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Traffic and Transport Assessment

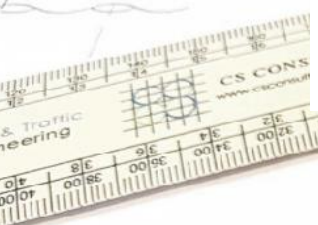
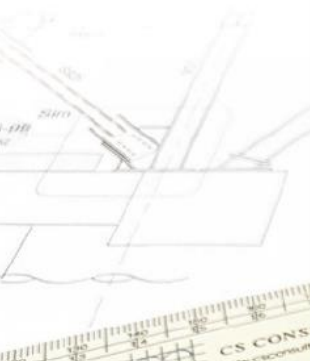
The Arboury

Belgard Road, Tallaght, Dublin 24

Client: Landmarque Belgard Development
Company Limited

Job No. L088

May 2022



TRAFFIC AND TRANSPORT ASSESSMENT

THE ARBOURY, BELGARD ROAD, TALLAGHT, DUBLIN 24

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1.0 INTRODUCTION

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by Landmarque Belgard Development Company Limited to prepare a Traffic and Transport Assessment to accompany an SHD planning application for a residential development located on the site of the former ABB Building on Belgard Road, Tallaght, Dublin 24.

Preparation of this report has been overseen by Gordon Finn, Roads and Traffic Engineer with CS Consulting. Gordon holds BA/BAI and MAI degrees in Civil, Structural, and Environmental Engineering from the University of Dublin, and is a member of the Institute of Engineers of Ireland. His relevant professional experience includes the preparation of Traffic and Transport Assessments, Travel Plans, and Environmental Impact Assessment Report chapters for a broad range of residential, commercial, and institutional developments.

In preparing this report, CS Consulting has made reference to the following:

- South Dublin County Council Development Plan 2016-2022
- Draft South Dublin County Development Plan 2022-2028
- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities) 2020
- TII Project Appraisal Guidelines (2011)
- TII Traffic and Transport Assessment Guidelines (2014)
- Trip Rate Information Computer System (TRICS) database
- CSO 2016 Census data
- Design Manual for Urban Roads and Streets (DMURS) 2019
- The Institution of Structural Engineers (IStructE) Design Recommendations for Multi-Storey and Underground Car Parks (2011)
- National Cycle Manual (2011)
- Greater Dublin Area Cycle Network Plan (2015)

The Traffic and Transport Assessment is to be read in conjunction with the engineering drawings and documents submitted by CS Consulting and with the various additional information submitted by the other members of the design team, as part of the planning submission.

1.1 Objective

The objective of this report is to examine the traffic implications associated with the proposed development, in terms of integration with existing traffic in the area. The report determines the impact of the proposed development on the existing road network, in particular through the operational assessment of 2no. junctions on Belgard Square North and Belgard Square East. The selection of these junctions, which define the study area, has been determined by proximity to the development site and by the degree to which the proposed development is projected to contribute to future traffic flows at specific locations; this is discussed in sub-section 4.5.

The report also examines the proposed development's vehicular access arrangements, car and bicycle parking provision, site layout, public transport availability, contribution to public transport demand, and facilities for pedestrians and cyclists.

1.2 Study Methodology

Prior to the preparation of this report, CS Consulting discussed the traffic and transport aspects of the proposed development with representatives of South Dublin County Council and An Bord Pleanála in the course of pre-planning meetings conducted on the 8th of January 2021 and the 19th of January 2022.

The methodology adopted in preparing this report corresponds to industry best practice and follows the guidance set out by Transport Infrastructure Ireland (TII) in its *Project Appraisal Guidelines* and its *Traffic and Transport Assessment Guidelines*. This methodology is summarised as follows:

- Receiving environment – A desktop study of the area surrounding the development site has been conducted, examining the nature of the surrounding existing transport infrastructure, the existing public transport services nearby, and proposed future improvements to public transport services and transport infrastructure.
- Traffic flow data – Traffic survey data for junctions surrounding the development site were obtained from a traffic survey undertaken on Tuesday the 15th of February 2022 by IDASO Limited, on behalf of CS Consulting, and a traffic survey undertaken on Thursday the 28th of November 2019 by Nationwide Data Collection (NDC) on behalf of the NTA under the BusConnects project (Core Bus Corridor no. 9).
- Trip generation – A development trip generation assessment has been carried out using data extracted from the Trip Rate Information Computer System (TRICS) database of traffic surveys, to determine the potential vehicular trips to and from the proposed development site during peak hours.
- Parking – Car and bicycle parking provisions within the proposed development have been assessed with reference to the parking standards set out in the Local Authority development plan and to those given in the *2020 Design Standards for New Apartments*.
- Public transport capacity and demand – The approximate capacity of existing public transport services close to the development site has been established, and the development's projected public transport demand at peak times has been calculated and compared to the existing capacity.

1.3 Structure of Report

The structure of this report corresponds to the various stages outlined above, and the key tasks summarised below:

- Section 2 describes the proposed development location, the existing land use, and the development proposals.
- Section 3 provides an overview of the existing local road network and existing traffic conditions, as well as identifying relevant proposed improvements to local infrastructure or services.
- Sections 4 and 5 detail the analysis as described in the study methodology above. The analysis examines trip generation, trip distribution, and resulting junction operational performance with the development in place.
- Section 6 assesses the proposed car and bicycle parking provision for the development, with reference to Local Authority standards and to the 2020 *Design Standards for New Apartments*.
- Section 7 examines the development's vehicular access arrangements, internal layout, servicing arrangements, nearby public transport services, the development's contribution to public transport demand, and pedestrian and cyclist facilities.
- Section 8 provides an overview of the relevant opinions and recommendations received from An Bord Pleanála and from South Dublin County Council in the course of the Strategic Housing Development application process to date, and details the measures taken in response to these comments.
- Section 9 presents the conclusions of the report.

Luas tram stop into the town centre (500m). The site is within 2.5 km of the M50 motorway to the east.

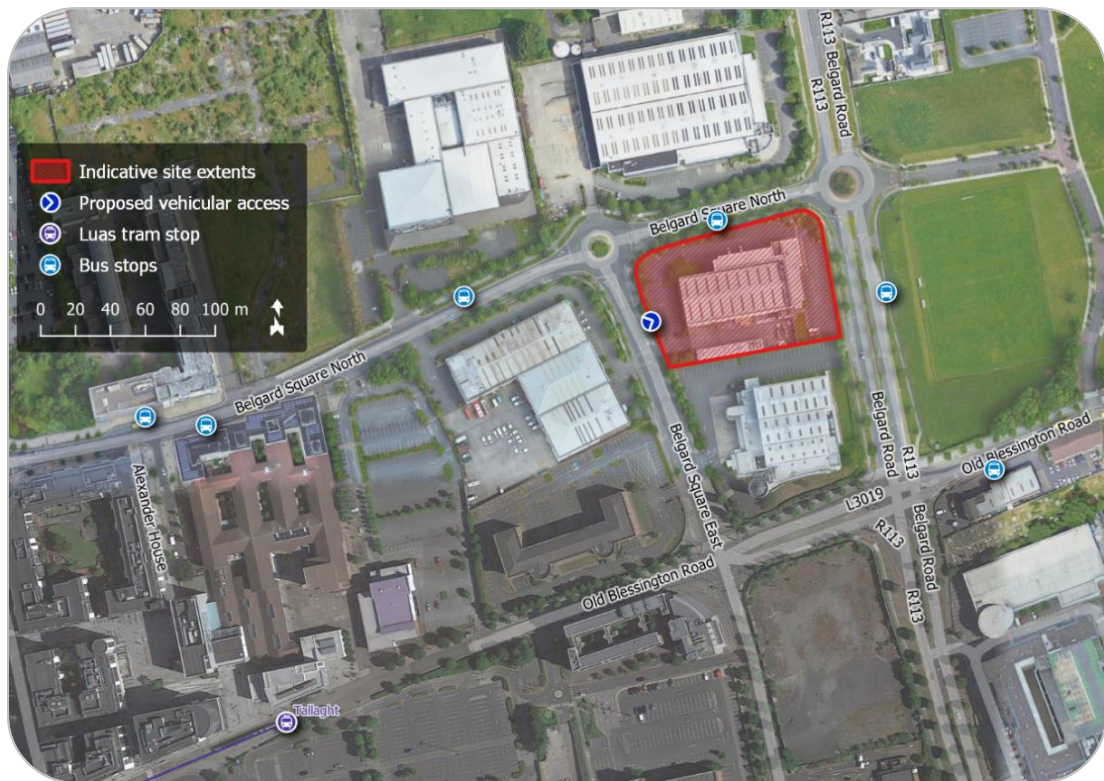


Figure 2 – Site Environs
(map data and imagery: NTA, OSM Contributors, Google)

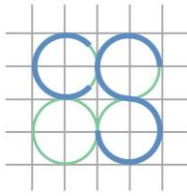
2.2 Existing Land Use

The subject site, formerly occupied by ABB Limited but now vacant, presently comprises an industrial/office building, a former storage yard, and car parking. The site currently generates no vehicular traffic.

2.3 Proposed Development

The proposed development will consist of:

1. Demolition of all existing structures on site (with a combined gross floor area of c. 3625 sqm)
2. The construction of a mixed-use residential development set out in 3 No. blocks including a podium over a basement, ranging in height from 2 to 13 storeys (with core access above to roof terrace), comprising:
 - 334 no. residential units of which 118 No. will be Build to Rent (BTR) residential units, with associated amenities and facilities across the development,
 - 4 No. retail/café/restaurant units and 3 no. commercial spaces associated with the 3 no. live-work units (723 sqm combined),
 - Childcare facility (144 sq.m.),
 - 670 No. bicycle parking spaces including 186 visitor spaces; 117 car parking spaces (including 6 disabled spaces) are provided at ground floor and basement level.
 - The overall development has a Gross Floor Area of 29,784 sq.m.
 - Two (2) podium residential courtyards and three (3) public accessible pocket parks, two (2) to the North & one (1) to the South.
 - Linear Park (as a provision of the Tallaght Town Centre LAP) providing safe public pedestrian and cycling access between Belgard Rd and Belgard Square East
3. Of the total 334 residential units proposed, unit types comprise:
 - Block A (Build-to-Rent)
 - 91 no. 1 bed units
 - 1 no. 2 bed 3 person units
 - 26 no. 2 bed 4 person units including 2 no. duplex units



- Blocks B & C
 - 2 no. live-work studio units
 - 102 no. 1-bed units
 - 12 no. 2-bed 3 person units
 - 88 no. 2-bed 4 person units including 5 no. duplex units
 - 1 no. 2-bed 4 person live-work unit
 - 11 no. 3-bed units
- 4. All associated works, plant, services, utilities, PV panels and site hoarding during construction.

3.0 RECEIVING ENVIRONMENT

3.1 Existing Road Network Characteristics

3.2.1 Belgard Road

- Dual carriageway road with a pavement width of 7.5m, including a cycle lane, in each direction separated by a grass verge. Total carriageway width is 18.5m in the vicinity of the subject development.
- Regional road with a north-south alignment, leading to the N81 in the south and to the N7 in the north.
- Subject to a 50km/h speed limit.
- Raised footpaths are present along both sides of Belgard Road. No bus lanes are present.
- On-street parking is not present along sections of Belgard Road in the vicinity of the subject development site.
- On-road cycle lanes are present along both directions of Belgard road.

3.2.2 Belgard Square North

- Single carriageway road with a pavement width of approximately 9m in the vicinity of the subject development site.
- Link road with an east-west alignment, leading to Belgard Road in the east and to Cookstown Way in the west.
- Subject to a 50km/h speed limit.
- Raised and segregated footpaths are present along both sides of Belgard Square North.
- No bus or cycle lanes are present on Belgard Square North.
- On-street parking is not present on either side Belgard Square North in the vicinity of the subject development site.

3.2.3 Belgard Square East

- Single carriageway road with a pavement width of approximately 9m in the vicinity of the subject development site.
- Link road with a north-south alignment, leading to the Belgard Square North in the north and to the N81 in the south.
- Subject to a 50km/h speed limit.
- Raised and segregated footpaths are present along both sides of Belgard Square East.
- No bus or cycle lanes are present on Belgard Square East.
- On-street parking is not present on either side Belgard Square East in the vicinity of the subject development site.

3.2.4 Blessington Road

- Dual carriageway road with a pavement width of approximately 17m in the vicinity of the subject development site, which includes two lanes in each direction separated by a 3m concrete verge.
- Link road with an east-west alignment, leading to the Belgard Road in the east and to the Cookstown Way in the west.
- Subject to a 50km/h speed limit.
- Raised and segregated footpaths are present along both sides of Blessington Road.
- No bus or cycle lanes are present on Blessington Road.
- On-street parking is not present on either side Blessington Road in the vicinity of the subject development site.

3.2 **Proposed Road Network Improvements**

3.2.1 BusConnects Core Bus Corridors

Under the BusConnects Core Bus Corridor (CBC) project, it is proposed to implement Core Bus Corridor no. 9 (Greenhills to City Centre) along Belgard Square North, Belgard Square East, and Blessington Road,

passing along the western boundary of the subject development site. These BusConnects proposals do not require any land take from the development site but do include the following elements that will affect existing local traffic flows:

- conversion of the existing 4-arm roundabout junction of Belgard Square East with Belgard Square North to a 4-arm signal controlled junction; and
- implementation of a bus gate at the southern arm of this reconfigured junction, prohibiting all vehicle movements except buses between Belgard Square East and Belgard Square North.

It is also proposed under BusConnects that a bus stop be located on Belgard Square East, immediately to the north of the proposed development access.

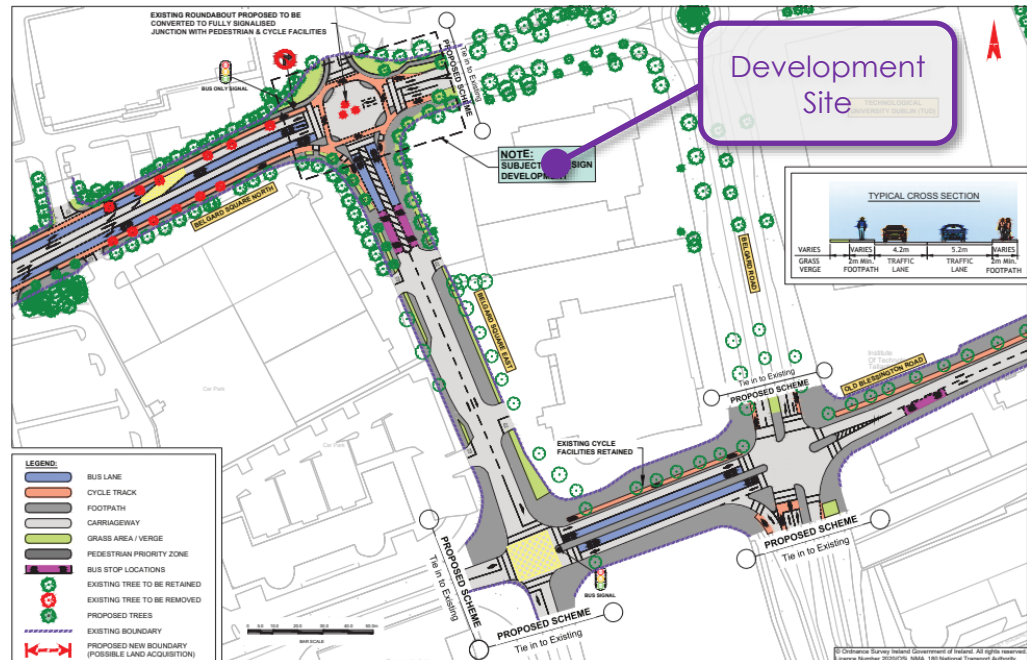


Figure 3 – Core Bus Corridor no.9 Greenhills / City Centre
(background imagery source: NTA)

The effects of these Core Bus Corridor measures on the distribution of existing local traffic, as well as on that of traffic to be generated by the

proposed development, are examined in Section 4 of this report. Integration of the proposed development's access arrangements with the Core Bus Corridor design along Belgard Square East is discussed in sub-section 7.7.

3.2.2 Greater Dublin Area Cycle Network Plan

As part of the *Cycle Network Plan for the Greater Dublin Area*, administered by the National Transport Authority, it is proposed that primary cycle route 9A be implemented along Blessington Road, to the south of the subject development site. There is also a feeder lane proposed for Belgard Square North, to the north of the development site. These routes will link the existing secondary route, 9C, and primary route, S05, currently present on Belgard Road and further increase connectivity across Dublin. No information is yet publicly available on the proposed design or delivery timeframe of these objectives.

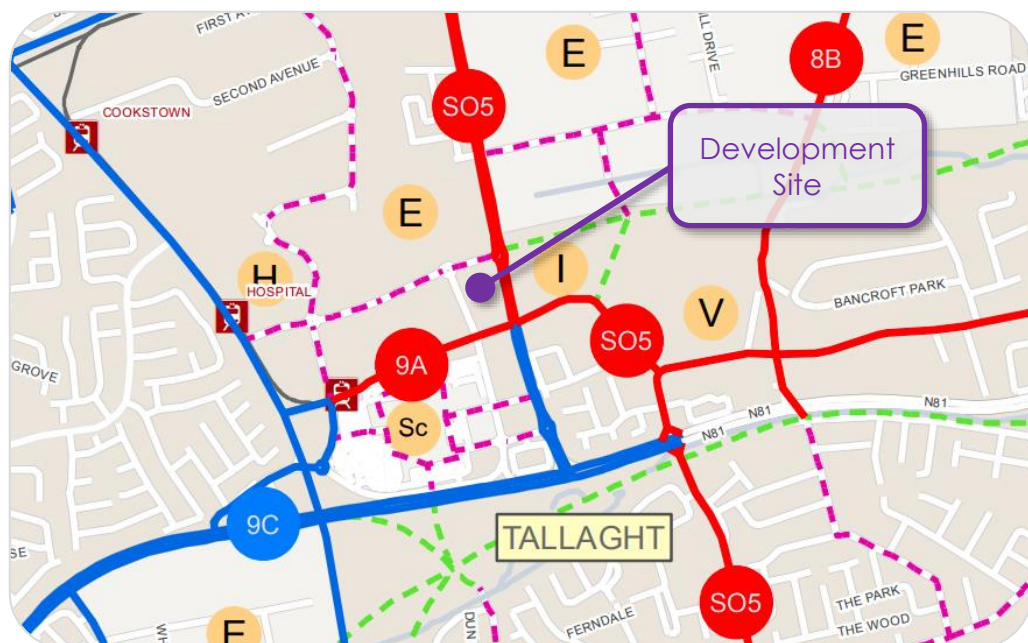


Figure 4 – Extract of Greater Dublin Area Cycle Network Plan mapping
(background imagery source: NTA)

3.3 Existing Local Traffic Flows

Traffic survey data for junctions surrounding the development site were obtained from two sources:

- a traffic survey undertaken on Tuesday the 15th of February 2022 by IDASO Limited, on behalf of CS Consulting; and
- a traffic survey undertaken on Thursday the 28th of November 2019 by Nationwide Data Collection (NDC) on behalf of the NTA under the BusConnects project (Core Bus Corridor no. 9).

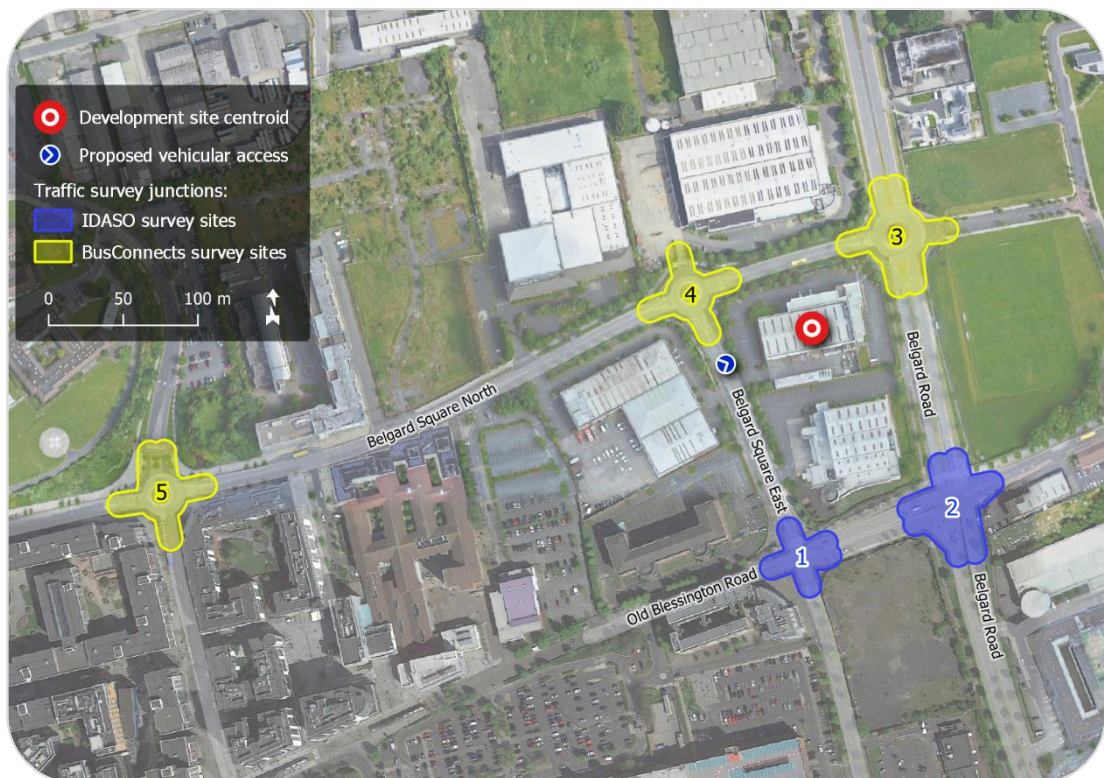


Figure 5 – Surveyed Road Junctions
(map data and imagery: EPA, OSM Contributors, Google)

3.3.1 IDASO traffic survey

The IDASO traffic survey was conducted between 07:00 and 19:00 at 2no. key junctions on the road network south of the proposed development site (see Figure 5):

- J1. Belgard Square East / Old Blessington Road
(4-arm signal-controlled junction)
- J2. Belgard Road / Old Blessington Road
(4-arm signal-controlled junction)

3.3.2 NDC traffic survey

The NDC traffic survey was conducted between 07:00 and 19:00 at a total of 47no. sites along the BusConnects Core Bus Corridor no. 9 route. The following 3no. junctions to the north and west of the proposed development site were extracted from this larger data set (see Figure 5):

- J3. Belgard Road / Belgard Square North / TUD Campus
(4-arm roundabout junction)
- J4. Belgard Square East / Belgard Square North / Vardis Site
(4-arm roundabout junction)
- J5. Belgard Square North / Belgard Square West / Tallaght Hospital
(4-arm roundabout junction)

The 3no. junction sites selected from this traffic survey, referred to in this report as J3, J4, and J5, are numbered in the NDC survey dataset as sites 9-5, 9-4, and 9-3, respectively.

Raw data from both traffic surveys are provided as Appendix A to this report. The junction turning count data extracted from the 2019 NDC/BusConnects traffic survey (sites J3, J4, and J5) were adjusted and scaled to be coherent with the traffic movements recorded by IDASO in 2022 at junction sites J1 and J2.

Table 1 – Total Existing Peak Traffic at Surveyed Junctions

Time Period	Total Junction Traffic Movements (Passenger Car Units)				
	J1	J2	J3	J4	J5
AM Peak (08:45-09:45)	542	1082	1855	1257	1583
PM Peak (16:00-17:00)	704	1245	1956	1205	1408

The peak hour traffic flows across all 5no. survey sites were found to occur between 08:45 and 09:45 (AM peak hour) and between 16:00 and 17:00 (PM peak hour). The baseline traffic movements at each surveyed junction during the peak hours have been isolated from the count data and are included in the traffic flow matrices given in Appendix C. Total existing peak hour flows at the surveyed junctions (for the baseline year of 2022) are also given in Table 1.

3.4 Road Traffic Collision Data

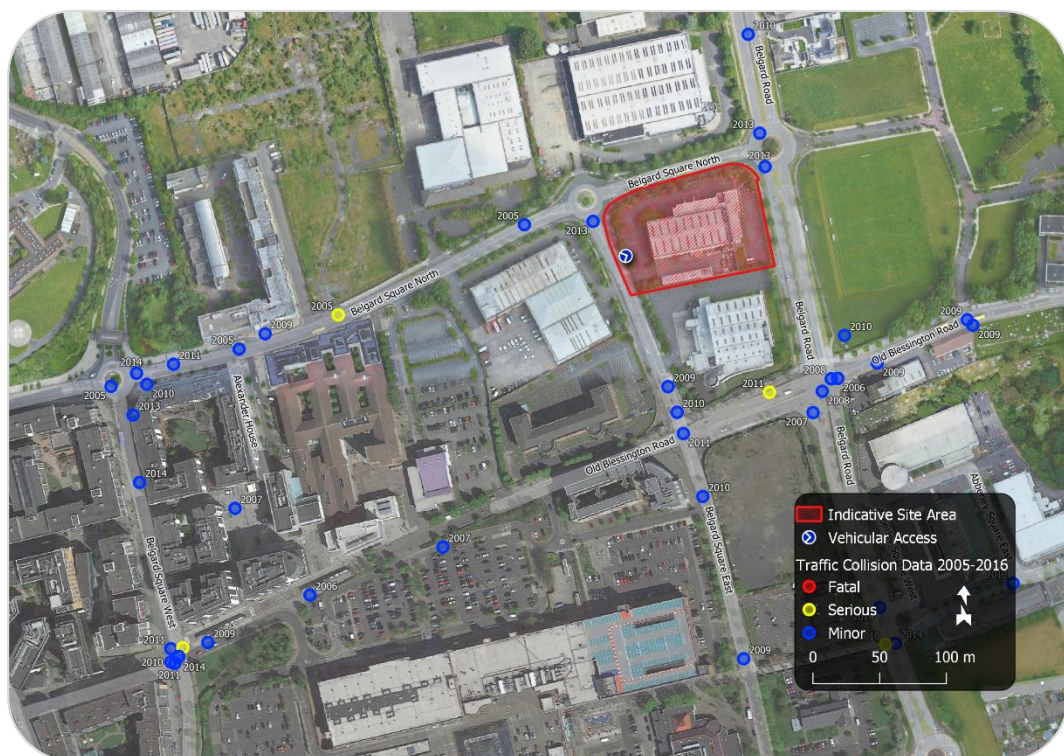


Figure 6 – Recorded road traffic collisions on surrounding road network
(map data and imagery: RSA, OSM Contributors, Google)

The locations of recorded road traffic collisions in the vicinity of the development site over the 12-year period from 2005 to 2016 (inclusive), which have been collated by the Road Safety Authority, are shown in Figure 6. These indicate a low frequency of traffic collisions in the immediate vicinity of the subject development site.

3.5 Future Year Background Traffic Growth

The operational impact of traffic on the road network within the proposed development's area of influence has been assessed for the following years:

- 2022 Baseline year
- 2025 Assumed opening year
- 2030 5 years after opening
- 2040 Design year (15 years after opening)

Unit 5.3 of the TII *Project Appraisal Guidelines (PE-PAG-02017 Travel Demand Projections, October 2021)* has been used to apply growth factors to the existing surveyed background traffic flows, to obtain traffic flows for future year junction assessments. The TII annual growth rates applied are given in Table 2, and the resultant cumulative growth in background traffic for each assessment year is given in Table 3.

Table 2 – TII Central Growth Rates (Light Vehicles)

Geographic Area	Background Traffic Growth per Year		
	2016-2030	2030-2040	2040-2050
Dublin Metropolitan Area	+ 1.62%	+ 0.51%	+ 0.44%

Table 3 – Predicted Background Traffic Growth ¹

2025 Year of opening	2030 Opening year +5	2040 Opening year +15
+ 4.9%	+ 13.7%	+ 19.7%

3.6 Existing Pedestrian and Cyclist Facilities

Existing pedestrian facilities on Belgard Square East, Belgard Square North, Belgard Road, and other neighbouring streets in the vicinity of the

¹ Cumulative percentage increases over 2022 baseline traffic levels.

development site are generally in good condition. Raised footpaths and public lighting are in place along all streets in the vicinity of the subject development site.

Refer to the Residential Travel Plan document submitted with this application for more details of pedestrian and cyclist accessibility.

3.7 Nearby Committed Development

2no. active planning permissions have been identified that are considered sufficiently close to the subject development site to have a potential significant influence on the traffic flows at the junctions considered in this report, if developed as permitted:

A. Belgard Gardens SHD (ABP Planning Ref. 301909-21)

Demolition of buildings and construction of Phase 1 of mixed-use residential development comprising 427no. apartments, 358no. bed space student accommodation, and childcare facilities, with vehicular access onto Belgard Square North.

B. Airton Plaza SHD (ABP Planning Ref. 305763-20)

Demolition of existing industrial buildings and construction of residential development comprising 2 blocks of 328no. apartments, with vehicular access onto Airton Road.

Refer to Figure 7 for the locations of these committed developments.

The vehicular traffic projected to be generated by these 2no. committed developments has been included in all future year assessment scenarios within this report, as discussed in sub-section 4.6.

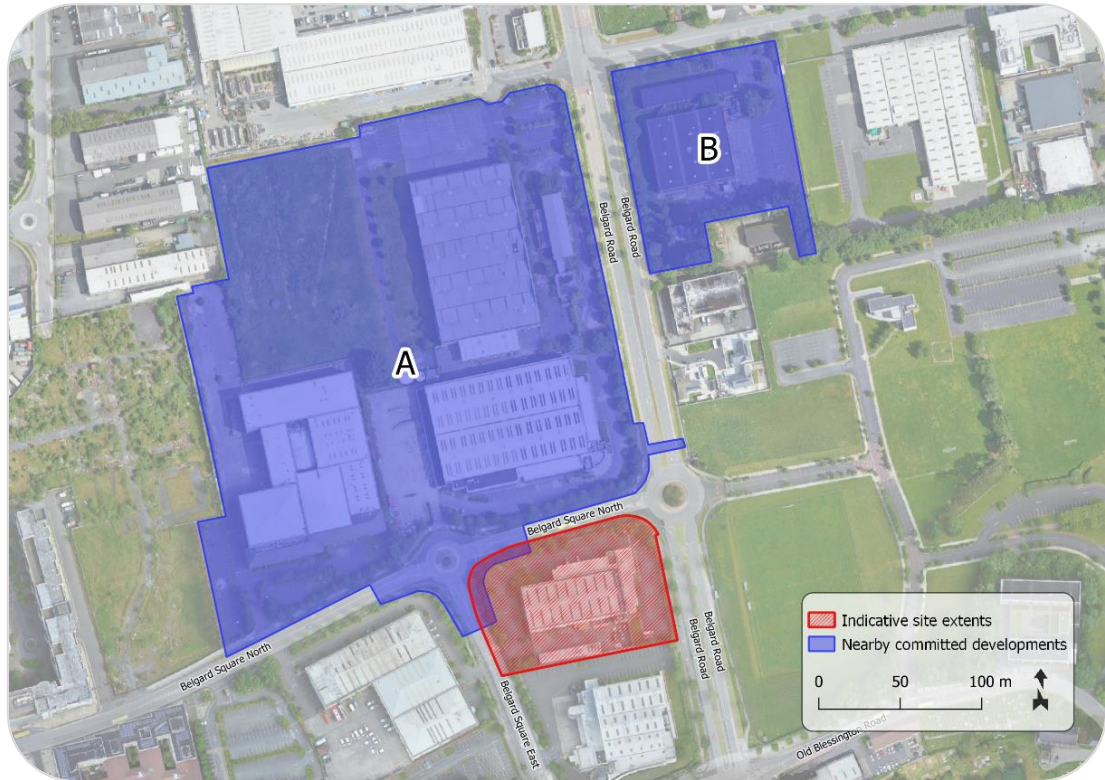
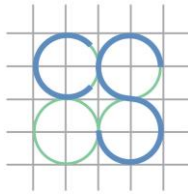


Figure 7 – Nearby committed developments
(map data and imagery: DoHPLG, OSM Contributors, Google)

4.0 TRAFFIC GENERATION AND TRIP DISTRIBUTION

4.1 Proposed Development Trip Generation

Trip generation factors from the TRICS database have been used to predict the trip generation to and from the proposed development, once completed, for both the AM and PM peak hour periods. Full details of the TRICS information used in the assessments are provided in Appendix B.

The proposed development comprises the following elements relevant to vehicular trip generation:

- 334no. apartments
- 4no. retail/café/restaurant units with a combined gross floor area of 723m²
- a crèche with a gross floor area of 144m², with 4no. classrooms.

For a full schedule of the proposed development, please refer to the architectural documentation submitted with this application.

The development's retail/café/restaurant units and crèche are not considered to have any potential to generate external vehicular trips to and from the development, given that they are expected to serve the immediate vicinity and shall have no allocated car parking (see sub-section 6.1). These elements have therefore been excluded from the vehicular trip generation calculations detailed here.

The TRICS sub-category '03 Residential / C – Flats Privately Owned' has been employed, being the most appropriate for this type of development. This is described in the TRICS land use category definitions as follows:

“Housing developments where at least 75% of households are privately owned. Of the total number of units, 75% must also be flats (sum of flats in blocks and "split" houses), with no more than 25% of the total units being "non-split" houses. Includes properties that are privately owned and then privately rented. Note that "Help to Buy" dwellings or any other where

residents have equity in a property are considered to be privately owned. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms."

The TRICS trip rates for the proposed development have been selected from the above category, restricted insofar as possible to similar edge-of-city-centre locations, and further refined with reference to 2016 CSO census data on the basis of:

- the population within 1 mile of the development site (35,000 approx.);
- the population within 5 miles of the development site (430,000 approx.);
- the aggregate mean car ownership rate within 5 miles of the development site (1.2 cars per household).

The trip rates selected are given in Table 4 and the resultant proposed development trip generation figures obtained are given in Table 5.

Table 4 – TRICS Apartment Trip Generation Rates

Time Period	Arrivals per hour per unit	Departures per hour per unit
AM Peak (08:45-09:45)	0.048	0.087
PM Peak (16:00-17:00)	0.111	0.059

Table 5 – Proposed development Trip Generation from TRICS

Time Period	Arrivals	Departures	Total Trips
AM Peak (08:45-09:45)	16	29	45
PM Peak (16:00-17:00)	37	20	57

4.2 Proposed Development Trip Distribution

A cordon method has been employed to establish the future distribution of traffic to be generated by the proposed development. This is based upon the

existing surveyed mainline traffic flows at key locations on the surrounding street network.

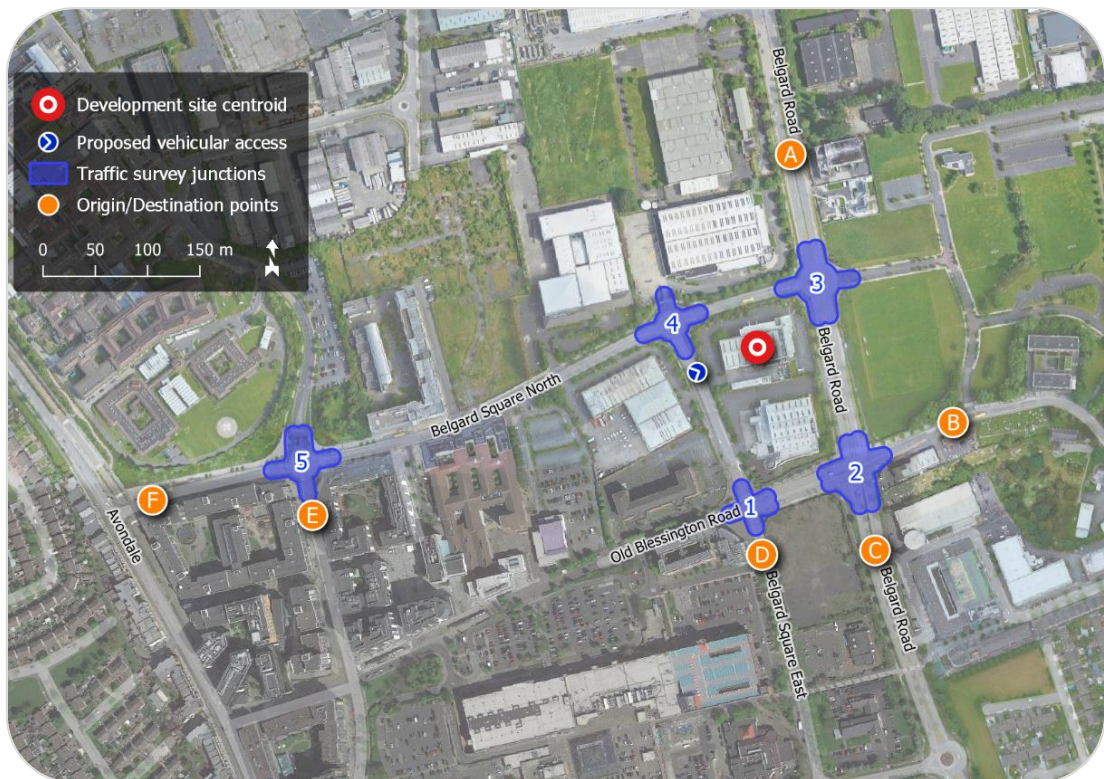


Figure 8 – Subject development traffic origin/destination points
(map data and imagery: OSi, OSM Contributors, Google)

As shown in Figure 8, vehicular traffic arriving to or departing from the development site is expected to leave or enter the immediate surrounding area via one of the following streets:

- (A) Belgard Road to/from the north (at surveyed junction J3);
- (B) Old Blessington Road to/from the east (at surveyed junction J2);
- (C) Belgard Road to/from the south (at surveyed junction J2);
- (D) Belgard Square East to/from the south (at surveyed junction J1);
- (E) Belgard Square West to/from the south (at surveyed junction J5); or
- (F) Belgard Square North to/from the west (at surveyed junction J5).

The predicted distribution of vehicular trips to and from the subject development has been established following the proportions of the surveyed inbound and outbound mainline traffic flows at these six points on the local road network, in each of the peak hour periods.

Table 6 and Table 7 give the proportions and numbers of trips from/to each network point, and the other surveyed junctions through which they will pass. All vehicular trips arriving or departing shall use the proposed development access at the site's western boundary (numbered as junction J6).

Table 6 – Distribution of Development Arrival Trips

Network Entry Point	Gateway junction	Other Junctions Passed Through	% of AM Trips	% of PM Trips	Number of AM Trips	Number of PM Trips
A	3	4,6	32.3%	28.9%	5	11
B	2	3,4,6	4.4%	9.4%	1	3
C	2	3,4,6	22.7%	19.4%	4	7
D	1	6	11.2%	12.7%	2	5
E	5	4,6	5.9%	13.9%	1	5
F	5	4,6	23.5%	15.7%	4	6

Table 7 – Distribution of Development Departure Trips

Network Exit Point	Gateway junction	Other Junctions Passed Through	% of AM Trips	% of PM Trips	Number of AM Trips	Number of PM Trips
A	3	6,4	32.1%	40.8%	9	8
B	2	6,1	6.5%	3.2%	2	1
C	2	6,1	15.8%	20.6%	5	4
D	1	6	6.2%	6.2%	2	1
E	5	6,4	23.3%	9.3%	7	2
F	5	6,4	16.1%	19.8%	5	4

It is noted that, under the scenario in which BusConnects Core Bus Corridor no. 9 has been implemented along Belgard Square East (as described in sub-

section 3.2), some traffic routes will be slightly different but the proportion to/from each network point shall remain the same.

4.3 Reassignment of Existing Traffic due to BusConnects Measures

As described in sub-section 3.2, the measures proposed for Core Bus Corridor no. 9 under the BusConnects project include implementation of a bus gate at the southern arm of the reconfigured junction at the north-west corner of the development site, prohibiting all vehicle movements except buses between Belgard Square East and Belgard Square North.

Separate traffic flow matrices have been prepared for each junction (refer to Appendix A) for the assessment scenarios under which this bus gate has been implemented. Under these scenarios, all existing traffic except buses has been removed from the southern arm of Junction 4 and redistributed via other junctions (see Figure 8).

4.4 Addition of New Bus Traffic due to BusConnects

The Core Bus Corridor Project is accompanied within the BusConnects framework by the Dublin Area Revised Bus Network initiative, which seeks to improve the overall convenience and efficiency of the city's bus routes. Under these proposals, it is proposed to implement new spine routes A3, D2, D4, and D5 along Belgard Square North and Belgard Square East, as well as new orbital routes S6 and S8. These shall therefore pass through surveyed junctions J1, J2, J4, and J5 (see sub-section 3.3) and shall pass the proposed new development access on Belgard Square East. Orbital route W2 and radial route 82 are to be implemented along Belgard Square North and Belgard Road; these shall pass through most of the surveyed junctions but shall not pass the proposed new development access.

The frequencies and routes of these future bus services are given in Table 8 and shown on Figure 9.

Table 8 – Future BusConnects Route Frequencies

Route No.	Buses during AM Peak Hour (in each direction)	Buses during PM Peak Hour (in each direction)
A3	6	6
D2	5	5
D4	3	3
D5	3	3
S6	5	5
S8	5	5
82	4	4
W2	5	5



Figure 9 – Extract of Revised Bus Network Tallaght area map
(background imagery source: NTA)

Additional bus traffic flows corresponding to these routes and frequencies have been included in all future assessment scenarios that assume implementation of BusConnects Core Bus Corridor no. 9. To ensure a robust

assessment, however, no existing bus traffic has been removed from the network under these assessment scenarios.

4.5 Proportional Increases in Traffic

Table 9 and Table 10 show the absolute and proportional increases in peak hour traffic flows that shall result from the proposed development at each of the 5no. surveyed junctions shown in Figure 5 (page 13), both without and with the implementation of BusConnects measures.

Table 9 – Changes in Traffic Flows at Junctions (Without BusConnects)

Surveyed Junction No.	Background Traffic Flows at Junction (Year 2025) ²		Development-Related Trips Through Junction		Proportional Change	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
J1	579	753	11	11	1.9%	1.5%
J2	1240	1429	12	15	1.0%	1.0%
J3	2116	2247	14	19	0.7%	0.8%
J4	1571	1522	31	36	2.0%	2.4%
J5	1762	1563	17	17	1.0%	1.1%

Table 10 – Changes in Traffic Flows at Junctions (With BusConnects)

Surveyed Junction No.	Background Traffic Flows at Junction (Year 2025) ³		Development-Related Trips Through Junction		Proportional Change	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
J1	653	765	30	40	4.6%	5.2%
J2	1333	1513	26	34	2.0%	2.2%
J3	2394	2438	31	36	1.3%	1.5%
J4	1504	1345	17	17	1.1%	1.3%
J5	1898	1704	17	17	0.9%	1.0%

² Total projected vehicle movements (PCU/hour) in the development's opening year, with the existing road network structure, including committed development.

³ Total projected vehicle movements (PCU/hour) in the opening year, accounting for traffic redistribution due to BusConnects and including committed development.

The TII *Traffic and Transport Assessment Guidelines* (PE-PDV-02045) advise that Transport Assessments should generally be applied where traffic to and from a development is predicted to exceed 10% of the existing background traffic on the adjoining road (or 5% at sensitive locations).

As shown in Table 9, at no junction shall the subject development result in an increase of more than 5% in total traffic flows in either peak hour period, with the existing road network structure. With the implementation of BusConnects measures, including the bus gate at junction J4 and consequent redistribution of background traffic, traffic to and from the subject development (which shall also be distributed differently) shall result in an increase of 5.2% in total traffic flows at junction J1 during the PM peak. Total traffic volumes at this junction shall however remain low, and this is not considered a sensitive location.

Consequently, only the following junctions have been selected for detailed operational assessment, which is described in Section 5:

- the existing J4 roundabout (without BusConnects)
- the proposed J4 signal controlled junction (with BusConnects in place)
- the proposed development access junction (J6) on Belgard Square East

These junctions have been selected on the basis of their proximity to the subject development.

4.6 Committed Development Trip Generation and Trip Distribution

The vehicular trips predicted to be generated by the 2no. committed developments described in sub-section 3.7 have been included in the background traffic flows for all future assessment years. The projected trip generation of committed developments A (Belgard Gardens SHD) and B (Airton Plaza SHD) is reproduced in Table 11.

Table 11 – Committed Development Trip Generation

Committed Development	Peak Hour Period	Arrivals	Departures	Total Trips
(A) Belgard Gardens SHD	AM	62	186	248
	PM	204	125	329
(B) Airton Plaza SHD	AM	36	86	122
	PM	75	43	118

These figures have been sourced from:

- the Traffic Impact Assessment prepared by O'Connor Sutton Cronin (OCSC) for the Belgard Gardens SHD; and
- the Traffic Impact Assessment prepared by Martin Rogers Consulting Limited for the Airton Plaza SHD.

These trips have also been distributed across the local road network as specified in the aforementioned Traffic Impact Assessment reports. At junctions not covered by these reports, as well as under assessment scenarios that assume the implementation of BusConnects measures, trips have been distributed in accordance with the existing and projected directional splits at each junction (these being different for scenarios with and without BusConnects measures).

5.0 OPERATIONAL ASSESSMENT

5.1 Introduction

To determine the likely traffic impact of the proposed development, operational assessments of 2no. key junctions have been undertaken using the industry-standard TRL computer program TRANSYT, for both the weekday AM peak hour (08:45-09:45) and the weekday PM peak hour (16:00-17:00).

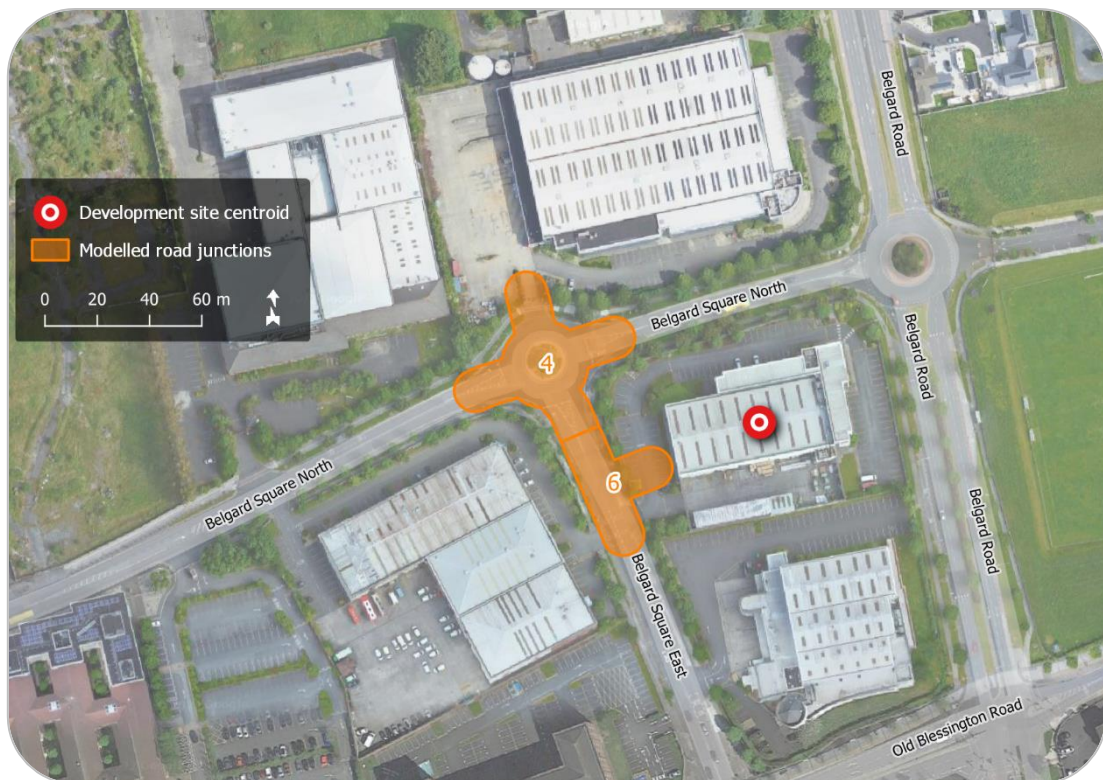


Figure 10 – Modelled road junctions
(map data & imagery: OSM Contributors, Google)

The following junctions have been modelled and assessed (see Figure 10):

- J4. Belgard Square East / Belgard Square North / Vardis Site
(existing 4-arm roundabout junction, proposed for conversion to 4-arm signal-controlled junction under BusConnects)
- J6. Belgard Square East / Development Access
(proposed new 3-arm priority-controlled junction)

Junction performance is assessed based upon the five metrics defined in sub-section 5.3. Full TRANSYT outputs are provided in Appendix D.

5.2 Assessment Scenarios

The performances of these junctions have been assessed under the following scenarios relating to the proposed development's operational phase, using the existing and predicted traffic flows given in Appendix C:

- 2022 – existing baseline traffic conditions;
- 2025 (planned year of opening) – with & without proposed development;
- 2030 – with & without proposed development; and
- 2040 (design year) – with & without proposed development.

As described in sub-section 3.2, proposals for the implementation of BusConnects Core Bus Corridor no. 9 along Belgard Square North and Belgard Square East will entail the following:

- conversion of the existing 4-arm roundabout junction of Belgard Square East with Belgard Square North to a 4-arm signal-controlled junction; and
- implementation of a bus gate at the southern arm of this reconfigured junction, prohibiting all vehicle movements except buses between Belgard Square East and Belgard Square North.

As well as altering the configuration of junction J4, these proposed BusConnects measures will have an effect on the traffic flows along Belgard Square East, past the proposed development access junction J6. All future year assessments of both modelled junctions have therefore been conducted in parallel under two local road configurations and with two sets of traffic flow data:

- Without BusConnects – assessment with the existing J4 roundabout junction structure and with traffic flow patterns dictated by those existing.

- With BusConnects – assessment with the proposed new J4 signalised junction arrangement and traffic flows influenced by the addition of the bus gate at this location.

5.3 Definitions

Degree of Saturation:

The ratio of current traffic flow to ultimate capacity (also known as RFC) on a link or traffic stream. Account is taken of the green time given to the link per cycle when calculating this value (for signalised junction approaches), as well as blocking effects and oversaturation effects.

Mean Maximum Queue:

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

Mean End of Red Queue:

The mean length of queue in any lane of a signal-controlled junction approach link by the end of the red signal phase for that approach, measured in PCU. Given in the following tables for signal-controlled junction approaches only.

Mean Delay per Vehicle:

The average delay incurred by a vehicle on a junction approach as a result of having to wait at a signal or give way at a priority-controlled junction.

Practical Reserve Capacity:

The percentage by which the arriving traffic flow on a stream could increase before that junction approach would reach its effective capacity (i.e. 90% saturation).

5.4 Junction 4 Assessment Results – Without BusConnects

The following tables give the TRANSYT modelling results, for each of the assessment scenarios without BusConnects implementation, at the existing 4-arm roundabout junction of Belgard Square North with Belgard Square East and the Vardis site.

- Arm A: Belgard Square North (to east)
- Arm B: Belgard Square East (to south)
- Arm C: Belgard Square North (to west)
- Arm D: Vardis Site [future SHD] (to north)

Table 12 – Junction 4 Assessment Results – No BusConnects

Junction Approach Arm	Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
	AM	PM	AM	PM	AM	PM	AM	PM
2022 – baseline year assessment								
A	36	20	0	0	1	0	153	339
B	51	55	0	1	5	5	76	63
C	36	47	0	0	1	2	150	90
D	0	0	0	0	0	0	35005	n/a
2025 – opening year assessment – WITHOUT proposed development								
A	42	25	0	0	1	1	115	256
B	59	63	1	1	7	7	52	44
C	41	54	0	0	2	3	121	68
D	16	18	0	0	0	1	467	411
2025 – opening year assessment – WITH proposed development in place								
A	42	26	0	0	1	1	113	244
B	63	65	1	1	8	7	44	39
C	41	55	0	1	2	3	118	64
D	16	18	0	0	0	1	463	406
2030 assessment – WITHOUT proposed development								
A	45	27	0	0	2	1	100	232
B	66	69	1	1	9	9	37	31
C	44	59	0	1	2	4	104	53
D	16	18	0	0	0	1	453	392

Table 13 – Junction 4 Assessment Results – No BusConnects (continued)

Junction Approach Arm	Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
	AM	PM	AM	PM	AM	PM	AM	PM
2030 assessment – WITH proposed development in place								
A	46	28	0	0	2	1	98	221
B	69	71	1	1	11	10	30	27
C	45	60	0	1	2	4	101	50
D	16	19	0	0	0	1	450	386
2040 – design year assessment – WITHOUT proposed development								
A	47	28	0	0	2	1	90	216
B	71	73	1	1	12	11	27	24
C	47	62	0	1	2	4	93	45
D	17	19	0	0	0	1	444	379
2040 – design year assessment – WITH proposed development in place								
A	48	29	0	0	2	1	88	206
B	75	75	2	2	14	12	21	20
C	47	63	0	1	2	4	91	42
D	17	19	0	0	0	1	440	373

The assessment results show that this junction currently operates well within its effective capacity on all approaches during both the AM and PM peak periods, with negligible vehicle queues and only minor delays. All junction approaches are shown to continue operating well within their effective capacities past the year 2040, with vehicle queues on all junction approaches at levels similar to those currently existing and mean vehicle delays showing a minor increase.

In each of the future years assessed, the addition of the vehicular traffic generated by the proposed development is shown to have a negligible impact on junction performance, having no discernible effect on mean vehicle queue length in either peak hour period and adding no more than 2 seconds to mean vehicle delay on any approach.

5.5 Junction 4 Assessment Results – With BusConnects

The following tables give the TRANSYT modelling results, for each of the future year assessment scenarios with the implementation of the BusConnects Core Bus Corridor, at the proposed reconfigured 4-arm signal-controlled junction of Belgard Square North with Belgard Square East and the Vardis site.

- Arm A: Belgard Square North (to east)
- Arm B: Belgard Square East (to south)
- Arm C: Belgard Square North (to west)
- Arm D: Vardis Site [future SHD] (to north)

Table 14 – Junction 4 Assessment Results – With BusConnects

Junction Approach Arm and Traffic Stream ⁴		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2025 – opening year assessment – WITHOUT proposed development											
A	S/L	83	50	22	10	14	8	39	25	8	80
	R	35	39	1	1	1	1	64	65	155	130
B	S/L/R	38	38	2	2	2	2	58	58	140	140
C	S/L	62	77	13	18	10	13	31	37	44	16
	R	35	39	2	2	2	2	57	60	156	133
D	S/L/R	60	57	6	6	5	5	55	53	49	58
2025 – opening year assessment – WITH proposed development in place											
A	S/L	83	51	22	10	14	8	38	25	8	77
	R	35	39	1	1	1	1	64	65	155	130
B	S/L/R	38	38	2	2	2	2	58	58	140	140
C	S/L	62	79	13	19	10	13	30	38	45	14
	R	39	39	2	2	2	2	60	60	133	133
D	S/L/R	60	57	6	6	5	5	55	53	49	58

⁴ S = straight ahead, L = left turn, R = right turn

Table 15 – Junction 4 Assessment Results – With BusConnects (continued)

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2030 assessment – WITHOUT proposed development											
A	S/L	89	54	26	11	16	8	45	26	1	66
	R	35	39	1	1	1	1	64	65	155	130
B	S/L/R	41	41	2	2	2	2	59	59	122	122
C	S/L	66	84	14	21	10	14	31	42	36	8
	R	42	42	2	2	2	2	61	61	114	114
D	S/L/R	60	57	6	6	5	5	55	53	49	58
2030 assessment – WITH proposed development in place											
A	S/L	90	55	27	11	17	9	47	26	0	64
	R	35	39	1	1	1	1	64	65	155	130
B	S/L/R	41	41	2	2	2	2	59	59	122	122
C	S/L	67	85	14	22	11	15	32	44	35	6
	R	42	42	2	2	2	2	61	61	114	114
D	S/L/R	60	57	6	6	5	5	55	53	49	58
2040 – design year assessment – WITHOUT proposed development											
A	S/L	93	57	30	12	19	9	54	27	-3	58
	R	35	39	1	1	1	1	64	65	155	130
B	S/L/R	42	43	2	2	2	2	59	60	112	109
C	S/L	69	88	15	23	11	16	33	47	30	3
	R	44	40	2	2	2	2	62	59	105	125
D	S/L/R	60	60	6	6	5	5	55	55	49	51
2040 – design year assessment – WITH proposed development in place											
A	S/L	93	57	30	12	19	9	53	26	-3	59
	R	35	39	1	1	1	1	64	65	155	130
B	S/L/R	42	43	2	2	2	2	59	60	112	109
C	S/L	69	87	15	23	11	16	32	46	31	3
	R	44	40	2	2	2	2	62	59	105	125
D	S/L/R	64	63	6	6	6	6	58	58	42	43

The assessment results show that this junction will operate within its effective capacity on all approaches during both the AM and PM peak periods in the year 2025, with BusConnects Core Bus Corridor no. 9 in place. Vehicle queues and delays shall however be significantly higher than those projected without the implementation of BusConnects measures. The reconfigured junction is

projected to reach effective capacity by the year 2030 but to remain within ultimate capacity past the year 2040.

In each of the future years assessed, the addition of the vehicular traffic generated by the proposed development is shown to have a negligible impact on junction performance, having no discernible effect on either mean vehicle queue length or mean vehicle delay on any approach, in either peak hour period.

5.6 Junction 6 Assessment Results – Without BusConnects

The following tables give the TRANSYT modelling results, for each of the 'with development' assessment scenarios without BusConnects implementation, at the development's proposed 3-arm priority-controlled access junction on Belgard Square East.

- Arm A: Belgard Square East (to north)
- Arm B: Development Access (to east)
- Arm C: Belgard Square East (to south)

Table 16 – Junction 6 Assessment Results – Without BusConnects

Junction Approach Arm	Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
	AM	PM	AM	PM	AM	PM	AM	PM
2025 – opening year assessment – WITH proposed development in place								
A	8	9	0	0	0	0	1065	859
B	6	4	0	0	0	0	1365	2022
C	20	25	0	0	0	1	354	255
2030 assessment – WITH proposed development in place								
A	8	10	0	0	0	0	987	800
B	6	4	0	0	0	0	1348	1992
C	21	27	0	0	0	1	321	229
2040 – design year assessment – WITH proposed development in place								
A	9	10	0	0	0	0	938	762
B	6	4	0	0	0	0	1336	1972
C	22	29	0	0	0	1	301	214

The assessment results show that this junction shall operate well within its effective capacity on all approaches during both the AM and PM peak periods in all assessment years, with negligible vehicle queues and delays.

5.7 Junction 6 Assessment Results – With BusConnects

The following tables give the TRANSYT modelling results, for each of the ‘with development’ assessment scenarios with the implementation of the BusConnects Core Bus Corridor, at the development’s proposed 3-arm priority-controlled access junction on Belgard Square East.

- Arm A: Belgard Square East (to north)
- Arm B: Development Access (to east)
- Arm C: Belgard Square East (to south)

Table 17 – Junction 6 Assessment Results – With BusConnects

Junction Approach Arm	Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
	AM	PM	AM	PM	AM	PM	AM	PM
2025 – opening year assessment – WITH proposed development in place								
A	3	3	0	0	0	0	2646	2646
B	5	3	0	0	0	0	1760	2691
C	6	10	0	0	0	0	1316	820
2030 assessment – WITH proposed development in place								
A	4	4	0	0	0	0	2431	2431
B	5	3	0	0	0	0	1757	2686
C	7	10	0	0	0	0	1255	794
2040 – design year assessment – WITH proposed development in place								
A	4	4	0	0	0	0	2318	2318
B	5	3	0	0	0	0	1755	2683
C	7	10	0	0	0	0	1211	774

The assessment results show that this junction shall operate well within its effective capacity on all approaches during both the AM and PM peak periods in all assessment years, with negligible vehicle queues and delays.

6.0 PARKING

The subject development comprises the following elements:

- 195no. 1-bedroom apartments (including studio units)
- 128no. 2-bedroom apartments
- 11no. 3-bedroom apartments
- 4no. retail/café/restaurant units with a combined gross floor area of 723m²
- a crèche with a gross floor area of 144m², with 4no. classrooms.

6.1 Car Parking Provision

The development shall include a total of 117no. car parking spaces, all of which shall be allocated to residential use. 78no. spaces shall be provided at undercroft (ground floor) level and 39no. spaces shall be provided at basement level. The development's proposed car parking provision equates to an average rate of 0.35 spaces per residential unit.

The car parking provision of the proposed development has been assessed with respect to the *South Dublin County Council Development Plan 2016–2022*, which defines the standard maximum car parking provision for new developments by land use type. Table 18 below shows the car parking standards applicable to the proposed development and illustrates that the total car parking provision does not exceed the maximum number permitted by the Local Authority development plan.

It is noted that the maximum rates of car parking provision given in Table 18, sourced from the *South Dublin County Council Development Plan 2016–2022*, remain unchanged in the *Draft South Dublin County Development Plan 2022–2028*.

Table 18 – Car Parking Provision – by County Development Plan

Land Use Type	Maximum Rate (Zone 2) ⁵	Quantum	Max. Parking Provision	Proposed Provision
1-bed Apartment	0.75 spaces per unit	195 units	146 spaces	117 spaces
2-bed Apartment	1 space per unit	128 units	128 spaces	
3-bed Apartment	1.25 spaces per unit	11 units	14 spaces	
Convenience Retail	1 space per 25m ² GFA	723m ² GFA	29 spaces	0 spaces
Crèche	0.5 spaces per classroom	4 classrooms	2 spaces	0 spaces
Total			319 spaces	117 spaces

The *South Dublin County Council Development Plan 2016–2022* and the *Draft South Dublin County Development Plan 2022–2028* both note that:

“The number of spaces provided for any particular development should not exceed the maximum provision. The maximum provision should not be viewed as a target and a lower rate of parking may be acceptable subject to:

- The proximity of the site to public transport and the quality of the transport service it provides,*
- The proximity of the development to services that fulfil occasional and day to day needs,*
- The existence of a robust and achievable Workforce Management or Mobility Management Plan for the development,*
- The ability of people to fulfil multiple needs in a single journey*
- The levels of car dependency generated by particular uses within the development,*

⁵ More restrictive rates for sites within 400m of a high-quality public transport service (see Figure 11).

- *The ability of residents to live in close proximity to the workplace,*
- *Peak hours of demand and the ability to share spaces between different uses,*
- *Uses for which parking rates can be accumulated, and*
- *The ability of the surrounding road network to cater for an increase in traffic."*

As detailed in sub-section 7.9 of this report, and as illustrated in Figure 11, the development site is situated within a 10-minute walk of the Tallaght tram stop on the Luas Red Line and within a 5-minute walk of bus stops served by high-frequency bus routes (operating at intervals of 10 minutes during peak times).

In relation to the other relevant items enumerated in this section of the Development Plan:

- The development site is within a 10-minute walk distance of Tallaght centre and The Square shopping centre, which contain numerous services (such as shops) that fulfil occasional and day to day needs.
- A robust and achievable Mobility Management Plan has been prepared, in the form of the Residential Travel Plan submitted under separate cover in support of this planning application.
- The Tallaght town centre area contains significant commercial activity, offering good prospects for employment within convenient walking and cycling distance of the proposed development.
- The junction performance assessments conducted for this report indicates that the surrounding road network can readily accommodate an increase in vehicular traffic as a result of the proposed development; this is not however considered a good reason to provide excessive car parking within the development.

The remaining items in the list contained within the Development Plan (the ability of people to fulfil multiple needs in a single journey, the levels of car dependency generated by particular uses within the development, peak

hours of demand and the ability to share spaces between different uses, and uses for which parking rates can be accumulated) are not relevant to a residential development.

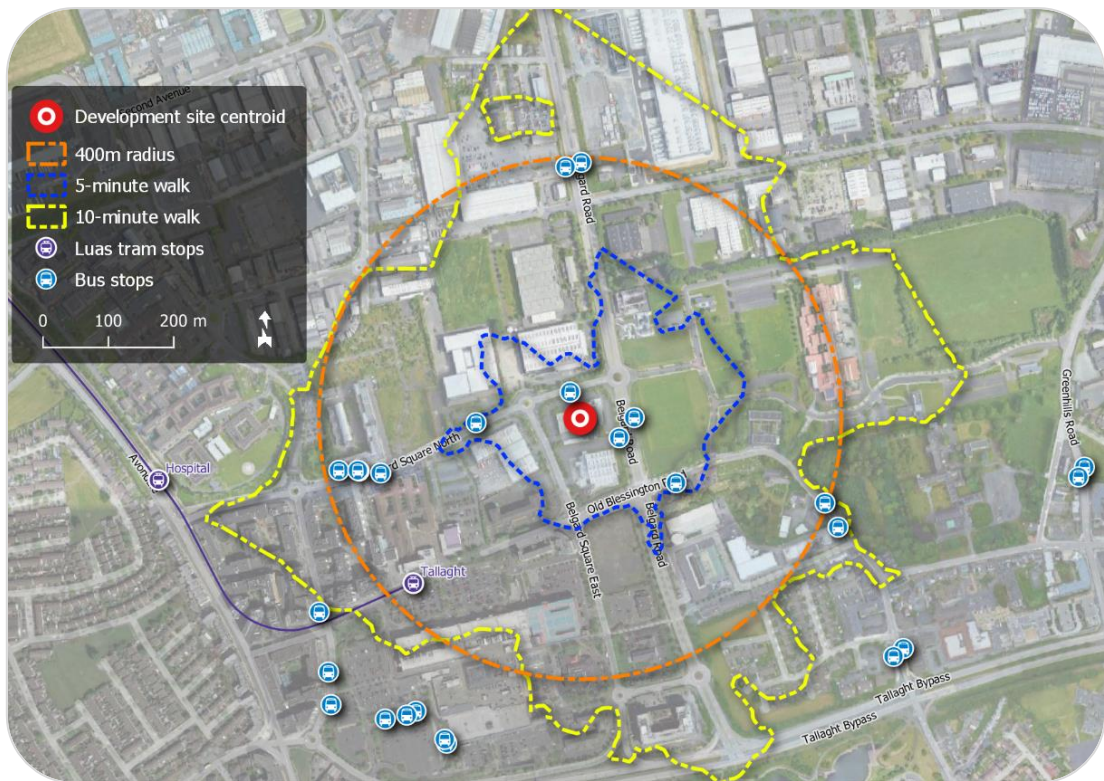


Figure 11 – Proximity to public transport services
(map data and imagery: NTA, OSM Contributors, Google)

In addition to the Local Authority's Development Plan guidance, the *Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities)*, published by the Department of Housing, Planning and Local Government in December 2020, gives the following guidance on the provision of residential car parking:

“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 [as] rail and bus stations located in close proximity.

“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.”

The proposed development is therefore considered an appropriate candidate for a limited residential car parking provision, in accordance with the standards and guidelines set out by South Dublin County Council and by the Department of Housing, Planning and Local Government.

6.2 Disabled-Accessible Car Parking

The *South Dublin County Council Development Plan 2016–2022* requires that disabled-accessible parking be provided in new developments in accordance with Part M of the Building Regulations. Table 19 applies this requirement to the proposed development.

Table 19 – Accessible Car Parking Provision

Proposed Car Parking Provision	Minimum Required Proportion	Accessible Spaces Required	Accessible Spaces Proposed
117 spaces	5%	6	6

6no. disabled-accessible car parking spaces are provided at undercroft level within the proposed development.

6.3 Bicycle Parking Provision

The development shall include a total of 670no. bicycle parking spaces. These comprise:

- 120no. publicly accessible short stay bicycle parking spaces located at ground level in open space, for the use of residents' visitors and commercial unit patrons, and to serve the crèche;
- 490no. secure long-term bicycle storage spaces at undercroft level, for the use of development residents, commercial unit staff, and crèche staff;
- 60no. additional secure internal cycle parking spaces at undercroft level, for short stay use by residents' visitors.

Table 20 – Bicycle Parking Provision – by County Development Plan

Land Use	Minimum Rates	Quantum	Minimum Provision	Proposed Provision
Long-Term Cycle Parking				
Residential Apartments	1 space per 5 units	334 units	67 spaces	484 spaces
Convenience Retail	1 space per 5 staff	20 staff ⁶	4 spaces	4 spaces
Crèche	1 space per 5 staff	8 staff ⁷	2 spaces	2 spaces
Sub-Total			73 spaces	490 spaces
Short Stay Cycle Parking				
Residential Apartments	1 space per 10 units	334 units	33 spaces	167 spaces
Convenience Retail	1 space per 50m ² GFA	530m ² GFA	11 spaces	11 spaces
Crèche	1 space per 10 children	24 children ⁷	2 spaces	2 spaces
Sub-Total			46 spaces	180 spaces
Development Totals				
Total			119 spaces	670 spaces

⁶ Provisional figure representing maximum potential staff levels

⁷ Figure calculated from TUSLA child care facility standards

The overall bicycle parking provision of the proposed development has been assessed with respect to the *South Dublin County Council Development Plan 2016–2022*, which defines the minimum standard bicycle parking provision for new developments by land use type. Table 20 shows the standards applicable to the proposed development, illustrating that its proposed bicycle parking provision exceeds the requirements of the Local Authority development plan.

The *Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities)*, published by the Department of Housing, Planning and Local Government in December 2020, states that:

“A general minimum standard of 1 cycle storage space per bedroom shall be applied. For studio units, at least 1 cycle storage space shall be provided. Visitor cycle parking shall also be provided at a standard of 1 space per 2 residential units. Any deviation from these standards shall be at the discretion of the planning authority and shall be justified with respect to factors such as location, quality of facilities proposed, flexibility for future enhancement/enlargement, etc.”

Table 21 illustrates the application of these Apartment Guidelines recommendations to the proposed development.

Table 21 – Residential Bicycle Parking Provision – by Apartment Guidelines			
Recommended Rates	Quantum	Recommended Provision	Proposed Provision
Long-Term Cycle Parking			
1 space per bedroom	484 bedrooms	484 spaces	484 spaces
Short Stay Cycle Parking			
1 space per 2 apartments	334 apartments	167 spaces	167 spaces
Development Totals			
Total		651 spaces	651 spaces

It is noted that the *Draft South Dublin County Development Plan 2022–2028* requires compliance with the above Apartment Guidelines recommendations, in respect of bicycle parking provision for apartment developments.

6.4 Electric Vehicle Charging Provision

The *South Dublin County Council Development Plan 2016–2022* sets out the standard requirement for the provision of Electric Vehicle (EV) charging spaces in new developments, as a proportion of the total development car parking provision. Table 22 applies this requirement to the proposed development.

Table 22 – EV Parking Provision – by current County Development Plan

Proposed Car Parking Provision	Required Proportion	EV Spaces Required	EV Spaces Proposed
117 spaces	10%	12	24

24no. car parking spaces within the proposed development shall be equipped with facilities for the charging of electric vehicles. All other car parking spaces within the development shall be 'future-proofed' by the inclusion of ducting and/or cabling to permit the rapid future installation of additional EV charging points, as defined in the ESB ecars specification document no. 18017 (*Public Charge Points*, last reviewed February 2012).

Table 23 provides a further comparison of the development's proposed electric vehicle charging provision against the requirements of the *Draft South Dublin County Development Plan 2022–2028*, showing that these are also complied with.

Table 23 – EV Parking Provision – by Draft County Development Plan

Proposed Car Parking Provision	Required Proportion	EV Spaces Required	EV Spaces Proposed
117 spaces	15% - 20%	18 - 24	24

6.5 Residential Car-Share Parking

It is proposed to establish a car-sharing club for residents of the development. 17no. dedicated shared vehicles shall be provided under this scheme, and 17no. car parking spaces within the development shall be reserved for these vehicles.

A recent study of car clubs in Scotland, commissioned and published by CoMoUK⁸, concluded that a single shared car may replace 14 private cars. On this basis, the 17no. shared car parking spaces may therefore be considered to reduce residential parking demand within the development by approximately 221no. spaces.

Further details of the proposed residential car club arrangements are provided in sub-section 7.6 of this report.

6.6 Car Parking Management

All internal car parking spaces within the development (including the 6no. accessible spaces and 17no. car club spaces) shall be controlled by the development's Management Company. Parking spaces shall not be assigned to individual apartment units; spaces shall instead be allocated and/or leased to residents and staff on the basis of availability and need, in part by means of a permit/lottery system, in order to optimise the use of parking spaces.

⁸ *Car Club Annual Survey for Scotland 2019/2020*, available from <https://como.org.uk/shared-mobility/shared-cars/why/>

7.0 ACCESS, LAYOUT, PEDESTRIANS & CYCLISTS, SERVICING, PUBLIC TRANSPORT

7.1 Development Access

A single vehicular access to the development is proposed. This shall take the form of a simple priority junction on Belgard Square East, at the western boundary of the site. This access leads directly to the development's undercroft parking area, within which internal bicycle parking is also located.

Unobstructed sightlines corresponding to a vehicle approach distance of 49m are achieved in either direction along Belgard Square East for vehicles exiting the proposed development, from a set-back of 2.4m, in accordance with Design Manual for Urban Roads and Streets (DMURS) requirements. These sightlines are illustrated on CS Consulting drawing **BR-CSC-ZZ-00-DR-C-0016**.

7.2 Internal Site Layout

The development's internal layout comprises parking areas at undercroft and basement level. These are interconnected by an access ramp with a principal gradient of 1:6 and transition slopes of 1:12 at either end. Within each parking area, car parking spaces are arranged perpendicularly to either side of a two-way circulation aisle generally 6.0m in width (incorporating a 1.0m-wide pedestrian walkway to either side).

6no. disabled-accessible car parking spaces are located at undercroft level, and a minimum vertical clearance of 2.6m is maintained at these spaces and along the access routes to them. A minimum perpendicular clearance of 2.3m is provided along the access ramp between the undercroft and basement levels.

7.3 Pedestrians and Cyclists

Pedestrian access to the development shall be accommodated via multiple access points on the site's northern boundary on Belgard Square North, with the main entrance to the reception/concierge located at the north-western corner of the development site. Pedestrian entrances to buildings and to the undercroft parking area are also present on the site's eastern and southern boundaries.

Inside the southern boundary of the development site, a pedestrian and cyclist route has been provided on an east-west axis between Belgard Road and Belgard Square East. This shall be accessible to the public at all times, providing enhanced pedestrian and cyclist permeability between elements of the surrounding street network. Footpaths with a minimum width of 2.0m are provided or maintained along the development's western and northern boundaries on Belgard Square East and Belgard Square North.

The development shall include a total of 670no. bicycle parking spaces, comprising 490no. long-term bicycle storage spaces for development residents and commercial unit staff, and 180no. short stay bicycle parking spaces for visitors, for commercial unit patrons, and for the proposed crèche.

7.4 Development Servicing and Waste Collection

Vehicular servicing of the proposed development shall be accommodated by proposed new loading/set-down bays on Belgard Square North, along the northern boundary of the development site.

Bin stores shall be located internally at undercroft level within the development, and the development's Management Company shall have responsibility for organising refuse collection. Refuse bins shall be transferred to a suitable kerbside location shortly before collection by an authorised waste contractor, and returned to the bin stores immediately thereafter.

For full details of the proposed development's bin storage arrangements and waste collection strategy, please refer to the Operational Waste Management Plan prepared by AWN Consulting and submitted under separate cover with this application.

7.5 Swept Path Analysis

Swept path analyses of the proposed development have been carried out for cars accessing the development and circulating within its undercroft and basement car parking areas (including parking manoeuvres). A swept path analysis has also been conducted for a fire tender travelling through the site inside its southern boundary, along the pedestrian and cyclist route that shall also serve for emergency vehicle access. These analyses, shown on CS Consulting drawings **BR-CSC-ZZ-00-DR-C-0017** and **BR-CSC-ZZ-00-DR-C-0018**, indicate that the development's access design and internal layout can accommodate these vehicle movements where required.

7.6 Residential Car-Share Club

A residential car sharing club shall be established within the development, allowing residents the common use of a vehicle pool based permanently within the site. Private cars are parked for the vast majority of the time, whereas shared cars are in use far more frequently and therefore make more efficient use of parking spaces: a single shared car may make as many trips in a day as 14no. private cars.

Within the proposed development, it is intended to provide spaces at undercroft level for 17no. shared cars; these shall be supplied and maintained by an established operator such as Go Car or Yuko, on behalf of the development's management company. The cars will be for the exclusive use of residents and a booking system will be available through the Resident App or through the Concierge. The provision of this service will promote sustainable

travel as residents will have access to a car when required, eliminating the need for their own private vehicle.

7.7 Integration with BusConnects Proposals

As described in sub-section 3.2, the NTA proposes to implement BusConnects Core Bus Corridor no. 9 (Greenhills to City Centre) along Belgard Square North, Belgard Square East, and Blessington Road, passing along the western boundary of the subject development site. These BusConnects proposals do not require any land take from the development site but do entail the provision of:

- an off-road cycle track along either side of Belgard Square East; and
- a bus stop on either side of Belgard Square East, immediately to the north of the proposed development access location.

A design has been prepared for the integration of the proposed development, including its access junction onto Belgard Square East, with these Core Bus Corridor proposals. This is shown on CS Consulting drawing **BR-CSC-ZZ-00-DR-C-0015**, which is included in this planning submission. A meeting was held with representatives of the NTA and of AECOM (CBC design consultants) on the 25th of April 2022, at which this BusConnects integration design was presented.

AECOM, via the NTA, subsequently confirmed that the development's proposed access design can be accommodated in the BusConnects Scheme, subject to design coordination. Relevant correspondence between CS Consulting, the NTA, and AECOM is provided in Appendix F.

7.8 Independent Quality Audit

An independent Quality Audit of the proposed development layout and access arrangements has been conducted by PMCE Consulting Engineers on behalf of CS Consulting. This incorporates the following components:

- Stage 1/2 Road Safety Audit
- Accessibility & Walkability Audit
- Non-motorised User and Cycle Audit

The Quality Audit was completed in May 2022. Design changes have been made in response to the recommendations of the Quality Audit and the measures adopted have been accepted by the audit team. Refer to CS Consulting drawing **BR-CSC-ZZ-XX-DR-C-0026** for details of these design changes.

The Quality Audit report document issued by PMCE, together with the audit response form, are provided as Appendix E to this report.

7.9 Public Transport Services and Capacity

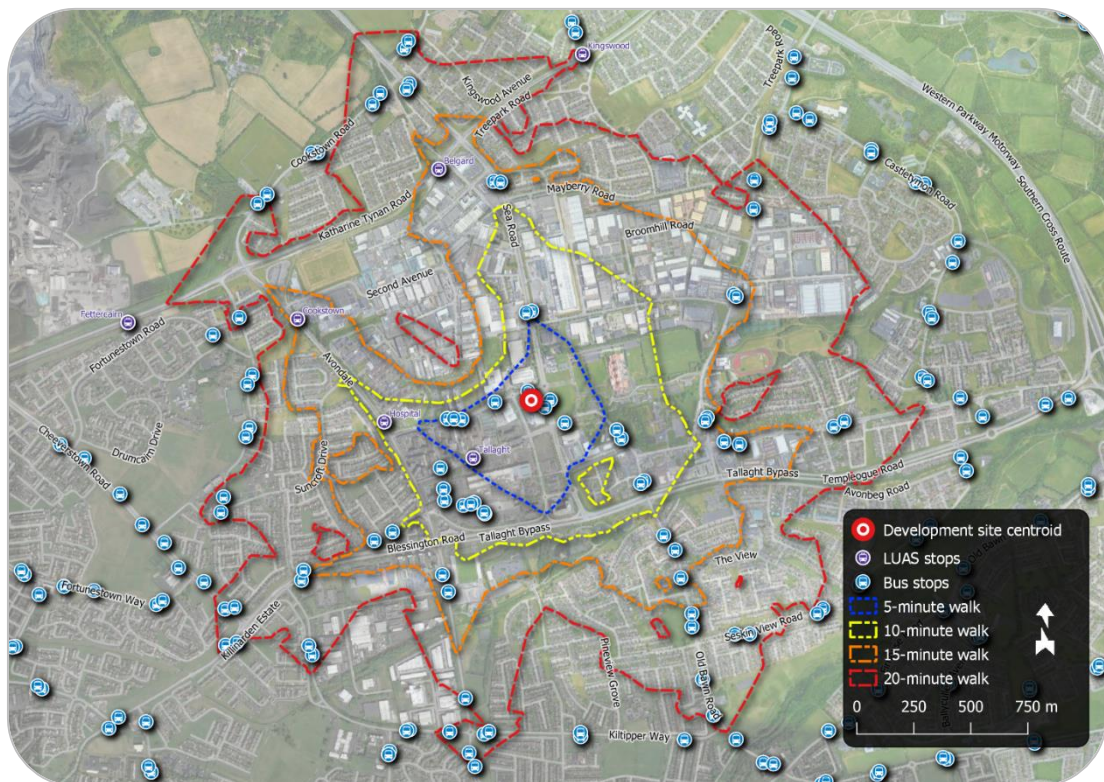


Figure 3 – Walking isochrones and public transport accessibility
(map data and imagery: NTA, OSM Contributors, Google)

7.9.1 Light rail services

The Luas light rail network consists of two principal lines, which connect to one another at Abbey Street/Marlborough Street/O'Connell Street in Dublin City Centre.

- LUAS Red Line (E-W) Dublin Docklands to Tallaght/Saggart
- LUAS Green Line (N-S) Broombridge to Bride's Glen

The subject development site is located within a 5-minute walk of the Tallaght (The Square) stop on the Luas Red Line. Light rail services operating to and from this stop connect it directly to the Docklands in the northeast, via Dublin city centre; interchange with the Luas Green Line is possible at Abbey Street. Trams serve the Tallaght Luas stop at minimum intervals of 2-3 minutes at peak times.

Table 24 – Luas Red Line Light Rail Services at Tallaght Stop

Direction	Destinations	Weekday Services	Minimum Peak Interval
Eastbound	Dublin Docklands	114	3 min
Westbound	Tallaght/Saggart	116	2 min

7.9.2 Light rail capacity

The Luas Red Line is operated using Alstom Citadis 401 trams (70% low-floor configuration), each with a maximum capacity of 358no. passengers. On average, a tram serves the Tallaght Luas stop every 8 minutes in either direction between 07:00 and 10:00, and every 9 minutes in either direction between 16:00 and 19:00.

As shown in Table 25, the average peak period capacities of the Luas Red Line are therefore:

- 2,685 passengers per hour (in either direction) during the AM peak period
- 2,387 passengers per hour (in either direction) during the PM peak period

Table 25 – Luas Red Line Light Rail Peak Capacity

Direction	Destinations	Average Peak Interval	Average Peak Capacity (passengers/hour)
AM Peak Period (07:00-10:00)			
Eastbound	Dublin Docklands	8 min	2,685
Westbound	Tallaght/Saggart	8 min	2,685
PM Peak Period (16:00-19:00)			
Eastbound	Dublin Docklands	9 min	2,387
Westbound	Tallaght/Saggart	9 min	2,387

These are the average peak capacities, each applicable to a 3-hour period. Luas frequencies (and therefore hourly capacities) are higher still at the times of greatest Luas demand: 08:00-09:00 in the morning and 17:00-18:00 in the evening. As the exact number of trams serving a given stop during these two hourly periods is not specified, however, the true peak capacity cannot be determined.

7.9.3 Bus services

Table 26 – Bus Services within 5-minute Walk of Site

Route No.	Operator	Destinations	Weekday Services ⁹	Peak Interval
27	Dublin Bus	Clare Hall / Jobstown	100	10 mins
54a	Dublin Bus	Pearse Street / Ellensborough	33	30 mins
65	Dublin Bus	Poolbeg Street / Blessington	15	1 hour
75 / 75a	Go-Ahead	Dún Laoghaire / Tallaght	35	30 mins
76 / 76a	Go-Ahead	Chapelizod / Tallaght	51	15 mins
77a	Dublin Bus	Ringsend Road / Citywest	52	10 mins
175	Go-Ahead	UCD / Citywest	18	1 hour

⁹ Average number of services per day in each direction, Monday-Friday

Bus stops on Belgard Square North, Belgard Road, and Blessington Road, all within a 5-minute walk of the subject site, are served by 7no. bus routes, of which 2no. routes operate at high-frequency intervals of 10 minutes during peak times. Details of these bus routes are given in Table 26.

7.9.4 Bus capacity

Bus capacity depends upon bus model, which in turn varies according to the bus route, the time of day, and other operational factors.

The most common bus model currently used by Dublin Bus is the Volvo B5TL double-decker (comprising approx. 50% of its fleet), with a capacity of 95no. passengers. The majority of other buses in the Dublin Bus fleet have capacities ranging between 78no. passengers and 91no. passengers.

Go-Ahead Ireland operates a bus fleet comprising principally Volvo B5TL double-deckers (approx. 65% of its fleet) and Wright StreetLite single-deckers (approx. 30% of its fleet); these have capacities of 95no. passengers and 45no. passengers, respectively.

For the purposes of estimating bus service capacity, it is therefore assumed that:

- each bus on a Dublin Bus route has a capacity of 90no. passengers; and
- each bus on a Go-Ahead route has a capacity of 80no. passengers.

Table 27 and Table 28 present the resultant estimated bus service capacities during the AM peak hour (08:00-09:00) and the PM peak hour (17:00-18:00), respectively. These have been calculated on the basis of the timetabled number of buses serving stops within a 5-minute walk of the subject site, in each of these peak hours.

Table 27 – Local Bus Service Capacities – AM Peak (08:00-09:00)

Route No.	Operator	Destination	Peak Hour Services (buses)	Approx. Peak Hour Capacity (passengers)
27	Dublin Bus	Clare Hall	7	630
		Jobstown	7	630
54a	Dublin Bus	Pearse Street	2	180
		Ellensborough	3	270
65	Dublin Bus	Poolbeg Street	1	90
		Blessington	1	90
75 / 75a	Go-Ahead	Dún Laoghaire	1	80
		Tallaght	3	240
76 / 76a	Go-Ahead	Chapelizod	3	240
		Tallaght	2	160
77a	Dublin Bus	Ringsend Road	6	540
		Citywest	1	90
175	Go-Ahead	UCD	2	160
		Citywest	1	80

Table 28 – Local Bus Service Capacities – PM Peak (17:00-18:00)

Route No.	Operator	Destination	Peak Hour Services (buses)	Approx. Peak Hour Capacity (passengers)
27	Dublin Bus	Clare Hall	7	630
		Jobstown	7	630
54a	Dublin Bus	Pearse Street	2	180
		Ellensborough	3	270
65	Dublin Bus	Poolbeg Street	0	0
		Blessington	1	90
75 / 75a	Go-Ahead	Dún Laoghaire	2	160
		Tallaght	2	160
76 / 76a	Go-Ahead	Chapelizod	4	320
		Tallaght	2	160
77a	Dublin Bus	Ringsend Road	4	360
		Citywest	3	270
175	Go-Ahead	UCD	2	160
		Citywest	2	160

7.10 Contribution to Public Transport Service Demand

The subject development comprises 334no. residential apartments (excluding ancillary commercial space and crèche). TRICS data for similar residential developments (included in Appendix B) indicates that, on average, 2.22 person trips (by all modes of transport) are made to and from each such residential unit on a typical weekday between the hours of 07:00 and 19:00. The development therefore has the potential to generate the following person trips during this time range:

- 741no. departures
- 741no. arrivals

The typical time distribution of these trips, also as dictated by the TRICS data, is given in Table 29.

Table 29 – TRICS Person Trip Time Distribution Proportions

Hour of the Day	Proportion of Departure Trips	Proportion of Arrival Trips
07:00-08:00	4.2%	15.6%
08:00-09:00	3.2%	16.5%
09:00-10:00	4.8%	6.3%
10:00-11:00	5.3%	5.3%
11:00-12:00	5.1%	5.2%
12:00-13:00	8.5%	10.2%
13:00-14:00	7.6%	5.8%
14:00-15:00	6.0%	5.5%
15:00-16:00	7.6%	4.6%
16:00-17:00	12.9%	6.5%
17:00-18:00	20.9%	9.7%
18:00-19:00	13.9%	8.8%

Table 30 applies these time distribution proportions to the development's projected total person trip generation between 07:00 and 19:00.

Table 30 – Person Trip Time Distribution for Proposed Development

Hour of the Day	Departure Trips	Arrival Trips
07:00-08:00	116	31
08:00-09:00	122	23
09:00-10:00	47	35
10:00-11:00	40	39
11:00-12:00	38	38
12:00-13:00	75	63
13:00-14:00	43	56
14:00-15:00	41	44
15:00-16:00	34	56
16:00-17:00	48	96
17:00-18:00	72	155
18:00-19:00	66	103

During the relevant peak hours for public transport demand, the proposed development is projected to generate:

- 122no. departure trips and 23no. arrival trips in the AM peak (08:00-09:00)
- 72no. departure trips and 155no. arrival trips in the PM peak (17:00-18:00)

The initial modal split targets for the proposed development, discussed more fully in the accompanying Residential Travel Plan, are as follows:

Table 31 – Initial Target Modal Splits for Development Occupants

Mode	Assumed Starting Proportion of Trips	Initial RTP Modal Split Targets
Driving a Car	37%	30%
Passenger in a Car	4%	3%
Bicycle	3%	5%
Motorcycle	0%	0%
Bus	15%	17%
Train or Tram	20%	22%
Walking	21%	23%
TOTAL	100%	100%

Applying these initial modal split targets, the development may therefore be expected to generate the following maximum possible public transport demand during each weekday peak hour:

Table 32 – Proposed Development Peak Hour Public Transport Demand

Public Transport Mode	Departure Trips	Arrival Trips
AM Peak Hour (08:00-09:00)		
Luas Tram	27	5
Bus	21	4
PM Peak Hour (17:00-18:00)		
Luas Tram	16	34
Bus	12	26

In the context of the proposed development's potential impact upon existing public transport services, only the following are considered relevant:

- Departure trips in the AM peak hour – assumed all to be made in the 'inbound' direction, towards Dublin city centre
- Arrival trips in the PM peak hour – assumed all to be made in the 'outbound' direction, away from Dublin city centre

Table 33 and Table 34 compare these public transport demand figures against the approximate existing tram and bus service capacities in the immediate vicinity of the subject development (see sub-sections 7.9.2 and 7.9.4), for both the AM peak hour and the PM peak hour.

Table 33 – Maximum Public Transport Demand – AM Peak Inbound

Public Transport Type	Approx. Total Inbound Service Capacity (passengers)	Inbound Development Demand (passengers)	Demand as Proportion of Capacity
Luas Tram	2,685	27	1.0%
Bus ¹⁰	1,680	21	1.3%
Total	4,365	48	1.1%

¹⁰ Considering only radial bus services into Dublin city centre

Table 34 – Maximum Public Transport Demand – PM Peak Outbound

Public Transport Type	Approx. Total Outbound Service Capacity (passengers)	Outbound Development Demand (passengers)	Demand as Proportion of Capacity
Luas Tram	2,387	34	1.4%
Bus ¹¹	1,420	26	1.8%
Total	3,807	60	1.6%

The above are to be considered 'worst-case scenario' figures, as they assume that:

- all public transport users departing the development in the AM peak will travel into Dublin city centre;
- all public transport users arriving to the development in the PM peak will travel from Dublin city centre; and
- development residents will use only radial bus routes into and out from Dublin city centre, and will not use orbital bus routes (e.g. route no. 75/75a between Dún Laoghaire and Tallaght).

Furthermore, as discussed previously, the true capacities of Luas Red Line tram services at times of peak demand are greater than those given here. The Luas capacity figures in Table 33 and Table 34 are conservative and are based on average tram frequencies over a 3-hour period, whereas Luas frequencies increase during the peak demand hours of 08:00-09:00 and 17:00-18:00 (but these increased frequencies are variable and therefore cannot be used to calculate capacity figures).

It is therefore concluded that the existing public transport service capacity is sufficient to meet the demands of the proposed development, and that the proposed development is not expected to contribute significant additional service demand. It is further noted that, in the event that additional public

¹¹ Considering only radial bus services out from Dublin city centre

transport capacity is required on services in proximity to the subject development site, this can be provided by means of increased frequency on the existing services. Such a decision would be made on the basis of observed demand, of which regular monitoring is undertaken by the National Transport Authority.

8.0 COMMENTS RECEIVED FROM PLANNING AUTHORITIES

Both An Bord Pleanála and South Dublin City Council have reviewed the planning documentation submitted in respect of the proposed development during the pre-application consultation phase of the SHD process. A tripartite pre-application consultation meeting has also been held with An Bord Pleanála and South Dublin City Council.

The relevant opinions of An Bord Pleanála that pertain to traffic and transport matters, as communicated to the applicant, are reproduced below; also examined in this section are the recommendations of South Dublin City Council's Transportation Planning Division, which were issued to An Bord Pleanála. In each case, we describe measures taken by the design team in response to these opinions and recommendations.

8.1 Opinion Issued by An Bord Pleanála

An Bord Pleanála has issued an opinion enumerating the items of specific information that should be submitted with any application for permission. The following items among these are of relevance to this Traffic and Transport Assessment

8.1.1 ABP Item 12

"A Traffic and Transport Assessment"

Response to ABP Item 12

The present document satisfies this requirement.

8.1.2 ABP Item 13

"A report prepared demonstrating specific compliance with the requirements set out in the Design Manual for Urban Roads and Streets and the National Cycle Manual for all streets, including the revised

junction to replace the roundabout on Belgard Square North and the proposed crossing of the Belgard Road."

Response to ABP Item 13

Refer to the accompanying DMURS Statement of Compliance. It is noted however that reconfiguration of the existing roundabout on Belgard Square North is not proposed as part of this planning application; these works are proposed under the NTA's BusConnects Core Bus Corridor programme. The subject development's layout along Belgard Square North and Belgard Square East ensures that it can be integrated into the Core Bus Corridor proposals (based on the most recent design details supplied by the NTA), as described in sub-sections 3.2 and 7.7 of this report.

8.1.3 ABP Item 16

"A full response to matters raised within the PA Opinion and Appended South Dublin County Council Department comments submitted to ABP on the 11.01.2021."

Response to ABP Item 16

Please refer to sub-section 8.2 for the responses to matters raised by the SDCC Roads Department within the Planning Authority Opinion.

8.2 Recommendations from South Dublin County Council

South Dublin City Council (SDCC) issued an opinion to An Bord Pleanála on the 9th of November 2021. This included a number of recommendations by the SDCC Roads Department in relation to the proposed development, which are reproduced and responded to below.

8.2.1 SDCC Roads Dept Recommendation 1

“A masterplan is required to ensure a coordinated approach to the proposed development. It is important to understand how the design will fit in relation to future neighbouring developments. It is important to maximise the pedestrian, cyclist, and vehicular permeability throughout the site and to the wider masterplan area.”

Response to Recommendation 1

The subject development site is not of a scale to warrant preparation of a development masterplan. The proposed development shall be completed in a single phase and the applicant does not have control over adjoining lands. Account has however been taken of other nearby development proposals, insofar as these are in the public domain, and the scheme has been designed in compliance with the Tallaght Town Centre Local Area Plan; please refer to architectural and planning documentation within this submission for further detail in this regard.

Inside the southern boundary of the development site, a pedestrian and cyclist route has been provided on an east-west axis between Belgard Road and Belgard Square East. This shall be accessible to the public at all times, providing enhanced pedestrian and cyclist permeability between elements of the surrounding street network.

8.2.2 SDCC Roads Dept Recommendation 2

“SDCC recommends a ratio of 0.35 or (130 car parking spaces) for the residential element of this development. Please note that the commercial car parking element is seen as complementary to the residential spaces that are provided above.”

Response to Recommendation 2

As detailed in section 6.1 of this report, it is proposed to provide 117no. car parking spaces to serve the development's 334no. residential units. This

equates to a car parking ratio of 0.35 spaces per residential unit. No car parking is to be provided for the development's ancillary commercial and crèche elements.

8.2.3 SDCC Roads Dept Recommendation 3

“The applicant is requested to liaise with NTA for any set back required to accommodate works proposed under Bus Connects route this shall be agreed with the NTA and should be implemented as part of the proposed development. Any agreement with NTA must be submitted to the planning authority in support of this application.”

Response to Recommendation 3

The current NTA Core Bus Corridor proposals do not require any land take from the development site, and the development design provides sufficient setback to allow the future provision of the following elements proposed under BusConnects:

- an off-road cycle track along the eastern side of Belgard Square East; and
- a bus stop on the eastern side Belgard Square East, to the north of the proposed development access location.

As described in sub-section 7.7, a design has been prepared for the integration of the proposed development, including its access junction onto Belgard Square East, with the NTA's BusConnects Core Bus Corridor no. 9 proposals along Belgard Square East. This is shown on CS Consulting drawing **BR-CSC-ZZ-00-DR-C-0015**, which is included in this planning submission.

A meeting was held with representatives of the NTA and of AECOM (CBC design consultants) on the 25th of April 2022, at which this BusConnects integration design was presented. AECOM, via the NTA, subsequently confirmed that the development's proposed access design can be

accommodated in the BusConnects Scheme, subject to design coordination. Relevant correspondence between CS Consulting, the NTA, and AECOM is provided in Appendix F.

8.2.4 SDCC Roads Dept Recommendation 4

“The main vehicular access and egress road onto Belgard Square East shall be 6.0m wide with a 1.8m wide pedestrian footpath.”

Response to Recommendation 4

Please refer CS Consulting drawings **BR-CSC-ZZ-00-DR-C-0003** and **BR-CSC-ZZ-00-DR-C-0016**, which show the details of the main vehicular access and egress on Belgard Square East. A 6.0m-wide carriageway is provided at this location into the development's undercroft parking area; no pedestrian footpath is however provided, as this is not intended to be used as a pedestrian access.

8.2.5 SDCC Roads Dept Recommendation 5

“The applicant will be required to submit a swept path / Auto track analysis of large cars particularly at parking no. 15, 16 and fire tender access through the entire site.”

Response to Recommendation 5

Swept path analyses of the proposed development have been carried out for cars accessing the development and circulating within its undercroft and basement car parking areas (including parking manoeuvres). A swept path analysis has also been conducted for a fire tender travelling through the site inside its southern boundary, along the pedestrian and cyclist route that shall also serve for emergency vehicle access. These analyses, show on CS Consulting drawings **BR-CSC-ZZ-00-DR-C-0017** and **BR-CSC-ZZ-00-DR-C-0018**, indicate that the

development's access design and internal layout can accommodate these vehicle movements where required.

8.2.6 SDCC Roads Dept Recommendation 6

"The car parking size should be 5.0m x 2.5m with 6m reversing distance to help access and egress from the parking spaces. Prior to construction a revised layout showing parking spaces of 2.5m x 5.0m must be agreed in writing with the roads department and a copy filed with the planning department."

Response to Recommendation 6

Aisle widths within the development's undercroft and basement car parking areas allow a reversing distance of 6.0m at parking spaces, to accommodate car parking manoeuvres. All car parking spaces within the development are 4.8m long by 2.3m wide, in accordance with guidance given in the IStructE *Design Recommendations for Multi-Storey and Underground Car Parks*.

8.2.7 SDCC Roads Dept Recommendation 7

"The applicant shall provide a 10% of the overall vehicular parking spaces to be equipped with electrical charging points."

Response to Recommendation 7

As detailed in sub-section 6.4 of this report, 24no. car parking spaces within the proposed development (20.5% of the total car parking provision) shall be equipped with facilities for the charging of electric vehicles. All other car parking spaces within the development shall be 'future-proofed' by the inclusion of ducting and/or cabling to permit the rapid future installation of additional EV charging points.

8.2.8 SDCC Roads Dept Recommendation 8

“SDCC required a mobility impaired provision of 5% of total car parking spaces.”

Response to Recommendation 8

6no. disabled-accessible car parking spaces are provided at undercroft level within the proposed development, representing 5.1% of the total car parking provision.

8.2.9 SDCC Roads Dept Recommendation 9

“The proposed development shall make provision for the charging of electric vehicles. 100% of surface car parking spaces must be provided with electrical ducting and termination points to allow for the provision of future charging points, and 10% of surface car parking spaces must be provided with electric vehicle charging points initially. Details of how it is proposed to comply with these requirements including details of the design of, and signage for, the electric charging points (where they are not in areas to be taken in charge) shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. REASON: In the interest of sustainable transport.”

Response to Recommendation 9

The proposed development does not include any external surface-level car parking spaces. However, as previously noted, 24no. car parking spaces within the proposed development (20.5% of the total car parking provision) shall be equipped with facilities for the charging of electric vehicles, and all other car parking spaces within the development shall be 'future-proofed' by the inclusion of ducting to permit the rapid future installation of additional EV charging points, as defined in the ESB ecars specification document no. 18017 (Public Charge Points, last reviewed February 2012).

Specifications for the charging points to be fitted and the associated signage, as well as the layout of the ducting to accommodate future additional charging points, will be determined at detailed design stage.

8.2.10 SDCC Roads Dept Recommendation 10

“Bicycle parking provision is to be to 2018 Apartment Guidelines which is satisfactory. However, all spaces including visitor spaces are recommended to be covered spaces to encourage this mode of travel.”

Response to Recommendation 10

As described in sub-section 6.3, the development shall include a total of 670no. bicycle parking spaces. 490no. secure long-term bicycle storage spaces shall be provided at undercroft level, for the use of development residents, commercial unit staff, and crèche staff. 180no. bicycle parking spaces shall be provided for short-stay use (predominantly by visitors). Of these short-stay spaces, 120no. spaces shall be located at ground level in open space and 60no. spaces shall be located internally at undercroft level. All internal bicycle parking spaces shall be covered.

8.2.11 SDCC Roads Dept Recommendation 11

“The applicant shall submit Traffic and transport assessment which shall include details on network road traffic analysis, predicted traffic growth and analysis of local junction capacities.”

Response to Recommendation 11

The present document satisfies this requirement.

8.2.12 SDCC Roads Dept Recommendation 12

“The applicant shall submit stage 1 Road safety audit for the proposed development.”

Response to Recommendation 12

An independent Quality Audit of the proposed development layout and access arrangements, including a Stage 1/2 Road Safety Audit, has been conducted by PMCE Consulting Engineers on behalf of CS Consulting.

The Quality Audit was completed in May 2022. Design changes have been made in response to the recommendations of the Quality Audit and the measures adopted have been accepted by the audit team. Refer to CS Consulting drawing **BR-CSC-ZZ-XX-DR-C-0026** for details of these design changes.

The Quality Audit report document issued by PMCE, together with the audit response form, are provided as Appendix E to this report.

8.2.13 SDCC Roads Dept Recommendation 13

"The applicant is requested to submit details of the pedestrian routes within the development."

Response to Recommendation 13

Pedestrian access to the development shall be accommodated via multiple access points on the site's northern boundary on Belgard Square North, with the main entrance to the reception/concierge located at the north-western corner of the development site. Pedestrian entrances to buildings and to the undercroft parking area are also present on the site's eastern and southern boundaries.

Please refer to CS Consulting drawing **BR-CSC-ZZ-00-DR-C-0003** for further detail.

8.2.14 SDCC Roads Dept Recommendation 14

"A Mobility Management Plan is to be completed within six months of opening of the proposed development. The Mobility Management Plan shall be agreed in writing with the roads department and the agreed

plan, along with the written agreement of the roads department shall be lodged to the planning file. The written commitment of the developer to implement the agreed plan shall also be lodged to the file. REASON: In the interest of sustainable transport."

Response to Recommendation 14

A Residential Travel Plan framework document has been prepared and is submitted under separate cover with this planning application. The development's Residential Travel Plan shall be administered by a Mobility Coordinator, who will liaise with the SDCC Roads Department following completion and occupation of the development.

8.2.15 SDCC Roads Dept Recommendation 15

"The management of bin storage needs to be set out clearly."

Response to Recommendation 15

For details of the proposed development's bin storage arrangements and waste collection strategy, please refer to the Operational Waste Management Plan prepared by AWN Consulting and submitted under separate cover with this application.

8.2.16 SDCC Roads Dept Recommendation 16

"Proposed pedestrian and cycle access between Belgard Road and Belgard Square East at the southern end of the proposed development shall be design for a fire tender to access and egress at this location."

Response to Recommendation 16

The proposed pedestrian and cycle route between Belgard Road and Belgard Square East, inside the development's southern boundary, has been designed to permit its use as an emergency vehicle access. Please

refer to CS Consulting drawing **BR-CSC-ZZ-00-DR-C-0018** for the relevant vehicle swept path analysis.

8.2.17 SDCC Roads Dept Recommendation 17

"Prior to commencement, SDCC will require a public lighting scheme to be agreed with South Dublin County Council Lighting Department."

Response to Recommendation 17

For details of the development's proposed public lighting scheme, please refer to the Lighting Masterplan prepared by EQ2 and submitted separately as part of this planning application.

8.2.18 SDCC Roads Dept Recommendation 18

"All items and areas for taking in charge shall be undertaken to a taking in charge standard. Prior to development the applicant shall submit construction details of all items to be taken in charge. No development shall take place until these items have been agreed."

Response to Recommendation 18

The extents of areas proposed to be taken in charge by the Local Authority are indicated on architectural drawings submitted with this planning application. Construction details pertaining to these areas shall be submitted to and agreed with South Dublin County Council prior to construction.

8.2.19 SDCC Roads Dept Recommendation 19

"Prior to commencement a developed Construction Demolition and Waste Management Plan shall be agreed by SDCC and lodged on the planning file."

Response to Recommendation 19

A Demolition and Construction Waste Management Plan has been prepared by CS Consulting and is submitted under separate cover with this application.

8.2.20 SDCC Roads Dept Recommendation 20

"The applicant/developer is requested to submit accurate plans demonstrating the provision of a visibility splay of 2.0m x 49m in both directions from entrance and exit locations. Sightlines should be shown to the near side edge of the road to the right-hand side of entrance and to the centreline of the road to the left-hand side of the entrance (when exiting)."

Response to Recommendation 20

Unobstructed sightlines corresponding to a vehicle approach distance of 49m are achieved in either direction along Belgard Square East for vehicles exiting the proposed development, from a set-back of 2.4m, in accordance with Design Manual for Urban Roads and Streets (DMURS) requirements. These sightlines are illustrated on CS Consulting drawing **BR-CSC-ZZ-00-DR-C-0016**.

8.2.21 SDCC Roads Dept Recommendation 21

"The footpath at the existing entrance is to be continued and made good when the access point is closed. The footpath and grass verge shall match the existing and in line with SDCC taking in charge standards."

Response to Recommendation 21

The footpath at the existing entrance shall be continued and made good when this access point is closed. The footpath and grass verge shall match the existing and be in line with SDCC taking in charge standards.

8.2.22 SDCC Roads Dept Recommendation 22

“The proposal shall include the upgrade of local cycle facilities along the frontage of the site.”

Response to Recommendation 22

Existing cycle facilities are in place locally only along Belgard Road, to the east of the development site. The development site does not however extend this far to the east, so does not adjoin these facilities. Accordingly, it is not proposed to upgrade these as part of the proposed development.

8.2.23 SDCC Roads Dept supplementary comment – BusConnects Street Layout

“Of particular note is the proposed changes to the layout to Belgard Square East under Bus Connects. Under these proposals, the vehicular entrance to the scheme would only be approachable from the south via a right turn across a bus lane. It is the opinion of the Planning Authority that the applicant should examine if this is the best location for a vehicular access.”

Response

As described in sub-section 3.2, the NTA proposals for the implementation of Core Bus Corridor no. 9 (Greenhills to City Centre) along Belgard Square North and Belgard Square East include the following elements that will affect existing local traffic flows:

- conversion of the existing 4-arm roundabout junction of Belgard Square East with Belgard Square North to a 4-arm signal controlled junction; and
- implementation of a bus gate at the southern arm of this reconfigured junction, prohibiting all vehicle movements except buses between Belgard Square East and Belgard Square North.

The proposed bus gate takes the form of short sections of bus lane at the northernmost end of Belgard Square East. These do not however extend southward past the proposed development access location, and vehicles entering the development would not be required to enter or turn across a bus lane.

As discussed in sub-section 7.7, a design has been prepared for the integration of the proposed development, including its access junction onto Belgard Square East, with these Core Bus Corridor proposals. This is shown on CS Consulting drawing **BR-CSC-ZZ-00-DR-C-0015**, which is included in this planning submission.

A meeting was held with representatives of the NTA and of AECOM (CBC design consultants) on the 25th of April 2022, at which this BusConnects integration design was presented. AECOM, via the NTA, subsequently confirmed that the development's proposed access design can be accommodated in the BusConnects Scheme, subject to design coordination. Relevant correspondence between CS Consulting, the NTA, and AECOM is provided in Appendix F.

In light of the foregoing, it is considered that the BusConnects Core Bus Corridor proposals do not preclude the use of Belgard Square East for vehicular access to the proposed development, and that the development shall not prejudice delivery of the Core Bus Corridor along this street.

9.0 SUMMARY & CONCLUSIONS

This report examines the impact on the performance of the surrounding road network of a proposed Strategic Housing Development on the site of the former ABB Building on Belgard Road, Tallaght, Dublin 24. The report also assesses the development's internal layout, car and bicycle parking provision; cyclist and pedestrian facilities, servicing arrangements, and contribution to public transport demand.

The main observations and conclusions of this study are as follows:

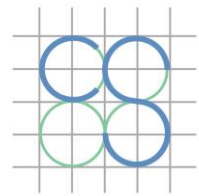
- The proposed development shall not generate excessive vehicular traffic flows in its operational phase. Total vehicle trips (arrivals and departures combined) of 45 PCU are predicted during the AM peak hour, and total vehicle trips of 57 PCU in the PM peak hour.
- The existing roundabout junction of Belgard Square North with Belgard Square North and the Vardis site currently operates well within its effective capacity during peak periods, with negligible vehicle queues and only minor delays. The junction is shown to continue operating within effective capacity past the year 2040, with vehicle queues at levels similar to those currently existing and mean vehicle delays showing a minor increase. Vehicular traffic generated by the proposed development shall have a negligible influence on the operation of this junction.
- Conversion of the existing roundabout at the intersection of Belgard Square North and Belgard Square East to a 4-arm signal-controlled junction, as planned by the NTA under the BusConnects Core Bus Corridor no. 9 proposals, would result in reduced capacity at this junction. The junction would consequently exceed effective capacity at peak times by the year 2030 but would remain within ultimate capacity past the year 2040. Traffic generated by the proposed development would have a negligible influence on the operation of this reconfigured junction.

- The development's proposed access junction on Belgard Square East shall operate well within effective capacity in all future years assessed, with negligible vehicle queuing and delays, both with and without the implementation of BusConnects Core Bus Corridor no. 9.
- The proposed development includes an appropriate level of car parking provision, at a ratio agreed with the Local Authority. The provision of disabled-accessible car parking spaces and EV charging facilities complies with Local Authority development plan standards.
- The development's proposed bicycle parking provision complies with Local Authority development plan standards and with the recommendations of the 2020 Apartment Guidelines.
- Unobstructed sightlines corresponding to a vehicle approach distance of 49m are achieved in either direction along Belgard Square East for vehicles exiting the proposed development, in accordance with the requirements of the *Design Manual for Urban Roads and Streets*.
- Swept path analyses have been carried out for cars accessing the development and circulating within its undercroft and basement car parking areas, as well as for a fire tender travelling through the site inside its southern boundary. These analyses indicate that the development's access design and internal layout can accommodate these vehicle movements where required.
- The development shall not place an undue burden on existing local public transport services. The development's projected demand for these public transport services represents less than 2% of their existing capacity at peak times.
- Consultation has been engaged in with the National Transport Authority (NTA) regarding integration of the development's proposed access arrangements with the design proposals for BusConnects Core Bus Corridor

no. 9, and it has been confirmed that the proposed development can be accommodated in the final design for these infrastructure proposals.

- An independent Quality Audit of the proposed development layout and access arrangements has been conducted by PMCE Consulting Engineers on behalf of CS Consulting. Design changes have been made in response to the recommendations of the Quality Audit and the measures adopted have been accepted by the audit team.

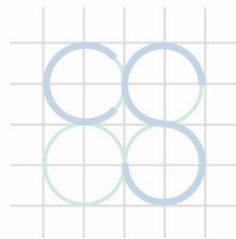
In summary, the assessment indicates that the proposed development can be supported by the existing road infrastructure, that existing public transport service capacity can cater for development demand, that the development includes appropriate levels of car and bicycle parking provision, and that the development access design and internal layout are fit for purpose.



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Appendix A

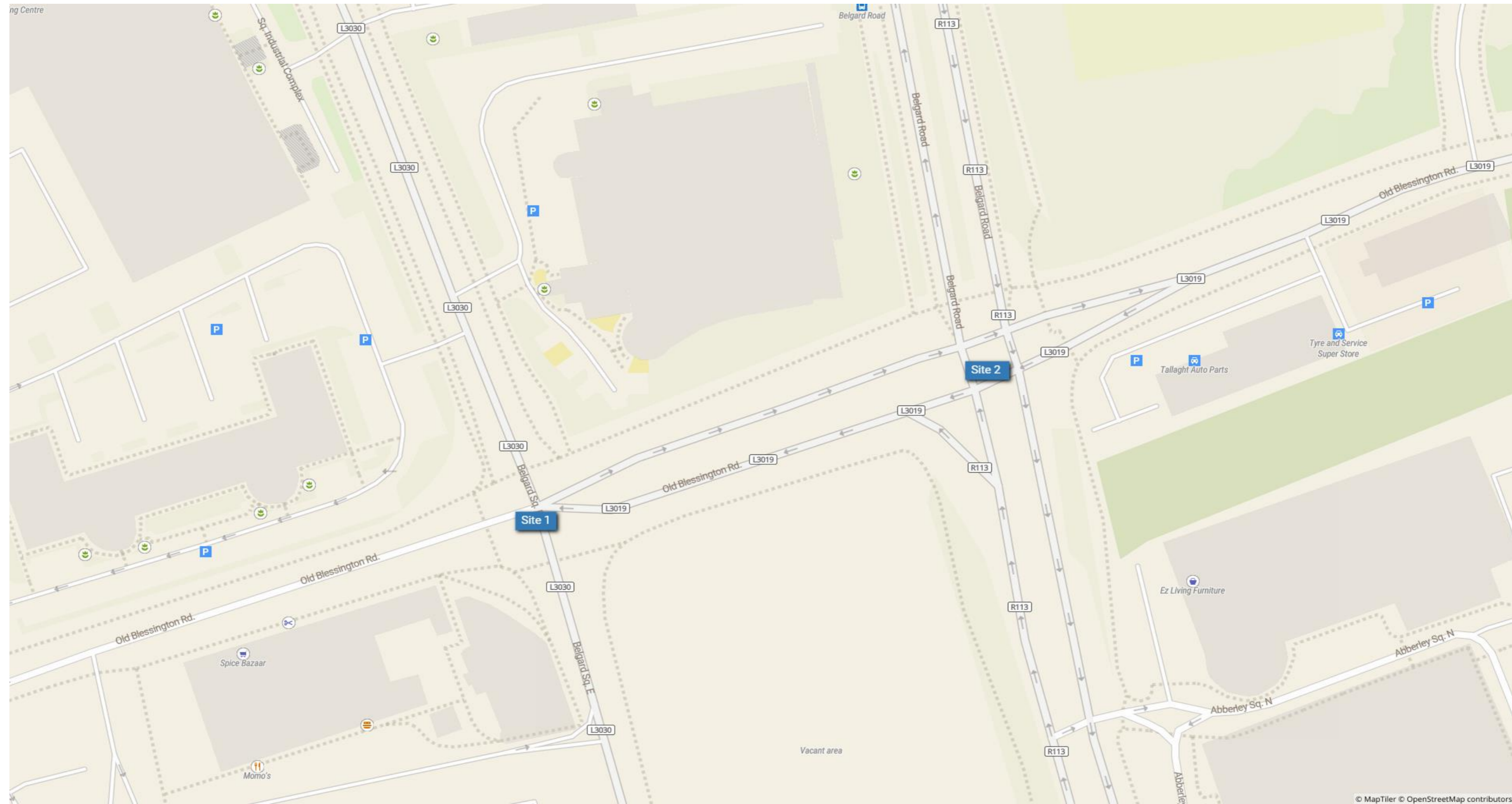
Traffic Survey Data



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IDASO

Survey Name: 056 22113 Belgard Road Traffic Quotations
Date: Tue 15 Feb 2022



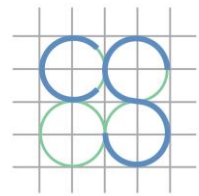


IDASO

Survey Name: 056 22113 Belgard Road Traffic Quotations
Site: Site 1
Location: Belgard Square E/Unnamed Road
Date: Tue 15-Feb-2022

Table with columns for TIME, vehicle types (P/C, M/C, CAR, TAXI, LGV, OGV1, OGV2, PSV), and totals (TOT, PCU) for directions A=>A, A=>B, A=>C, and A=>D. Rows represent 15-minute intervals from 07:00 to 19:45, plus a 12 TOT summary row.

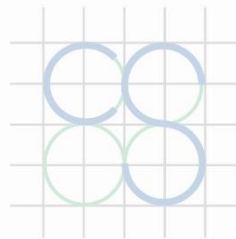
Survey Company	Client	Proj Reference	Site No	Method of Survey	Address	Latitude	Longitude	Easting	Northing	Date From	Date To	Time From	Time To	Observations	Weather	Junction Type
Nationwide Data Collection	NTA	10702 - Bus Connects	9-1	Video	Belgard Square South - Belgard Square West	53.28582103	-6.37553268	708317	727398.5875	28/11/2019	28/11/2019	00:00	00(24):00			3 Arm Roundabout
Nationwide Data Collection	NTA	10702 - Bus Connects	9-2	Video	Old Blessington Road - Belgard Square West	53.2872876	-6.37508707	708343	727562.4313	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-3	Video	Belgard Square North - Belgard Square West	53.28918189	-6.37561516	708303	727772.3875	28/11/2019	28/11/2019	00:00	00(24):00			4 Arm Roundabout
Nationwide Data Collection	NTA	10702 - Bus Connects	9-4	Video	Belgard Road North - Belgard Square East	53.2903578	-6.37036552	708650	727911.1875	28/11/2019	28/11/2019	00:00	00(24):00			4 Arm Roundabout
Nationwide Data Collection	NTA	10702 - Bus Connects	9-5	Video	Belgard Sq North/ Belgard Road	53.29060132	-6.36806122	708803	727941.7875	28/11/2019	28/11/2019	00:00	00(24):00			4 Arm Roundabout
Nationwide Data Collection	NTA	10702 - Bus Connects	9-6	Video	ITT Access Road - Greenhills Road	53.29102323	-6.35787491	709481	728004.2875	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-7	Video	Greenhills Road - Airton Road	53.29367812	-6.35583791	709610	728302.7896	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-8	Video	Greenhills Road - Hibernian Industrial Estate (South)	53.29457964	-6.35532323	709642	728403.8813	28/11/2019	28/11/2019	00:00	00(24):00			
Nationwide Data Collection	NTA	10702 - Bus Connects	9-9	Video	Greenhills Road/ Broomhill Road /Hibernian Industrial Estate (North)	53.29652756	-6.35424323	709709	728622.2626	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-10	Video	Greenhills Road - Mayberry Road	53.29823994	-6.35404236	709718	728813.0875	28/11/2019	28/11/2019	00:00	00(24):00			
Nationwide Data Collection	NTA	10702 - Bus Connects	9-11	Video	Greenhills Road - Castletymon Road	53.3012563	-6.35212588	709838	729151.6291	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-12	Video	Greenhills Road - Ballymount Road Upper	53.30636921	-6.34823756	710084	729726.4708	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-13	Video	Ballymount Avenue - Calmount Road	53.31207638	-6.34905274	710015	730360.1876	28/11/2019	28/11/2019	00:00	00(24):00			4 Arm Roundabout
Nationwide Data Collection	NTA	10702 - Bus Connects	9-14	Video	Calmount Road - Calmount Avenue	53.31355193	-6.34545384	710251	730529.9042	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-15	Video	Walkinstown Roundabout	53.31713707	-6.33306736	711067	730947.9707	28/11/2019	28/11/2019	00:00	00(24):00			5 Arm Roundabout
Nationwide Data Collection	NTA	10702 - Bus Connects	9-16	Video	Walkinstown Road - Kilmanagh Road	53.32141806	-6.33093405	711198	731427.5875	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-17	Video	Walkinstown Road - Long Mile Road	53.32413951	-6.32778038	711401	731735.2875	28/11/2019	28/11/2019	00:00	00(24):00			5 Arm Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-18	Video	Drimnagh Road - Errigal Road	53.32483339	-6.32104275	711848	731823.0177	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-19	Video	Drimnagh Road - Kildare Road - Crumlin Road - St Marys rd	53.32518393	-6.31724586	712100	731867.9708	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-20	Video	Crumlin Road - Cooley Road	53.32600197	-6.3159526	712184	731961.0156	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-21	Video	Crumlin Road - Sundrive Road - Herberton road	53.3301282	-6.29817842	713357	732448.1584	28/11/2019	28/11/2019	00:00	00(24):00			
Nationwide Data Collection	NTA	10702 - Bus Connects	9-22	Video	Crumlin Road - Dolphin Road - Parnell Road	53.33210931	-6.29332481	713675	732676.2875	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-23	Video	Dolphins Barn - South Circular Road	53.33346291	-6.2913488	713803	732830.0344	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-24	Video	Cork Street - Marrowbone Lane - Donore Avenue	53.33719267	-6.28646943	714118	733252.7875	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-25	Video	Cork Street - Ardee Street - St. Lukes Avenue	53.33863073	-6.27950385	714578	733423.9375	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-26	Video	St. Luke's Avenue - Dean Street	53.33944363	-6.27483071	714887	733521.8875	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-27	Video	Dean Street - Patrick Street - New Street South - Kevin Street Upper	53.3389471	-6.27256811	715039	733470.2875	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-28	Video	Patrick Street - Bride Road	53.34148906	-6.27227012	715052	733753.5813	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-29	Video	High Street - Christchurch Place - Nicholas Street	53.34284607	-6.27186982	715075	733905.2041	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-30	Video	R110 Crumlin Road / Windmill Road	53.32765659	-6.30875611	712659	732156.4333	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-31	Video	R110 Crumlin Road / Clonard Road	53.32821566	-6.30625676	712824	732222.5792	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-32	Video	R110 Crumlin Road / Bangor Drive	53.32851755	-6.30490859	712913	732258.298	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-33	Video	R110 Crumlin Road / Dunnes Stores Crumlin Shopping Centre	53.32932153	-6.30124335	713155	732353.5482	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-34	Video	R110 Crumlin Road / Old County Road	53.32970163	-6.29954667	713267	732398.5275	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-35	Video	R137 Patrick Street / Bull Alley Street	53.34058678	-6.27227656	715054	733653.1842	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-36	Video	R810 High Street / R108 Cornmarket / Bridge Street Upper	53.34336623	-6.27503279	714863	733957.9848	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-37	Video	R148 Arran Quay / R148 Inns Quay / Church Street / N1	53.34577195	-6.27562657	714817	734224.6853	28/11/2019	28/11/2019	00:00	00(24):00			
Nationwide Data Collection	NTA	10702 - Bus Connects	9-38	Video	R148 Usher's Quay / R148 Merchant's Quay / R108 Bridge Street Lower / N1	53.34522337	-6.27584397	714804	734163.3018	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-39	Video	R148 Inns Quay / R148 Ormond Quay / Chancery Place / O'Donovan Rossa Bridge	53.34555131	-6.27221099	715045	734205.6353	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-40	Video	R148 Merchant's Quay / R148 Wood Quay / Winetavern Street	53.34501762	-6.27212426	715051	734146.3685	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-41	Video	R148 Ormond Quay Upper / R148 Ormond Quay Lower / Capel Street / Grattan Bridge	53.34604089	-6.26792556	715329	734267.0187	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-42	Video	R148 Essex Quay / R148 Wellington Quay / Parliament Street / Grattan Bridge	53.34535226	-6.2676681	715348	734190.8186	28/11/2019	28/11/2019	00:00	00(24):00			X-Road
Nationwide Data Collection	NTA	10702 - Bus Connects	9-43	Video	Crumlin Road / Old County Road	53.3297935	-6.29910761	713296	732409.4457	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-44	Video	Crumlin Road / Herberton Road	53.33038887	-6.29758249	713396	732478.1052	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-45	Video	R110 Cork Street / Donore Avenue / R804 Marrowbone Lane	53.33726044	-6.28624146	714133	733260.6913	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-46	Video	Dean Street / R137 Patrick Street / Kevin Street / New Street South	53.33842195	-6.27255931	715041	733411.8745	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction
Nationwide Data Collection	NTA	10702 - Bus Connects	9-47	Video	Dean Street / Francis Street	53.33919339	-6.27360938	714969	733496.0122	28/11/2019	28/11/2019	00:00	00(24):00			T-Junction



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Appendix B

TRICS Data



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Calculation Reference: AUDIT-656801-220224-0213

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : C - FLATS PRIVATELY OWNED
 MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	HC HAMPSHIRE	1 days
	HF HERTFORDSHIRE	1 days
05	EAST MIDLANDS	
	DS DERBYSHIRE	1 days
11	SCOTLAND	
	EB CITY OF EDINBURGH	1 days
15	GREATER DUBLIN	
	DL DUBLIN	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
 Actual Range: 20 to 91 (units:)
 Range Selected by User: 6 to 493 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/13 to 30/06/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	2 days
Wednesday	2 days
Thursday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Edge of Town Centre	2
Suburban Area (PPS6 Out of Centre)	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	3
Built-Up Zone	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3 5 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

20,001 to 25,000 2 days

25,001 to 50,000 3 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

250,001 to 500,000 5 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0 3 days

1.1 to 1.5 2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes 2 days

No 3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present 5 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1	DL-03-C-15 BLOCKS OF FLATS MONKSTOWN ROAD DUBLIN MONKSTOWN Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 20 <i>Survey date: WEDNESDAY 01/10/14</i>	DUBLIN	<i>Survey Type: MANUAL</i>
2	DS-03-C-03 BLOCKS OF FLATS CAESAR STREET DERBY Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 30 <i>Survey date: WEDNESDAY 25/09/19</i>	DERBYSHIRE	<i>Survey Type: MANUAL</i>
3	EB-03-C-01 BLOCKS OF FLATS MYRESIDE ROAD EDINBURGH CRAIGLOCKHART Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 32 <i>Survey date: TUESDAY 26/05/15</i>	CITY OF EDINBURGH	<i>Survey Type: MANUAL</i>
4	HC-03-C-01 BLOCKS OF FLATS CROSS STREET PORTSMOUTH Edge of Town Centre Built-Up Zone Total No of Dwellings: 90 <i>Survey date: TUESDAY 05/06/18</i>	HAMPSHIRE	<i>Survey Type: MANUAL</i>
5	HF-03-C-03 BLOCK OF FLATS SHENLEY ROAD BOREHAMWOOD Edge of Town Centre Built-Up Zone Total No of Dwellings: 91 <i>Survey date: THURSDAY 14/11/19</i>	HERTFORDSHIRE	<i>Survey Type: MANUAL</i>

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL TOTAL VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Total People to Total Vehicles ratio (all time periods and directions): 2.54

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.042	5	53	0.125	5	53	0.167
08:00 - 09:00	5	53	0.019	5	53	0.156	5	53	0.175
09:00 - 10:00	5	53	0.053	5	53	0.061	5	53	0.114
10:00 - 11:00	5	53	0.034	5	53	0.053	5	53	0.087
11:00 - 12:00	5	53	0.049	5	53	0.068	5	53	0.117
12:00 - 13:00	5	53	0.084	5	53	0.103	5	53	0.187
13:00 - 14:00	5	53	0.068	5	53	0.057	5	53	0.125
14:00 - 15:00	5	53	0.061	5	53	0.049	5	53	0.110
15:00 - 16:00	5	53	0.072	5	53	0.034	5	53	0.106
16:00 - 17:00	5	53	0.106	5	53	0.049	5	53	0.155
17:00 - 18:00	5	53	0.141	5	53	0.080	5	53	0.221
18:00 - 19:00	5	53	0.110	5	53	0.072	5	53	0.182
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.839			0.907			1.746

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

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

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Parameter summary

Trip rate parameter range selected: 20 - 91 (units:)
 Survey date date range: 01/01/13 - 30/06/21
 Number of weekdays (Monday-Friday): 5
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

MULTI-MODAL TAXIS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.004	5	53	0.004	5	53	0.008
08:00 - 09:00	5	53	0.000	5	53	0.000	5	53	0.000
09:00 - 10:00	5	53	0.004	5	53	0.004	5	53	0.008
10:00 - 11:00	5	53	0.000	5	53	0.000	5	53	0.000
11:00 - 12:00	5	53	0.004	5	53	0.004	5	53	0.008
12:00 - 13:00	5	53	0.015	5	53	0.015	5	53	0.030
13:00 - 14:00	5	53	0.000	5	53	0.000	5	53	0.000
14:00 - 15:00	5	53	0.000	5	53	0.000	5	53	0.000
15:00 - 16:00	5	53	0.000	5	53	0.000	5	53	0.000
16:00 - 17:00	5	53	0.008	5	53	0.008	5	53	0.016
17:00 - 18:00	5	53	0.000	5	53	0.000	5	53	0.000
18:00 - 19:00	5	53	0.004	5	53	0.004	5	53	0.008
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.039			0.039			0.078

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

MULTI-MODAL OGVS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.011	5	53	0.011	5	53	0.022
08:00 - 09:00	5	53	0.000	5	53	0.000	5	53	0.000
09:00 - 10:00	5	53	0.004	5	53	0.004	5	53	0.008
10:00 - 11:00	5	53	0.004	5	53	0.004	5	53	0.008
11:00 - 12:00	5	53	0.000	5	53	0.000	5	53	0.000
12:00 - 13:00	5	53	0.000	5	53	0.000	5	53	0.000
13:00 - 14:00	5	53	0.000	5	53	0.000	5	53	0.000
14:00 - 15:00	5	53	0.000	5	53	0.000	5	53	0.000
15:00 - 16:00	5	53	0.000	5	53	0.000	5	53	0.000
16:00 - 17:00	5	53	0.004	5	53	0.004	5	53	0.008
17:00 - 18:00	5	53	0.000	5	53	0.000	5	53	0.000
18:00 - 19:00	5	53	0.000	5	53	0.000	5	53	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.023			0.023			0.046

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL PSVS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.000	5	53	0.000	5	53	0.000
08:00 - 09:00	5	53	0.000	5	53	0.000	5	53	0.000
09:00 - 10:00	5	53	0.000	5	53	0.000	5	53	0.000
10:00 - 11:00	5	53	0.000	5	53	0.000	5	53	0.000
11:00 - 12:00	5	53	0.000	5	53	0.000	5	53	0.000
12:00 - 13:00	5	53	0.000	5	53	0.000	5	53	0.000
13:00 - 14:00	5	53	0.000	5	53	0.000	5	53	0.000
14:00 - 15:00	5	53	0.004	5	53	0.004	5	53	0.008
15:00 - 16:00	5	53	0.000	5	53	0.000	5	53	0.000
16:00 - 17:00	5	53	0.004	5	53	0.004	5	53	0.008
17:00 - 18:00	5	53	0.000	5	53	0.000	5	53	0.000
18:00 - 19:00	5	53	0.000	5	53	0.000	5	53	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.008			0.008			0.016

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL CYCLISTS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.004	5	53	0.011	5	53	0.015
08:00 - 09:00	5	53	0.000	5	53	0.019	5	53	0.019
09:00 - 10:00	5	53	0.000	5	53	0.000	5	53	0.000
10:00 - 11:00	5	53	0.000	5	53	0.000	5	53	0.000
11:00 - 12:00	5	53	0.008	5	53	0.000	5	53	0.008
12:00 - 13:00	5	53	0.004	5	53	0.000	5	53	0.004
13:00 - 14:00	5	53	0.004	5	53	0.000	5	53	0.004
14:00 - 15:00	5	53	0.004	5	53	0.004	5	53	0.008
15:00 - 16:00	5	53	0.000	5	53	0.000	5	53	0.000
16:00 - 17:00	5	53	0.000	5	53	0.000	5	53	0.000
17:00 - 18:00	5	53	0.019	5	53	0.008	5	53	0.027
18:00 - 19:00	5	53	0.008	5	53	0.004	5	53	0.012
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.051			0.046			0.097

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL VEHICLE OCCUPANTS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.057	5	53	0.160	5	53	0.217
08:00 - 09:00	5	53	0.023	5	53	0.217	5	53	0.240
09:00 - 10:00	5	53	0.061	5	53	0.068	5	53	0.129
10:00 - 11:00	5	53	0.046	5	53	0.061	5	53	0.107
11:00 - 12:00	5	53	0.061	5	53	0.072	5	53	0.133
12:00 - 13:00	5	53	0.114	5	53	0.144	5	53	0.258
13:00 - 14:00	5	53	0.095	5	53	0.065	5	53	0.160
14:00 - 15:00	5	53	0.065	5	53	0.057	5	53	0.122
15:00 - 16:00	5	53	0.087	5	53	0.046	5	53	0.133
16:00 - 17:00	5	53	0.156	5	53	0.065	5	53	0.221
17:00 - 18:00	5	53	0.194	5	53	0.099	5	53	0.293
18:00 - 19:00	5	53	0.137	5	53	0.095	5	53	0.232
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.096			1.149			2.245

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL PEDESTRIANS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.027	5	53	0.110	5	53	0.137
08:00 - 09:00	5	53	0.023	5	53	0.065	5	53	0.088
09:00 - 10:00	5	53	0.038	5	53	0.042	5	53	0.080
10:00 - 11:00	5	53	0.061	5	53	0.053	5	53	0.114
11:00 - 12:00	5	53	0.030	5	53	0.038	5	53	0.068
12:00 - 13:00	5	53	0.057	5	53	0.057	5	53	0.114
13:00 - 14:00	5	53	0.061	5	53	0.038	5	53	0.099
14:00 - 15:00	5	53	0.049	5	53	0.049	5	53	0.098
15:00 - 16:00	5	53	0.049	5	53	0.034	5	53	0.083
16:00 - 17:00	5	53	0.072	5	53	0.080	5	53	0.152
17:00 - 18:00	5	53	0.137	5	53	0.106	5	53	0.243
18:00 - 19:00	5	53	0.095	5	53	0.080	5	53	0.175
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.699			0.752			1.451

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL BUS/TRAM PASSENGERS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.004	5	53	0.046	5	53	0.050
08:00 - 09:00	5	53	0.023	5	53	0.072	5	53	0.095
09:00 - 10:00	5	53	0.004	5	53	0.030	5	53	0.034
10:00 - 11:00	5	53	0.008	5	53	0.004	5	53	0.012
11:00 - 12:00	5	53	0.011	5	53	0.008	5	53	0.019
12:00 - 13:00	5	53	0.008	5	53	0.027	5	53	0.035
13:00 - 14:00	5	53	0.000	5	53	0.030	5	53	0.030
14:00 - 15:00	5	53	0.011	5	53	0.011	5	53	0.022
15:00 - 16:00	5	53	0.015	5	53	0.027	5	53	0.042
16:00 - 17:00	5	53	0.034	5	53	0.000	5	53	0.034
17:00 - 18:00	5	53	0.072	5	53	0.008	5	53	0.080
18:00 - 19:00	5	53	0.042	5	53	0.015	5	53	0.057
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.232			0.278			0.510

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL TOTAL RAIL PASSENGERS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.000	5	53	0.030	5	53	0.030
08:00 - 09:00	5	53	0.000	5	53	0.004	5	53	0.004
09:00 - 10:00	5	53	0.000	5	53	0.004	5	53	0.004
10:00 - 11:00	5	53	0.004	5	53	0.004	5	53	0.008
11:00 - 12:00	5	53	0.008	5	53	0.000	5	53	0.008
12:00 - 13:00	5	53	0.000	5	53	0.004	5	53	0.004
13:00 - 14:00	5	53	0.000	5	53	0.000	5	53	0.000
14:00 - 15:00	5	53	0.004	5	53	0.000	5	53	0.004
15:00 - 16:00	5	53	0.008	5	53	0.000	5	53	0.008
16:00 - 17:00	5	53	0.011	5	53	0.004	5	53	0.015
17:00 - 18:00	5	53	0.027	5	53	0.000	5	53	0.027
18:00 - 19:00	5	53	0.011	5	53	0.008	5	53	0.019
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.073			0.058			0.131

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL COACH PASSENGERS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.000	5	53	0.000	5	53	0.000
08:00 - 09:00	5	53	0.000	5	53	0.000	5	53	0.000
09:00 - 10:00	5	53	0.000	5	53	0.000	5	53	0.000
10:00 - 11:00	5	53	0.000	5	53	0.000	5	53	0.000
11:00 - 12:00	5	53	0.000	5	53	0.000	5	53	0.000
12:00 - 13:00	5	53	0.000	5	53	0.000	5	53	0.000
13:00 - 14:00	5	53	0.000	5	53	0.000	5	53	0.000
14:00 - 15:00	5	53	0.000	5	53	0.004	5	53	0.004
15:00 - 16:00	5	53	0.000	5	53	0.000	5	53	0.000
16:00 - 17:00	5	53	0.004	5	53	0.000	5	53	0.004
17:00 - 18:00	5	53	0.000	5	53	0.000	5	53	0.000
18:00 - 19:00	5	53	0.000	5	53	0.000	5	53	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.004			0.004			0.008

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL PUBLIC TRANSPORT USERS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.004	5	53	0.076	5	53	0.080
08:00 - 09:00	5	53	0.023	5	53	0.076	5	53	0.099
09:00 - 10:00	5	53	0.004	5	53	0.034	5	53	0.038
10:00 - 11:00	5	53	0.008	5	53	0.008	5	53	0.016
11:00 - 12:00	5	53	0.011	5	53	0.008	5	53	0.019
12:00 - 13:00	5	53	0.008	5	53	0.030	5	53	0.038
13:00 - 14:00	5	53	0.004	5	53	0.030	5	53	0.034
14:00 - 15:00	5	53	0.011	5	53	0.015	5	53	0.026
15:00 - 16:00	5	53	0.027	5	53	0.027	5	53	0.054
16:00 - 17:00	5	53	0.049	5	53	0.004	5	53	0.053
17:00 - 18:00	5	53	0.099	5	53	0.008	5	53	0.107
18:00 - 19:00	5	53	0.061	5	53	0.023	5	53	0.084
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.309			0.339			0.648

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL TOTAL PEOPLE
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period
 Total People to Total Vehicles ratio (all time periods and directions): 2.54

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.091	5	53	0.357	5	53	0.448
08:00 - 09:00	5	53	0.068	5	53	0.376	5	53	0.444
09:00 - 10:00	5	53	0.103	5	53	0.144	5	53	0.247
10:00 - 11:00	5	53	0.114	5	53	0.122	5	53	0.236
11:00 - 12:00	5	53	0.110	5	53	0.118	5	53	0.228
12:00 - 13:00	5	53	0.183	5	53	0.232	5	53	0.415
13:00 - 14:00	5	53	0.163	5	53	0.133	5	53	0.296
14:00 - 15:00	5	53	0.129	5	53	0.125	5	53	0.254
15:00 - 16:00	5	53	0.163	5	53	0.106	5	53	0.269
16:00 - 17:00	5	53	0.278	5	53	0.148	5	53	0.426
17:00 - 18:00	5	53	0.449	5	53	0.221	5	53	0.670
18:00 - 19:00	5	53	0.300	5	53	0.202	5	53	0.502
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.151			2.284			4.435

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL CARS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.015	5	53	0.106	5	53	0.121
08:00 - 09:00	5	53	0.011	5	53	0.144	5	53	0.155
09:00 - 10:00	5	53	0.042	5	53	0.053	5	53	0.095
10:00 - 11:00	5	53	0.030	5	53	0.042	5	53	0.072
11:00 - 12:00	5	53	0.034	5	53	0.053	5	53	0.087
12:00 - 13:00	5	53	0.049	5	53	0.065	5	53	0.114
13:00 - 14:00	5	53	0.057	5	53	0.042	5	53	0.099
14:00 - 15:00	5	53	0.049	5	53	0.042	5	53	0.091
15:00 - 16:00	5	53	0.065	5	53	0.030	5	53	0.095
16:00 - 17:00	5	53	0.076	5	53	0.027	5	53	0.103
17:00 - 18:00	5	53	0.129	5	53	0.065	5	53	0.194
18:00 - 19:00	5	53	0.103	5	53	0.061	5	53	0.164
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.660			0.730			1.390

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL LGVS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.008	5	53	0.004	5	53	0.012
08:00 - 09:00	5	53	0.008	5	53	0.011	5	53	0.019
09:00 - 10:00	5	53	0.004	5	53	0.000	5	53	0.004
10:00 - 11:00	5	53	0.000	5	53	0.008	5	53	0.008
11:00 - 12:00	5	53	0.011	5	53	0.011	5	53	0.022
12:00 - 13:00	5	53	0.019	5	53	0.023	5	53	0.042
13:00 - 14:00	5	53	0.008	5	53	0.011	5	53	0.019
14:00 - 15:00	5	53	0.008	5	53	0.004	5	53	0.012
15:00 - 16:00	5	53	0.008	5	53	0.004	5	53	0.012
16:00 - 17:00	5	53	0.011	5	53	0.008	5	53	0.019
17:00 - 18:00	5	53	0.008	5	53	0.011	5	53	0.019
18:00 - 19:00	5	53	0.004	5	53	0.004	5	53	0.008
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.097			0.099			0.196

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

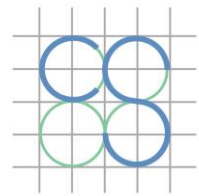
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected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

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL MOTOR CYCLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	53	0.004	5	53	0.000	5	53	0.004
08:00 - 09:00	5	53	0.000	5	53	0.000	5	53	0.000
09:00 - 10:00	5	53	0.000	5	53	0.000	5	53	0.000
10:00 - 11:00	5	53	0.000	5	53	0.000	5	53	0.000
11:00 - 12:00	5	53	0.000	5	53	0.000	5	53	0.000
12:00 - 13:00	5	53	0.000	5	53	0.000	5	53	0.000
13:00 - 14:00	5	53	0.004	5	53	0.004	5	53	0.008
14:00 - 15:00	5	53	0.000	5	53	0.000	5	53	0.000
15:00 - 16:00	5	53	0.000	5	53	0.000	5	53	0.000
16:00 - 17:00	5	53	0.004	5	53	0.000	5	53	0.004
17:00 - 18:00	5	53	0.004	5	53	0.004	5	53	0.008
18:00 - 19:00	5	53	0.000	5	53	0.004	5	53	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.016			0.012			0.028

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

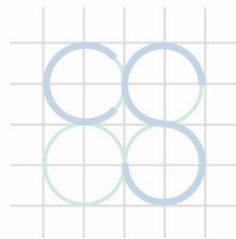
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected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



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Appendix C

Traffic Matrices



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Junction 1 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - Existing Junction Configurations

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	6	92	14	112	Belgard Sq East (North)		0	9	101	20	130
Old Blessington Rd (East)		33	0	28	25	86	Old Blessington Rd (East)		25	0	27	31	83
Belgard Sq East (South)		264	5	0	21	291	Belgard Sq East (South)		286	2	0	14	302
Old Blessington Rd (West)		21	23	8	0	53	Old Blessington Rd (West)		78	81	30	0	189
TOTALS		319	35	128	61	542	TOTALS		388	93	158	65	704

2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	0	7	1	8	Belgard Sq East (North)		0	0	6	1	7
Old Blessington Rd (East)		0	0	0	0	0	Old Blessington Rd (East)		0	0	0	0	0
Belgard Sq East (South)		3	0	0	0	3	Belgard Sq East (South)		6	0	0	0	6
Old Blessington Rd (West)		0	0	0	0	0	Old Blessington Rd (West)		0	1	0	0	1
TOTALS		3	0	7	1	11	TOTALS		6	1	6	1	14

2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	6	104	16	126	Belgard Sq East (North)		0	10	112	22	144
Old Blessington Rd (East)		35	0	29	27	91	Old Blessington Rd (East)		26	0	28	33	87
Belgard Sq East (South)		280	6	0	22	308	Belgard Sq East (South)		306	2	0	14	322
Old Blessington Rd (West)		22	24	8	0	54	Old Blessington Rd (West)		82	86	32	0	200
TOTALS		337	36	141	65	579	TOTALS		414	98	172	69	753

2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	7	2	0	9	Belgard Sq East (North)		0	5	1	0	6
Old Blessington Rd (East)		0	0	0	0	0	Old Blessington Rd (East)		0	0	0	0	0
Belgard Sq East (South)		2	0	0	0	2	Belgard Sq East (South)		5	0	0	0	5
Old Blessington Rd (West)		0	0	0	0	0	Old Blessington Rd (West)		0	0	0	0	0
TOTALS		2	7	2	0	11	TOTALS		5	5	1	0	11

2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	13	106	16	135	Belgard Sq East (North)		0	15	113	22	150
Old Blessington Rd (East)		35	0	29	27	91	Old Blessington Rd (East)		26	0	28	33	87
Belgard Sq East (South)		282	6	0	22	310	Belgard Sq East (South)		311	2	0	14	327
Old Blessington Rd (West)		22	24	8	0	54	Old Blessington Rd (West)		82	86	32	0	200
TOTALS		339	43	143	65	590	TOTALS		419	103	173	69	764

2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	7	112	17	136	Belgard Sq East (North)		0	10	121	24	155
Old Blessington Rd (East)		38	0	31	29	98	Old Blessington Rd (East)		28	0	31	35	94
Belgard Sq East (South)		303	6	0	24	333	Belgard Sq East (South)		331	3	0	16	350
Old Blessington Rd (West)		24	26	9	0	59	Old Blessington Rd (West)		89	93	34	0	216
TOTALS		365	39	152	70	626	TOTALS		448	106	186	75	815

2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	14	114	17	145	Belgard Sq East (North)		0	15	122	24	161
Old Blessington Rd (East)		38	0	31	29	98	Old Blessington Rd (East)		28	0	31	35	94
Belgard Sq East (South)		305	6	0	24	335	Belgard Sq East (South)		336	3	0	16	355
Old Blessington Rd (West)		24	26	9	0	59	Old Blessington Rd (West)		89	93	34	0	216
TOTALS		367	46	154	70	637	TOTALS		453	111	187	75	826

2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	7	117	18	142	Belgard Sq East (North)		0	11	127	25	163
Old Blessington Rd (East)		40	0	33	30	103	Old Blessington Rd (East)		29	0	32	37	98
Belgard Sq East (South)		319	6	0	25	350	Belgard Sq East (South)		348	3	0	16	367
Old Blessington Rd (West)		26	28	10	0	64	Old Blessington Rd (West)		93	98	36	0	227
TOTALS		385	41	160	73	659	TOTALS		470	112	195	78	855

2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	14	119	18	151	Belgard Sq East (North)		0	16	128	25	169
Old Blessington Rd (East)		40	0	33	30	103	Old Blessington Rd (East)		29	0	32	37	98
Belgard Sq East (South)		321	6	0	25	352	Belgard Sq East (South)		353	3	0	16	372
Old Blessington Rd (West)		26	28	10	0	64	Old Blessington Rd (West)		93	98	36	0	227
TOTALS		387	48	162	73	670	TOTALS		475	117	196	78	866

Junction 1 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - Existing Junction Configurations

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	115	1325	359	1799
Old Blessington Rd (East)	328	0	469	361	1158
Belgard Sq East (South)	3640	48	1	190	3879
Old Blessington Rd (West)	777	733	269	0	1779
TOTALS	4745	896	2064	910	8615

2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	11	29	6	46
Old Blessington Rd (East)	9	0	5	0	14
Belgard Sq East (South)	119	4	0	6	129
Old Blessington Rd (West)	13	4	0	0	17
TOTALS	141	19	34	12	206

2025 Light Vehicles Other committed development flows

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	3	62	10	75
Old Blessington Rd (East)	3	0	0	9	12
Belgard Sq East (South)	82	0	0	0	82
Old Blessington Rd (West)	8	5	0	0	13
TOTALS	93	8	62	19	182

2025 Heavy Vehicles Other committed development flows

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	0	1	0	1
Old Blessington Rd (East)	0	0	0	0	0
Belgard Sq East (South)	3	0	0	0	3
Old Blessington Rd (West)	0	0	0	0	0
TOTALS	3	0	1	0	4

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	124	1452	387	1963
Old Blessington Rd (East)	347	0	492	388	1227
Belgard Sq East (South)	3902	50	1	199	4152
Old Blessington Rd (West)	823	774	282	0	1879
TOTALS	5072	948	2227	974	9221

2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	12	33	7	52
Old Blessington Rd (East)	10	0	5	0	15
Belgard Sq East (South)	133	4	0	7	144
Old Blessington Rd (West)	14	4	0	0	18
TOTALS	157	20	38	14	229

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	76	26	0	102
Old Blessington Rd (East)	0	0	0	0	0
Belgard Sq East (South)	45	0	0	0	45
Old Blessington Rd (West)	0	0	0	0	0
TOTALS	45	76	26	0	147

2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	4	0	0	4
Old Blessington Rd (East)	0	0	0	0	0
Belgard Sq East (South)	1	0	0	0	1
Old Blessington Rd (West)	0	0	0	0	0
TOTALS	1	4	0	0	5

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	200	1478	387	2065
Old Blessington Rd (East)	347	0	492	388	1227
Belgard Sq East (South)	3947	50	1	199	4197
Old Blessington Rd (West)	823	774	282	0	1879
TOTALS	5117	1024	2253	974	9368

2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	16	33	7	56
Old Blessington Rd (East)	10	0	5	0	15
Belgard Sq East (South)	134	4	0	7	145
Old Blessington Rd (West)	14	4	0	0	18
TOTALS	158	24	38	14	234

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	134	1569	418	2121
Old Blessington Rd (East)	376	0	533	420	1329
Belgard Sq East (South)	4221	55	1	216	4493
Old Blessington Rd (West)	892	839	306	0	2037
TOTALS	5489	1028	2409	1054	9980

2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	14	38	8	60
Old Blessington Rd (East)	11	0	6	0	17
Belgard Sq East (South)	153	5	0	8	166
Old Blessington Rd (West)	16	5	0	0	21
TOTALS	180	24	44	16	264

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	210	1595	418	2223
Old Blessington Rd (East)	376	0	533	420	1329
Belgard Sq East (South)	4266	55	1	216	4538
Old Blessington Rd (West)	892	839	306	0	2037
TOTALS	5534	1104	2435	1054	10127

2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	18	38	8	64
Old Blessington Rd (East)	11	0	6	0	17
Belgard Sq East (South)	154	5	0	8	167
Old Blessington Rd (West)	16	5	0	0	21
TOTALS	181	28	44	16	269

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	141	1647	440	2228
Old Blessington Rd (East)	395	0	561	441	1397
Belgard Sq East (South)	4437	57	1	227	4722
Old Blessington Rd (West)	938	882	322	0	2142
TOTALS	5770	1080	2531	1108	10489

2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	16	43	9	68
Old Blessington Rd (East)	13	0	7	0	20
Belgard Sq East (South)	175	6	0	9	190
Old Blessington Rd (West)	19	6	0	0	25
TOTALS	207	28	50	18	303

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	217	1673	440	2330
Old Blessington Rd (East)	395	0	561	441	1397
Belgard Sq East (South)	4482	57	1	227	4767
Old Blessington Rd (West)	938	882	322	0	2142
TOTALS	5815	1156	2557	1108	10636

2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	0	20	43	9	72
Old Blessington Rd (East)	13	0	7	0	20
Belgard Sq East (South)	176	6	0	9	191
Old Blessington Rd (West)	19	6	0	0	25
TOTALS	208	32	50	18	308

Junction 1 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - With BusConnects Changes to Junction 4

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	6	92	14	112	Belgard Sq East (North)	Belgard Sq East (North)	0	9	101	20	130
Old Blessington Rd (East)	Belgard Sq East (North)	33	0	28	25	86	Old Blessington Rd (East)	Belgard Sq East (North)	25	0	27	31	83
Belgard Sq East (South)	Belgard Sq East (North)	264	5	0	21	291	Belgard Sq East (South)	Belgard Sq East (North)	286	2	0	14	302
Old Blessington Rd (West)	Belgard Sq East (North)	21	23	8	0	53	Old Blessington Rd (West)	Belgard Sq East (North)	78	81	30	0	189
TOTALS		319	35	128	61	542	TOTALS		388	93	158	65	704
2022 AM Peak BusConnects Reallocation						2022 PM Peak (16:00-17:00) BusConnects Reallocation							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	49	-91	-14	-56	Belgard Sq East (North)	Belgard Sq East (North)	0	45	-98	-20	-73
Old Blessington Rd (East)	Belgard Sq East (North)	32	0	91	14	137	Old Blessington Rd (East)	Belgard Sq East (North)	29	0	99	20	148
Belgard Sq East (South)	Belgard Sq East (North)	-258	258	0	0	0	Belgard Sq East (South)	Belgard Sq East (North)	-281	281	0	0	0
Old Blessington Rd (West)	Belgard Sq East (North)	-21	21	0	0	0	Old Blessington Rd (West)	Belgard Sq East (North)	-77	77	0	0	0
TOTALS		-247	328	0	0	81	TOTALS		-329	403	1	0	75
2022 AM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)						2022 PM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	55	1	0	56	Belgard Sq East (North)	Belgard Sq East (North)	0	54	3	0	57
Old Blessington Rd (East)	Belgard Sq East (North)	65	0	119	39	223	Old Blessington Rd (East)	Belgard Sq East (North)	0	0	126	51	177
Belgard Sq East (South)	Belgard Sq East (North)	6	263	0	21	291	Belgard Sq East (South)	Belgard Sq East (North)	5	283	0	14	302
Old Blessington Rd (West)	Belgard Sq East (North)	0	44	8	0	53	Old Blessington Rd (West)	Belgard Sq East (North)	1	158	30	0	189
TOTALS		72	363	128	61	623	TOTALS		6	496	159	65	726
2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	0	0	0	0	Belgard Sq East (North)	Belgard Sq East (North)	0	0	0	0	0
Old Blessington Rd (East)	Belgard Sq East (North)	0	0	0	2	2	Old Blessington Rd (East)	Belgard Sq East (North)	0	0	0	2	2
Belgard Sq East (South)	Belgard Sq East (North)	0	0	0	0	0	Belgard Sq East (South)	Belgard Sq East (North)	0	0	0	0	0
Old Blessington Rd (West)	Belgard Sq East (North)	0	0	0	0	0	Old Blessington Rd (West)	Belgard Sq East (North)	0	2	0	0	2
TOTALS		0	0	0	2	2	TOTALS		0	2	0	2	4
2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	58	1	0	59	Belgard Sq East (North)	Belgard Sq East (North)	0	57	3	0	60
Old Blessington Rd (East)	Belgard Sq East (North)	68	0	124	43	235	Old Blessington Rd (East)	Belgard Sq East (North)	0	0	132	56	188
Belgard Sq East (South)	Belgard Sq East (North)	7	276	0	22	305	Belgard Sq East (South)	Belgard Sq East (North)	5	297	0	14	316
Old Blessington Rd (West)	Belgard Sq East (North)	0	46	8	0	54	Old Blessington Rd (West)	Belgard Sq East (North)	1	168	32	0	201
TOTALS		75	380	133	65	653	TOTALS		6	522	167	70	765
2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	16	2	0	18	Belgard Sq East (North)	Belgard Sq East (North)	0	13	1	0	14
Old Blessington Rd (East)	Belgard Sq East (North)	10	0	0	0	10	Old Blessington Rd (East)	Belgard Sq East (North)	21	0	0	0	21
Belgard Sq East (South)	Belgard Sq East (North)	2	0	0	0	2	Belgard Sq East (South)	Belgard Sq East (North)	5	0	0	0	5
Old Blessington Rd (West)	Belgard Sq East (North)	0	0	0	0	0	Old Blessington Rd (West)	Belgard Sq East (North)	0	0	0	0	0
TOTALS		12	16	2	0	30	TOTALS		26	13	1	0	40
2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	74	3	0	77	Belgard Sq East (North)	Belgard Sq East (North)	0	70	4	0	74
Old Blessington Rd (East)	Belgard Sq East (North)	78	0	124	43	245	Old Blessington Rd (East)	Belgard Sq East (North)	21	0	132	56	209
Belgard Sq East (South)	Belgard Sq East (North)	9	276	0	22	307	Belgard Sq East (South)	Belgard Sq East (North)	10	297	0	14	321
Old Blessington Rd (West)	Belgard Sq East (North)	0	46	8	0	54	Old Blessington Rd (West)	Belgard Sq East (North)	1	168	32	0	201
TOTALS		87	396	135	65	683	TOTALS		32	535	168	70	805
2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	63	1	0	64	Belgard Sq East (North)	Belgard Sq East (North)	0	62	3	0	65
Old Blessington Rd (East)	Belgard Sq East (North)	74	0	135	47	256	Old Blessington Rd (East)	Belgard Sq East (North)	0	0	143	60	203
Belgard Sq East (South)	Belgard Sq East (North)	7	300	0	24	331	Belgard Sq East (South)	Belgard Sq East (North)	6	322	0	16	344
Old Blessington Rd (West)	Belgard Sq East (North)	0	50	9	0	59	Old Blessington Rd (West)	Belgard Sq East (North)	1	182	34	0	217
TOTALS		81	413	145	71	710	TOTALS		7	566	180	76	829
2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	79	3	0	82	Belgard Sq East (North)	Belgard Sq East (North)	0	75	4	0	79
Old Blessington Rd (East)	Belgard Sq East (North)	84	0	135	47	266	Old Blessington Rd (East)	Belgard Sq East (North)	21	0	143	60	224
Belgard Sq East (South)	Belgard Sq East (North)	9	300	0	24	333	Belgard Sq East (South)	Belgard Sq East (North)	11	322	0	16	349
Old Blessington Rd (West)	Belgard Sq East (North)	0	50	9	0	59	Old Blessington Rd (West)	Belgard Sq East (North)	1	182	34	0	217
TOTALS		93	429	147	71	740	TOTALS		33	579	181	76	869
2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	66	1	0	67	Belgard Sq East (North)	Belgard Sq East (North)	0	65	4	0	69
Old Blessington Rd (East)	Belgard Sq East (North)	78	0	142	49	269	Old Blessington Rd (East)	Belgard Sq East (North)	0	0	151	63	214
Belgard Sq East (South)	Belgard Sq East (North)	7	315	0	25	347	Belgard Sq East (South)	Belgard Sq East (North)	6	339	0	16	361
Old Blessington Rd (West)	Belgard Sq East (North)	0	53	10	0	63	Old Blessington Rd (West)	Belgard Sq East (North)	1	191	36	0	228
TOTALS		85	434	153	74	746	TOTALS		7	595	191	79	872
2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS	From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)	Belgard Sq East (North)	0	82	3	0	85	Belgard Sq East (North)	Belgard Sq East (North)	0	78	5	0	83
Old Blessington Rd (East)	Belgard Sq East (North)	88	0	142	49	279	Old Blessington Rd (East)	Belgard Sq East (North)	21	0	151	63	235
Belgard Sq East (South)	Belgard Sq East (North)	9	315	0	25	349	Belgard Sq East (South)	Belgard Sq East (North)	11	339	0	16	366
Old Blessington Rd (West)	Belgard Sq East (North)	0	53	10	0	63	Old Blessington Rd (West)	Belgard Sq East (North)	1	191	36	0	228
TOTALS		97	450	155	74	776	TOTALS		33	608	192	79	912

Junction 1 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - With BusConnects Changes to Junction 4

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	115	1325	359	1799
Old Blessington Rd (East)		328	0	469	361	1158
Belgard Sq East (South)		3640	48	1	190	3879
Old Blessington Rd (West)		777	733	269	0	1779
TOTALS		4745	896	2064	910	8615

2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	11	29	6	46
Old Blessington Rd (East)		9	0	5	0	14
Belgard Sq East (South)		119	4	0	6	129
Old Blessington Rd (West)		13	4	0	0	17
TOTALS		141	19	34	12	206

2022 Light Vehicles AADT BusConnects Reallocation

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	-113	-1307	-354	-1774
Old Blessington Rd (East)		-325	0	1307	354	1336
Belgard Sq East (South)		-3601	3601	0	0	0
Old Blessington Rd (West)		-769	769	0	0	0
TOTALS		-4695	4257	0	0	-438

2022 Heavy Vehicles AADT BusConnects Reallocation

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	354	-16	-3	335
Old Blessington Rd (East)		355	0	16	4	375
Belgard Sq East (South)		-67	68	0	0	1
Old Blessington Rd (West)		-7	8	0	0	1
TOTALS		281	430	0	1	712

2022 Light Vehicles RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	2	18	5	25
Old Blessington Rd (East)		3	0	1776	715	2494
Belgard Sq East (South)		39	3649	1	190	3879
Old Blessington Rd (West)		8	1502	269	0	1779
TOTALS		50	5153	2064	910	8177

2022 Heavy Vehicles RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	365	13	3	381
Old Blessington Rd (East)		364	0	21	4	389
Belgard Sq East (South)		52	72	0	6	130
Old Blessington Rd (West)		6	12	0	0	18
TOTALS		422	449	34	13	918

2025 Light Vehicles Other committed development flows

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	0	0	0	0
Old Blessington Rd (East)		0	0	0	30	30
Belgard Sq East (South)		0	0	0	0	0
Old Blessington Rd (West)		0	26	0	0	26
TOTALS		0	26	0	30	56

2025 Heavy Vehicles Other committed development flows

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	0	0	0	0
Old Blessington Rd (East)		0	0	0	0	0
Belgard Sq East (South)		0	0	0	0	0
Old Blessington Rd (West)		0	0	0	0	0
TOTALS		0	0	0	0	0

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	2	19	5	26
Old Blessington Rd (East)		3	0	1864	780	2647
Belgard Sq East (South)		41	3829	1	199	4070
Old Blessington Rd (West)		8	1602	282	0	1892
TOTALS		52	5433	2166	984	8635

2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	398	14	3	415
Old Blessington Rd (East)		397	0	23	4	424
Belgard Sq East (South)		57	79	0	7	143
Old Blessington Rd (West)		7	13	0	0	20
TOTALS		461	490	37	14	1002

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	215	26	0	241
Old Blessington Rd (East)		202	0	0	0	202
Belgard Sq East (South)		45	0	0	0	45
Old Blessington Rd (West)		0	0	0	0	0
TOTALS		247	215	26	0	488

2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	8	0	0	8
Old Blessington Rd (East)		8	0	0	0	8
Belgard Sq East (South)		1	0	0	0	1
Old Blessington Rd (West)		0	0	0	0	0
TOTALS		9	8	0	0	17

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	217	45	5	267
Old Blessington Rd (East)		205	0	1864	780	2849
Belgard Sq East (South)		86	3829	1	199	4115
Old Blessington Rd (West)		8	1602	282	0	1892
TOTALS		299	5648	2192	984	9123

2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	406	14	3	423
Old Blessington Rd (East)		405	0	23	4	432
Belgard Sq East (South)		58	79	0	7	144
Old Blessington Rd (West)		7	13	0	0	20
TOTALS		470	498	37	14	1019

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	2	20	6	28
Old Blessington Rd (East)		3	0	2020	843	2866
Belgard Sq East (South)		44	4150	1	216	4411
Old Blessington Rd (West)		9	1734	306	0	2049
TOTALS		56	5886	2347	1065	9354

2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	461	16	4	481
Old Blessington Rd (East)		459	0	26	5	490
Belgard Sq East (South)		66	91	0	8	165
Old Blessington Rd (West)		8	15	0	0	23
TOTALS		533	567	42	17	1159

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	217	46	6	269
Old Blessington Rd (East)		205	0	2020	843	3068
Belgard Sq East (South)		89	4150	1	216	4456
Old Blessington Rd (West)		9	1734	306	0	2049
TOTALS		303	6101	2373	1065	9842

2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	469	16	4	489
Old Blessington Rd (East)		467	0	26	5	498
Belgard Sq East (South)		67	91	0	8	166
Old Blessington Rd (West)		8	15	0	0	23
TOTALS		542	575	42	17	1176

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	2	22	6	30
Old Blessington Rd (East)		4	0	2125	886	3015
Belgard Sq East (South)		47	4366	1	227	4641
Old Blessington Rd (West)		10	1823	322	0	2155
TOTALS		61	6191	2470	1119	9841

2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	527	19	4	550
Old Blessington Rd (East)		526	0	30	6	562
Belgard Sq East (South)		75	104	0	9	188
Old Blessington Rd (West)		9	17	0	0	26
TOTALS		610	648	49	19	1326

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	217	48	6	271
Old Blessington Rd (East)		206	0	2125	886	3217
Belgard Sq East (South)		92	4366	1	227	4686
Old Blessington Rd (West)		10	1823	322	0	2155
TOTALS		308	6406	2496	1119	10329

2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)

From	To	Belgard Sq East (North)	Old Blessington	Belgard Sq East (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	535	19	4	558
Old Blessington Rd (East)		534	0	30	6	570
Belgard Sq East (South)		76	104	0	9	189
Old Blessington Rd (West)		9	17	0	0	26
TOTALS		619	656	49	19	1343

Junction 2 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - Existing Junction Configurations

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	54	266	26	345	Belgard Road (North)	0	41	401	24	467
Old Blessington Rd (East)	64	0	40	10	113	Old Blessington Rd (East)	130	0	76	17	223
Belgard Road (South)	465	73	0	50	588	Belgard Road (South)	385	36	0	40	461
Old Blessington Rd (West)	10	7	18	0	35	Old Blessington Rd (West)	42	5	47	0	95
TOTALS	539	133	324	86	1082	TOTALS	557	83	525	80	1245

2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	3	71	2	76	Belgard Road (North)	0	2	79	3	84
Old Blessington Rd (East)	2	0	0	0	2	Old Blessington Rd (East)	5	0	0	0	5
Belgard Road (South)	29	0	0	0	29	Belgard Road (South)	33	0	0	0	33
Old Blessington Rd (West)	0	0	0	0	0	Old Blessington Rd (West)	2	0	0	0	2
TOTALS	31	3	71	2	107	TOTALS	40	2	79	3	124

2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	59	350	29	438	Belgard Road (North)	0	45	500	28	573
Old Blessington Rd (East)	69	0	41	10	120	Old Blessington Rd (East)	141	0	80	18	239
Belgard Road (South)	517	76	0	53	646	Belgard Road (South)	437	38	0	41	516
Old Blessington Rd (West)	10	7	19	0	36	Old Blessington Rd (West)	46	5	50	0	101
TOTALS	596	142	410	92	1240	TOTALS	624	88	630	87	1429

2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	0	0	0	0	Belgard Road (North)	0	0	0	0	0
Old Blessington Rd (East)	1	0	0	0	1	Old Blessington Rd (East)	3	0	0	0	3
Belgard Road (South)	4	0	0	0	4	Belgard Road (South)	7	0	0	0	7
Old Blessington Rd (West)	0	2	5	0	7	Old Blessington Rd (West)	0	1	4	0	5
TOTALS	5	2	5	0	12	TOTALS	10	1	4	0	15

2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	59	350	29	438	Belgard Road (North)	0	45	500	28	573
Old Blessington Rd (East)	70	0	41	10	121	Old Blessington Rd (East)	144	0	80	18	242
Belgard Road (South)	521	76	0	53	650	Belgard Road (South)	444	38	0	41	523
Old Blessington Rd (West)	10	9	24	0	43	Old Blessington Rd (West)	46	6	54	0	106
TOTALS	601	144	415	92	1252	TOTALS	634	89	634	87	1444

2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	64	373	32	469	Belgard Road (North)	0	49	535	30	614
Old Blessington Rd (East)	75	0	45	11	131	Old Blessington Rd (East)	153	0	86	19	258
Belgard Road (South)	558	83	0	57	698	Belgard Road (South)	471	41	0	45	557
Old Blessington Rd (West)	11	8	21	0	40	Old Blessington Rd (West)	50	6	54	0	110
TOTALS	644	155	439	100	1338	TOTALS	674	96	675	94	1539

2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	64	373	32	469	Belgard Road (North)	0	49	535	30	614
Old Blessington Rd (East)	76	0	45	11	132	Old Blessington Rd (East)	156	0	86	19	261
Belgard Road (South)	562	83	0	57	702	Belgard Road (South)	478	41	0	45	564
Old Blessington Rd (West)	11	10	26	0	47	Old Blessington Rd (West)	50	7	58	0	115
TOTALS	649	157	444	100	1350	TOTALS	684	97	679	94	1554

2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	67	389	33	489	Belgard Road (North)	0	51	559	32	642
Old Blessington Rd (East)	79	0	47	11	137	Old Blessington Rd (East)	161	0	91	20	272
Belgard Road (South)	586	87	0	60	733	Belgard Road (South)	494	43	0	47	584
Old Blessington Rd (West)	11	8	22	0	41	Old Blessington Rd (West)	53	6	57	0	116
TOTALS	676	162	458	104	1400	TOTALS	708	100	707	99	1614

2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	67	389	33	489	Belgard Road (North)	0	51	559	32	642
Old Blessington Rd (East)	80	0	47	11	138	Old Blessington Rd (East)	164	0	91	20	275
Belgard Road (South)	590	87	0	60	737	Belgard Road (South)	501	43	0	47	591
Old Blessington Rd (West)	11	10	27	0	48	Old Blessington Rd (West)	53	7	61	0	121
TOTALS	681	164	463	104	1412	TOTALS	718	101	711	99	1629

Junction 2 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - Existing Junction Configurations

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	7	178	4270	504	4959
Old Blessington Rd (East)	665	0	605	171	1441
Belgard Road (South)	5199	492	0	485	6176
Old Blessington Rd (West)	342	73	481	0	896
TOTALS	6213	743	5356	1160	13472

2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	207	119	2	328
Old Blessington Rd (East)	217	0	6	2	225
Belgard Road (South)	315	38	0	9	362
Old Blessington Rd (West)	13	1	4	0	18
TOTALS	545	246	129	13	933

2025 Light Vehicles Other committed development flows

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	17	588	29	634
Old Blessington Rd (East)	36	0	0	0	36
Belgard Road (South)	581	0	0	0	581
Old Blessington Rd (West)	18	0	0	0	18
TOTALS	635	17	588	29	1269

2025 Heavy Vehicles Other committed development flows

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	2	19	1	22
Old Blessington Rd (East)	3	0	0	0	3
Belgard Road (South)	21	0	0	0	21
Old Blessington Rd (West)	0	0	0	0	0
TOTALS	24	2	19	1	46

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	7	204	5069	558	5838
Old Blessington Rd (East)	734	0	635	179	1548
Belgard Road (South)	6037	516	0	509	7062
Old Blessington Rd (West)	377	77	505	0	959
TOTALS	7155	797	6209	1246	15407

2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	228	149	3	380
Old Blessington Rd (East)	240	0	7	2	249
Belgard Road (South)	365	41	0	10	416
Old Blessington Rd (West)	14	1	4	0	19
TOTALS	619	270	160	15	1064

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	0	0	0	0
Old Blessington Rd (East)	17	0	0	0	17
Belgard Road (South)	72	0	0	0	72
Old Blessington Rd (West)	0	9	67	0	76
TOTALS	89	9	67	0	165

2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	0	0	0	0
Old Blessington Rd (East)	2	0	0	0	2
Belgard Road (South)	4	0	0	0	4
Old Blessington Rd (West)	0	3	1	0	4
TOTALS	6	3	1	0	10

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	7	204	5069	558	5838
Old Blessington Rd (East)	751	0	635	179	1565
Belgard Road (South)	6109	516	0	509	7134
Old Blessington Rd (West)	377	86	572	0	1035
TOTALS	7244	806	6276	1246	15572

2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	228	149	3	380
Old Blessington Rd (East)	242	0	7	2	251
Belgard Road (South)	369	41	0	10	420
Old Blessington Rd (West)	14	4	5	0	23
TOTALS	625	273	161	15	1074

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	8	219	5444	602	6273
Old Blessington Rd (East)	792	0	688	194	1674
Belgard Road (South)	6493	559	0	552	7604
Old Blessington Rd (West)	407	83	547	0	1037
TOTALS	7700	861	6679	1348	16588

2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	263	169	4	436
Old Blessington Rd (East)	277	0	8	3	288
Belgard Road (South)	418	48	0	11	477
Old Blessington Rd (West)	16	1	5	0	22
TOTALS	711	312	182	18	1223

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	8	219	5444	602	6273
Old Blessington Rd (East)	809	0	688	194	1691
Belgard Road (South)	6565	559	0	552	7676
Old Blessington Rd (West)	407	92	614	0	1113
TOTALS	7789	870	6746	1348	16753

2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	263	169	4	436
Old Blessington Rd (East)	279	0	8	3	290
Belgard Road (South)	422	48	0	11	481
Old Blessington Rd (West)	16	4	6	0	26
TOTALS	717	315	183	18	1233

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	8	230	5697	632	6567
Old Blessington Rd (East)	832	0	724	205	1761
Belgard Road (South)	6802	589	0	580	7971
Old Blessington Rd (West)	427	87	576	0	1090
TOTALS	8069	906	6997	1417	17389

2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	301	191	4	496
Old Blessington Rd (East)	316	0	9	3	328
Belgard Road (South)	476	55	0	13	544
Old Blessington Rd (West)	19	1	6	0	26
TOTALS	811	357	206	20	1394

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	8	230	5697	632	6567
Old Blessington Rd (East)	849	0	724	205	1778
Belgard Road (South)	6874	589	0	580	8043
Old Blessington Rd (West)	427	96	643	0	1166
TOTALS	8158	915	7064	1417	17554

2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)	0	301	191	4	496
Old Blessington Rd (East)	318	0	9	3	330
Belgard Road (South)	480	55	0	13	548
Old Blessington Rd (West)	19	4	7	0	30
TOTALS	817	360	207	20	1404

Junction 2 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - With BusConnects Changes to Junction 4

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	54	266	26	345	Belgard Road (North)		0	41	401	24	467
Old Blessington Rd (East)		64	0	40	10	113	Old Blessington Rd (East)		130	0	76	17	223
Belgard Road (South)		465	73	0	50	588	Belgard Road (South)		385	36	0	40	461
Old Blessington Rd (West)		10	7	18	0	35	Old Blessington Rd (West)		42	5	47	0	95
TOTALS		539	133	324	86	1082	TOTALS		557	83	525	80	1245

2022 AM Peak BusConnects Reallocation						2022 PM Peak (16:00-17:00) BusConnects Reallocation							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Sq East (North)		0	9	4	-7	6	Belgard Road (North)		0	8	4	-3	9
Old Blessington Rd (East)		11	0	0	52	63	Old Blessington Rd (East)		10	0	0	52	62
Belgard Sq East (South)		19	0	0	-13	6	Belgard Road (South)		6	0	0	-4	2
Old Blessington Rd (West)		-1	53	-3	0	49	Old Blessington Rd (West)		-1	54	-2	0	51
TOTALS		29	62	1	32	124	TOTALS		15	62	2	45	124

2022 AM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)						2022 PM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	63	270	19	351	Belgard Road (North)		0	49	405	21	476
Old Blessington Rd (East)		75	0	40	62	176	Old Blessington Rd (East)		140	0	76	69	285
Belgard Road (South)		484	73	0	37	594	Belgard Road (South)		391	36	0	36	463
Old Blessington Rd (West)		9	60	15	0	84	Old Blessington Rd (West)		41	59	45	0	146
TOTALS		568	195	325	118	1206	TOTALS		572	145	527	125	1369

2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	8	35	2	45	Belgard Road (North)		0	5	36	2	43
Old Blessington Rd (East)		3	0	0	0	3	Old Blessington Rd (East)		8	0	0	0	8
Belgard Road (South)		20	0	0	0	20	Belgard Road (South)		24	0	0	0	24
Old Blessington Rd (West)		0	0	0	0	0	Old Blessington Rd (West)		2	0	0	0	2
TOTALS		23	8	35	2	68	TOTALS		34	5	36	2	77

2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	74	318	22	414	Belgard Road (North)		0	57	461	24	542
Old Blessington Rd (East)		82	0	41	65	188	Old Blessington Rd (East)		155	0	80	72	307
Belgard Road (South)		528	76	0	39	643	Belgard Road (South)		434	38	0	37	509
Old Blessington Rd (West)		9	63	16	0	88	Old Blessington Rd (West)		45	62	48	0	155
TOTALS		619	213	375	126	1333	TOTALS		634	157	589	133	1513

2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	0	0	5	5	Belgard Road (North)		0	0	0	11	11
Old Blessington Rd (East)		0	0	0	1	1	Old Blessington Rd (East)		0	0	0	3	3
Belgard Road (South)		0	0	0	4	4	Belgard Road (South)		0	0	0	7	7
Old Blessington Rd (West)		9	2	5	0	16	Old Blessington Rd (West)		8	1	4	0	13
TOTALS		9	2	5	10	26	TOTALS		8	1	4	21	34

2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	74	318	27	419	Belgard Road (North)		0	57	461	35	553
Old Blessington Rd (East)		82	0	41	66	189	Old Blessington Rd (East)		155	0	80	75	310
Belgard Road (South)		528	76	0	43	647	Belgard Road (South)		434	38	0	44	516
Old Blessington Rd (West)		18	65	21	0	104	Old Blessington Rd (West)		53	63	52	0	168
TOTALS		628	215	380	136	1359	TOTALS		642	158	593	154	1547

2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	79	342	24	445	Belgard Road (North)		0	61	497	26	584
Old Blessington Rd (East)		89	0	45	70	204	Old Blessington Rd (East)		167	0	86	78	331
Belgard Road (South)		571	83	0	43	697	Belgard Road (South)		469	41	0	40	550
Old Blessington Rd (West)		10	68	17	0	95	Old Blessington Rd (West)		49	67	52	0	168
TOTALS		670	230	404	137	1441	TOTALS		685	169	635	144	1633

2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	79	342	29	450	Belgard Road (North)		0	61	497	37	595
Old Blessington Rd (East)		89	0	45	71	205	Old Blessington Rd (East)		167	0	86	81	334
Belgard Road (South)		571	83	0	47	701	Belgard Road (South)		469	41	0	47	557
Old Blessington Rd (West)		19	70	22	0	111	Old Blessington Rd (West)		57	68	56	0	181
TOTALS		679	232	409	147	1467	TOTALS		693	170	639	165	1667

2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	83	358	25	466	Belgard Road (North)		0	64	521	27	612
Old Blessington Rd (East)		93	0	47	74	214	Old Blessington Rd (East)		176	0	91	82	349
Belgard Road (South)		600	87	0	45	732	Belgard Road (South)		492	43	0	42	577
Old Blessington Rd (West)		10	72	18	0	100	Old Blessington Rd (West)		52	71	54	0	177
TOTALS		703	242	423	144	1512	TOTALS		720	178	666	151	1715

2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS	From	To	Belgard Road (North)	Old Blessington	Belgard Road (South)	Old Blessington	TOTALS
Belgard Road (North)		0	83	358	30	471	Belgard Road (North)		0	64	521	38	623
Old Blessington Rd (East)		93	0	47	75	215	Old Blessington Rd (East)		176	0	91	85	352
Belgard Road (South)		600	87	0	49	736	Belgard Road (South)		492	43	0	49	584
Old Blessington Rd (West)		19	74	23	0	116	Old Blessington Rd (West)		60	72	58	0	190
TOTALS		712	244	428	154	1538	TOTALS		728	179	670	172	1749

Junction 3 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - Existing Junction Configurations

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	6	124	250	456	837	Belgard Rd (North)	17	37	336	297	687
TUD Campus (East)	1	0	0	0	1	TUD Campus (East)	2	0	0	1	3
Belgard Rd (South)	324	40	4	173	541	Belgard Rd (South)	459	8	2	89	558
Belgard Sq N (West)	328	53	94	2	477	Belgard Sq N (West)	558	16	130	4	709
TOTALS	659	217	348	632	1855	TOTALS	1036	61	468	391	1956

2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	0	3	5	20	28	Belgard Rd (North)	1	1	5	17	24
TUD Campus (East)	0	0	0	0	0	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	4	0	0	26	30	Belgard Rd (South)	12	0	0	26	38
Belgard Sq N (West)	36	4	71	0	111	Belgard Sq N (West)	51	3	79	0	133
TOTALS	40	7	76	46	169	TOTALS	64	4	84	43	195

2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	6	133	267	499	905	Belgard Rd (North)	19	40	358	328	745
TUD Campus (East)	1	0	0	0	1	TUD Campus (East)	2	0	0	1	3
Belgard Rd (South)	344	42	4	208	598	Belgard Rd (South)	494	8	2	119	623
Belgard Sq N (West)	380	60	170	2	612	Belgard Sq N (West)	637	20	215	4	876
TOTALS	731	235	441	709	2116	TOTALS	1152	68	575	452	2247

2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	0	0	0	5	5	Belgard Rd (North)	0	0	0	11	11
TUD Campus (East)	0	0	0	0	0	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	0	0	0	0	0	Belgard Rd (South)	0	0	0	0	0
Belgard Sq N (West)	9	0	0	0	9	Belgard Sq N (West)	8	0	0	0	8
TOTALS	9	0	0	5	14	TOTALS	8	0	0	11	19

2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	6	133	267	504	910	Belgard Rd (North)	19	40	358	339	756
TUD Campus (East)	1	0	0	0	1	TUD Campus (East)	2	0	0	1	3
Belgard Rd (South)	344	42	4	208	598	Belgard Rd (South)	494	8	2	119	623
Belgard Sq N (West)	389	60	170	2	621	Belgard Sq N (West)	645	20	215	4	884
TOTALS	740	235	441	714	2130	TOTALS	1160	68	575	463	2266

2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	7	144	289	539	979	Belgard Rd (North)	20	43	387	354	804
TUD Campus (East)	1	0	0	0	1	TUD Campus (East)	2	0	0	1	3
Belgard Rd (South)	372	45	5	223	645	Belgard Rd (South)	534	9	2	127	672
Belgard Sq N (West)	408	64	178	2	652	Belgard Sq N (West)	686	21	227	5	939
TOTALS	788	253	472	764	2277	TOTALS	1242	73	616	487	2418

2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	7	144	289	544	984	Belgard Rd (North)	20	43	387	365	815
TUD Campus (East)	1	0	0	0	1	TUD Campus (East)	2	0	0	1	3
Belgard Rd (South)	372	45	5	223	645	Belgard Rd (South)	534	9	2	127	672
Belgard Sq N (West)	417	64	178	2	661	Belgard Sq N (West)	694	21	227	5	947
TOTALS	797	253	472	769	2291	TOTALS	1250	73	616	498	2437

2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	7	152	304	566	1029	Belgard Rd (North)	21	45	407	372	845
TUD Campus (East)	1	0	0	0	1	TUD Campus (East)	2	0	0	1	3
Belgard Rd (South)	392	48	5	233	678	Belgard Rd (South)	561	10	2	132	705
Belgard Sq N (West)	428	67	183	2	680	Belgard Sq N (West)	719	22	235	5	981
TOTALS	828	267	492	801	2388	TOTALS	1303	77	644	510	2534

2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	7	152	304	571	1034	Belgard Rd (North)	21	45	407	383	856
TUD Campus (East)	1	0	0	0	1	TUD Campus (East)	2	0	0	1	3
Belgard Rd (South)	392	48	5	233	678	Belgard Rd (South)	561	10	2	132	705
Belgard Sq N (West)	437	67	183	2	689	Belgard Sq N (West)	727	22	235	5	989
TOTALS	837	267	492	806	2402	TOTALS	1311	77	644	521	2553

Junction 3 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - Existing Junction Configurations

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	110	699	3814	5025	9648
TUD Campus (East)	32	0	1	5	38
Belgard Rd (South)	4712	187	21	1301	6221
Belgard Sq N (West)	6160	339	1136	29	7664
TOTALS	11014	1225	4972	6360	23571

2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	11	7	96	129	243
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	215	0	5	327	547
Belgard Sq N (West)	107	4	230	0	341
TOTALS	333	11	331	456	1131

2025 Light Vehicles Other committed development flows

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	5	17	91	378	491
TUD Campus (East)	1	0	0	0	1
Belgard Rd (South)	99	0	0	535	634
Belgard Sq N (West)	400	19	542	0	961
TOTALS	505	36	633	913	2087

2025 Heavy Vehicles Other committed development flows

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	1	0	3	13	17
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	5	0	0	19	24
Belgard Sq N (West)	13	1	20	0	34
TOTALS	19	1	23	32	75

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	120	751	4093	5651	10615
TUD Campus (East)	35	0	1	5	41
Belgard Rd (South)	5044	196	22	1900	7162
Belgard Sq N (West)	6864	375	1734	30	9003
TOTALS	12063	1322	5850	7586	26821

2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	13	8	108	154	283
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	240	0	5	376	621
Belgard Sq N (West)	130	5	271	0	406
TOTALS	383	13	384	530	1310

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	0	0	0	113	113
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	0	0	0	0	0
Belgard Sq N (West)	139	0	0	0	139
TOTALS	139	0	0	113	252

2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	0	0	0	2	2
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	0	0	0	0	0
Belgard Sq N (West)	4	0	0	0	4
TOTALS	4	0	0	2	6

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	120	751	4093	5764	10728
TUD Campus (East)	35	0	1	5	41
Belgard Rd (South)	5044	196	22	1900	7162
Belgard Sq N (West)	7003	375	1734	30	9142
TOTALS	12202	1322	5850	7699	27073

2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	13	8	108	156	285
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	240	0	5	376	621
Belgard Sq N (West)	134	5	271	0	410
TOTALS	387	13	384	532	1316

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	130	812	4428	6092	11462
TUD Campus (East)	37	0	1	6	44
Belgard Rd (South)	5457	213	24	2014	7708
Belgard Sq N (West)	7405	405	1834	33	9677
TOTALS	13029	1430	6287	8145	28891

2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	15	9	124	176	324
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	276	0	6	432	714
Belgard Sq N (West)	148	6	310	0	464
TOTALS	439	15	440	608	1502

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	130	812	4428	6205	11575
TUD Campus (East)	37	0	1	6	44
Belgard Rd (South)	5457	213	24	2014	7708
Belgard Sq N (West)	7544	405	1834	33	9816
TOTALS	13168	1430	6287	8258	29143

2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	15	9	124	178	326
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	276	0	6	432	714
Belgard Sq N (West)	152	6	310	0	468
TOTALS	443	15	440	610	1508

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	137	853	4655	6391	12036
TUD Campus (East)	39	0	1	6	46
Belgard Rd (South)	5737	224	25	2092	8078
Belgard Sq N (West)	7771	425	1901	35	10132
TOTALS	13684	1502	6582	8524	30292

2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	17	10	142	199	368
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	316	0	7	491	814
Belgard Sq N (West)	168	7	352	0	527
TOTALS	501	17	501	690	1709

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	137	853	4655	6504	12149
TUD Campus (East)	39	0	1	6	46
Belgard Rd (South)	5737	224	25	2092	8078
Belgard Sq N (West)	7910	425	1901	35	10271
TOTALS	13823	1502	6582	8637	30544

2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	17	10	142	201	370
TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	316	0	7	491	814
Belgard Sq N (West)	172	7	352	0	531
TOTALS	505	17	501	692	1715

Junction 3 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - With BusConnects Changes to Junction 4

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS						2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	110	699	3814	5025	9648	Belgard Rd (North)	11	7	96	129	243
TUD Campus (East)	32	0	1	5	38	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	4712	187	21	1301	6221	Belgard Rd (South)	215	0	5	327	547
Belgard Sq N (West)	6160	339	1136	29	7664	Belgard Sq N (West)	107	4	230	0	341
TOTALS	11014	1225	4972	6360	23571	TOTALS	333	11	331	456	1131
2022 Light Vehicles AADT BusConnects Reallocation						2022 Heavy Vehicles AADT BusConnects Reallocation					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Sq East (North)	0	0	828	-828	0	Belgard Rd (North)	0	0	2	71	73
Old Blessington Rd (East)	0	0	0	-1	-1	TUD Campus (East)	0	0	0	0	0
Belgard Sq East (South)	2184	0	0	1764	3948	Belgard Rd (South)	18	0	0	67	85
Old Blessington Rd (West)	-2184	-120	324	-15	-1995	Belgard Sq N (West)	55	-1	29	0	83
TOTALS	0	-120	1152	920	1952	TOTALS	73	-1	31	138	241
2022 Light Vehicles RESTRUCTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)						2022 Heavy Vehicles RESTRUCTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	110	699	4642	4197	9648	Belgard Rd (North)	11	7	98	200	316
TUD Campus (East)	32	0	1	4	37	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	6896	187	21	3065	10169	Belgard Rd (South)	233	0	5	394	632
Belgard Sq N (West)	3976	219	1460	14	5669	Belgard Sq N (West)	162	3	259	0	424
TOTALS	11014	1105	6124	7280	25523	TOTALS	406	10	362	594	1372
2025 Light Vehicles Other committed development flows						2025 Heavy Vehicles Other committed development flows					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	5	17	111	576	709	Belgard Rd (North)	1	0	3	15	19
TUD Campus (East)	1	0	0	0	1	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	145	0	0	347	492	Belgard Rd (South)	5	0	0	20	25
Belgard Sq N (West)	692	34	224	4	954	Belgard Sq N (West)	15	0	19	0	34
TOTALS	843	51	335	927	2156	TOTALS	21	0	22	35	78
2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	120	751	4982	4980	10833	Belgard Rd (North)	13	8	110	233	364
TUD Campus (East)	35	0	1	4	40	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	7382	196	22	3563	11163	Belgard Rd (South)	259	0	5	450	714
Belgard Sq N (West)	4864	264	1756	19	6903	Belgard Sq N (West)	192	3	302	0	497
TOTALS	12401	1211	6761	8566	28939	TOTALS	464	11	417	683	1575
2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS						2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	0	0	113	0	113	Belgard Rd (North)	0	0	2	0	2
TUD Campus (East)	0	0	0	0	0	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	139	0	0	116	255	Belgard Rd (South)	4	0	0	5	9
Belgard Sq N (West)	0	0	110	0	110	Belgard Sq N (West)	0	0	4	0	4
TOTALS	139	0	223	116	478	TOTALS	4	0	6	5	15
2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	120	751	5095	4980	10946	Belgard Rd (North)	13	8	112	233	366
TUD Campus (East)	35	0	1	4	40	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	7521	196	22	3679	11418	Belgard Rd (South)	263	0	5	455	723
Belgard Sq N (West)	4864	264	1866	19	7013	Belgard Sq N (West)	192	3	306	0	501
TOTALS	12540	1211	6984	8682	29417	TOTALS	468	11	423	688	1590
2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	130	812	5390	5349	11681	Belgard Rd (North)	15	9	127	267	418
TUD Campus (East)	37	0	1	5	43	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	7987	213	24	3832	12056	Belgard Rd (South)	299	0	6	517	822
Belgard Sq N (West)	5213	283	1884	20	7400	Belgard Sq N (West)	219	4	346	0	569
TOTALS	13367	1308	7299	9206	31180	TOTALS	533	13	479	784	1809
2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	130	812	5503	5349	11794	Belgard Rd (North)	15	9	129	267	420
TUD Campus (East)	37	0	1	5	43	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	8126	213	24	3948	12311	Belgard Rd (South)	303	0	6	522	831
Belgard Sq N (West)	5213	283	1994	20	7510	Belgard Sq N (West)	219	4	350	0	573
TOTALS	13506	1308	7522	9322	31658	TOTALS	537	13	485	789	1824
2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	137	853	5665	5598	12253	Belgard Rd (North)	17	10	145	304	476
TUD Campus (East)	39	0	1	5	45	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	8396	224	25	4014	12659	Belgard Rd (South)	342	0	7	589	938
Belgard Sq N (West)	5449	296	1971	21	7737	Belgard Sq N (West)	249	4	393	0	646
TOTALS	14021	1373	7662	9638	32694	TOTALS	608	14	545	893	2060
2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS	From \ To	Belgard Rd (North)	TUD Campus (East)	Belgard Rd (South)	Belgard Sq N (West)	TOTALS
Belgard Rd (North)	137	853	5778	5598	12366	Belgard Rd (North)	17	10	147	304	478
TUD Campus (East)	39	0	1	5	45	TUD Campus (East)	0	0	0	0	0
Belgard Rd (South)	8535	224	25	4130	12914	Belgard Rd (South)	346	0	7	594	947
Belgard Sq N (West)	5449	296	2081	21	7847	Belgard Sq N (West)	249	4	397	0	650
TOTALS	14160	1373	7885	9754	33172	TOTALS	612	14	551	898	2075

Junction 4 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - Existing Junction Configurations

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	71	447	0	518	Belgard Sq N (East)	0	59	235	1	295
Belgard Sq E (South)	131	3	185	0	319	Belgard Sq E (South)	249	3	138	0	390
Belgard Sq N (West)	373	41	3	0	417	Belgard Sq N (West)	448	70	0	2	520
Vardis (North)	1	0	0	2	3	Vardis (North)	0	0	0	0	0
TOTALS	505	115	635	2	1257	TOTALS	697	132	373	3	1205

2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	1	8	36	45	Belgard Sq N (East)	0	1	4	39	44
Belgard Sq E (South)	1	0	0	2	3	Belgard Sq E (South)	5	0	0	2	7
Belgard Sq N (West)	3	0	0	22	25	Belgard Sq N (West)	10	0	0	18	28
Vardis (North)	108	7	65	0	180	Vardis (North)	118	7	54	0	179
TOTALS	112	8	73	60	253	TOTALS	133	8	58	59	258

2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	76	477	36	589	Belgard Sq N (East)	0	63	251	40	354
Belgard Sq E (South)	138	3	194	2	337	Belgard Sq E (South)	266	3	145	2	416
Belgard Sq N (West)	394	43	3	22	462	Belgard Sq N (West)	480	73	0	20	573
Vardis (North)	109	7	65	2	183	Vardis (North)	118	7	54	0	179
TOTALS	641	129	739	62	1571	TOTALS	864	146	450	62	1522

2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	5	0	0	5	Belgard Sq N (East)	0	11	0	0	11
Belgard Sq E (South)	9	0	12	0	21	Belgard Sq E (South)	8	0	6	0	14
Belgard Sq N (West)	0	5	0	0	5	Belgard Sq N (West)	0	11	0	0	11
Vardis (North)	0	0	0	0	0	Vardis (North)	0	0	0	0	0
TOTALS	9	10	12	0	31	TOTALS	8	22	6	0	36

2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	81	477	36	594	Belgard Sq N (East)	0	74	251	40	365
Belgard Sq E (South)	147	3	206	2	358	Belgard Sq E (South)	274	3	151	2	430
Belgard Sq N (West)	394	48	3	22	467	Belgard Sq N (West)	480	84	0	20	584
Vardis (North)	109	7	65	2	183	Vardis (North)	118	7	54	0	179
TOTALS	650	139	751	62	1602	TOTALS	872	168	456	62	1558

2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	82	516	36	634	Belgard Sq N (East)	0	68	271	40	379
Belgard Sq E (South)	150	3	210	2	365	Belgard Sq E (South)	288	3	157	2	450
Belgard Sq N (West)	427	47	3	22	499	Belgard Sq N (West)	519	80	0	20	619
Vardis (North)	109	7	65	2	183	Vardis (North)	118	7	54	0	179
TOTALS	686	139	794	62	1681	TOTALS	925	158	482	62	1627

2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	87	516	36	639	Belgard Sq N (East)	0	79	271	40	390
Belgard Sq E (South)	159	3	222	2	386	Belgard Sq E (South)	296	3	163	2	464
Belgard Sq N (West)	427	52	3	22	504	Belgard Sq N (West)	519	91	0	20	630
Vardis (North)	109	7	65	2	183	Vardis (North)	118	7	54	0	179
TOTALS	695	149	806	62	1712	TOTALS	933	180	488	62	1663

2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	86	543	36	665	Belgard Sq N (East)	0	72	285	40	397
Belgard Sq E (South)	158	4	221	2	385	Belgard Sq E (South)	303	4	165	2	474
Belgard Sq N (West)	449	49	4	22	524	Belgard Sq N (West)	546	84	0	20	650
Vardis (North)	109	7	65	2	183	Vardis (North)	118	7	54	0	179
TOTALS	716	146	833	62	1757	TOTALS	967	167	504	62	1700

2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)	0	91	543	36	670	Belgard Sq N (East)	0	83	285	40	408
Belgard Sq E (South)	167	4	233	2	406	Belgard Sq E (South)	311	4	171	2	488
Belgard Sq N (West)	449	54	4	22	529	Belgard Sq N (West)	546	95	0	20	661
Vardis (North)	109	7	65	2	183	Vardis (North)	118	7	54	0	179
TOTALS	725	156	845	62	1788	TOTALS	975	189	510	62	1736

Junction 4 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - Existing Junction Configurations

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS						2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1048	4112	1	5161	Belgard Sq N (East)		0	15	417	1	433
Belgard Sq E (South)		2717	70	1978	4	4769	Belgard Sq E (South)		98	6	39	0	143
Belgard Sq N (West)		5008	727	26	9	5770	Belgard Sq N (West)		300	30	1	0	331
Vardis (North)		8	0	1	0	9	Vardis (North)		2	0	0	1	3
TOTALS		7733	1845	6117	14	15709	TOTALS		400	51	457	2	910

2025 Light Vehicles Other committed development flows						2025 Heavy Vehicles Other committed development flows							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	24	96	793	913	Belgard Sq N (East)		0	0	4	29	33
Belgard Sq E (South)		45	0	0	48	93	Belgard Sq E (South)		1	0	0	2	3
Belgard Sq N (West)		84	0	0	396	480	Belgard Sq N (West)		2	0	0	14	16
Vardis (North)		833	51	404	0	1288	Vardis (North)		30	2	15	0	47
TOTALS		962	75	500	1237	2774	TOTALS		33	2	19	45	99

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1124	4411	794	6329	Belgard Sq N (East)		0	16	459	30	505
Belgard Sq E (South)		2896	73	2076	52	5097	Belgard Sq E (South)		108	7	43	2	160
Belgard Sq N (West)		5339	763	27	405	6534	Belgard Sq N (West)		329	33	1	14	377
Vardis (North)		841	51	405	0	1297	Vardis (North)		32	2	15	1	50
TOTALS		9076	2011	6919	1251	19257	TOTALS		469	58	518	47	1092

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS						2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	113	0	0	113	Belgard Sq N (East)		0	2	0	0	2
Belgard Sq E (South)		139	0	116	0	255	Belgard Sq E (South)		4	0	5	0	9
Belgard Sq N (West)		0	110	0	0	110	Belgard Sq N (West)		0	4	0	0	4
Vardis (North)		0	0	0	0	0	Vardis (North)		0	0	0	0	0
TOTALS		139	223	116	0	478	TOTALS		4	6	5	0	15

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1237	4411	794	6442	Belgard Sq N (East)		0	18	459	30	507
Belgard Sq E (South)		3035	73	2192	52	5352	Belgard Sq E (South)		112	7	48	2	169
Belgard Sq N (West)		5339	873	27	405	6644	Belgard Sq N (West)		329	37	1	14	381
Vardis (North)		841	51	405	0	1297	Vardis (North)		32	2	15	1	50
TOTALS		9215	2234	7035	1251	19735	TOTALS		473	64	523	47	1107

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1216	4772	794	6782	Belgard Sq N (East)		0	19	530	30	579
Belgard Sq E (South)		3135	80	2249	53	5517	Belgard Sq E (South)		125	8	49	2	184
Belgard Sq N (West)		5779	827	30	406	7042	Belgard Sq N (West)		381	38	1	14	434
Vardis (North)		842	51	405	0	1298	Vardis (North)		33	2	15	1	51
TOTALS		9756	2174	7456	1253	20639	TOTALS		539	67	595	47	1248

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1329	4772	794	6895	Belgard Sq N (East)		0	21	530	30	581
Belgard Sq E (South)		3274	80	2365	53	5772	Belgard Sq E (South)		129	8	54	2	193
Belgard Sq N (West)		5779	937	30	406	7152	Belgard Sq N (West)		381	42	1	14	438
Vardis (North)		842	51	405	0	1298	Vardis (North)		33	2	15	1	51
TOTALS		9895	2397	7572	1253	21117	TOTALS		543	73	600	47	1263

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1278	5016	794	7088	Belgard Sq N (East)		0	22	606	30	658
Belgard Sq E (South)		3296	84	2367	53	5800	Belgard Sq E (South)		143	9	56	2	210
Belgard Sq N (West)		6076	870	31	407	7384	Belgard Sq N (West)		435	43	1	14	493
Vardis (North)		843	51	405	0	1299	Vardis (North)		33	2	15	1	51
TOTALS		10215	2283	7819	1254	21571	TOTALS		611	76	678	47	1412

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1391	5016	794	7201	Belgard Sq N (East)		0	24	606	30	660
Belgard Sq E (South)		3435	84	2483	53	6055	Belgard Sq E (South)		147	9	61	2	219
Belgard Sq N (West)		6076	980	31	407	7494	Belgard Sq N (West)		435	47	1	14	497
Vardis (North)		843	51	405	0	1299	Vardis (North)		33	2	15	1	51
TOTALS		10354	2506	7935	1254	22049	TOTALS		615	82	683	47	1427

Junction 4 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - With BusConnects Changes

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	71	447	0	518	Belgard Sq N (East)		0	59	235	1	295
Belgard Sq E (South)		131	3	185	0	319	Belgard Sq E (South)		249	3	138	0	390
Belgard Sq N (West)		373	41	3	0	417	Belgard Sq N (West)		448	70	0	2	520
Vardis (North)		1	0	0	2	3	Vardis (North)		0	0	0	0	0
TOTALS		505	115	635	2	1257	TOTALS		697	132	373	3	1205
2022 AM Peak BusConnects Reallocation						2022 PM Peak (16:00-17:00) BusConnects Reallocation							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq East (North)		0	-70	200	0	130	Belgard Sq N (East)		0	-58	154	0	96
Old Blessington Rd (East)		-129	-3	-128	0	-260	Belgard Sq E (South)		-246	-3	-82	0	-331
Belgard Sq East (South)		58	14	-3	0	69	Belgard Sq N (West)		87	-15	0	0	72
Old Blessington Rd (West)		0	0	0	-2	-2	Vardis (North)		0	0	0	0	0
TOTALS		-71	-59	69	-2	-63	TOTALS		-159	-76	72	0	-163
2022 AM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)						2022 PM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1	647	0	648	Belgard Sq N (East)		0	1	389	1	391
Belgard Sq E (South)		2	0	57	0	59	Belgard Sq E (South)		3	0	56	0	59
Belgard Sq N (West)		431	55	0	0	486	Belgard Sq N (West)		535	55	0	2	592
Vardis (North)		1	0	0	1	1	Vardis (North)		0	0	0	0	0
TOTALS		434	56	704	0	1194	TOTALS		538	56	445	3	1042
2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	8	37	45	Belgard Sq N (East)		0	0	4	40	44
Belgard Sq E (South)		0	0	0	0	0	Belgard Sq E (South)		0	0	0	0	0
Belgard Sq N (West)		3	0	0	23	26	Belgard Sq N (West)		10	0	0	19	29
Vardis (North)		112	0	68	0	180	Vardis (North)		123	0	56	0	179
TOTALS		115	0	76	60	251	TOTALS		133	0	60	59	252
2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1	687	37	725	Belgard Sq N (East)		0	1	412	41	454
Belgard Sq E (South)		2	0	60	0	62	Belgard Sq E (South)		3	0	59	0	62
Belgard Sq N (West)		455	58	0	23	536	Belgard Sq N (West)		571	58	0	21	650
Vardis (North)		113	0	68	0	181	Vardis (North)		123	0	56	0	179
TOTALS		570	59	815	60	1504	TOTALS		697	59	527	62	1345
2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	12	0	12	Belgard Sq N (East)		0	0	6	0	6
Belgard Sq E (South)		0	0	0	0	0	Belgard Sq E (South)		0	0	0	0	0
Belgard Sq N (West)		5	0	0	0	5	Belgard Sq N (West)		11	0	0	0	11
Vardis (North)		0	0	0	0	0	Vardis (North)		0	0	0	0	0
TOTALS		5	0	12	0	17	TOTALS		11	0	6	0	17
2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1	699	37	737	Belgard Sq N (East)		0	1	418	41	460
Belgard Sq E (South)		2	0	60	0	62	Belgard Sq E (South)		3	0	59	0	62
Belgard Sq N (West)		460	58	0	23	541	Belgard Sq N (West)		582	58	0	21	661
Vardis (North)		113	0	68	0	181	Vardis (North)		123	0	56	0	179
TOTALS		575	59	827	60	1521	TOTALS		708	59	533	62	1362
2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1	744	37	782	Belgard Sq N (East)		0	1	446	41	488
Belgard Sq E (South)		2	0	65	0	67	Belgard Sq E (South)		3	0	64	0	67
Belgard Sq N (West)		493	63	0	23	579	Belgard Sq N (West)		618	63	0	21	702
Vardis (North)		113	0	68	0	181	Vardis (North)		123	0	56	0	179
TOTALS		608	64	877	60	1609	TOTALS		744	64	566	62	1436
2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1	756	37	794	Belgard Sq N (East)		0	1	452	41	494
Belgard Sq E (South)		2	0	65	0	67	Belgard Sq E (South)		3	0	64	0	67
Belgard Sq N (West)		498	63	0	23	584	Belgard Sq N (West)		629	63	0	21	713
Vardis (North)		113	0	68	0	181	Vardis (North)		123	0	56	0	179
TOTALS		613	64	889	60	1626	TOTALS		755	64	572	62	1453
2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1	782	37	820	Belgard Sq N (East)		0	1	469	41	511
Belgard Sq E (South)		2	0	68	0	70	Belgard Sq E (South)		4	0	67	0	71
Belgard Sq N (West)		519	66	0	23	608	Belgard Sq N (West)		650	66	0	21	737
Vardis (North)		113	0	68	0	181	Vardis (North)		123	0	56	0	179
TOTALS		634	67	918	60	1679	TOTALS		777	67	592	62	1498
2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1	794	37	832	Belgard Sq N (East)		0	1	475	41	517
Belgard Sq E (South)		2	0	68	0	70	Belgard Sq E (South)		4	0	67	0	71
Belgard Sq N (West)		524	66	0	23	613	Belgard Sq N (West)		661	66	0	21	748
Vardis (North)		113	0	68	0	181	Vardis (North)		123	0	56	0	179
TOTALS		639	67	930	60	1696	TOTALS		788	67	598	62	1515

Junction 4 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - With BusConnects Changes

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS						2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	1048	4112	1	5161	Belgard Sq N (East)		0	15	417	1	433
Belgard Sq E (South)		2717	70	1978	4	4769	Belgard Sq E (South)		98	6	39	0	143
Belgard Sq N (West)		5008	727	26	9	5770	Belgard Sq N (West)		300	30	1	0	331
Vardis (North)		8	0	1	0	9	Vardis (North)		2	0	0	1	3
TOTALS		7733	1845	6117	14	15709	TOTALS		400	51	457	2	910

2022 Light Vehicles AADT BusConnects Reallocation						2022 Heavy Vehicles AADT BusConnects Reallocation							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq East (North)		0	-1048	1978	0	930	Belgard Sq N (East)		0	-9	146	0	137
Old Blessington Rd (East)		-2717	-70	-1978	0	-4769	Belgard Sq E (South)		-57	-6	337	0	274
Belgard Sq East (South)		727	-727	-26	0	-26	Belgard Sq N (West)		141	342	-1	0	482
Old Blessington Rd (West)		0	0	0	0	0	Vardis (North)		0	0	0	-1	-1
TOTALS		-1990	-1845	-26	0	-3861	TOTALS		84	327	482	-1	892

2022 Light Vehicles RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)						2022 Heavy Vehicles RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	6090	1	6091	Belgard Sq N (East)		0	6	563	1	570
Belgard Sq E (South)		0	0	0	4	4	Belgard Sq E (South)		41	0	376	0	417
Belgard Sq N (West)		5735	0	0	9	5744	Belgard Sq N (West)		441	372	0	0	813
Vardis (North)		8	0	1	0	9	Vardis (North)		2	0	0	0	2
TOTALS		5743	0	6091	14	11848	TOTALS		484	378	939	1	1802

2025 Light Vehicles Other committed development flows						2025 Heavy Vehicles Other committed development flows							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	100	825	925	Belgard Sq N (East)		0	0	5	30	35
Belgard Sq E (South)		0	0	0	0	0	Belgard Sq E (South)		0	0	0	0	0
Belgard Sq N (West)		83	0	0	412	495	Belgard Sq N (West)		3	0	0	15	18
Vardis (North)		868	0	421	0	1289	Vardis (North)		31	0	15	0	46
TOTALS		951	0	521	1237	2709	TOTALS		34	0	20	45	99

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	6491	826	7317	Belgard Sq N (East)		0	7	619	31	657
Belgard Sq E (South)		0	0	0	4	4	Belgard Sq E (South)		45	0	410	0	455
Belgard Sq N (West)		6101	0	0	421	6522	Belgard Sq N (West)		484	406	0	15	905
Vardis (North)		876	0	422	0	1298	Vardis (North)		33	0	15	0	48
TOTALS		6977	0	6913	1251	15141	TOTALS		562	413	1044	46	2065

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS						2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	116	0	116	Belgard Sq N (East)		0	0	5	0	5
Belgard Sq E (South)		0	0	0	0	0	Belgard Sq E (South)		0	0	0	0	0
Belgard Sq N (West)		110	0	0	0	110	Belgard Sq N (West)		4	0	0	0	4
Vardis (North)		0	0	0	0	0	Vardis (North)		0	0	0	0	0
TOTALS		110	0	116	0	226	TOTALS		4	0	5	0	9

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	6607	826	7433	Belgard Sq N (East)		0	7	624	31	662
Belgard Sq E (South)		0	0	0	4	4	Belgard Sq E (South)		45	0	410	0	455
Belgard Sq N (West)		6211	0	0	421	6632	Belgard Sq N (West)		488	406	0	15	909
Vardis (North)		876	0	422	0	1298	Vardis (North)		33	0	15	0	48
TOTALS		7087	0	7029	1251	15367	TOTALS		566	413	1049	46	2074

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	7025	826	7851	Belgard Sq N (East)		0	8	715	31	754
Belgard Sq E (South)		0	0	0	5	5	Belgard Sq E (South)		52	0	474	0	526
Belgard Sq N (West)		6605	0	0	422	7027	Belgard Sq N (West)		559	469	0	15	1043
Vardis (North)		877	0	422	0	1299	Vardis (North)		34	0	15	0	49
TOTALS		7482	0	7447	1253	16182	TOTALS		645	477	1204	46	2372

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	7141	826	7967	Belgard Sq N (East)		0	8	720	31	759
Belgard Sq E (South)		0	0	0	5	5	Belgard Sq E (South)		52	0	474	0	526
Belgard Sq N (West)		6715	0	0	422	7137	Belgard Sq N (West)		563	469	0	15	1047
Vardis (North)		877	0	422	0	1299	Vardis (North)		34	0	15	0	49
TOTALS		7592	0	7563	1253	16408	TOTALS		649	477	1209	46	2381

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	7387	826	8213	Belgard Sq N (East)		0	9	818	31	858
Belgard Sq E (South)		0	0	0	5	5	Belgard Sq E (South)		59	0	543	0	602
Belgard Sq N (West)		6945	0	0	423	7368	Belgard Sq N (West)		640	537	0	15	1192
Vardis (North)		878	0	422	0	1300	Vardis (North)		34	0	15	0	49
TOTALS		7823	0	7809	1254	16886	TOTALS		733	546	1376	46	2701

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq E (South)	Belgard Sq N (West)	Vardis (North)	TOTALS
Belgard Sq N (East)		0	0	7503	826	8329	Belgard Sq N (East)		0	9	823	31	863
Belgard Sq E (South)		0	0	0	5	5	Belgard Sq E (South)		59	0	543	0	602
Belgard Sq N (West)		7055	0	0	423	7478	Belgard Sq N (West)		644	537	0	15	1196
Vardis (North)		878	0	422	0	1300	Vardis (North)		34	0	15	0	49
TOTALS		7933	0	7925	1254	17112	TOTALS		737	546	1381	46	2710

Junction 5 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - Existing Junction Configurations

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	14	264	195	166	639	Belgard Sq N (East)	8	95	228	47	378
Belgard Sq W (South)	67	0	64	22	153	Belgard Sq W (South)	152	0	153	26	331
Belgard Sq N (West)	281	164	1	161	607	Belgard Sq N (West)	220	79	3	70	372
Hospital (North)	65	49	69	1	184	Hospital (North)	144	62	120	1	327
TOTALS	427	477	329	350	1583	TOTALS	524	236	504	144	1408
2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	11	51	13	75	Belgard Sq N (East)	0	6	48	3	57
Belgard Sq W (South)	2	0	0	0	2	Belgard Sq W (South)	5	0	0	0	5
Belgard Sq N (West)	21	0	0	0	21	Belgard Sq N (West)	18	0	0	0	18
Hospital (North)	3	0	0	0	3	Hospital (North)	6	0	0	0	6
TOTALS	26	11	51	13	101	TOTALS	29	6	48	3	86
2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	15	288	256	187	746	Belgard Sq N (East)	8	106	287	52	453
Belgard Sq W (South)	72	0	67	23	162	Belgard Sq W (South)	165	0	161	27	353
Belgard Sq N (West)	316	173	1	169	659	Belgard Sq N (West)	249	83	3	73	408
Hospital (North)	71	51	72	1	195	Hospital (North)	157	65	126	1	349
TOTALS	474	512	396	380	1762	TOTALS	579	254	577	153	1563
2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	7	5	0	12	Belgard Sq N (East)	0	2	4	0	6
Belgard Sq W (South)	1	0	0	0	1	Belgard Sq W (South)	5	0	0	0	5
Belgard Sq N (West)	4	0	0	0	4	Belgard Sq N (West)	6	0	0	0	6
Hospital (North)	0	0	0	0	0	Hospital (North)	0	0	0	0	0
TOTALS	5	7	5	0	17	TOTALS	11	2	4	0	17
2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	15	295	261	187	758	Belgard Sq N (East)	8	108	291	52	459
Belgard Sq W (South)	73	0	67	23	163	Belgard Sq W (South)	170	0	161	27	358
Belgard Sq N (West)	320	173	1	169	663	Belgard Sq N (West)	255	83	3	73	414
Hospital (North)	71	51	72	1	195	Hospital (North)	157	65	126	1	349
TOTALS	479	519	401	380	1779	TOTALS	590	256	581	153	1580
2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	16	311	273	202	802	Belgard Sq N (East)	9	114	307	56	486
Belgard Sq W (South)	78	0	73	25	176	Belgard Sq W (South)	178	0	174	30	382
Belgard Sq N (West)	341	187	1	183	712	Belgard Sq N (West)	268	90	3	80	441
Hospital (North)	77	56	78	1	212	Hospital (North)	170	71	136	1	378
TOTALS	512	554	425	411	1902	TOTALS	625	275	620	167	1687
2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	16	318	278	202	814	Belgard Sq N (East)	9	116	311	56	492
Belgard Sq W (South)	79	0	73	25	177	Belgard Sq W (South)	183	0	174	30	387
Belgard Sq N (West)	345	187	1	183	716	Belgard Sq N (West)	274	90	3	80	447
Hospital (North)	77	56	78	1	212	Hospital (North)	170	71	136	1	378
TOTALS	517	561	430	411	1919	TOTALS	636	277	624	167	1704
2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	17	327	284	212	840	Belgard Sq N (East)	10	120	321	59	510
Belgard Sq W (South)	82	0	77	27	186	Belgard Sq W (South)	187	0	183	31	401
Belgard Sq N (West)	357	197	1	193	748	Belgard Sq N (West)	281	95	4	84	464
Hospital (North)	81	59	82	1	223	Hospital (North)	178	74	144	1	397
TOTALS	537	583	444	433	1997	TOTALS	656	289	652	175	1789
2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)					
From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	17	334	289	212	852	Belgard Sq N (East)	10	122	325	59	516
Belgard Sq W (South)	83	0	77	27	187	Belgard Sq W (South)	192	0	183	31	406
Belgard Sq N (West)	361	197	1	193	752	Belgard Sq N (West)	287	95	4	84	470
Hospital (North)	81	59	82	1	223	Hospital (North)	178	74	144	1	397
TOTALS	542	590	449	433	2014	TOTALS	667	291	656	175	1789

Junction 5 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - Existing Junction Configurations

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	103	1471	3010	1581	6165
Belgard Sq W (South)	1106	5	1340	321	2772
Belgard Sq N (West)	3267	1479	32	1911	6689
Hospital (North)	1348	591	1227	23	3189
TOTALS	5824	3546	5609	3836	18815

2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	399	57	1	457
Belgard Sq W (South)	275	0	9	2	286
Belgard Sq N (West)	50	7	1	9	67
Hospital (North)	5	1	10	0	16
TOTALS	330	407	77	12	826

2025 Light Vehicles Other committed development flows

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	3	66	345	87	501
Belgard Sq W (South)	51	0	0	0	51
Belgard Sq N (West)	354	0	0	0	354
Hospital (North)	73	0	0	0	73
TOTALS	481	66	345	87	979

2025 Heavy Vehicles Other committed development flows

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	6	12	2	20
Belgard Sq W (South)	3	0	0	0	3
Belgard Sq N (West)	11	0	0	0	11
Hospital (North)	2	0	0	0	2
TOTALS	16	6	12	2	36

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	111	1610	3504	1746	6971
Belgard Sq W (South)	1212	5	1406	337	2960
Belgard Sq N (West)	3782	1552	34	2005	7373
Hospital (North)	1488	620	1288	24	3420
TOTALS	6593	3787	6232	4112	20724

2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	441	74	3	518
Belgard Sq W (South)	303	0	10	2	315
Belgard Sq N (West)	66	8	1	10	85
Hospital (North)	7	1	11	0	19
TOTALS	376	450	96	15	937

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	45	71	0	116
Belgard Sq W (South)	32	0	0	0	32
Belgard Sq N (West)	78	0	0	0	78
Hospital (North)	0	0	0	0	0
TOTALS	110	45	71	0	226

2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	4	1	0	5
Belgard Sq W (South)	3	0	0	0	3
Belgard Sq N (West)	1	0	0	0	1
Hospital (North)	0	0	0	0	0
TOTALS	4	4	1	0	9

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	111	1655	3575	1746	7087
Belgard Sq W (South)	1244	5	1406	337	2992
Belgard Sq N (West)	3860	1552	34	2005	7451
Hospital (North)	1488	620	1288	24	3420
TOTALS	6703	3832	6303	4112	20950

2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	445	75	3	523
Belgard Sq W (South)	306	0	10	2	318
Belgard Sq N (West)	67	8	1	10	86
Hospital (North)	7	1	11	0	19
TOTALS	380	454	97	15	946

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	120	1739	3768	1885	7512
Belgard Sq W (South)	1309	6	1524	365	3204
Belgard Sq N (West)	4069	1682	36	2173	7960
Hospital (North)	1606	672	1395	26	3699
TOTALS	7104	4099	6723	4449	22375

2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	509	84	3	596
Belgard Sq W (South)	350	0	11	3	364
Belgard Sq N (West)	74	9	1	11	95
Hospital (North)	8	1	13	0	22
TOTALS	432	519	109	17	1077

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	120	1784	3839	1885	7628
Belgard Sq W (South)	1341	6	1524	365	3236
Belgard Sq N (West)	4147	1682	36	2173	8038
Hospital (North)	1606	672	1395	26	3699
TOTALS	7214	4144	6794	4449	22601

2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	513	85	3	601
Belgard Sq W (South)	353	0	11	3	367
Belgard Sq N (West)	75	9	1	11	96
Hospital (North)	8	1	13	0	22
TOTALS	436	523	110	17	1086

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	126	1826	3947	1979	7878
Belgard Sq W (South)	1374	6	1603	384	3367
Belgard Sq N (West)	4263	1770	38	2287	8358
Hospital (North)	1686	707	1468	28	3889
TOTALS	7449	4309	7056	4678	23492

2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	582	94	3	679
Belgard Sq W (South)	400	0	13	3	416
Belgard Sq N (West)	83	10	1	13	107
Hospital (North)	9	1	14	0	24
TOTALS	492	593	122	19	1226

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	126	1871	4018	1979	7994
Belgard Sq W (South)	1406	6	1603	384	3399
Belgard Sq N (West)	4341	1770	38	2287	8436
Hospital (North)	1686	707	1468	28	3889
TOTALS	7559	4354	7127	4678	23718

2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)	0	586	95	3	684
Belgard Sq W (South)	403	0	13	3	419
Belgard Sq N (West)	84	10	1	13	108
Hospital (North)	9	1	14	0	24
TOTALS	496	597	123	19	1235

Junction 5 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - With BusConnects Changes to Junction 4

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS						2022 PM Peak (16:00-17:00) BASELINE TRAFFIC FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		14	264	195	166	639	Belgard Sq N (East)		8	95	228	47	378
Belgard Sq W (South)		67	0	64	22	153	Belgard Sq W (South)		152	0	153	26	331
Belgard Sq N (West)		281	164	1	161	607	Belgard Sq N (West)		220	79	3	70	372
Hospital (North)		65	49	69	1	184	Hospital (North)		144	62	120	1	327
TOTALS		427	477	329	350	1583	TOTALS		524	236	504	144	1408
2022 AM Peak BusConnects Reallocation						2022 PM Peak (16:00-17:00) BusConnects Reallocation							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq East (North)		-14	72	0	0	58	Belgard Sq N (East)		-8	72	0	0	64
Old Blessington Rd (East)		72	0	0	0	72	Belgard Sq W (South)		72	0	0	0	72
Belgard Sq East (South)		0	0	-1	0	-1	Belgard Sq N (West)		0	0	-3	0	-3
Old Blessington Rd (West)		0	0	0	-1	-1	Hospital (North)		0	0	0	-1	-1
TOTALS		58	72	-1	-1	128	TOTALS		64	72	-3	-1	132
2022 AM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)						2022 PM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	336	195	166	697	Belgard Sq N (East)		0	167	228	47	442
Belgard Sq W (South)		139	0	64	22	225	Belgard Sq W (South)		224	0	153	26	403
Belgard Sq N (West)		281	164	0	161	606	Belgard Sq N (West)		220	79	0	70	369
Hospital (North)		65	49	69	0	183	Hospital (North)		144	62	120	0	326
TOTALS		485	549	328	349	1711	TOTALS		588	308	501	143	1540
2025 AM Peak Other committed development flows						2025 PM Peak Other committed development flows							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	37	21	18	76	Belgard Sq N (East)		0	23	31	6	60
Belgard Sq W (South)		8	0	0	0	8	Belgard Sq W (South)		11	0	0	0	11
Belgard Sq N (West)		15	0	0	0	15	Belgard Sq N (West)		11	0	0	0	11
Hospital (North)		3	0	0	0	3	Hospital (North)		7	0	0	0	7
TOTALS		26	37	21	18	102	TOTALS		29	23	31	6	89
2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	390	226	192	808	Belgard Sq N (East)		0	198	270	55	523
Belgard Sq W (South)		154	0	67	23	244	Belgard Sq W (South)		246	0	161	27	434
Belgard Sq N (West)		310	173	0	169	652	Belgard Sq N (West)		242	83	0	73	398
Hospital (North)		71	51	72	0	194	Hospital (North)		158	65	126	0	349
TOTALS		535	614	365	384	1898	TOTALS		646	346	557	155	1704
2025 AM Peak SUBJECT DEVELOPMENT FLOWS						2025 PM Peak SUBJECT DEVELOPMENT FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	7	5	0	12	Belgard Sq N (East)		0	2	4	0	6
Belgard Sq W (South)		1	0	0	0	1	Belgard Sq W (South)		5	0	0	0	5
Belgard Sq N (West)		4	0	0	0	4	Belgard Sq N (West)		6	0	0	0	6
Hospital (North)		0	0	0	0	0	Hospital (North)		0	0	0	0	0
TOTALS		5	7	5	0	17	TOTALS		11	2	4	0	17
2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	397	231	192	820	Belgard Sq N (East)		0	200	274	55	529
Belgard Sq W (South)		155	0	67	23	245	Belgard Sq W (South)		251	0	161	27	439
Belgard Sq N (West)		314	173	0	169	656	Belgard Sq N (West)		248	83	0	73	404
Hospital (North)		71	51	72	0	194	Hospital (North)		158	65	126	0	349
TOTALS		540	621	370	384	1915	TOTALS		657	348	561	155	1721
2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	419	243	207	869	Belgard Sq N (East)		0	213	290	59	562
Belgard Sq W (South)		166	0	73	25	264	Belgard Sq W (South)		266	0	174	30	470
Belgard Sq N (West)		335	187	0	183	705	Belgard Sq N (West)		261	90	0	80	431
Hospital (North)		77	56	78	0	211	Hospital (North)		171	71	136	0	378
TOTALS		578	662	394	415	2049	TOTALS		698	374	600	169	1841
2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	426	248	207	881	Belgard Sq N (East)		0	215	294	59	568
Belgard Sq W (South)		167	0	73	25	265	Belgard Sq W (South)		271	0	174	30	475
Belgard Sq N (West)		339	187	0	183	709	Belgard Sq N (West)		267	90	0	80	437
Hospital (North)		77	56	78	0	211	Hospital (North)		171	71	136	0	378
TOTALS		583	669	399	415	2066	TOTALS		709	376	604	169	1858
2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	439	254	217	910	Belgard Sq N (East)		0	223	304	62	589
Belgard Sq W (South)		174	0	77	27	278	Belgard Sq W (South)		279	0	183	31	493
Belgard Sq N (West)		351	197	0	193	741	Belgard Sq N (West)		274	95	0	84	453
Hospital (North)		81	59	82	0	222	Hospital (North)		179	74	144	0	397
TOTALS		606	695	413	437	2151	TOTALS		732	392	631	177	1932
2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	446	259	217	922	Belgard Sq N (East)		0	225	308	62	595
Belgard Sq W (South)		175	0	77	27	279	Belgard Sq W (South)		284	0	183	31	498
Belgard Sq N (West)		355	197	0	193	745	Belgard Sq N (West)		280	95	0	84	459
Hospital (North)		81	59	82	0	222	Hospital (North)		179	74	144	0	397
TOTALS		611	702	418	437	2168	TOTALS		743	394	635	177	1949

Junction 5 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - With BusConnects Changes to Junction 4

2022 Light Vehicles AADT BASELINE TRAFFIC FLOWS						2022 Heavy Vehicles AADT BASELINE TRAFFIC FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		103	1471	3010	1581	6165	Belgard Sq N (East)		0	399	57	1	457
Belgard Sq W (South)		1106	5	1340	321	2772	Belgard Sq W (South)		275	0	9	2	286
Belgard Sq N (West)		3267	1479	32	1911	6689	Belgard Sq N (West)		50	7	1	9	67
Hospital (North)		1348	591	1227	23	3189	Hospital (North)		5	1	10	0	16
TOTALS		5824	3546	5609	3836	18815	TOTALS		330	407	77	12	826

2022 Light Vehicles AADT BusConnects Reallocation						2022 Heavy Vehicles AADT BusConnects Reallocation							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq East (North)		-103	0	0	0	-103	Belgard Sq N (East)		0	483	0	0	483
Old Blessington Rd (East)		0	-5	0	0	-5	Belgard Sq W (South)		483	0	0	0	483
Belgard Sq East (South)		0	0	-32	0	-32	Belgard Sq N (West)		0	0	-1	0	-1
Old Blessington Rd (West)		0	0	0	-23	-23	Hospital (North)		0	0	0	0	0
TOTALS		-103	-5	-32	-23	-163	TOTALS		483	483	-1	0	965

2022 Light Vehicles RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)						2022 Heavy Vehicles RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	1471	3010	1581	6062	Belgard Sq N (East)		0	882	57	1	940
Belgard Sq W (South)		1106	0	1340	321	2767	Belgard Sq W (South)		758	0	9	2	769
Belgard Sq N (West)		3267	1479	0	1911	6657	Belgard Sq N (West)		50	7	0	9	66
Hospital (North)		1348	591	1227	23	3166	Hospital (North)		5	1	10	0	16
TOTALS		5721	3541	5577	3813	18652	TOTALS		813	890	76	12	1791

2025 Light Vehicles Other committed development flows						2025 Heavy Vehicles Other committed development flows							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	126	259	136	521	Belgard Sq N (East)		0	19	1	0	20
Belgard Sq W (South)		96	0	0	0	96	Belgard Sq W (South)		17	0	0	0	17
Belgard Sq N (West)		283	0	0	0	283	Belgard Sq N (West)		1	0	0	0	1
Hospital (North)		117	0	0	0	117	Hospital (North)		0	0	0	0	0
TOTALS		496	126	259	136	1017	TOTALS		18	19	1	0	38

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	1670	3418	1795	6883	Belgard Sq N (East)		0	981	63	1	1045
Belgard Sq W (South)		1257	0	1406	337	3000	Belgard Sq W (South)		844	0	10	2	856
Belgard Sq N (West)		3711	1552	0	2005	7268	Belgard Sq N (West)		56	8	0	10	74
Hospital (North)		1532	620	1288	0	3440	Hospital (North)		5	1	11	0	17
TOTALS		6500	3842	6112	4137	20591	TOTALS		905	990	84	13	1992

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS						2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	45	71	0	116	Belgard Sq N (East)		0	4	1	0	5
Belgard Sq W (South)		32	0	0	0	32	Belgard Sq W (South)		3	0	0	0	3
Belgard Sq N (West)		78	0	0	0	78	Belgard Sq N (West)		1	0	0	0	1
Hospital (North)		0	0	0	0	0	Hospital (North)		0	0	0	0	0
TOTALS		110	45	71	0	226	TOTALS		4	4	1	0	9

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	1715	3489	1795	6999	Belgard Sq N (East)		0	985	64	1	1050
Belgard Sq W (South)		1289	0	1406	337	3032	Belgard Sq W (South)		847	0	10	2	859
Belgard Sq N (West)		3789	1552	0	2005	7346	Belgard Sq N (West)		57	8	0	10	75
Hospital (North)		1532	620	1288	0	3440	Hospital (North)		5	1	11	0	17
TOTALS		6610	3887	6183	4137	20817	TOTALS		909	994	85	13	2001

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	1799	3682	1934	7415	Belgard Sq N (East)		0	1132	73	1	1206
Belgard Sq W (South)		1354	0	1524	365	3243	Belgard Sq W (South)		973	0	11	3	987
Belgard Sq N (West)		3998	1682	0	2173	7853	Belgard Sq N (West)		64	9	0	11	84
Hospital (North)		1650	672	1395	0	3717	Hospital (North)		6	1	13	0	20
TOTALS		7002	4153	6601	4472	22228	TOTALS		1043	1142	97	15	2297

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	1844	3753	1934	7531	Belgard Sq N (East)		0	1136	74	1	1211
Belgard Sq W (South)		1386	0	1524	365	3275	Belgard Sq W (South)		976	0	11	3	990
Belgard Sq N (West)		4076	1682	0	2173	7931	Belgard Sq N (West)		65	9	0	11	85
Hospital (North)		1650	672	1395	0	3717	Hospital (North)		6	1	13	0	20
TOTALS		7112	4198	6672	4472	22454	TOTALS		1047	1146	98	15	2306

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)						2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth factor + committed development)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	1886	3861	2028	7775	Belgard Sq N (East)		0	1293	83	1	1377
Belgard Sq W (South)		1419	0	1603	384	3406	Belgard Sq W (South)		1112	0	13	3	1128
Belgard Sq N (West)		4192	1770	0	2287	8249	Belgard Sq N (West)		73	10	0	13	96
Hospital (North)		1730	707	1468	0	3905	Hospital (North)		7	1	14	0	22
TOTALS		7341	4363	6932	4699	23355	TOTALS		1192	1304	110	17	2623

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)						2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured flows + TII growth factor + committed dev. + subject dev.)							
From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS	From	To	Belgard Sq N (East)	Belgard Sq W (South)	Belgard Sq N (West)	Hospital (North)	TOTALS
Belgard Sq N (East)		0	1931	3932	2028	7891	Belgard Sq N (East)		0	1297	84	1	1382
Belgard Sq W (South)		1451	0	1603	384	3438	Belgard Sq W (South)		1115	0	13	3	1131
Belgard Sq N (West)		4270	1770	0	2287	8327	Belgard Sq N (West)		74	10	0	13	97
Hospital (North)		1730	707	1468	0	3905	Hospital (North)		7	1	14	0	22
TOTALS		7451	4408	7003	4699	23561	TOTALS		1196	1308	111	17	2632

Junction 6 - Peak Hour Traffic Flow Matrices (Passenger Car Units) - Existing Junction Configurations

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			115	115
Site Access (East)				0
Belgard Sq E (South)	319			319
TOTALS	319	0	115	434

2022 PM Peak (16:00-17:00) SURVEYED TRAFFIC FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			132	132
Site Access (East)				0
Belgard Sq E (South)	390			390
TOTALS	390	0	132	522

2025 AM Peak Other committed development flows

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	8	8
Site Access (East)	0	0	0	0
Belgard Sq E (South)	3	0	0	3
TOTALS	3	0	8	11

2025 PM Peak Other committed development flows

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	8	8
Site Access (East)	0	0	0	0
Belgard Sq E (South)	7	0	0	7
TOTALS	7	0	8	15

2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	129	129
Site Access (East)	0	0	0	0
Belgard Sq E (South)	338	0	0	338
TOTALS	338	0	129	467

2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	147	147
Site Access (East)	0	0	0	0
Belgard Sq E (South)	416	0	0	416
TOTALS	416	0	147	563

2025 AM Peak SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	10	0	10
Site Access (East)	21	0	9	30
Belgard Sq E (South)	0	7	0	7
TOTALS	21	17	9	47

2025 PM Peak SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	22	0	22
Site Access (East)	14	0	6	20
Belgard Sq E (South)	0	15	0	15
TOTALS	14	37	6	57

2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	10	129	139
Site Access (East)	21	0	9	30
Belgard Sq E (South)	338	7	0	345
TOTALS	359	17	138	514

2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	22	147	169
Site Access (East)	14	0	6	20
Belgard Sq E (South)	416	15	0	431
TOTALS	430	37	153	620

2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	139	139
Site Access (East)	0	0	0	0
Belgard Sq E (South)	366	0	0	366
TOTALS	366	0	139	505

2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	158	158
Site Access (East)	0	0	0	0
Belgard Sq E (South)	451	0	0	451
TOTALS	451	0	158	609

2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	10	139	149
Site Access (East)	21	0	9	30
Belgard Sq E (South)	366	7	0	373
TOTALS	387	17	148	552

2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	22	158	180
Site Access (East)	14	0	6	20
Belgard Sq E (South)	451	15	0	466
TOTALS	465	37	164	666

2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	146	146
Site Access (East)	0	0	0	0
Belgard Sq E (South)	385	0	0	385
TOTALS	385	0	146	531

2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	166	166
Site Access (East)	0	0	0	0
Belgard Sq E (South)	474	0	0	474
TOTALS	474	0	166	640

2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	10	146	156
Site Access (East)	21	0	9	30
Belgard Sq E (South)	385	7	0	392
TOTALS	406	17	155	578

2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	22	166	188
Site Access (East)	14	0	6	20
Belgard Sq E (South)	474	15	0	489
TOTALS	488	37	172	697

Junction 6 - AADT Traffic Flow Matrices (Light and Heavy Vehicles) - Existing Junction Configurations

2022 Light Vehicles AADT SURVEYED TRAFFIC FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			1845	1845
Site Access (East)				0
Belgard Sq E (South)	4769			4769
TOTALS	4769	0	1845	6614

2022 Heavy Vehicles AADT SURVEYED TRAFFIC FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			51	51
Site Access (East)				0
Belgard Sq E (South)	143			143
TOTALS	143	0	51	194

2025 Light Vehicles Other committed development flows

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	75	75
Site Access (East)	0	0	0	0
Belgard Sq E (South)	93	0	0	93
TOTALS	93	0	75	168

2025 Heavy Vehicles Other committed development flows

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	2	2
Site Access (East)	0	0	0	0
Belgard Sq E (South)	3	0	0	3
TOTALS	3	0	2	5

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	2011	2011
Site Access (East)	0	0	0	0
Belgard Sq E (South)	5098	0	0	5098
TOTALS	5098	0	2011	7109

2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	58	58
Site Access (East)	0	0	0	0
Belgard Sq E (South)	159	0	0	159
TOTALS	159	0	58	217

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	223	0	223
Site Access (East)	255	0	102	357
Belgard Sq E (South)	0	134	0	134
TOTALS	255	357	102	714

2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	6	0	6
Site Access (East)	9	0	4	13
Belgard Sq E (South)	0	7	0	7
TOTALS	9	13	4	26

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	223	2011	2234
Site Access (East)	255	0	102	357
Belgard Sq E (South)	5098	134	0	5232
TOTALS	5353	357	2113	7823

2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	6	58	64
Site Access (East)	9	0	4	13
Belgard Sq E (South)	159	7	0	166
TOTALS	168	13	62	243

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	2173	2173
Site Access (East)	0	0	0	0
Belgard Sq E (South)	5516	0	0	5516
TOTALS	5516	0	2173	7689

2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	66	66
Site Access (East)	0	0	0	0
Belgard Sq E (South)	183	0	0	183
TOTALS	183	0	66	249

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	223	2173	2396
Site Access (East)	255	0	102	357
Belgard Sq E (South)	5516	134	0	5650
TOTALS	5771	357	2275	8403

2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	6	66	72
Site Access (East)	9	0	4	13
Belgard Sq E (South)	183	7	0	190
TOTALS	192	13	70	275

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	2283	2283
Site Access (East)	0	0	0	0
Belgard Sq E (South)	5799	0	0	5799
TOTALS	5799	0	2283	8082

2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (surveyed flows + TII growth factor + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	76	76
Site Access (East)	0	0	0	0
Belgard Sq E (South)	210	0	0	210
TOTALS	210	0	76	286

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	223	2283	2506
Site Access (East)	255	0	102	357
Belgard Sq E (South)	5799	134	0	5933
TOTALS	6054	357	2385	8796

2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (surveyed + TII growth factor + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	6	76	82
Site Access (East)	9	0	4	13
Belgard Sq E (South)	210	7	0	217
TOTALS	219	13	80	312

Junction 6 - Peak Hour Traffic Flow Matrices (Passenger Car Units)

2022 AM Peak (08:45-09:45) BASELINE TRAFFIC FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			115	115
Site Access (East)				0
Belgard Sq E (South)	319			319
TOTALS	319	0	115	434

2022 PM Peak (16:00-17:00) SURVEYED TRAFFIC FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			132	132
Site Access (East)				0
Belgard Sq E (South)	390			390
TOTALS	390	0	132	522

2022 AM Peak BusConnects Reallocation

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			-59	-59
Site Access (East)				0
Belgard Sq E (South)	-260			-260
TOTALS	-260	0	-59	-319

2022 PM Peak BusConnects Reallocation

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			-76	-76
Site Access (East)				0
Belgard Sq E (South)	-331			-331
TOTALS	-331	0	-76	-407

2022 AM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			56	56
Site Access (East)				0
Belgard Sq E (South)	59			59
TOTALS	59	0	56	115

2022 PM Peak RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			56	56
Site Access (East)				0
Belgard Sq E (South)	59			59
TOTALS	59	0	56	115

2025 AM Peak Other committed development flows

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	0	0
Belgard Sq E (South)	0	0	0	0
TOTALS	0	0	0	0

2025 PM Peak Other committed development flows

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	0	0
Belgard Sq E (South)	0	0	0	0
TOTALS	0	0	0	0

2025 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	59	59
Site Access (East)	0	0	0	0
Belgard Sq E (South)	62	0	0	62
TOTALS	62	0	59	121

2025 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	59	59
Site Access (East)	0	0	0	0
Belgard Sq E (South)	62	0	0	62
TOTALS	62	0	59	121

2025 AM Peak SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	30	30
Belgard Sq E (South)	0	17	0	17
TOTALS	0	17	30	47

2025 PM Peak SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	20	20
Belgard Sq E (South)	0	37	0	37
TOTALS	0	37	20	57

2025 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	59	59
Site Access (East)	0	0	30	30
Belgard Sq E (South)	62	17	0	79
TOTALS	62	17	89	168

2025 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	59	59
Site Access (East)	0	0	20	20
Belgard Sq E (South)	62	37	0	99
TOTALS	62	37	79	178

2030 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	64	64
Site Access (East)	0	0	0	0
Belgard Sq E (South)	67	0	0	67
TOTALS	67	0	64	131

2030 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	64	64
Site Access (East)	0	0	0	0
Belgard Sq E (South)	67	0	0	67
TOTALS	67	0	64	131

2030 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	64	64
Site Access (East)	0	0	30	30
Belgard Sq E (South)	67	17	0	84
TOTALS	67	17	94	178

2030 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	64	64
Site Access (East)	0	0	20	20
Belgard Sq E (South)	67	37	0	104
TOTALS	67	37	84	188

2040 AM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	67	67
Site Access (East)	0	0	0	0
Belgard Sq E (South)	71	0	0	71
TOTALS	71	0	67	138

2040 PM Peak WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	67	67
Site Access (East)	0	0	0	0
Belgard Sq E (South)	71	0	0	71
TOTALS	71	0	67	138

2040 AM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	67	67
Site Access (East)	0	0	30	30
Belgard Sq E (South)	71	17	0	88
TOTALS	71	17	97	185

2040 PM Peak WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	67	67
Site Access (East)	0	0	20	20
Belgard Sq E (South)	71	37	0	108
TOTALS	71	37	87	195

Junction 6 - AADT Traffic Flow Matrices (Light and Heavy Vehicles)

2022 Light Vehicles AADT SURVEYED TRAFFIC FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			1845	1845
Site Access (East)				0
Belgard Sq E (South)	4769			4769
TOTALS	4769	0	1845	6614

2022 Heavy Vehicles AADT SURVEYED TRAFFIC FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			51	51
Site Access (East)				0
Belgard Sq E (South)	143			143
TOTALS	143	0	51	194

2022 Light Vehicles BusConnects Reallocation

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			-1845	-1845
Site Access (East)				0
Belgard Sq E (South)	-4769			-4769
TOTALS	-4769	0	-1845	-6614

2022 Heavy Vehicles BusConnects Reallocation

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			327	327
Site Access (East)				0
Belgard Sq E (South)	274			274
TOTALS	274	0	327	601

2022 Light Vehicles RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			0	0
Site Access (East)				0
Belgard Sq E (South)	0			0
TOTALS	0	0	0	0

2022 Heavy Vehicles RESTRICTURED TRAFFIC FLOWS (baseline flows + BusConnects reallocation)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)			378	378
Site Access (East)				0
Belgard Sq E (South)	417			417
TOTALS	417	0	378	795

2025 Light Vehicles Other committed development flows

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	0	0
Belgard Sq E (South)	0	0	0	0
TOTALS	0	0	0	0

2025 Heavy Vehicles Other committed development flows

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	0	0
Belgard Sq E (South)	0	0	0	0
TOTALS	0	0	0	0

2025 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	0	0
Belgard Sq E (South)	0	0	0	0
TOTALS	0	0	0	0

2025 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	412	412
Site Access (East)	0	0	0	0
Belgard Sq E (South)	455	0	0	455
TOTALS	455	0	412	867

2025 Light Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	357	357
Belgard Sq E (South)	0	357	0	357
TOTALS	0	357	357	714

2025 Heavy Vehicles SUBJECT DEVELOPMENT FLOWS

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	13	13
Belgard Sq E (South)	0	13	0	13
TOTALS	0	13	13	26

2025 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	357	357
Belgard Sq E (South)	0	357	0	357
TOTALS	0	357	357	714

2025 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	412	412
Site Access (East)	0	0	13	13
Belgard Sq E (South)	455	13	0	468
TOTALS	455	13	425	893

2030 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	0	0
Belgard Sq E (South)	0	0	0	0
TOTALS	0	0	0	0

2030 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	477	477
Site Access (East)	0	0	0	0
Belgard Sq E (South)	526	0	0	526
TOTALS	526	0	477	1003

2030 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	357	357
Belgard Sq E (South)	0	357	0	357
TOTALS	0	357	357	714

2030 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	477	477
Site Access (East)	0	0	13	13
Belgard Sq E (South)	526	13	0	539
TOTALS	526	13	490	1029

2040 Light Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	0	0
Belgard Sq E (South)	0	0	0	0
TOTALS	0	0	0	0

2040 Heavy Vehicles WITHOUT SUBJECT DEVELOPMENT (restructured flows + TII growth + committed development)

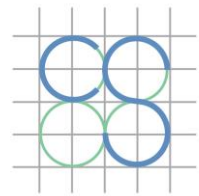
From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	546	546
Site Access (East)	0	0	0	0
Belgard Sq E (South)	602	0	0	602
TOTALS	602	0	546	1148

2040 Light Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	0	0
Site Access (East)	0	0	357	357
Belgard Sq E (South)	0	357	0	357
TOTALS	0	357	357	714

2040 Heavy Vehicles WITH SUBJECT DEVELOPMENT IN PLACE (restructured + TII growth + committed dev. + subject dev.)

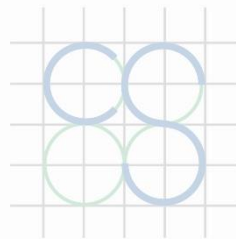
From \ To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS
Belgard Sq E (North)	0	0	546	546
Site Access (East)	0	0	13	13
Belgard Sq E (South)	602	13	0	615
TOTALS	602	13	559	1174



CS CONSULTING
GROUP

Appendix D

TRANSYT Model Results



CS CONSULTING
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TRANSYT 16
Version: 16.0.1.8473 © Copyright TRL Limited, 2019
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Filename: L088 Existing Scenario 20220511 GF.t16
Path: J:\L_JOBS\Job-L088\B_Documents\ID_Civil Reports\Traffic\TTA\Modelling
Report generation date: 11/05/2022 08:12:35

- »A1 - Standard : D1 - 2022 Baseline, AM :
- »A1 - Standard : D2 - 2022 Baseline, PM :
- »A1 - Standard : D3 - 2025 No Dev, AM :
- »A1 - Standard : D4 - 2025 No Dev, PM :
- »A1 - Standard : D5 - 2025 With Dev, AM :
- »A1 - Standard : D6 - 2025 With Dev, PM :
- »A1 - Standard : D7 - 2030 No Dev, AM :
- »A1 - Standard : D8 - 2030 No Dev, PM :
- »A1 - Standard : D9 - 2030 With Dev, AM :
- »A1 - Standard : D10 - 2030 With Dev, PM :
- »A1 - Standard : D11 - 2040 No Dev, AM :
- »A1 - Standard : D12 - 2040 No Dev, PM :
- »A1 - Standard : D13 - 2040 With Dev, AM :
- »A1 - Standard : D14 - 2040 With Dev, PM :

Summary of network performance

	AM					PM				
	Set ID	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	Within capacity	Set ID	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	Within capacity
	Standard - 2022 Baseline									
Network	D1	0.78	51% (TS 4B/1)	0 (0%)	YES	D2	0.98	55% (TS 4B/1)	0 (0%)	YES
	Standard - 2025 No Dev									
Network	D3	1.18	59% (TS 4B/1)	0 (0%)	YES	D4	1.47	63% (TS 4B/1)	0 (0%)	YES
	Standard - 2025 With Dev									
Network	D5	1.35	63% (TS 4B/1)	0 (0%)	YES	D6	1.63	65% (TS 4B/1)	0 (0%)	YES
	Standard - 2030 No Dev									
Network	D7	1.60	66% (TS 4B/1)	0 (0%)	YES	D8	1.99	69% (TS 4B/1)	0 (0%)	YES
	Standard - 2030 With Dev									
Network	D9	1.86	69% (TS 4B/1)	0 (0%)	YES	D10	2.22	71% (TS 4B/1)	0 (0%)	YES
	Standard - 2040 No Dev									
Network	D11	2.01	71% (TS 4B/1)	0 (0%)	YES	D12	2.48	73% (TS 4B/1)	0 (0%)	YES
	Standard - 2040 With Dev									
Network	D13	2.38	75% (TS 4B/1)	0 (0%)	YES	D14	2.78	75% (TS 4B/1)	0 (0%)	YES

File summary

File description

File title	The Arboury
Location	Belgard Square
Site number	
UTCRegion	
Driving side	Left
Date	11/05/2022
Version	Existing Junction Layout
Status	
Identifier	
Client	
Jobnumber	L088
Enumerator	LJ/GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	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	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

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	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	10000	10000	-1	3	60	✓			0	0	0.00

A1 - Standard D1 - 2022 Baseline, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:11:57	11/05/2022 08:11:57	0.85	08:45	100	11.01	0.78	51.26	4B/1	0	0		6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2022 Baseline	AM	(untitled)			08:45		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	71	447	0
	4-2	131	3	185	0

4-3	373	41	3	0
4-4	1	0	0	2

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	0
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	447
	4		4-1	4-2	4A/1, 4Bx/1	Normal	71
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	131
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	0
	8		4-2	4-3	4B/1, 4Cx/1	Normal	185
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	3
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	41
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	373
	12		4-3	4-4	4C/1, 4Dx/1	Normal	0
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	2
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	0
	16		4-4	4-1	4D/1, 4Ax/1	Normal	1

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	115
	6-2	0	0	0
	6-3	319	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	115
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-2	6C/1, 6Bx/1	Normal	0
	6		6-3	6-1	6C/1, 6Ax/1	Normal	319

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	518	1455	100	0.00	36	153	10.42	1.02	0.00	0.15		100	100	0.00	2.09
4Ac	1	Roundabout circulation	1	49	3600	100	100.00	1	6512	10.29	0.01	0.00	0.00		100	100	0.00	0.00
4Ax	1	Junction exit		505	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	319	622	100	0.00	51	76	13.92	4.53	0.00	0.40		100	100	0.00	5.70
4Bc	1	Roundabout circulation	2	452	3600	100	0.00	13	617	10.35	0.07	0.00	0.01		100	100	0.00	0.13
4Bx	1	Junction exit	6	115	1800	100	0.00	6	1309	16.20	0.07	0.00	0.00		100	100	0.00	0.03
4C	1	Belgard Sq North (West)	3	417	1160	100	0.00	36	150	10.72	1.30	0.00	0.15		100	100	0.00	2.14
4Cc	1	Roundabout circulation	3	136	3600	100	0.00	4	2282	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Cx	1	Junction exit		635	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	3	1170	100	100.00	0	35005	9.40	0.01	0.00	0.00		100	100	0.00	0.00
4Dc	1	Roundabout circulation	4	551	3600	100	0.00	15	488	10.35	0.09	0.00	0.01		100	100	0.00	0.20
4Dx	1	Junction exit		2	Unrestricted	100	100.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	115	1800	100	0.00	6	1309	14.39	0.07	0.00	0.00		100	100	0.00	0.03
6Ax	1	Junction exit	6	319	1800	100	0.00	18	408	16.62	0.22	0.00	0.02		100	100	0.00	0.27
6B	1	Development Access	5	0	0	100	100.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit		0	Unrestricted	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	319	1800	100	0.00	18	408	8.14	0.32	0.00	0.03		100	100	0.00	0.41
6Cx	1	Junction exit		115	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	461.95	16.17	28.56	0.00	0.78	11.01	0.00	0.00	11.01
Bus									
Tram									
Pedestrians									
TOTAL	461.95	16.17	28.56	0.00	0.78	11.01	0.00	0.00	11.01

- < = 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

A1 - Standard D2 - 2022 Baseline, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:11:57	11/05/2022 08:11:58	1.47	16:00	100	13.88	0.98	55.14	4B/1	0	0		6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2022 Baseline	PM	(untitled)			16:00		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	59	235	1
	4-2	249	3	138	0

4-3	448	70	0	2
4-4	0	0	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	1
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	235
	4		4-1	4-2	4A/1, 4Bx/1	Normal	59
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	249
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	0
	8		4-2	4-3	4B/1, 4Cx/1	Normal	138
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	70
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	448
	12		4-3	4-4	4C/1, 4Dx/1	Normal	2
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	0
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	0
	16		4-4	4-1	4D/1, 4Ax/1	Normal	0

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	132
	6-2	0	0	0
	6-3	390	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	132
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-2	6C/1, 6Bx/1	Normal	0
	6		6-3	6-1	6C/1, 6Ax/1	Normal	390

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	295	1440	100	0.00	20	339	9.88	0.48	0.00	0.04		100	100	0.00	0.56
4Ac	1	Roundabout circulation	1	73	3600	100	0.00	2	4338	10.29	0.01	0.00	0.00		100	100	0.00	0.00
4Ax	1	Junction exit		697	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	390	707	100	0.00	55	63	14.05	4.65	0.00	0.50		100	100	0.00	7.16
4Bc	1	Roundabout circulation	2	236	3600	100	0.00	7	1273	10.32	0.04	0.00	0.00		100	100	0.00	0.03
4Bx	1	Junction exit	6	132	1800	100	0.00	7	1127	16.21	0.08	0.00	0.00		100	100	0.00	0.04
4C	1	Belgard Sq North (West)	3	520	1098	100	0.00	47	90	11.63	2.21	0.00	0.32		100	100	0.00	4.53
4Cc	1	Roundabout circulation	3	253	3600	100	0.00	7	1181	10.32	0.04	0.00	0.00		100	100	0.00	0.04
4Cx	1	Junction exit		373	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	0	1046	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
4Dc	1	Roundabout circulation	4	770	3600	100	0.00	21	321	10.40	0.14	0.00	0.03		100	100	0.00	0.41
4Dx	1	Junction exit		3	Unrestricted	100	100.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	132	1800	100	0.00	7	1127	14.40	0.08	0.00	0.00		100	100	0.00	0.04
6Ax	1	Junction exit	6	390	1800	100	0.00	22	315	16.68	0.28	0.00	0.03		100	100	0.00	0.43
6B	1	Development Access	5	0	0	100	100.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit		0	Unrestricted	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	390	1800	100	0.00	22	315	8.23	0.41	0.00	0.04		100	100	0.00	0.64
6Cx	1	Junction exit		132	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	481.74	17.04	28.28	0.00	0.98	13.88	0.00	0.00	13.88
Bus									
Tram									
Pedestrians									
TOTAL	481.74	17.04	28.28	0.00	0.98	13.88	0.00	0.00	13.88

- < = 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

A1 - Standard

D3 - 2025 No Dev, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:11:58	11/05/2022 08:11:59	1.70	08:45	100	16.73	1.18	59.03	4B/1	0	0		6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2025 No Dev	AM	(untitled)			08:45		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	76	477	36
	4-2	138	3	194	2

4-3	394	43	3	22
4-4	109	7	65	2

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	36
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	477
	4		4-1	4-2	4A/1, 4Bx/1	Normal	76
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	138
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	194
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	3
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	43
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	394
	12		4-3	4-4	4C/1, 4Dx/1	Normal	22
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	2
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	65
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	109

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	129
	6-2	0	0	0
	6-3	338	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	129
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-2	6C/1, 6Bx/1	Normal	0
	6		6-3	6-1	6C/1, 6Ax/1	Normal	338

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	589	1410	100	0.00	42	115	10.77	1.37	0.00	0.22		100	100	0.00	3.19
4Ac	1	Roundabout circulation	1	123	3600	100	0.00	3	2534	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		641	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	337	571	100	0.00	59	52	16.12	6.73	0.00	0.63		100	100	0.00	8.94
4Bc	1	Roundabout circulation	2	583	3600	100	0.00	16	456	10.38	0.10	0.00	0.02		100	100	0.00	0.22
4Bx	1	Junction exit	6	129	1800	100	0.00	7	1156	16.21	0.08	0.00	0.00		100	100	0.00	0.04
4C	1	Belgard Sq North (West)	3	462	1136	100	0.00	41	121	11.05	1.62	0.00	0.21		100	100	0.00	2.96
4Cc	1	Roundabout circulation	3	181	3600	100	0.00	5	1690	10.31	0.03	0.00	0.00		100	100	0.00	0.02
4Cx	1	Junction exit		739	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	183	1153	100	0.00	16	467	9.84	0.44	0.00	0.02		100	100	0.00	0.32
4Dc	1	Roundabout circulation	4	581	3600	100	0.00	16	458	10.36	0.10	0.00	0.02		100	100	0.00	0.22
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	129	1800	100	0.00	7	1156	14.40	0.08	0.00	0.00		100	100	0.00	0.04
6Ax	1	Junction exit	6	338	1800	100	0.00	19	379	16.63	0.23	0.00	0.02		100	100	0.00	0.31
6B	1	Development Access	5	0	0	100	100.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit		0	Unrestricted	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	338	1800	100	0.00	19	379	8.16	0.35	0.00	0.03		100	100	0.00	0.46
6Cx	1	Junction exit		129	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	560.02	19.85	28.22	0.00	1.18	16.73	0.00	0.00	16.73
Bus									
Tram									
Pedestrians									
TOTAL	560.02	19.85	28.22	0.00	1.18	16.73	0.00	0.00	16.73

- < = 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

A1 - Standard

D4 - 2025 No Dev, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:11:59	11/05/2022 08:12:00	1.50	16:00	100	20.89	1.47	62.61	4B/1	0	0		6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2025 No Dev	PM	(untitled)			16:00		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	63	251	40
	4-2	266	3	145	2

4-3	480	73	0	20
4-4	118	7	54	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	40
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	251
	4		4-1	4-2	4A/1, 4Bx/1	Normal	63
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	266
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	145
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	73
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	480
	12		4-3	4-4	4C/1, 4Dx/1	Normal	20
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	0
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	54
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	118

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	147
	6-2	0	0	0
	6-3	416	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	147
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-2	6C/1, 6Bx/1	Normal	0
	6		6-3	6-1	6C/1, 6Ax/1	Normal	416

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOW	PERFORMANCE		PER PCU		QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted		Mean	Mean	Mean			

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	354	1401	100	0.00	25	256	10.05	0.65	0.00	0.06		100	100	0.00	0.91
4Ac	1	Roundabout circulation	1	137	3600	100	0.00	4	2265	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		864	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	416	664	100	0.00	63	44	16.11	6.71	0.00	0.78		100	100	0.00	11.02
4Bc	1	Roundabout circulation	2	345	3600	100	0.00	10	839	10.33	0.05	0.00	0.01		100	100	0.00	0.07
4Bx	1	Junction exit	6	146	1800	100	0.00	8	1010	16.22	0.09	0.00	0.00		100	100	0.00	0.05
4C	1	Belgard Sq North (West)	3	573	1067	100	0.00	54	68	12.34	2.92	0.00	0.47		100	100	0.00	6.61
4Cc	1	Roundabout circulation	3	311	3600	100	0.00	9	942	10.33	0.05	0.00	0.00		100	100	0.00	0.06
4Cx	1	Junction exit		450	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	179	1017	100	0.00	18	411	9.96	0.57	0.00	0.03		100	100	0.00	0.40
4Dc	1	Roundabout circulation	4	822	3600	100	0.00	23	294	10.41	0.15	0.00	0.03		100	100	0.00	0.48
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	147	1800	100	0.00	8	1002	14.41	0.09	0.00	0.00		100	100	0.00	0.05
6Ax	1	Junction exit	6	416	1800	100	0.00	23	289	16.70	0.30	0.00	0.03		100	100	0.00	0.49
6B	1	Development Access	5	0	0	100	100.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit		0	Unrestricted	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	416	1800	100	0.00	23	289	8.27	0.45	0.00	0.05		100	100	0.00	0.74
6Cx	1	Junction exit		147	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	582.36	20.88	27.89	0.00	1.47	20.89	0.00	0.00	20.89
Bus									
Tram									
Pedestrians									
TOTAL	582.36	20.88	27.89	0.00	1.47	20.89	0.00	0.00	20.89

- < = 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

A1 - Standard D5 - 2025 With Dev, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:00	11/05/2022 08:12:01	1.55	08:45	100	19.23	1.35	62.71	4B/1	0	0		4B/1	4B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2025 With Dev	AM	(untitled)			08:45		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	81	477	36
	4-2	147	3	206	2

4-3	394	48	3	22
4-4	109	7	65	2

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	36
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	477
	4		4-1	4-2	4A/1, 4Bx/1	Normal	81
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	147
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	206
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	3
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	48
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	394
	12		4-3	4-4	4C/1, 4Dx/1	Normal	22
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	2
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	65
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	109

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	10	129
	6-2	21	0	9
	6-3	338	7	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	10
	2		6-2	6-1	6B/1, 6Ax/1	Normal	21
	3		6-1	6-3	6A/1, 6Cx/1	Normal	129
	4		6-2	6-3	6B/1, 6Cx/1	Normal	9
	5		6-3	6-2	6C/1, 6Bx/1	Normal	7
	6		6-3	6-1	6C/1, 6Ax/1	Normal	338

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	594	1407	100	0.00	42	113	10.79	1.40	0.00	0.23		100	100	0.00	3.28
4Ac	1	Roundabout circulation	1	128	3600	100	0.00	4	2431	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		650	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	358	571	100	0.00	63	44	17.22	7.83	0.00	0.78		100	100	0.00	11.06
4Bc	1	Roundabout circulation	2	583	3600	100	0.00	16	456	10.38	0.10	0.00	0.02		100	100	0.00	0.22
4Bx	1	Junction exit	6	139	1800	100	0.00	8	1065	16.21	0.08	0.00	0.00		100	100	0.00	0.05
4C	1	Belgard Sq North (West)	3	467	1131	100	0.00	41	118	11.09	1.67	0.00	0.22		100	100	0.00	3.08
4Cc	1	Roundabout circulation	3	190	3600	100	0.00	5	1605	10.31	0.03	0.00	0.00		100	100	0.00	0.02
4Cx	1	Junction exit		751	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	183	1145	100	0.00	16	463	9.84	0.45	0.00	0.02		100	100	0.00	0.32
4Dc	1	Roundabout circulation	4	595	3600	100	0.00	17	445	10.36	0.10	0.00	0.02		100	100	0.00	0.23
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	139	1800	100	0.00	8	1065	14.40	0.08	0.00	0.00		100	100	0.00	0.05
6Ax	1	Junction exit	6	359	1800	100	0.00	20	351	16.65	0.25	0.00	0.02		100	100	0.00	0.35
6B	1	Development Access	5	30	488	100	100.00	6	1365	5.78	0.36	0.00	0.00		100	100	0.00	0.04
6Bx	1	Junction exit		17	Unrestricted	100	100.00	0	Unrestricted	13.26	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	345	1740	100	0.00	20	354	8.20	0.38	0.00	0.04		100	100	0.00	0.52
6Cx	1	Junction exit		138	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	577.91	20.62	28.03	0.00	1.35	19.23	0.00	0.00	19.23
Bus									
Tram									
Pedestrians									
TOTAL	577.91	20.62	28.03	0.00	1.35	19.23	0.00	0.00	19.23

- < = 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

A1 - Standard

D6 - 2025 With Dev, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:01	11/05/2022 08:12:02	1.88	16:00	100	23.21	1.63	64.72	4B/1	0	0		4B/1	4B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2025 With Dev	PM	(untitled)			16:00		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	74	251	40
	4-2	274	3	151	2

4-3	480	84	0	20
4-4	118	7	54	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	40
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	251
	4		4-1	4-2	4A/1, 4Bx/1	Normal	74
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	274
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	151
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	84
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	480
	12		4-3	4-4	4C/1, 4Dx/1	Normal	20
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	0
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	54
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	118

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	22	147
	6-2	14	0	6
	6-3	416	15	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	22
	2		6-2	6-1	6B/1, 6Ax/1	Normal	14
	3		6-1	6-3	6A/1, 6Cx/1	Normal	147
	4		6-2	6-3	6B/1, 6Cx/1	Normal	6
	5		6-3	6-2	6C/1, 6Bx/1	Normal	15
	6		6-3	6-1	6C/1, 6Ax/1	Normal	416

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	365	1395	100	0.00	26	244	10.08	0.69	0.00	0.07		100	100	0.00	0.99
4Ac	1	Roundabout circulation	1	148	3600	100	0.00	4	2089	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		872	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	430	664	100	0.00	65	39	16.73	7.34	0.00	0.88		100	100	0.00	12.45
4Bc	1	Roundabout circulation	2	345	3600	100	0.00	10	839	10.33	0.05	0.00	0.01		100	100	0.00	0.07
4Bx	1	Junction exit	6	168	1800	100	0.00	9	864	16.23	0.10	0.00	0.00		100	100	0.00	0.07
4C	1	Belgard Sq North (West)	3	584	1062	100	0.00	55	64	12.51	3.09	0.00	0.50		100	100	0.00	7.11
4Cc	1	Roundabout circulation	3	319	3600	100	0.00	9	916	10.33	0.05	0.00	0.00		100	100	0.00	0.06
4Cx	1	Junction exit		456	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	179	1006	100	0.00	18	406	9.98	0.58	0.00	0.03		100	100	0.00	0.41
4Dc	1	Roundabout circulation	4	841	3600	100	0.00	23	285	10.41	0.15	0.00	0.04		100	100	0.00	0.51
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	169	1800	100	0.00	9	859	14.42	0.10	0.00	0.00		100	100	0.00	0.07
6Ax	1	Junction exit	6	430	1800	100	0.00	24	277	16.72	0.31	0.00	0.04		100	100	0.00	0.53
6B	1	Development Access	5	20	472	100	100.00	4	2022	5.67	0.25	0.00	0.00		100	100	0.00	0.02
6Bx	1	Junction exit		37	Unrestricted	100	100.00	0	Unrestricted	13.26	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	431	1698	100	0.00	25	255	8.36	0.54	0.00	0.06		100	100	0.00	0.92
6Cx	1	Junction exit		153	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	604.55	21.79	27.75	0.00	1.63	23.21	0.00	0.00	23.21
Bus									
Tram									
Pedestrians									
TOTAL	604.55	21.79	27.75	0.00	1.63	23.21	0.00	0.00	23.21

- < = 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

A1 - Standard

D7 - 2030 No Dev, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:02	11/05/2022 08:12:03	1.83	08:45	100	22.68	1.60	65.70	4B/1	0	0		6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2030 No Dev	AM	(untitled)			08:45		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	82	516	36
	4-2	150	3	210	2

4-3	427	47	3	22
4-4	109	7	65	2

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	36
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	516
	4		4-1	4-2	4A/1, 4Bx/1	Normal	82
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	150
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	210
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	3
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	47
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	427
	12		4-3	4-4	4C/1, 4Dx/1	Normal	22
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	2
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	65
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	109

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	139
	6-2	0	0	0
	6-3	366	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	139
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-2	6C/1, 6Bx/1	Normal	0
	6		6-3	6-1	6C/1, 6Ax/1	Normal	366

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	634	1407	100	0.00	45	100	10.96	1.57	0.00	0.28		100	100	0.00	3.92
4Ac	1	Roundabout circulation	1	127	3600	100	0.00	4	2451	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		686	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	365	556	100	0.00	66	37	18.52	9.13	0.00	0.93		100	100	0.00	13.14
4Bc	1	Roundabout circulation	2	622	3600	100	0.00	17	421	10.39	0.10	0.00	0.02		100	100	0.00	0.26
4Bx	1	Junction exit	6	139	1800	100	0.00	8	1065	16.21	0.08	0.00	0.00		100	100	0.00	0.05
4C	1	Belgard Sq North (West)	3	499	1130	100	0.00	44	104	11.31	1.89	0.00	0.26		100	100	0.00	3.71
4Cc	1	Roundabout circulation	3	193	3600	100	0.00	5	1579	10.31	0.03	0.00	0.00		100	100	0.00	0.02
4Cx	1	Junction exit		794	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	183	1125	100	0.00	16	453	9.86	0.47	0.00	0.02		100	100	0.00	0.34
4Dc	1	Roundabout circulation	4	630	3600	100	0.00	18	414	10.37	0.11	0.00	0.02		100	100	0.00	0.26
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	139	1800	100	0.00	8	1065	14.40	0.08	0.00	0.00		100	100	0.00	0.05
6Ax	1	Junction exit	6	366	1800	100	0.00	20	343	16.66	0.26	0.00	0.03		100	100	0.00	0.37
6B	1	Development Access	5	0	0	100	100.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit		0	Unrestricted	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	366	1800	100	0.00	20	343	8.20	0.38	0.00	0.04		100	100	0.00	0.55
6Cx	1	Junction exit		139	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	600.45	21.61	27.78	0.00	1.60	22.68	0.00	0.00	22.68
Bus									
Tram									
Pedestrians									
TOTAL	600.45	21.61	27.78	0.00	1.60	22.68	0.00	0.00	22.68

- < = 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

A1 - Standard

D8 - 2030 No Dev, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:03	11/05/2022 08:12:04	1.61	16:00	100	28.25	1.99	68.54	4B/1	0	0		6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2030 No Dev	PM	(untitled)			16:00		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	68	271	40
	4-2	288	3	157	2

4-3	519	80	0	20
4-4	118	7	54	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	40
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	271
	4		4-1	4-2	4A/1, 4Bx/1	Normal	68
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	288
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	157
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	80
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	519
	12		4-3	4-4	4C/1, 4Dx/1	Normal	20
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	0
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	54
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	118

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	158
	6-2	0	0	0
	6-3	451	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	158
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-2	6C/1, 6Bx/1	Normal	0
	6		6-3	6-1	6C/1, 6Ax/1	Normal	451

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	379	1397	100	0.00	27	232	10.11	0.72	0.00	0.08		100	100	0.00	1.07
4Ac	1	Roundabout circulation	1	144	3600	100	0.00	4	2150	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		925	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	450	657	100	0.00	69	31	18.17	8.78	0.00	1.10		100	100	0.00	15.58
4Bc	1	Roundabout circulation	2	365	3600	100	0.00	10	788	10.34	0.06	0.00	0.01		100	100	0.00	0.08
4Bx	1	Junction exit	6	158	1800	100	0.00	9	925	16.23	0.10	0.00	0.00		100	100	0.00	0.06
4C	1	Belgard Sq North (West)	3	619	1055	100	0.00	59	53	13.03	3.61	0.00	0.62		100	100	0.00	8.82
4Cc	1	Roundabout circulation	3	333	3600	100	0.00	9	873	10.33	0.05	0.00	0.00		100	100	0.00	0.07
4Cx	1	Junction exit		482	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	179	978	100	0.00	18	392	10.01	0.62	0.00	0.03		100	100	0.00	0.44
4Dc	1	Roundabout circulation	4	890	3600	100	0.00	25	264	10.42	0.16	0.00	0.04		100	100	0.00	0.58
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	158	1800	100	0.00	9	925	14.42	0.10	0.00	0.00		100	100	0.00	0.06
6Ax	1	Junction exit	6	451	1800	100	0.00	25	259	16.74	0.33	0.00	0.04		100	100	0.00	0.59
6B	1	Development Access	5	0	0	100	100.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit		0	Unrestricted	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	451	1800	100	0.00	25	259	8.32	0.50	0.00	0.06		100	100	0.00	0.89
6Cx	1	Junction exit		158	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	624.50	22.81	27.38	0.00	1.99	28.25	0.00	0.00	28.25
Bus									
Tram									
Pedestrians									
TOTAL	624.50	22.81	27.38	0.00	1.99	28.25	0.00	0.00	28.25

- < = 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

A1 - Standard

D9 - 2030 With Dev, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:04	11/05/2022 08:12:05	1.66	08:45	100	26.42	1.86	69.48	4B/1	0	0		4B/1	4B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2030 With Dev	AM	(untitled)			08:45		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	87	516	36
	4-2	159	3	222	2

4-3	427	52	3	22
4-4	109	7	65	2

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	36
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	516
	4		4-1	4-2	4A/1, 4Bx/1	Normal	87
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	159
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	222
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	3
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	52
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	427
	12		4-3	4-4	4C/1, 4Dx/1	Normal	22
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	2
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	65
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	109

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	10	139
	6-2	21	0	9
	6-3	366	7	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	10
	2		6-2	6-1	6B/1, 6Ax/1	Normal	21
	3		6-1	6-3	6A/1, 6Cx/1	Normal	139
	4		6-2	6-3	6B/1, 6Cx/1	Normal	9
	5		6-3	6-2	6C/1, 6Bx/1	Normal	7
	6		6-3	6-1	6C/1, 6Ax/1	Normal	366

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOW	PERFORMANCE		PER PCU		QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted		Mean	Mean	Mean			

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	639	1404	100	0.00	46	98	11.00	1.60	0.00	0.28		100	100	0.00	4.04
4Ac	1	Roundabout circulation	1	132	3600	100	0.00	4	2355	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		695	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	386	556	100	0.00	69	30	20.18	10.79	0.00	1.16		100	100	0.00	16.42
4Bc	1	Roundabout circulation	2	622	3600	100	0.00	17	421	10.39	0.10	0.00	0.02		100	100	0.00	0.26
4Bx	1	Junction exit	6	149	1800	100	0.00	8	987	16.22	0.09	0.00	0.00		100	100	0.00	0.05
4C	1	Belgard Sq North (West)	3	504	1125	100	0.00	45	101	11.36	1.94	0.00	0.27		100	100	0.00	3.86
4Cc	1	Roundabout circulation	3	202	3600	100	0.00	6	1504	10.31	0.03	0.00	0.00		100	100	0.00	0.02
4Cx	1	Junction exit		806	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	183	1118	100	0.00	16	450	9.87	0.47	0.00	0.02		100	100	0.00	0.34
4Dc	1	Roundabout circulation	4	644	3600	100	0.00	18	403	10.37	0.11	0.00	0.02		100	100	0.00	0.28
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	149	1800	100	0.00	8	987	14.41	0.09	0.00	0.00		100	100	0.00	0.05
6Ax	1	Junction exit	6	387	1800	100	0.00	22	319	16.68	0.27	0.00	0.03		100	100	0.00	0.42
6B	1	Development Access	5	30	483	100	100.00	6	1348	5.78	0.37	0.00	0.00		100	100	0.00	0.04
6Bx	1	Junction exit		17	Unrestricted	100	100.00	0	Unrestricted	13.26	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	373	1744	100	0.00	21	321	8.24	0.42	0.00	0.04		100	100	0.00	0.62
6Cx	1	Junction exit		148	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	618.34	22.47	27.52	0.00	1.86	26.42	0.00	0.00	26.42
Bus									
Tram									
Pedestrians									
TOTAL	618.34	22.47	27.52	0.00	1.86	26.42	0.00	0.00	26.42

- < = 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

A1 - Standard

D10 - 2030 With Dev, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:05	11/05/2022 08:12:07	2.14	16:00	100	31.50	2.22	70.67	4B/1	0	0		4B/1	4B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2030 With Dev	PM	(untitled)			16:00		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	79	271	40
	4-2	296	3	163	2

4-3	519	91	0	20
4-4	118	7	54	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	40
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	271
	4		4-1	4-2	4A/1, 4Bx/1	Normal	79
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	3
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	296
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	163
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	91
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	519
	12		4-3	4-4	4C/1, 4Dx/1	Normal	20
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	0
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	54
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	118

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	22	158
	6-2	14	0	6
	6-3	451	15	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	22
	2		6-2	6-1	6B/1, 6Ax/1	Normal	14
	3		6-1	6-3	6A/1, 6Cx/1	Normal	158
	4		6-2	6-3	6B/1, 6Cx/1	Normal	6
	5		6-3	6-2	6C/1, 6Bx/1	Normal	15
	6		6-3	6-1	6C/1, 6Ax/1	Normal	451

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

	FLOWS	PERFORMANCE		PER PCU		QUEUES	WEIGHTS	PENALTIES	P.I.
		Wasted		Mean	Mean	Mean			

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	390	1390	100	0.00	28	221	10.15	0.76	0.00	0.08		100	100	0.00	1.16
4Ac	1	Roundabout circulation	1	155	3600	100	0.00	4	1990	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		933	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	464	657	100	0.00	71	27	19.07	9.68	0.00	1.25		100	100	0.00	17.72
4Bc	1	Roundabout circulation	2	365	3600	100	0.00	10	788	10.34	0.06	0.00	0.01		100	100	0.00	0.08
4Bx	1	Junction exit	6	180	1800	100	0.00	10	800	16.24	0.11	0.00	0.01		100	100	0.00	0.08
4C	1	Belgard Sq North (West)	3	630	1051	100	0.00	60	50	13.24	3.82	0.00	0.67		100	100	0.00	9.50
4Cc	1	Roundabout circulation	3	341	3600	100	0.00	9	850	10.33	0.05	0.00	0.00		100	100	0.00	0.07
4Cx	1	Junction exit		488	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	179	968	100	0.00	19	386	10.03	0.63	0.00	0.03		100	100	0.00	0.45
4Dc	1	Roundabout circulation	4	909	3600	100	0.00	25	256	10.43	0.17	0.00	0.04		100	100	0.00	0.61
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	180	1800	100	0.00	10	800	14.43	0.11	0.00	0.01		100	100	0.00	0.08
6Ax	1	Junction exit	6	465	1800	100	0.00	26	248	16.75	0.35	0.00	0.04		100	100	0.00	0.64
6B	1	Development Access	5	20	465	100	100.00	4	1992	5.67	0.26	0.00	0.00		100	100	0.00	0.02
6Bx	1	Junction exit		37	Unrestricted	100	100.00	0	Unrestricted	13.26	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	466	1705	100	0.00	27	229	8.41	0.60	0.00	0.08		100	100	0.00	1.09
6Cx	1	Junction exit		164	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	646.69	23.77	27.20	0.00	2.22	31.50	0.00	0.00	31.50
Bus									
Tram									
Pedestrians									
TOTAL	646.69	23.77	27.20	0.00	2.22	31.50	0.00	0.00	31.50

- < = 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

A1 - Standard D11 - 2040 No Dev, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:07	11/05/2022 08:12:08	1.05	08:45	100	28.59	2.01	70.71	4B/1	0	0		6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2040 No Dev	AM	(untitled)			08:45		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	86	543	36
	4-2	158	4	221	2

4-3	449	49	4	22
4-4	109	7	65	2

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	36
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	543
	4		4-1	4-2	4A/1, 4Bx/1	Normal	86
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	4
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	158
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	221
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	4
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	49
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	449
	12		4-3	4-4	4C/1, 4Dx/1	Normal	22
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	2
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	65
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	109

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	146
	6-2	0	0	0
	6-3	385	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	146
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-2	6C/1, 6Bx/1	Normal	0
	6		6-3	6-1	6C/1, 6Ax/1	Normal	385

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	665	1405	100	0.00	47	90	11.12	1.72	0.00	0.32		100	100	0.00	4.52
4Ac	1	Roundabout circulation	1	131	3600	100	0.00	4	2373	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		716	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	385	545	100	0.00	71	27	21.03	11.63	0.00	1.24		100	100	0.00	17.66
4Bc	1	Roundabout circulation	2	650	3600	100	0.00	18	398	10.39	0.11	0.00	0.02		100	100	0.00	0.28
4Bx	1	Junction exit	6	146	1800	100	0.00	8	1010	16.22	0.09	0.00	0.00		100	100	0.00	0.05
4C	1	Belgard Sq North (West)	3	524	1125	100	0.00	47	93	11.51	2.09	0.00	0.30		100	100	0.00	4.31
4Cc	1	Roundabout circulation	3	202	3600	100	0.00	6	1504	10.31	0.03	0.00	0.00		100	100	0.00	0.02
4Cx	1	Junction exit		833	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	183	1106	100	0.00	17	444	9.88	0.48	0.00	0.02		100	100	0.00	0.35
4Dc	1	Roundabout circulation	4	664	3600	100	0.00	18	388	10.37	0.11	0.00	0.02		100	100	0.00	0.30
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	146	1800	100	0.00	8	1010	14.41	0.09	0.00	0.00		100	100	0.00	0.05
6Ax	1	Junction exit	6	385	1800	100	0.00	21	321	16.67	0.27	0.00	0.03		100	100	0.00	0.41
6B	1	Development Access	5	0	0	100	100.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit		0	Unrestricted	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	385	1800	100	0.00	21	321	8.23	0.41	0.00	0.04		100	100	0.00	0.62
6Cx	1	Junction exit		146	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	628.60	22.97	27.37	0.00	2.01	28.59	0.00	0.00	28.59
Bus									
Tram									
Pedestrians									
TOTAL	628.60	22.97	27.37	0.00	2.01	28.59	0.00	0.00	28.59

- < = 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

A1 - Standard

D12 - 2040 No Dev, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:08	11/05/2022 08:12:08	0.84	16:00	100	35.25	2.48	72.81	4B/1	0	0		6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2040 No Dev	PM	(untitled)			16:00		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	72	285	40
	4-2	303	4	165	2

4-3	546	84	0	20
4-4	118	7	54	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	40
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	285
	4		4-1	4-2	4A/1, 4Bx/1	Normal	72
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	4
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	303
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	165
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	84
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	546
	12		4-3	4-4	4C/1, 4Dx/1	Normal	20
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	0
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	54
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	118

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	166
	6-2	0	0	0
	6-3	474	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	166
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-2	6C/1, 6Bx/1	Normal	0
	6		6-3	6-1	6C/1, 6Ax/1	Normal	474

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	397	1394	100	0.00	28	216	10.17	0.77	0.00	0.08		100	100	0.00	1.21
4Ac	1	Roundabout circulation	1	149	3600	100	0.00	4	2074	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		967	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	474	651	100	0.00	73	24	20.19	10.80	0.00	1.42		100	100	0.00	20.19
4Bc	1	Roundabout circulation	2	379	3600	100	0.00	11	755	10.34	0.06	0.00	0.01		100	100	0.00	0.09
4Bx	1	Junction exit	6	167	1800	100	0.00	9	870	16.23	0.10	0.00	0.00		100	100	0.00	0.07
4C	1	Belgard Sq North (West)	3	650	1046	100	0.00	62	45	13.62	4.20	0.00	0.76		100	100	0.00	10.76
4Cc	1	Roundabout circulation	3	349	3600	100	0.00	10	828	10.33	0.05	0.00	0.01		100	100	0.00	0.07
4Cx	1	Junction exit		504	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	179	952	100	0.00	19	379	10.05	0.66	0.00	0.03		100	100	0.00	0.46
4Dc	1	Roundabout circulation	4	937	3600	100	0.00	26	246	10.44	0.18	0.00	0.05		100	100	0.00	0.65
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	166	1800	100	0.00	9	876	14.42	0.10	0.00	0.00		100	100	0.00	0.07
6Ax	1	Junction exit	6	474	1800	100	0.00	26	242	16.76	0.36	0.00	0.05		100	100	0.00	0.67
6B	1	Development Access	5	0	0	100	100.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit		0	Unrestricted	100	100.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	474	1800	100	0.00	26	242	8.35	0.54	0.00	0.07		100	100	0.00	1.00
6Cx	1	Junction exit		166	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	653.67	24.27	26.93	0.00	2.48	35.25	0.00	0.00	35.25
Bus									
Tram									
Pedestrians									
TOTAL	653.67	24.27	26.93	0.00	2.48	35.25	0.00	0.00	35.25

- < = 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

A1 - Standard

D13 - 2040 With Dev, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:08	11/05/2022 08:12:09	1.86	08:45	100	33.84	2.38	74.56	4B/1	0	0		4B/1	4B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2040 With Dev	AM	(untitled)			08:45		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	91	543	36
	4-2	167	4	233	2

4-3	449	54	4	22
4-4	109	7	65	2

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	36
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	543
	4		4-1	4-2	4A/1, 4Bx/1	Normal	91
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	4
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	167
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	233
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	4
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	54
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	449
	12		4-3	4-4	4C/1, 4Dx/1	Normal	22
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	2
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	65
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	109

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	10	146
	6-2	21	0	9
	6-3	385	7	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	10
	2		6-2	6-1	6B/1, 6Ax/1	Normal	21
	3		6-1	6-3	6A/1, 6Cx/1	Normal	146
	4		6-2	6-3	6B/1, 6Cx/1	Normal	9
	5		6-3	6-2	6C/1, 6Bx/1	Normal	7
	6		6-3	6-1	6C/1, 6Ax/1	Normal	385

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOWs	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	670	1402	100	0.00	48	88	11.15	1.76	0.00	0.33		100	100	0.00	4.65
4Ac	1	Roundabout circulation	1	136	3600	100	0.00	4	2282	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		725	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	406	545	100	0.00	75	21	23.38	13.99	0.00	1.58		100	100	0.00	22.40
4Bc	1	Roundabout circulation	2	650	3600	100	0.00	18	398	10.39	0.11	0.00	0.02		100	100	0.00	0.28
4Bx	1	Junction exit	6	156	1800	100	0.00	9	938	16.23	0.09	0.00	0.00		100	100	0.00	0.06
4C	1	Belgard Sq North (West)	3	529	1120	100	0.00	47	91	11.57	2.15	0.00	0.32		100	100	0.00	4.49
4Cc	1	Roundabout circulation	3	211	3600	100	0.00	6	1436	10.31	0.03	0.00	0.00		100	100	0.00	0.03
4Cx	1	Junction exit		845	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	183	1098	100	0.00	17	440	9.89	0.49	0.00	0.02		100	100	0.00	0.35
4Dc	1	Roundabout circulation	4	678	3600	100	0.00	19	378	10.38	0.12	0.00	0.02		100	100	0.00	0.31
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	156	1800	100	0.00	9	938	14.42	0.09	0.00	0.00		100	100	0.00	0.06
6Ax	1	Junction exit	6	406	1800	100	0.00	23	299	16.69	0.29	0.00	0.03		100	100	0.00	0.47
6B	1	Development Access	5	30	479	100	100.00	6	1336	5.79	0.38	0.00	0.00		100	100	0.00	0.04
6Bx	1	Junction exit		17	Unrestricted	100	100.00	0	Unrestricted	13.26	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	392	1747	100	0.00	22	301	8.26	0.45	0.00	0.05		100	100	0.00	0.69
6Cx	1	Junction exit		155	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	646.50	23.93	27.01	0.00	2.38	33.84	0.00	0.00	33.84
Bus									
Tram									
Pedestrians									
TOTAL	646.50	23.93	27.01	0.00	2.38	33.84	0.00	0.00	33.84

- < = 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

A1 - Standard

D14 - 2040 With Dev, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	Optimisation Order	Advanced	Because the optimisation list is blank, no optimisation will occur.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	11/05/2022 08:12:09	11/05/2022 08:12:10	1.75	16:00	100	39.50	2.78	74.96	4B/1	0	0		4B/1	4B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Standard					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2040 With Dev	PM	(untitled)			16:00		✓

Roundabouts

Roundabouts

Roundabout	Name	Roundabout type	Lighting
4		Standard	Normal/unknown

Entries

Roundabout	Entry	Name	Description	Auto assign priority	Type	Entry	Number of circulating items	Circulating 1	Calculate slope intercept	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Slope	Intercept (PCU/hr)
4	A			✓	TrafficStream	4C/1	1	4Cc/1	✓	4.40	4.40	0.00	15.00	34.00	47.00	0.53	1233
	B			✓	TrafficStream	4D/1	1	4Dc/1	✓	4.50	5.50	8.60	15.00	45.00	44.00	0.57	1482
	C			✓	TrafficStream	4A/1	1	4Ac/1	✓	4.00	6.70	4.10	45.00	34.00	36.00	0.61	1485
	D			✓	TrafficStream	4B/1	1	4Bc/1	✓	3.40	4.00	0.50	5.00	34.00	60.00	0.39	800

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6Ax/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	4.00	22.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.50	3.50	20.00	25.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	672	0.09	0.24	521	0.09	0.22	0.14	0.31	702	0.25	0.25

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	83	285	40
	4-2	311	4	171	2

4-3	546	95	0	20
4-4	118	7	54	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#FF0000
	4-3		4C/1	4Cx/1	#00FF00
	4-4		4D/1	4Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-1	4-1	4A/1, 4Bc/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	0
	2		4-1	4-4	4A/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	40
	3		4-1	4-3	4A/1, 4Bc/1, 4Cx/1	Normal	285
	4		4-1	4-2	4A/1, 4Bx/1	Normal	83
	5		4-2	4-2	4B/1, 4Cc/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	4
	6		4-2	4-1	4B/1, 4Cc/1, 4Dc/1, 4Ax/1	Normal	311
	7		4-2	4-4	4B/1, 4Cc/1, 4Dx/1	Normal	2
	8		4-2	4-3	4B/1, 4Cx/1	Normal	171
	9		4-3	4-3	4C/1, 4Dc/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	0
	10		4-3	4-2	4C/1, 4Dc/1, 4Ac/1, 4Bx/1	Normal	95
	11		4-3	4-1	4C/1, 4Dc/1, 4Ax/1	Normal	546
	12		4-3	4-4	4C/1, 4Dx/1	Normal	20
	13		4-4	4-4	4D/1, 4Ac/1, 4Bc/1, 4Cc/1, 4Dx/1	Normal	0
	14		4-4	4-3	4D/1, 4Ac/1, 4Bc/1, 4Cx/1	Normal	54
	15		4-4	4-2	4D/1, 4Ac/1, 4Bx/1	Normal	7
	16		4-4	4-1	4D/1, 4Ax/1	Normal	118

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	22	166
	6-2	14	0	6
	6-3	474	15	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#FF00FF
	6-3		6C/1	6Cx/1	#008000

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	22
	2		6-2	6-1	6B/1, 6Ax/1	Normal	14
	3		6-1	6-3	6A/1, 6Cx/1	Normal	166
	4		6-2	6-3	6B/1, 6Cx/1	Normal	6
	5		6-3	6-2	6C/1, 6Bx/1	Normal	15
	6		6-3	6-1	6C/1, 6Ax/1	Normal	474

Signal Timings

Network Default: 100s cycle time; 100 steps

No Controller Streams present.

Final Prediction Table

Traffic Stream Results

				FLOW	PERFORMANCE	PER PCU	QUEUES	WEIGHTS	PENALTIES	P.I.
					Wasted	Mean	Mean	Mean		

Arm	Traffic Stream	Name	Traffic node	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s per cycle)	time total (s per cycle)	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (PCU)	end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (€ per hr)	P.I.
4A	1	Belgard Sq North (East)	1	408	1387	100	0.00	29	206	10.20	0.81	0.00	0.09		100	100	0.00	1.30
4Ac	1	Roundabout circulation	1	160	3600	100	0.00	4	1925	10.30	0.02	0.00	0.00		100	100	0.00	0.01
4Ax	1	Junction exit		975	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South)	2	488	651	100	0.00	75	20	21.40	12.01	0.00	1.63		100	100	0.00	23.12
4Bc	1	Roundabout circulation	2	379	3600	100	0.00	11	755	10.34	0.06	0.00	0.01		100	100	0.00	0.09
4Bx	1	Junction exit	6	189	1800	100	0.00	11	757	16.25	0.12	0.00	0.01		100	100	0.00	0.09
4C	1	Belgard Sq North (West)	3	661	1042	100	0.00	63	42	13.88	4.45	0.00	0.82		100	100	0.00	11.61
4Cc	1	Roundabout circulation	3	357	3600	100	0.00	10	808	10.34	0.06	0.00	0.01		100	100	0.00	0.08
4Cx	1	Junction exit		510	Unrestricted	100	0.00	0	Unrestricted	16.13	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis	4	179	941	100	0.00	19	373	10.07	0.67	0.00	0.03		100	100	0.00	0.48
4Dc	1	Roundabout circulation	4	956	3600	100	0.00	27	239	10.44	0.18	0.00	0.05		100	100	0.00	0.68
4Dx	1	Junction exit		62	Unrestricted	100	0.00	0	Unrestricted	16.12	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq East (North)	5	188	1800	100	0.00	10	762	14.44	0.12	0.00	0.01		100	100	0.00	0.09
6Ax	1	Junction exit	6	488	1800	100	0.00	27	232	16.77	0.37	0.00	0.05		100	100	0.00	0.72
6B	1	Development Access	5	20	460	100	100.00	4	1972	5.68	0.27	0.00	0.00		100	100	0.00	0.02
6Bx	1	Junction exit		37	Unrestricted	100	100.00	0	Unrestricted	13.26	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South)	5	489	1708	100	0.00	29	214	8.45	0.63	0.00	0.09		100	100	0.00	1.22
6Cx	1	Junction exit		172	Unrestricted	100	0.00	0	Unrestricted	15.32	0.00	0.00	0.00		100	100	0.00	0.00

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	675.86	25.31	26.70	0.00	2.78	39.50	0.00	0.00	39.50
Bus									
Tram									
Pedestrians									
TOTAL	675.86	25.31	26.70	0.00	2.78	39.50	0.00	0.00	39.50

- < = 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 16	
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Filename: L088 BusConnects Scenario 20220509 GF.t16
 Path: J:\L_JOBS\Job-L088\B_Documents\ID_Civil Reports\Traffic\TTA\Modelling
 Report generation date: 09/05/2022 17:06:27

- »A1 - BusConnects : D3 - 2025 No Dev, AM :
- »A1 - BusConnects : D4 - 2025 No Dev, PM :
- »A1 - BusConnects : D5 - 2025 With Dev, AM :
- »A1 - BusConnects : D6 - 2025 With Dev, PM :
- »A1 - BusConnects : D7 - 2030 No Dev, AM :
- »A1 - BusConnects : D8 - 2030 No Dev, PM :
- »A1 - BusConnects : D9 - 2030 With Dev, AM :
- »A1 - BusConnects : D10 - 2030 With Dev, PM :
- »A1 - BusConnects : D11 - 2040 No Dev, AM :
- »A1 - BusConnects : D12 - 2040 No Dev, PM :
- »A1 - BusConnects : D13 - 2040 With Dev, AM :
- »A1 - BusConnects : D14 - 2040 With Dev, PM :

Summary of network performance

	AM					PM				
	Set ID	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	Within capacity	Set ID	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated	Within capacity
BusConnects - 2025 No Dev										
Network	D3	16.52	82% (TS 4A/1)	0 (0%)	YES	D4	14.20	76% (TS 4C/1)	0 (0%)	YES
BusConnects - 2025 With Dev										
Network	D5	16.96	83% (TS 4A/1)	0 (0%)	YES	D6	14.51	77% (TS 4C/1)	0 (0%)	YES
BusConnects - 2030 No Dev										
Network	D7	19.42	89% (TS 4A/1)	0 (0%)	YES	D8	15.93	82% (TS 4C/1)	0 (0%)	YES
BusConnects - 2030 With Dev										
Network	D9	20.17	90% (TS 4A/1)	1 (4%)	NO	D10	16.35	83% (TS 4C/1)	0 (0%)	YES
BusConnects - 2040 No Dev										
Network	D11	22.57	93% (TS 4A/1)	1 (4%)	NO	D12	17.45	86% (TS 4C/1)	0 (0%)	YES
BusConnects - 2040 With Dev										
Network	D13	23.90	95% (TS 4A/1)	1 (4%)	NO	D14	18.01	87% (TS 4C/1)	0 (0%)	YES

File summary

File description

File title	The Arboury
Location	Belgard Square
Site number	
UTCRegion	
Driving side	Left
Date	09/05/2022
Version	BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	L088
Enumerator	LJ/GF
Description	

Model and Results

Enable controller offsets	Enable fuel consumption	Enable quick flares	Display journey time results	Display OD matrix distances	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	Display controller phase minimums
			✓			✓	✓	✓	✓	✓	✓	✓			

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	✓

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	10000	10000	-1	3	60	✓			0	0	0.00

A1 - BusConnects D3 - 2025 No Dev, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:13	09/05/2022 17:06:13	0.87	08:45	100	251.48	16.52	81.90	4A/1	0	0	4A/1	6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2025 No Dev	AM	(untitled)			08:45		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6B/1	Two-Way	6C/1	6C/1	6C/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	687	37
	4-2	2	0	60	0
	4-3	455	58	0	23
	4-4	113	0	68	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	455
	3		4-3	4-4	4C/1, 4Dx/1	Normal	23
	4		4-4	4-1	4D/1, 4Ax/1	Normal	113
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	60
	10		4-2	4-1	4B/1, 4Ax/1	Normal	2
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	58
	14		4-1	4-4	4A/2, 4Dx/1	Normal	37
	17		4-1	4-3	4A/1, 4Cx/1	Normal	687
	18		4-4	4-3	4D/1, 4Cx/1	Normal	68

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	59
	6-2	0	0	0
	6-3	62	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	59
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-1	6C/1, 6Ax/1	Normal	62
	6		6-3	6-2	6C/1, 6Bx/1	Normal	0

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

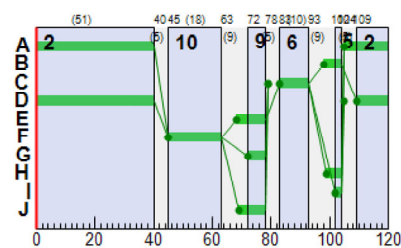
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

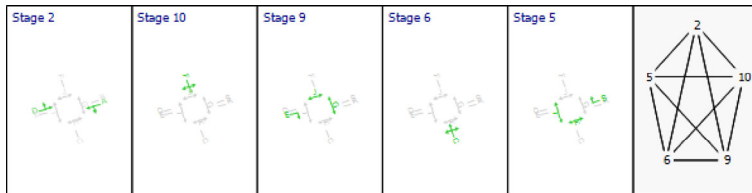
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
08:45-09:45	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	688 <	1800	55	0.00	82	10	42.02	37.00	91.79	21.48 +	14.02	100	100	0.00	108.34
	2	Belgard Sq North (East) R	1	4	B	37	1800	6	4.00	35	155	68.59	63.57	102.37	1.28	1.26	100	100	0.00	9.75
4Ax	1	Junction exit				570	Unrestricted	120	40.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	62	1800	10	0.00	38	140	67.35	57.79	97.70	2.04	1.99	100	100	0.00	14.89
4Bx	1	Junction exit	3			59	1800	120	104.00	3	2646	12.43	0.03	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	478 <	1800	51	0.00	61	47	35.08	29.86	78.29	12.70 +	9.51	100	100	0.00	61.00
	2	Belgard Sq North (West) R	1	4	E	58	1800	10	7.00	35	156	62.27	57.05	97.18	1.90	1.85	100	100	0.00	13.76
4Cx	1	Junction exit				815	Unrestricted	120	22.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	181	1800	18	0.00	64	42	62.52	58.01	100.92	6.17	5.62	100	100	0.00	43.71
4Dx	1	Junction exit				60	Unrestricted	120	83.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			59	1800	120	100.00	3	2646	9.96	0.03	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			62	1800	120	0.00	3	2513	12.55	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			0	0	120	120.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit				0	Unrestricted	120	120.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			62	1800	120	0.00	3	2513	5.65	0.04	0.00	0.00		100	100	0.00	0.01
6Cx	1	Junction exit				59	Unrestricted	120	96.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	245.66	24.71	9.94	13.41	3.12	234.64	16.84	0.00	251.48
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	245.66	24.71	9.94	13.41	3.12	234.64	16.84	0.00	251.48

- < = 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

A1 - BusConnects D4 - 2025 No Dev, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:14	09/05/2022 17:06:14	0.32	16:00	100	215.97	14.20	75.90	4C/1	0	0	4C/1	6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2025 No Dev	PM	(untitled)			16:00		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	412	41
	4-2	3	0	59	0
	4-3	571	58	0	21
	4-4	123	0	56	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	571
	3		4-3	4-4	4C/1, 4Dx/1	Normal	21
	4		4-4	4-1	4D/1, 4Ax/1	Normal	123
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	59
	10		4-2	4-1	4B/1, 4Ax/1	Normal	3
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	58
	14		4-1	4-4	4A/2, 4Dx/1	Normal	41
	17		4-1	4-3	4A/1, 4Cx/1	Normal	412
	18		4-4	4-3	4D/1, 4Cx/1	Normal	56

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	59
	6-2	0	0	0
	6-3	62	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	59
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-1	6C/1, 6Ax/1	Normal	62
	6		6-3	6-2	6C/1, 6Bx/1	Normal	0

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

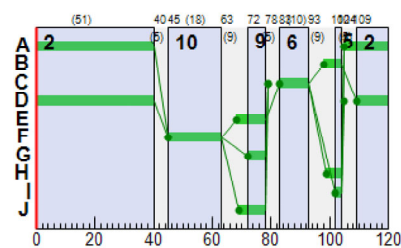
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

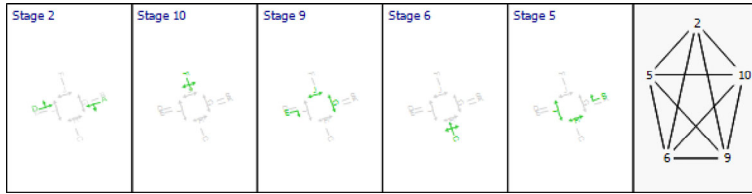
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
16:00-17:00	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	413 <	1800	55	0.00	49	83	29.23	24.21	69.01	9.76 +	7.58	100	100	0.00	43.02
	2	Belgard Sq North (East) R	1	4	B	41	1800	6	4.00	39	130	70.31	65.29	103.66	1.43	1.41	100	100	0.00	11.09
4Ax	1	Junction exit				697	Unrestricted	120	39.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	62	1800	10	0.00	38	140	67.35	57.79	97.70	2.04	1.99	100	100	0.00	14.89
4Bx	1	Junction exit	3			59	1800	120	104.00	3	2646	12.43	0.03	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	592 <	1800	51	0.00	76	19	41.05	35.83	88.23	17.78 +	12.35	100	100	0.00	90.22
	2	Belgard Sq North (West) R	1	4	E	58	1800	10	7.00	35	156	62.27	57.05	97.18	1.90	1.85	100	100	0.00	13.76
4Cx	1	Junction exit				527	Unrestricted	120	22.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	179	1800	18	0.00	63	43	62.15	57.64	100.54	6.09	5.54	100	100	0.00	42.96
4Dx	1	Junction exit				62	Unrestricted	120	76.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			59	1800	120	100.00	3	2646	9.96	0.03	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			62	1800	120	0.00	3	2513	12.55	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			0	0	120	120.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit				0	Unrestricted	120	120.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			62	1800	120	0.00	3	2513	5.65	0.04	0.00	0.00		100	100	0.00	0.01
6Cx	1	Junction exit				59	Unrestricted	120	96.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	221.66	21.59	10.27	11.94	2.26	201.59	14.38	0.00	215.97
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	221.66	21.59	10.27	11.94	2.26	201.59	14.38	0.00	215.97

- < = 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

A1 - BusConnects D5 - 2025 With Dev, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:14	09/05/2022 17:06:14	0.70	08:45	100	257.95	16.96	83.33	4A/1	0	0	4A/1	6C/1	4A/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2025 With Dev	AM	(untitled)			08:45		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	699	37
	4-2	2	0	60	0
	4-3	460	58	0	23
	4-4	113	0	68	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	460
	3		4-3	4-4	4C/1, 4Dx/1	Normal	23
	4		4-4	4-1	4D/1, 4Ax/1	Normal	113
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	60
	10		4-2	4-1	4B/1, 4Ax/1	Normal	2
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	58
	14		4-1	4-4	4A/2, 4Dx/1	Normal	37
	17		4-1	4-3	4A/1, 4Cx/1	Normal	699
	18		4-4	4-3	4D/1, 4Cx/1	Normal	68

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	59
	6-2	0	0	30
	6-3	62	17	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	59
	4		6-2	6-3	6B/1, 6Cx/1	Normal	30
	5		6-3	6-1	6C/1, 6Ax/1	Normal	62
	6		6-3	6-2	6C/1, 6Bx/1	Normal	17

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

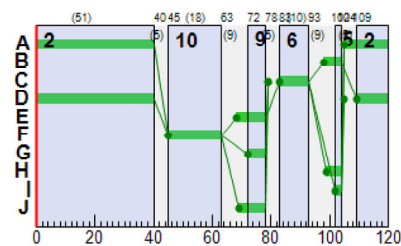
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

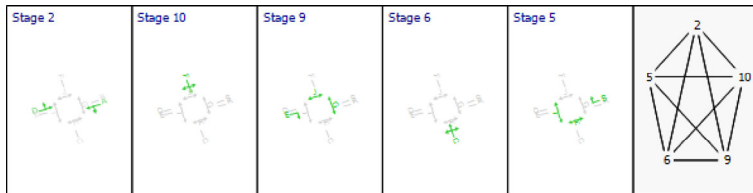
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
08:45-09:45	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	700 <	1800	55	0.00	83	8	43.24	38.23	93.41	22.22 ₊	14.45	100	100	0.00	113.74
	2	Belgard Sq North (East) R	1	4	B	37	1800	6	4.00	35	155	68.59	63.57	102.37	1.28	1.26	100	100	0.00	9.75
4Ax	1	Junction exit				575	Unrestricted	120	40.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	62	1800	10	0.00	38	140	67.35	57.79	97.70	2.04	1.99	100	100	0.00	14.89
4Bx	1	Junction exit	3			59	1800	120	104.00	3	2646	12.43	0.03	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	483 <	1800	51	0.00	62	45	35.28	30.06	78.51	12.84 ₊	9.62	100	100	0.00	62.02
	2	Belgard Sq North (West) R	1	4	E	58	1800	10	7.00	35	156	62.27	57.05	97.18	1.90	1.85	100	100	0.00	13.76
4Cx	1	Junction exit				827	Unrestricted	120	22.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	181	1800	18	0.00	64	42	62.52	58.01	100.92	6.17	5.62	100	100	0.00	43.71
4Dx	1	Junction exit				60	Unrestricted	120	83.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			59	1800	120	100.00	3	2646	9.96	0.03	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			62	1800	120	0.00	3	2513	12.55	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			30	620	120	120.00	5	1760	4.58	0.15	0.00	0.00		100	100	0.00	0.02
6Bx	1	Junction exit				17	Unrestricted	120	120.00	0	Unrestricted	11.63	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			79	1243	120	0.00	6	1316	5.71	0.10	0.00	0.00		100	100	0.00	0.03
6Cx	1	Junction exit				89	Unrestricted	120	92.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	254.73	25.45	10.01	13.61	3.35	240.76	17.18	0.00	257.95
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	254.73	25.45	10.01	13.61	3.35	240.76	17.18	0.00	257.95

- < = 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

A1 - BusConnects D6 - 2025 With Dev, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:14	09/05/2022 17:06:15	1.08	16:00	100	220.69	14.51	77.31	4C/1	0	0	4C/1	6C/1	4C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2025 With Dev	PM	(untitled)			16:00		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	418	41
	4-2	3	0	59	0
	4-3	582	58	0	21
	4-4	123	0	56	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	582
	3		4-3	4-4	4C/1, 4Dx/1	Normal	21
	4		4-4	4-1	4D/1, 4Ax/1	Normal	123
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	59
	10		4-2	4-1	4B/1, 4Ax/1	Normal	3
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	58
	14		4-1	4-4	4A/2, 4Dx/1	Normal	41
	17		4-1	4-3	4A/1, 4Cx/1	Normal	418
	18		4-4	4-3	4D/1, 4Cx/1	Normal	56

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	59
	6-2	0	0	20
	6-3	62	37	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	59
	4		6-2	6-3	6B/1, 6Cx/1	Normal	20
	5		6-3	6-1	6C/1, 6Ax/1	Normal	62
	6		6-3	6-2	6C/1, 6Bx/1	Normal	37

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

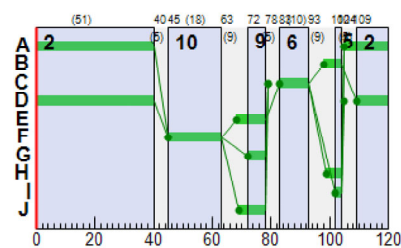
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

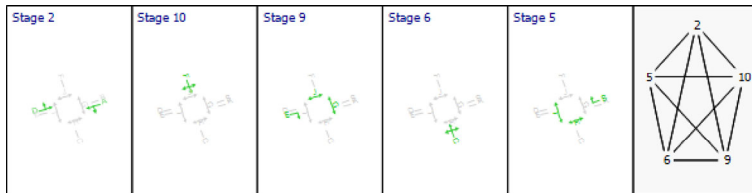
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
16:00-17:00	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	419 <	1800	55	0.00	50	80	29.39	24.37	69.54	9.91 +	7.70	100	100	0.00	43.94
	2	Belgard Sq North (East) R	1	4	B	41	1800	6	4.00	39	130	70.31	65.29	103.66	1.43	1.41	100	100	0.00	11.09
4Ax	1	Junction exit				708	Unrestricted	120	39.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	62	1800	10	0.00	38	140	67.35	57.79	97.70	2.04	1.99	100	100	0.00	14.89
4Bx	1	Junction exit	3			59	1800	120	104.00	3	2646	12.43	0.03	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	603 <	1800	51	0.00	77	16	41.88	36.66	89.41	18.37 +	12.68	100	100	0.00	93.95
	2	Belgard Sq North (West) R	1	4	E	58	1800	10	7.00	35	156	62.27	57.05	97.18	1.90	1.85	100	100	0.00	13.76
4Cx	1	Junction exit				533	Unrestricted	120	22.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	179	1800	18	0.00	63	43	62.15	57.64	100.54	6.09	5.54	100	100	0.00	42.96
4Dx	1	Junction exit				62	Unrestricted	120	75.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			59	1800	120	100.00	3	2646	9.96	0.03	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			62	1800	120	0.00	3	2513	12.55	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			20	620	120	120.00	3	2691	4.53	0.10	0.00	0.00		100	100	0.00	0.01
6Bx	1	Junction exit				37	Unrestricted	120	120.00	0	Unrestricted	11.63	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			99	1012	120	0.00	10	820	5.80	0.19	0.00	0.01		100	100	0.00	0.08
6Cx	1	Junction exit				79	Unrestricted	120	94.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	232.24	22.25	10.44	12.12	2.39	206.02	14.67	0.00	220.69
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	232.24	22.25	10.44	12.12	2.39	206.02	14.67	0.00	220.69

- < = 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

A1 - BusConnects D7 - 2030 No Dev, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:15	09/05/2022 17:06:15	0.43	08:45	100	294.86	19.42	88.69	4A/1	0	0	4A/1	6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2030 No Dev	AM	(untitled)			08:45		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	744	37
	4-2	2	0	65	0
	4-3	493	63	0	23
	4-4	113	0	68	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	493
	3		4-3	4-4	4C/1, 4Dx/1	Normal	23
	4		4-4	4-1	4D/1, 4Ax/1	Normal	113
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	65
	10		4-2	4-1	4B/1, 4Ax/1	Normal	2
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	63
	14		4-1	4-4	4A/2, 4Dx/1	Normal	37
	17		4-1	4-3	4A/1, 4Cx/1	Normal	744
	18		4-4	4-3	4D/1, 4Cx/1	Normal	68

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	64
	6-2	0	0	0
	6-3	67	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	64
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-1	6C/1, 6Ax/1	Normal	67
	6		6-3	6-2	6C/1, 6Bx/1	Normal	0

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

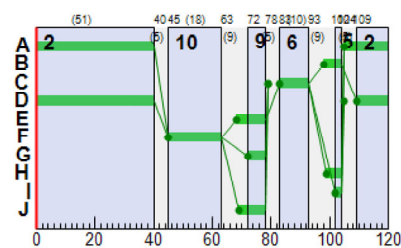
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

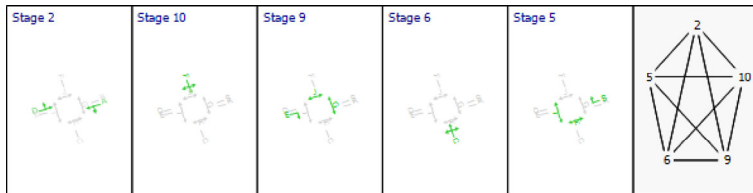
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
08:45-09:45	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	745 <	1800	55	0.00	89	1	49.60	44.59	101.07	25.76 +	16.45	100	100	0.00	140.48
	2	Belgard Sq North (East) R	1	4	B	37	1800	6	4.00	35	155	68.59	63.57	102.37	1.28	1.26	100	100	0.00	9.75
4Ax	1	Junction exit				608	Unrestricted	120	40.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	67	1800	10	0.00	41	122	68.38	58.81	99.19	2.24	2.17	100	100	0.00	16.38
4Bx	1	Junction exit	3			64	1800	120	104.00	4	2431	12.43	0.04	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	516 <	1800	51	0.00	66	36	36.70	31.48	81.23	14.26 +	10.39	100	100	0.00	69.32
	2	Belgard Sq North (West) R	1	4	E	63	1800	10	0.00	38	136	63.20	57.98	97.83	2.08	2.02	100	100	0.00	15.18
4Cx	1	Junction exit				877	Unrestricted	120	21.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	181	1800	18	0.00	64	42	62.52	58.01	100.92	6.17	5.62	100	100	0.00	43.71
4Dx	1	Junction exit				60	Unrestricted	120	80.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			64	1800	120	99.00	4	2431	9.96	0.04	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			67	1800	120	0.00	4	2318	12.55	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			0	0	120	120.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit				0	Unrestricted	120	120.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			67	1800	120	0.00	4	2318	5.65	0.04	0.00	0.00		100	100	0.00	0.01
6Cx	1	Junction exit				64	Unrestricted	120	95.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	263.19	28.20	9.33	14.69	4.73	275.80	19.07	0.00	294.86
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	263.19	28.20	9.33	14.69	4.73	275.80	19.07	0.00	294.86

- < = 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

A1 - BusConnects D8 - 2030 No Dev, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:15	09/05/2022 17:06:15	0.82	16:00	100	242.18	15.93	81.92	4C/1	0	0	4C/1	6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2030 No Dev	PM	(untitled)			16:00		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	446	41
	4-2	3	0	64	0
	4-3	618	63	0	21
	4-4	123	0	56	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	618
	3		4-3	4-4	4C/1, 4Dx/1	Normal	21
	4		4-4	4-1	4D/1, 4Ax/1	Normal	123
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	64
	10		4-2	4-1	4B/1, 4Ax/1	Normal	3
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	63
	14		4-1	4-4	4A/2, 4Dx/1	Normal	41
	17		4-1	4-3	4A/1, 4Cx/1	Normal	446
	18		4-4	4-3	4D/1, 4Cx/1	Normal	56

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	64
	6-2	0	0	0
	6-3	67	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	64
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-1	6C/1, 6Ax/1	Normal	67
	6		6-3	6-2	6C/1, 6Bx/1	Normal	0

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

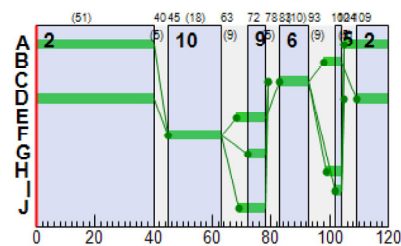
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

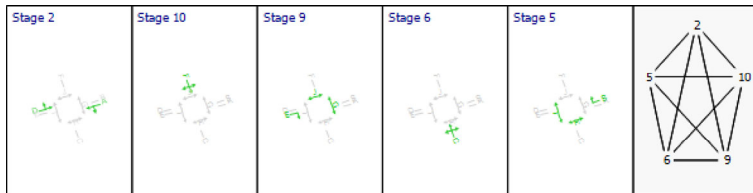
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
16:00-17:00	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	447 <	1800	55	0.00	53	69	30.15	25.13	71.07	10.86 +	8.25	100	100	0.00	48.30
	2	Belgard Sq North (East) R	1	4	B	41	1800	6	4.00	39	130	70.31	65.29	103.66	1.43	1.41	100	100	0.00	11.09
4Ax	1	Junction exit				744	Unrestricted	120	39.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	67	1800	10	0.00	41	122	68.38	58.81	99.19	2.24	2.17	100	100	0.00	16.38
4Bx	1	Junction exit	3			64	1800	120	104.00	4	2431	12.43	0.04	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	639 <	1800	51	0.00	82	10	45.18	39.96	93.96	20.43 +	13.86	100	100	0.00	108.24
	2	Belgard Sq North (West) R	1	4	E	63	1800	10	0.00	38	136	63.20	57.98	97.83	2.08	2.02	100	100	0.00	15.18
4Cx	1	Junction exit				566	Unrestricted	120	21.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	179	1800	18	0.00	63	43	62.15	57.64	100.54	6.09	5.54	100	100	0.00	42.96
4Dx	1	Junction exit				62	Unrestricted	120	93.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			64	1800	120	99.00	4	2431	9.96	0.04	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			67	1800	120	0.00	4	2318	12.55	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			0	0	120	120.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit				0	Unrestricted	120	120.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			67	1800	120	0.00	4	2318	5.65	0.04	0.00	0.00		100	100	0.00	0.01
6Cx	1	Junction exit				64	Unrestricted	120	95.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	237.08	23.84	9.95	12.94	2.99	226.28	15.91	0.00	242.18
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	237.08	23.84	9.95	12.94	2.99	226.28	15.91	0.00	242.18

- < = 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

A1 - BusConnects D9 - 2030 With Dev, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:15	09/05/2022 17:06:16	1.18	08:45	100	305.94	20.17	90.12	4A/1	1	4	4A/1	6C/1	4A/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2030 With Dev	AM	(untitled)			08:45		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	756	37
	4-2	2	0	65	0
	4-3	498	63	0	23
	4-4	113	0	68	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	498
	3		4-3	4-4	4C/1, 4Dx/1	Normal	23
	4		4-4	4-1	4D/1, 4Ax/1	Normal	113
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	65
	10		4-2	4-1	4B/1, 4Ax/1	Normal	2
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	63
	14		4-1	4-4	4A/2, 4Dx/1	Normal	37
	17		4-1	4-3	4A/1, 4Cx/1	Normal	756
	18		4-4	4-3	4D/1, 4Cx/1	Normal	68

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	64
	6-2	0	0	30
	6-3	67	17	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	64
	4		6-2	6-3	6B/1, 6Cx/1	Normal	30
	5		6-3	6-1	6C/1, 6Ax/1	Normal	67
	6		6-3	6-2	6C/1, 6Bx/1	Normal	17

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

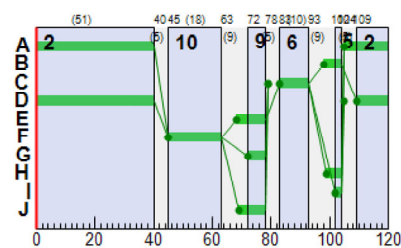
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

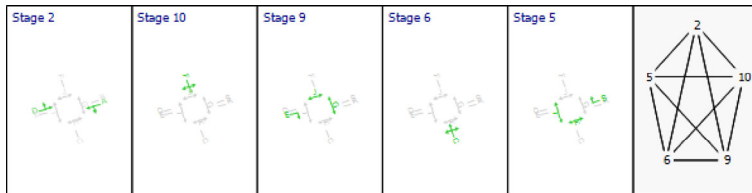
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
08:45-09:45	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	757 <	1800	55	0.00	90	0	52.06	47.05	103.78	26.83 +	17.16	100	100	0.00	150.34
	2	Belgard Sq North (East) R	1	4	B	37	1800	6	4.00	35	155	68.59	63.57	102.37	1.28	1.26	100	100	0.00	9.75
4Ax	1	Junction exit				613	Unrestricted	120	40.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	67	1800	10	0.00	41	122	68.38	58.81	99.19	2.24	2.17	100	100	0.00	16.38
4Bx	1	Junction exit	3			64	1800	120	104.00	4	2431	12.43	0.04	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	521 <	1800	51	0.00	67	35	36.93	31.71	81.58	14.41 +	10.51	100	100	0.00	70.50
	2	Belgard Sq North (West) R	1	4	E	63	1800	10	0.00	38	136	63.20	57.98	97.83	2.08	2.02	100	100	0.00	15.18
4Cx	1	Junction exit				889	Unrestricted	120	21.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	181	1800	18	0.00	64	42	62.52	58.01	100.92	6.17	5.62	100	100	0.00	43.71
4Dx	1	Junction exit				60	Unrestricted	120	80.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			64	1800	120	99.00	4	2431	9.96	0.04	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			67	1800	120	0.00	4	2318	12.55	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			30	619	120	120.00	5	1757	4.58	0.15	0.00	0.00		100	100	0.00	0.02
6Bx	1	Junction exit				17	Unrestricted	120	120.00	0	Unrestricted	11.63	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			84	1265	120	0.00	7	1255	5.71	0.10	0.00	0.00		100	100	0.00	0.03
6Cx	1	Junction exit				94	Unrestricted	120	92.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	272.26	29.24	9.31	14.91	5.26	286.38	19.55	0.00	305.94
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	272.26	29.24	9.31	14.91	5.26	286.38	19.55	0.00	305.94

- < = 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

A1 - BusConnects D10 - 2030 With Dev, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:16	09/05/2022 17:06:17	1.29	16:00	100	248.46	16.35	83.33	4C/1	0	0	4C/1	6C/1	4C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2030 With Dev	PM	(untitled)			16:00		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	452	41
	4-2	3	0	64	0
	4-3	629	63	0	21
	4-4	123	0	56	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	629
	3		4-3	4-4	4C/1, 4Dx/1	Normal	21
	4		4-4	4-1	4D/1, 4Ax/1	Normal	123
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	64
	10		4-2	4-1	4B/1, 4Ax/1	Normal	3
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	63
	14		4-1	4-4	4A/2, 4Dx/1	Normal	41
	17		4-1	4-3	4A/1, 4Cx/1	Normal	452
	18		4-4	4-3	4D/1, 4Cx/1	Normal	56

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	64
	6-2	0	0	20
	6-3	67	37	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	64
	4		6-2	6-3	6B/1, 6Cx/1	Normal	20
	5		6-3	6-1	6C/1, 6Ax/1	Normal	67
	6		6-3	6-2	6C/1, 6Bx/1	Normal	37

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

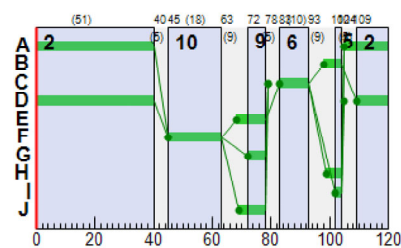
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

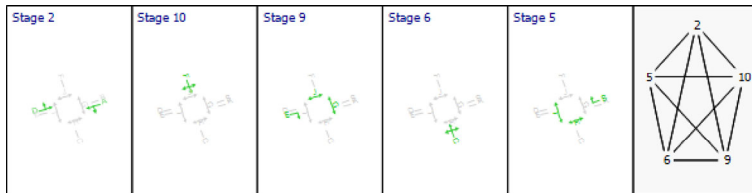
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
16:00-17:00	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	453 <	1800	55	0.00	54	67	30.32	25.31	71.53	11.01 +	8.37	100	100	0.00	49.28
	2	Belgard Sq North (East) R	1	4	B	41	1800	6	4.00	39	130	70.31	65.29	103.66	1.43	1.41	100	100	0.00	11.09
4Ax	1	Junction exit				755	Unrestricted	120	39.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	67	1800	10	0.00	41	122	68.38	58.81	99.19	2.24	2.17	100	100	0.00	16.38
4Bx	1	Junction exit	3			64	1800	120	104.00	4	2431	12.43	0.04	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	650 <	1800	51	0.00	83	8	46.44	41.22	95.55	21.14 +	14.27	100	100	0.00	113.46
	2	Belgard Sq North (West) R	1	4	E	63	1800	10	0.00	38	136	63.20	57.98	97.83	2.08	2.02	100	100	0.00	15.18
4Cx	1	Junction exit				572	Unrestricted	120	21.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	179	1800	18	0.00	63	43	62.15	57.64	100.54	6.09	5.54	100	100	0.00	42.96
4Dx	1	Junction exit				62	Unrestricted	120	96.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			64	1800	120	99.00	4	2431	9.96	0.04	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			67	1800	120	0.00	4	2318	12.55	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			20	619	120	120.00	3	2686	4.53	0.10	0.00	0.00		100	100	0.00	0.01
6Bx	1	Junction exit				37	Unrestricted	120	120.00	0	Unrestricted	11.63	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			104	1033	120	0.00	10	794	5.80	0.20	0.00	0.01		100	100	0.00	0.08
6Cx	1	Junction exit				84	Unrestricted	120	93.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	247.66	24.61	10.06	13.14	3.22	232.22	16.25	0.00	248.46
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	247.66	24.61	10.06	13.14	3.22	232.22	16.25	0.00	248.46

- < = 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

A1 - BusConnects D11 - 2040 No Dev, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:17	09/05/2022 17:06:17	0.65	08:45	100	341.48	22.57	93.21	4A/1	1	4	4A/1	6B/1	6B/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2040 No Dev	AM	(untitled)			08:45		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	782	37
	4-2	2	0	68	0
	4-3	519	66	0	23
	4-4	113	0	68	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	519
	3		4-3	4-4	4C/1, 4Dx/1	Normal	23
	4		4-4	4-1	4D/1, 4Ax/1	Normal	113
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	68
	10		4-2	4-1	4B/1, 4Ax/1	Normal	2
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	66
	14		4-1	4-4	4A/2, 4Dx/1	Normal	37
	17		4-1	4-3	4A/1, 4Cx/1	Normal	782
	18		4-4	4-3	4D/1, 4Cx/1	Normal	68

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	67
	6-2	0	0	0
	6-3	71	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	67
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-1	6C/1, 6Ax/1	Normal	71
	6		6-3	6-2	6C/1, 6Bx/1	Normal	0

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

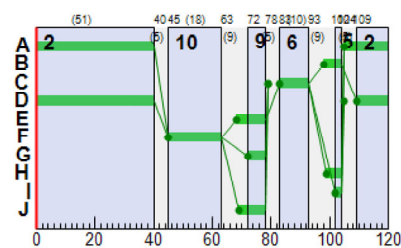
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

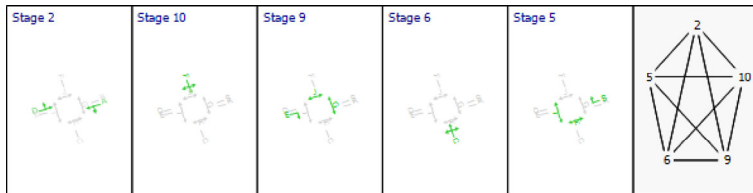
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
08:45-09:45	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	783 <	1800	55	0.00	93	-3	59.41	54.39	111.08	29.84 +	19.18	100	100	0.00	178.90
	2	Belgard Sq North (East) R	1	4	B	37	1800	6	4.00	35	155	68.59	63.57	102.37	1.28	1.26	100	100	0.00	9.75
4Ax	1	Junction exit				634	Unrestricted	120	40.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	70	1800	10	0.00	42	112	69.04	59.47	99.69	2.35	2.27	100	100	0.00	17.30
4Bx	1	Junction exit	3			67	1800	120	104.00	4	2318	12.43	0.04	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	542 <	1800	51	0.00	69	30	37.98	32.76	83.39	15.39 +	11.02	100	100	0.00	75.71
	2	Belgard Sq North (West) R	1	4	E	66	1800	10	0.00	40	125	63.82	58.60	98.98	2.20	2.13	100	100	0.00	16.07
4Cx	1	Junction exit				918	Unrestricted	120	20.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	181	1800	18	0.00	64	42	62.52	58.01	100.92	6.17	5.62	100	100	0.00	43.71
4Dx	1	Junction exit				60	Unrestricted	120	79.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			67	1800	120	99.00	4	2318	9.97	0.04	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			71	1800	120	0.00	4	2182	12.56	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			0	0	120	120.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit				0	Unrestricted	120	120.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			71	1800	120	0.00	4	2182	5.65	0.04	0.00	0.00		100	100	0.00	0.01
6Cx	1	Junction exit				67	Unrestricted	120	95.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	274.90	31.73	8.66	15.60	6.97	320.45	21.03	0.00	341.48
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	274.90	31.73	8.66	15.60	6.97	320.45	21.03	0.00	341.48

- < = 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

A1 - BusConnects D12 - 2040 No Dev, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:17	09/05/2022 17:06:18	1.01	16:00	100	264.95	17.45	86.03	4C/1	0	0	4C/1	6B/1	6B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2040 No Dev	PM	(untitled)			16:00		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6B/1	Two-Way	6C/1	6C/1	6C/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	469	41
	4-2	4	0	67	0
	4-3	650	66	0	21
	4-4	123	0	56	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	650
	3		4-3	4-4	4C/1, 4Dx/1	Normal	21
	4		4-4	4-1	4D/1, 4Ax/1	Normal	123
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	67
	10		4-2	4-1	4B/1, 4Ax/1	Normal	4
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	66
	14		4-1	4-4	4A/2, 4Dx/1	Normal	41
	17		4-1	4-3	4A/1, 4Cx/1	Normal	469
	18		4-4	4-3	4D/1, 4Cx/1	Normal	56

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	67
	6-2	0	0	0
	6-3	71	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	67
	4		6-2	6-3	6B/1, 6Cx/1	Normal	0
	5		6-3	6-1	6C/1, 6Ax/1	Normal	71
	6		6-3	6-2	6C/1, 6Bx/1	Normal	0

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

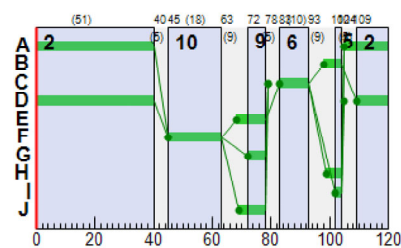
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

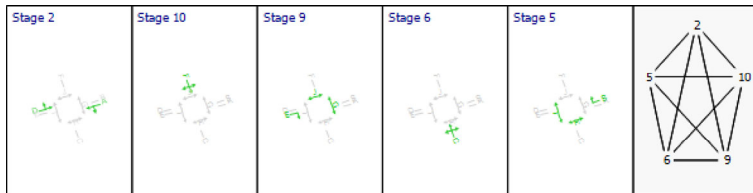
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
16:00-17:00	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	470 <	1800	55	0.00	56	61	30.82	25.81	72.56	11.58 +	8.71	100	100	0.00	52.12
	2	Belgard Sq North (East) R	1	4	B	41	1800	6	4.00	39	130	70.31	65.29	103.66	1.43	1.41	100	100	0.00	11.09
4Ax	1	Junction exit				777	Unrestricted	120	37.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	71	1800	10	0.00	43	109	69.26	59.70	99.85	2.39	2.31	100	100	0.00	17.61
4Bx	1	Junction exit	3			67	1800	120	104.00	4	2318	12.43	0.04	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	671 <	1800	51	0.00	86	5	49.32	44.10	98.99	22.62 +	15.17	100	100	0.00	125.05
	2	Belgard Sq North (West) R	1	4	E	66	1800	10	0.00	40	125	63.82	58.60	98.98	2.20	2.13	100	100	0.00	16.07
4Cx	1	Junction exit				592	Unrestricted	120	21.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	179	1800	18	0.00	63	43	62.15	57.64	100.54	6.09	5.54	100	100	0.00	42.96
4Dx	1	Junction exit				62	Unrestricted	120	99.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			67	1800	120	99.00	4	2318	9.97	0.04	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			71	1800	120	0.00	4	2182	12.56	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			0	0	120	120.00	0	-100	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6Bx	1	Junction exit				0	Unrestricted	120	120.00	0	Unrestricted	0.00	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			71	1800	120	0.00	4	2182	5.65	0.04	0.00	0.00		100	100	0.00	0.01
6Cx	1	Junction exit				67	Unrestricted	120	95.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	247.63	25.71	9.63	13.67	3.79	247.85	17.10	0.00	264.95
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	247.63	25.71	9.63	13.67	3.79	247.85	17.10	0.00	264.95

- < = 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

A1 - BusConnects D13 - 2040 With Dev, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:18	09/05/2022 17:06:18	0.37	08:45	100	361.05	23.90	94.64	4A/1	1	4	4A/1	6C/1	4A/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2040 With Dev	AM	(untitled)			08:45		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6Bx/1	Two-Way	6C/1	6C/1	6Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	794	37
	4-2	2	0	68	0
	4-3	524	66	0	23
	4-4	113	0	68	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	524
	3		4-3	4-4	4C/1, 4Dx/1	Normal	23
	4		4-4	4-1	4D/1, 4Ax/1	Normal	113
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	68
	10		4-2	4-1	4B/1, 4Ax/1	Normal	2
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	66
	14		4-1	4-4	4A/2, 4Dx/1	Normal	37
	17		4-1	4-3	4A/1, 4Cx/1	Normal	794
	18		4-4	4-3	4D/1, 4Cx/1	Normal	68

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	67
	6-2	0	0	30
	6-3	71	17	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	67
	4		6-2	6-3	6B/1, 6Cx/1	Normal	30
	5		6-3	6-1	6C/1, 6Ax/1	Normal	71
	6		6-3	6-2	6C/1, 6Bx/1	Normal	17

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

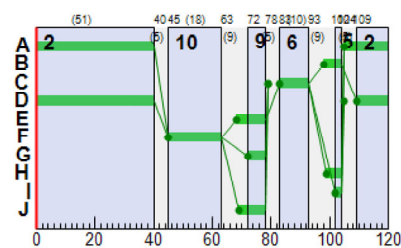
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

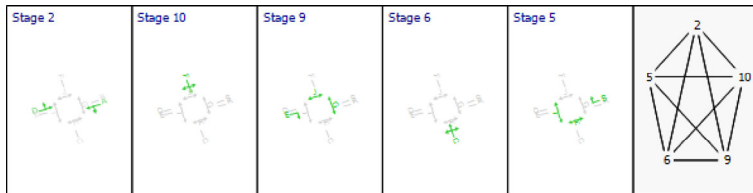
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
08:45-09:45	4	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	795 <	1800	55	0.00	95	-5	64.20	59.19	115.52	31.50 +	20.45	100	100	0.00	197.13
	2	Belgard Sq North (East) R	1	4	B	37	1800	6	4.00	35	155	68.59	63.57	102.37	1.28	1.26	100	100	0.00	9.75
4Ax	1	Junction exit				639	Unrestricted	120	40.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	70	1800	10	0.00	42	112	69.04	59.47	99.69	2.35	2.27	100	100	0.00	17.30
4Bx	1	Junction exit	3			67	1800	120	104.00	4	2318	12.43	0.04	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	547 <	1800	51	0.00	70	28	38.25	33.03	83.82	15.55 +	11.14	100	100	0.00	77.01
	2	Belgard Sq North (West) R	1	4	E	66	1800	10	0.00	40	125	63.82	58.60	98.98	2.20	2.13	100	100	0.00	16.07
4Cx	1	Junction exit				930	Unrestricted	120	20.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	181	1800	18	0.00	64	42	62.52	58.01	100.92	6.17	5.62	100	100	0.00	43.71
4Dx	1	Junction exit				60	Unrestricted	120	78.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			67	1800	120	99.00	4	2318	9.97	0.04	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			71	1800	120	0.00	4	2182	12.56	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			30	618	120	120.00	5	1755	4.58	0.15	0.00	0.00		100	100	0.00	0.02
6Bx	1	Junction exit				17	Unrestricted	120	120.00	0	Unrestricted	11.63	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			88	1281	120	0.00	7	1211	5.71	0.10	0.00	0.00		100	100	0.00	0.04
6Cx	1	Junction exit				97	Unrestricted	120	91.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	283.98	33.36	8.51	15.84	8.06	339.33	21.72	0.00	361.05
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	283.98	33.36	8.51	15.84	8.06	339.33	21.72	0.00	361.05

- < = 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

A1 - BusConnects D14 - 2040 With Dev, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	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 overall PRC	Network within capacity
1	09/05/2022 17:06:18	09/05/2022 17:06:18	0.75	16:00	100	273.26	18.01	87.44	4C/1	0	0	4C/1	6C/1	4C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2040 With Dev	PM	(untitled)			16:00		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
6			✓	TrafficStream	Two-Way	6A/1	6A/1	6A/1	Two-Way	6B/1	6B/1	6B/1	Two-Way	6C/1	6C/1	6C/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
6	8.00	8.00	0.00	2.20	40.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
6	3.00	3.00	15.00	15.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
6	633	0.09	0.22	490	0.08	0.21	0.13	0.29	597	0.21	0.21

Local OD Matrix - Local Matrix: 4

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
4		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To			
		4-1	4-2	4-3	4-4
From	4-1	0	1	475	41
	4-2	4	0	67	0
	4-3	661	66	0	21
	4-4	123	0	56	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
4	4-1		4A/1, 4A/2	4Ax/1	#0000FF
	4-2		4B/1	4Bx/1	#0000FF
	4-3		4C/1, 4C/2	4Cx/1	#0000FF
	4-4		4D/1	4Dx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
4	1		4-3	4-1	4C/1, 4Ax/1	Normal	661
	3		4-3	4-4	4C/1, 4Dx/1	Normal	21
	4		4-4	4-1	4D/1, 4Ax/1	Normal	123
	8		4-1	4-2	4A/1, 4Bx/1	Normal	1
	9		4-2	4-3	4B/1, 4Cx/1	Normal	67
	10		4-2	4-1	4B/1, 4Ax/1	Normal	4
	11		4-2	4-4	4B/1, 4Dx/1	Normal	0
	12		4-4	4-2	4D/1, 4Bx/1	Normal	0
	13		4-3	4-2	4C/2, 4Bx/1	Normal	66
	14		4-1	4-4	4A/2, 4Dx/1	Normal	41
	17		4-1	4-3	4A/1, 4Cx/1	Normal	475
	18		4-4	4-3	4D/1, 4Cx/1	Normal	56

Local OD Matrix - Local Matrix: 6

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
6		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		6-1	6-2	6-3
From	6-1	0	0	67
	6-2	0	0	20
	6-3	71	37	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
6	6-1		6A/1	6Ax/1	#00FFFF
	6-2		6B/1	6Bx/1	#00FFFF
	6-3		6C/1	6Cx/1	#00FFFF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
6	1		6-1	6-2	6A/1, 6Bx/1	Normal	0
	2		6-2	6-1	6B/1, 6Ax/1	Normal	0
	3		6-1	6-3	6A/1, 6Cx/1	Normal	67
	4		6-2	6-3	6B/1, 6Cx/1	Normal	20
	5		6-3	6-1	6C/1, 6Ax/1	Normal	71
	6		6-3	6-2	6C/1, 6Bx/1	Normal	37

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 4

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
4			6	Manual	120	49

Controller Stream 4 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
4	Unspecified						Absolute

Controller Stream 4 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
4	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
4	A	(untitled)	4	300	0	0	Traffic	
	B	(untitled)	4	300	0	0	Traffic	
	C	(untitled)	4	300	0	0	Traffic	
	D	(untitled)	4	300	0	0	Traffic	
	E	(untitled)	4	300	0	0	Traffic	
	F	(untitled)	4	300	0	0	Traffic	
	G	(untitled)	2	300	0	0	Pedestrian	0
	H	(untitled)	2	300	0	0	Pedestrian	0
	I	(untitled)	2	300	0	0	Pedestrian	0
	J	(untitled)	2	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
4	1	A, B	1	1	100
	2	A, D	1	1	100
	3	A, J	1	1	100
	4	B, E	1	1	100
	5	B, H, I	1	1	100
	6	C	1	1	100
	7	D, E	1	1	100
	8	D, H	1	1	100
	9	E, G, J	1	1	100
	10	F	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
4	1	(untitled)	Single	2, 10, 5, 6, 9	16, 39, 66, 86, 113	55	
	2	(untitled)	Single	2, 10, 5, 9, 6	16, 38, 65, 91, 112	54	
	3	(untitled)	Single	2, 10, 6, 5, 9	16, 39, 61, 86, 113	51	
	4	(untitled)	Single	2, 10, 6, 9, 5	16, 39, 60, 87, 113	54	
	5	(untitled)	Single	2, 10, 9, 5, 6	16, 39, 64, 91, 112	51	
	6	(untitled)	Single	2, 10, 9, 6, 5	40, 63, 78, 93, 104	49	
	7	(untitled)	Single	2, 5, 10, 6, 9	16, 44, 65, 86, 113	55	
	8	(untitled)	Single	2, 5, 10, 9, 6	16, 44, 66, 91, 112	52	
	9	(untitled)	Single	2, 5, 6, 10, 9	16, 44, 65, 88, 113	52	
	10	(untitled)	Single	2, 5, 6, 9, 10	16, 44, 65, 92, 112	55	

Intergreen Matrix for Controller Stream 4

		To									
		A	B	C	D	E	F	G	H	I	J
From	A			5	5	5	6	8	12		
	B			5	5	5	6			11	
	C	5	5		5	5	5	11	6	9	12
	D		5	5			5	12		6	9
	E	5	5	5			5		11	6	
	F	5	5	5	5	5		9	12	11	6
	G	1	1	1	1		1				
	H	1		1		1	1				
	I	1		1	1	1	1				
	J		1	1	1	1					

Banned Stage transitions for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										

Interstage Matrix for Controller Stream 4

		To									
		1	2	3	4	5	6	7	8	9	10
From	1	0	5	11	5	12	5	5	8	11	5
	2	5	0	9	5	12	5	5	8	12	5
	3	1	1	0	5	12	5	5	8	6	5
	4	5	5	11	0	11	5	5	11	11	5
	5	1	5	11	1	0	5	5	5	11	5
	6	5	5	12	5	9	0	5	6	12	5
	7	5	5	9	5	11	5	0	11	12	5
	8	5	1	9	5	6	5	1	0	12	5
	9	5	5	5	1	11	5	1	11	0	5
	10	5	5	6	5	12	5	5	12	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
4	1	✓	2	A,D	109	40	51	1	4
	2	✓	10	F	45	63	18	1	4
	3	✓	9	E,G,J	72	78	6	1	2
	4	✓	6	C	83	93	10	1	4
	5	✓	5	B,H,I	102	104	2	1	2

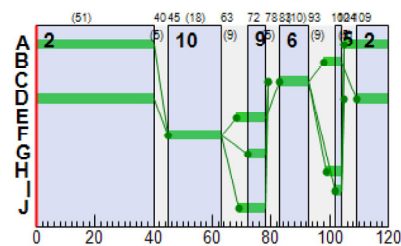
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
4	A	1	✓	105	40	55
	B	1	✓	98	104	6
	C	1	✓	83	93	10
	D	1	✓	109	40	51
	E	1	✓	68	78	10
	F	1	✓	45	63	18
	G	1	✓	72	78	6
	H	1	✓	99	104	5
	I	1	✓	102	104	2
	J	1	✓	69	78	9

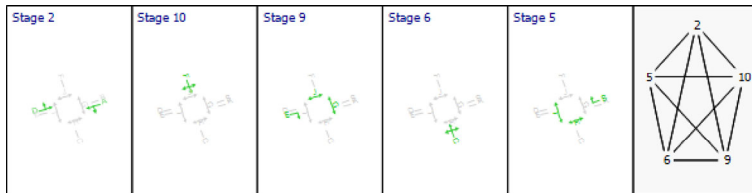
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
4A	1	1	4	A	105	40	55
4A	2	1	4	B	98	104	6
4B	1	1	4	C	83	93	10
4C	1	1	4	D	109	40	51
4C	2	1	4	E	68	78	10
4D	1	1	4	F	45	63	18

Phase Timings Diagram for Controller Stream 4



Stage Sequence Diagram for Controller Stream 4



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (€ per hr)	Intergreen broken penalty (€ per hr)	Stage constraint broken penalty (€ per hr)	Cost of controller stream penalties (€ per hr)
16:00-17:00	4	0.00	0.00	0.00	0.00

Final Prediction Table

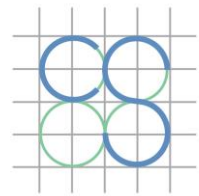
Traffic Stream Results

Arm	Traffic Stream	Name	Traffic node	SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES		WEIGHTS		PENALTIES	P.I.
				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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)		
4A	1	Belgard Sq North (East) S/L	1	4	A	476 <	1800	55	0.00	57	59	31.00	25.99	72.78	11.74 +	8.83	100	100	0.00	53.14
	2	Belgard Sq North (East) R	1	4	B	41	1800	6	4.00	39	130	70.31	65.29	103.66	1.43	1.41	100	100	0.00	11.09
4Ax	1	Junction exit				788	Unrestricted	120	37.00	0	Unrestricted	12.63	0.00	0.00	0.00		100	100	0.00	0.00
4B	1	Belgard Sq East (South) S/L/R	1	4	C	71	1800	10	0.00	43	109	69.26	59.70	99.85	2.39	2.31	100	100	0.00	17.61
4Bx	1	Junction exit	3			67	1800	120	104.00	4	2318	12.43	0.04	0.00	0.00		100	100	0.00	0.01
4C	1	Belgard Sq North (West) S/L	1	4	D	682 <	1800	51	0.00	87	3	51.18	45.95	101.09	23.48 +	15.71	100	100	0.00	132.26
	2	Belgard Sq North (West) R	1	4	E	66	1800	10	0.00	40	125	63.82	58.60	98.98	2.20	2.13	100	100	0.00	16.07
4Cx	1	Junction exit				598	Unrestricted	120	21.00	0	Unrestricted	12.97	0.00	0.00	0.00		100	100	0.00	0.00
4D	1	Vardis S/L/R	1	4	F	179	1800	18	0.00	63	43	62.15	57.64	100.54	6.09	5.54	100	100	0.00	42.96
4Dx	1	Junction exit				62	Unrestricted	120	100.00	0	Unrestricted	12.11	0.00	0.00	0.00		100	100	0.00	0.00
6A	1	Belgard Sq E (South) S/L	2			67	1800	120	99.00	4	2318	9.97	0.04	0.00	0.00		100	100	0.00	0.01
6Ax	1	Junction exit	3			71	1800	120	0.00	4	2182	12.56	0.04	0.00	0.00		100	100	0.00	0.01
6B	1	Development Access	2			20	618	120	120.00	3	2683	4.53	0.10	0.00	0.00		100	100	0.00	0.01
6Bx	1	Junction exit				37	Unrestricted	120	120.00	0	Unrestricted	11.63	0.00	0.00	0.00		100	100	0.00	0.00
6C	1	Belgard Sq East (South) S/R	2			108	1048	120	0.00	10	774	5.81	0.20	0.00	0.01		100	100	0.00	0.08
6Cx	1	Junction exit				87	Unrestricted	120	93.00	0	Unrestricted	11.92	0.00	0.00	0.00		100	100	0.00	0.00

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	258.21	26.62	9.70	13.87	4.14	255.78	17.49	0.00	273.26
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	258.21	26.62	9.70	13.87	4.14	255.77	17.49	0.00	273.26

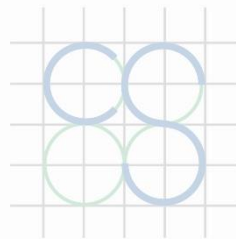
- < = adjusted flow warning (upstream links/traffic streams are over-saturated)
- * = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%
- ^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%
-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



CS CONSULTING
GROUP

Appendix E

Independent Quality Audit



CS CONSULTING
GROUP

Cronin & Sutton Consulting

Strategic Housing Development at The
Arboury, Belgard Road, Dublin 24

Quality Audit

Cronin & Sutton Consulting

Strategic Housing Development at The Arboury, Belgard Road, Dublin 24

Quality Audit

Document Ref:	P22-063-UQA-GEN-RP-001
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Rev	Prepared By	Reviewed By	Approved By	Issue Date	Reason for Revision
3.0	AOR	AP	AOR	16 th May 2022	Revised Final
2.0	AOR	AP	AOR	11 th May 2022	Final
1.0	AP	AOR/TAG	AOR	10 th May 2022	Draft Report

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1 Introduction

1.1 General

This report was prepared in response to a request from Mr Gordon Finn of Cronin & Sutton Consulting to provide a Quality Audit of the Strategic Housing Development at The Arboury, Belgard Road, Dublin 24. The Quality Audit shall consider the following elements:

- Road Safety Audit
- Access Audit
- Walking Audit
- Non-Motorised User Audit
- Cycle Audit.

The Quality Audit followed a site visit on the 3rd May 2022. At the time of the site visit the weather conditions were dry and the road surface was dry. Traffic volumes during the site visit were moderate, pedestrian and cyclist volumes were low and traffic speeds were considered to be generally within the posted speed limit.

This report contains three primary sections, with each section focussing on different implications to the users of the scheme. The Road Safety Audit identifies safety implications of the scheme, whilst the Accessibility & Walking Audit focusses more on accessibility implications for vehicles and pedestrians associated with the development. Finally, the Non-Motorised User and Cycle Audit predominantly focusses on cycle use, as pedestrians have been discussed as part of the accessibility and walking audit, and there are currently no requirements for equestrians as part of this development.

2 Background

A new development is proposed on an existing brownfield site to the northeast of The Square Shopping Centre in Tallaght, Co. Dublin (see Figure 2.1). The land use in the surrounding area is primarily commercial and industrial. The development is bounded to the north by the L3034 (Belgard Square North), to the east by the R113 (Belgard Road), to the south by existing commercial developments, and to the west by the L3030 (Belgard East). The proposed development includes the construction of a residential complex, distributed across three multi-storey blocks, commercial units, parking facilities for cars and bicycles at surface level, and a basement carpark. The carpark and access road at surface level will be partially covered by the three blocks with the areas between the blocks uncovered.

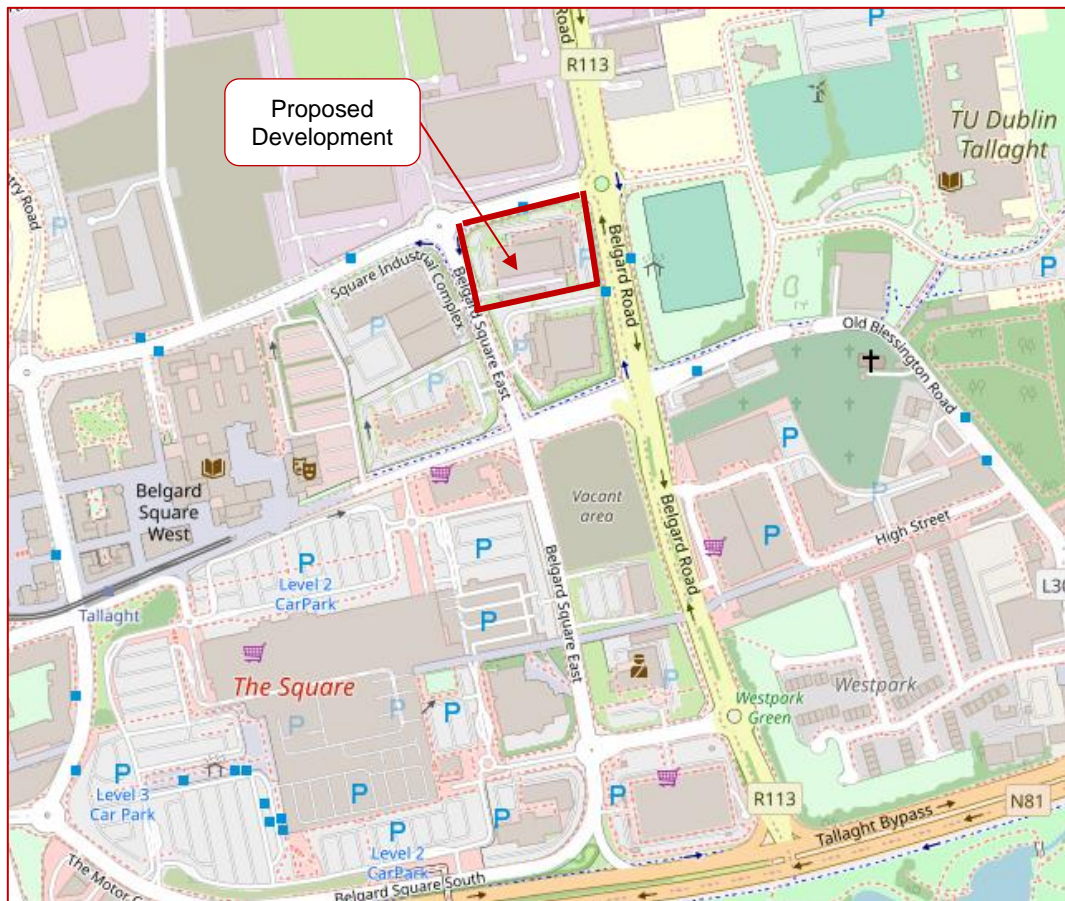


FIGURE 2.1: SITE LOCATION PLAN (SOURCE: WWW.OPENSTREETMAP.ORG)

Belgard Road, which forms part of the R113, runs in a north-south direction and is a two-way dual-carriageway with cycle tracks, pedestrian footpaths and public lighting on both sides. Gaps in the central median are provided for right-turns into adjacent developments. Belgard Road starts south of the development site at its junction with the N81, and becomes the Fonthill Road South north of its junction with the N7 (Naas Road), approximately 3km north of the proposed development. Belgard Square North is a two-way single carriageway road running in an east-west direction with a posted speed limit of 50kph. The road is approximately 700m in length and runs between its junction with Belgard Road in the east to its junction with Cookstown Way in the west, connecting the development to various commercial developments throughout. Wide footpaths and public lighting are provided on both sides of Belgard Square North.

Vehicular entry to the proposed development will be via a new two-way single carriageway access on Belgard Square East. This is a two-way single carriageway running in a north-south direction and is approximately 500m long extending between a roundabout junction with Belgard Square South in the south and a roundabout junction with Belgard Square North in the north. Belgard Square East has a posted speed limit of 50kph with footpaths and public lighting provided on both sides of road. A short section on the western side of the road, between its junction with Belgard Square North and its junction with Blessington Road, includes a cycle lane.

A number of accesses for non-motorised road users are proposed within the development on Belgard Square East and Belgard Road, where a through route for non-motorised road users through an area of open space is proposed at the development's southern boundary. Access to the development from the footpaths on Belgard Square North and Belgard Road are also proposed. Amendments to the existing footpaths surrounding the development are proposed as part of the development and these amended footpaths will tie-into the existing footpaths within the surrounding road network. It is also proposed to construct a landscaped area and a footpath along the southern extent of the development with the footpath tying into the existing footpaths on Belgard Road and Belgard Square East. The footpath improvements on Belgard Square East, Belgard Square North and Belgard Road include enhancements to the public realm and will provide wider footpaths, vegetation and bicycle parking stands.

3 Road Safety Audit

3.1 Introduction

This Road Safety Audit has been carried out in accordance with the requirements of GE-STY-01024 (previously NRA HD19/15) dated December 2017, contained on the Transport Infrastructure Ireland (TII) Publication's website.

The members of the Road Safety Audit Team are independent of the design team, and include:

Mr. Alan O'Reilly
(BA BAI MSc CEng MIEI RSACert)
Road Safety Audit Team Leader

Mr. Antonis Papadakis
(MSc, MIEI)
Road Safety Audit Team Member

The Audit took place between April and May 2022 and comprised an examination of the documents provided by the designers (see Section 3.8). A site visit was undertaken on the 3rd May 2022. At the time of the site visit the weather conditions were dry and the road surface was dry. Traffic volumes were moderate and pedestrian and cyclist volumes were low. Traffic speeds were considered to be generally within the posted speed limit.

Where problems are relevant to specific locations these are shown on drawing extracts within the main body of the report. Where problems are general to the proposals sample drawing extracts are within the main body of the report, where considered necessary. Road Safety problem locations are also shown in Appendix A - Road Safety Audit Problem Locations.

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety and considers the perspective of all road users. It has not been examined or verified for compliance with any other standards or criteria. The problems identified in this report are considered to require action in order to improve the safety of the scheme and minimise collision occurrence.

If any of the recommendations within this road safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments made within the report under the heading of Observations are intended to be for information only. Written responses to Observations are not required.

3.2 Items Not Submitted for Auditing

Details of the following items were not submitted for audit; therefore, no specific problems have been identified at this stage relating to these design elements, however where the absence of this information has given rise to a safety concern it has been commented upon in Section 3.4: -

- Vehicle swept paths
- Drainage
- Public Lighting
- Visibility splays

3.3 Collision History

The Road Safety Authority website (www.rsa.ie) was consulted to identify historical collisions in the vicinity of the proposed development. The website includes summary information on recorded collision occurrence for the period 2005 to 2016 (see Figure 3.1).

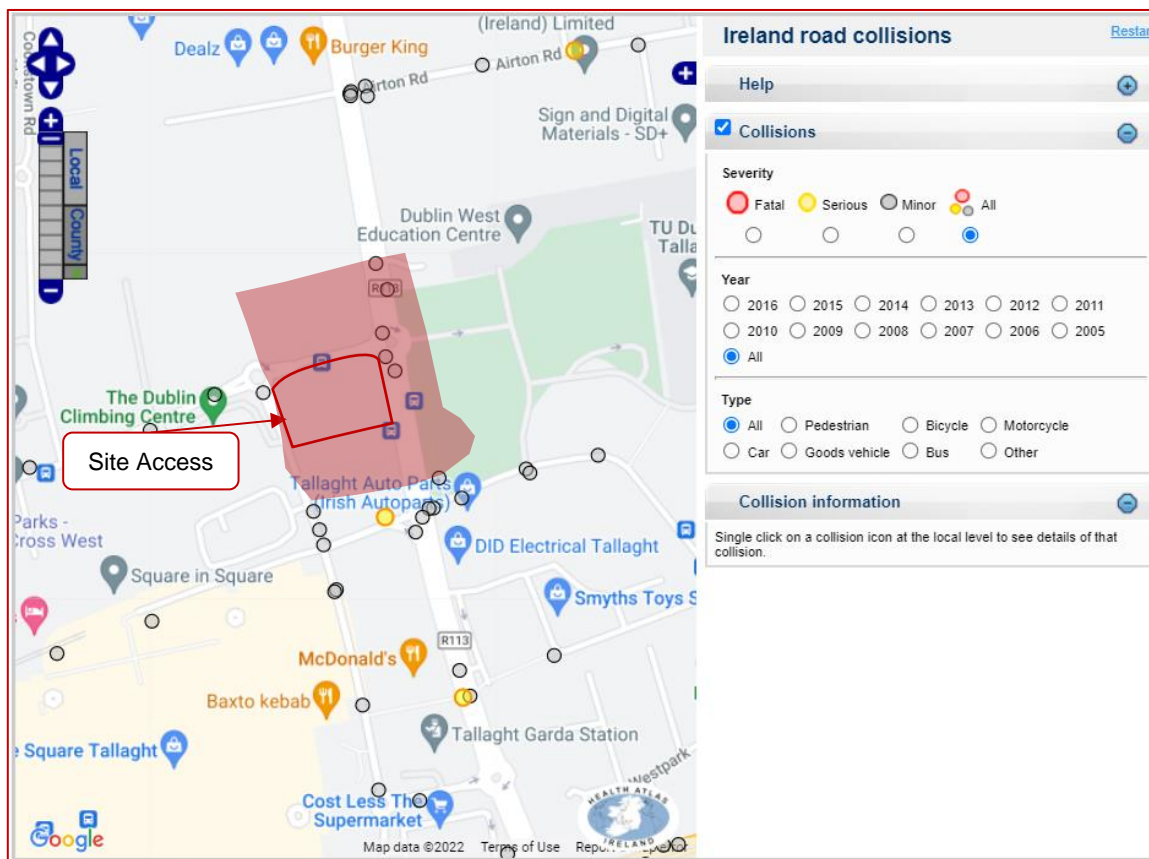


FIGURE 3.1: HISTORICAL COLLISIONS IN THE VICINITY OF THE PROPOSED DEVELOPMENT (SOURCE WWW.RSA.IE)

One Serious Injury Collision and eleven Minor Injury Collisions were recorded in the vicinity of the proposed development during this period. Table 3-1 below contains a summary of these collisions.

TABLE 3-1: SUMMARY OF RECORDED COLLISIONS IN THE VICINITY OF THE DEVELOPMENT

Year	Vehicle	Circumstances	Day	Time	Speed Limit	Location	Severity
2016	Bicycle	Other	Wednesday	7am – 10am	50kph	Belgard Rd/Belgard Square North Roundabout	Minor
2013	Car	Rear end, straight	Thursday	10am – 4pm	50kph	Belgard Square E/Belgard Square North Roundabout	Minor
2013	Car	Other	Wednesday	4pm – 7pm	50kph	Belgard Rd/Belgard Square North Roundabout	Minor
2013	Car	Other	Monday	7am – 10am	50kph	Belgard Rd/Belgard Square North Roundabout	Minor
2011	Undefined	Pedestrian	Tuesday	10am – 4pm	50kph	Belgard Square E/Blessington Rd Junction	Minor
2011	Car	Pedestrian	Saturday	3am – 7am	30kph	Belgard Rd/Blessington Road Junction	Serious
2010	Car	Other	Monday	4pm – 7pm	50kph	Belgard Rd/Blessington Rd Junction	Minor
2010	Car	Rear end, straight	Tuesday	10am – 4pm	50kph	Belgard Square E/Blessington Rd Junction	Minor
2009	Car	Pedestrian	Saturday	4pm – 7pm	50kph	Belgard Square East	Minor
2008	Car	Rear end, straight	Sunday	10am – 4pm	80kph	Belgard Rd/Blessington Rd Junction	Minor
2008	Motorcycle	Other	Tuesday	7am – 10am	80kph	Belgard Rd/Blessington Rd Junction	Minor
2006	Car	Pedestrian	Thursday	10am – 4pm	50kph	Belgard Rd/Blessington Rd Junction	Minor

3.4 Road Safety Audit

3.4.1 Problem

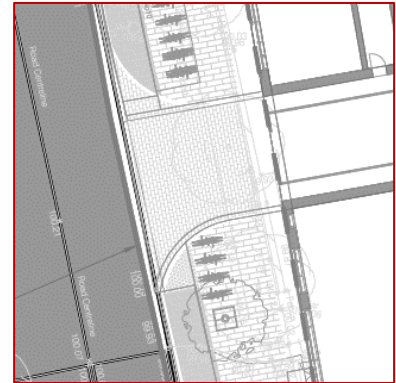
Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: Junction control, and priority, has not been indicated at the access to the proposed development.

The junction control (stop, yield etc.), and thus priority, at the development's access has not been indicated. The absence of adequate road markings and signage may lead to driver confusion and hesitation resulting in drivers misinterpreting priority at the junction and entering the junction at the same time as opposing vehicles where there is an increased risk of side-swipe or side-on collisions.

Recommendation

Ensure the junction control, and priority, at the proposed development access is clear via signage and road markings.



3.4.2 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: It is unclear if emergency, or larger, vehicles will be able to access the development and if they will be able to safely turn around within the development's extents.

Information regarding the swept path analysis of vehicles within the development has not been provided and it is therefore unclear if large vehicles, particularly emergency vehicles, will be able to safely enter, traverse and exit the proposed development. If sufficient space is not available for all vehicles to travel within the development there is an increased risk of collisions with items of street furniture or parked vehicles resulting in material damage.



Additionally, columns have been indicated within the development's carpark indicating that it is covered, or at least partially covered, by the structure above. The vertical clearance beneath the structure has not been indicated and it is therefore unclear if larger vehicles (e.g. vans, ambulances etc.), will be able pass beneath the structure. If sufficient vertical clearance is not provided for emergency vehicles there is an increased risk of reduced reaction times and building strikes.

Recommendation

Ensure all vehicles that require access to the proposed development can safely enter, turn within, and exit the development without colliding with roadside furniture, or parked vehicles.

Additionally, ensure the structure above does not restrict entry to the development for emergency vehicles. Measures advising drivers of the height restriction, and the maximum height of vehicle that can enter the development, should be provided at the entrance to the development where it will be sufficiently visible to approaching drivers.

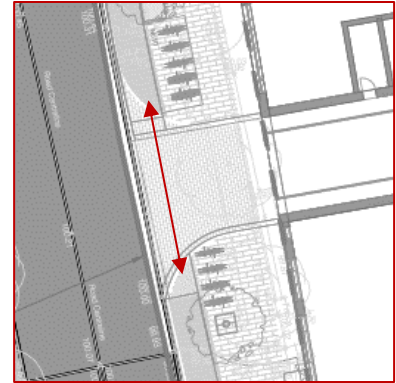
3.4.3 Problem

Location: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: A pedestrian crossing has not been indicated across the development access.

A pedestrian crossing, including dropped kerbs and tactile paving, has not been indicated across the access to the proposed development. This may lead to visually and mobility impaired pedestrians being unable to safely, and independently, navigate the road layout.

A failure to provide a pedestrian crossing with dropped kerbs may lead to mobility impaired pedestrians having difficulty in ascending/descending the kerb when crossing the carriageway, resulting in a risk of trips and falls and personal injury, while a failure to provide tactile paving may lead to visually impaired pedestrians inadvertently entering the carriageway where there is an increased risk of being struck by a vehicle.



Recommendation

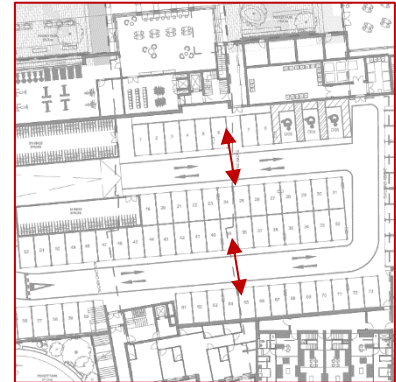
An uncontrolled pedestrian crossing of the development access should be provided including dropped kerbs, and associated tactile paving.

3.4.4 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: Lack of pedestrian crossing facilities within the development may lead to an increased risk of vehicle-pedestrian collisions.

Formal pedestrian crossing points have not been indicated across the carpark access road within the proposed development. It is likely that pedestrian desire lines will exist between parking spaces and units within the development which are located on opposite sides of the access road. A failure to provide designated crossing points may lead to pedestrians crossing at locations where drivers may be less attentive to them, or where inter-visibility will be restricted by parked vehicles or the horizontal alignment, increasing the risk of vehicle-pedestrian collisions.



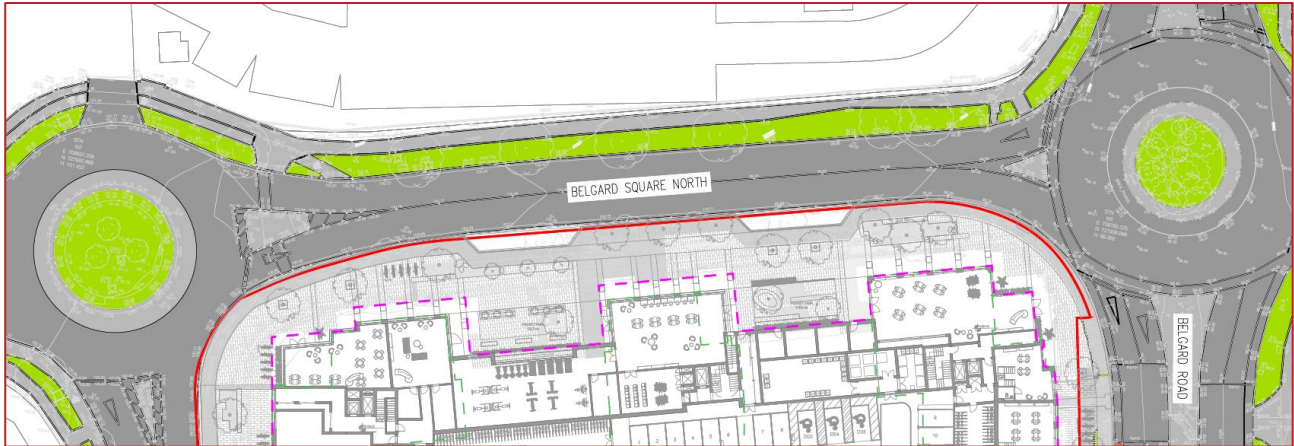
Recommendation

Formal pedestrian crossings should be provided across the access road within the proposed development. This may require the removal of some parking spaces to provide build-outs at crossings and to optimise the inter-visibility between pedestrians and approaching drivers at crossings.

3.4.5 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: No tactile paving at existing dropped kerbs on all arms of the roundabouts at either end of Belgard Square North.



Dropped kerbs have been provided on both sides of the carriageway on all arms of the roundabouts at either end of Belgard Square North with the dropped kerbs on the southern side of Belgard Square North being located within the extents of the proposed public realm works at this location. Tactile paving has however not been provided at the dropped kerbs. A failure to provide tactile paving at dropped kerbs may lead to visually impaired pedestrians inadvertently entering the carriageway where there is an increased risk of being struck by a vehicle.

Recommendation

Tactile paving should be provided at the existing dropped kerbs on all arms of the roundabouts at locations both within, and outside, the works associated with the proposed development.

Where the dropped kerbs are outside the extent of works associated with the proposed development, the issue should be brought to the attention of the Local Authority.

3.4.6 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: Absence of dropped kerbs and tactile paving at mobility impaired parking spaces.

It is unclear from the drawings provided if the carriageway and pedestrian footpath within the proposed development is at the same level or if a level difference will be provided between them.

Mobility impaired parking spaces have been indicated within the development however dropped kerbs and tactile paving have not been indicated adjacent these spaces. If a level difference exists between the footpath and carriageway/parking spaces the absence of dropped kerbs could lead to difficulties for mobility impaired pedestrians in accessing the footpath once they leave their vehicle, while a failure to provide tactile paving at dropped kerbs may lead to visually impaired pedestrians inadvertently entering the carriageway where there is an increased risk of being struck by a vehicle.



Recommendation

If a level difference is proposed between the footpath and carriageway/parking spaces, dropped kerbs and associated tactile paving should be provided adjacent the mobility impaired parking spaces to permit safe access to/from the footpath.

3.4.7 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: Cyclists may be required to mount/dismount a full height kerb when accessing the bicycle parking within the proposed development, leading to the potential for falls from their bicycle and personal injuries.

Bicycle parking has been indicated within the proposed development with access provided from the proposed footpath. It is unclear from the drawings provided if the carriageway and pedestrian footpath within the proposed development is at the same level or if a level difference will be provided between them. If a level difference is provided, and a dropped kerb not provided adjacent the bicycle parking facilities, cyclists may be required to mount/dismount a full height kerb when travelling to/from the bicycle parking leading to the potential for falls from their bicycle and personal injuries.



Recommendation

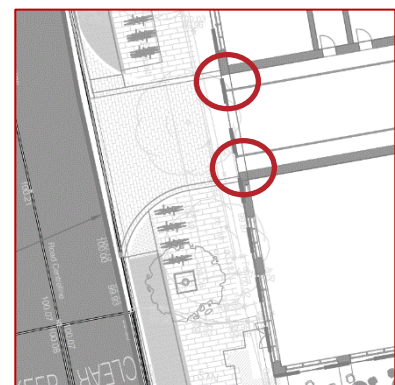
If a level difference is proposed between the footpath and carriageway, dropped kerbs, which can be safely traversed by cyclists and detected by the visually impaired, should be provided adjacent the bicycle parking facilities.

3.4.8 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: Unclear how pedestrians will transition between the footpath within the proposed development and the footpath on Belgard Square East.

The footpath within the proposed development, on both sides of the access road carriageway, terminates abruptly at the development access such that pedestrians are directed into the access carriageway rather than onto the adjacent footpaths on Belgard Square East. This results in pedestrians having to enter, and exit, the development via the carriageway where there is an increased risk of being struck by a vehicle.



Additionally, it is unclear from the drawings provided if the pedestrian footpath within the proposed development is at the same level of the footpath on Belgard Square East. If the two footpaths are at a different level pedestrians may also have to descend a kerb when transitioning between them increasing the risk of trips and falls.

Recommendation

The footpath within the proposed development should tie-into the footpaths on Belgard Square East, on both sides of the access, such that pedestrians do not have to enter the access carriageway, or mount/dismount a kerb, when transitioning between the adjoining facilities.

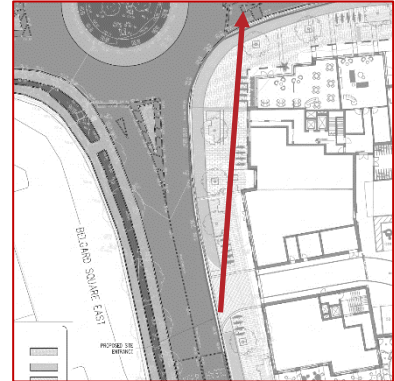
3.4.9 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: Parked bicycles may restrict a driver's visibility when exiting the development onto Belgard Square East towards vehicles exiting the roundabout.

The proposed public realm improvements within the footpath on the northern side of the development access includes bicycle stands and planting.

There is a risk that the proposed bicycle parking and landscaping on the footpath on Belgard Square East may be located within a driver's visibility splay, thus restricting their visibility to a vehicle turning left from Belgard Square North. This may lead to drivers exiting the development when it is unsafe to do so resulting in side-on collisions with vehicles on Belgard Square East.



Recommendation

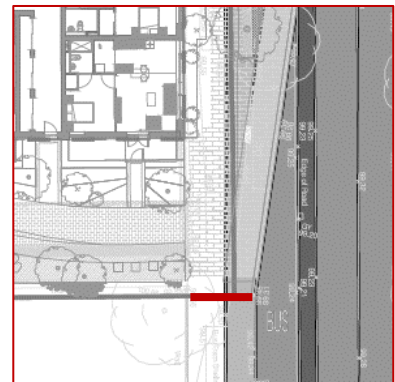
Ensure that the visibility splay for drivers exiting the development access is not impeded by items of street furniture or landscaping.

3.4.10 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: Tactile paving has not been indicated at the transitions between shared surfaces, within the proposed public realm improvements and existing footpaths.

Public realm improvements are proposed on the eastern side of Belgard Square East, the southern side of Belgard Square North and the western side of Belgard Road. It is assumed that these will be shared areas as cycle parking facilities have been indicated within the widened footpaths. These widened areas are indicated as tying into the existing footpaths on Belgard Square East and Belgard Road to the south of the proposed development. Tactile paving has not been indicated at the transitions between the existing footpaths and shared areas within the public realm improvements. This could lead to visually impaired pedestrians being insufficiently aware that they are entering/exiting a shared surface where cyclists will also be present increasing the risk of pedestrian-cyclist collisions.



Recommendation

Tactile paving should be provided at the transitions between the existing footpaths and shared surfaces within the proposed development.

3.4.11 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: It is unclear if two vehicles will be able to safely pass each other on the development's internal access road.

The Audit Team is concerned that the internal access road may not be sufficiently wide enough to accommodate two-way traffic, particularly at the horizontal curve within the access road, where forward visibility may be restricted by the alignment and parked vehicles, as the access road appears to maintain the same width throughout its length. If two-way traffic is not possible throughout, or at some locations on, the access road there is a risk of low-speed head-on collisions.



Recommendation

Ensure there is sufficient space within the development access road to accommodate two-way traffic. If additional give-way arrangements, like the one indicated, are required at constrained locations, these should be provided and a driver's forward visibility towards them kept clear of any obstructions.

3.4.12 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: It is unclear if the proposed development will be sufficiently lit during the hours of darkness.

Information regarding public lighting within the proposed development has not been provided to the Audit Team and it is therefore unclear if the development will be sufficiently lit during the hours of darkness.

If the proposed development is not sufficiently lit during the hours of darkness, there is a risk that inter-visibility between drivers and non-motorised road users will be reduced resulting in an increased risk of vehicle-pedestrian collisions

Recommendation

Ensure the proposed development is sufficiently lit during the hours of darkness.

3.4.13 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: It is unclear if the carriageway within the proposed development will sufficiently shed surface water.

Information regarding the drainage provision within the proposed development has not been provided to the Audit Team. Should insufficient drainage measures be provided, this could lead to ponding within the development's access road or pedestrian routes, leading to loss of traction during wet or icy weather and possible loss of control collisions, or slips and falls for pedestrians.

Recommendation

Ensure the carriageway within the development is sufficiently drained and that ponding does not occur.

3.4.14 Problem

Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

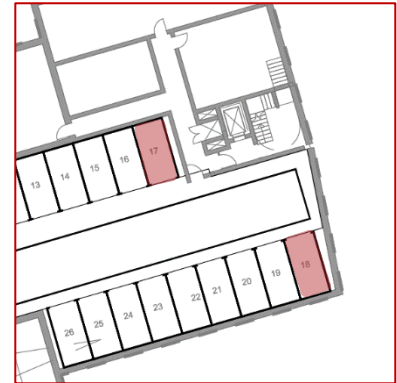
Summary: It is unclear if there is sufficient space for drivers to safely enter/exit all parking spaces within the development's basement, and surface level, carparks.

It is unclear if there will be sufficient space available for drivers to enter and exit all parking spaces within the proposed basement, and surface level, carparks, particularly those at the end of aisles where physical boundary constraints are located (e.g. parking space No. 9 (surface level) & parking spaces No. 17, 18, and 30 (basement level)).

Should there be insufficient space available to safely enter and exit all parking spaces there is an increased risk of low speed material damage collisions with other parked vehicles or building boundaries within the carparks.

Recommendation

A swept path analysis should be undertaken within the carparks to ensure safe entry and exit to/from potentially constrained spaces, and the layout revised if necessary.



3.4.15 Problem

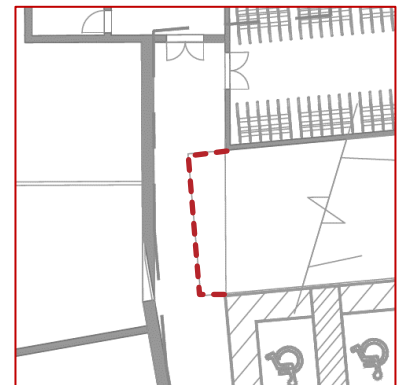
Drawing: Drawing no. BR-CSC-ZZ-00-DR-C-0013 (Rev. P4)

Summary: It is unclear if sufficient edge protection will be provided at surface level adjacent the basement carpark access ramp.

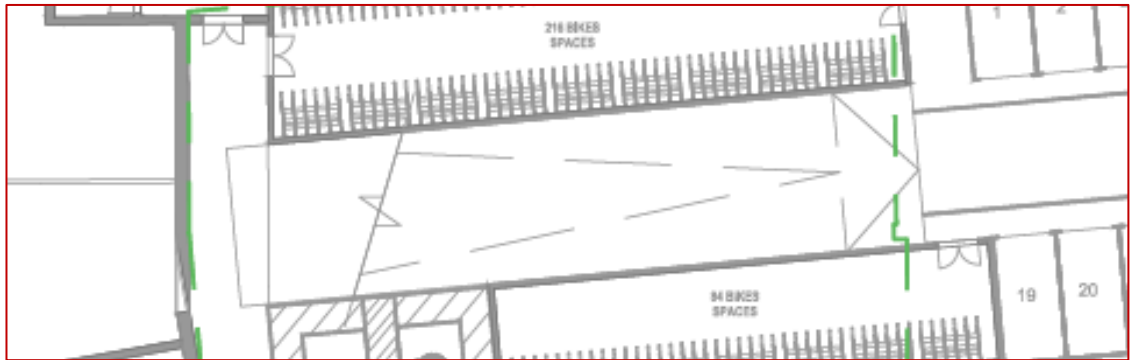
A pedestrian/cyclist route has been indicated at surface level adjacent the basement carpark access ramp. It is unclear from the drawing provided if sufficient edge protection will be provided at surface level adjacent the ramp. If sufficient edge protection is not provided there is an increased risk of pedestrians and cyclists falling from a height onto the ramp below, leading to serious personal injury.

Recommendation

Sufficient edge protection, which can restrain both pedestrians and cyclists, should be provided at surface level adjacent the basement carpark access ramp.

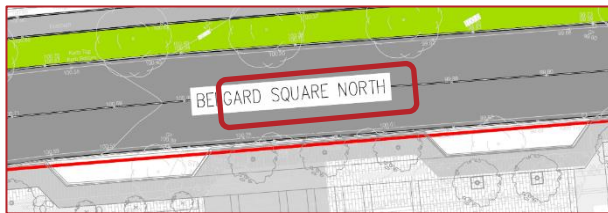


3.5 Observations



3.5.1 The gradient of the proposed basement carpark access ramp has not been indicated. As no bicycle parking has been indicated within the basement carpark, it is considered likely that only motorised vehicles will require entry to the basement carpark. Ensure the gradient of the ramp is sufficient for all types of vehicles that will require access to the carpark without experiencing difficulties when ascending/descending the ramp.

3.5.2 There is an existing bus stop on the southern side of Belgard Square North. It is unclear if this is to be retained as it does not appear to be allowed for in the proposed amended road layout at this location. Two inset bays have been indicated at this location although their purpose is unclear. Existing bus stops within the extents of the proposed development should be appropriately integrated into the public realm improvements.



3.5.3 There is an existing uncontrolled pedestrian crossing on Belgard Road. The tactile paving layout on both sides of this crossing is not the correct colour, or shape, for an uncontrolled crossing. The tactile paving on the western side of Belgard Road is located within the proposed public realm improvements at this location and, although unclear, it appears that it is proposed to retain the tactile paving in its current layout, and extend it to the rear of the amended footpath. This may lead to visually impaired pedestrians mistaking the uncontrolled crossing for a controlled crossing, or confusion for visually impaired pedestrians regarding the road layout.



The existing tactile paving, on both sides of the crossing, should be replaced with buff coloured tactile paving, of the appropriate depth for an inset crossing.



3.6 Road Safety Audit Team Statement

We certify that we have examined the drawings referred to in this report. The examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme.


The problems identified have been noted in this report together with associated safety improvement suggestions, which we would recommend should be studied for implementation.

The Road Safety Audit Team has not been involved in the design of this scheme.

ROAD SAFETY AUDIT TEAM LEADER

Alan O'Reilly

Signed:



Dated:

16th May 2022

ROAD SAFETY AUDIT TEAM MEMBER

Antonios Papadakis

Signed:



Dated:

16th May 2022

3.7 Road Safety Audit Brief Checklist

Have the following been included in the audit brief?: (if 'No', reasons should be given below)

	Yes	No
1. The Design Brief	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Departures from Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Scheme Drawings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Scheme Details such as signs schedules, traffic signal staging	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Collision data for existing roads affected by scheme	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Traffic surveys	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Previous Road Safety Audit Reports and Designer's Responses/Feedback Form	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Previous Exception Reports	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Start date for construction and expected opening date	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Any elements to be excluded from audit	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Any other information? (if 'Yes', describe below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.8 Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
PROPOSED DEVELOPMENT ON EXISTING ROAD NETWORK	BR-CSC-ZZ-00-DR-C-0013	P4
PROPOSED BASEMENT LEVEL LAYOUT	BR-CSC-ZZ-00-DR-C-0004	P1
PROPOSED GROUND LEVEL LAYOUT	BR-CSC-ZZ-00-DR-C-0003	P3

3.9 Road Safety Audit Feedback Form

Scheme: Strategic Housing Development at The Arboury, Belgard Road, Dublin 24

Route No.: Belgard Square North, Belgard Square East, Belgard Road

Audit Stage: 1 Date Audit Completed: 09.05.2022

To be Completed by Designer				To be Completed by Audit Team Leader
Paragraph No. in Safety Audit Report	Problem Accepted (Yes/No)	Recommended Measure(s) Accepted (Yes/No)	Describe Alternative Measure(s). Give reasons for not accepting recommended measure	Alternative Measures or Reasons Accepted by Auditors (Yes/No)
3.4.1	Yes	Yes		
3.4.2	Yes	Yes		
3.4.3	Yes	Yes		
3.4.4	Yes	Yes		
3.4.5	Yes	Yes		
3.4.6	Yes	Yes	No level difference proposed within undercroft.	
3.4.7	Yes	Yes	No level difference proposed within undercroft.	
3.4.8	Yes	No	Pedestrian walkways removed from access carriageway; pedestrian access provided at other locations.	Yes
3.4.9	Yes	Yes		
3.4.10	Yes	Yes		
3.4.11	Yes	Yes		

3.9 Road Safety Audit Feedback Form

Scheme: Strategic Housing Development at The Arboury, Belgard Road, Dublin 24


Route No.: Belgard Square North, Belgard Square East, Belgard Road

Audit Stage: 1 **Date Audit Completed:** 09.05.2022

To be Completed by Designer				To be Completed by Audit Team Leader
Paragraph No. in Safety Audit Report	Problem Accepted (Yes/No)	Recommended Measure(s) Accepted (Yes/No)	Describe Alternative Measure(s). Give reasons for not accepting recommended measure	Alternative Measures or Reasons Accepted by Auditors (Yes/No)
3.4.12	Yes	Yes		
3.4.13	Yes	Yes		
3.4.14	Yes	Yes		
3.4.15	Yes	Yes		

Signed:  Designer **Date** 11.05.2022

Signed:  Audit Team Leader **Date** 16th May 2022

Signed:  Employer **Date** 11th May 2022

4 Accessibility & Walkability Audit

4.1 Introduction

A new residential development is proposed on an existing brownfield site to the northeast of The Square Shopping Centre in Tallaght, Co. Dublin. The proposed development includes the construction of a residential complex, distributed across three multi-storey blocks, commercial units, parking facilities for cars and bicycles at surface level, and a basement carpark. The carpark and access road at surface level will be partially covered by the three blocks with the areas between the blocks uncovered.

A number of pedestrian accesses are proposed at locations on the north, east and west sides of the proposed development (see Figure 4.1). These include the main development access on Belgard Square East, the shared pedestrian and cycle route through the open space area at the development's southern boundary (which links Belgard Square East with Belgard Road), multiple building accesses on Belgard Square North and Belgard Road. Public realm improvements are proposed within the existing footpaths surrounding the development with the most substantial measures proposed on Belgard Square North. These improvements include widened footpaths, decorative paving, planting, bicycle parking, landscaping, seating areas and pocket parks. These amended footpaths will tie-into the existing footpaths on Belgard Square East and Belgard Road to the south of the proposed development.

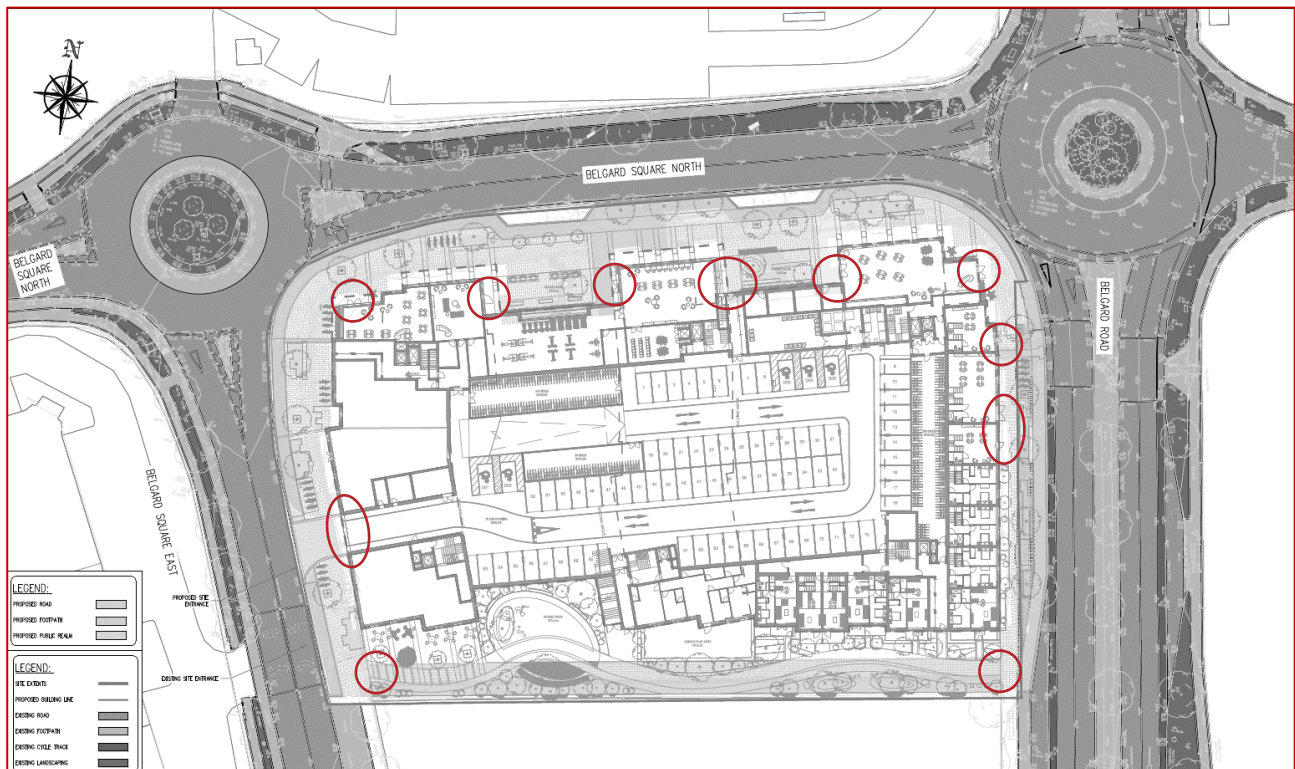


FIGURE 4.1: PROPOSED DEVELOPMENT LAYOUT INDICATING PEDESTRIAN ACCESSES

It is also proposed to construct a landscaped area which will include a pocket park, creche play area and outdoor seating, along the development's southern boundary. This area will tie-into the existing footpaths on Belgard Road and Belgard Square East, providing improved permeability between these roads. There are also pedestrian footpaths proposed adjacent the development's access road throughout the development at surface level.

The existing roads which abut the development include footpaths on both sides. Two existing roundabout junctions are located adjacent the northeast and northwest corners of the proposed development, at either end of Belgard Square North. Existing pedestrian crossings are provided at these roundabouts however tactile paving is not provided at the dropped kerbs at these crossings.

There are two existing signalised crossroad junctions to the south of the proposed development between Belgard Square East and Blessington Road and Belgard Road and Blessington Road. These junctions are

located approximately 140m and 350m from the proposed site access to the south and southeast respectively and include signalised pedestrian crossings which link Belgard Square East and Belgard Road with the wider surrounding road network including the Square Shopping Centre, the Technological University Dublin, Tallaght, Tallaght Village, and multiple existing residential developments.

4.1.1 Access to local bus network

There are several bus stops located in the vicinity of the proposed development. The closest bus stops to the proposed development, and the bus routes which serve them, are detailed in Table 4-1 below. The distance to these bus stops has been measured using the development access junction as the origin point. Residents of the proposed development will therefore have good access to existing bus services, with connections to Dublin City.

TABLE 4-1 BUS ROUTE NEAR THE PROPOSED DEVELOPMENT

Bus Stop (Name)	Bus Stop (Number)	Proximity to the development	Bus Route	Travelling between
Belgard Square North (Eastbound)	5008	110m	27	Clare Hall to Jobstown
			54A	Pearse Street to Ellensborough/Kiltipper Way
			65	Poolberg Street to Vallemount Road
			75, 75A	Dún Laoghaire to The Square Tallaght
			76, 76A	Glenaulin to Belgard Square South
			77A	Bianconi Avenue to Barrow Street
			175	Blanchardstown SC - Belgard Square South
South Dublin CC (Westbound)	4647	140m	27	Clare Hall to Jobstown
			54A	Pearse Street to Ellensborough/Kiltipper Way
			65	Poolberg Street to Vallemount Road
			75, 75A	Dún Laoghaire to The Square Tallaght
			76, 76A	Glenaulin to Belgard Square South
			77A	Bianconi Avenue to Barrow Street
			175	Blanchardstown SC - Belgard Square South
Belgard Road	2363	260m	76, 76A	Glenaulin to Belgard Square South
			175	Blanchardstown SC - Belgard Square South
Belgard Square North	2346	240m	76, 76A	Glenaulin to Belgard Square South
			175	Blanchardstown SC - Belgard Square South

4.1.2 Access to the Luas

The proposed development is located close to two Luas stops, 'Tallaght (The Square)' and 'Tallaght Hospital,' both of which are on the Red Line.

The 'Tallaght (The Square)' and 'Tallaght Hospital' Luas stops are located approximately 500m and 900m respectively from the proposed development. Given its proximity to the Luas Red Line, which connects the development to Dublin City Centre, where railway services are available at Heuston, and Connolly, Train Stations, as well all other locations serviced by the Red Line (see Figure 4.2), the development is considered to have high quality access to Dublin's light rail, and subsequently national railway, networks.

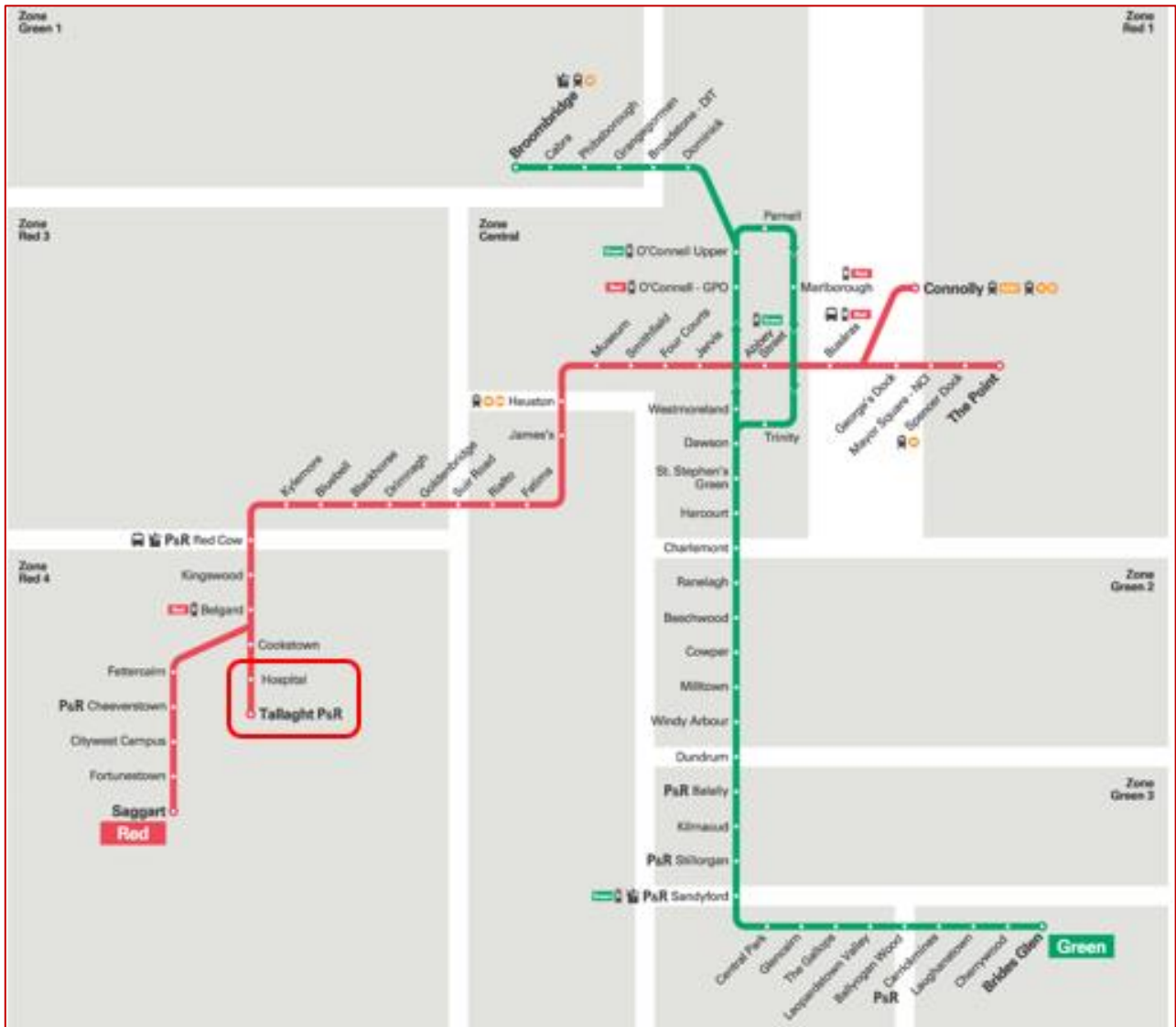


FIGURE 4.2: DUBLIN RAIL NETWORK

4.1.3 Local Amenities

Tallaght Village encompasses the area to the north, northeast and east of the proposed development, and includes a number of amenities, as detailed in Table 4-2. The distance to these amenities, on foot and by bicycle, has also been provided and been measured using the proposed development access junction as the origin point. Given the range of amenities in close proximity to the proposed development, and the comprehensive footpath network between the development and Tallaght Village, residents of the new development will have good access to local amenities.

TABLE 4-2: LOCAL AMENITIES CLOSE TO THE PROPOSED DEVELOPMENT

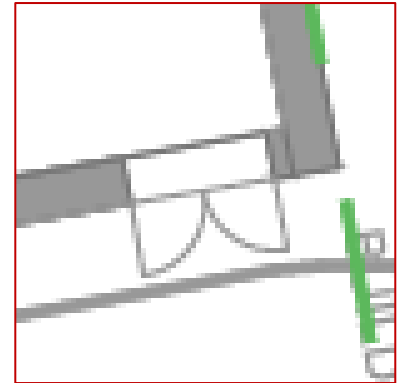
Amenity	Distance (approx.)	Journey Time (approx.) [On Foot / By Bicycle]	Direction from Development
Dublin West Education Centre	450m	6min / 2min	Northeast
Burger King fast food restaurant	650m	7min / 2min	North
Starbucks Belgard Road café	750m	8min / 3min	North
Home goods store	550m	7min / 2min	North
Aldi Supermarket	600m	7min / 2min	Southwest
Russell Medical Centre	950m	10min / 3min	Southwest
Tallaght University Hospital	750m	9min / 3min	Northwest
County Library	650m	8min / 2min	West
Square Tallaght Shopping mall	850m	11min / 1min	Southwest
McDonald's fast food restaurant	350m	4min / 1min	South
Centra Belgard Road	400m	5min / 2min	Southeast
Saint Maelruain's Church	800m	10min / 3min	Southeast
TUD, Tallaght	600m	8min / 2min	East
Tallaght Stadium	1.1km	14min / 5min	Southwest
Old Bawn Community School	1.1km	14min / 4min	Southwest

Amenity	Distance (approx.)	Journey Time (approx.) [On Foot / By Bicycle]	Direction from Development
Sean Walsh Memorial Park	750m	9min / 3min	South

4.2 Building Accesses

4.2.1 Issue

Accesses to the buildings within the proposed development have been indicated both from the external and internal footpaths. There are several locations within the development where doors are indicated opening outwards into the footpath. External doorways open onto the proposed public realm improvements which provide wider footpaths however within the proposed development the pedestrian routes are narrower. Doors opening outwards onto pedestrian routes within the proposed development may lead to the effective width of the footpath being reduced, thus restricting access for pedestrians, particularly wheelchair users and those pushing prams/stroller, on the footpath.



Recommendation

Preferably, doors within the development should open inwards however, where doors must open outwards for reasons associated with fire safety, ensure a minimum effective width of 1.2m remains within the footpath such that there is sufficient space for a wheelchair user to pass.

4.3 Pedestrian Crossing Facilities

Accessibility issues relating to Pedestrian Facilities have been discussed in Sections 3.4.3, 3.4.4, 3.4.5 & 3.5.3.

4.4 Target Groups (i.e. mobility, and visually, impaired etc.)

Accessibility issues relating to Mobility Impaired Access have been discussed in Sections 3.4.5, 3.4.6, 3.4.10 and 3.5.3.

4.5 Subways

No accessibility issues have been identified relating to Subways.

4.6 Junctions

Accessibility issues relating to Junctions have been discussed in Section 3.4.1.

4.7 Signage

No accessibility issues have been identified relating to Signage.

4.8 Public Transport

No accessibility issues have been identified relating to Public Transport.

4.9 Lighting

Accessibility issues relating to Lighting have been discussed in Section 3.4.12.

4.10 Visibility

Accessibility issues relating to Visibility have been discussed in Sections 3.4.9 and 3.4.11.

4.11 Waste Facilities within the Development

4.11.1 Issue

It is unclear where refuse will be collected from and if, and how, bins will be transported to surface level, if the collection point is located at the basement carpark. Large, heavy bins may have to be transported long distances from bin stores to collection points which may result in difficulties for maintenance/refuse operatives. Additionally, it is unclear how refuse will be collected from the development, and how refuse trucks will access the collection location.

The absence of a detailed refuse strategy could lead to maintenance/refuse operatives and refuse trucks drivers having difficulty in transporting, and accessing, bins respectively.

Recommendation

A refuse strategy for the proposed development should be prepared which clearly outlines how refuse is to be stored, transported and collected and how refuse vehicles are to access the collection point.

4.12 Carriageway Markings for Pedestrians

No accessibility issues have been identified relating to Carriageway Markings for Pedestrians.

4.13 Parking

4.13.1 Issue

Electric Vehicle (EV) parking spaces have not been indicated within the development's surface or basement carpark, however it is likely that a portion of the parking spaces will be required for EVs. These spaces typically require additional width to support a buffer zone to account for potentially different charging port connections on vehicles. The additional width allows space for electric cables, as well as user access to connect/disconnect the charging cables.

All of the parking spaces, with the exception of mobility impaired parking spaces, within the carpark, both in the basement and at surface level, appear to have similar dimensions. There is a risk therefore that, should any of these spaces be designated for EVs as the design progresses, the required space will not be available to accommodate the necessary buffer zone and infrastructure for EV parking spaces.

Recommendation

A sufficient number of parking spaces within the development's carparks should be designated as EV parking spaces and sufficient space should be provided at these spaces in accordance with Section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings.'

Other accessibility issues relating to Parking have been discussed in Section 3.4.14.

5 Non-motorised User and Cycle Audit

The proposed development will provide cyclist permeability between Belgard Road through the southern shared surface corridor which connects with the development access at Belgard Square East. Cycle lanes are provided along both sides of Belgard Road to the east of the development site initiating approximately 600m south where it meets the N81 continuing northwest to Cookstown Road where Tallaght town extends.

5.1 External Cycle Provision

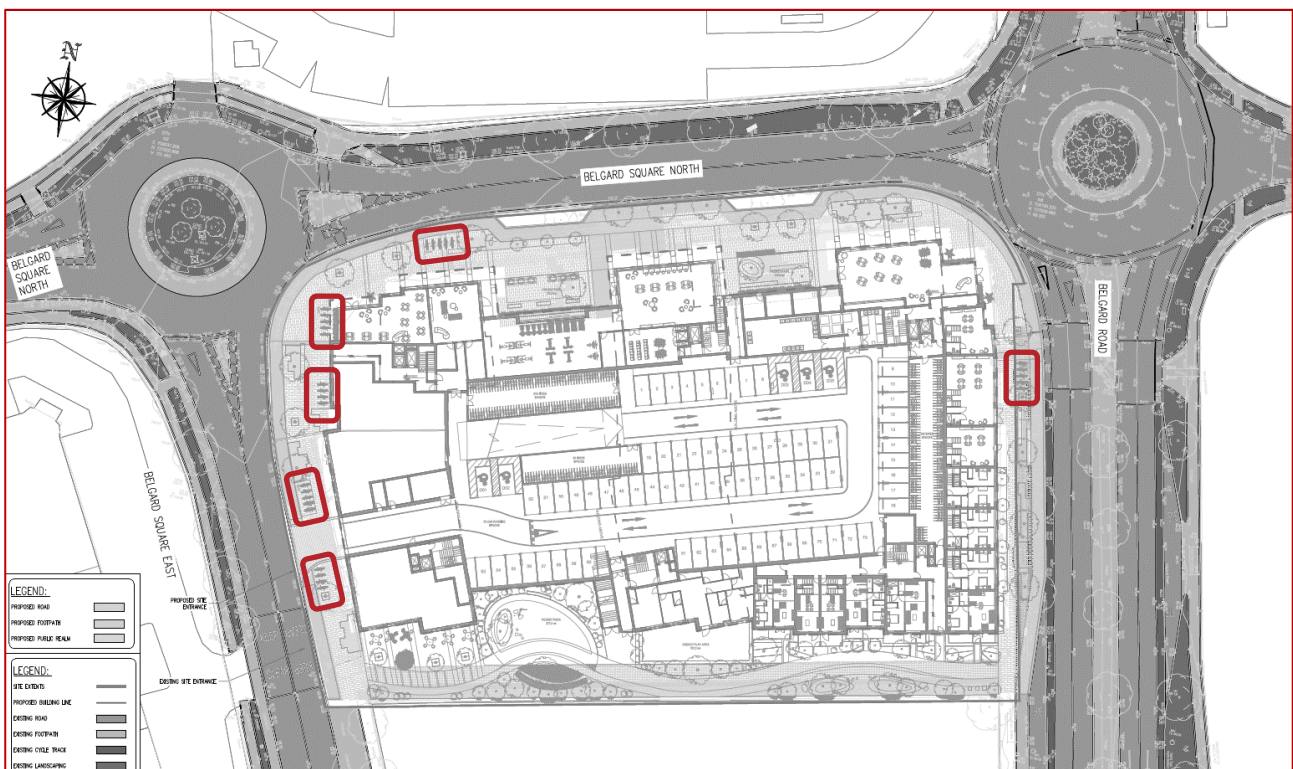
An existing cycle lane is provided on the eastern side of Belgard Square East. It is at the same level as the footpath and delineated by a white line. Belgard Square North does not include any existing cycle facilities with a footpath only provided on both sides of the carriageway. Cyclists approaching from west of the roundabout junction with Belgard Square East are directed onto the carriageway via a ramp downstream of the exit from the roundabout on Belgard Square North. Westbound cyclists on Belgard Square North, who must travel within the traffic lane, can access the existing cycle lane on Belgard Square East via an existing ramp to continue southwards. The section of Belgard Square North between the two existing roundabouts, where no existing cycle facilities are provided, is approximately 100m long and in a low speed environment. Cyclists sharing the carriageway with motorised vehicles over this short section is not expected to give rise to significant cycle safety issues.

Cycle lanes are provided on both sides of Belgard Road to the east of the proposed development commencing approximately 600m south, at its junction with the N81. These continue northwest on Belgard Road to Cookstown Road and provide a link between the proposed development and Tallaght Village and Kilnamanagh.

5.2 Internal Cycle Provision

The proposed development will provide cyclist permeability between Belgard Road and Belgard Square East through the public open space at the development's southern boundary which includes a shared pedestrian & cycle path connecting these roads. Cycle parking facilities are proposed within the development at surface level and also within the proposed improved footpaths on Belgard Square East, Belgard Square North and Belgard Road.

5.2.1 Issue



It is unclear if the proposed cycle parking stands, within the improved footpaths on Belgard Square East, Belgard Square North and Belgard Road will be sheltered. Users may be discouraged from using cycle stands if they believe the locations are unsafe, or if their bicycle will be exposed to the weather. This may encourage informal parking on footpaths or at property access, thereby restricting pedestrian access.

Recommendation

Ensure sheltered cycle parking is provided in certain locations, and strategically located to benefit cyclists within the development.

Other accessibility issues relating to Internal Cycle Provision have been discussed in Section 3.4.7.

5.3 Quality Audit Action Plan

Issue	Situation	Action/Adjustment	Priority	Cost
4.2.1	There are several locations within the development where doors are indicated opening outwards into the footpath.	Preferably, doors within the development should open inwards however, where doors must open outwards for reasons associated with fire safety, ensure a minimum effective width of 1.2m remains within the footpath such that there is sufficient space for a wheelchair user to pass.	1	C
4.3	<p>A pedestrian crossing has not been indicated across the development access.</p> <p>Lack of pedestrian crossing facilities within the development may lead to an increased risk of vehicle-pedestrian collisions.</p> <p>No tactile paving at existing dropped kerbs on all arms of the roundabouts at either end of Belgard Square North.</p> <p>There is an existing uncontrolled pedestrian crossing on Belgard Road. The tactile paving layout on both sides of this crossing is not the correct colour, or shape, for an uncontrolled crossing.</p>	<p>An uncontrolled pedestrian crossing of the development access should be provided including dropped kerbs, and associated tactile paving.</p> <p>Formal pedestrian crossings should be provided across the access road within the proposed development. This may require the removal of some parking spaces to provide build-outs at crossings and to optimise the inter-visibility between pedestrians and approaching drivers at crossings.</p> <p>Tactile paving should be provided at the existing dropped kerbs on all arms of the roundabouts at locations both within, and outside, the works associated with the proposed development.</p> <p>Where the dropped kerbs are outside the extent of works associated with the proposed development, the issue should be brought to the attention of the Local Authority.</p> <p>The existing tactile paving, on both sides of the crossing, should be replaced with buff coloured tactile paving, of the appropriate depth for an inset crossing.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>A</p> <p>A</p> <p>A</p> <p>A</p>

Issue	Situation	Action/Adjustment	Priority	Cost
4.4	No tactile paving at existing dropped kerbs on all arms of the roundabouts at either end of Belgard Square North.	Tactile paving should be provided at the existing dropped kerbs on all arms of the roundabouts at locations both within, and outside, the works associated with the proposed development.	1	A
	Absence of dropped kerbs and tactile paving at mobility impaired parking spaces.	Where the dropped kerbs are outside the extent of works associated with the proposed development, the issue should be brought to the attention of the Local Authority. If a level difference is proposed between the footpath and carriageway/parking spaces, dropped kerbs and associated tactile paving should be provided adjacent the mobility impaired parking spaces to permit safe access to/from the footpath.	1	A
	Tactile paving has not been indicated at the transitions between shared surfaces, within the proposed public realm improvements and existing footpaths.	Tactile paving should be provided at the transitions between the existing footpaths and shared surfaces within the proposed development.	1	A
	There is an existing uncontrolled pedestrian crossing on Belgard Road. The tactile paving layout on both sides of this crossing is not the correct colour, or shape, for an uncontrolled crossing.	The existing tactile paving, on both sides of the crossing, should be replaced with buff coloured tactile paving, of the appropriate depth for an inset crossing.	1	A
4.6	Junction control, and priority, has not been indicated at the access to the proposed development.	Ensure the junction control, and priority, at the proposed development access is clear via signage and road markings.	1	A
4.9	It is unclear if the proposed development will be sufficiently lit during the hours of darkness.	Ensure the proposed development is sufficiently lit during the hours of darkness.	1	D
4.10	Parked bicycles may restrict a driver's visibility when exiting the development onto Belgard Square East towards vehicles exiting the roundabout.	Ensure that the visibility splay for drivers exiting the development access is not impeded by items of street furniture or landscaping.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
	It is unclear if two vehicles will be able to safely pass each other on the development's internal access road.	Ensure there is sufficient space within the development access road to accommodate two-way traffic. If additional give-way arrangements, like the one indicated, are required at constrained locations, these should be provided and a driver's forward visibility towards them kept clear of any obstructions.	1	C
4.11.1	It is unclear where refuse will be collected from and if, and how, bins will be transported to surface level, if the collection point is located at the basement carpark.	A refuse strategy for the proposed development should be prepared which clearly outlines how refuse is to be stored, transported and collected and how refuse vehicles are to access the collection point.	1	A
4.13.1	Electric Vehicle (EV) parking spaces have not been indicated within the development's surface or basement carpark, however it is likely that a portion of the parking spaces will be required for EVs.	A sufficient number of parking spaces within the development's carparks should be designated as EV parking spaces and sufficient space should be provided at these spaces in accordance with Section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings'.	1	D
4.13	It is unclear if there is sufficient space for drivers to safely enter/exit all parking spaces within the development's basement, and surface level, carparks.	A swept path analysis should be undertaken within the carparks to ensure safe entry and exit to/from potentially constrained spaces, and the layout revised if necessary.	1	C
5.2.1	It is unclear if the proposed cycle parking stands, within the improved footpaths on Belgard Square East, Belgard Square North and Belgard Road will be sheltered.	Ensure sheltered cycle parking is provided in certain locations, and strategically located to benefit cyclists within the development.	1	B
5.2	Cyclists may be required to mount/dismount a full height kerb when accessing the bicycle parking within the proposed development, leading to the potential for falls from their bicycle and personal injuries.	If a level difference is proposed between the footpath and carriageway, dropped kerbs, which can be safely traversed by cyclists and detected by the visually impaired, should be provided adjacent the bicycle parking facilities.	1	A

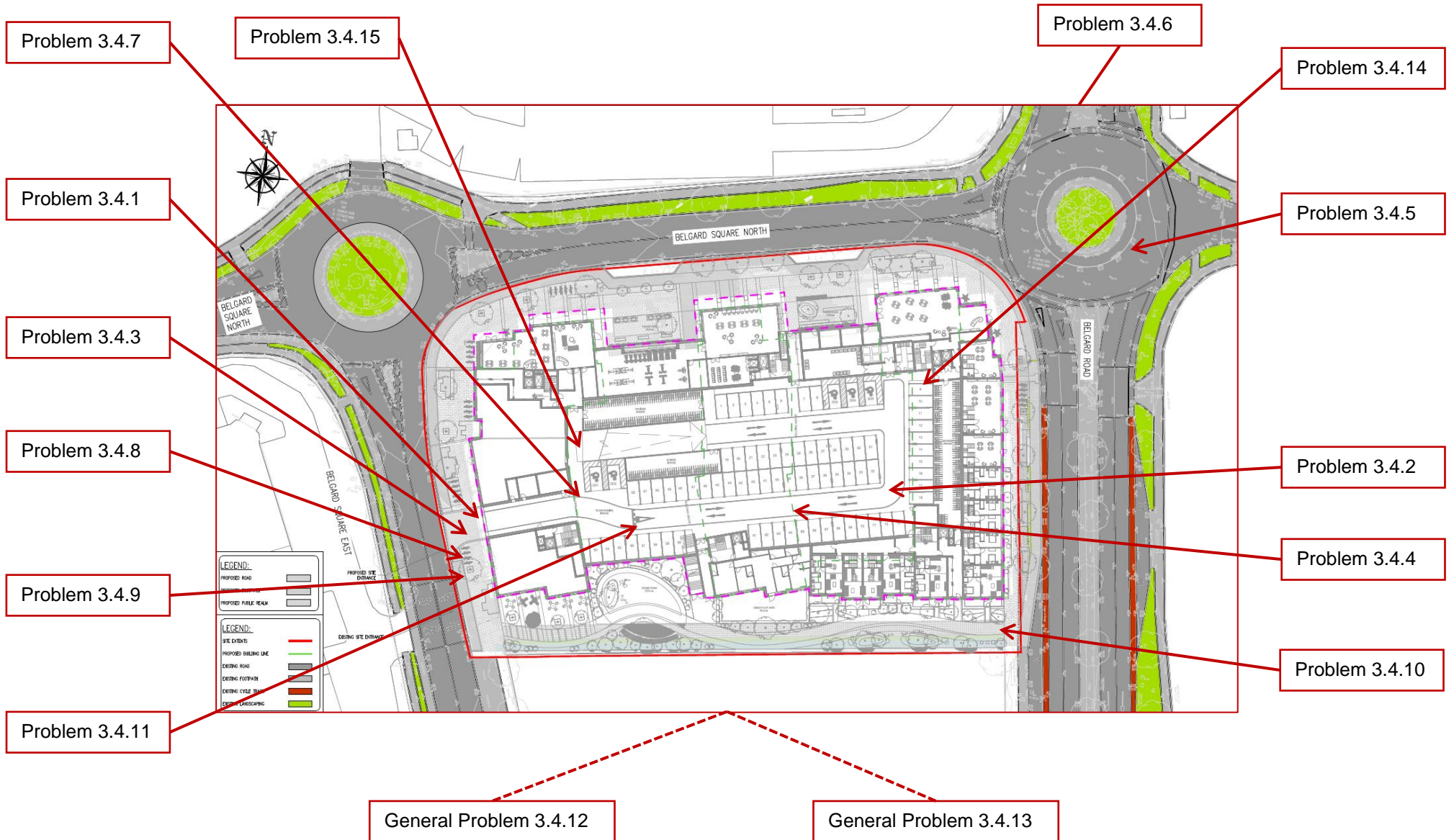
Priority

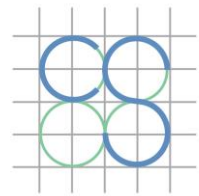
- 1 – Immediate works required;
- 2 – Essential works required within 1 year;
- 3 - Desirable works required within 2 years;
- 4 – Long term works;
- 5 - Specific needs (e.g. pedestrian desire line not catered for)

Cost (Indicative cost only)

- A – Up to €2,500
- B – From €2,500 up to €10,000
- C - Between €10,000 up to €20,000
- D – Above €20,000

6 Appendix A - Road Safety Audit Problem Locations

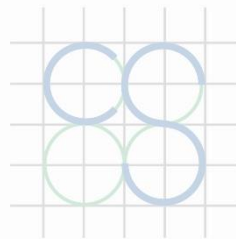




CS CONSULTING
GROUP

Appendix F

BusConnects Correspondence with NTA and AECOM



CS CONSULTING
GROUP

Gordon Finn

From: [REDACTED]@aecom.com>
Sent: Thursday 5 May 2022 16:39
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: L088 The Arboury Belgard Square - proposed BusConnects integration

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Hi Colin,

We confirm that relocation of the site entrance on Belgard Square East as proposed by the developer can be accommodated in the BusConnects Scheme subject to design coordination and clarification of two points:

- Development site boundary – as indicated below, in the area shaded blue (labelled “Public RoW Lands”) there is an overlap between development boundary and BusConnects CBC boundary on Belgard Square East. The development proposals (Hardscaping/Softscaping) for this area should take account of BusConnects proposals for bus stop, cycle track, cycle parking, street furniture, footway widths and landscaping.
- Area of land indicated below shaded dark green (labelled “Land Parcel A”) - is this land to become part of public RoW for Belgard Square East to allow it to be utilised for footway / landscaping / street furniture?



Regards,

[REDACTED]
AECOM

Principal Highways Engineer

[REDACTED]
[REDACTED]@aecom.com

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From: [REDACTED]@nationaltransport.ie>
Sent: 05 May 2022 08:57
To: [REDACTED]@aecom.com>; [REDACTED]@aecom.com>
Subject: [EXTERNAL] FW: L088 The Arboury Belgard Square - proposed BusConnects integration

Hi Alan, Colin,
What's your opinion on the proposal from C&S in relation to Belgard Square East, former ABB site and its interface with the CBC?

From: Gordon Finn [REDACTED]
Sent: Thursday 5 May 2022 07:44
To: [REDACTED]@nationaltransport.ie>; [REDACTED]@nationaltransport.ie>
Cc: [REDACTED]@aecom.com; [REDACTED]@aecom.com>; [REDACTED]
[REDACTED]
Subject: RE: L088 The Arboury Belgard Square - proposed BusConnects integration

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

David, Colin,

Following review of this design drawing by AECOM and the NTA, are you able to confirm that the NTA has no objection to our proposals for integration with the Core Bus Corridor no. 9 arrangement?
We are fast approaching our deadline for lodgement of this planning application, and so we will need to act immediately on any new comments that you or AECOM may have.

If you need anything further from us, please let me know.

Kind regards,

Gordon Finn Civil and Traffic Engineer

BA, BAI (Hons), MAI (St), MIEI

T 01-5480863 [REDACTED]
E [REDACTED] W www.csconsulting.ie





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From: Gordon Finn

Sent: Monday 25 April 2022 17:16

To: [redacted]@aecom.com; [redacted]@aecom.com>

Cc: [redacted]

Subject: L088 The Arboury Belgard Square - proposed BusConnects integration

Colin, Alan,

Many thanks once more for taking the time this morning to run through our proposed site access arrangements on Belgard Square East.

As discussed, attached is our drawing showing the proposed access arrangement to the development on the former ABB site, and the integration of this with the BusConnects Core Bus Corridor no. 9 design.

On foot of the comments made during this morning's discussion, we have widened the proposed central turning bay to 3.0m by relocating the cycle track and kerb lines at our access 0.4m into our site. The two other lanes on Belgard Square East maintain a width of 3.5m.

We have also amended the drawing to make it clear that this is a raised cycle track, not an on-road cycle lane.

The current red line boundary of the forthcoming SHD planning application is also included for reference.

If you need full details of the development site ownership extents, this would best be obtained from William Power (C+W O'Brien Architects), who is copied on this email.

In principle, however, my understanding is that our client would be willing to cede to the Local Authority whatever part of the public realm would reasonably be necessary to implement the proposed bus stop, cycle track, and footpath arrangements. A drawing showing the extents of public realm intended for taking-in-charge by the Local Authority will form part of the planning application, so we welcome any comments you have in that regard.

For context, I've included some details below from our calculations on future traffic movements at this location (with BusConnects measures in place) and the projected vehicular trip generation of the proposed development. This will of course all be presented more thoroughly in the final application documentation.

Future Bus Frequency

Following implementation of Core Bus Corridor no. 9 and completion of the BusConnects network reorganisation, the following bus routes will travel along Belgard Square East past the development site access:

Bus Route	Weekday Peaks (buses)	
	AM Peak (08:45-09:45)	PM Peak (16:00-17:00)
A3	6	6
D2	5	5
D4	3	3
D5	3	3
S6	5	5
S8	5	5
ALL	27 each direction	27 each direction

Therefore the proposed new bus stop on the eastern side of Belgard Square East, outside the development site, will be served at peak times by one bus approximately every 2 minutes.

Traffic Movements at Development Access (with BusConnects measures)

Our proposed development will generate the following vehicular traffic (in Passenger Car Units) at peak times:

	AM Peak	PM Peak
Arrivals	17	37
Departures	30	20
Total Trips	47	57

With all BusConnects measures in place, and our proposed development operational, the traffic flows at its access junction will be as follows (in Passenger Car Units):

2025		AM Peak			WITH SUBJECT DEVELOPMENT IN PLACE	
From	To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS	
Belgard Sq E (North)		0	0	59	59	
Site Access (East)		0	0	30	30	
Belgard Sq E (South)		62	17	0	79	
TOTALS		62	17	89	168	

2025		PM Peak			WITH SUBJECT DEVELOPMENT IN PLACE	
From	To	Belgard Sq E (North)	Site Access (East)	Belgard Sq E (South)	TOTALS	
Belgard Sq E (North)		0	0	59	59	
Site Access (East)		0	0	20	20	
Belgard Sq E (South)		62	37	0	99	

TOTALS	62	37	79	178
--------	----	----	----	-----

Preliminary PICADY modelling of the development access junction (with BusConnects measures in place) indicates that there is ample spare capacity under the projected traffic loading.
 Most importantly, there will be no queuing of vehicles waiting to turn right into the development, so no obstruction of the bus lane immediately to the north.

Kind regards,

Gordon Finn Civil and Traffic Engineer

BA, BAI (Hons), MAI (St), MIEI

T 01-5480863 [REDACTED]

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