			15				
A-C	340	85			340				

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	27	7	528	0.051	27	0.0	0.1	7.181	A
B-A	68	17	428	0.160	68	0.1	0.2	10.004	B
C-AB	6	2	688	0.009	6	0.0	0.0	5.340	A
C-A	185	46			185				
A-B	18	4			18				
A-C	405	101			405				

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	33	8	497	0.066	33	0.1	0.1	7.756	A
B-A	84	21	397	0.211	83	0.2	0.3	11.467	B
C-AB	8	2	696	0.012	8	0.0	0.0	5.307	A
C-A	226	57			226				
A-B	22	6			22				
A-C	497	124			497				

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	33	8	497	0.066	33	0.1	0.1	7.760	A
B-A	84	21	397	0.211	84	0.3	0.3	11.490	B
C-AB	8	2	696	0.012	8	0.0	0.0	5.315	A
C-A	226	57			226				
A-B	22	6			22				
A-C	497	124			497				

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	27	7	528	0.051	27	0.1	0.1	7.185	A
B-A	68	17	428	0.160	69	0.3	0.2	10.031	B
C-AB	6	2	689	0.009	6	0.0	0.0	5.355	A
C-A	185	46			185				
A-B	18	4			18				
A-C	405	101			405				

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	23	6	550	0.041	23	0.1	0.0	6.832	A
B-A	57	14	450	0.127	57	0.2	0.1	9.174	A
C-AB	5	1	683	0.007	5	0.0	0.0	5.372	A
C-A	155	39			155				
A-B	15	4			15				
A-C	340	85			340				

Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2026, 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	Ravens Rock Road / Carmanhall Road	T-Junction	Two-way		1.52	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Baseline 2026	AM	ONE HOUR	00:00	01:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Carmanhall Road (East)		ONE HOUR	✓	496	100.000
B - Ravens Rock Road		ONE HOUR	✓	113	100.000
C - Carmanhall Road (West)		ONE HOUR	✓	224	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	21	475
	B - Ravens Rock Road	81	0	32
	C - Carmanhall Road (West)	219	5	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	0	5
	B - Ravens Rock Road	0	0	0
	C - Carmanhall Road (West)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.07	7.97	0.1	A	29	44
B-A	0.23	12.04	0.3	B	74	111
C-AB	0.01	5.37	0.0	A	7	10
C-A					199	298
A-B					19	29
A-C					436	654

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	24	6	544	0.044	24	0.0	0.0	6.922	A
B-A	61	15	444	0.137	60	0.0	0.2	9.368	A
C-AB	5	1	685	0.007	5	0.0	0.0	5.356	A
C-A	164	41			164				
A-B	16	4			16				
A-C	358	89			358				

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	521	0.055	29	0.0	0.1	7.318	A
B-A	73	18	421	0.173	73	0.2	0.2	10.342	B
C-AB	6	2	690	0.009	6	0.0	0.0	5.330	A
C-A	195	49			195				
A-B	19	5			19				
A-C	427	107			427				

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	35	9	487	0.072	35	0.1	0.1	7.965	A
B-A	89	22	388	0.230	89	0.2	0.3	12.014	B
C-AB	8	2	699	0.012	8	0.0	0.0	5.293	A
C-A	238	60			238				
A-B	23	6			23				
A-C	523	131			523				

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	35	9	487	0.072	35	0.1	0.1	7.970	A
B-A	89	22	388	0.230	89	0.3	0.3	12.042	B
C-AB	8	2	699	0.012	8	0.0	0.0	5.302	A
C-A	238	60			238				
A-B	23	6			23				
A-C	523	131			523				

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	520	0.055	29	0.1	0.1	7.323	A
B-A	73	18	421	0.173	73	0.3	0.2	10.371	B
C-AB	6	2	690	0.009	6	0.0	0.0	5.344	A
C-A	195	49			195				
A-B	19	5			19				
A-C	427	107			427				

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	24	6	544	0.044	24	0.1	0.0	6.930	A
B-A	61	15	444	0.137	61	0.2	0.2	9.410	A
C-AB	5	1	685	0.007	5	0.0	0.0	5.365	A
C-A	164	41			164				
A-B	16	4			16				
A-C	358	89			358				

Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2031, 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	Ravens Rock Road / Carmanhall Road	T-Junction	Two-way		1.58	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	Baseline 2031	AM	ONE HOUR	00:00	01:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Carmanhall Road (East)		ONE HOUR	✓	525	100.000
B - Ravens Rock Road		ONE HOUR	✓	118	100.000
C - Carmanhall Road (West)		ONE HOUR	✓	238	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	22	503
	B - Ravens Rock Road	85	0	33
	C - Carmanhall Road (West)	232	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	0	5
	B - Ravens Rock Road	0	0	0
	C - Carmanhall Road (West)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.08	8.19	0.1	A	30	45
B-A	0.25	12.68	0.3	B	78	117
C-AB	0.01	5.36	0.0	A	8	12
C-A					210	315
A-B					20	30
A-C					462	692

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	537	0.046	25	0.0	0.0	7.022	A
B-A	64	16	437	0.147	63	0.0	0.2	9.623	A
C-AB	6	2	686	0.009	6	0.0	0.0	5.355	A
C-A	173	43			173				
A-B	17	4			17				
A-C	379	95			379				

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	512	0.058	30	0.0	0.1	7.457	A
B-A	76	19	412	0.186	76	0.2	0.2	10.718	B
C-AB	8	2	693	0.011	8	0.0	0.0	5.327	A
C-A	206	52			206				
A-B	20	5			20				
A-C	452	113			452				

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	476	0.076	36	0.1	0.1	8.184	A
B-A	94	23	377	0.248	93	0.2	0.3	12.648	B
C-AB	10	3	702	0.015	10	0.0	0.0	5.288	A
C-A	252	63			252				
A-B	24	6			24				
A-C	554	138			554				

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	36	9	476	0.076	36	0.1	0.1	8.189	A
B-A	94	23	377	0.248	94	0.3	0.3	12.683	B
C-AB	10	3	702	0.015	10	0.0	0.0	5.295	A
C-A	252	63			252				
A-B	24	6			24				
A-C	554	138			554				

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	30	7	512	0.058	30	0.1	0.1	7.463	A
B-A	76	19	412	0.186	77	0.3	0.2	10.756	B
C-AB	8	2	693	0.011	8	0.0	0.0	5.345	A
C-A	206	52			206				
A-B	20	5			20				
A-C	452	113			452				

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	25	6	537	0.046	25	0.1	0.0	7.031	A
B-A	64	16	437	0.147	64	0.2	0.2	9.670	A
C-AB	6	2	686	0.009	6	0.0	0.0	5.363	A
C-A	173	43			173				
A-B	17	4			17				
A-C	379	95			379				

Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2041, 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	Ravens Rock Road / Carmanhall Road	T-Junction	Two-way		1.64	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	Baseline 2041	AM	ONE HOUR	00:00	01:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Carmanhall Road (East)		ONE HOUR	✓	546	100.000
B - Ravens Rock Road		ONE HOUR	✓	123	100.000
C - Carmanhall Road (West)		ONE HOUR	✓	247	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	23	523
	B - Ravens Rock Road	88	0	35
	C - Carmanhall Road (West)	241	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	0	5
	B - Ravens Rock Road	0	0	0
	C - Carmanhall Road (West)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.08	8.39	0.1	A	32	48
B-A	0.26	13.18	0.4	B	81	121
C-AB	0.02	5.36	0.0	A	8	12
C-A					218	328
A-B					21	32
A-C					480	720

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	26	7	532	0.050	26	0.0	0.1	7.107	A
B-A	66	17	432	0.153	66	0.0	0.2	9.813	A
C-AB	6	2	687	0.009	6	0.0	0.0	5.350	A
C-A	180	45			180				
A-B	17	4			17				
A-C	394	98			394				

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	31	8	506	0.062	31	0.1	0.1	7.580	A
B-A	79	20	406	0.195	79	0.2	0.2	11.001	B
C-AB	8	2	694	0.011	8	0.0	0.0	5.320	A
C-A	214	54			214				
A-B	21	5			21				
A-C	470	118			470				

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	39	10	468	0.082	38	0.1	0.1	8.377	A
B-A	97	24	370	0.262	96	0.2	0.3	13.138	B
C-AB	11	3	704	0.015	11	0.0	0.0	5.277	A
C-A	261	65			261				
A-B	25	6			25				
A-C	576	144			576				

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	39	10	468	0.082	39	0.1	0.1	8.385	A
B-A	97	24	370	0.262	97	0.3	0.4	13.180	B
C-AB	11	3	704	0.015	11	0.0	0.0	5.285	A
C-A	261	65			261				
A-B	25	6			25				
A-C	576	144			576				

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	31	8	506	0.062	32	0.1	0.1	7.588	A
B-A	79	20	406	0.195	80	0.4	0.2	11.045	B
C-AB	8	2	694	0.011	8	0.0	0.0	5.336	A
C-A	214	54			214				
A-B	21	5			21				
A-C	470	118			470				

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	26	7	532	0.050	26	0.1	0.1	7.120	A
B-A	66	17	432	0.153	66	0.2	0.2	9.865	A
C-AB	6	2	687	0.009	6	0.0	0.0	5.360	A
C-A	180	45			180				
A-B	17	4			17				
A-C	394	98			394				

Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2026 with Development, 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	Ravens Rock Road / Carmanhall Road	T-Junction	Two-way		1.55	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Baseline 2026 with Development	AM	ONE HOUR	00:00	01:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Carmanhall Road (East)		ONE HOUR	✓	512	100.000
B - Ravens Rock Road		ONE HOUR	✓	113	100.000
C - Carmanhall Road (West)		ONE HOUR	✓	231	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	27	485
	B - Ravens Rock Road	81	0	32
	C - Carmanhall Road (West)	221	10	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	0	5
	B - Ravens Rock Road	0	0	0
	C - Carmanhall Road (West)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.07	8.04	0.1	A	29	44
B-A	0.23	12.28	0.3	B	74	111
C-AB	0.02	5.42	0.0	A	13	20
C-A					199	298
A-B					25	37
A-C					445	668

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	24	6	541	0.045	24	0.0	0.0	6.955	A
B-A	61	15	440	0.139	60	0.0	0.2	9.467	A
C-AB	10	2	683	0.015	10	0.0	0.0	5.411	A
C-A	164	41			164				
A-B	20	5			20				
A-C	365	91			365				

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	518	0.056	29	0.0	0.1	7.362	A
B-A	73	18	416	0.175	73	0.2	0.2	10.482	B
C-AB	13	3	688	0.018	13	0.0	0.0	5.397	A
C-A	195	49			195				
A-B	24	6			24				
A-C	436	109			436				

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	35	9	483	0.073	35	0.1	0.1	8.034	A
B-A	89	22	382	0.233	89	0.2	0.3	12.253	B
C-AB	17	4	697	0.024	17	0.0	0.0	5.378	A
C-A	237	59			237				
A-B	30	7			30				
A-C	534	133			534				

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	35	9	483	0.073	35	0.1	0.1	8.039	A
B-A	89	22	382	0.233	89	0.3	0.3	12.282	B
C-AB	17	4	697	0.024	17	0.0	0.0	5.386	A
C-A	237	59			237				
A-B	30	7			30				
A-C	534	133			534				

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	517	0.056	29	0.1	0.1	7.371	A
B-A	73	18	416	0.175	73	0.3	0.2	10.516	B
C-AB	13	3	688	0.018	13	0.0	0.0	5.414	A
C-A	195	49			195				
A-B	24	6			24				
A-C	436	109			436				

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	24	6	541	0.045	24	0.1	0.0	6.966	A
B-A	61	15	440	0.139	61	0.2	0.2	9.510	A
C-AB	10	2	683	0.015	10	0.0	0.0	5.418	A
C-A	164	41			164				
A-B	20	5			20				
A-C	365	91			365				

Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2031 with Development, 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	Ravens Rock Road / Carmanhall Road	T-Junction	Two-way		1.50	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Baseline 2031 with Development	AM	ONE HOUR	00:00	01:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Carmanhall Road (East)		ONE HOUR	✓	485	100.000
B - Ravens Rock Road		ONE HOUR	✓	109	100.000
C - Carmanhall Road (West)		ONE HOUR	✓	231	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	26	459
	B - Ravens Rock Road	77	0	32
	C - Carmanhall Road (West)	221	10	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	0	5
	B - Ravens Rock Road	0	0	0
	C - Carmanhall Road (West)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.07	7.87	0.1	A	29	44
B-A	0.22	11.81	0.3	B	71	106
C-AB	0.02	5.38	0.0	A	13	20
C-A					199	298
A-B					24	36
A-C					421	632

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	24	6	548	0.044	24	0.0	0.0	6.873	A
B-A	58	14	445	0.130	57	0.0	0.1	9.271	A
C-AB	10	2	688	0.014	10	0.0	0.0	5.373	A
C-A	164	41			164				
A-B	20	5			20				
A-C	346	86			346				

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	525	0.055	29	0.0	0.1	7.250	A
B-A	69	17	422	0.164	69	0.1	0.2	10.198	B
C-AB	13	3	694	0.018	13	0.0	0.0	5.353	A
C-A	195	49			195				
A-B	23	6			23				
A-C	413	103			413				

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	35	9	493	0.071	35	0.1	0.1	7.861	A
B-A	85	21	390	0.218	84	0.2	0.3	11.782	B
C-AB	17	4	703	0.024	17	0.0	0.0	5.326	A
C-A	237	59			237				
A-B	29	7			29				
A-C	505	126			505				

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	35	9	493	0.071	35	0.1	0.1	7.865	A
B-A	85	21	390	0.218	85	0.3	0.3	11.806	B
C-AB	17	4	703	0.024	17	0.0	0.0	5.333	A
C-A	237	59			237				
A-B	29	7			29				
A-C	505	126			505				

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	29	7	525	0.055	29	0.1	0.1	7.255	A
B-A	69	17	422	0.164	70	0.3	0.2	10.226	B
C-AB	13	3	694	0.018	13	0.0	0.0	5.368	A
C-A	195	49			195				
A-B	23	6			23				
A-C	413	103			413				

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	24	6	547	0.044	24	0.1	0.0	6.881	A
B-A	58	14	445	0.130	58	0.2	0.2	9.310	A
C-AB	10	2	688	0.014	10	0.0	0.0	5.382	A
C-A	164	41			164				
A-B	20	5			20				
A-C	346	86			346				

Ravens Rock Road / Carmanhall Road - Junction Analysis - Baseline 2041 with Development, 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	Ravens Rock Road / Carmanhall Road	T-Junction	Two-way		1.67	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	Baseline 2041 with Development	AM	ONE HOUR	00:00	01:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Carmanhall Road (East)		ONE HOUR	✓	562	100.000
B - Ravens Rock Road		ONE HOUR	✓	123	100.000
C - Carmanhall Road (West)		ONE HOUR	✓	254	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	29	533
	B - Ravens Rock Road	88	0	35
	C - Carmanhall Road (West)	243	11	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Carmanhall Road (East)	B - Ravens Rock Road	C - Carmanhall Road (West)
From	A - Carmanhall Road (East)	0	0	5
	B - Ravens Rock Road	0	0	0
	C - Carmanhall Road (West)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.08	8.46	0.1	A	32	48
B-A	0.27	13.47	0.4	B	81	121
C-AB	0.03	5.42	0.0	A	15	23
C-A					218	327
A-B					27	40
A-C					489	734

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	26	7	530	0.050	26	0.0	0.1	7.142	A
B-A	66	17	428	0.155	66	0.0	0.2	9.919	A
C-AB	11	3	686	0.016	11	0.0	0.0	5.405	A
C-A	180	45			180				
A-B	22	5			22				
A-C	401	100			401				

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	31	8	503	0.063	31	0.1	0.1	7.629	A
B-A	79	20	401	0.197	79	0.2	0.2	11.171	B
C-AB	14	4	692	0.021	14	0.0	0.0	5.388	A
C-A	214	53			214				
A-B	26	7			26				
A-C	479	120			479				

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	39	10	464	0.083	38	0.1	0.1	8.456	A
B-A	97	24	364	0.266	96	0.2	0.4	13.422	B
C-AB	20	5	702	0.028	20	0.0	0.0	5.365	A
C-A	260	65			260				
A-B	32	8			32				
A-C	587	147			587				

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	39	10	464	0.083	39	0.1	0.1	8.465	A
B-A	97	24	364	0.266	97	0.4	0.4	13.465	B
C-AB	20	5	702	0.028	20	0.0	0.0	5.375	A
C-A	260	65			260				
A-B	32	8			32				
A-C	587	147			587				

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	31	8	503	0.063	32	0.1	0.1	7.640	A
B-A	79	20	401	0.197	80	0.4	0.2	11.210	B
C-AB	14	4	692	0.021	15	0.0	0.0	5.405	A
C-A	214	53			214				
A-B	26	7			26				
A-C	479	120			479				

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	26	7	530	0.050	26	0.1	0.1	7.158	A
B-A	66	17	428	0.155	67	0.2	0.2	9.975	A
C-AB	11	3	686	0.017	11	0.0	0.0	5.416	A
C-A	180	45			180				
A-B	22	5			22				
A-C	401	100			401				

Junctions 9
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Filename: Junction 2 - Carmanhall Road - Blackthorn Road.j9
Path: M:\Projects\21\21-118 - Ravens Rock\Design\Traffic
Report generation date: 07/02/2022 08:47:41

«Carmanhall Road - Blackthorn Road - Baseline 2041, AM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
Carmanhall Road - Blackthorn Road - Baseline 2022			
Stream B-C	0.7	12.62	0.42
Stream B-A	0.1	15.63	0.05
Stream C-AB	0.3	11.17	0.18
Carmanhall Road - Blackthorn Road - Baseline 2026			
Stream B-C	1.0	15.57	0.49
Stream B-A	0.1	18.82	0.07
Stream C-AB	0.3	12.54	0.21
Carmanhall Road - Blackthorn Road - Baseline 2031			
Stream B-C	0.7	12.62	0.42
Stream B-A	0.1	15.63	0.05
Stream C-AB	0.3	11.17	0.18
Carmanhall Road - Blackthorn Road - Baseline 2041			
Stream B-C	1.3	19.10	0.56
Stream B-A	0.1	22.39	0.08
Stream C-AB	0.4	13.91	0.25

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

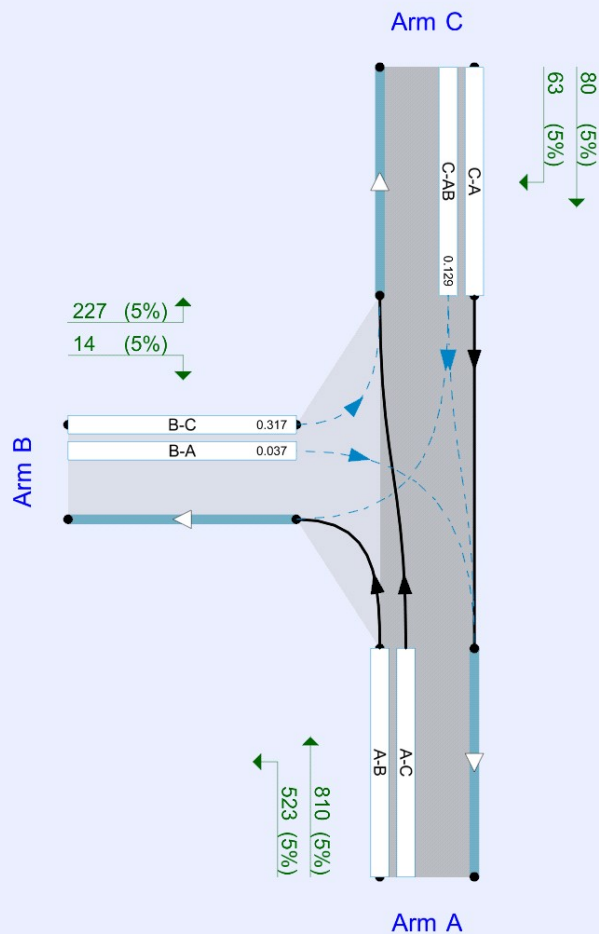
File summary

File Description

Title	
Location	
Site number	
Date	07/02/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DOMAINI.byrne
Description	

Units

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



Flows show original traffic demand (PCU/hr).
Streams (downstream end) show RFC ()

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Carmanhall Road - Blackthorn Road	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	Baseline 2041	AM	ONE HOUR	08:00	09:30	15	✓

Carmanhall Road - Blackthorn Road - Baseline 2041, 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	untitled	T-Junction	Two-way		3.34	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		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	9.00			0.0	✓	0.00

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	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	6.80	4.00	4.00	4.00	4.00		1.00	49	49

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	455	0.072	0.182	0.115	0.260
B-C	733	0.098	0.247	-	-
C-B	574	0.193	0.193	-	-

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

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1333	100.000
B		ONE HOUR	✓	241	100.000
C		ONE HOUR	✓	143	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	523	810
	B	14	0	227
	C	80	63	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	5	5
	B	5	0	5
	C	5	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.56	19.10	1.3	C	208	312
B-A	0.08	22.39	0.1	C	13	19
C-AB	0.25	13.91	0.4	B	72	108
C-A					59	89
A-B					480	720
A-C					743	1115

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	171	43	539	0.317	169	0.0	0.5	10.160	B
B-A	11	3	287	0.037	10	0.0	0.0	13.636	B
C-AB	55	14	427	0.129	54	0.0	0.2	10.122	B
C-A	52	13			52				
A-B	394	98			394				
A-C	610	152			610				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	204	51	501	0.407	203	0.5	0.7	12.653	B
B-A	13	3	248	0.051	13	0.0	0.1	16.051	C
C-AB	69	17	401	0.173	69	0.2	0.3	11.396	B
C-A	59	15			59				
A-B	470	118			470				
A-C	728	182			728				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	250	62	448	0.559	248	0.7	1.3	18.702	C
B-A	15	4	185	0.083	15	0.1	0.1	22.199	C
C-AB	92	23	364	0.252	91	0.3	0.4	13.838	B
C-A	66	16			66				
A-B	576	144			576				
A-C	892	223			892				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	250	62	447	0.559	250	1.3	1.3	19.101	C
B-A	15	4	184	0.084	15	0.1	0.1	22.386	C
C-AB	92	23	364	0.252	92	0.4	0.4	13.907	B
C-A	66	16			66				
A-B	576	144			576				
A-C	892	223			892				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	204	51	501	0.407	206	1.3	0.7	12.930	B
B-A	13	3	247	0.051	13	0.1	0.1	16.154	C
C-AB	69	17	401	0.173	70	0.4	0.3	11.462	B
C-A	59	15			59				
A-B	470	118			470				
A-C	728	182			728				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	171	43	539	0.317	172	0.7	0.5	10.320	B
B-A	11	3	287	0.037	11	0.1	0.0	13.692	B
C-AB	55	14	428	0.129	56	0.3	0.2	10.181	B
C-A	52	13			52				
A-B	394	98			394				
A-C	610	152			610				

Junctions 9
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Filename: Junction 4 - Ravens Rock Site Access.j9
Path: M:\Projects\21\21-118 - Ravens Rock\Design\Traffic
Report generation date: 07/02/2022 09:59:14

«Site Access - Raven's Rock - 2041 and Development, AM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

AM			
	Queue (PCU)	Delay (s)	RFC
Site Access - Raven's Rock - 2026 and Development			
Stream B-AC	0.0	0.00	0.00
Stream C-AB	0.0	5.64	0.00
Site Access - Raven's Rock - 2031 and Development			
Stream B-AC	0.0	0.00	0.00
Stream C-AB	0.0	5.26	0.00
Site Access - Raven's Rock - 2041 and Development			
Stream B-AC	0.0	0.00	0.00
Stream C-AB	0.0	5.21	0.00

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

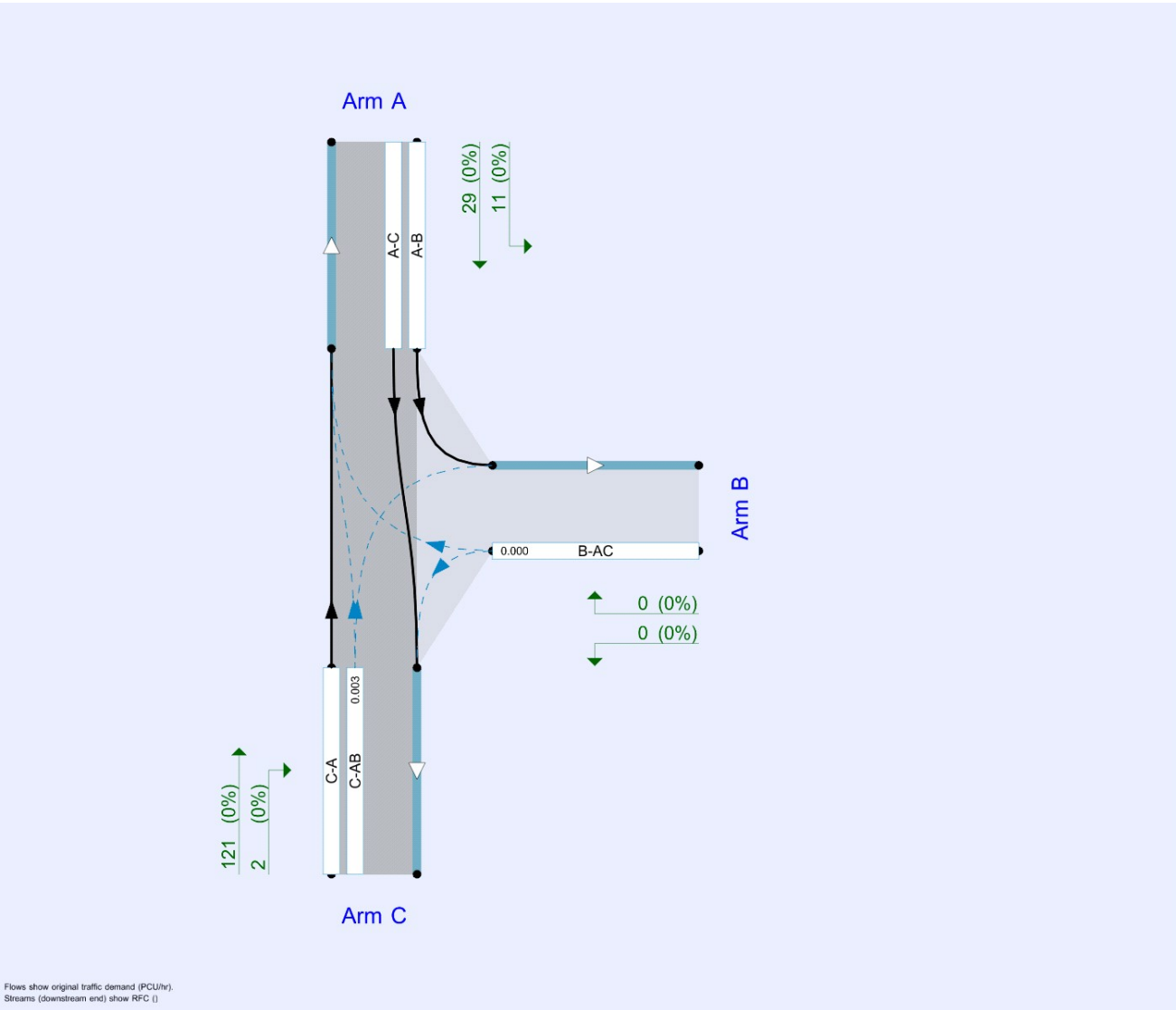
File summary

File Description

Title	
Location	
Site number	
Date	03/02/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DOMAIN\I.byrne
Description	

Units

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



Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Site Access - Raven's Rock	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2041 and Development	AM	ONE HOUR	08:00	09:30	15	✓

Site Access - Raven's Rock - 2041 and Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.08	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		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	8.00			115.0	✓	0.00

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	2.20	0	0

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	440	0.073	0.185	0.116	0.264
B-C	574	0.080	0.203	-	-
C-B	641	0.227	0.227	-	-

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

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	40	100.000
B		ONE HOUR	✓	0	100.000
C		ONE HOUR	✓	123	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	11	29
	B	0	0	0
	C	121	2	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	A	0	0
C-AB	0.00	5.21	0.0	A	2	3
C-A					111	166
A-B					10	15
A-C					27	40

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	486	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.43	693	0.003	2	0.0	0.0	5.209	A
C-A	91	23			91				
A-B	8	2			8				
A-C	22	5			22				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	483	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.53	703	0.003	2	0.0	0.0	5.136	A
C-A	108	27			108				
A-B	10	2			10				
A-C	26	7			26				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	480	0.000	0	0.0	0.0	0.000	A
C-AB	3	0.68	717	0.004	3	0.0	0.0	5.038	A
C-A	133	33			133				
A-B	12	3			12				
A-C	32	8			32				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	480	0.000	0	0.0	0.0	0.000	A
C-AB	3	0.68	717	0.004	3	0.0	0.0	5.038	A
C-A	133	33			133				
A-B	12	3			12				
A-C	32	8			32				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	483	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.53	703	0.003	2	0.0	0.0	5.138	A
C-A	108	27			108				
A-B	10	2			10				
A-C	26	7			26				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	486	0.000	0	0.0	0.0	0.000	A
C-AB	2	0.43	693	0.003	2	0.0	0.0	5.209	A
C-A	91	23			91				
A-B	8	2			8				
A-C	22	5			22				

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Filename: Junction 5 - Carmanhall Road Site Access.j9
Path: M:\Projects\21\21-118 - Ravens Rock\Design\Traffic
Report generation date: 07/02/2022 10:09:15

«Carmanhall - Site Access - 2041 and Development, AM

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
Carmanhall - Site Access - 2026 and Development			
Stream B-AC	0.1	11.33	0.12
Stream C-AB	0.0	5.40	0.00
Carmanhall - Site Access - 2031 and Development			
Stream B-AC	0.1	11.31	0.12
Stream C-AB	0.0	5.42	0.00
Carmanhall - Site Access - 2041 and Development			
Stream B-AC	0.1	12.27	0.13
Stream C-AB	0.0	5.37	0.01

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

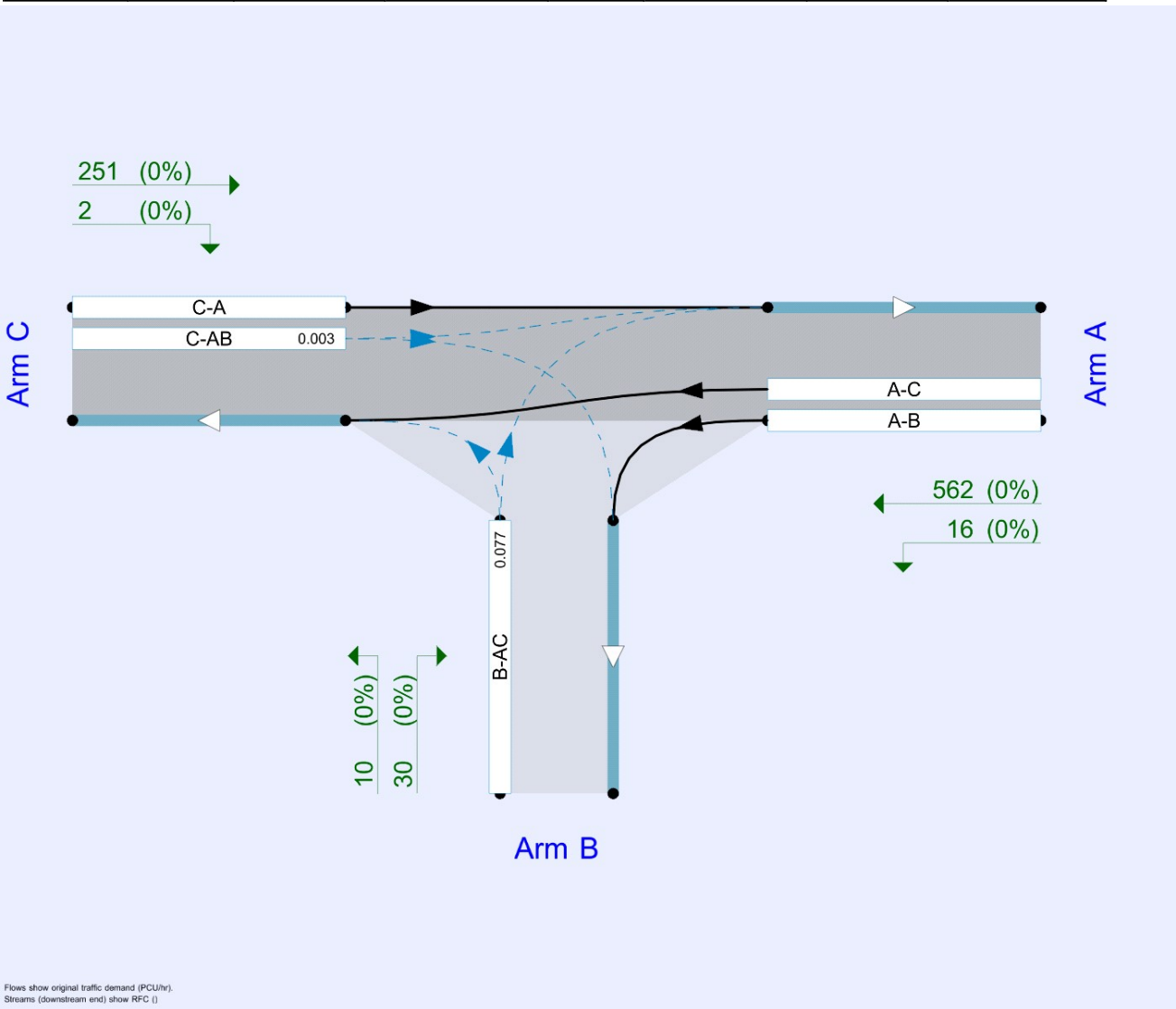
File summary

File Description

Title	
Location	
Site number	
Date	03/02/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DOMAIN\I.byrne
Description	

Units

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



Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Carmanhall - Site Access	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2041 and Development	AM	ONE HOUR	08:00	09:30	15	✓

Carmanhall - Site Access - 2041 and Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.58	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		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	6.50			125.0	✓	0.00

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	2.40	45	45

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	483	0.086	0.218	0.137	0.311
B-C	613	0.092	0.232	-	-
C-B	646	0.245	0.245	-	-

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

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	578	100.000
B		ONE HOUR	✓	40	100.000
C		ONE HOUR	✓	253	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	16	562
	B	30	0	10
	C	251	2	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.13	12.27	0.1	B	37	55
C-AB	0.01	5.37	0.0	A	3	4
C-A					229	344
A-B					15	22
A-C					516	774

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	8	393	0.077	30	0.0	0.1	9.914	A
C-AB	2	0.52	672	0.003	2	0.0	0.0	5.372	A
C-A	188	47			188				
A-B	12	3			12				
A-C	423	106			423				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	36	9	369	0.097	36	0.1	0.1	10.787	B
C-AB	3	0.67	680	0.004	3	0.0	0.0	5.317	A
C-A	225	56			225				
A-B	14	4			14				
A-C	505	126			505				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	11	337	0.131	44	0.1	0.1	12.262	B
C-AB	4	0.92	692	0.005	4	0.0	0.0	5.233	A
C-A	275	69			275				
A-B	18	4			18				
A-C	619	155			619				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	11	337	0.131	44	0.1	0.1	12.272	B
C-AB	4	0.92	692	0.005	4	0.0	0.0	5.235	A
C-A	275	69			275				
A-B	18	4			18				
A-C	619	155			619				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	36	9	369	0.097	36	0.1	0.1	10.806	B
C-AB	3	0.67	680	0.004	3	0.0	0.0	5.319	A
C-A	225	56			225				
A-B	14	4			14				
A-C	505	126			505				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	30	8	393	0.077	30	0.1	0.1	9.937	A
C-AB	2	0.52	672	0.003	2	0.0	0.0	5.375	A
C-A	188	47			188				
A-B	12	3			12				
A-C	423	106			423				

Junctions 9
PICADY 9 - Priority Intersection Module
Version: 9.5.1.7462 © Copyright TRL Limited, 2019
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Filename: Junction 6 - Blackthorn Site Access.j9
Path: M:\Projects\21\21-118 - Ravens Rock\Design\Traffic
Report generation date: 07/02/2022 10:14:11

«**Blackthorn - Site Access - 2041 and development, AM**

- »Junction Network
- »Arms
- »Traffic Demand
- »Origin-Destination Data
- »Vehicle Mix
- »Results

Summary of junction performance

	AM		
	Queue (PCU)	Delay (s)	RFC
Blackthorn - Site Access - 2026 and development			
Stream B-AC	0.2	11.04	0.17
Stream C-AB	0.0	0.00	0.00
Blackthorn - Site Access - 2031 and development			
Stream B-AC	0.2	11.19	0.17
Stream C-AB	0.0	0.00	0.00
Blackthorn - Site Access - 2041 and development			
Stream B-AC	0.2	12.22	0.18
Stream C-AB	0.0	0.00	0.00

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

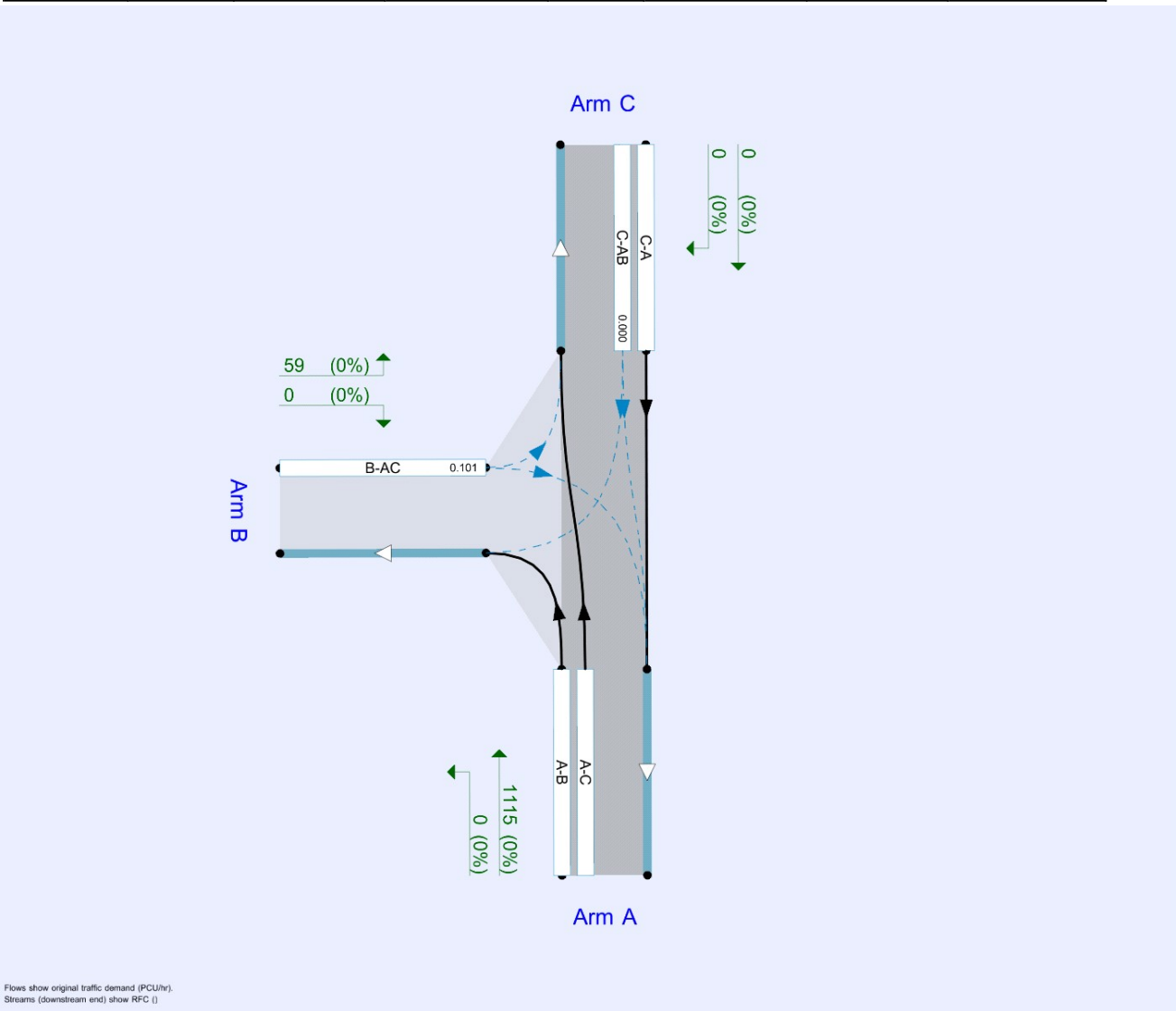
File summary

File Description

Title	
Location	
Site number	
Date	03/02/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	DOMAIN\I.byrne
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Blackthorn - Site Access	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2041 and development	AM	ONE HOUR	08:00	09:30	15	✓

Blackthorn - Site Access - 2041 and development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.61	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		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	9.00			150.0	✓	0.00

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	2.40	45	45

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	483	0.077	0.194	0.122	0.276
B-C	613	0.082	0.207	-	-
C-B	661	0.223	0.223	-	-

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

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1115	100.000
B		ONE HOUR	✓	59	100.000
C		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	0	1115
	B	0	0	59
	C	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.18	12.22	0.2	B	54	81
C-AB	0.00	0.00	0.0	A	0	0
C-A					0	0
A-B					0	0
A-C					1023	1535

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	11	440	0.101	44	0.0	0.1	9.087	A
C-AB	0	0	474	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	0	0			0				
A-C	839	210			839				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	53	13	406	0.131	53	0.1	0.1	10.189	B
C-AB	0	0	438	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	0	0			0				
A-C	1002	251			1002				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	65	16	360	0.181	65	0.1	0.2	12.199	B
C-AB	0	0	388	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	0	0			0				
A-C	1228	307			1228				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	65	16	360	0.181	65	0.2	0.2	12.220	B
C-AB	0	0	388	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	0	0			0				
A-C	1228	307			1228				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	53	13	406	0.131	53	0.2	0.2	10.214	B
C-AB	0	0	438	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	0	0			0				
A-C	1002	251			1002				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	44	11	440	0.101	45	0.2	0.1	9.115	A
C-AB	0	0	474	0.000	0	0.0	0.0	0.000	A
C-A	0	0			0				
A-B	0	0			0				
A-C	839	210			839				

UK and Ireland Office Locations

