Project

Proposed Residential & Commercial Development, Scholarstown Road, Dublin 16

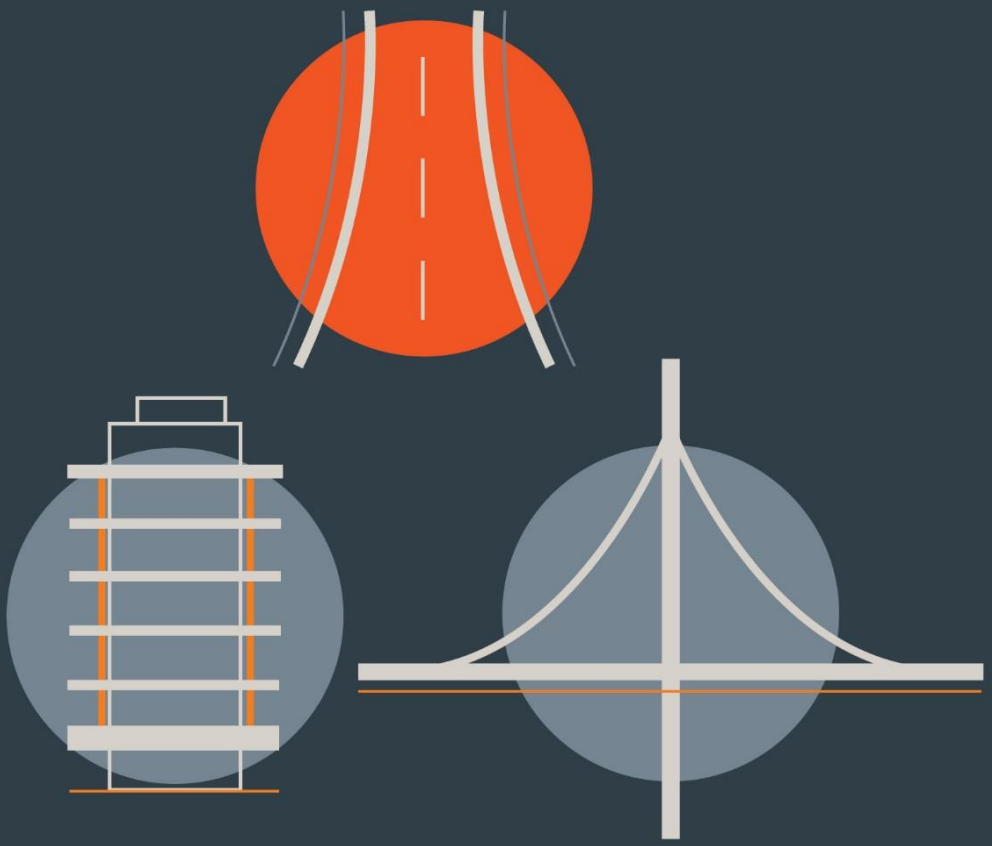
Report Title

Traffic and Transport Assessment Report

Client

Ardstone Homes Limited

TRANSPORTATION



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1.0 INTRODUCTION

1.1 BACKGROUND

1.1.1 DBFL Consulting Engineers (DBFL) have been commissioned to prepare a Traffic and Transport Assessment (TTA) for a proposed residential/commercial development at a site located in Scholarstown, Dublin 16.

1.1.2 Ardstone Homes Limited intend to apply to An Bord Pleanála for permission for a strategic housing development at a 5.35 hectare site located north of Scholarstown Road incorporating dwellings known as 'Beechpark' and 'Maryfield', Scholarstown Road, Dublin 16, D16 X3X8 and D16 N6V6. Works are also proposed to Scholarstown Road and Woodfield junction including new traffic signals, the elimination of the left-turn slip-lane into Woodfield off Scholarstown Road, upgraded public lighting and upgraded cycle and pedestrian facilities on an area measuring 0.7 hectares, providing a total application site area of 6.05 hectares.

1.1.3 The development will principally consist of: the demolition of all existing structures on site which include a single story dwelling known as 'Beechpark' (172 sq m), a 2 No. storey dwelling known as 'Maryfield' (182 sq m), with associated garage/shed (33.5 sq m) and associated outbuildings (47.1 sq m); and the construction of 590 No. residential units (480 No. Build-to-Rent apartment units and 110 No. Build-to Sell duplex units and apartments), ancillary residential support facilities and commercial floorspace. The total gross floor space of the development is 51,252 sq m over a partial basement of 5,888 sq m (which principally provides car and bicycle parking, plant and bin stores).

1.1.4 The 480 No. 'Build-to-Rent' units will be provided in 8 No. blocks as follows: 7 No. blocks ranging in height from part 5 to part 6 No. storeys (Blocks B1 – B5, C1 and C3) and 1 No. block ranging in height from part 4 to part 6 No. storeys (Block C2) and will comprise 246 No. one bed units and 234 No. two bed units. The 110 No. 'Build-to-Sell' units will be provided in 9 No. duplex blocks which will be 3 No. storeys in height (Blocks A1 – A9) and will comprise 55 No. two bed units and 55 No. three bed units.

1.1.5 The development will also consist of the provision of a part 1 to part 2 No. storey ancillary amenity block (Block D1) (414 sq m) within the central open space which comprises a gymnasium, lobby, kitchenette and lounge at ground floor level and lounge at first floor level in addition to a roof terrace (facing north, south and west) to serve the Build-to-Rent residents; a 2 No. storey retail/café/restaurant building (Block D2) (657 sq m) comprising 2 No. retail units at ground floor level (328.5 sq

m) and a café/restaurant unit at first floor level (328.5 sq m); a creche (438 sq m) within Block C2 at ground floor level; and a management suite (261 sq m) and café/restaurant (288 sq m) within Block C3 at ground floor level.

1.1.6 The development provides a vehicular access off Scholarstown Road between Blocks C1 and C3 towards the south-east corner of the site; a separate pedestrian access and emergency vehicular access off Scholarstown Road between Blocks A9 and C2 towards the south-west corner of the site; the facilitation of a pedestrian connection from the north-east corner of the subject site to the public open space in Dargle Park; 459 No. car parking spaces (178 No. at basement level and 281 No. at surface level); bicycle parking; bin storage; boundary treatments; private balconies and terraces; hard and soft landscaping; plant; services; sedum roofs; PV panels; substations; lighting; and all other associated site works above and below ground.

1.1.7 The purpose of this TTA is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the proposed residential development.

1.1.8 The scope of the assessment covers transport and sustainability issues including access, pedestrian, cyclist and public transport connections. Recommendations contained within this report are based on existing and proposed road layout plans, site visits, site traffic observations and junction survey data.

1.1.9 This TTA has been prepared in reference to the requirements of the National Roads Authority "Traffic and Transportation Assessment Guidelines". Reference has also been made to the South Dublin County Development Plan 2016 - 2022.

1.2 REPORT STRUCTURE

1.2.1 **Section 2** of this report describes the existing conditions at the proposed development location and immediate surrounding area, whilst the relevant transport policies that influence the design and appraisal of the subject residential development proposals are highlighted within **Section 3**.

1.2.2 A summary of the principal characteristics of the proposed residential & commercial development is provided in **Section 4**.

1.2.3 **Section 5** outlines the trip generation exercise carried out and the adopted methodology for applying growth factors to establish design year network traffic flows.

1.2.4 The potential traffic impact of the proposal as assessed for the adopted 2021 Opening Year and the 2036 Horizon Year are summarised within **Section 6**.

1.2.5 The Construction Phase is described in **Section 7** of this report.

1.2.6 The main conclusions and recommendations derived from the analysis are summarised in **Section 8**.

2.0 RECEIVING ENVIRONMENT

2.1 LAND USE

2.1.1 The surrounding area on all sides of the subject land is predominately residential housing. The South Dublin County Development Plan allocates this land as being zoned 'To protect and/or improve residential amenity'.

2.1.2 The subject site currently accommodates two existing dwellings, namely 'Beechpark' and 'Maryfield' as well as a number of outbuildings to the north of the site and a shed/garage to the rear of Maryfield.

2.2 LOCATION

2.2.1 The subject site is located within the Knocklyon suburb of South Dublin within the administrative area of South Dublin County Council. The subject lands are situated to the north of the Scholarstown Road corridor and approximately 550m east of the M50 junction 12 interchange. The southern boundary of the subject site is formed by Scholarstown Road, whilst the northern boundary is formed by the Dargle Wood residential settlement. Scholarstown Park forms the eastern boundary, with the western boundary formed by a private access driveway of a residential dwelling.

2.2.2 The general location of the subject site in relation to the surrounding road network is illustrated in **Figure 2.1** below, whilst **Figure 2.2** shows the indicative extent of the subject site lands. It is noted that the site boundary incorporates the Scholarstown Road as works such as new footpaths, cycle tracks and crossings are proposed on Scholarstown Road as part of this development. The subject site is located within the C-Ring of the M50 and is approximately 10 kilometres southwest of Dublin City Centre.

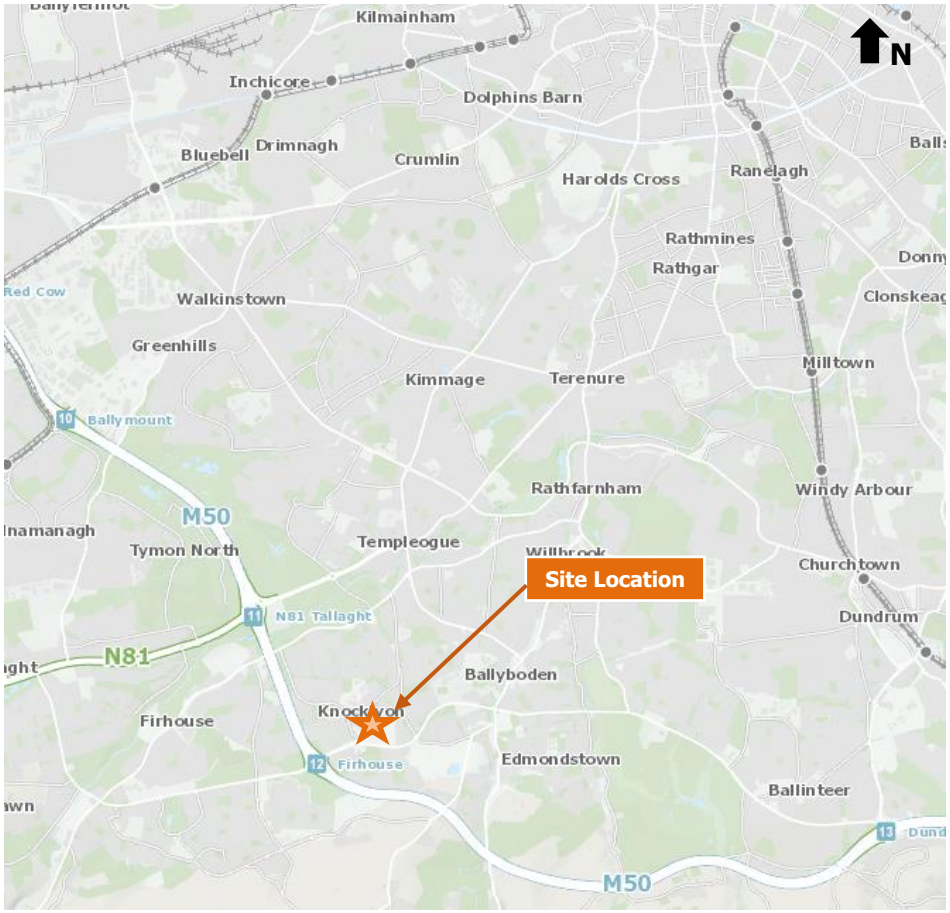


Figure 2.1: Site Location (Source : http://map.geohive.ie/)

Figure 2.2: Indicative Site Boundary (Source : http://map.geohive.ie)

2.3 EXISTING TRANSPORTATION INFRASTRUCTURE

Road Network

2.3.1 The existing subject development site is located immediately north of the Scholarstown Road. Scholarstown Road, in the vicinity of the development site, is subject to a 50kph speed limit and has a wide single road carriageway. The road is one lane in each direction, however, there are existing right turn pockets to facilitate vehicles turning into the existing St Colmcille's Community School and the Woodfield residential estate.

2.3.2 The existing Scholarstown Road/Woodfield priority junction is located within the immediate vicinity of the proposed site as shown in **Figure 2.3**.

2.3.3 The M50 motorway is located approximately 550m west of the site.

Figure 2.3: Location of Scholarstown Road/Woodfield Priority Junction

Existing Cycling and Pedestrian Facilities

2.3.4 There are pedestrian paths and segregated cycle tracks on both sides of the Scholarstown Road in the vicinity of the proposed development site which are separated from the road carriageway with grass verges. These facilities are shown below in **Figure 2.4**.

Figure 2.4: Pedestrian and Cycle Facilities on Scholarstown Road

2.3.5 As well as the cycle tracks outlined in the vicinity of the proposed site, there are also a variety of other cycle facilities available on the routes leading to the subject site area as illustrated in **Figure 2.5** (extract from GDA Cycle Network Plan).

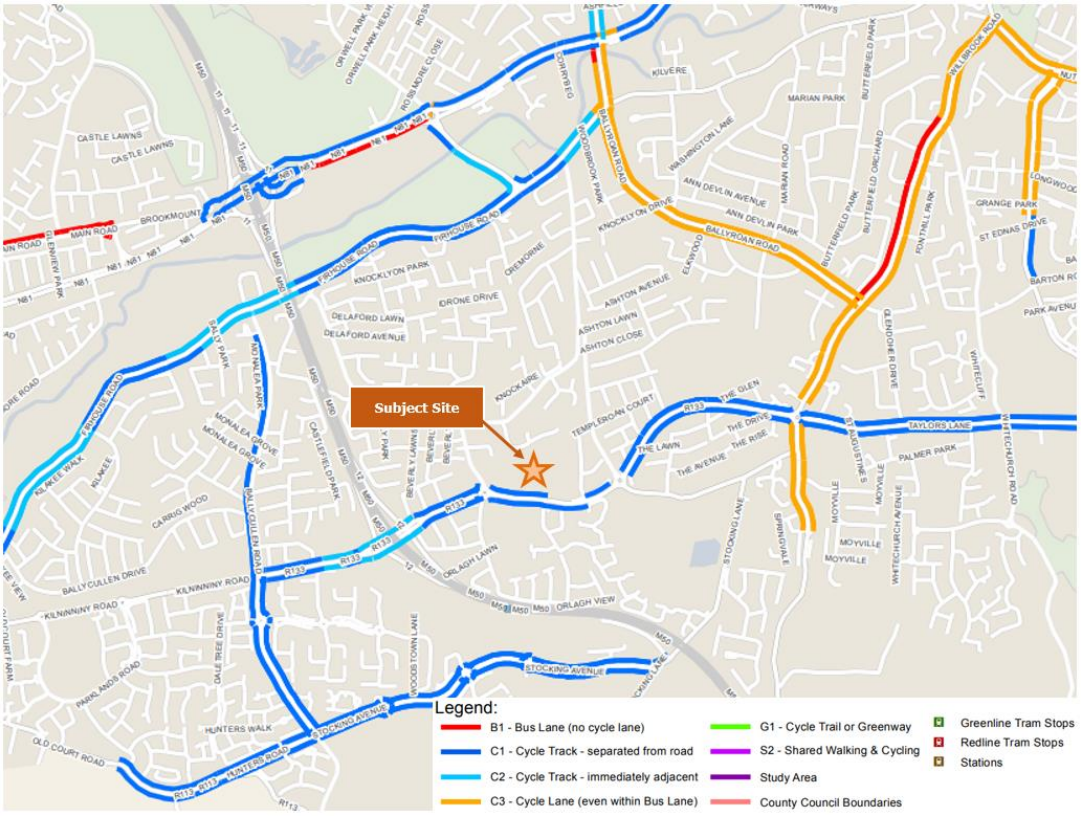


Figure 2.5: Existing Cycle Facilities (Source: Sheet E6 GDA Cycle Network Plan)

2.3.6 There is an existing signalised pedestrian crossing provided on Scholarstown Road to the east of the Woodfield/Scholarstown Road priority junction as shown in **Figure 2.6**.

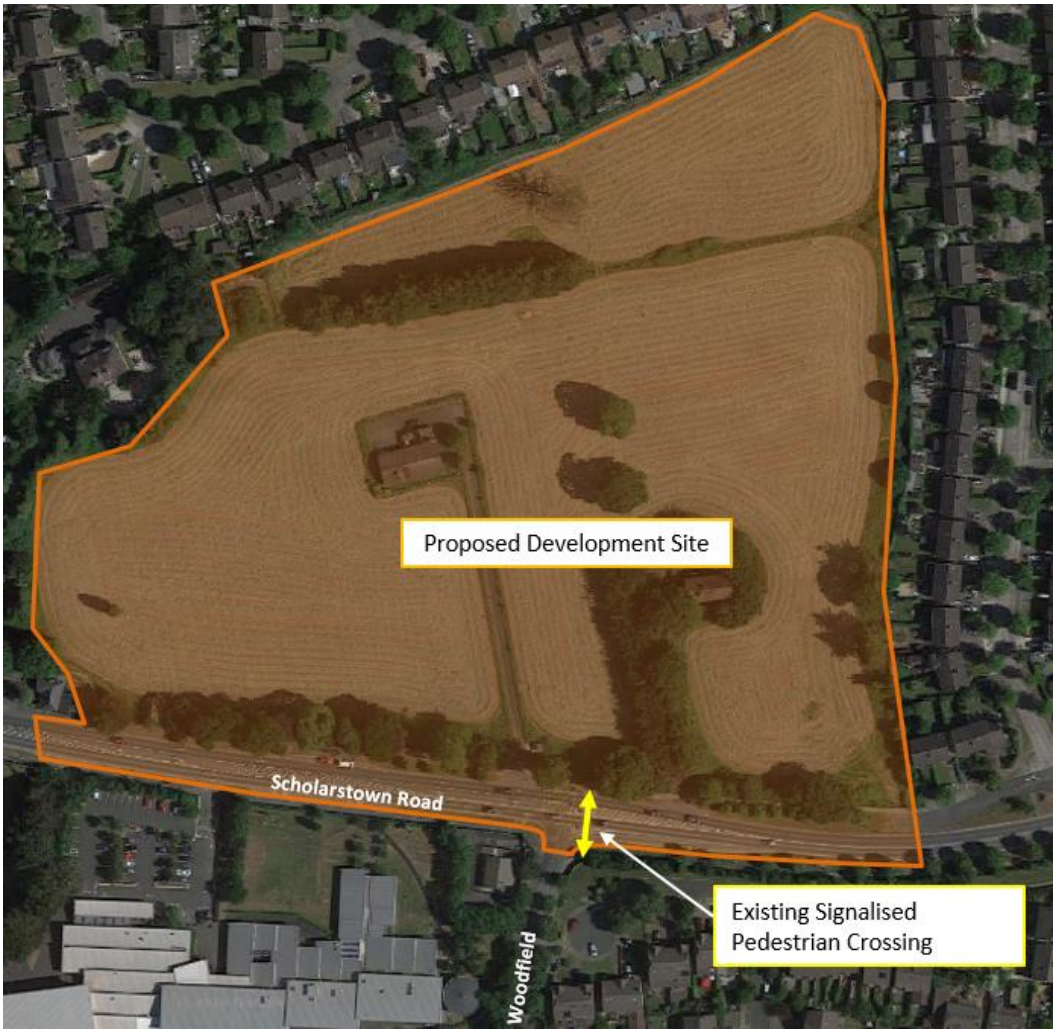


Figure 2.6: Existing Pedestrian Crossing location on Scholarstown Road

Public Transport – Bus

2.3.7 Dublin Bus operates service number 15 along the Scholarstown Road corridor with the closest bus stop located approximately 300m west of the proposed development site. Route 15 provides access to/from Dublin City centre via Terenure and Rathmines, before terminating at Clongriffin in north Dublin.

2.3.8 Dublin Bus also operates the number 15B along the Ballyboden Way, with the closest stop located approximately 450m west of the proposed development. The 15b provides access to Dublin city centre also but travels to a range of different intermediate destinations including Rathfarnham and Rathgar before terminating at Ringsend.

2.3.9 Go Ahead Ireland operates service number 175 along the Scholarstown Road corridor adjacent to the subject site with bus stops for this service located within

100-150m walking distance west of the site. This Go-Ahead Ireland service travels between Citywest, Tallaght and Dundrum before terminating at UCD.

2.3.10 **Figure 2.7** illustrates these bus routes and stops in the proximity of the proposed development site.

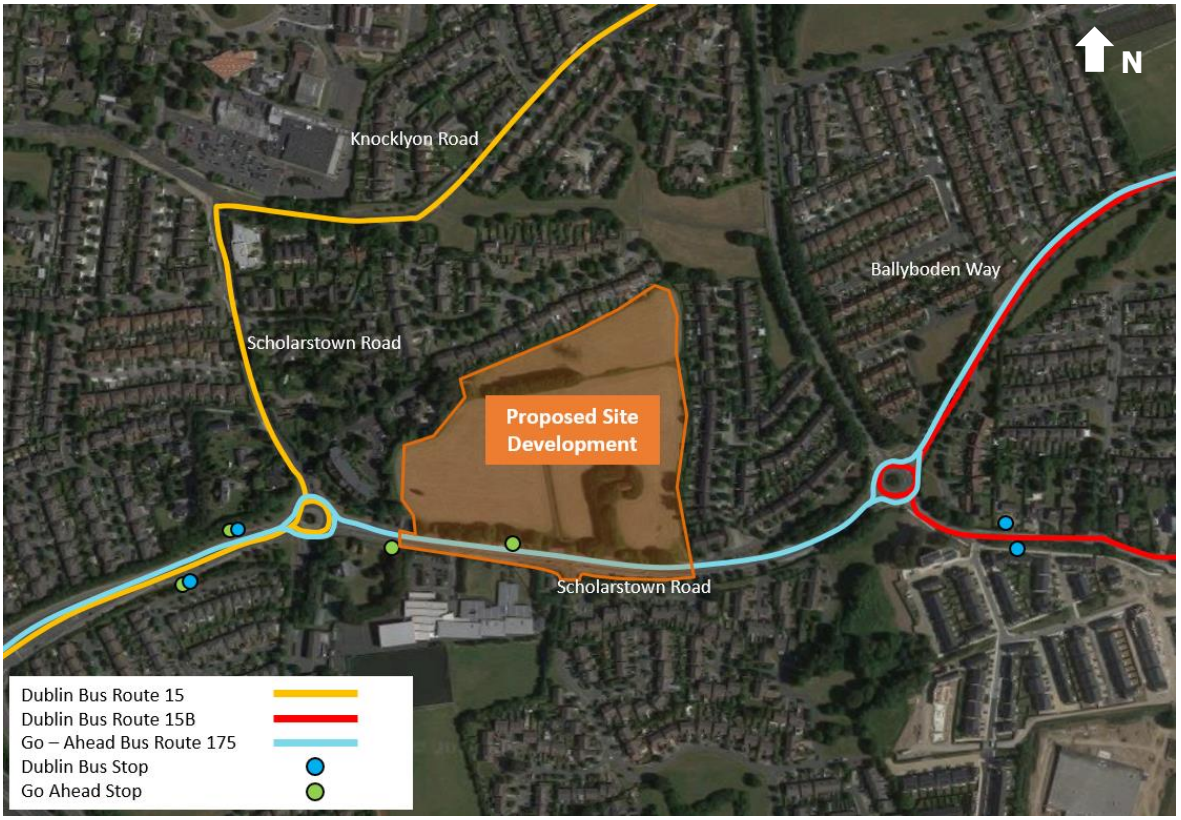


Figure 2.7: Existing Dublin Bus and Go Ahead Routes and Stops (Source: Google Maps)

2.3.11 Both the 15 and 15B Dublin Bus services operate daily and offer frequent services (i.e every 8 – 12 minutes for the 15 bus and every 15 minutes for the 15b bus) as summarised in **Table 2.1** below. The 175 Go Ahead service operates with a frequency of every 30 minutes during weekday Monday to Friday and on an hourly service on weekends as shown in **Table 2.1**.

Table 2.1: Bus Service Frequency (minutes) – (source www.dublinbus.ie)

Route Number	Route	Monday – Friday	Saturday	Sunday
Dublin Bus 15	Clongriffin - Ballycullen Rd	8-12	15	15
Dublin Bus 15b	Grand Canal Dock (Benson St.) - Stocking Ave	15	15	20
Go-Ahead 175	Citywest - Tallaght - Ballyboden - Dundrum - UCD	30	60	60

2.3.12 **Figure 2.7** outlines that bus stops for the 15, 15B and 175 are all located within close walking distance of the site. **Table 2.1** outlines the high quality and regular

frequency of the bus services for the area.

2.4 LOCAL AMENITIES

2.4.1 The subject development site is very well placed in terms of the availability of local amenities. There are a number of schools within walking distance of the subject site including St Colmcilles Community School, St Colmcilles National and Gaelscoil Chnoc Liamhna. Furthermore, the subject site benefits from good access to leisure facilities such as public parks, GAA Clubs, and retail facilities. **Figure 2.8** below shows the subject sites location in relation to the numerous amenities in the surrounding area.

Figure 2.8: Subject Site Local Amenities

2.4.2 **Figure 2.9** illustrates the walking and cycling linkages from the subject site to the amenities within the surrounding area as well as the distance and travel time for these modes.

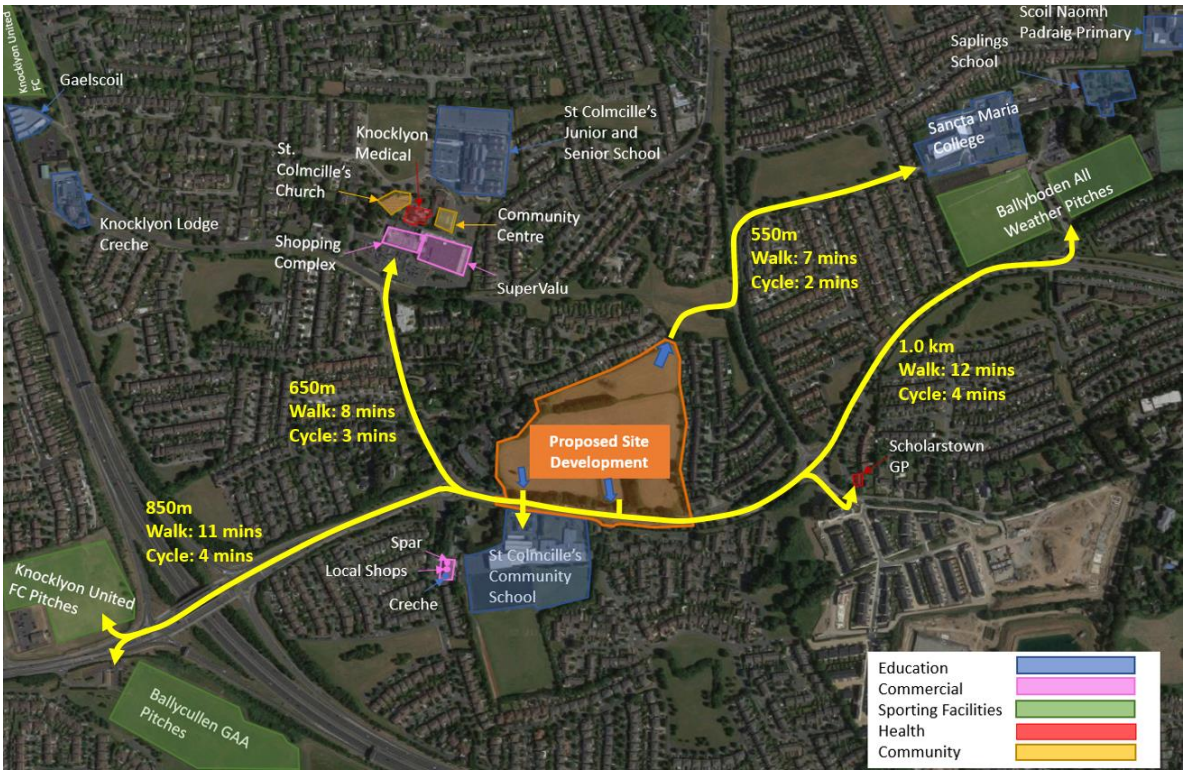


Figure 2.9: Subject Site Linkages for Pedestrians and Cyclists

2.5 PROPOSED TRANSPORT INFRASTRUCTURE

Cycle Network Proposals

2.5.1 The subject site is located within the "Dublin South West Sector" as outlined within the Greater Dublin Area Cycle Network Plan (published by the NTA in 2013). The Sector *"extends outward from the twin corridors of Camden Street and Clanbrassil Street in the city centre, through the inner suburbs of Rathmines and Harold's Cross, to serve the areas of Terenure, Kimmage, Walkinstown, Tallaght, Firhouse and Rathfarnham."* In the vicinity of the subject site the Plan proposes the following GDA Cycle Network Plan route additions as indicated in **Figure 2.10** below:-

- Primary Route SO5: *"Dun Laoghaire to Palmerstown via Tallaght and Clondalkin";*
- Secondary Route SO6: *"Dun Laoghaire to Tallaght via Ballycullen and Old Bawn"; The Tallaght section of this route has progressed through Part 8 planning; Junction Improvements at the Scholarstown Roundabout have been recently completed as part of this cycle route.*
- Dodder Valley Greenway: *"This major greenway will extend for a distance of 18km from the City Centre at the Docklands south-westwards to the Dublin Mountains at Bohernabreena"; This greenway was approved through Part 8 in*

2107; Detailed Design is to be completed in early 2019.

- Secondary Route 10: *"Camden Street through Rathmines, Rathgar and Terenure to Rathfarnham, where it splits into several branches. South of Rathfarnham there are 3 branch routes and extend southward through the surrounding suburban area to connect with Orbital Route SO6 along Grange Road and Taylor's Lane"*; and
- Secondary Route 10A: *"turns south-westward along Butterfield Avenue (also on Route SO4) and runs parallel to the River Dodder to Firhouse and Oldcourt beside Old Bawn Bridge on Orbital Route SO6. Knocklyon Road and Ballycullen Road are local secondary routes that branch off southward at various points"*.

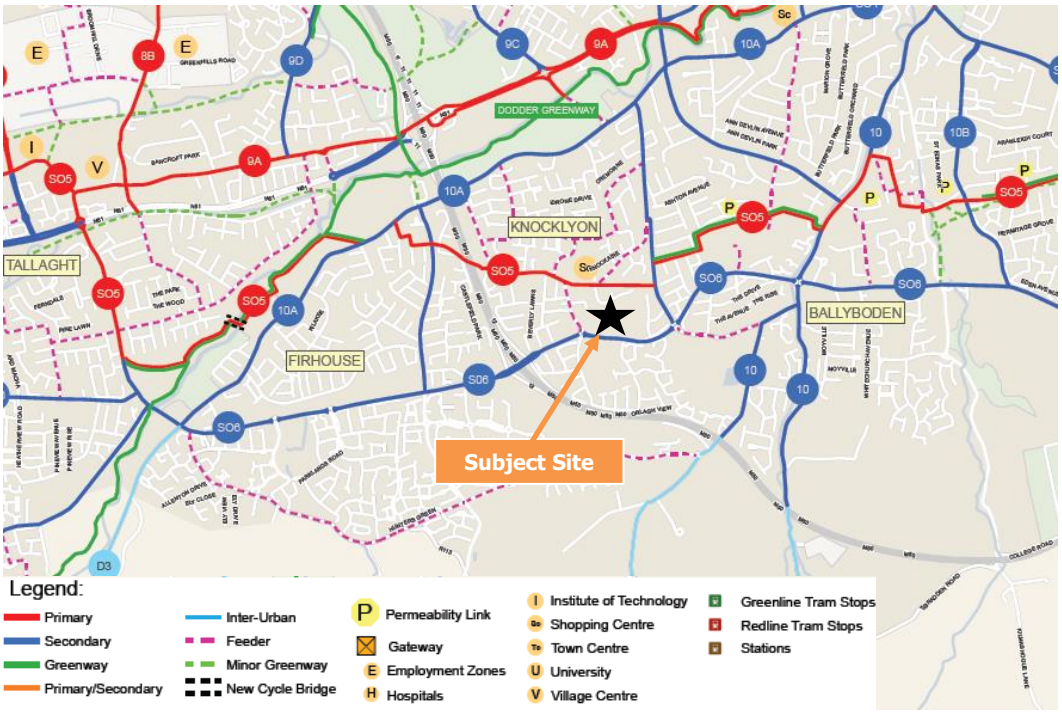


Figure 2.10: Proposed Cycle Routes (Source: Extract of Sheet N6 GDA Cycle Network Plan)

Bus Connects

2.5.2 The National Transport Authority (NTA) has recently published a consultation report entitled 'Dublin Area Bus Network Redesign Public Consultation Report'. The report introduces a number of significant changes to the bus services within Dublin including: -

- *"Services to be arranged along seven cross-city super-frequent spines*
- *Dramatic increase in the numbers of orbital services*
- *Increase in the number of all-day high-frequency services*
- *Move to a simplified two-fare system*

- *A new route numbering system".*

"Under the proposals, the level of bus service will increase by 27%. This includes services on 11 brand-new orbital routes that will operate on a 15-minute frequency or better, in the north, south and west of the network area."

2.5.3 **Figure 2.11** below indicates the proposed bus services in the vicinity of the subject site, as part of the BusConnects network redesign.

2.5.4 Under the BusConnects proposals, the following services and frequencies will be within convenient walking distance (within 500m) for residents of the subject site:-

- **A1** (10-15 minute frequency) – serves Knocklyon, Templeogue, Terenure, Rathgar, Rathmines, Dublin City Centre & Drumcondra
- **S8** (20 minute frequency) – serves Tallaght, Ballyboden, Ballinteer, Sandyford, White's Cross and Monkstown
- **16** (10 – 15 minute frequency) – serves Kiltipper, Ballycullen, Ballyboden, Rathfarnham, Terenure, Harold's Cross, Clanbrassil St, Dublin City Centre (Dame St & O'Connell Street)

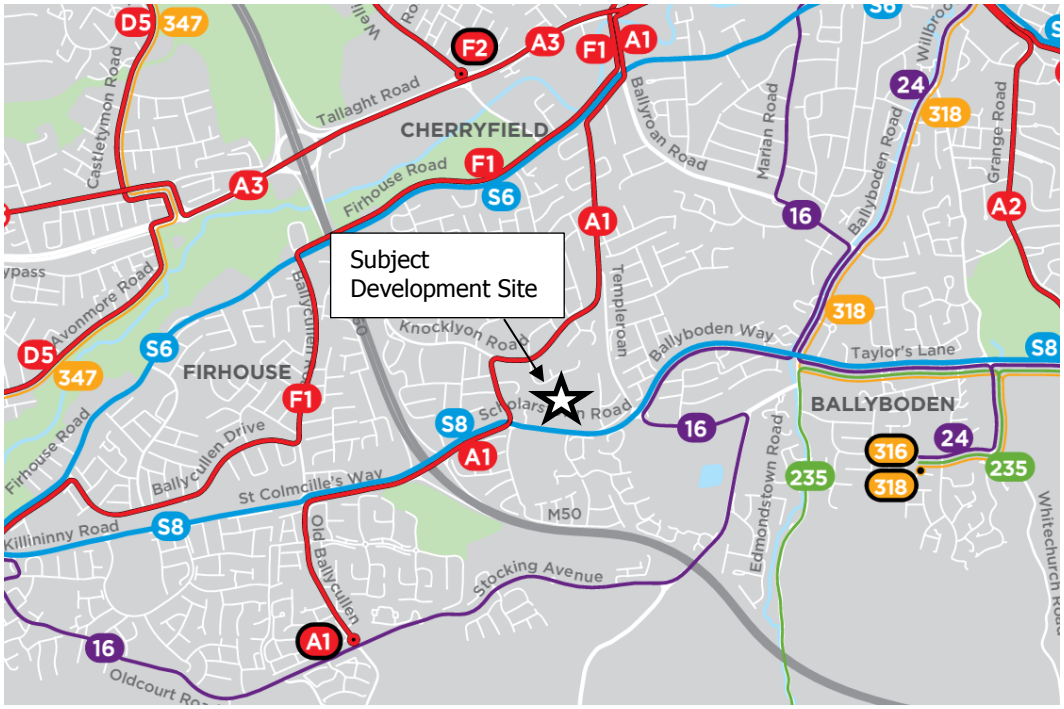


Figure 2.11: Proposed BusConnects Bus Services
(Extract of Map 2 - https://busconnects.ie/initiatives/dublin-area-bus-network-redesign-maps/)

2.5.5 As part of the BusConnects public consultation, maps are available to use to show how the proposed changes will affect each area. **Figure 2.12** below indicates the areas reachable within 30, 45 and 60 minutes.

2.5.6 The BusConnects maps also provides information regarding how many more jobs that are accessible from a particular location within the 30, 45- and 60-minute travel time. It can be seen from **Table 2.2** below, that residents of the subject site will have the benefit of being able to gain convenient access to an additional 144,800 jobs within a 60-minute travel time when compared to the existing bus services. From **Table 2.2** this equates to a percentage increase of 50% more accessible jobs.

Table 2.2: % Change in Number of Jobs Accessible before/after BusConnects Implementation

How Many More Jobs Can I Reach?			
Travel Time	Jobs in Existing	Jobs in Proposed	% Change
30 mins	38,400	49,300	28%
45 mins	102,400	173,100	69%
60 mins	289,100	433,900	50%

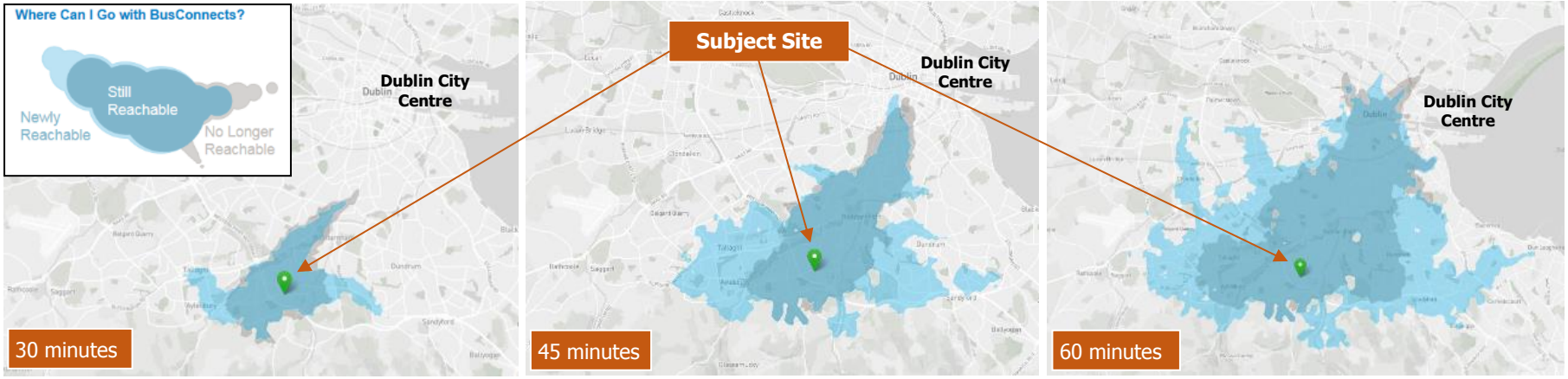


Figure 2.12: Areas Reachable Within 30, 45, and 60 minutes by Bus

2.5.7 The subject site is ideally located to benefit from the enhanced accessibility levels delivered by the BusConnects proposals.

Road Infrastructure Proposals

2.5.8 The South Dublin County Development Plan 2016 – 2022 has outlined a six year programme for road upgrades of which their delivery is subject to funding.

2.5.9 The Development Plan also outlines long-term road network proposals which will be phased '*according to need'* and '*may be brought forward for construction at an earlier date, subject to funding being available'*.

2.5.10 **Figure 2.13** below illustrates the location of some of these proposals in relation to the subject site. The map highlights that there are a number of walking and pedestrian proposals in close proximity to the development site.

2.5.11 It is also noted that the development proposes to provide a connection link for pedestrians and cyclists at the north eastern side of the site that will route through to Dargle Park.

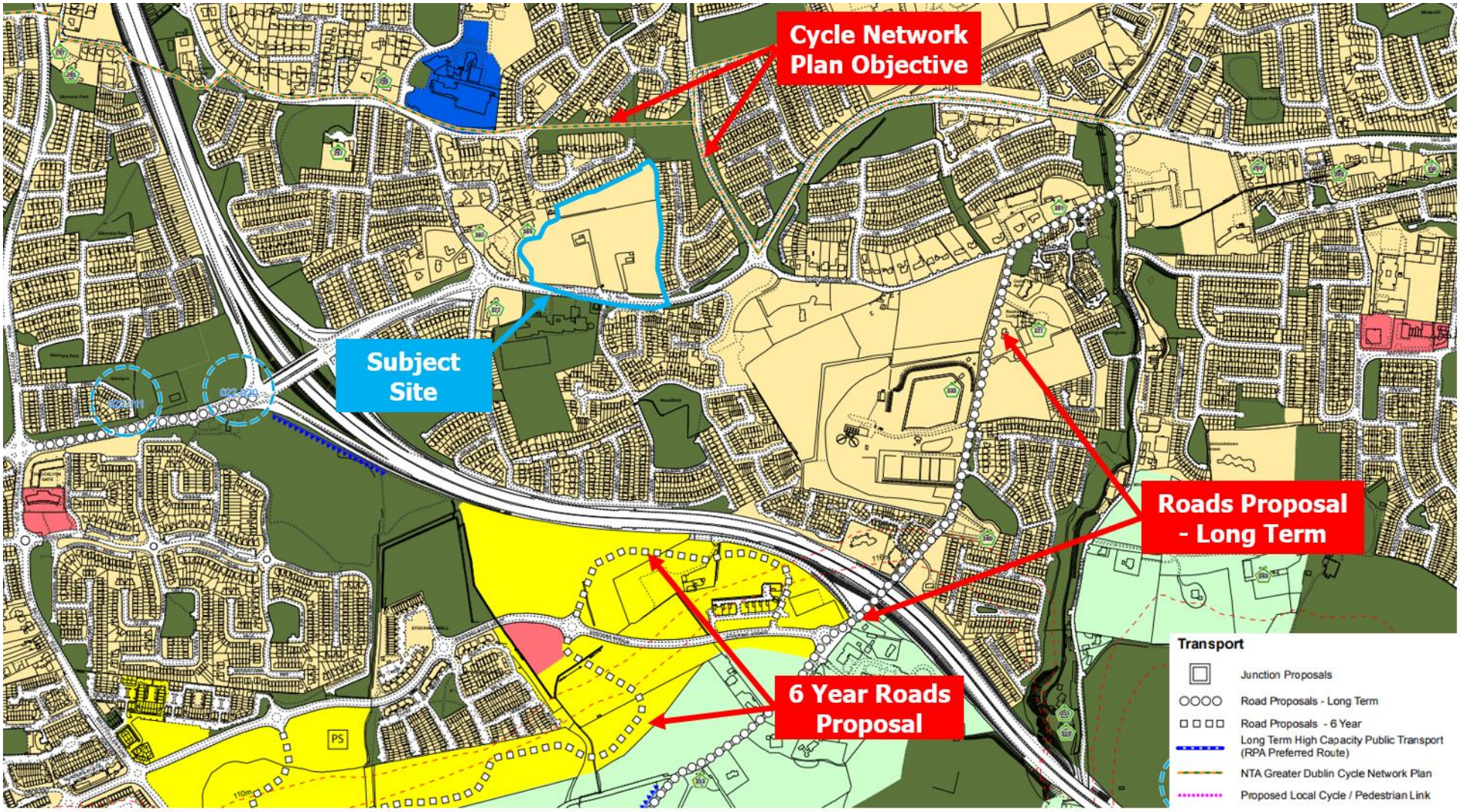
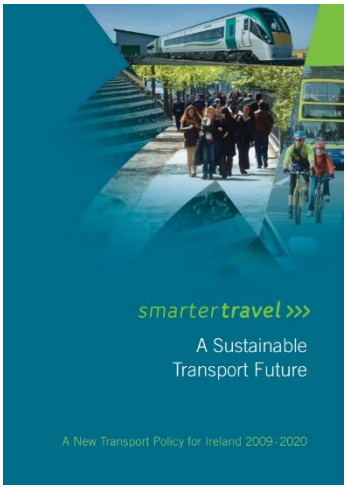


Figure 2.13: SDCC Infrastructure Objectives in vicinity of subject site (extract Map 10 SDCC Development Plan)

3.0 POLICY FRAMEWORK

3.1 SMARTER TRAVEL – A SUSTAINABLE TRANSPORT FUTURE



3.1.1 *Smarter Travel* was published in 2009 by the Department of Transport which represents the national policy documentation outlining a broad vision for the future and establishes objectives and targets for transport. The document examines past trends in population and economic growth and transport concluding that these trends are unsustainable into the future.

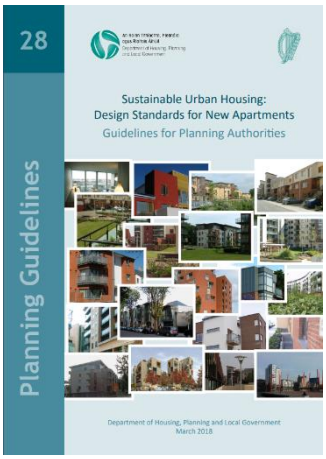
3.1.2 In order to address the unsustainable nature of current travel behaviour, *Smarter Travel* sets down a number of key goals and targets for 2020 - including:

- Total vehicle km travelled by car will not significantly increase;
- Work-related commuting by car will be reduced from 65% to 45%;
- 10% of all trips will be by cycling;
- The efficiency of the transport system will be significantly improved.

3.1.3 The document recognises that these are ambitious targets, and outlines a suite of 49 actions required to achieve these targets – summarised under the following four main headings:

- Actions aimed at reducing distances travelled by car and the use of fiscal measures to discourage use of the car;
- Actions aimed at ensuring that alternatives to the car are more widely available;
- Actions aimed at improving fuel efficiency of motorised travel; and
- Actions aimed at strengthening institutional arrangements to deliver the targets.

3.2 SUSTAINABLE URBAN HOUSING: DESIGN STANDARDS FOR NEW APARTMENTS – MARCH 2018



3.2.1 This guideline document was produced by the Department of Housing, Planning and Local Government and was updated with the latest version in March 2018. The purpose of this document is to set out standards for apartment development, mainly in response to circumstances that had arisen whereby some local authority standards were at odds with national guidance.

3.2.2 With the demand for housing increasing, this means that there is a need for an absolute minimum of 275,000 new homes in Ireland's cities by 2040. It is therefore critical to ensure that apartment living is an increasingly attractive and desirable housing option for a range of household types and tenures.

3.2.3 These Guidelines apply to all housing developments that include apartments that may be made available for sale, whether for owner occupation or for individual lease. They also apply to housing developments that include apartments that are built specifically for rental purposes, whether as 'build to rent' or as 'shared accommodation'.

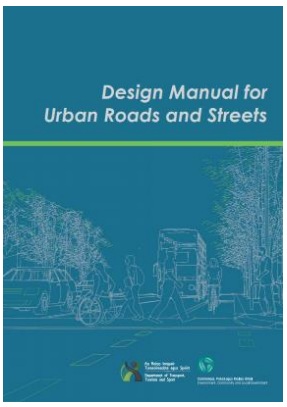
3.2.4 Cycling provides a flexible, efficient and attractive transport option for urban living and these guidelines require that this transport mode is fully integrated into the design and operation of all new apartment development schemes.

3.2.5 The quantum of car parking or the requirement for any such provision for apartment developments will vary, having regard to the types of location in cities and towns that may be suitable for apartment development, broadly based on proximity and accessibility criteria. There are three types of locations set out that will determine the level of parking provided. The **Central and/or Accessible Urban Locations** comprise of apartments in more central locations that are well served by public transport. These locations have a default policy for car parking provision to be minimised, substantially reduced or wholly eliminated in certain circumstances. The **Intermediate Urban Locations** comprise of apartments in suburban/urban locations served by public transport or close to town centres or employments areas. These locations require that planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum cap parking standard. The

Peripheral and/or Less Accessible Urban Locations comprise of apartments located in relatively peripheral or less accessible urban locations, one car parking space per unit, together with an element of visitor parking should generally be required.

3.2.6 For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure, where possible, the provision of an appropriate number of drop off, service, visitor parking spaces and parking for the mobility impaired. Provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles and cycle parking and secure storage.

3.3 DESIGN MANUAL FOR URBAN ROADS AND STREETS (DMURS) - 2013



3.3.1 DMURS provides guidance relating to the design of urban roads and streets. It presents a series of principles, approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to street networks and individual streets.

3.3.2 The manual places a significant emphasis on car dominance in Ireland and the implications this has had regarding the pedestrian and cycle environment. The document encourages more sustainable travel patterns and safer streets by proposing a hierarchy for user priorities. This hierarchy places pedestrians at the top, indicating that walking is the most sustainable form of transport and that by prioritising pedestrians first, the number of short car journeys can be reduced and public transport made more accessible.

3.3.3 Second in the hierarchy are cyclists with public transport third in the hierarchy and private motor vehicles at the bottom. By placing private vehicles at the bottom of the hierarchy, the document indicates that there should be a balance on street networks and cars should no longer take priority over the needs of other users.

3.3.4 The manual emphasises that narrow carriageways are one of the most effective design measures that calm traffic. Standard width of an arterial and link street is 3.25m, however, this may be reduced to 3m where lower design speeds are being applied. Desirable footpath widths are between 2m – 4m. The 2m width should be implemented to allow for low to moderate pedestrian activity. A 3m – 4m footpath should be implemented to allow for moderate to high pedestrian activity.

3.3.5 The focus of the manual is to create a place – based sustainable street network that balances the pedestrian and vehicle movements. The manual references the different types of street networks, including arterial streets, link streets, local streets, and highlights the importance of movement.

3.4 TRANSPORT STRATEGY FOR THE GREATER DUBLIN AREA 2016-2035

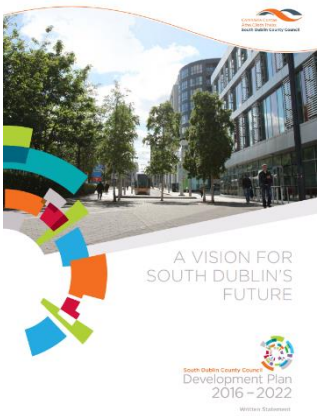
3.4.1 The Transport Strategy for the Greater Dublin Area 2016-2035 is a document compiled by the National Transport Authority which sets out the Strategic Transport Plan for the Greater Dublin Area for the period up to 2035. This sets out an integrated long-term strategy for the area and includes new public transport proposals such as DART and Luas expansion and also a new Metro route.

3.4.2 This document will influence transport planning across the region until 2035 and replaces 'A Platform for Change – An Integrated Transportation Strategy for the Greater Dublin Area 2000 to 2016'. It thereby underpins all transportation strategies, traffic management schemes and development plans prepared by South Dublin County Council during this timeframe.

3.4.3 The Strategy sets out a clear hierarchy of transport users, commencing with the sustainable modes of travel such as walking, cycling and public transport users at the very top of the hierarchy. The Strategy adopts the general principle that these users should have their safety and convenience needs considered first and that the hierarchy is applied where a large share of travel is (or could be) made by walking, cycling and public transport.

3.4.4 In addition to guiding the development of specific Strategy measures, the NTA encourages that the "transport user hierarchy should guide engineers, planners and urban designers on the order in which the needs of transport users should be considered in designing new developments or traffic schemes in the Greater Dublin Area."

3.5 SOUTH DUBLIN COUNTY DEVELOPMENT PLAN 2016-2022



3.5.1 Transport and mobility policy in South Dublin is guided by a comprehensive and coordinated set of national and regional policy documents. National and Regional policy recognises that current transport trends, in particular levels of car use, are unsustainable and that a transition towards more sustainable modes of transport, such as walking, cycling and public transport is required. There are concerns that if current trends continue, congestion will increase, transport emissions will grow, economic competitiveness will suffer and quality of life will decline.

3.5.2 The council will seek to rebalance transport and mobility within the County by promoting ease of movement by sustainable modes (including walking, cycling and public transport) and freeing up road space for economic growth and new development.

3.5.3 The Council recognises that new development, both residential and commercial, permitted in line with this Plan will lead to additional trips being generated. The Council will work with the relevant agencies to seek to ensure that as high a proportion as possible would be conducted by sustainable means.

3.5.4 The following objectives have seen set out within the plan in order to promote transport and mobility within the County:

TM1 Objective 1: To support and guide national agencies in delivering major improvements to the transport network.

TM1 Objective 2: To spatially arrange activities around, and improve access to, existing and planned public transport infrastructure and services.

TM1 Objective 3: To focus on improvements to the local road and street network that will better utilise existing road space and encourage a transition towards more sustainable modes of transport, while also ensuring sufficient road capacity exists for the residual proportion of the trips which will continue to be taken by private vehicle.

TM1 Objective 4: To prioritise new road construction that provides access to new communities and development areas and supports the economic development of the County.

TM1 Objective 5: To balance the needs of road users and the local community

with the need to support the development of a sustainable transportation network.

TM1 Objective 6: To support the delivery of sufficient public transport and road capacity to facilitate sustainable new development in the County.

4.0 CHARACTERISTICS OF PROPOSALS

4.1 PROPOSED DEVELOPMENT

Development Schedule

4.1.1 Ardstone Homes Limited intend to apply to An Bord Pleanála for permission for a strategic housing development at a 5.35 hectare site located north of Scholarstown Road incorporating dwellings known as 'Beechpark' and 'Maryfield', Scholarstown Road, Dublin 16, D16 X3X8 and D16 N6V6. Works are also proposed to Scholarstown Road and Woodfield junction including new traffic signals, the elimination of the left-turn slip-lane into Woodfield off Scholarstown Road, upgraded public lighting and upgraded cycle and pedestrian facilities on an area measuring 0.7 hectares, providing a total application site area of 6.05 hectares.

4.1.2 The development will principally consist of: the demolition of all existing structures on site which include a single story dwelling known as 'Beechpark' (172 sq m), a 2 No. storey dwelling known as 'Maryfield' (182 sq m), with associated garage/shed (33.5 sq m) and associated outbuildings (47.1 sq m); and the construction of 590 No. residential units (480 No. Build-to-Rent apartment units and 110 No. Build-to Sell duplex units and apartments), ancillary residential support facilities and commercial floorspace. The total gross floor space of the development is 51,252 sq m over a partial basement of 5,888 sq m (which principally provides car and bicycle parking, plant and bin stores).

4.1.3 The 480 No. 'Build-to-Rent' units will be provided in 8 No. blocks as follows: 7 No. blocks ranging in height from part 5 to part 6 No. storeys (Blocks B1 – B5, C1 and C3) and 1 No. block ranging in height from part 4 to part 6 No. storeys (Block C2) and will comprise 246 No. one bed units and 234 No. two bed units. The 110 No. 'Build-to-Sell' units will be provided in 9 No. duplex blocks which will be 3 No. storeys in height (Blocks A1 – A9) and will comprise 55 No. two bed units and 55 No. three bed units.

4.1.4 The development will also consist of the provision of a part 1 to part 2 No. storey ancillary amenity block (Block D1) (414 sq m) within the central open space which comprises a gymnasium, lobby, kitchenette and lounge at ground floor level and lounge at first floor level in addition to a roof terrace (facing north, south and west)

to serve the Build-to-Rent residents; a 2 No. storey retail/café/restaurant building (Block D2) (657 sq m) comprising 2 No. retail units at ground floor level (328.5 sq m) and a café/restaurant unit at first floor level (328.5 sq m); a creche (438 sq m) within Block C2 at ground floor level; and a management suite (261 sq m) and café/restaurant (288 sq m) within Block C3 at ground floor level.

4.1.5 The development provides a vehicular access off Scholarstown Road between Blocks C1 and C3 towards the south-east corner of the site; a separate pedestrian access and emergency vehicular access off Scholarstown Road between Blocks A9 and C2 towards the south-west corner of the site; the facilitation of a pedestrian connection from the north-east corner of the subject site to the public open space in Dargle Park; 459 No. car parking spaces (178 No. at basement level and 281 No. at surface level); bicycle parking; bin storage; boundary treatments; private balconies and terraces; hard and soft landscaping; plant; services; sedum roofs; PV panels; substations; lighting; and all other associated site works above and below ground.

4.1.6 Further details of the development proposals, including the site layout drawing, are illustrated in the architects' scheme drawings as submitted with this planning application.

4.1.7 It is noted that the BTR residential facility units, including the Gymnasium, Lounges, Kitchenette and roof terrace will be used solely by residents of the Build to Rent units and will therefore not generate any external trips.

Cycle Parking Facilities

South Dublin County Development Plan 2016-2022

4.1.8 The South Dublin County Council Development Plan outlines that the provision for cycle parking for both residential and retail/commercial units for both long term and short term stay. These are outlined in **Table 4.1**.

Table 4.1: SDCC Cycle Parking Standards

SDCC Cycle Parking Standards			
Category	**Land Use**	**Long Term**	**Short Term**
Accommodation	Residential Apartment	1 per 5 apartments	1 per 10 apartments
Education	Creche	1 per 5 staff	1 per 10 children
Retail/Commercial	Café/Restaurant	1 per 5 staff	1 per 10 seats
Retail/Commercial	Retail Convenience	1 per 5 staff	1 per 50 sqm GFA

4.1.9 There are estimated to be 10 no. staff employed for the Creche and a capacity for

101 children within the creche with a total of 25 no. staff envisaged to be employed within the retail/ café/commercial units. **Table 4.2** below outlines the requirement for the development for cycle parking spaces based on the SDCC cycle parking standards.

Table 4.2: SDCC Cycle Parking Standard Provision

SDCC Cycle Parking Standard Provision			
Category	**Land Use**	**Long Term**	**Short Term**
Accommodation	Residential Apartment/Duplex	118	59
Education	Creche	2	10
Retail	Retail Convenience	2	7
Retail	Café	3	10
Total		**125**	**86**

4.1.10 It is noted that the residential apartments include for both the apartment units and the duplex units for this assessment. It can be seen that there is a requirement to provide a total of 125 long term cycle parking spaces and 86 short term spaces for visitors. This equates to a total provision requirement of 211 cycle parking spaces.

Department of Housing, Planning and Local Government

4.1.11 The Department of Housing, Planning and Local Government 'Sustainable Urban Housing: Design Standards for New Apartments' (SUHDS guidance 2018) states the following requirements for cycle parking: -

- 1 cycle storage space per bedroom
- 1 cycle storage space for studio units;
- 1 cycle space per two residential units for visitor parking

4.1.12 In total, there are 480 residential apartment units and 110 residential duplex units proposed. Of these, there is proposed to be 246 No. 1-bedroom apartments, 289 No. 2-bedroom apartments and 55 No. 3-bedroom apartments. Therefore, in accordance with these guidelines above, there is a requirement to provide a total of 989 residential cycle spaces as well as 295 visitor cycle parking spaces. This equates to a total of 1,284 cycle parking spaces.

4.1.13 It is considered that a provision of cycle parking that is between the SDCC guidelines of 211 spaces and the new Sustainable Urban Housing guidelines of 1,284 spaces is acceptable. Therefore, the development proposes to provide a total of **800 cycle parking spaces** with 320 of these proposed as long term stay in the basement and 480 proposed as both long term and short term stay on the surface.

Car Parking Provision

4.1.14 The SDCC Development Plan outlines the car parking standards required for non-residential units; ie, retail/commercial and creche etc. **Table 4.3** outlines the maximum car parking standards for the non-residential element of the proposed development.

4.1.15 It is noted that the proposed development is considered to be located within Zone 2, which is ideally located within 400m of good public transport.

Table 4.3: SDCC Maximum Car Parking Standards (Non-Residential)

SDCC Maximum Car Parking Standards (Non - Residential)			
Category	**Land Use**	**Zone 2**	**Provision**
Education	Creche	0.5 per classroom	3
Retail and Retail Services	Retail Convenience	1 per 25 sqm	13
Retail and Retail Services	Café/Restaurant	1 per 20 sqm	31
Total			47

4.1.16 **Table 4.3** outlines that a maximum of 47 car parking spaces could be provided for the non-residential elements of the proposed development. A total of 47 car parking spaces have been proposed for the non-residential units.

4.1.17 The SDCC Development Plan outlines the car parking standards required for new residential units. **Table 4.4** below outlines the required parking standard for both Apartment units and duplex units. It was determined that 0.75 spaces was acceptable for 1 bed units, 1 space per unit was acceptable for 2 bed units, with 1.25 spaces per unit acceptable for three bed units.

Table 4.4: SDCC Car Parking Standards for Residential Developments

Table 11.24: **Maximum Parking Rates (Residential Development)**

DWELLING TYPE	NO. OF BEDROOMS	ZONE 1	ZONE 2
Apartment	1 Bed	1 space	0.75 space
Duplex	2 bed	1.25 space	1 space
	3 bed+	1.5 spaces	1.25 space

4.1.18 Car parking provision for the Build-to-Sell duplex units has been assigned with reference to the SDCC Development Plan standards noted in **Table 4.4**. With a total of 110 duplex units, 55 of which are 2-bed and 55 of which are 3-bed, the total maximum car parking provision equates to 124 car parking spaces.

4.1.19 The duplex units have been allocated a total car parking provision of 124 car parking spaces, therefore, meeting the provision of the standards.

4.1.20 Car parking for the Build-to-Rent development is proposed to make reference to the recent guidance from the Department of Housing, Planning and Local

Government '*Sustainable Urban Housing: Design Standards for New Apartments – March 2018*'. The development is located within an 'Intermediate Urban Location' as classified within these guidelines. The document highlights that for new developments in these locations, '**the Planning Authority must consider a reduced overall car parking standard**.'

4.1.21 A proposed Parking Strategy for the subject development site at Scholarstown Road has been developed as a separate report and is based on the objectives and policies for justification of reduced car parking for the Build-to-Rent apartment units.

4.1.22 The Parking Strategy report outlines recent case studies within the UK and Ireland regarding Build-to-Rent apartments. A number of surveys undertaken for these developments indicates that the main age demographic interested in the BTR schemes are the 25- 35 year age bracket. The surveys also highlighted that car ownership and car usage for these types of development are generally lower than for Build-to-Sell units. CSO data was reviewed for the Parking Strategy report in order to determine whether the demand for BTR apartments within the urban Dublin location was justified.

4.1.23 It is proposed to provide a reduced number of car parking spaces for the Build-to-Rent apartments at a ratio of 0.60 spaces per unit. This equates to a total provision for the 480 apartment units of 288 spaces. These proposals are in line with relevant case studies undertaken as discussed above. It is also noted that recent planning applications under the Strategic Housing Development (SHD) proposals, have included for reduced car parking ratios which have been accepted by SDCC and ABP.

4.1.24 The SDCC Development Plan outlines that 5% of total car parking provision is allocated for Mobility Impaired spaces within the development. The development proposes a total of 25 mobility impaired spaces; therefore, this is in accordance with this requirement.

4.1.25 The SDCC Development Plan outlines that 10% of total car parking provision is allocated for Electric Vehicle spaces within the development. The development proposes a total of 50 electric vehicle spaces that will be operational on opening of the development, therefore, this is in accordance with this requirement.

4.1.26 A total of 3 no. spaces have been allocated as 'Club Car' parking spaces.

4.1.27 A breakdown of allocation for car parking is shown in **Table 4.5** below. This outlines that the majority of parking provision has been designed in accordance with the SDCC Development standards. The Build-to-Rent apartment parking

provision has been designed to the SUHDS standards.

Table 4.5: Parking Provision based on Relevant Standards

Unit Type	Parking Spaces	Basement	Surface
Build to Rent	288	178 *(includes 50 e-car)*	110 *(includes 3 Car Share and 15 Disabled Spaces)*
Build to Sell	124	-	124 *(Includes 6 Disabled Spaces)*
Creche	3	-	3 *(Includes 1 Disabled Spaces)*
Retail	13	-	13 *(Includes 1 Disabled Spaces)*
Café/Restaurant	31		31 *(Includes 2 Disabled Spaces)*
Total	**459**	**178**	**281**

4.1.28 It is an objective for this development to reduce the need for commuters to travel by car and instead to avail of more sustainable modes of travel in line with current and future travel requirements as set out in recent policy documents within Ireland. It is noted that the concept for car parking reduction in apartments is relatively new in Ireland and, therefore, proposals to implement a more sustainable approach for car parking may take time.

4.1.29 Further details on the parking management regime proposed at the development site are provided in the *Parking Strategy* report prepared as part of this planning submission.

4.2 INITIATIVES FOR SUSTAINABLE TRAVEL

4.2.1 Policy documents in Ireland, as referenced in Section 3 of this report, highlight the importance of travel by more sustainable means (Walking, Cycling, Public Transport) and that reduction in car use is key to the improvement of travel and mobility within the country. Promoting sustainable travel, therefore, is a vital element for this development.

4.2.2 It is acknowledged, however, that homeowners may require a vehicle of some sort for purposes other than commuting on an everyday basis and simply reducing car parking to 0.60 spaces per unit would not be realistic without implementing alternative measures to accommodate residents and visitors alike. Therefore, the following sustainable alternative arrangements are proposed as car parking and car ownership has been reduced within the development for the Build-to-Rent residents:

- Car Club (Go Car);
- Mobility Management Plan;
- Increased Cycle Parking (Including Initiatives such a Bleeper Bike);
- Parking Management; and

- Sustainable Travel Initiatives

Car Club

4.2.3 A Car Club provides its members with quick and easy access to a vehicle for short term hire. The GoCar is a well-established and successful car club operator in Dublin. This service has been recommended in recent developments as a means for car sharing where car parking is reduced. GoCar would provide a number of permanent vehicles within close proximity to the development or within the development itself where residents would have availability to use.

4.2.4 A recent survey undertaken by GoCar indicated that the main uses of the service was for day trips, family trips and big shopping trips. The survey also highlighted that the average use of a car was for 1 hour a day. GoCar also offer more favourable rates for long distance travel.

4.2.5 It is proposed to provide 3. No. car share spaces (e.g. GoCar or similar) within the development for residents to utilise.

Mobility Management Plan

4.2.6 An outline Mobility Management Plan has been prepared, within a separate document, and should be read in conjunction with this document. The MMP will be developed further at operation stage by the management company who will have a more active role than a management company from a traditional apartment development.

Increased Cycle Parking

4.2.7 Increasing cycle parking is an alternative measure when reducing car parking spaces. A total of 800 cycle spaces are proposed for this development. With a total of 590 residential units being proposed as well as a number of retail and commercial units, it is noted that the provision of cycle parking proposed within the development is more than adequate to accommodate residents and visitors to the site.

Parking Management Strategy

4.2.8 A parking management strategy has been undertaken in order to manage the daily operations within the car park. A *Parking Strategy* Report has been prepared and issued as part of this planning submission. The parking strategy outlines that car parking for the Build-to-Rent apartments will be actively managed by a management company with car parking spaces rented to residents rather than previous apartment assumptions of 1 - 2 car parking spaces automatically allocated per apartment.

Sustainable Travel Initiatives

4.2.9 Section 2 of this report outlines the initiatives for sustainable travel that are

proposed within close proximity of the development site such as BusConnects routes, the National Cycle Network routes as well as overall improvements to the walking and cycling network. These will provide additional enhancements for sustainable travel throughout the area.

4.3 PEDESTRIAN CONNECTIVITY

4.3.1 The Design Manual for Urban Roads and Streets (DMURS) identifies the importance of connectivity for pedestrians within residential areas. The document states '*The creation of vibrant and active places requires pedestrian activity. This in turn requires walkable street networks that can be easily navigated and are well connected*.'

4.3.2 DMURS references that 'Sustainable neighbourhoods are areas where an efficient use of land, high quality urban design and effective integration in the provision of physical and social infrastructure such as public transport, schools, amenities and other facilities combine to create places people want to live in'.

4.3.3 In terms of street networks, DMURS specifies the use of 'Homezones' within residential areas that create a sense of place for the pedestrian.

4.3.4 The document highlights that residential locations that have been constructed in accordance with the principles of segregation, and that increase walking distances for residents, have a significant influence on mode choice as a lack of connectivity is one of the key factors that discourage people from walking.

4.3.5 The proposed development site has excellent connectivity for pedestrians through the site. There are footpaths provided on both sides of the streets within the site with a number of connecting paths that route through the proposed Central Open Space area. This enables pedestrians to route easily through the site with no barriers or segregated areas to hinder movement.

4.3.6 There are also a number of accesses north and south of the development for pedestrians and cyclists to route through.

4.3.7 A pedestrian/cycle link is proposed through the north-east of the site to the public open space in Dargle Park.

4.4 VEHICULAR/PEDESTRIAN/CYCLE ACCESS

4.4.1 Vehicular access to/from the subject development will be provided via the existing Scholarstown/Woodfield priority junction. As part of the development proposals, a fourth arm (subject site access) will be incorporated, and the junction will be upgraded from its existing 3 arm priority controlled arrangement to a 4 arm signal controlled junction.

4.4.2 The site accesses for vehicles, pedestrians and cyclists are illustrated in the Site Plan drawing (Ref no. P-S-R-002) below in **Figure 4.1**.

Figure 4.1: Proposed Site Accesses for Vehicles, Pedestrians & Cyclists

4.4.3 **Figure 4.1** shows that the main vehicular access, as outlined above, will form a signalised junction with Scholarstown Road and Woodfield residential estate. This access also allows pedestrians and cyclists to route through. An emergency access is proposed to the western side of the development. This is proposed for

emergency vehicles only and will be controlled with bollards to prohibit general vehicles using the access. Pedestrians and cyclists will be also be able to use this emergency access on a regular basis.

4.4.4 To the north east of the site it is also proposed to provide a pedestrian and cycle link route. This route will connect to an existing pedestrian and cycle path that leads out to the Templeroan Road and will provide a key link for residents to and from the north eastern side of the development.

Service Vehicles

4.4.5 All service vehicles will access the site from the main external Scholarstown Road. A separate Operational Phase Waste Management Plan has been produced and forms part of the planning submission. Further information is provided in this document.

4.5 PUBLIC TRANSPORT

4.5.1 The subject site is highly accessible by public transport as outlined in Section 2 above with two frequent Dublin Bus Services within 400m of the proposed development (15 , 15B) as well as a Go Ahead bus service (175) that routes directly adjacent to the site.

4.5.2 Bus stops are located within walking distance of the development site with the 175 eastbound stop situated 50m west of the site and the westbound stop situated 200m west of the site. The route 15 bus stops are situated 300m west of the proposed site. The route 15B bus stops are located 450m east of the proposed site. Therefore, all stops are located within easy walking distance of the site.

5.0 TRIP GENERATION AND DISTRIBUTION

5.1 TRAFFIC SURVEYS

5.1.1 In order to establish the existing local road networks traffic characteristics and subsequently enable the identification of the potential impact of the proposed residential development, traffic surveys were commissioned in September 2019 and were conducted on the 12/09/19. These surveys were a follow on from traffic surveys that were undertaken in May 2018 as part of this scheme development. It was deemed necessary to carry out new surveys due to the recent redevelopment of the Scholarstown Road/Orlagh Grove Roundabout.

5.1.2 The aforementioned traffic surveys (2018) (weekday classified junction turning counts) were conducted by IDASO Innovative Data Solutions over two three hour time periods from 07:00 – 10:00 AM and from 16:00 – 19:00 PM in May during school operating times. The following three junctions were included within this survey (**Figure 5.1**) in 2018:

- **A** – Scholarstown Road/Orlagh Grove Roundabout;
- **B** – Scholarstown Road/Woodfield junction (proposed site access); and
- **C** – Scholarstown Road/Templeroan Road/Ballyboden Way Roundabout.

Figure 5.1: Traffic Survey Locations (2018 Survey)

5.1.3 For the 2019 traffic survey, it was deemed necessary to conduct traffic counts at the M50 Junction 12 in order to determine the traffic impact of the development on this junction.

5.1.4 The 2019 surveys were conducted in September 2019 and were carried out by IDASO over a 12 hour time period from 07:00 – 19:00. A total of four junctions were surveyed, these included the following (**Figure 5.2**):

- **1** – Scholarstown Road / M50 (Jnc 12) NB On Ramp;
- **2** – Scholarstown Road / M50 (Jnc 12) SB On Ramp;
- **3** – Scholarstown Road / Orlagh Grove Roundabout; and
- **4** – Scholarstown Road / Templeroan Road Roundabout.

5.1.5 It is noted that the residential traffic into and out of the Woodfield arm of the Scholarstown Road/Woodfield Estate junction has not been resurveyed for the 2019 survey. It was considered that this arm is a residential cul-de-sac and traffic flows to and from this arm would remain relatively unchanged from the 2018 survey. Traffic flows along the Scholarstown Road arms for this junction have been updated to reflect the 2019 traffic flows.

Figure 5.2: Traffic Survey Locations (2019 Survey)

5.1.6 In order to analyse and assess the predicted traffic generation from the proposed residential & commercial development upon the local road network, an area wide traffic model incorporating these local junctions was created by DBFL. **Figure 5.3** illustrates the AM peak hour and PM peak hour base traffic flows for the relevant junctions for the **2018 survey**. These are also displayed in more detail in **Appendix B** of this report.

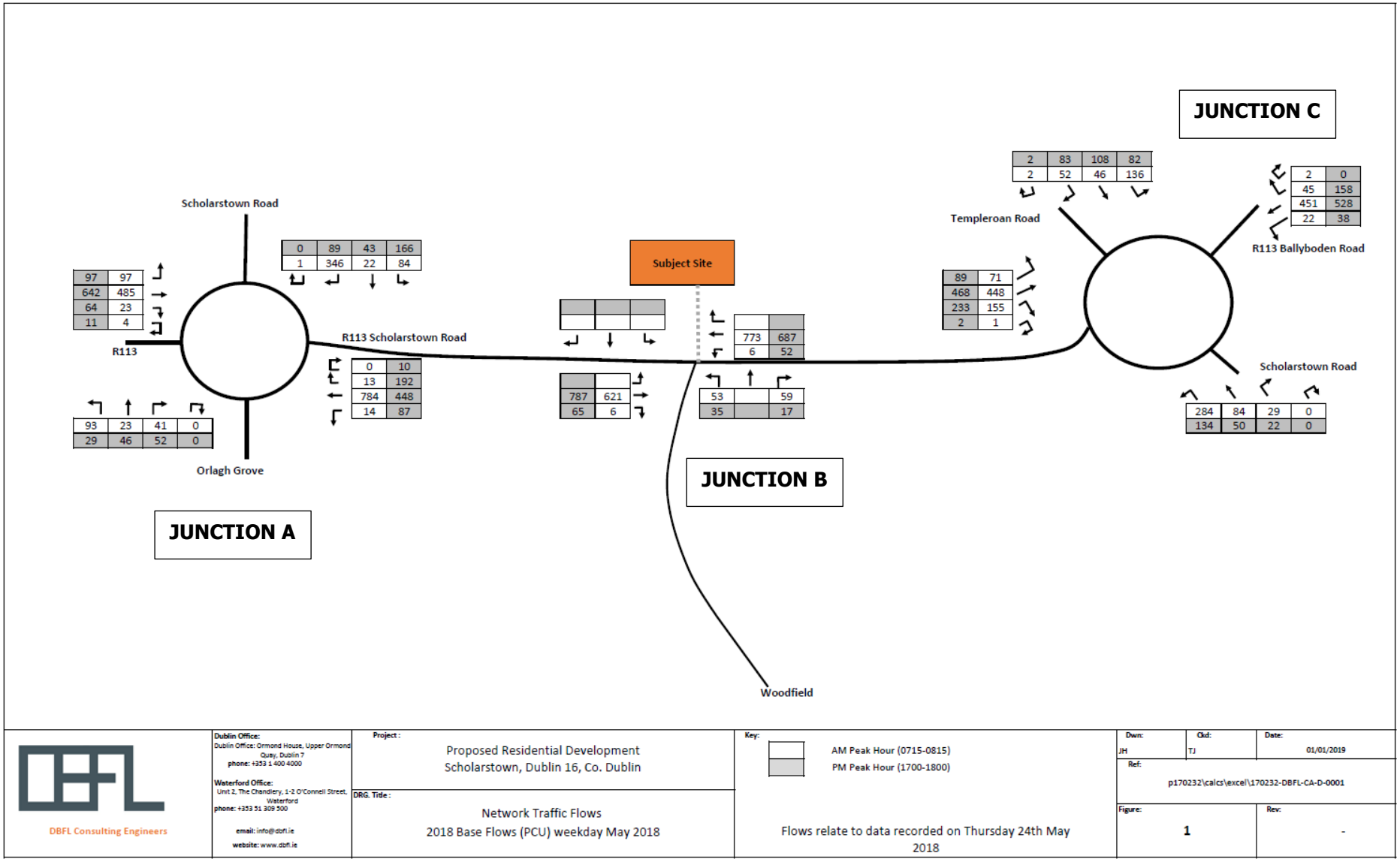


Figure 5.4: Network Traffic Flows for the 2018 AM and PM Peak

5.1.7 **Figure 5.3** shows that both the AM and PM peak hour have high traffic flows along the Scholarstown Road travelling through Junction B (Scholarstown Road/Woodfield Residential Estate). For the AM peak, there are 621 pcu's travelling eastbound and 773 pcu's travelling westbound along Scholarstown Road. For the PM peak, there are 787 pcu's travelling eastbound and 687 pcu's travelling westbound along Scholarstown Road. The Woodfield arm of Junction B shows low traffic volumes for both the AM peak hour and PM peak hour.

5.1.8 Junction A (Scholarstown Road/Orlagh Grove Roundabout) has a high traffic flow through the junction during the morning peak hour, in particular on the Scholarstown Road (E) arm. The majority of traffic on the Scholarstown Road (E) arm (784 pcu's) are travelling straight through the junction. There is a high right turn movement from the Scholarstown Road (N) arm to the R113 in the AM peak with 346 pcu's.

5.1.9 During the PM peak hour, the highest traffic flow is on the R113 with 814 pcu's, 642 of these travelling straight through the roundabout.

5.1.10 The Orlagh Grove arm has a low traffic flow during both peak hours.

5.1.11 Junction C (Scholarstown Road /Templeroan Road Roundabout) has a high traffic volume at the Scholarstown Road (W) arm of the roundabout in the AM peak hour with a total of 675 pcu's. All other arms are displaying relatively low traffic flows in the AM peak hour at the roundabout.

5.1.12 The PM peak hour, the Ballyboden arm is displaying a high traffic flow with a total of 724 pcu's. The Scholarstown Road (W) arm is also displaying high traffic flow of 792 pcu's.

5.1.13 **Figure 5.4** illustrates the AM and PM peak hour for the 2019 traffic survey junctions. These are also displayed in more detail in **Appendix B**.

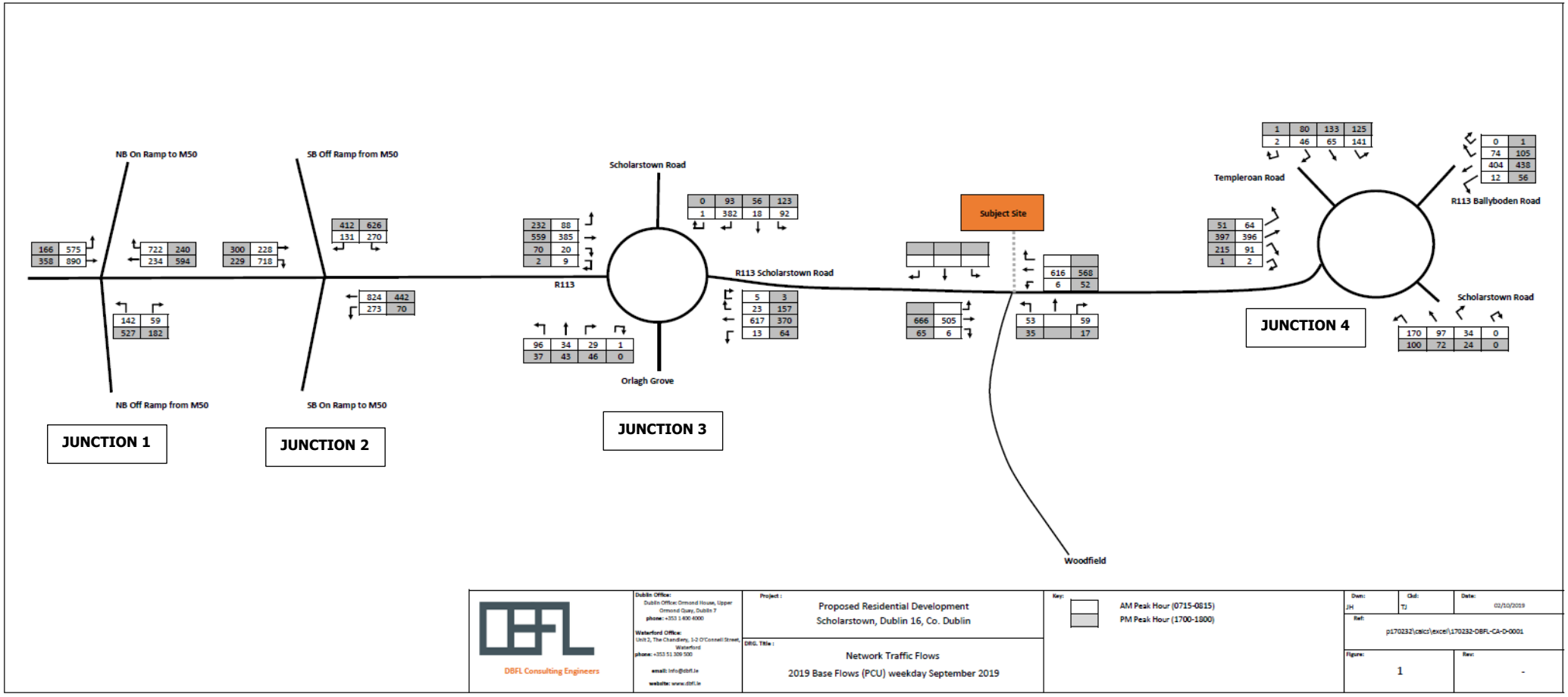


Figure 5.5: Network Traffic Flows for the 2019 AM and PM Peak

5.1.14 Results for the 2019 traffic surveys show that traffic volumes have generally decreased from the surveys conducted in 2018, in particular, at the Scholarstown Road/Orlagh Grove roundabout. The 2018 surveys showed a total traffic flow through the roundabout of 2,025 PCUs in the AM peak and 1,966 PCUs in the PM peak hour. This is in comparison to the 2019 traffic surveys that showed a total traffic flow of 1,797 PCUs in the AM peak and 1,850 PUCs in the PM peak hour.

5.1.15 For the 2019 surveys, the results show a high traffic volume along Scholarstown Road, in the vicinity of the development site, during both peak hours and in both directions with a two way flow of 1,121 PCUs in the AM peak hour and 1,234 PCUs in the PM peak hour. These flows have reduced from the 2018 survey flows with a two way flow of 1,394 PCUs recorded for the 2018 AM peak hour and 1,474 PCUs recorded for the 2018 PM peak hour.

5.1.16 The interchange junctions that were surveyed at Junction 12 of the M50 also display a high level of traffic travelling through these, in particular, during the AM peak hour. Junction 1 (Scholarstown Road/NB On/Off ramp for M50) showed a total traffic flow in the AM and PM peak hour of 2,622 PCUs and 2,067 PCUs respectively.

5.1.17 For Junction 2 (Scholarstown Road/SB On/Off Ramp from M50), the PM peak hour displays the highest traffic flow on the off ramp with a total traffic volume of 1,038 PCUs, 412 of these are turning right and 626 are taking the left slip lane towards the Scholarstown Road/Orlagh Grove Roundabout. It was noted from on site footage during the evening peak hour, that the right turning lane queues back along the off ramp of the M50 due to this lane having a full signal control. The left slip lane is free flowing with little queuing on the off ramp.

5.1.18 For Junction 1 (Scholarstown Road/ NB On/Off Ramp M50), the AM peak hour displays a high number of vehicles entering on to the On Ramp to the M50 motorway with a total of 1,297 PCUs.

5.2 TRAFFIC GROWTH

5.2.1 An Opening Year of 2021 has been assumed for this assessment. In accordance with TII (NRA) Guidance, Future Design years (+5 and +15 years) of 2026 and 2036 have also been adopted.

5.2.2 The TII Project Appraisal Guidelines (PAG) have been utilised to determine the traffic growth forecast rates. The traffic growth forecast rates within the PAG ensures local and regional variations and demographic patterns are accounted for.

5.2.3 Table 5.3.2 within the PAG provides Annual National Traffic Growth Factors for the different regions within Ireland. The subject site lies within 'Region 1 Dublin' with the growth factors as outlined within **Table 5.1** below.

Region	Name	Low Growth				Medium Growth				High Growth			
		2013-2030		2030-2050		2013-2030		2030-2050		2013-2030		2030-2050	
		LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1	Dublin	1.0089	1.0221	1.0004	1.0135	1.0134	1.0237	1.0038	1.0176	1.0149	1.0242	1.0054	1.0195

Table 5.1: National Traffic Growth Forecasts: Annual Growth Factors
(Extract from Table 5.3.2 PAG)

5.2.4 It was determined that a Low Growth factor was appropriate for this assessment. This presents a more realistic assessment within this established urban environment which is located within the M50 Motorway boundary and therefore is constricted in terms of urban sprawl and also reflects the decrease in traffic volumes noted between the 2018 and 2019 surveys.

5.2.5 Applying the annual factors (low growth) as outlined in **Table 5.1** above for the adopted Opening Year of 2021 and Future Horizon Years of 2026 (+5 years) and 2036 (+15 years), the following growth rates have been adopted to establish corresponding 2021, 2026 and 2036 baseline network flows: -

- 2018 to 2021 – 1.0269 (or 2.69%);
- 2018 to 2026 – 1.0734 (or 7.34%); and
- 2018 to 2036 – 1.1054 (or 10.54%).

5.2.6 Traffic flow diagrams for the 2021, 2026 and 2036 flows are illustrated in **Appendix B** of this report.

5.3 TRIP GENERATION

Subject Site – Non- Residential

5.3.1 To estimate the potential level of vehicle trips that could be generated by the proposed retail and commercial elements of the development, reference has been made to the TRICS database. TRICS provides trip rate information for a variety of different land uses and development types, which can be applied to the subject development.

Subject Site - Residential

5.3.2 To estimate the potential level of vehicle trips that could be generated by the proposed residential development, both the TRICS database as well as a Donor Site has been reviewed for trip rate information. The donor site is referenced as 'The Grange'. This is a residential development located in Stillorgan comprising of a total of 452 residential units that were constructed in 2014.

5.3.3 As part of a separate planning application on the same site as 'The Grange', which comprised of the addition of a number of new apartment units on this development site, a traffic count survey was conducted at the site access junction of the development in order to determine the existing traffic movements of the residents of the 452 residential units built prior to this. This enabled trip rates to be determined from this survey for the AM and PM peak hours.

5.3.4 The TRICS database was referenced for vehicle trip rates for residential development sites. The trip rates produced for both the Donor Site and the TRICS database are outlined in **Table 5.2**. A Committed Development, within proximity of the proposed development and discussed in **Section 5.4** below, was also referenced with regard to trip rates used for that development site (from their TTA Report) in order to make a comparison.

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Donor Site	0.051	0.21	0.17	0.106
TRICS Database	0.045	0.218	0.185	0.042
Committed Development (TRICS)	0.04	0.211	0.181	0.051

Table 5.2: Trip Rate Comparison

5.3.5 The donor site of 'The Grange' was deemed to be reflective of the site conditions for this proposed development due to its good location to Dublin Bus transport and

lack of other public transport facilities such as Luas and DART services. The trip rates used for the Donor Site were also reflective of the trip rates used for both the TRICS database as well as for the Committed Development.

5.3.6 Based on both TRICS generated vehicle trip rates for the retail/commercial elements of the site as well as the Donor Site trip rates for the residential element of the site, **Table 5.3** outlines the potential peak hour vehicle trips that have been calculated based on the proposed development schedule.

Land Use	Period	Vehicle Trip Rates (per unit)/100 sqm GFA		Traffic Generation	
		Arr	Dep	Arr	Dep
(590 no.) Apartments/Duplexes	AM	0.051	0.21	30	124
	PM	0.17	0.106	100	63
Creche (438 sqm) *discounted by 40% to account for internal and pass-by traffic generation	AM	1.593	1.056	3	2
	PM	2.419	2.589	5	6
Retail/Café (945 sqm) *discounted by 50% to account for internal and pass-by traffic generation	AM	0.309	0.206	1	1
	PM	1.374	1.236	6	6
Total		**AM**		**36**	**128**
		PM		**114**	**76**

Table 5.3: Proposed Development Vehicle Trip Rates & Traffic Generation

5.3.7 It is noted that the trips generated for the creche and the café/retail elements have been discounted by 50%. This is in order to account for the fact that the majority of trips to and from these units will either be internal trips from the Development, immediate existing residents within the surrounding area, or pass-by trips that are already on the road network.

5.3.8 Therefore, it is envisaged that the retail and creche elements will not generate a significant amount of 'Primary Trips' on to the road network. In order to provide a more conservative assessment, however, it was assumed that 50% of the trips to and from these units were classed as 'Primary Trips'.

5.4 COMMITTED DEVELOPMENT

Scholarstown Road Residential Development (Ref 15A/0017)

5.4.1 The Scholarstown Road residential development was granted planning permission in August 2015 by ABP following first and third party appeals. The development consists of the provision of 314 residential units (244 houses & 70 apartments), and a 223 sqm creche on a site situated to the southeast of the subject site, on the southern side of Scholarstown Road. The development is currently under construction and partially occupied. Nonetheless, when the development is complete and fully occupied it may generate an impact upon the local road

networks existing traffic characteristics.

5.4.2 In order to establish the potential quantum of traffic generated by the Scholarstown Road committed development, reference has been made to the corresponding TTA report (January 2015) that was submitted with the application. **Table 5.4** below indicates the TRICS derived trip rates and associated vehicle traffic generation for the aforementioned committed residential development.

Land Use	Period	Vehicle Trip Rates (per unit)/100 sqm GFA		Traffic Generation	
		Arr	Dep	Arr	Dep
Apartments (30 Apartments occupied at time of 2019 traffic survey)	AM	0.040	0.211	2	10
	PM	0.181	0.051	9	2
Houses (assumed 100 no occupied at time of 2019 traffic survey)	AM	0.129	0.390	16	78
	PM	0.377	0.216	75	43
Creche	AM	3.443	2.79	8	6
	PM	0.338	0.957	1	2
Total		**AM**		**28**	**73**
		PM		**64**	**36**

Table 5.4: Scholarstown Road Residential Development Trip Rates & Traffic Generation (Ref. SD15A/0017)

5.5 TRIP DISTRIBUTION & ASSIGNMENT

Subject Development

5.5.1 The distribution of subject development traffic as proposed by DBFL will be based upon the surveyed traffic movements at the nearby key local junctions.

Scholarstown Road Residential Development (Ref SD15A/0017)

5.5.2 The trip distribution and assignment of the Scholarstown Road Residential Development (Ref SD15A/0017) traffic will be as per the distribution contained within the TTA submitted with the aforementioned planning application.

6.0 NETWORK IMPACT ANALYSIS

6.1 ASSESSMENT SCOPE

6.1.1 Two different traffic scenarios have been assessed, namely (a) the 'Base' (Do Nothing) traffic characteristics and (b) the 'Post Development' (Do Something) traffic characteristics.

6.1.2 The 'Base' traffic scenario has taken into account the potential level of traffic that could be generated by the Scholarstown Road committed development (Ref SD15A/0017) in addition to the existing flows travelling across the network from the 2019 traffic surveys.

6.1.3 The proposed development traffic flows have then been added to the network's 'Base' (Base + Committed Development) traffic flows to establish the new 'Post' Development traffic flows.

6.1.4 In Summary the following scenarios are considered:

Do Nothing

- A1 – 2021 Base Flows + Committed Development
- A2 – 2026 Base Flows + Committed Development
- A3 – 2036 Base Flows + Committed Development

Do Something

- B1 – 2021 Do Nothing (A1) + Proposed Development Flows (100 Units Complete)
- B2 – 2026 Do Nothing (A2) + Proposed Development Flows (Fully Complete)
- B3 – 2036 Do Nothing (A2) + Proposed Development Flows (Fully Complete)

6.1.5 It is assumed that for the 2021 Opening Year, the development will have 100 units completed and occupied. For the 2026 and 2036 design years, the development has been assumed to be fully complete and occupied.

6.1.6 The Do Nothing and Do Something traffic flow diagrams for all scenarios outlined are shown in **Appendix B** of this report.

6.2 NETWORK IMPACT

6.2.1 The Institute of Highways and Transportation document 'Guidelines for Traffic Impact Assessments' states that the impact of a proposed development upon the local road network is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks respectively. When such levels of impact are generated, a more detailed assessment should be undertaken to ascertain the specific impact upon the network's operational performance. These same thresholds are reproduced in the TII document entitled Traffic and Transport Assessment Guidelines (2014).

6.2.2 In accordance with the IHT and NRA guidelines, assessments have been undertaken to establish the potential level of impact upon the key junctions of the local road network. To enable this calculation to be undertaken, the analysis took account of the following:

- 2021 Opening Year (Do Nothing & Do Something);
- 2026 Future Design Year Scenario (Do Nothing & Do Something); and
- 2036 Future Design Year Scenario (Do Nothing & Do Something).

6.2.3 **Table 6.1** and **Table 6.2** details the percentage impact of the relevant key junctions (illustrated in **Figure 6.1**):

Junction 1 – Scholarstown Road / M50 (Jnc 12) NB On Ramp;
Junction 2 – Scholarstown Road / M50 (Jnc 12) SB On Ramp;
Junction 3 – Scholarstown Road / Orlagh Grove Roundabout;
Junction 4 – Scholarstown Road / Templeroan Road Roundabout; and
Junction 5 – Scholarstown Road / Development Site Access

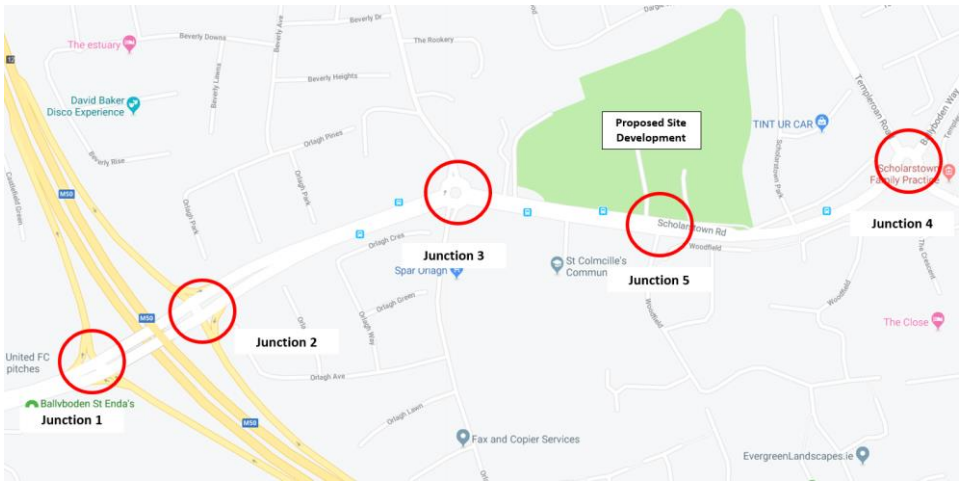


Figure 6.1: Junction Location

AM Peak												
	2021			2026			2036			% Impact		
	DN	DS	diff	DN	DS	diff	DN	DS	diff	2021	2026	2036
Junction 1 – Scholarstown Road / M50 (Jnc 12) NB On Ramp	2729	2738	9	2851	2906	55	2935	2990	55	0.3%	1.9%	1.9%
Junction 2 – Scholarstown Road / M50 (Jnc 12) SB On Ramp	2563	2572	9	2677	2755	78	2755	2833	78	0.3%	2.9%	2.8%
Junction 3 – Scholarstown Road / Orlagh Grove Roundabout	1923	1937	14	2007	2093	86	2065	2151	86	0.7%	4.3%	4.1%
Junction 4 – Scholarstown Road / Templeroan Road Roundabout	1719	1732	12	1794	1870	76	1845	1921	76	0.7%	4.3%	4.15%
Junction 5 – Scholarstown Road / Development Site Access	1340	1366	26	1398	1560	162	1437	1600	162	1.9%	11.6%	11.3%

Table 6.1: Network Impact Assessment for the AM Peak Hour (Flows in PCUs)

PM Peak												
	2021			2026			2036			% Impact		
	DN	DS	diff	DN	DS	diff	DN	DS	diff	2021	2026	2036
Junction 1 – Scholarstown Road / M50 (Jnc 12) NB On Ramp	2144	2149	5	2240	2274	33	2306	2340	33	0.2%	1.5%	1.4%
Junction 2 – Scholarstown Road / M50 (Jnc 12) SB On Ramp	2178	2188	10	2274	2342	68	2341	2409	68	0.5%	3.0%	2.9%
Junction 3 – Scholarstown Road / Orlagh Grove Roundabout	1965	1979	14	2051	2146	94	2111	2205	94	0.7%	4.6%	4.5%
Junction 4 – Scholarstown Road / Templeroan Road Roundabout	1926	1940	14	2010	2101	91	2068	2159	91	0.7%	4.6%	4.4%
Junction 5 – Scholarstown Road / Development Site Access	1500	1528	28	1566	1751	186	1610	1796	186	1.8%	11.9%	11.5%

Table 6.2: Network Impact Assessment for the PM Peak Hour (Flows in PCUs)

6.2.4 Scholarstown Road, during the AM peak hour within the vicinity of the development, experiences congestion. As noted within the TII Traffic & Transport Assessment Guidelines, a 10% impact threshold is usually applied for road networks that operate well; this threshold is reduced to 5% where road networks experience congestion. Therefore, it was considered appropriate to analyse the network impact with regard to a 5% threshold.

6.2.5 During the AM Peak Hour, the resulting percentage increase in traffic flows as a result of the traffic generated by the proposed development is established as being above the 5% threshold at the following junctions:

Junction 5: Scholarstown Road/Woodfield/Site Access Junction.

6.2.6 It can be seen that the Proposed Site Access Junction is above the 5% threshold during the AM peak hour for the 2026 and 2036 assessment periods with 1.9%, 11.6% and 11.3% impact for the 2021 Opening Year, 2026 and 2036 assessment periods respectively.

6.2.7 During the PM Peak Hour, the resulting percentage increase in traffic flows as a result of the traffic generated by the proposed development is established as being above the 5% threshold at the following junctions:

Junction 5: Scholarstown Road/Woodfield/Site Access Junction.

6.2.8 It can be seen that the Proposed Site Access Junction is above the 5% threshold during the PM peak hour for the 2026 and 2036 assessment periods with 1.8%, 11.9% and 11.5% for the 2021, 2026 and 2036 assessment periods respectively.

6.2.9 It is noted for **Junction 3** - Scholarstown Road/Orlagh Grove Roundabout, the impact threshold is below 5% for all assessment scenarios. In response to Item 7 of the An Bord Pleanála Opinion, dated 28/06/19, as well as discussions with South Dublin County Council, we have included further assessment of this roundabout.

6.2.10 The junctions, therefore, that have been assessed in further detail are as follows:

- Junction 5 (Scholarstown Road/Woodfield/Site Access)
- Junction 3 (Scholarstown Road/Orlagh Grove)

6.3 NETWORK ANALYSIS

6.3.1 The resulting percentage increase in traffic flows as a result of the traffic generated by the proposed development is established as being above the 5% threshold at the following junction:

Junction 5: Scholarstown Road/Woodfield/ Proposed Site Access Junction.

Junction 5 Assessment

6.3.2 An assessment of the existing priority Scholarstown Road/Woodfield junction was undertaken in order to determine the capacity of this junction in a Do Nothing scenario. This assessment was undertaken using the 'Junctions 9 PICADY 9 – Priority Intersection Module' modelling software and the junction was assessed for the 2018 Base, 2021 Do Nothing scenario as well as the subsequent 2026 and 2036 Do Nothing Years. It is noted that the 'Do Nothing' scenarios include for the Committed Development traffic flows as well as the growth rates in background traffic.

6.3.3 With regard to the proposed junction and the addition of the site access arm, and the upgrading of the junction to traffic signal controlled; in order to determine whether this junction would cater for the predicted level of traffic generation, a traffic model of the junction was analysed for the 2021 Opening Year scenario as well as the subsequent 2026 and 2036 Future Design Years.

6.3.4 The operational assessment of this junction was undertaken using the Transport Research Laboratory (TRL) computer software TRANSYT for signal-controlled junctions.

6.3.5 Shown in **Figure 6.2** is the existing Scholarstown Road/Woodfield junction. Shown in **Table 6.3** below are the PICADY results for the Do-Nothing scenarios for the 2021, 2026 and 2036 scenarios for both the AM and PM peak hour. This table displays the PICADY results for the priority junction and includes Queue length in PCU, Delay in Seconds, the Ratio of Flow to Capacity (RFC) as well as the Level of Service (LOS) for each arm.

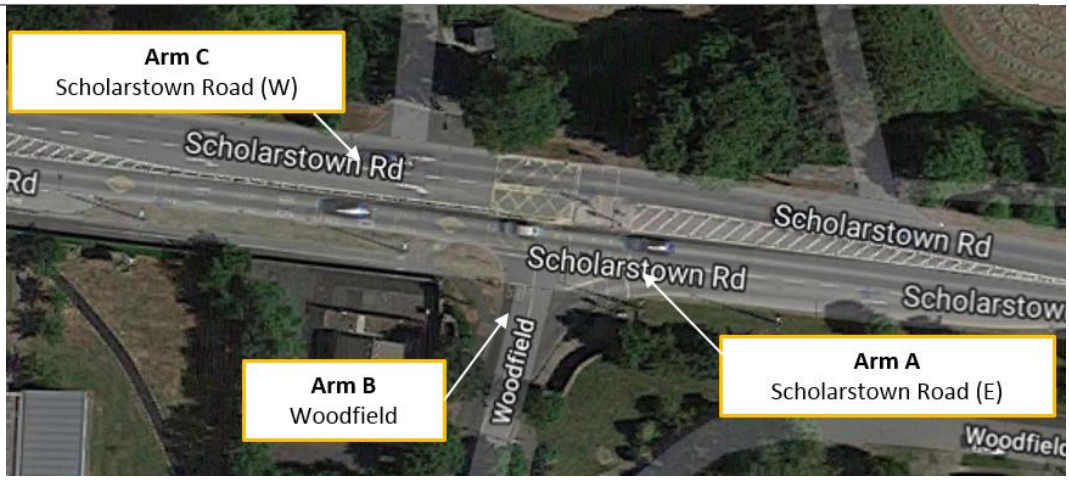


Figure 6.2: Existing Scholarstown Road/Woodfield Junction

		AM				PM			
		Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
		2018							
Stream B-AC	Woodfield to Scholarstown	0.5	13.58	0.32	B	0.2	9.9	0.14	A
Stream C-A	Scholarstown (W) to Scholarstown (E)	0.7	3.6	0.25	A	1.2	5.08	0.38	A
Stream C-B	Scholarstown (W) to Woodfield	0	3.65	0.26	A	0.1	5.87	0.42	A
Stream A-B	Scholarstown (E) to Woodfield								
Stream A-C	Scholarstown (E) to Scholarstown (W)								
		2021 DN							
Stream B-AC	Woodfield to Scholarstown	0.6	15.65	0.36	C	0.2	10.78	0.15	B
Stream C-A	Scholarstown (W) to Scholarstown (E)	0.7	3.69	0.27	A	1.4	5.38	0.42	A
Stream C-B	Scholarstown (W) to Woodfield	0	3.74	0.28	A	0.1	6.26	0.45	A
Stream A-B	Scholarstown (E) to Woodfield								
Stream A-C	Scholarstown (E) to Scholarstown (W)								
		2026 DN							
Stream B-AC	Woodfield to Scholarstown	0.7	17.8	0.41	C	0.2	11.62	0.17	B
Stream C-A	Scholarstown (W) to Scholarstown (E)	0.8	3.8	0.29	A	1.5	5.66	0.45	A
Stream C-B	Scholarstown (W) to Woodfield	0	3.87	0.3	A	0.1	6.65	0.48	A
Stream A-B	Scholarstown (E) to Woodfield								
Stream A-C	Scholarstown (E) to Scholarstown (W)								
		2036 DN							
Stream B-AC	Woodfield to Scholarstown	0.8	21.12	0.46	C	0.2	12.76	0.19	B
Stream C-A	Scholarstown (W) to Scholarstown (E)	0.9	3.9	0.31	A	1.8	6.02	0.49	A
Stream C-B	Scholarstown (W) to Woodfield	0	3.97	0.32	A	0.2	7.15	0.51	A
Stream A-B	Scholarstown (E) to Woodfield								
Stream A-C	Scholarstown (E) to Scholarstown (W)								

Table 6.3: PICADY Results for the Do Nothing Scenarios at Scholarstown Rd/Woodfield Junction

6.3.6 Results for the PICADY assessment show that the Scholarstown Road/Woodfield priority junction operates well (as an isolated junction) for both the AM and PM peak 2018 base year with all arms operating at an RFC of below 0.4. Queueing and delay for the junction is low.

6.3.7 For the 2021 Do Nothing scenario, the junction continues to operate within capacity, as an isolated junction, for both peak hours with the highest RFC of 0.45 recorded during the PM peak hour for the Scholarstown Road (W) to Woodfield right turn movement. Queueing and delay for the junction remains low on all arms.

6.3.8 For the 2026 Do Nothing scenario, the junction continues to operate within capacity, with a slight increase in RFC on all arms as compared with the 2021 assessment for both peak hour periods.

6.3.9 For the 2036 Do Nothing scenario, the junction continues to operate within capacity for both the AM and Peak hour periods. The highest RFC of 0.51 is recorded during the PM peak hour for the Scholarstown Road (W) to Woodfield right turn movement.

6.3.10 The scheme development proposes to locate the vehicular site access on to the Scholarstown Road in the location of the existing three arm priority junction. Therefore, a four arm signal controlled junction has been proposed at this location in order to safely accommodate both the existing Woodfield access arm and the proposed development access arm. A letter of consent was received from South Dublin County Council for the proposed works along Scholarstown Road.

6.3.11 In order to analyse the proposed four arm signal controlled junction, a TRANSYT model was developed. TRANSYT is a software programme that is used for the analysis of signalised junctions.

6.3.12 Shown in **Figure 6.3** is the proposed four arm Scholarstown Road/Woodfield/Site Access Junction. Shown in **Table 6.4** are the TRANSYT results for the 2021 Do Something Opening Year, 2026 and 2036 Future Design Year results for the Scholarstown Road/Woodfield/Site Access junction.

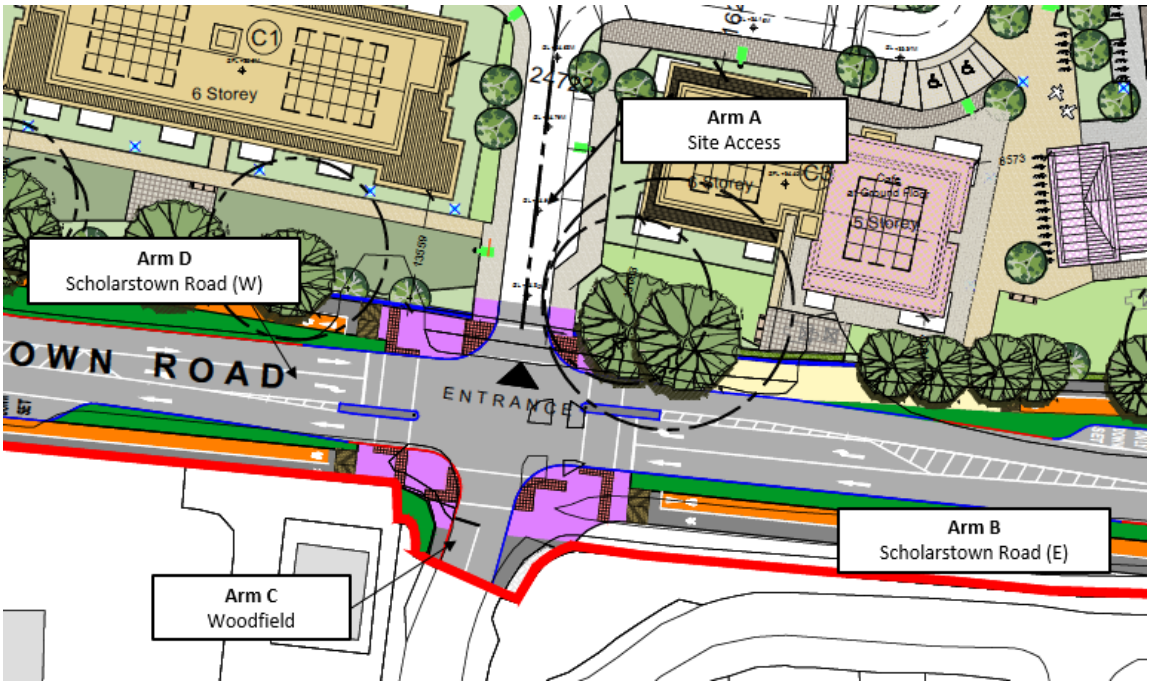


Figure 6.3: Proposed Scholarstown Road/Woodfield/Site Access Junction

		AM			PM		
Arm	Description	Degree of saturation (%)	Mean Delay per Veh (s)	Mean max queue (PCU)	Degree of saturation (%)	Mean Delay per Veh (s)	Mean max queue (PCU)
		2021 DS					
A: Site Access	Left,Straight,Right	80	93.02	6.82	72	94.56	3.8
B: Scholarstown (E)	Straight,Left	64	11.82	19.93	55	7.7	14.09
B: Scholarstown (E)	Right	2	4.95	0.18	6	3.58	0.52
C: Woodfield	Left,Straight,Right	71	78.06	5.52	49	69.91	2.28
D: Scholarstown (W)	Straight,Left	50	9.18	12.9	64	9.15	18.69
D: Scholarstown (W)	Right	1	4.93	0.07	7	3.66	0.7
		2026 DS					
A: Site Access	Left,Straight,Right	80	93.02	6.82	72	94.2	3.76
B: Scholarstown (E)	Straight,Left	68	12.84	22.34	59	8.4	16.26
B: Scholarstown (E)	Right	2	4.95	0.18	6	3.66	0.54
C: Woodfield	Left,Straight,Right	75	83.55	6.06	52	71.87	2.45
D: Scholarstown (W)	Straight,Left	53	9.65	14.17	68	10.14	21.85
D: Scholarstown (W)	Right	1	4.93	0.08	8	3.76	0.76
		2036 DS					
A: Site Access	Left,Straight,Right	80	91.49	6.52	76	104.02	3.94
B: Scholarstown (E)	Straight,Left	73	14.19	25.62	63	9.08	18.94
B: Scholarstown (E)	Right	2	4.95	0.18	6	3.67	0.55
C: Woodfield	Left,Straight,Right	80	91.46	6.57	58	77.63	2.65
D: Scholarstown (W)	Straight,Left	56	10.23	15.81	72	11.17	25.35
D: Scholarstown (W)	Right	1	4.93	0.08	8	3.8	0.84

Table 6.4: TRANSYT Results for the Do Something Scenarios at Scholarstown/Woodfield Junction

6.3.13 Results for the TRANSYT assessment for the 2021 Opening Year Do Something scenario show that the junction will operate within capacity on all arms for both the AM and PM peak hour. The AM peak hour shows that the highest Degree of Saturation (DOS) is on the Site Access arm which operates with a DOS of 80% for this scenario. The Mean Max Queue (MMQ) however is low for the arm with 7pcu's. The PM peak hour shows that the highest DOS is on the Site Access arm with a DOS of 72% and a MMQ of 4 pcu's.

6.3.14 The Scholarstown Road East and West arms operate within capacity for the 2021 scenario for both peak hours. During the AM peak, the highest DOS is 64% on the Scholarstown East arm. Queuing on this arm is approximately 20pcu which equates to an average queue length of 110m. During the PM peak, the highest DOS is 64% on the Scholarstown Road West arm with an average queue length of almost 19pcu.

6.3.15 The Woodfield arm also operates within capacity during the 2021 Opening Year with a DOS of 71% in the AM peak hour and 49% in the PM peak hour. Delay on the arm is approximately 78 seconds per pcu. The delay on both side arms is higher than on the main Scholarstown Road arm as the Scholarstown Road arms can run during the majority of green time for the junction.

6.3.16 For the 2026 and 2036 Future Design Years, the junction, as analysed as an isolated junction, continues to operate within capacity for both peak hours.

Junction 3 (Scholarstown Road/Orlagh Grove) Assessment

6.3.17 As stated above in Section 5, Junction 3 – Scholarstown Road /Orlagh Grove Roundabout has been subjected to further analysis. This is in response to Item 7 of the An Bord Pleanála Opinion, dated 28/06/19, that requests an inclusion for the consideration of the adjacent junction on the M50, as well as discussions with South Dublin County Council.

6.3.18 This roundabout has recently been redeveloped to deliver upgrades to the pedestrian and cyclist environment through the roundabout and to increase safety for all users. The redevelopment of the roundabout ensures that vehicular traffic speeds are reduced through the roundabout and provides a single lane approach and toucan/zebra crossings on all arms.

6.3.19 In order to gauge the performance of this roundabout in all assessment scenarios outlined previously, an ARCADY model was developed. This model reflects the geometry and layout for the new roundabout.

6.3.20 The results for the AM and PM peak hour ARCADY assessments are outlined in **Table 6.5** and **Table 6.6** respectively. These show the average RFC (Ratio of Flow to Capacity), the average Queue length over the hour (pcu) as well as the average Delay over the hour (s) for both the Do Nothing (DN) and Do Something (DS) scenarios for the 2019, 2021 Opening Year, 2026 and 2036 Design Years.

6.3.21 **Figure 6.6** below illustrates the roundabout layout for assessment.

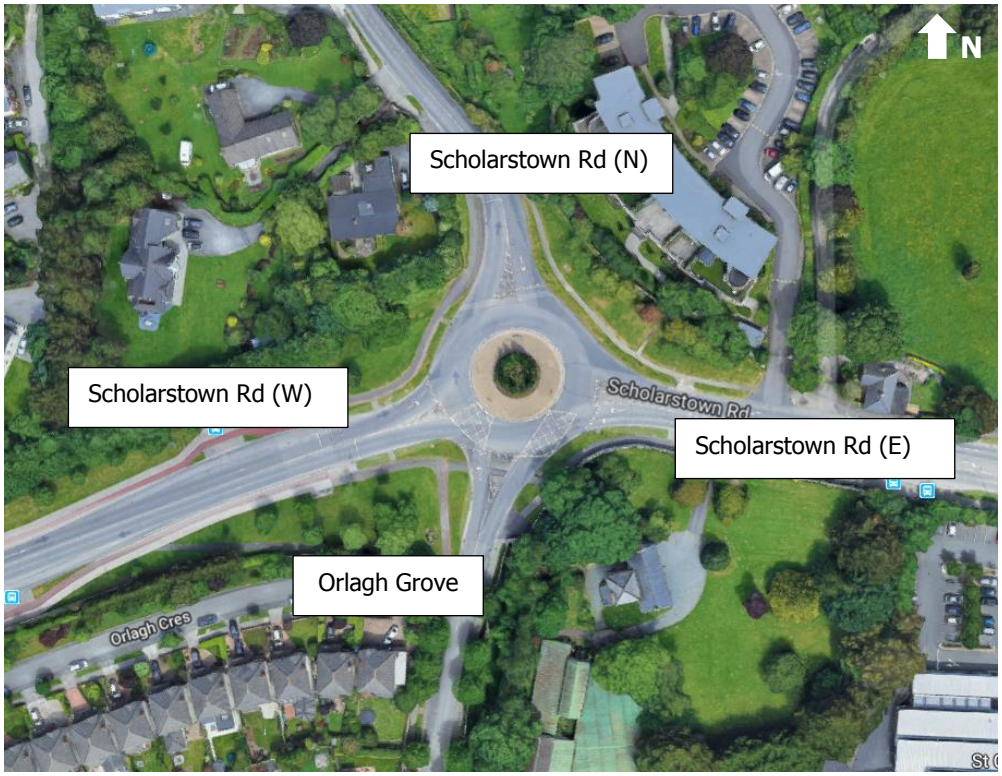


Figure 6.4: Scholarstown Rd/Orlagh Grove Roundabout Layout (Source: GoogleMaps)

Table 6.5: ARCADY results for the AM Peak Hour for Scholarstown Rd/Orlagh Grove Rnd

AM PEAK						
	RFC		Average Queue (PCU)		Average Delay (s)	
	DN	DS	DN	DS	DN	DS
2019						
Scholarstown Rd (E)	0.87	N/A	8	N/A	45	N/A
Orlagh Grove	0.30	N/A	0	N/A	10	N/A
Scholarstown Rd (W)	0.49	N/A	1	N/A	7	N/A
Scholarstown Rd (N)	0.68	N/A	2	N/A	16	N/A
2021						
Scholarstown Rd (E)	0.96	0.97	20	24	102	116
Orlagh Grove	0.33	0.33	1	1	11	11
Scholarstown Rd (W)	0.52	0.52	1	1	8	8
Scholarstown Rd (N)	0.66	0.66	2	2	15	15
2026						
Scholarstown Rd (E)	1.01	1.10	34	65	153	267
Orlagh Grove	0.35	0.36	1	1	11	12
Scholarstown Rd (W)	0.54	0.55	1	1	8	8
Scholarstown Rd (N)	0.70	0.71	3	3	17	18
2036						
Scholarstown Rd (E)	1.04	1.14	45	77	195	315
Orlagh Grove	0.37	0.37	1	1	12	12
Scholarstown Rd (W)	0.55	0.57	1	1	8	8
Scholarstown Rd (N)	0.73	0.74	3	3	19	20

Table 6.6: ARCADY results for the PM Peak Hour for Scholarstown Rd/Orlagh Grove Rnd

PM PEAK						
	RFC		Average Queue (PCU)		Average Delay (s)	
	DN	DS	DN	DS	DN	DS
2019						
Scholarstown Rd (E)	0.69	N/A	2	N/A	14	N/A
Orlagh Grove	0.18	N/A	0	N/A	6	N/A
Scholarstown Rd (W)	0.88	N/A	9	N/A	38	N/A
Scholarstown Rd (N)	0.41	N/A	1	N/A	9	N/A
2021						
Scholarstown Rd (E)	0.71	0.72	3	3	15	16
Orlagh Grove	0.19	0.19	0	0	6	6
Scholarstown Rd (W)	0.93	0.94	16	18	67	74
Scholarstown Rd (N)	0.42	0.43	1	1	9	9
2026						
Scholarstown Rd (E)	0.75	0.79	3	4	18	21
Orlagh Grove	0.20	0.21	0	0	7	7
Scholarstown Rd (W)	0.98	1.04	30	51	110	170
Scholarstown Rd (N)	0.45	0.47	1	1	10	10
2036						
Scholarstown Rd (E)	0.77	0.81	4	5	20	25
Orlagh Grove	0.21	0.22	0	0	7	7
Scholarstown Rd (W)	1.01	1.07	42	65	145	211
Scholarstown Rd (N)	0.46	0.48	1	1	10	11

6.3.22 The results for the AM peak hour show that the Scholarstown Road (E) arm in the 2019 Base Year has an RFC of 0.87. There is a high traffic demand on this arm during the morning peak. This RFC would be expected based on site observation and the frequent movement of pedestrians and cyclists through the junction who access the nearby schools. All other arms during the base year operate efficiently.

6.3.23 With the 2021 AM Opening Year, the Scholarstown Road (E) arm, in the Do Nothing scenario, increases in RFC to 0.96. This is due to the increase of background traffic as part of the growth assessment. For the Do Something scenario, this arm increases in RFC to 0.97. This is due to the site development trips generated for the 2021 Opening Year. Average queueing and delay increase also in the Do Something scenario from the Do Nothing scenario with an average increase of 2pcus and an average increase in delay of 14s per vehicle. The 2026 and 2036 scenarios continue to increase in both the Do Nothing and Do Something scenarios for the AM peak hour due to both the increase in background traffic on the road network and the development trips generated from the proposed development. The average increase in delay between the 2021 and 2036 year scenarios is approximately 2 minutes.

6.3.24 All other arms operate reasonably well during the AM peak hour.

6.3.25 For the PM peak hour, the results show that the Scholarstown Road (W) arm operates in the 2019 Base Year with an RFC of 0.88. The average queue length on this arm is 9pcu which equates to an approximate queue length of 50m.

6.3.26 For the 2021 Opening Year, the Do Nothing scenario operates with an RFC of 0.93. This is due to an increase in background traffic as part of the growth assessment. For the Do Something scenario, the RFC increases from the Do Nothing scenario to 0.94. This results in an increase in average delay of 7s per vehicle and an increase in average queue length of 2pcus from the Do Nothing scenario.

6.3.27 For the 2026 Design Year, the development has been assumed to be fully complete. The Do Nothing scenario shows an RFC of 0.98 on the Scholarstown Road (W) arm and an average queue length of 30 pcus. This is due to the assumed increase in background traffic on the road network. The Do Something scenario shows an RFC of 1.04 and an average queue length of 51pcus.

6.3.28 For the 2036 Design Year, the Do Nothing scenario generates an RFC of 1.01 on the Scholarstown Road (W) arm. This is due to the predicted growth in background traffic on the network. An RFC of 1.07 results from the inclusion of the development trips. There is an increase in average delay of approximately 1 minute from the Do Nothing Scenario to the Do Something Scenario.

M50 Consideration

6.3.29 In response to the Item 7 of the An Bord Pleanála opinion dated 28/06/19, we have included for an assessment for the consideration of the adjacent junction on the M50 Motorway.

6.3.30 The distance between the Scholarstown Road / Orlagh Grove Roundabout and the Off ramp to the M50 Motorway is approximately 320m, as shown in **Figure 6.5**. There is also a left turning merging lane from the M50 off ramp that is approximately 125m in length. Vehicles exiting left from the off ramp use this additional lane to merge into general traffic.

6.3.31 The existing level of queuing on the Scholarstown Road (W) arm, as noted, is an average of approximately 50m during the PM peak hour. For the proposed development, this queue length will increase on this arm. It was considered prudent to assess the impact that the proposed development may have on the operation of the M50 motorway or the M50 off ramp. Therefore, in order to determine how this off ramp operates currently, traffic surveys were carried out at this junction with cameras placed to capture the existing operation. The image below in **Figure 6.6** illustrates the PM peak hour operation on this ramp (which is the heavier trafficked peak hour). There are two lanes, a right turning lane that is fully signal controlled and a left turning slip lane that is on an amber give way. As shown in **Figure 6.6**, queueing occurs in the right turn lane on the M50 off ramp. This is due to this lane being under full signal control. The left turn flare lane does not queue back and it was noted that this lane is free flowing for the majority of the PM peak hour.

6.3.32 Therefore, it is concluded that the increase in vehicular traffic as a result of the proposed development would not negatively impact on the M50 motorway as the majority of development traffic will utilise the left slip lane to navigate towards the proposed development site.

Figure 6.5: Location of M50 Off Ramp to the Scholarstown Road/Orlagh Grove Roundabout

Figure 6.6: Vehicles Queueing back on M50 Off Ramp in PM Peak Hour

Junction Assessment

6.3.33 As mentioned above, SDCC/NTA's recent upgrade to the Scholarstown Road/Orlagh Grove roundabout sought to prioritise safety upgrades for pedestrians/cyclists at the junction which at the expense of junction capacity aligns with national policy to promote the use of sustainable modes of travel.

6.3.34 Notwithstanding this strategic decision by SDCC/NTA, an additional assessment has been undertaken as part of this TTA with regard to the Scholarstown Road/Orlagh Grove roundabout that considered a notional conversion of this roundabout to a signal controlled junction in order to demonstrate that vehicular capacity could be enhanced at the junction up to and including the future horizon year of 2036.

6.3.35 It is noted that the National Transport Authority have invested significantly in this roundabout and have implemented this new junction in order to prioritise and provide improved, safer facilities for pedestrians and cyclists through the roundabout. It is considered that a further modification to the junction is unlikely in the short/medium term as a result.

6.3.36 The analysis undertaken detailed the possible capacity results for a notional signal controlled junction in this location in order to determine whether this could provide for improvements to the vehicular capacity whilst also providing and maintaining safe facilities for pedestrians and cyclists.

6.3.37 The assessment for a signal controlled junction at the Scholarstown Road/Orlagh Grove junction was undertaken in the TRANSYT software modelling tool. The assessment considered the 2036 Do Something Design Year as this encompassed the full development traffic on the road network and provides a worst case scenario in terms of capacity assessment.

6.3.38 The TRANSYT model was developed with a cycle time of 120 seconds and runs an all red pedestrian stage in every cycle.

6.3.39 Shown in **Table 6.7** and **Table 6.8** are the TRANSYT results for the Do Something 2036 AM and PM peak hour respectively. These display the Degree of Saturation (DOS) on each arm shown as a percentage, the Mean Delay per Vehicle in seconds and the Mean Maximum Queue (MMQ) shown in PCU.

Table 6.7: TRANSYT results for the AM Peak Hour for Scholarstown Rd/Orlagh Grove Junction

Time Segment	Arm	Arm Description	Degree of saturation (%)	Mean Delay per Veh (s)	Mean max queue (PCU)
08:00-09:00	1	Scholarstown Road (W) Left	14	14.03	0.88
		Scholarstown Road (W) Straight	49	16.2	4.23
		Scholarstown Road (W) Right	5	13.1	0.19
	2	Scholarstown Road (N) Straight/Left	50	56.02	3.95
		Scholarstown Road (N) Right	83	56.9	15.16
	3	Scholarstown Road (E) Left	2	8.77	0.09
		Scholarstown Road (E) Straight	85	20.12	6.37
		Scholarstown Road (E) Right	6	8.43	0.14
	4	Orlagh Grove Straight/Left	60	60.82	4.97
		Orlagh Grove Right	7	28.56	0.79
	9	Scholarstown Road (E) On Approach	54	21.51	20.73
	10	Scholarstown Road (W) On Approach	25	9.17	8.28
	11	Scholarstown Road (N) On Approach	32	0.57	0.84
	12	Orlagh Grove On Approach	10	0.11	0.01

Table 6.5: TRANSYT results for the PM Peak Hour for Scholarstown Rd/Orlagh Grove Junction

Time Segment	Arm	Arm Description	Degree of saturation (%)	Mean Delay per Veh (s)	Mean max queue (PCU)
17:00-18:00	1	Scholarstown Road (W) Left	37	11.44	1.59
		Scholarstown Road (W) Straight	75	16.08	5.1
		Scholarstown Road (W) Right	17	9.99	0.45
	2	Scholarstown Road (N) Straight/Left	33	30.57	4.08
		Scholarstown Road (N) Right	31	32.99	2.44
	3	Scholarstown Road (E) Left	2	13.63	0.15
		Scholarstown Road (E) Straight	48	16.29	4.22
		Scholarstown Road (E) Right	41	16.32	1.79
	4	Orlagh Grove Straight/Left	14	29.84	2.11
		Orlagh Grove Right	17	30.11	1.36
	9	Scholarstown Road (E) On Approach	28	8.98	9.44
	10	Scholarstown Road (W) On Approach	54	18.16	22.86
	11	Scholarstown Road (N) On Approach	21	2.62	2.31
	12	Orlagh Grove On Approach	8	0.09	0

6.3.40 Results for the AM peak hour show that in the 2036 Do Something assessment, the junction would operate within capacity on all arms. The Scholarstown Road (E) Straight arm displays the highest DOS of 85%. This arm displays an average queue length of 6 pcus at the junction and 20 pcus on approach to the junction. This equates to an average queue length of 140m on this arm. The delay for this arm is low with an average of approximately 41 seconds per vehicle (20 seconds at the junction and 21 seconds on approach).

6.3.41 Results for the PM peak hour show that in the 2036 Do Something assessment, the junction would operate within capacity on all arms. The Scholarstown Road (W) Straight arm displays the highest DOS of 75%. Taking into consideration the straight arm at the junction as well as the approach arm on the Scholarstown (W)

arm, the average queue length is 27pcus which equates to an approximate length of 148m. The delay on this arm is low at an average of 34 seconds per vehicle considering the arm at the junction and the approach arm.

6.3.42 The analysis and results presented above for a notional signal controlled junction display a capacity operation that would provide an improvement in comparison to the current arrangement for 2036 for the Do Nothing and Do Something Scenarios and also for the base and Opening Year.

6.4 MITIGATION MEASURES

Mobility Management Plan (MMP)

6.4.1 A Mobility Management Plan (MMP) has been prepared by DBFL for this development and is submitted as part of this application.

6.4.2 The MMP has been prepared to guide the delivery and management of a package of integrated initiatives which seek to encourage sustainable travel practices at the proposed residential and commercial development in Scholarstown.

6.4.3 It is noted that a successfully implemented MMP can provide reductions in car usage, particularly influencing levels of single-occupancy car travel, with increased trips made by public transport, walking and cycling.

6.4.4 Within the MMP document, a number of 1 year to 5 year targets have been outlined with a specific objective of reducing single-occupancy car travel. The existing modal split within the area surrounding the proposed development (taken from the 2016 census data) has been used as a basis for these targets in order to outline a realistic target for the development. The 2016 Census data modal split as well as the 1st and 5 year targets proposed are outlined in Table 6.6.

Table 6.6: MMP Targets for Modal Split

Mode of Travel	Local Area Mode Split (Census, 2016)	MMP 1st Year Target (2021)	MMP 5-year Target (2026)
On Foot	12%	13%	14%
Bicycle	6%	8%	10%
Bus/Minibus/Coach	15%	15%	18%
Train/DART/LUAS	1%	1%	1%
Motorcycle/Scooter	1%	1%	1%
Car Driver	46%	43%	38%
Car Passenger	12%	12%	12%
Van	2%	2%	2%
Other (incl. lorry)	0%	0%	0%
Work mainly at/from home	2%	2%	2%
Not Stated	2%	2%	2%

6.4.5 The MMP also sets out a number of Actions and Targets to help achieve the modal split targets of increasing sustainable travel within the development. The document also provides mode specific ideas for sustainable travel promotion and requires that the document be actively managed and monitored within the development with yearly travel surveys undertaken by residents to determine the actual changes in travel behaviour.

Car Parking Strategy

6.4.6 A Car Parking Strategy document has been prepared by DBFL for this development and has been submitted as part of this application.

6.4.7 This document has been prepared in order to present a rationale behind the identification of the quantum of vehicle parking and cycle parking proposed within the development. The document also sets out the management measures that will be deployed to allocate the use and control of parking provided at the proposed development site, in particular, for the Build-to-Rent units, and states that the parking spaces for these units will be based on a rental scheme that will be actively managed by the management company on the site.

6.4.8 The document highlights some of the initiatives that are proposed within the development to encourage alternative travel modes, such as the allocation of 3 GoCar spaces within the development that will accommodate residents from the

Build-to-Rent units as well as the provision of 800 cycle parking spaces.

6.4.9 It is felt that all of the above measures will help encourage the use of sustainable transport modes as a means of accessing the development rather than a reliance on the private vehicle which could potentially compromise the recent investment in infrastructure in he vicinity of the site.

7.0 CONSTRUCTION PHASE

7.1 OVERVIEW

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

7.1.2 All construction activities will be governed by a Construction Traffic Management Plan (CTMP), the details of which will be agreed with South Dublin County Council prior to the commencement of construction activities on site. The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction phase upon the public (off-site), visitors to the subject site (on-site) and internal (on-site) workers environments, are fully considered and proactively managed/programmed thereby ensuring that safety is maintained at all times, disruption is minimised and undertaken within a controlled hazard free/minimised environment. A Preliminary CMP has been prepared and is submitted with this application.

7.1.3 During the general excavation of the foundations there may be additional HGV movements from the site. All suitable material will be used for construction and fill activities where possible and appropriate. All spoil material will be removed to a registered landfill site which will be agreed in full with South Dublin County Council.

7.1.4 In addition to the traffic generated by the disposal of surplus subsoil from the site, there will be traffic generated from deliveries of construction materials and equipment. It should be noted that construction traffic generated during the development works tends to be at off-peak hours. Such trips would generally be spread out over the full working day and are unlikely to be higher than the peak hour predicted for the operational stage.

7.1.5 Construction traffic will consist of the following categories:

- Private vehicles owned and driven by site staff and management;
- Construction vehicles e.g. excavation plant, dump trucks (including trucks for delivery of imported fill to site;
- Materials delivery vehicles involved in site development works.

7.1.6 On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 16:00. It should be noted that a large proportion of construction workers would arrive in shared transport. Deliveries would arrive at a steady rate during the course of the day.

7.1.7 In the absence of a final construction programme it is difficult to assess the exact impact during the construction period. Nevertheless, the following estimates have been made in respect of the construction period impacts:

- Appropriate on-site parking and compounding will be provided to prevent overflow onto the local network.
- It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential.
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low.

7.1.8 The exact location of the construction compound is to be confirmed in advance of commencement of the works and agreed with South Dublin County Council. The location of the construction compound may be relocated during the course of the works.

7.1.9 Finally, truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by South Dublin County Council will be adhered to.

8.0 SUMMARY AND CONCLUSION

8.1 SUMMARY & CONCLUSION

8.1.1 DBFL Consulting Engineers (DBFL) have been commissioned to prepare a Traffic and Transport Assessment (TTA) for a proposed residential/commercial development at a site located in Scholarstown, Dublin 16.

8.1.2 Ardstone Homes Limited intend to apply to An Bord Pleanála for permission for a strategic housing development at a 5.35 hectare site located north of Scholarstown Road incorporating dwellings known as 'Beechpark' and 'Maryfield', Scholarstown Road, Dublin 16, D16 X3X8 and D16 N6V6. Works are also proposed to Scholarstown Road and Woodfield junction including new traffic signals, the elimination of the left-turn slip-lane into Woodfield off Scholarstown Road, upgraded public lighting and upgraded cycle and pedestrian facilities on an area measuring 0.7 hectares, providing a total application site area of 6.05 hectares.

8.1.3 The development will principally consist of: the demolition of all existing structures on site which include a single story dwelling known as 'Beechpark' (172 sq m), a 2 No. storey dwelling known as 'Maryfield' (182 sq m), with associated garage/shed (33.5 sq m) and associated outbuildings (47.1 sq m); and the construction of 590 No. residential units (480 No. Build-to-Rent apartment units and 110 No. Build-to Sell duplex units and apartments), ancillary residential support facilities and commercial floorspace. The total gross floor space of the development is 51,252 sq m over a partial basement of 5,888 sq m (which principally provides car and bicycle parking, plant and bin stores).

8.1.4 The 480 No. 'Build-to-Rent' units will be provided in 8 No. blocks as follows: 7 No. blocks ranging in height from part 5 to part 6 No. storeys (Blocks B1 – B5, C1 and C3) and 1 No. block ranging in height from part 4 to part 6 No. storeys (Block C2) and will comprise 246 No. one bed units and 234 No. two bed units. The 110 No. 'Build-to-Sell' units will be provided in 9 No. duplex blocks which will be 3 No. storeys in height (Blocks A1 – A9) and will comprise 55 No. two bed units and 55 No. three bed units.

8.1.5 The development will also consist of the provision of a part 1 to part 2 No. storey ancillary amenity block (Block D1) (414 sq m) within the central open space which comprises a gymnasium, lobby, kitchenette and lounge at ground floor level and

lounge at first floor level in addition to a roof terrace (facing north, south and west) to serve the Build-to-Rent residents; a 2 No. storey retail/café/restaurant building (Block D2) (657 sq m) comprising 2 No. retail units at ground floor level (328.5 sq m) and a café/restaurant unit at first floor level (328.5 sq m); a creche (438 sq m) within Block C2 at ground floor level; and a management suite (261 sq m) and café/restaurant (288 sq m) within Block C3 at ground floor level.

8.1.6 The development provides a vehicular access off Scholarstown Road between Blocks C1 and C3 towards the south-east corner of the site; a separate pedestrian access and emergency vehicular access off Scholarstown Road between Blocks A9 and C2 towards the south-west corner of the site; the facilitation of a pedestrian connection from the north-east corner of the subject site to the public open space in Dargle Park; 459 No. car parking spaces (178 No. at basement level and 281 No. at surface level); bicycle parking; bin storage; boundary treatments; private balconies and terraces; hard and soft landscaping; plant; services; sedum roofs; PV panels; substations; lighting; and all other associated site works above and below ground.

8.1.7 The proposed development has a site area of 51,252 sq m above ground over a basement measuring 5,888 sq m.

8.1.8 The purpose of this TTA was to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the proposed residential/commercial development.

8.1.9 The existing site is located along Scholarstown Road, Dublin 16. The site is located in close proximity to the M50 Motorway and has good walking and cycling provision within the vicinity of the proposed development. The site benefits from good public transport facilities including two regular Dublin Bus routes as well as one Go Ahead Ireland bus route.

8.1.10 In terms of future transport proposals, the GDA Cycle Network Plan, BusConnects as well as the SDCC Development Plan proposes a number of cycle routes, bus routes and road improvement proposals within the area in proximity to the development site.

8.1.11 A number of policy and guidance documents reviewed as part of this assessment emphasises the requirement for increasing sustainable travel modes such as

walking, cycling and public transport. The 'Design Standards for New Apartments -March 2018' outlines the car parking requirements for new apartment units. The document states that for new apartments within an 'Intermediate Urban Location' with good access to public transport, consideration should be given to a reduced overall car parking provision.

8.1.12 It is proposed for this development that the car parking provision for the Build to Sell Duplex units will be in accordance with the SDCC Development Plan standards. The Build to Rent apartment units, however, will make reference to the 'Design Standards for New Apartments' and will provide a ratio of 0.60 parking spaces per unit.

8.1.13 A Parking Management Strategy and a Mobility Management Plan (MMP) have been prepared as part of this application. The Parking Strategy document provides justification of reduced car parking provision for Build to Rent (BTR) apartments. The document also highlights the requirement for a Management Company to manage the car parking for the BTR units. The MMP document presents a number of objectives and targets for reducing private car travel in favour of more sustainable travel modes within the development.

8.1.14 A total of 800 cycle parking spaces are proposed within the development to accommodate residents, visitors and staff. It is also proposed to provide three number car sharing vehicles within the development to be used by residents within the BTR apartment units.

8.1.15 Traffic Surveys were carried out in May 2018 on a number of key junctions surrounding the proposed development site. Updated traffic surveys were conducted in 2019 in order to present updated survey data as well as a wider range of surveyed junctions.

8.1.16 In order to undertake an assessment of the likely traffic impacts that the proposed development would have on the surrounding road network, a traffic generation assessment was undertaken. Traffic growth rates were applied to background traffic using the TII Project Appraisal Guidelines (PAG). Development trips were generated using both a 'donor site' as well as the TRICS database. A Committed Development close to the proposed development site was also included as part of the assessment.

8.1.17 A detailed traffic model was developed of the road and junction network. Trips

were assigned to the network for the Opening Year (2021) as well as the Future Design Years (2026 and 2036). A traffic impact assessment was undertaken in order to determine whether the impact threshold of 5% was exceeded (as per the TII Traffic and Transport Assessment Guidance which recommended a 10% impact threshold for non-congested road networks and a 5% impact threshold for congested road networks).

8.1.18 It was determined that the Scholarstown Road/Woodfield/Site Access junction exceeded the 5% threshold and therefore this junction was analysed further in order to determine the extent of the impact.

8.1.19 A PICADY analysis was undertaken on the existing three arm priority junction of Scholarstown Road/Woodfield Residential estate. This showed that the junction, when analysed in isolation, operated well in both the AM and PM peak hour for all scenario years (2021, 2026 and 2036 Do Nothing).

8.1.20 A TRANSYT analysis was undertaken on the proposed four arm signalised Scholarstown Road/Woodfield/Site Access junction. Analysis was undertaken for the 2021 Do Something Opening Year as well as the 2026 and 2036 Design Year Scenarios. Results showed that the proposed junction operates within capacity (as an isolated junction) for both the AM and PM peak hours for all scenario years.

8.1.21 An assessment of the Scholarstown Road/Orlagh Grove roundabout was also carried out. This was in response to Item 7 of the An Bord Pleanála Opinion as well as consultation with South Dublin County Council. Although this roundabout was below the 5% threshold, it was considered appropriate to carry out a further assessment at this junction.

8.1.22 This analysis showed that for the 2021 Opening Year for the Do Nothing scenario and Do Something scenario, there is a minor increase in average delay and queueing due to the proposed development. For the 2026 and 2036 Design Year scenarios, the roundabout continues to operate over capacity for both the Do Nothing and Do Something scenarios. The high demand of pedestrian and cycle movements through the roundabout also contributes to the reduction in traffic capacity.

8.1.23 An assessment was undertaken to assess the potential impact of the development on the M50. It was concluded that there would not be a significant negative impact from the development on the M50.

8.1.24 A scenario was assessed that considered the possibility of the redevelopment of the Scholarstown Road/Orlagh Grove roundabout to a notional signal-controlled junction in future years. An analysis was undertaken for the Do Something 2036 AM and PM peak hours and results showed that the junction would operate within capacity in both peak hours. It was noted, however, that the NTA have invested in the development of improved roundabouts that consider pedestrian and cycle safety as a priority rather than vehicular capacity.

8.1.25 Mitigation Measures for the development included the development of a Mobility Management Plan as well as a Parking Strategy Document, both of which have been prepared for this development.

8.1.26 The facilities proposed within the subject development include for 800 cycle parking spaces, linkages to good public transport services (current and future), reduced parking for Build-to-Rent residents as well as the representation of GoCar within the development. Therefore, this development proposes a sustainable approach to travel within the development.

APPENDICES

APPENDIX A

TRICS Database Outputs

Calculation Reference: AUDIT-638801-190121-0124

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : D - NURSERY
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	1 days
09	NORTH		
	TW	TYNE & WEAR	1 days

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

Secondary 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: Gross floor area
Actual Range: 185 to 750 (units: sqm)
Range Selected by User: 176 to 2350 (units: sqm)

Parking Spaces Range: Selected: 5 to 22 Actual: 5 to 22

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 31/10/17

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:

Monday	1 days
Tuesday	2 days
Wednesday	2 days
Friday	1 days

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

Selected survey types:

Manual count	6 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 undertaking using machines.

Selected Locations:

Edge of Town Centre	2
Suburban Area (PPS6 Out of Centre)	3
Neighbourhood Centre (PPS6 Local Centre)	1

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	5
No Sub Category	1

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:

D1	6 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 1 mile:

15,001 to 20,000	2 days
25,001 to 50,000	3 days
50,001 to 100,000	1 days

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

Population within 5 miles:

75,001 to 100,000	2 days
125,001 to 250,000	2 days
250,001 to 500,000	2 days

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

Car ownership within 5 miles:

0.5 or Less	1 days
0.6 to 1.0	2 days
1.1 to 1.5	3 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:

No	6 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	6 days

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

LIST OF SITES relevant to selection parameters

1 CA-04-D-02 NURSERY CAMBRIDGESHIRE
EASTFIELD ROAD
PETERBOROUGH

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 400 sqm
Survey date: TUESDAY *18/10/16* *Survey Type: MANUAL*

2 CH-04-D-01 NURSERY CHESHIRE
CHESTER ROAD
MACCLESFIELD

Edge of Town Centre
No Sub Category
Total Gross floor area: 500 sqm
Survey date: MONDAY *24/11/14* *Survey Type: MANUAL*

3 ES-04-D-01 NURSERY EAST SUSSEX
CONNAUGHT ROAD
BRIGHTON
HOVE
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Gross floor area: 185 sqm
Survey date: FRIDAY *22/09/17* *Survey Type: MANUAL*

4 LN-04-D-01 NURSERY LINCOLNSHIRE
NEWARK ROAD
LINCOLN
SWALLOW BECK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 600 sqm
Survey date: TUESDAY *31/10/17* *Survey Type: MANUAL*

5 SF-04-D-03 NURSERY SUFFOLK
CAMP ROAD
LOWESTOFT

Edge of Town Centre
Residential Zone
Total Gross floor area: 750 sqm
Survey date: WEDNESDAY *10/12/14* *Survey Type: MANUAL*

6 TW-04-D-02 NURSERY TYNE & WEAR
ETTRICK GROVE
SUNDERLAND
HIGH BARNES
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 500 sqm
Survey date: WEDNESDAY *28/11/12* *Survey Type: MANUAL*

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	1.124	6	489	0.579	6	489	1.703
08:00 - 09:00	6	489	2.998	6	489	2.487	6	489	5.485
09:00 - 10:00	6	489	0.852	6	489	0.784	6	489	1.636
10:00 - 11:00	6	489	0.170	6	489	0.204	6	489	0.374
11:00 - 12:00	6	489	0.477	6	489	0.511	6	489	0.988
12:00 - 13:00	6	489	0.647	6	489	0.954	6	489	1.601
13:00 - 14:00	6	489	0.852	6	489	0.852	6	489	1.704
14:00 - 15:00	6	489	0.273	6	489	0.341	6	489	0.614
15:00 - 16:00	6	489	1.124	6	489	0.988	6	489	2.112
16:00 - 17:00	6	489	1.261	6	489	1.295	6	489	2.556
17:00 - 18:00	6	489	2.419	6	489	2.589	6	489	5.008
18:00 - 19:00	6	489	0.204	6	489	0.818	6	489	1.022
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			12.401			12.402			24.803

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

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

Parameter summary

Trip rate parameter range selected:	185 - 750 (units: sqm)
Survey date date range:	01/01/10 - 31/10/17
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
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 04 - EDUCATION/D - NURSERY
MULTI-MODAL TAXIS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	0.102	6	489	0.102	6	489	0.204
08:00 - 09:00	6	489	0.034	6	489	0.034	6	489	0.068
09:00 - 10:00	6	489	0.000	6	489	0.000	6	489	0.000
10:00 - 11:00	6	489	0.034	6	489	0.034	6	489	0.068
11:00 - 12:00	6	489	0.000	6	489	0.000	6	489	0.000
12:00 - 13:00	6	489	0.034	6	489	0.034	6	489	0.068
13:00 - 14:00	6	489	0.000	6	489	0.000	6	489	0.000
14:00 - 15:00	6	489	0.000	6	489	0.000	6	489	0.000
15:00 - 16:00	6	489	0.000	6	489	0.000	6	489	0.000
16:00 - 17:00	6	489	0.000	6	489	0.000	6	489	0.000
17:00 - 18:00	6	489	0.000	6	489	0.000	6	489	0.000
18:00 - 19:00	6	489	0.000	6	489	0.000	6	489	0.000
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.204			0.204			0.408

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	0.000	6	489	0.000	6	489	0.000
08:00 - 09:00	6	489	0.000	6	489	0.000	6	489	0.000
09:00 - 10:00	6	489	0.034	6	489	0.034	6	489	0.068
10:00 - 11:00	6	489	0.000	6	489	0.000	6	489	0.000
11:00 - 12:00	6	489	0.000	6	489	0.000	6	489	0.000
12:00 - 13:00	6	489	0.000	6	489	0.000	6	489	0.000
13:00 - 14:00	6	489	0.000	6	489	0.000	6	489	0.000
14:00 - 15:00	6	489	0.000	6	489	0.000	6	489	0.000
15:00 - 16:00	6	489	0.000	6	489	0.000	6	489	0.000
16:00 - 17:00	6	489	0.000	6	489	0.000	6	489	0.000
17:00 - 18:00	6	489	0.000	6	489	0.000	6	489	0.000
18:00 - 19:00	6	489	0.000	6	489	0.000	6	489	0.000
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.034			0.034			0.068

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL PSVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	0.000	6	489	0.000	6	489	0.000
08:00 - 09:00	6	489	0.034	6	489	0.034	6	489	0.068
09:00 - 10:00	6	489	0.000	6	489	0.000	6	489	0.000
10:00 - 11:00	6	489	0.000	6	489	0.000	6	489	0.000
11:00 - 12:00	6	489	0.000	6	489	0.000	6	489	0.000
12:00 - 13:00	6	489	0.000	6	489	0.000	6	489	0.000
13:00 - 14:00	6	489	0.000	6	489	0.000	6	489	0.000
14:00 - 15:00	6	489	0.000	6	489	0.000	6	489	0.000
15:00 - 16:00	6	489	0.000	6	489	0.000	6	489	0.000
16:00 - 17:00	6	489	0.000	6	489	0.000	6	489	0.000
17:00 - 18:00	6	489	0.000	6	489	0.000	6	489	0.000
18:00 - 19:00	6	489	0.000	6	489	0.000	6	489	0.000
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.034			0.034			0.068

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	0.000	6	489	0.000	6	489	0.000
08:00 - 09:00	6	489	0.102	6	489	0.034	6	489	0.136
09:00 - 10:00	6	489	0.000	6	489	0.000	6	489	0.000
10:00 - 11:00	6	489	0.000	6	489	0.000	6	489	0.000
11:00 - 12:00	6	489	0.000	6	489	0.000	6	489	0.000
12:00 - 13:00	6	489	0.034	6	489	0.000	6	489	0.034
13:00 - 14:00	6	489	0.000	6	489	0.000	6	489	0.000
14:00 - 15:00	6	489	0.000	6	489	0.000	6	489	0.000
15:00 - 16:00	6	489	0.000	6	489	0.000	6	489	0.000
16:00 - 17:00	6	489	0.000	6	489	0.000	6	489	0.000
17:00 - 18:00	6	489	0.000	6	489	0.034	6	489	0.034
18:00 - 19:00	6	489	0.000	6	489	0.068	6	489	0.068
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00	1	400	0.000	1	400	0.000	1	400	0.000
21:00 - 22:00	1	400	0.000	1	400	0.000	1	400	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.136			0.136			0.272

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	1.567	6	489	0.613	6	489	2.180
08:00 - 09:00	6	489	5.247	6	489	2.453	6	489	7.700
09:00 - 10:00	6	489	1.261	6	489	0.886	6	489	2.147
10:00 - 11:00	6	489	0.239	6	489	0.204	6	489	0.443
11:00 - 12:00	6	489	0.613	6	489	0.750	6	489	1.363
12:00 - 13:00	6	489	0.818	6	489	1.022	6	489	1.840
13:00 - 14:00	6	489	1.056	6	489	0.988	6	489	2.044
14:00 - 15:00	6	489	0.409	6	489	0.477	6	489	0.886
15:00 - 16:00	6	489	1.363	6	489	1.465	6	489	2.828
16:00 - 17:00	6	489	1.431	6	489	2.044	6	489	3.475
17:00 - 18:00	6	489	2.692	6	489	4.395	6	489	7.087
18:00 - 19:00	6	489	0.170	6	489	1.465	6	489	1.635
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			16.866			16.762			33.628

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL PEDESTRIANS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	0.341	6	489	0.034	6	489	0.375
08:00 - 09:00	6	489	1.601	6	489	0.716	6	489	2.317
09:00 - 10:00	6	489	0.204	6	489	0.068	6	489	0.272
10:00 - 11:00	6	489	0.239	6	489	0.204	6	489	0.443
11:00 - 12:00	6	489	0.613	6	489	0.511	6	489	1.124
12:00 - 13:00	6	489	1.533	6	489	1.090	6	489	2.623
13:00 - 14:00	6	489	0.477	6	489	0.784	6	489	1.261
14:00 - 15:00	6	489	0.170	6	489	0.273	6	489	0.443
15:00 - 16:00	6	489	0.818	6	489	0.613	6	489	1.431
16:00 - 17:00	6	489	0.784	6	489	1.670	6	489	2.454
17:00 - 18:00	6	489	0.647	6	489	1.261	6	489	1.908
18:00 - 19:00	6	489	0.034	6	489	0.204	6	489	0.238
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			7.461			7.428			14.889

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	0.068	6	489	0.000	6	489	0.068
08:00 - 09:00	6	489	0.239	6	489	0.068	6	489	0.307
09:00 - 10:00	6	489	0.000	6	489	0.034	6	489	0.034
10:00 - 11:00	6	489	0.000	6	489	0.000	6	489	0.000
11:00 - 12:00	6	489	0.000	6	489	0.034	6	489	0.034
12:00 - 13:00	6	489	0.170	6	489	0.136	6	489	0.306
13:00 - 14:00	6	489	0.034	6	489	0.034	6	489	0.068
14:00 - 15:00	6	489	0.000	6	489	0.000	6	489	0.000
15:00 - 16:00	6	489	0.034	6	489	0.000	6	489	0.034
16:00 - 17:00	6	489	0.000	6	489	0.102	6	489	0.102
17:00 - 18:00	6	489	0.034	6	489	0.170	6	489	0.204
18:00 - 19:00	6	489	0.000	6	489	0.034	6	489	0.034
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.579			0.612			1.191

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	0.068	6	489	0.000	6	489	0.068
08:00 - 09:00	6	489	0.239	6	489	0.068	6	489	0.307
09:00 - 10:00	6	489	0.000	6	489	0.034	6	489	0.034
10:00 - 11:00	6	489	0.000	6	489	0.000	6	489	0.000
11:00 - 12:00	6	489	0.000	6	489	0.034	6	489	0.034
12:00 - 13:00	6	489	0.170	6	489	0.136	6	489	0.306
13:00 - 14:00	6	489	0.034	6	489	0.034	6	489	0.068
14:00 - 15:00	6	489	0.000	6	489	0.000	6	489	0.000
15:00 - 16:00	6	489	0.034	6	489	0.000	6	489	0.034
16:00 - 17:00	6	489	0.000	6	489	0.102	6	489	0.102
17:00 - 18:00	6	489	0.034	6	489	0.170	6	489	0.204
18:00 - 19:00	6	489	0.000	6	489	0.034	6	489	0.034
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.579			0.612			1.191

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	1.976	6	489	0.647	6	489	2.623
08:00 - 09:00	6	489	7.189	6	489	3.271	6	489	10.460
09:00 - 10:00	6	489	1.465	6	489	0.988	6	489	2.453
10:00 - 11:00	6	489	0.477	6	489	0.409	6	489	0.886
11:00 - 12:00	6	489	1.227	6	489	1.295	6	489	2.522
12:00 - 13:00	6	489	2.555	6	489	2.249	6	489	4.804
13:00 - 14:00	6	489	1.567	6	489	1.806	6	489	3.373
14:00 - 15:00	6	489	0.579	6	489	0.750	6	489	1.329
15:00 - 16:00	6	489	2.215	6	489	2.078	6	489	4.293
16:00 - 17:00	6	489	2.215	6	489	3.816	6	489	6.031
17:00 - 18:00	6	489	3.373	6	489	5.860	6	489	9.233
18:00 - 19:00	6	489	0.204	6	489	1.772	6	489	1.976
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00	1	400	0.000	1	400	0.000	1	400	0.000
21:00 - 22:00	1	400	0.000	1	400	0.000	1	400	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			25.042			24.941			49.983

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 04 - EDUCATION/D - NURSERY
MULTI-MODAL Servicing Vehicles
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	400	0.000	1	400	0.000	1	400	0.000
07:00 - 08:00	6	489	0.000	6	489	0.000	6	489	0.000
08:00 - 09:00	6	489	0.034	6	489	0.034	6	489	0.068
09:00 - 10:00	6	489	0.000	6	489	0.000	6	489	0.000
10:00 - 11:00	6	489	0.000	6	489	0.000	6	489	0.000
11:00 - 12:00	6	489	0.000	6	489	0.000	6	489	0.000
12:00 - 13:00	6	489	0.000	6	489	0.000	6	489	0.000
13:00 - 14:00	6	489	0.000	6	489	0.000	6	489	0.000
14:00 - 15:00	6	489	0.000	6	489	0.000	6	489	0.000
15:00 - 16:00	6	489	0.000	6	489	0.000	6	489	0.000
16:00 - 17:00	6	489	0.000	6	489	0.000	6	489	0.000
17:00 - 18:00	6	489	0.000	6	489	0.000	6	489	0.000
18:00 - 19:00	6	489	0.000	6	489	0.000	6	489	0.000
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.034			0.034			0.068

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 CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL
Category : O - CONVENIENCE STORE
VEHICLES

Selected regions and areas:
15 GREATER DUBLIN
DL DUBLIN 1 days

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

Secondary 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: Gross floor area
Actual Range: 728 to 728 (units: sqm)
Range Selected by User: 728 to 728 (units: sqm)

Parking Spaces Range: Selected: 0 to 0 Actual: 0 to 0

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/10 to 27/09/11

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 1 days

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

Selected survey types:
Manual count 1 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 undertaking using machines.

Selected Locations:
Edge of Town Centre 1

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:
Retail Zone 1

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:
A1 1 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 1 mile:
10,001 to 15,000 1 days

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

Secondary Filtering selection (Cont.):

Population within 5 miles:
500,001 or More 1 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 1 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.

Petrol filling station:
Included in the survey count 0 days
Excluded from count or no filling station 1 days

This data displays the number of surveys within the selected set that include petrol filling station activity, and the number of surveys that do not.

Travel Plan:
No 1 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 1 days

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

LIST OF SITES relevant to selection parameters

1 DL-01-O-01 TESCO DUBLIN
UPPER BAGGOT STREET
DUBLIN
DUBLIN 4
Edge of Town Centre
Retail Zone
Total Gross floor area: 728 sqm
Survey date: TUESDAY *27/09/11* *Survey Type: MANUAL*

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 01 - RETAIL/O - CONVENIENCE STORE
VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	728	0.000	1	728	0.000	1	728	0.000
07:00 - 08:00	1	728	0.275	1	728	0.137	1	728	0.412
08:00 - 09:00	1	728	0.412	1	728	0.412	1	728	0.824
09:00 - 10:00	1	728	0.824	1	728	0.412	1	728	1.236
10:00 - 11:00	1	728	0.687	1	728	0.687	1	728	1.374
11:00 - 12:00	1	728	0.549	1	728	0.412	1	728	0.961
12:00 - 13:00	1	728	1.099	1	728	0.962	1	728	2.061
13:00 - 14:00	1	728	1.786	1	728	1.923	1	728	3.709
14:00 - 15:00	1	728	1.511	1	728	1.374	1	728	2.885
15:00 - 16:00	1	728	0.824	1	728	1.374	1	728	2.198
16:00 - 17:00	1	728	0.687	1	728	0.824	1	728	1.511
17:00 - 18:00	1	728	1.374	1	728	1.236	1	728	2.610
18:00 - 19:00	1	728	0.824	1	728	0.687	1	728	1.511
19:00 - 20:00	1	728	0.687	1	728	0.824	1	728	1.511
20:00 - 21:00	1	728	0.687	1	728	0.962	1	728	1.649
21:00 - 22:00	1	728	0.137	1	728	0.137	1	728	0.274
22:00 - 23:00	1	728	0.000	1	728	0.000	1	728	0.000
23:00 - 24:00	1	728	0.000	1	728	0.000	1	728	0.000
Total Rates:			12.363			12.363			24.726

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

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

Parameter summary

Trip rate parameter range selected:	728 - 728 (units: sqm)
Survey date date range:	01/01/10 - 27/09/11
Number of weekdays (Monday-Friday):	1
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 01 - RETAIL/O - CONVENIENCE STORE
OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1	728	0.000	1	728	0.000	1	728	0.000
07:00 - 08:00	1	728	0.137	1	728	0.000	1	728	0.137
08:00 - 09:00	1	728	0.000	1	728	0.137	1	728	0.137
09:00 - 10:00	1	728	0.000	1	728	0.000	1	728	0.000
10:00 - 11:00	1	728	0.000	1	728	0.000	1	728	0.000
11:00 - 12:00	1	728	0.000	1	728	0.000	1	728	0.000
12:00 - 13:00	1	728	0.000	1	728	0.000	1	728	0.000
13:00 - 14:00	1	728	0.000	1	728	0.000	1	728	0.000
14:00 - 15:00	1	728	0.000	1	728	0.000	1	728	0.000
15:00 - 16:00	1	728	0.000	1	728	0.000	1	728	0.000
16:00 - 17:00	1	728	0.000	1	728	0.000	1	728	0.000
17:00 - 18:00	1	728	0.000	1	728	0.000	1	728	0.000
18:00 - 19:00	1	728	0.000	1	728	0.000	1	728	0.000
19:00 - 20:00	1	728	0.000	1	728	0.000	1	728	0.000
20:00 - 21:00	1	728	0.000	1	728	0.000	1	728	0.000
21:00 - 22:00	1	728	0.000	1	728	0.000	1	728	0.000
22:00 - 23:00	1	728	0.000	1	728	0.000	1	728	0.000
23:00 - 24:00	1	728	0.000	1	728	0.000	1	728	0.000
Total Rates:			0.137			0.137			0.274

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 01 - RETAIL/O - CONVENIENCE STORE
CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

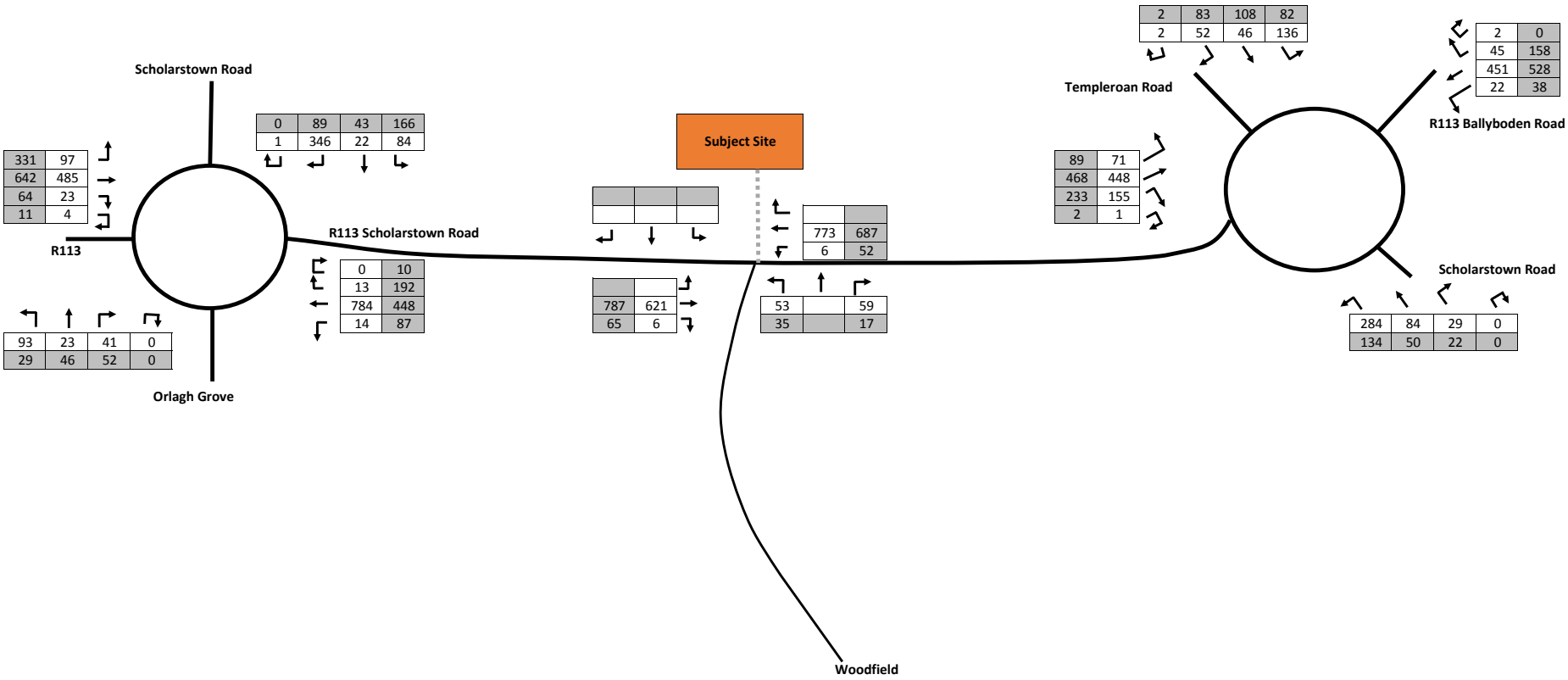
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	1	728	0.000	1	728	0.000	1	728	0.000
07:00 - 08:00	1	728	0.137	1	728	0.000	1	728	0.137
08:00 - 09:00	1	728	0.137	1	728	0.275	1	728	0.412
09:00 - 10:00	1	728	0.412	1	728	0.412	1	728	0.824
10:00 - 11:00	1	728	0.000	1	728	0.000	1	728	0.000
11:00 - 12:00	1	728	0.137	1	728	0.000	1	728	0.137
12:00 - 13:00	1	728	0.137	1	728	0.275	1	728	0.412
13:00 - 14:00	1	728	0.000	1	728	0.000	1	728	0.000
14:00 - 15:00	1	728	0.000	1	728	0.000	1	728	0.000
15:00 - 16:00	1	728	0.412	1	728	0.412	1	728	0.824
16:00 - 17:00	1	728	0.275	1	728	0.000	1	728	0.275
17:00 - 18:00	1	728	0.137	1	728	0.275	1	728	0.412
18:00 - 19:00	1	728	0.137	1	728	0.137	1	728	0.274
19:00 - 20:00	1	728	0.000	1	728	0.137	1	728	0.137
20:00 - 21:00	1	728	0.000	1	728	0.000	1	728	0.000
21:00 - 22:00	1	728	0.000	1	728	0.000	1	728	0.000
22:00 - 23:00	1	728	0.000	1	728	0.000	1	728	0.000
23:00 - 24:00	1	728	0.000	1	728	0.000	1	728	0.000
Total Rates:			1.921			1.923			3.844

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.*

APPENDIX B

Traffic Flow Diagrams



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Project :
Proposed Residential Development
Scholarstown, Dublin 16, Co. Dublin

DRG. Title :
Network Traffic Flows
2018 Base Flows (PCU) weekday May 2018

Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

Flows relate to data recorded on Thursday 24th May 2018

Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

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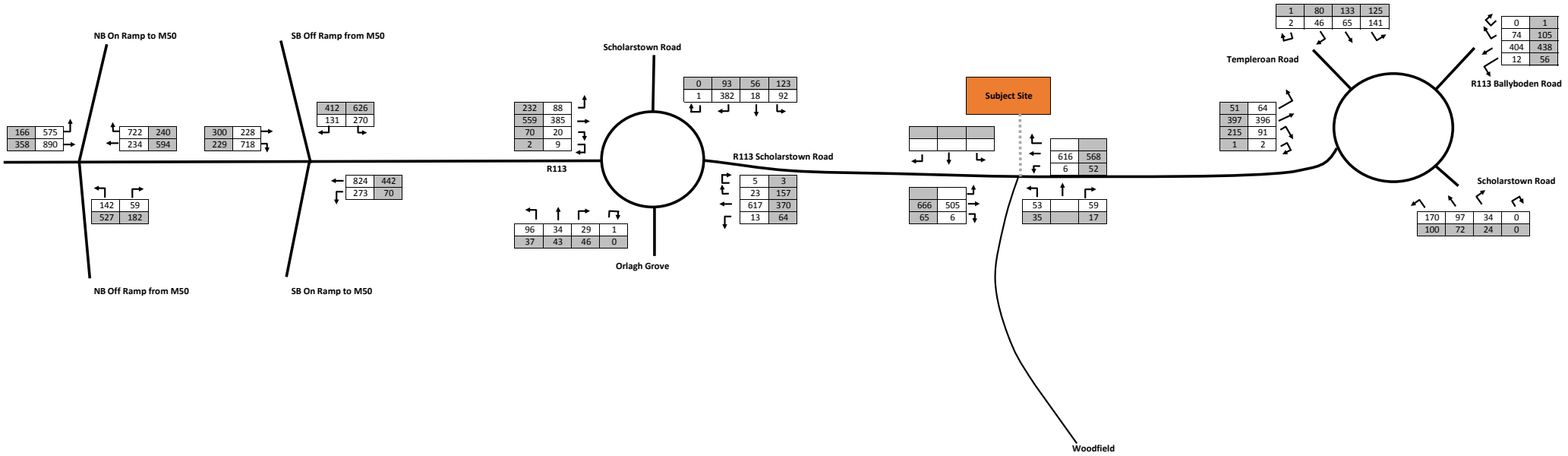
Figure: 1

Rev: -



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Project :
Proposed Residential Development
Scholarstown, Dublin 16, Co. Dublin

DRG. Title :
Network Traffic Flows
2019 Base Flows (PCU) weekday September 2019

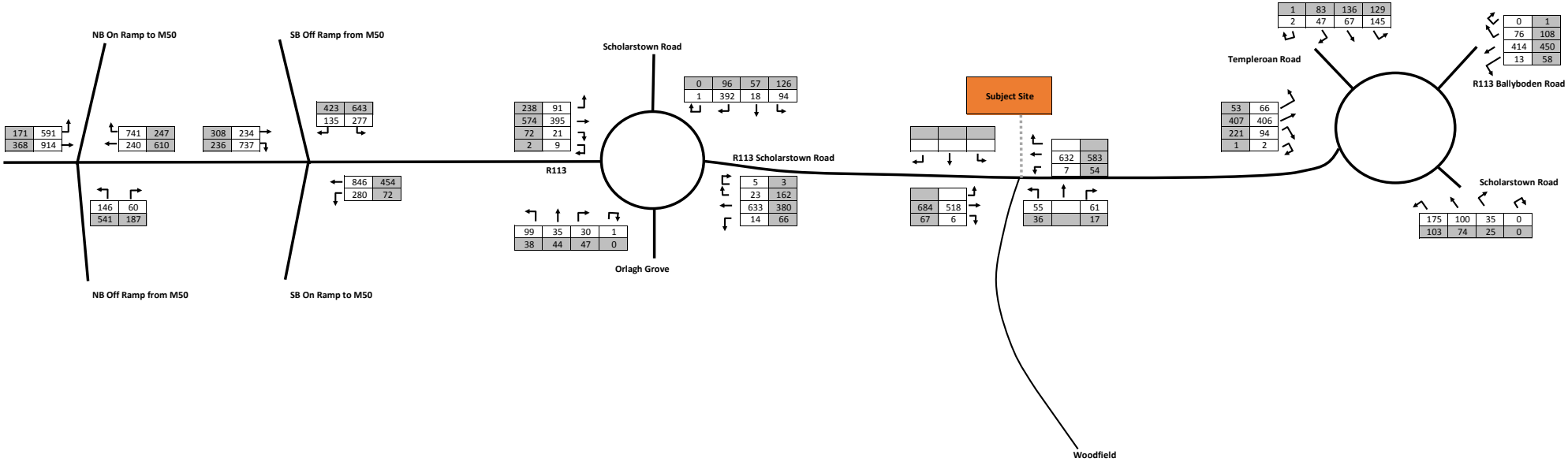
Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

Dwn:	Ckd:	Date:
JH	TJ	02/10/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure: 1

Rev: -



171	591
368	914

741	247
240	610

308	234
236	737

423	643
135	277

146	60
541	187

846	454
280	72

238	91
574	395
72	21
2	9

99	35	30	1
38	44	47	0

0	96	57	126
1	392	18	94

5	3
23	162
633	380
14	66

684	518	
67	6	

		632	583
		7	54

55		61
36		17

1	83	136	129
2	47	67	145

53	66
407	406
221	94
1	2

0	1
76	108
414	450
13	58

175	100	35	0
103	74	25	0

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Project :
Proposed Residential Development
Scholarstown, Dublin 16, Co. Dublin

DRG. Title :
Network Traffic Flows
2021 Base Flows (PCU)

Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

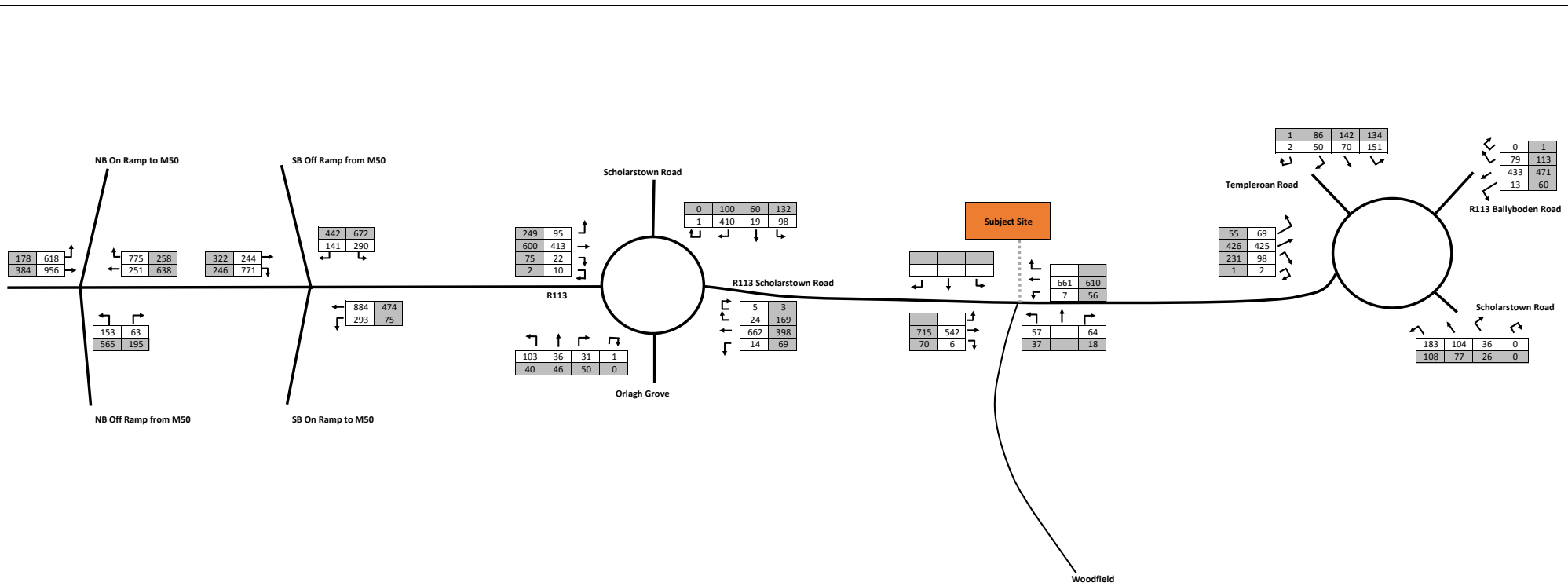
GR 1.026938

Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure: 2

Rev: -



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Proposed Residential Development
Scholarstown, Dublin 16, Co. Dublin

DRG. Title :
Network Traffic Flows
2026 Base Flows (PCU)

Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

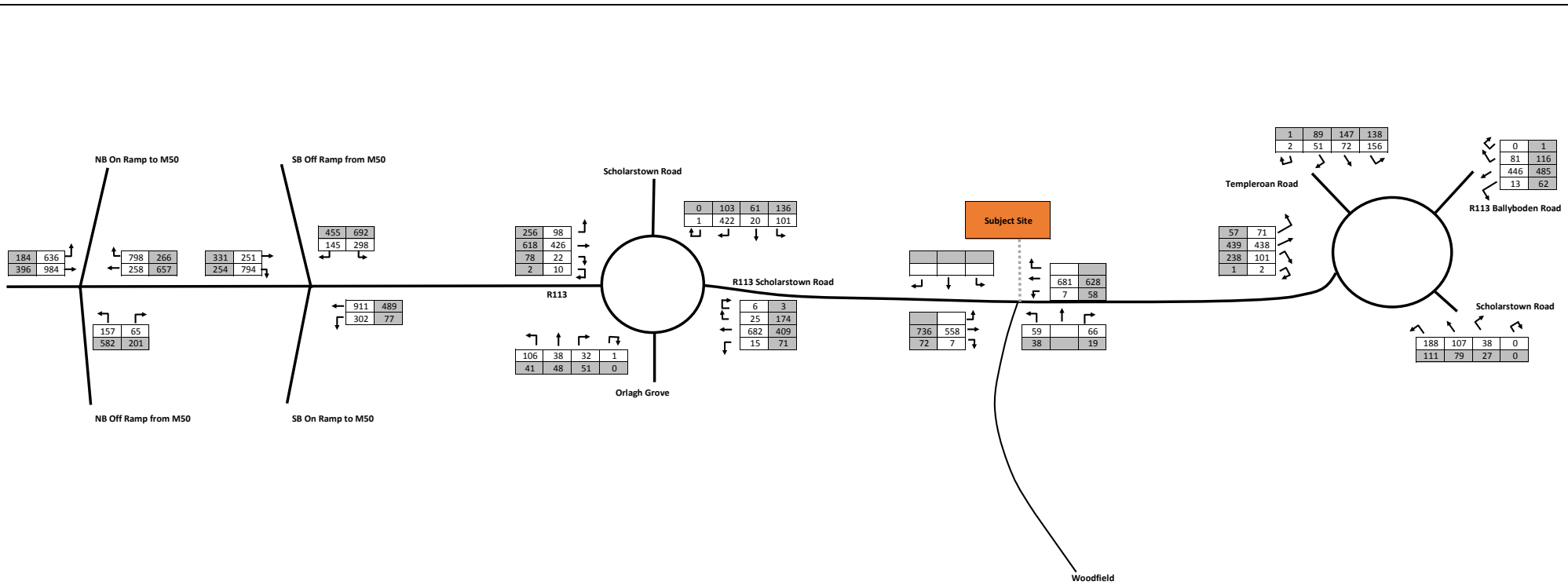
GR 1.073458

Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure: 3

Rev: -



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website: www.dbfl.ie

Project :
Proposed Residential Development
Scholarstown, Dublin 16, Co. Dublin

DRG. Title :
Network Traffic Flows
2036 Base Flows (PCU)

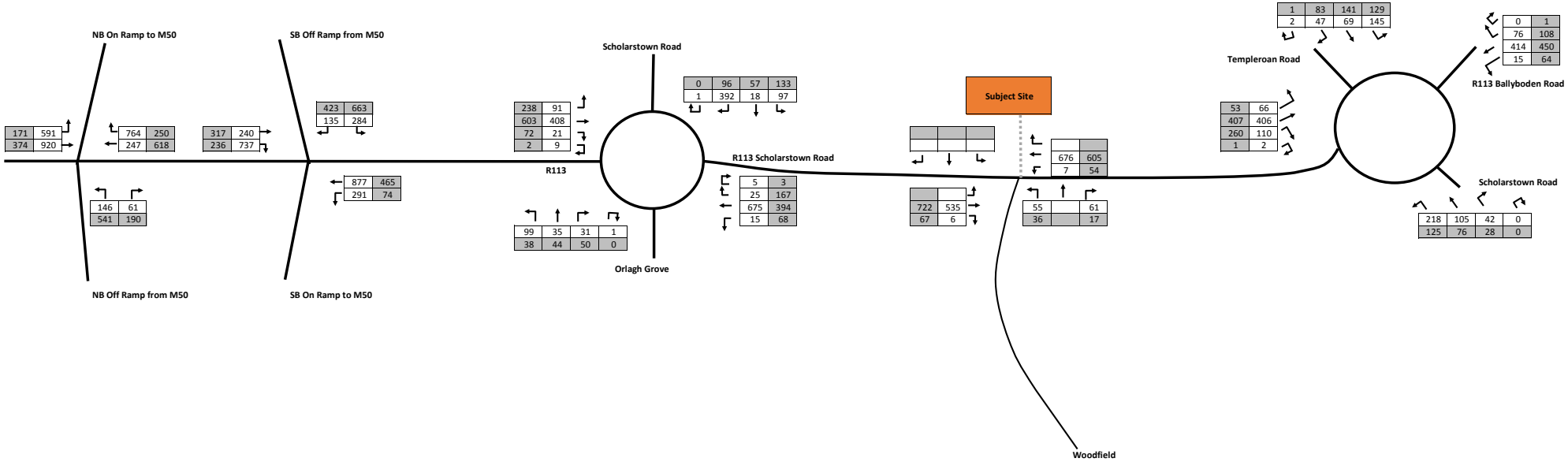
Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

GR 1.105465

Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure:	Rev:
4	-



171	591
374	920

764	250
247	618

317	240
236	737

423	663
135	284

877	465
291	74

146	61
541	190

238	91
603	408
72	21
2	9

99	35	31	1
38	44	50	0

0	96	57	133
1	392	18	97

5	3
25	167
675	394
15	68

722	535	
67	6	

676	605
7	54

55		61
36		17

1	83	141	129
2	47	69	145

53	66
407	406
260	110
1	2

0	1
76	108
414	450
15	64

218	105	42	0
125	76	28	0

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Scholarstown, Dublin 16, Co. Dublin

DRG. Title :
Network Traffic Flows
2021 DN

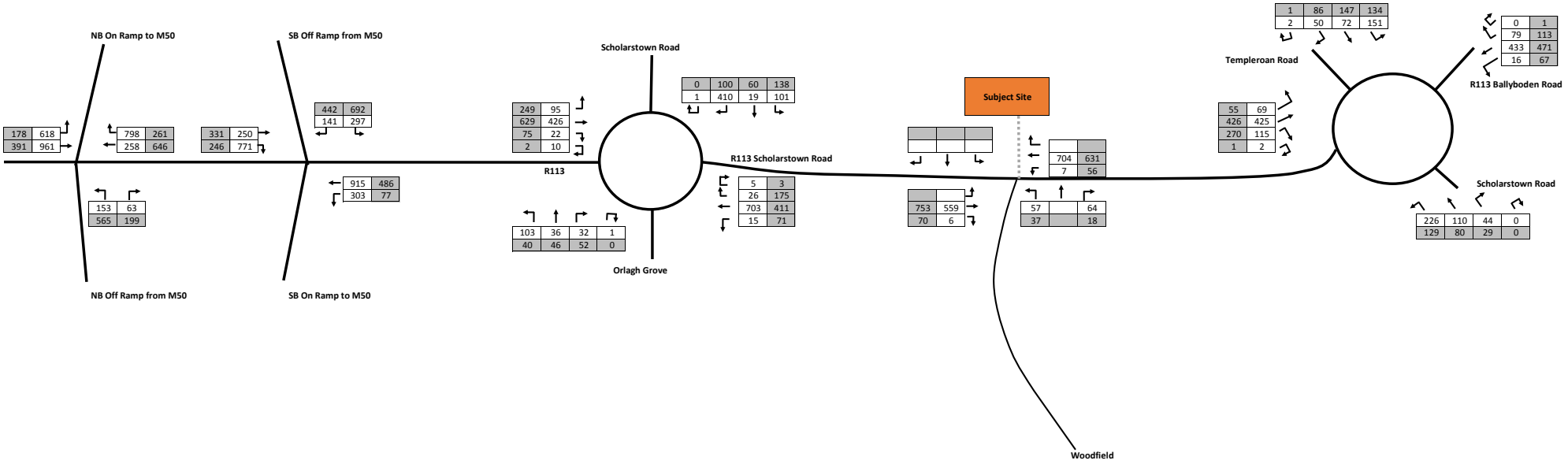
Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure: 9

Rev: -



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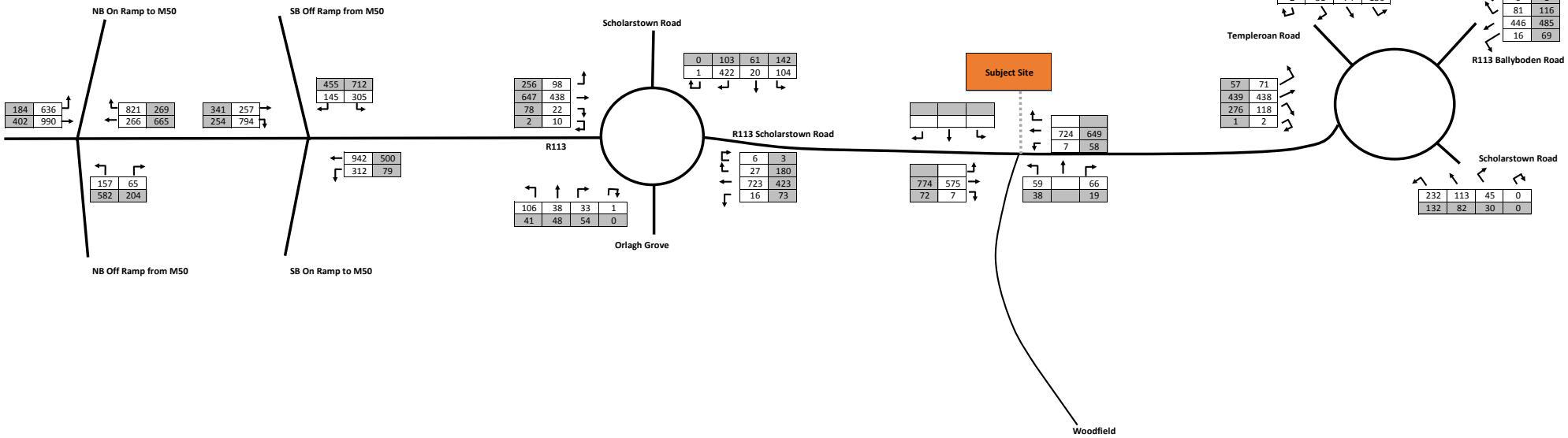
Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure:	Rev:
10	-



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Scholarstown, Dublin 16, Co. Dublin

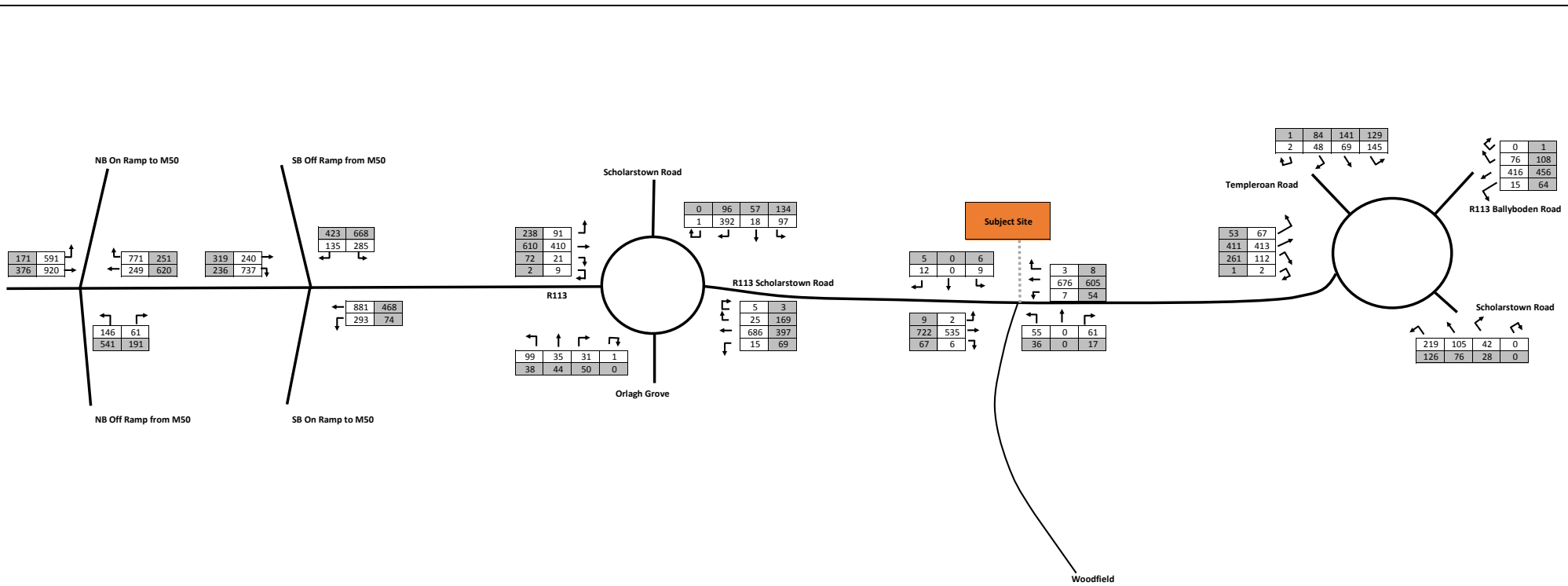
DRG. Title :
Network Traffic Flows
2036 DN

Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure:	Rev:
11	-



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Scholarstown, Dublin 16, Co. Dublin

DRG. Title : Network Traffic Flows
2021 DS

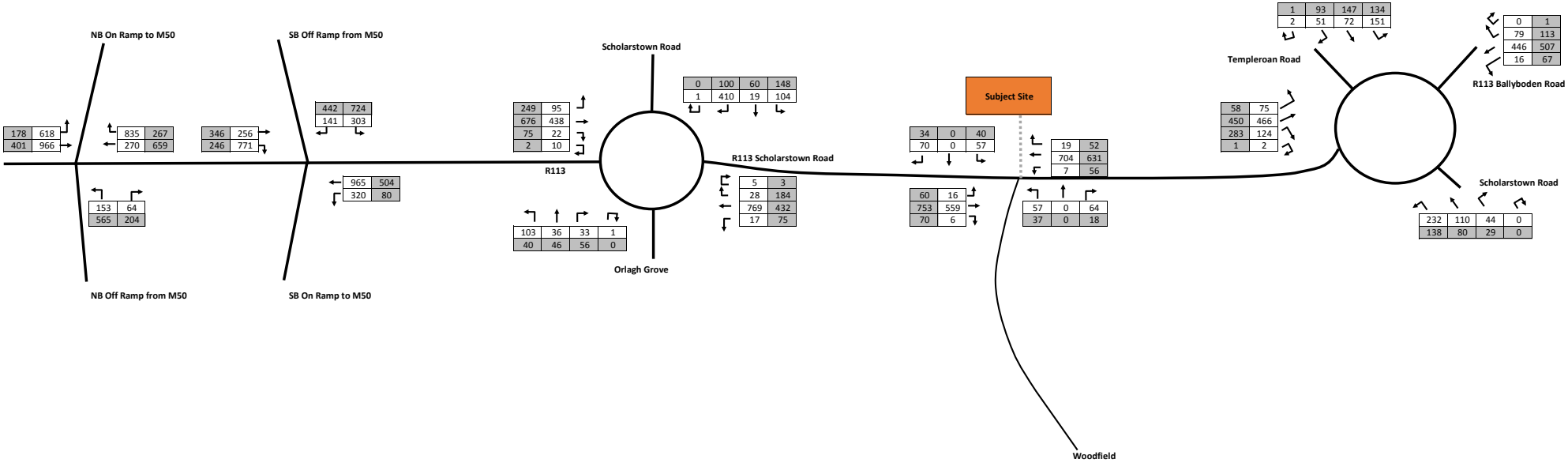
Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure: 12

Rev: -



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Scholarstown, Dublin 16, Co. Dublin

DRG. Title : Network Traffic Flows
2026 DS

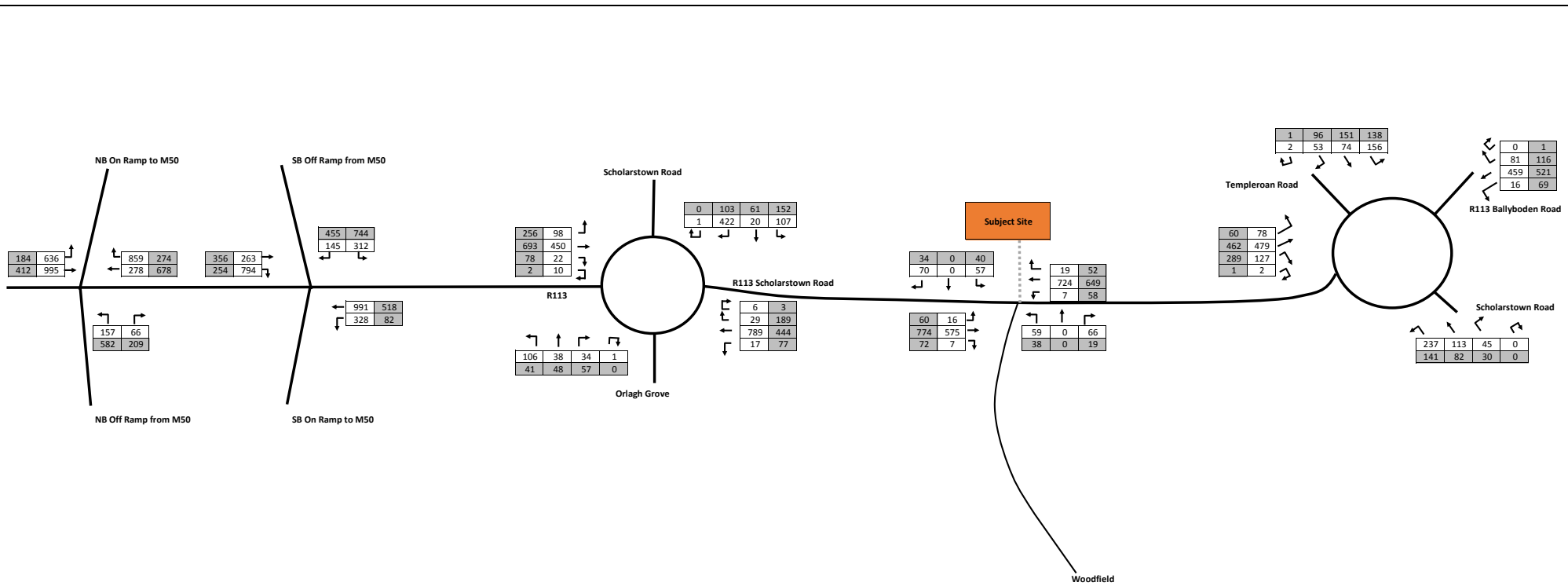
Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

Dwn:	Ckd:	Date:
JH	TJ	01/01/2019

Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001

Figure: 13

Rev: -



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DRG. Title : Network Traffic Flows
2036 DS

Key:
AM Peak Hour (0715-0815)
PM Peak Hour (1700-1800)

Dwn: JH	**Ckd:** TJ	**Date:** 01/01/2019	
Ref: p170232\calcs\excel\170232-DBFL-CA-D-0001			
Figure: 14		**Rev:** -	

APPENDIX C

PICADY Outputs

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.0.0.4211 []

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: Scholarstown Priority Junction.j9
Path: G:\2017\p170232\calcs\picady
Report generation date: 20/03/2019 11:08:18

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2018							
Stream B-AC	0.5	13.58	0.32	B	0.2	9.90	0.14	A
Stream C-A	0.7	3.60	0.25	A	1.2	5.08	0.38	A
Stream C-B	0.0	3.65	0.26	A	0.1	5.87	0.42	A
Stream A-B								
Stream A-C								
	2021 DN							
Stream B-AC	0.6	15.65	0.36	C	0.2	10.78	0.15	B
Stream C-A	0.7	3.69	0.27	A	1.4	5.38	0.42	A
Stream C-B	0.0	3.74	0.28	A	0.1	6.26	0.45	A
Stream A-B								
Stream A-C								
	2026 DN							

Stream B-AC	0.7	17.80	0.41	C	0.2	11.62	0.17	B
Stream C-A	0.8	3.80	0.29	A	1.5	5.66	0.45	A
Stream C-B	0.0	3.87	0.30	A	0.1	6.65	0.48	A
Stream A-B								
Stream A-C								
	2036 DN							
Stream B-AC	0.8	21.12	0.46	C	0.2	12.76	0.19	B
Stream C-A	0.9	3.90	0.31	A	1.8	6.02	0.49	A
Stream C-B	0.0	3.97	0.32	A	0.2	7.15	0.51	A
Stream A-B								
Stream A-C								

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	20/03/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	HEADOFFICE"Hennaghanj
Description	

Units

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

Analysis Options

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

Demand Set Summary

Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
2018	AM	ONE HOUR	08:00	09:30	15
2018	PM	ONE HOUR	17:00	18:30	15
2021 DN	AM	ONE HOUR	08:00	09:30	15
2021 DN	PM	ONE HOUR	17:00	18:30	15
2026 DN	AM	ONE HOUR	08:00	09:30	15
2026 DN	PM	ONE HOUR	17:00	18:30	15
2036 DN	AM	ONE HOUR	08:00	09:30	15
2036 DN	PM	ONE HOUR	17:00	18:30	15

2018, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	2.49	A

Junction Network Options

Driving side	Lighting

Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	11.00		✓	2.80	60.0		-

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.30	90	120

Pedestrian Crossings

Arm	Crossing type	Average pedestrian flow (Ped/hr)
A	None	
B	None	
C	Pelican	10.00

Pelican/Puffin Crossings

Arm	Space between crossing and junction entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
C	1.00	8.00	0.00	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B

1	B-A	584.542	0.083	0.211	0.132	0.301
1	B-C	720.490	0.086	0.218	-	-
1	C-B	648.459	0.197	0.197	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D1	2018	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	779.00	100.000
B		✓	112.00	100.000
C		✓	627.00	100.000

Demand overview (Pedestrians)

Arm	Average pedestrian flow (Ped/hr)
A	
B	
C	10.00

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0.000	6.000	773.000
	B	59.000	0.000	53.000
	C	621.000	6.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.32	13.58	0.5	B
C-A	0.25	3.60	0.7	A
C-B	0.26	3.65	0.0	A
A-B				
A-C				

Main Results for each time segment

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	84.32		471.59	0.179	83.46	0.2	9.255	A
C-A	467.52	7.53	2729.42	0.171	465.89	0.4	3.182	A
C-B	4.52	7.53	25.91	0.174	4.50	0.0	3.213	A
A-B	4.52				4.52			
A-C	581.95				581.95			

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	100.69		437.04	0.230	100.37	0.3	10.684	B
C-A	558.27	8.99	2710.47	0.206	557.85	0.5	3.346	A
C-B	5.39	8.99	25.76	0.209	5.39	0.0	3.385	A
A-B	5.39				5.39			
A-C	694.91				694.91			

Main results: (08:30-08:45)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	123.31		388.37	0.318	122.67	0.5	13.515	B
C-A	683.73	11.01	2684.13	0.255	683.09	0.7	3.599	A
C-B	6.61	11.01	25.55	0.259	6.60	0.0	3.651	A
A-B	6.61				6.61			
A-C	851.09				851.09			

Main results: (08:45-09:00)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	123.31		388.29	0.318	123.30	0.5	13.582	B
C-A	683.73	11.01	2684.20	0.255	683.73	0.7	3.599	A

C-B	6.61	11.01	25.55	0.259	6.61	0.0	3.650	A
A-B	6.61				6.61			
A-C	851.09				851.09			

Main results: (09:00-09:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	100.69		436.93	0.230	101.31	0.3	10.745	B
C-A	558.27	8.99	2710.55	0.206	558.90	0.5	3.351	A
C-B	5.39	8.99	25.77	0.209	5.40	0.0	3.389	A
A-B	5.39				5.39			
A-C	694.91				694.91			

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	84.32		471.38	0.179	84.65	0.2	9.316	A
C-A	467.52	7.53	2729.54	0.171	467.94	0.4	3.187	A
C-B	4.52	7.53	25.92	0.174	4.52	0.0	3.218	A
A-B	4.52				4.52			
A-C	581.95				581.95			

2018, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	2.98	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Pedestrian Crossings

Arm	Crossing type	Average pedestrian flow (Ped/hr)
A	None	
B	None	
C	Pelican	10.00

Pelican/Puffin Crossings

Arm	Space between crossing and junction entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
C	1.00	8.00	0.00	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D2	2018	PM	ONE HOUR	17:00	18:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	739.00	100.000
B		✓	52.00	100.000
C		✓	852.00	100.000

Demand overview (Pedestrians)

Arm	Average pedestrian flow (Ped/hr)
A	
B	
C	10.00

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0.000	52.000	687.000
	B	17.000	0.000	35.000
	C	787.000	65.000	0.000

Vehicle Mix

Heavy Vehicle proportion

	To			
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.14	9.90	0.2	A
C-A	0.38	5.08	1.2	A
C-B	0.42	5.87	0.1	A
A-B				
A-C				

Main Results for each time segment

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	39.15		505.99	0.077	38.82	0.1	7.700	A
C-A	592.49	7.53	2342.20	0.253	589.95	0.6	4.101	A
C-B	48.94	7.53	171.22	0.286	48.69	0.1	4.508	A
A-B	39.15				39.15			
A-C	517.21				517.21			

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	46.75		471.24	0.099	46.64	0.1	8.477	A
C-A	707.50	8.99	2309.61	0.306	706.73	0.8	4.467	A
C-B	58.43	8.99	171.14	0.341	58.35	0.1	5.012	A
A-B	46.75				46.75			
A-C	617.60				617.60			

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	57.25		420.94	0.136	57.07	0.2	9.888	A
C-A	866.50	11.01	2262.16	0.383	865.18	1.2	5.075	A
C-B	71.57	11.01	170.94	0.419	71.43	0.1	5.865	A
A-B	57.25				57.25			
A-C	756.40				756.40			

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	57.25		420.79	0.136	57.25	0.2	9.902	A
C-A	866.50	11.01	2262.63	0.383	866.49	1.2	5.080	A
C-B	71.57	11.01	171.16	0.418	71.56	0.1	5.871	A
A-B	57.25				57.25			
A-C	756.40				756.40			

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	46.75		471.02	0.099	46.93	0.1	8.492	A
C-A	707.50	8.99	2310.08	0.306	708.79	0.8	4.473	A
C-B	58.43	8.99	171.45	0.341	58.57	0.1	5.023	A

A-B	46.75				46.75			
A-C	617.60				617.60			

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	39.15		505.67	0.077	39.25	0.1	7.720	A
C-A	592.49	7.53	2342.80	0.253	593.28	0.6	4.112	A
C-B	48.94	7.53	171.62	0.285	49.02	0.1	4.523	A
A-B	39.15				39.15			
A-C	517.21				517.21			

2021 DN, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	2.61	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry
[same as above]

Minor Arm Geometry
[same as above]

Pedestrian Crossings

Arm	Crossing type	Average pedestrian flow (Ped/hr)
A	None	
B	None	
C	Pelican	10.00

Pelican/Puffin Crossings

Arm	Space between crossing and junction entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
C	1.00	8.00	0.00	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D3	2021 DN	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	871.00	100.000
B		✓	118.00	100.000
C		✓	674.00	100.000

Demand overview (Pedestrians)

Arm	Average pedestrian flow (Ped/hr)
A	
B	
C	10.00

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0.000	7.000	864.000
	B	62.000	0.000	56.000
	C	668.000	6.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.36	15.65	0.6	C
C-A	0.27	3.69	0.7	A

C-B	0.28	3.74	0.0	A
A-B				
A-C				

Main Results for each time segment

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	88.84		453.12	0.196	87.87	0.2	9.831	A
C-A	502.91	7.53	2732.49	0.184	501.12	0.4	3.226	A
C-B	4.52	7.53	24.15	0.187	4.50	0.0	3.257	A
A-B	5.27				5.27			
A-C	650.46				650.46			

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	106.08		414.58	0.256	105.69	0.3	11.639	B
C-A	600.52	8.99	2713.23	0.221	600.06	0.6	3.409	A
C-B	5.39	8.99	24.01	0.225	5.39	0.0	3.449	A
A-B	6.29				6.29			
A-C	776.72				776.72			

Main results: (08:30-08:45)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	129.92		360.00	0.361	129.07	0.6	15.534	C
C-A	735.48	11.01	2686.34	0.274	734.75	0.7	3.689	A
C-B	6.61	11.01	23.81	0.277	6.60	0.0	3.742	A

A-B	7.71				7.71			
A-C	951.28				951.28			

Main results: (08:45-09:00)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	129.92		359.92	0.361	129.89	0.6	15.646	C
C-A	735.48	11.01	2686.41	0.274	735.47	0.7	3.690	A
C-B	6.61	11.01	23.81	0.277	6.61	0.0	3.745	A
A-B	7.71				7.71			
A-C	951.28				951.28			

Main results: (09:00-09:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	106.08		414.45	0.256	106.91	0.3	11.736	B
C-A	600.52	8.99	2713.31	0.221	601.24	0.6	3.412	A
C-B	5.39	8.99	24.01	0.225	5.40	0.0	3.454	A
A-B	6.29				6.29			
A-C	776.72				776.72			

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	88.84		452.89	0.196	89.25	0.2	9.910	A
C-A	502.91	7.53	2732.61	0.184	503.37	0.4	3.232	A
C-B	4.52	7.53	24.16	0.187	4.52	0.0	3.263	A
A-B	5.27				5.27			
A-C	650.46				650.46			

2021 DN, PM

Data Errors and Warnings
No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	3.18	A

Junction Network Options
[same as above]

Arms

Arms
[same as above]

Major Arm Geometry
[same as above]

Minor Arm Geometry
[same as above]

Pedestrian Crossings

Arm	Crossing type	Average pedestrian flow (Ped/hr)
A	None	
B	None	
C	Pelican	10.00

Pelican/Puffin Crossings

Arm	Space between crossing and junction entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
C	1.00	8.00	0.00	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D4	2021 DN	PM	ONE HOUR	17:00	18:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	798.00	100.000
B		✓	54.00	100.000
C		✓	941.00	100.000

Demand overview (Pedestrians)

Arm	Average pedestrian flow (Ped/hr)
A	
B	
C	10.00

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0.000	54.000	744.000
	B	18.000	0.000	36.000
	C	873.000	68.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.15	10.78	0.2	B
C-A	0.42	5.38	1.4	A
C-B	0.45	6.26	0.1	A
A-B				
A-C				

Main Results for each time segment

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	40.65		488.96	0.083	40.29	0.1	8.017	A
C-A	657.24	7.53	2353.31	0.279	654.33	0.7	4.218	A
C-B	51.19	7.53	164.42	0.311	50.93	0.1	4.655	A
A-B	40.65				40.65			

A-C	560.12				560.12			

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	48.54		450.20	0.108	48.43	0.1	8.957	A
C-A	784.81	8.99	2319.17	0.338	783.89	1.0	4.644	A
C-B	61.13	8.99	164.51	0.372	61.04	0.1	5.236	A
A-B	48.54				48.54			
A-C	668.84				668.84			

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	59.46		393.44	0.151	59.23	0.2	10.765	B
C-A	961.19	11.01	2269.02	0.424	959.56	1.4	5.375	A
C-B	74.87	11.01	164.58	0.455	74.71	0.1	6.247	A
A-B	59.46				59.46			
A-C	819.16				819.16			

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	59.46		393.23	0.151	59.45	0.2	10.785	B
C-A	961.19	11.01	2269.61	0.424	961.17	1.4	5.382	A
C-B	74.87	11.01	164.84	0.454	74.87	0.1	6.256	A
A-B	59.46				59.46			
A-C	819.16				819.16			

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	48.54		449.92	0.108	48.76	0.1	8.980	A

C-A	784.81	8.99	2319.78	0.338	786.41	1.0	4.654	A
C-B	61.13	8.99	164.85	0.371	61.29	0.1	5.249	A
A-B	48.54				48.54			
A-C	668.84				668.84			

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	40.65		488.58	0.083	40.78	0.1	8.041	A
C-A	657.24	7.53	2354.04	0.279	658.18	0.7	4.231	A
C-B	51.19	7.53	164.85	0.311	51.29	0.1	4.672	A
A-B	40.65				40.65			
A-C	560.12				560.12			

2026 DN, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	2.80	A

Junction Network Options

[same as above]

Arms

Arms
[same as above]

Major Arm Geometry
[same as above]

Minor Arm Geometry
[same as above]

Pedestrian Crossings

Arm	Crossing type	Average pedestrian flow (Ped/hr)
A	None	
B	None	
C	Pelican	10.00

Pelican/Puffin Crossings

Arm	Space between crossing and junction entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
C	1.00	8.00	0.00	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D5	2026 DN	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	926.00	100.000
B		✓	125.00	100.000
C		✓	719.00	100.000

Demand overview (Pedestrians)

Arm	Average pedestrian flow (Ped/hr)
A	
B	
C	10.00

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0.000	7.000	919.000
	B	66.000	0.000	59.000
	C	712.000	7.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.41	17.80	0.7	C

C-A	0.29	3.80	0.8	A
C-B	0.30	3.87	0.0	A
A-B				
A-C				

Main Results for each time segment

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	94.11		439.95	0.214	93.03	0.3	10.345	B
C-A	536.03	7.53	2725.28	0.197	534.10	0.5	3.285	A
C-B	5.27	7.53	26.34	0.200	5.25	0.0	3.323	A
A-B	5.27				5.27			
A-C	691.87				691.87			

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	112.37		398.56	0.282	111.90	0.4	12.536	B
C-A	640.07	8.99	2705.43	0.237	639.56	0.6	3.487	A
C-B	6.29	8.99	26.18	0.240	6.29	0.0	3.535	A
A-B	6.29				6.29			
A-C	826.16				826.16			

Main results: (08:30-08:45)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	137.63		339.71	0.405	136.53	0.7	17.620	C
C-A	783.93	11.01	2677.57	0.293	783.11	0.8	3.798	A

C-B	7.71	11.01	25.96	0.297	7.70	0.0	3.865	A
A-B	7.71				7.71			
A-C	1011.84				1011.84			

Main results: (08:45-09:00)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	137.63		339.61	0.405	137.59	0.7	17.802	C
C-A	783.93	11.01	2677.67	0.293	783.92	0.8	3.801	A
C-B	7.71	11.01	25.96	0.297	7.71	0.0	3.868	A
A-B	7.71				7.71			
A-C	1011.84				1011.84			

Main results: (09:00-09:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	112.37		398.41	0.282	113.45	0.4	12.679	B
C-A	640.07	8.99	2705.54	0.237	640.88	0.6	3.489	A
C-B	6.29	8.99	26.18	0.240	6.30	0.0	3.537	A
A-B	6.29				6.29			
A-C	826.16				826.16			

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	94.11		439.70	0.214	94.60	0.3	10.446	B
C-A	536.03	7.53	2725.43	0.197	536.55	0.5	3.293	A
C-B	5.27	7.53	26.34	0.200	5.28	0.0	3.332	A
A-B	5.27				5.27			
A-C	691.87				691.87			

2026 DN, PM

Data Errors and Warnings
No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	3.36	A

Junction Network Options
[same as above]

Arms

Arms
[same as above]

Major Arm Geometry
[same as above]

Minor Arm Geometry
[same as above]

Pedestrian Crossings

Arm	Crossing type	Average pedestrian flow (Ped/hr)
A	None	
B	None	
C	Pelican	10.00

Pelican/Puffin Crossings

Arm	Space between crossing and junction entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
C	1.00	8.00	0.00	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D6	2026 DN	PM	ONE HOUR	17:00	18:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	851.00	100.000
B		✓	58.00	100.000
C		✓	1001.00	100.000

Demand overview (Pedestrians)

Arm	Average pedestrian flow (Ped/hr)
A	
B	
C	10.00

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0.000	58.000	793.000
	B	19.000	0.000	39.000
	C	929.000	72.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.17	11.62	0.2	B
C-A	0.45	5.66	1.5	A
C-B	0.48	6.65	0.1	A
A-B				
A-C				

Main Results for each time segment

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	43.67		477.79	0.091	43.27	0.1	8.277	A
C-A	699.40	7.53	2347.96	0.298	696.21	0.8	4.331	A
C-B	54.21	7.53	163.99	0.331	53.92	0.1	4.809	A
A-B	43.67				43.67			
A-C	597.01				597.01			

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	52.14		435.91	0.120	52.00	0.1	9.374	A
C-A	835.15	8.99	2311.87	0.361	834.11	1.1	4.811	A
C-B	64.73	8.99	164.19	0.394	64.63	0.1	5.468	A
A-B	52.14				52.14			
A-C	712.89				712.89			

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	63.86		373.90	0.171	63.58	0.2	11.590	B
C-A	1022.85	11.01	2258.39	0.453	1020.94	1.5	5.654	A
C-B	79.27	11.01	164.44	0.482	79.08	0.1	6.637	A
A-B	63.86				63.86			
A-C	873.11				873.11			

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	63.86		373.64	0.171	63.85	0.2	11.620	B
C-A	1022.85	11.01	2259.10	0.453	1022.82	1.5	5.664	A

C-B	79.27	11.01	164.74	0.481	79.27	0.1	6.648	A
A-B	63.86				63.86			
A-C	873.11				873.11			

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	52.14		435.58	0.120	52.41	0.1	9.403	A
C-A	835.15	8.99	2312.59	0.361	837.03	1.1	4.823	A
C-B	64.73	8.99	164.58	0.393	64.91	0.1	5.487	A
A-B	52.14				52.14			
A-C	712.89				712.89			

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	43.67		477.36	0.091	43.81	0.1	8.307	A
C-A	699.40	7.53	2348.78	0.298	700.47	0.8	4.347	A
C-B	54.21	7.53	164.47	0.330	54.31	0.1	4.831	A
A-B	43.67				43.67			
A-C	597.01				597.01			

2036 DN, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	3.09	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Pedestrian Crossings

Arm	Crossing type	Average pedestrian flow (Ped/hr)
A	None	
B	None	
C	Pelican	10.00

Pelican/Puffin Crossings

Arm	Space between crossing and junction entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
C	1.00	8.00	0.00	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D7	2036 DN	AM	ONE HOUR	08:00	09:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	986.00	100.000
B		✓	134.00	100.000
C		✓	767.00	100.000

Demand overview (Pedestrians)

Arm	Average pedestrian flow (Ped/hr)
A	
B	
C	10.00

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0.000	8.000	978.000
	B	71.000	0.000	63.000
	C	760.000	7.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.46	21.12	0.8	C
C-A	0.31	3.90	0.9	A
C-B	0.32	3.97	0.0	A
A-B				
A-C				

Main Results for each time segment

Main results: (08:00-08:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	100.88		425.94	0.237	99.66	0.3	10.994	B
C-A	572.17	7.53	2728.56	0.210	570.07	0.5	3.335	A
C-B	5.27	7.53	24.74	0.213	5.25	0.0	3.373	A
A-B	6.02				6.02			
A-C	736.29				736.29			

Main results: (08:15-08:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	120.46		381.45	0.316	119.88	0.5	13.730	B
C-A	683.22	8.99	2708.55	0.252	682.66	0.7	3.555	A
C-B	6.29	8.99	24.59	0.256	6.29	0.0	3.605	A
A-B	7.19				7.19			
A-C	879.20				879.20			

Main results: (08:30-08:45)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	147.54		317.87	0.464	146.02	0.8	20.763	C
C-A	836.78	11.01	2680.36	0.312	835.86	0.9	3.900	A
C-B	7.71	11.01	24.38	0.316	7.70	0.0	3.970	A
A-B	8.81				8.81			
A-C	1076.80				1076.80			

Main results: (08:45-09:00)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	147.54		317.76	0.464	147.47	0.8	21.117	C
C-A	836.78	11.01	2680.47	0.312	836.77	0.9	3.904	A
C-B	7.71	11.01	24.39	0.316	7.71	0.0	3.973	A
A-B	8.81				8.81			
A-C	1076.80				1076.80			

Main results: (09:00-09:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	120.46		381.29	0.316	121.97	0.5	13.959	B
C-A	683.22	8.99	2708.67	0.252	684.12	0.7	3.559	A
C-B	6.29	8.99	24.60	0.256	6.30	0.0	3.610	A

A-B	7.19				7.19			
A-C	879.20				879.20			

Main results: (09:15-09:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	100.88		425.66	0.237	101.51	0.3	11.128	B
C-A	572.17	7.53	2728.73	0.210	572.74	0.5	3.343	A
C-B	5.27	7.53	24.74	0.213	5.28	0.0	3.382	A
A-B	6.02				6.02			
A-C	736.29				736.29			

2036 DN, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	3.58	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry
[same as above]

Minor Arm Geometry
[same as above]

Pedestrian Crossings

Arm	Crossing type	Average pedestrian flow (Ped/hr)
A	None	
B	None	
C	Pelican	10.00

Pelican/Puffin Crossings

Arm	Space between crossing and junction entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
C	1.00	8.00	0.00	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity
[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)
D8	2036 DN	PM	ONE HOUR	17:00	18:30	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	908.00	100.000
B		✓	61.00	100.000
C		✓	1066.00	100.000

Demand overview (Pedestrians)

Arm	Average pedestrian flow (Ped/hr)
A	
B	
C	10.00

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0.000	62.000	846.000
	B	20.000	0.000	41.000
	C	989.000	77.000	0.000

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.19	12.76	0.2	B
C-A	0.49	6.02	1.8	A

C-B	0.51	7.15	0.2	A
A-B				
A-C				

Main Results for each time segment

Main results: (17:00-17:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	45.92		463.75	0.099	45.49	0.1	8.598	A
C-A	744.57	7.53	2338.56	0.318	741.07	0.9	4.468	A
C-B	57.97	7.53	164.77	0.352	57.65	0.1	5.002	A
A-B	46.68				46.68			
A-C	636.91				636.91			

Main results: (17:15-17:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	54.84		418.14	0.131	54.68	0.1	9.900	A
C-A	889.09	8.99	2300.08	0.387	887.89	1.2	5.015	A
C-B	69.22	8.99	165.11	0.419	69.10	0.1	5.759	A
A-B	55.74				55.74			
A-C	760.54				760.54			

Main results: (17:30-17:45)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	67.16		349.65	0.192	66.82	0.2	12.713	B
C-A	1088.91	11.01	2242.45	0.486	1086.65	1.7	6.004	A
C-B	84.78	11.01	165.60	0.512	84.55	0.2	7.136	A

A-B	68.26				68.26			
A-C	931.46				931.46			

Main results: (17:45-18:00)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	67.16		349.32	0.192	67.15	0.2	12.757	B
C-A	1088.91	11.01	2243.04	0.485	1088.87	1.8	6.020	A
C-B	84.78	11.01	165.91	0.511	84.77	0.2	7.155	A
A-B	68.26				68.26			
A-C	931.46				931.46			

Main results: (18:00-18:15)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	54.84		417.72	0.131	55.17	0.2	9.940	A
C-A	889.09	8.99	2300.94	0.386	891.31	1.2	5.031	A
C-B	69.22	8.99	165.58	0.418	69.44	0.1	5.782	A
A-B	55.74				55.74			
A-C	760.54				760.54			

Main results: (18:15-18:30)

Stream	Total Demand (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	45.92		463.25	0.099	46.09	0.1	8.632	A
C-A	744.57	7.53	2339.51	0.318	745.80	0.9	4.487	A
C-B	57.97	7.53	165.31	0.351	58.09	0.1	5.030	A
A-B	46.68				46.68			
A-C	636.91				636.91			

APPENDIX D

TRANSYT Outputs

TRANSYT 15

Version: 15.5.1.7048

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 770558 software@trl.co.uk www.trlsoftware.co.uk

Filename: 170232 Site Access Junction - JLH.t15
Path: G:\2017\p170232\calcs\transyt
Report generation date: 24/04/2019 10:05:04

File summary

File description

File title	(untitled)
Location	
Site number	
UTCRegion	
Driving side	Left
Date	28/05/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	HEADOFFICE\haleyj
Description	

Model and Results

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

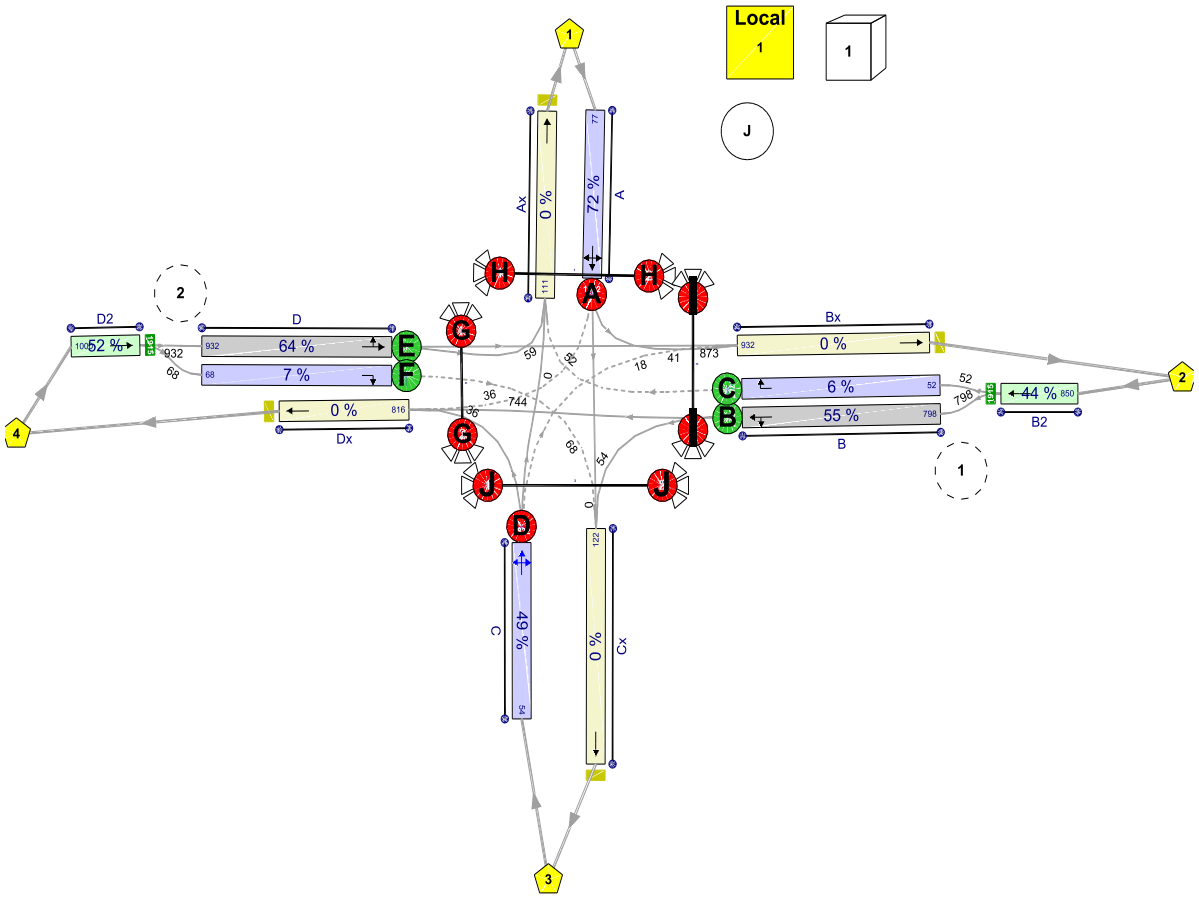
Units

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

Sorting

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

Network Diagrams



A1 - AM 2036 DS
D1 - AM 2036 DS*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	24/04/2019 10:04:13	24/04/2019 10:04:14	07:15	240	205.12	13.32	80.23	C/1	0	0	C/1	B2/1	C/1	✓

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
AM 2036 DS		D1	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
AM 2036 DS				07:15	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
240		60	1	60

Signals options

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

Advanced

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

Traffic options

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

Advanced

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

Normal Traffic parameters

Dispersion type	Dispersion coefficient
Default	35

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Bus	1.00	70	15	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Tram	1.00	0	0	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

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

Advanced

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

Economics

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

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
(ALL)	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node

A	Site Access		J
B	Scholarstown Rd East		J
C	Woodfield		J
D	Scholarstown Rd West		J
Ax	(untitled)		
B2	(untitled)		1
Bx	(untitled)		
Cx	(untitled)		
D2	(untitled)		2
Dx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	**1**	(untitled)			150.00	✓	Sum of lanes	1532	✓	✓	Normal	
B	**1**	(untitled)			30.00	✓	Sum of lanes	1877	✓		Normal	
	2	(untitled)			30.00	✓	Sum of lanes	1787	✓	✓	Normal	
C	**1**	(untitled)			200.00	✓	Sum of lanes	1532	✓	✓	Normal	
D	**1**	(untitled)			31.00	✓	Sum of lanes	1896	✓		Normal	
	2	(untitled)			31.00	✓	Sum of lanes	1823	✓	✓	Normal	
Ax	**1**	(untitled)			200.00						Normal	
B2	**1**	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Bx	**1**	(untitled)			300.00						Normal	
Cx	**1**	(untitled)			200.00						Normal	
D2	**1**	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Dx	**1**	(untitled)			200.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	**1**	**1**	Site Access		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
B	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		8	6.00	✓	1877
	2	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	10.00		1787
C	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
D	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		4	6.00	✓	1896
	2	**1**	(untitled)		✓	N/A	N/A	0	2.50		100	15.00		1823

Ax	**1**	**1**	(untitled)										
B2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Bx	**1**	**1**	(untitled)										
Cx	**1**	**1**	(untitled)										
D2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Dx	**1**	**1**	(untitled)										

Modelling

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

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	**(ALL)**	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	240

Normal - Modelling

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

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	**1**	133	133
B	**1**	986	986
	2	15	15
C	**1**	134	134
D	**1**	772	772
	2	7	7
Ax	**1**	27	27
B2	**1**	1001	1001
Bx	**1**	890	890
Cx	**1**	15	15
D2	**1**	779	779
Dx	**1**	1115	1115

Signals

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

D	**1**	1	E	
	2	1	F	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	**1**	18.00	30.00
C	**1**	24.00	30.00
B2	**1**	24.00	30.00
D2	**1**	24.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
B	**1**	**1**	B2/1	B/1	3.60	30.00	✓	Straight	Straight Movement
	2	**1**	B2/1	B/2	3.60	30.00	✓	Straight	Straight Movement
D	**1**	**1**	D2/1	D/1	3.72	30.00	✓	Straight	Straight Movement
	2	**1**	D2/1	D/2	3.72	30.00	✓	Straight	Straight Movement
Ax	**1**	**1**	B/2	Ax/1	24.00	30.00	✓	Offside	54.27
Bx	**1**	**1**	D/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	**1**	**1**	A/1	Cx/1	24.00	30.00	✓	Straight	Straight Movement
Dx	**1**	**1**	C/1	Dx/1	24.00	30.00	✓	Nearside	74.98
Ax	**1**	**2**	D/1	Ax/1	24.00	30.00	✓	Nearside	31.42
Bx	**1**	**2**	A/1	Bx/1	36.00	30.00	✓	Nearside	39.43
Cx	**1**	**2**	B/1	Cx/1	24.00	30.00	✓	Nearside	68.72
Dx	**1**	**2**	A/1	Dx/1	24.00	30.00	✓	Offside	83.90
Ax	**1**	**3**	C/1	Ax/1	24.00	30.00	✓	Straight	Straight Movement
Bx	**1**	**3**	C/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	**1**	**3**	D/2	Cx/1	24.00	30.00	✓	Offside	94.21
Dx	**1**	**3**	B/1	Dx/1	24.00	30.00	✓	Straight	Straight Movement

Give Way Data

Arm	Traffic Stream	Opposed traffic	Use Step-wise Opposed Turn Model	Visibility restricted
A	**1**	Movement		
B	**2**	AllTraffic		
C	**1**	Movement		
D	**2**	Movement		

Give Way Data - All Movements - Conflicts

Traffic Stream	Description	Controlling type	Controlling traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration

2		TrafficStream	D/1	100	0.00		0	0

Give Way Data - Movements

Arm	Traffic Stream	Movement	Destination traffic stream	Max Flow (Opposed) (PCU/hr)	Max Flow (Unopposed) (PCU/hr)	Percentage opposed (%)
A	1	1	Cx/1	0	1532	100
		2	Dx/1	1200	1532	100
		3	Bx/1	0	1532	100
C	1	1	Dx/1	0	1532	100
		2	Bx/1	1200	1532	100
		3	Ax/1	0	1532	100
D	2	1	Cx/1	1200	1823	100

Give Way Data - Movements - Conflicts

Arm	Traffic Stream	Movement	Destination traffic stream	Description	Controlling type	Controlling traffic stream	Controlling from traffic stream	Controlling to traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
A	1	2	Dx/1		TrafficStreamMovement		C/1	Dx/1	100	0.00		0	0
					TrafficStreamMovement		C/1	Ax/1	100	0.00		0	0
C	1	2	Bx/1		TrafficStreamMovement		A/1	Bx/1	100	0.00		0	0
					TrafficStreamMovement		A/1	Cx/1	100	0.00		0	0
D	2	1	Cx/1		TrafficStream	B/1			100	0.00		0	0

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
1	(untitled)		J		Farside	11.60	7.73	5.40
2	(untitled)		J		Farside	9.80	6.53	5.40
3	(untitled)		J		Farside	12.00	8.00	5.40
4	(untitled)		J		Farside	10.20	6.80	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
1	1	H	
2	1	I	
3	1	J	
4	1	G	

Pedestrian Crossings - Sides

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

Pedestrian Crossings - Modelling

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

Local OD Matrix - Local Matrix: 1

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
1	(untitled)	✓	✓	Path Equalisation			✓			✓	1.25		

Normal Input Flows (PCU/hr)

		To			
		1	2	3	4
From	1	0	59	0	74
	2	15	0	8	978
	3	0	71	0	63
	4	12	760	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
1	1	(untitled)	A/1	Ax/1	#0000FF
	2	(untitled)	B2/1	Bx/1	#00FF00
	3	(untitled)	C/1	Cx/1	#FFFF00
	4	(untitled)	D2/1	Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	14		4	2	D2/1, D/1, Bx/1	Normal	760
	30		1	3	A/1, Cx/1	Normal	0
	31		1	4	A/1, Dx/1	Normal	74
	32		1	2	A/1, Bx/1	Normal	59
	34		2	3	B2/1, B/1, Cx/1	Normal	8
	38		2	1	B2/1, B/2, Ax/1	Normal	15
	39		4	1	D2/1, D/1, Ax/1	Normal	12
	40		4	3	D2/1, D/2, Cx/1	Normal	7
	42		2	4	B2/1, B/1, Dx/1	Normal	978
	43		3	4	C/1, Dx/1	Normal	63

	44		3	1	C/1, Ax/1	Normal	0
	45		3	2	C/1, Bx/1	Normal	71

Signal Timings

Network Default: 240s cycle time; 240 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)
1	(untitled)		1	NetworkDefault	240

Controller Stream 1 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
1	Unspecified						Absolute

Controller Stream 1 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
1	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
1	**A**	(untitled)	7	14	0	0	Traffic	
	B	(untitled)	7	300	0	0	Traffic	
	C	(untitled)	7	300	0	0	Indicative arrow	
	D	(untitled)	7	300	0	0	Traffic	
	E	(untitled)	7	300	0	0	Traffic	
	F	(untitled)	7	300	0	0	Indicative arrow	
	G	(untitled)	7	300	0	0	Pedestrian	0
	H	(untitled)	7	300	0	0	Pedestrian	0
	I	(untitled)	7	300	0	0	Pedestrian	0
	J	(untitled)	7	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)
1	**1**	A, D	1
	2	D	1
	3	E, F, C, B	1
	4	F, C	1
	5	G, J, H, I	1

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends
1	**1**	(untitled)	Single	1, 3, 4, 5, 1, 3, 4	29, 130, 131, 145, 169, 9, 10

Intergreen Matrix for Controller Stream 1

		To									
		A	B	C	D	E	F	G	H	I	J
From	A		5	5		5	5	0	0	0	0
	B	0			0						
	C	5			5			7	7	7	7
	D		5	5		5	5	0	0	0	0
	E	0			0						
	F	5			5			7	7	7	7
	G	10		0	10		0				
	H	10		0	10		0				
	I	10		0	10		0				
	J	10		0	10		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)
1	1	✓	1	A,D	15	29	14	1	7
	2	✓	3	E,F,C,B	34	130	96	1	7
	3	✓	4	F,C	130	131	1	1	1
	4	✓	5	G,J,H,I	138	145	7	1	7
	5	✓	1	A,D	155	169	14	1	7
	6	✓	3	E,F,C,B	174	9	75	1	7
	7	✓	4	F,C	9	10	1	1	1

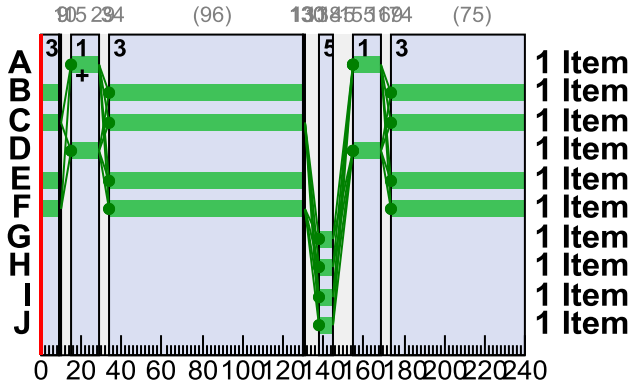
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	155	169	14
		2	✓	15	29	14
	B	1	✓	34	130	96
		2	✓	174	9	75
	C	1	✓	34	131	97
		2	✓	174	10	76
	D	1	✓	155	169	14
		2	✓	15	29	14
	E	1	✓	34	130	96
		2	✓	174	9	75
	F	1	✓	34	131	97
		2	✓	174	10	76
	G	1	✓	138	145	7
	H	1	✓	138	145	7
	I	1	✓	138	145	7
	J	1	✓	138	145	7

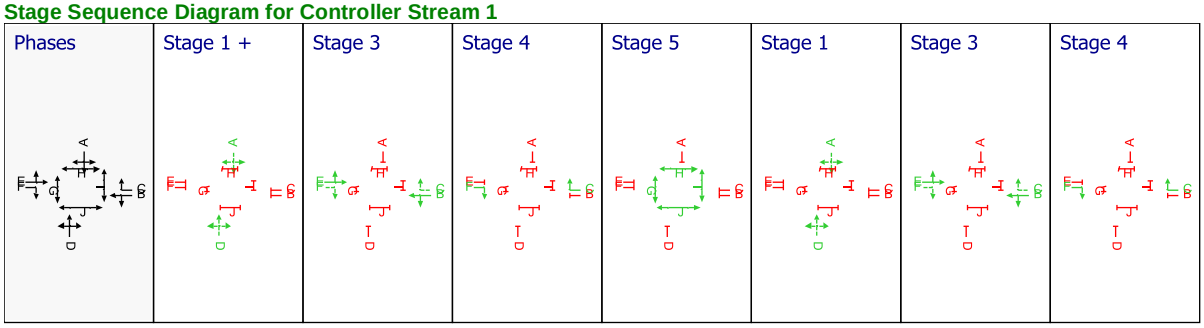
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1			Green Period 2		
					Start	End	Duration	Start	End	Duration
A	1	J	1	A	155	169	14	15	29	14
B	1	J	1	B	34	130	96	174	9	75
B	2	J	1	C	34	131	97	174	10	76
C	1	J	1	D	155	169	14	15	29	14
D	1	J	1	E	34	130	96	174	9	75
D	2	J	1	F	34	131	97	174	10	76

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
07:15-08:15	A	1	80	12	133	1328	28	91.49	6.52	25.01	48.00	2.09	50.09
	B	1	73	23	986	1877	171	14.19	25.62	491.05	55.17	7.27	62.44
		2	2	5179	15	1207	173	4.95	0.18	3.36	0.29	0.05	0.34
	C	1	80	12	134	1336	28	91.46	6.57	18.89	48.34	2.11	50.44
	D	1	56	59	772	1896	171	10.23	15.81	293.17	31.15	4.47	35.61

	2	1	11217	7	1207	173	4.93	0.08	1.52	0.14	0.02	0.16
Ax	**1**	0	Unrestricted	27	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
B2	**1**	52	72	1001	1915	240	1.03	0.29	0.82	4.06	0.00	4.06
Bx	**1**	0	Unrestricted	890	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
Cx	**1**	0	Unrestricted	15	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
D2	**1**	41	121	779	1915	240	0.64	0.14	0.40	1.98	0.00	1.98
Dx	**1**	0	Unrestricted	1115	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (PCU/hr)**	**Calculated sat flow (PCU/hr)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (PCU)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
A	**1**	(untitled)	J	1	A	133	1328	28	0.00	80	12	109.49	91.49	125.33	6.52	100	100	0.00	50.09
B	**1**	(untitled)	J	1	B	986 <	1877	171	0.00	73	23	17.79	14.19	58.79	25.62 +	100	100	0.00	62.44
	2	(untitled)	J	1	C	15	1207	173	173.00	2	5179	8.55	4.95	26.11	0.18	100	100	0.00	0.34
C	**1**	(untitled)	J	1	D	134	1336	28	0.00	80	12	115.46	91.46	125.30	6.57	100	100	0.00	50.44
D	**1**	(untitled)	J	1	E	772 <	1896	171	0.00	56	59	13.95	10.23	46.17	15.81 +	100	100	0.00	35.61
	2	(untitled)	J	1	F	7	1207	173	173.00	1	11217	8.65	4.93	26.10	0.08	100	100	0.00	0.16
Ax	**1**	(untitled)				27	Unrestricted	240	232.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
B2	**1**	(untitled)	1			1001	1915	240	110.00	52	72	25.03	1.03	0.00	0.29	100	100	0.00	4.06
Bx	**1**	(untitled)				890	Unrestricted	240	0.00	0	Unrestricted	36.00	0.00	0.00	0.00	100	100	0.00	0.00
Cx	**1**	(untitled)				15	Unrestricted	240	240.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
D2	**1**	(untitled)	2			779	1915	240	66.00	41	121	24.64	0.64	0.00	0.14	100	100	0.00	1.98
Dx	**1**	(untitled)				1115	Unrestricted	240	4.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent	Mean journey	Total delay	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue	Performance Index (£ per hr)

		(PCU-hr/hr)	speed (kph)	(PCU-hr/hr)			penalty (£ per hr)	
Normal traffic	955.33	45.16	21.15	13.32	189.12	16.01	0.00	205.12
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	955.33	45.16	21.15	13.32	189.12	16.01	0.00	205.12

- *< = 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***

A2 - PM 2036 DS
D7 - PM 2036 DS*

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
2	24/04/2019 10:04:17	24/04/2019 10:04:18	17:00	240	154.48	9.89	75.68	A/1	0	0	A/1	D2/1	A/1	✓

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
PM 2036 DS		D7	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
PM 2036 DS				17:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
240		60	1	60

Signals options

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

Advanced

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

Traffic options

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

Advanced

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

Normal Traffic parameters

Dispersion type	Dispersion coefficient
Default	35

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Bus	1.00	70	15	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Tram	1.00	0	0	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

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

Advanced

Optimisation type	Hill climb increments	OUTProfile accuracy	Use enhanced optimisation	Auto optimisation order	Optimisation order	Master controller	Offsets relative to	Master controller

							master controller	offset after each run
Hill Climb (Fast)	15, 40, -1, 15, 40, 1, -1, 1	50, 50, 5, 5, 0.5, 0.5, 0.05, 0.05		✓	1			Do nothing

Economics

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

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
(ALL)	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	Site Access		J
B	Scholarstown Rd East		J
C	Woodfield		J
D	Scholarstown Rd West		J
Ax	(untitled)		
B2	(untitled)		1
Bx	(untitled)		
Cx	(untitled)		
D2	(untitled)		2
Dx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			150.00	✓	Sum of lanes	1532	✓	✓	Normal	
B	1	(untitled)			30.00	✓	Sum of lanes	1877	✓		Normal	
	2	(untitled)			30.00	✓	Sum of lanes	1787	✓	✓	Normal	
C	1	(untitled)			200.00	✓	Sum of lanes	1532	✓	✓	Normal	
D	1	(untitled)			31.00	✓	Sum of lanes	1896	✓		Normal	
	2	(untitled)			31.00	✓	Sum of lanes	1823	✓	✓	Normal	
Ax	1	(untitled)			200.00						Normal	

B2	**1**	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Bx	**1**	(untitled)			300.00						Normal	
Cx	**1**	(untitled)			200.00						Normal	
D2	**1**	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Dx	**1**	(untitled)			200.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	**1**	**1**	Site Access		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
B	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		8	6.00	✓	1877
	2	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	10.00		1787
C	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
D	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		4	6.00	✓	1896
	2	**1**	(untitled)		✓	N/A	N/A	0	2.50		100	15.00		1823
Ax	**1**	**1**	(untitled)											
B2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Bx	**1**	**1**	(untitled)											
Cx	**1**	**1**	(untitled)											
D2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Dx	**1**	**1**	(untitled)											

Modelling

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

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	**(ALL)**	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	240

Normal - Modelling

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

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	1	77	77
B	1	908	908
	2	52	52
C	1	61	61
D	1	1048	1048
	2	77	77
Ax	1	111	111
B2	1	960	960
Bx	1	1050	1050
Cx	1	139	139
D2	1	1125	1125
Dx	1	923	923

Signals

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

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	18.00	30.00
C	1	24.00	30.00
B2	1	24.00	30.00
D2	1	24.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
B	1	1	B2/1	B/1	3.60	30.00	✓	Straight	Straight Movement
	2	1	B2/1	B/2	3.60	30.00	✓	Straight	Straight Movement
D	1	1	D2/1	D/1	3.72	30.00	✓	Straight	Straight Movement
	2	1	D2/1	D/2	3.72	30.00	✓	Straight	Straight Movement
Ax	1	1	B/2	Ax/1	24.00	30.00	✓	Offside	54.27
Bx	1	1	D/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	24.00	30.00	✓	Straight	Straight Movement
Dx	1	1	C/1	Dx/1	24.00	30.00	✓	Nearside	74.98
Ax	1	2	D/1	Ax/1	24.00	30.00	✓	Nearside	31.42

Bx	**1**	**2**	A/1	Bx/1	36.00	30.00	✓	Nearside	39.43
Cx	**1**	**2**	B/1	Cx/1	24.00	30.00	✓	Nearside	68.72
Dx	**1**	**2**	A/1	Dx/1	24.00	30.00	✓	Offside	83.90
Ax	**1**	**3**	C/1	Ax/1	24.00	30.00	✓	Straight	Straight Movement
Bx	**1**	**3**	C/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	**1**	**3**	D/2	Cx/1	24.00	30.00	✓	Offside	94.21
Dx	**1**	**3**	B/1	Dx/1	24.00	30.00	✓	Straight	Straight Movement

Give Way Data

Arm	Traffic Stream	Opposed traffic	Use Step-wise Opposed Turn Model	Visibility restricted
A	**1**	Movement		
B	**2**	AllTraffic		
C	**1**	Movement		
D	**2**	Movement		

Give Way Data - All Movements - Conflicts

Traffic Stream	Description	Controlling type	Controlling traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
2		TrafficStream	D/1	100	0.00		0	0

Give Way Data - Movements

Arm	Traffic Stream	Movement	Destination traffic stream	Max Flow (Opposed) (PCU/hr)	Max Flow (Unopposed) (PCU/hr)	Percentage opposed (%)
A	**1**	**1**	Cx/1	0	1532	100
		2	Dx/1	1200	1532	100
		3	Bx/1	0	1532	100
C	**1**	**1**	Dx/1	0	1532	100
		2	Bx/1	1200	1532	100
		3	Ax/1	0	1532	100
D	**2**	**1**	Cx/1	1200	1823	100

Give Way Data - Movements - Conflicts

Arm	Traffic Stream	Movement	Destination traffic stream	Description	Controlling type	Controlling traffic stream	Controlling from traffic stream	Controlling to traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
A	**1**	**2**	**Dx/1**		TrafficStreamMovement		C/1	Dx/1	100	0.00		0	0
					TrafficStreamMovement		C/1	Ax/1	100	0.00		0	0
C	**1**	**2**	**Bx/1**		TrafficStreamMovement		A/1	Bx/1	100	0.00		0	0
					TrafficStreamMovement		A/1	Cx/1	100	0.00		0	0
D	**2**	**1**	**Cx/1**		TrafficStream	B/1			100	0.00		0	0

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
1	(untitled)		J		Farside	11.60	7.73	5.40
2	(untitled)		J		Farside	9.80	6.53	5.40
3	(untitled)		J		Farside	12.00	8.00	5.40
4	(untitled)		J		Farside	10.20	6.80	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
1	1	H	
2	1	I	
3	1	J	
4	1	G	

Pedestrian Crossings - Sides

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

Pedestrian Crossings - Modelling

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

Local OD Matrix - Local Matrix: 1

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
1	(untitled)	✓	✓	Path Equalisation			✓			✓	1.25		

Normal Input Flows (PCU/hr)

		To			
		1	2	3	4
From	1	0	41	0	36
	2	52	0	62	846
	3	0	20	0	41
	4	59	989	77	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
1	1	(untitled)	A/1	Ax/1	#0000FF
	2	(untitled)	B2/1	Bx/1	#00FF00
	3	(untitled)	C/1	Cx/1	#FFFF00
	4	(untitled)	D2/1	Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	14		4	2	D2/1, D/1, Bx/1	Normal	989
	30		1	3	A/1, Cx/1	Normal	0
	31		1	4	A/1, Dx/1	Normal	36
	32		1	2	A/1, Bx/1	Normal	41
	34		2	3	B2/1, B/1, Cx/1	Normal	62
	38		2	1	B2/1, B/2, Ax/1	Normal	52
	39		4	1	D2/1, D/1, Ax/1	Normal	59
	40		4	3	D2/1, D/2, Cx/1	Normal	77
	42		2	4	B2/1, B/1, Dx/1	Normal	846
	43		3	4	C/1, Dx/1	Normal	41
	44		3	1	C/1, Ax/1	Normal	0
	45		3	2	C/1, Bx/1	Normal	20

Signal Timings

Network Default: 240s cycle time; 240 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)
1	(untitled)		1	NetworkDefault	240

Controller Stream 1 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
1	Unspecified						Absolute

Controller Stream 1 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
1	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
1	A	(untitled)	7	14	0	0	Traffic	
	B	(untitled)	7	300	0	0	Traffic	
	C	(untitled)	7	300	0	0	Indicative arrow	
	D	(untitled)	7	300	0	0	Traffic	

	E	(untitled)	7	300	0	0	Traffic	
	F	(untitled)	7	300	0	0	Indicative arrow	
	G	(untitled)	7	300	0	0	Pedestrian	0
	H	(untitled)	7	300	0	0	Pedestrian	0
	I	(untitled)	7	300	0	0	Pedestrian	0
	J	(untitled)	7	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)
1	**1**	A, D	1
	2	D	1
	3	E, F, C, B	1
	4	F, C	1
	5	G, J, H, I	1

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends
1	**1**	(untitled)	Single	1, 3, 4, 5, 1, 3, 4	29, 134, 135, 149, 168, 16, 17

Intergreen Matrix for Controller Stream 1

		To									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
From	**A**		5	5		5	5	0	0	0	0
	B	0			0						
	C	5			5			7	7	7	7
	D		5	5		5	5	0	0	0	0
	E	0			0						
	F	5			5			7	7	7	7
	G	10		0	10		0				
	H	10		0	10		0				
	I	10		0	10		0				
	J	10		0	10		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)
1	**1**	✓	1	A,D	22	29	7	1	7
	2	✓	3	E,F,C,B	34	134	100	1	7
	3	✓	4	F,C	134	135	1	1	1
	4	✓	5	G,J,H,I	142	149	7	1	7
	5	✓	1	A,D	159	168	9	1	7
	6	✓	3	E,F,C,B	173	16	83	1	7
	7	✓	4	F,C	16	17	1	1	1

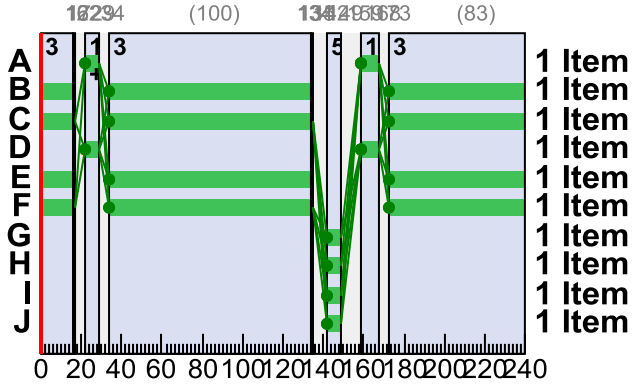
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	159	168	9
		2	✓	22	29	7
	B	1	✓	34	134	100
		2	✓	173	16	83
	C	1	✓	34	135	101
		2	✓	173	17	84
	D	1	✓	159	168	9
		2	✓	22	29	7
	E	1	✓	34	134	100
		2	✓	173	16	83
	F	1	✓	34	135	101
		2	✓	173	17	84
	G	1	✓	142	149	7
	H	1	✓	142	149	7
	I	1	✓	142	149	7
	J	1	✓	142	149	7

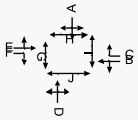
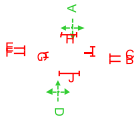
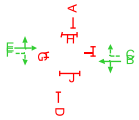
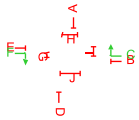
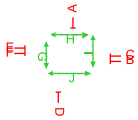
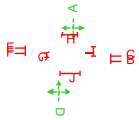
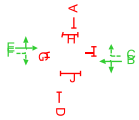
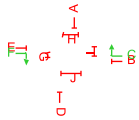
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1			Green Period 2		
					Start	End	Duration	Start	End	Duration
A	1	J	1	A	159	168	9	22	29	7
B	1	J	1	B	34	134	100	173	16	83
B	2	J	1	C	34	135	101	173	17	84
C	1	J	1	D	159	168	9	22	29	7
D	1	J	1	E	34	134	100	173	16	83
D	2	J	1	F	34	135	101	173	17	84

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1

Phases	Stage 1 +	Stage 3	Stage 4	Stage 5	Stage 1	Stage 3	Stage 4
							

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
17:00-18:00	A	1	76	19	77	1357	16	104.02	3.94	15.10	31.59	1.28	32.88
	B	1	63	43	908	1877	183	9.08	18.94	362.99	32.53	4.94	37.47
		2	6	1527	52	1206	185	3.67	0.55	10.55	0.75	0.14	0.89
	C	1	58	55	61	1405	16	77.63	2.65	7.63	18.68	0.87	19.54
	D	1	72	26	1048	1896	183	11.17	25.35	470.29	46.17	6.65	52.83
		2	8	999	77	1207	185	3.80	0.84	15.54	1.15	0.22	1.37
	Ax	1	0	Unrestricted	111	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	B2	1	50	80	960	1915	240	0.94	0.25	0.72	3.57	0.00	3.57
	Bx	1	0	Unrestricted	1050	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	Cx	1	0	Unrestricted	139	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	D2	1	59	53	1125	1915	240	1.34	0.42	1.20	5.92	0.00	5.92
	Dx	1	0	Unrestricted	923	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
A	1	(untitled)	J	1	A	77	1357	16	0.00	76	19	122.02	104.02	132.87	3.94	100	100	0.00	32.88

B	1	(untitled)	J	1	B	908 <	1877	183	0.00	63	43	12.68	9.08	43.41	18.94 +	100	100	0.00	37.47
	2	(untitled)	J	1	C	52	1206	185	184.00	6	1527	7.27	3.67	21.56	0.55	100	100	0.00	0.89
C	1	(untitled)	J	1	D	61	1405	16	0.00	58	55	101.63	77.63	113.15	2.65	100	100	0.00	19.54
D	1	(untitled)	J	1	E	1048 <	1896	183	0.00	72	26	14.89	11.17	50.64	25.35 +	100	100	0.00	52.83
	2	(untitled)	J	1	F	77	1207	185	0.00	8	999	7.52	3.80	22.33	0.84	100	100	0.00	1.37
Ax	1	(untitled)				111	Unrestricted	240	47.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
B2	1	(untitled)	1			960	1915	240	69.00	50	80	24.94	0.94	0.00	0.25	100	100	0.00	3.57
Bx	1	(untitled)				1050	Unrestricted	240	0.00	0	Unrestricted	36.00	0.00	0.00	0.00	100	100	0.00	0.00
Cx	1	(untitled)				139	Unrestricted	240	43.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
D2	1	(untitled)	2			1125	1915	240	91.00	59	53	25.34	1.34	0.00	0.42	100	100	0.00	5.92
Dx	1	(untitled)				923	Unrestricted	240	5.00	0	Unrestricted	24.00	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)	Total 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	1054.03	45.02	23.41	9.89	140.37	14.10	0.00	154.48
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	1054.03	45.02	23.41	9.89	140.37	14.10	0.00	154.48

- *< = 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***

A3 - AM 2026 DS
D8 - AM 2026 DS*

Summary

Data Errors and Warnings
No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
3	24/04/2019 10:04:20	24/04/2019 10:04:21	07:15	240	184.29	11.97	80.14	A/1	0	0	A/1	B2/1	A/1	✓

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
AM 2026 DS		D8	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
AM 2026 DS				07:15	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
240		60	1	60

Signals options

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

Advanced

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

Traffic options

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

Advanced

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

Normal Traffic parameters

Dispersion type	Dispersion coefficient
Default	35

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Bus	1.00	70	15	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Tram	1.00	0	0	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

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

Advanced

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

Economics

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

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
(ALL)	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	Site Access		J
B	Scholarstown Rd East		J
C	Woodfield		J

D	Scholarstown Rd West		J
Ax	(untitled)		
B2	(untitled)		1
Bx	(untitled)		
Cx	(untitled)		
D2	(untitled)		2
Dx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	**1**	(untitled)			150.00	✓	Sum of lanes	1532	✓	✓	Normal	
B	**1**	(untitled)			30.00	✓	Sum of lanes	1877	✓		Normal	
	2	(untitled)			30.00	✓	Sum of lanes	1787	✓	✓	Normal	
C	**1**	(untitled)			200.00	✓	Sum of lanes	1532	✓	✓	Normal	
D	**1**	(untitled)			31.00	✓	Sum of lanes	1896	✓		Normal	
	2	(untitled)			31.00	✓	Sum of lanes	1823	✓	✓	Normal	
Ax	**1**	(untitled)			200.00						Normal	
B2	**1**	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Bx	**1**	(untitled)			300.00						Normal	
Cx	**1**	(untitled)			200.00						Normal	
D2	**1**	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Dx	**1**	(untitled)			200.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	**1**	**1**	Site Access		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
B	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		8	6.00	✓	1877
	2	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	10.00		1787
C	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
D	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		4	6.00	✓	1896
	2	**1**	(untitled)		✓	N/A	N/A	0	2.50		100	15.00		1823
Ax	**1**	**1**	(untitled)											
B2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915

Bx	**1**	**1**	(untitled)										
Cx	**1**	**1**	(untitled)										
D2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Dx	**1**	**1**	(untitled)										

Modelling

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

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	**(ALL)**	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	240

Normal - Modelling

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

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	**1**	133	133
B	**1**	926	926
	2	15	15
C	**1**	125	125
D	**1**	724	724
	2	7	7
Ax	**1**	27	27
B2	**1**	941	941
Bx	**1**	837	837
Cx	**1**	14	14
D2	**1**	731	731
Dx	**1**	1052	1052

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	**1**	1	A	
B	**1**	1	B	
	2	1	C	
C	**1**	1	D	
D	**1**	1	E	
	2	1	F	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	18.00	30.00
C	1	24.00	30.00
B2	1	24.00	30.00
D2	1	24.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
B	1	1	B2/1	B/1	3.60	30.00	✓	Straight	Straight Movement
	2	1	B2/1	B/2	3.60	30.00	✓	Straight	Straight Movement
D	1	1	D2/1	D/1	3.72	30.00	✓	Straight	Straight Movement
	2	1	D2/1	D/2	3.72	30.00	✓	Straight	Straight Movement
Ax	1	1	B/2	Ax/1	24.00	30.00	✓	Offside	54.27
Bx	1	1	D/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	24.00	30.00	✓	Straight	Straight Movement
Dx	1	1	C/1	Dx/1	24.00	30.00	✓	Nearside	74.98
Ax	1	2	D/1	Ax/1	24.00	30.00	✓	Nearside	31.42
Bx	1	2	A/1	Bx/1	36.00	30.00	✓	Nearside	39.43
Cx	1	2	B/1	Cx/1	24.00	30.00	✓	Nearside	68.72
Dx	1	2	A/1	Dx/1	24.00	30.00	✓	Offside	83.90
Ax	1	3	C/1	Ax/1	24.00	30.00	✓	Straight	Straight Movement
Bx	1	3	C/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	1	3	D/2	Cx/1	24.00	30.00	✓	Offside	94.21
Dx	1	3	B/1	Dx/1	24.00	30.00	✓	Straight	Straight Movement

Give Way Data

Arm	Traffic Stream	Opposed traffic	Use Step-wise Opposed Turn Model	Visibility restricted
A	1	Movement		
B	2	AllTraffic		
C	1	Movement		
D	2	Movement		

Give Way Data - All Movements - Conflicts

Traffic Stream	Description	Controlling type	Controlling traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
2		TrafficStream	D/1	100	0.00		0	0

Give Way Data - Movements

Arm	Traffic Stream	Movement	Destination traffic stream	Max Flow (Opposed) (PCU/hr)	Max Flow (Unopposed) (PCU/hr)	Percentage opposed (%)

A	1	1	Cx/1	0	1532	100
		2	Dx/1	1200	1532	100
		3	Bx/1	0	1532	100
C	1	1	Dx/1	0	1532	100
		2	Bx/1	1200	1532	100
		3	Ax/1	0	1532	100
D	2	1	Cx/1	1200	1823	100

Give Way Data - Movements - Conflicts

Arm	Traffic Stream	Movement	Destination traffic stream	Description	Controlling type	Controlling traffic stream	Controlling from traffic stream	Controlling to traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
A	1	2	Dx/1		TrafficStreamMovement		C/1	Dx/1	100	0.00		0	0
					TrafficStreamMovement		C/1	Ax/1	100	0.00		0	0
C	1	2	Bx/1		TrafficStreamMovement		A/1	Bx/1	100	0.00		0	0
					TrafficStreamMovement		A/1	Cx/1	100	0.00		0	0
D	2	1	Cx/1		TrafficStream	B/1			100	0.00		0	0

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
1	(untitled)		J		Farside	11.60	7.73	5.40
2	(untitled)		J		Farside	9.80	6.53	5.40
3	(untitled)		J		Farside	12.00	8.00	5.40
4	(untitled)		J		Farside	10.20	6.80	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
1	1	H	
2	1	I	
3	1	J	
4	1	G	

Pedestrian Crossings - Sides

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

Pedestrian Crossings - Modelling

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

Local OD Matrix - Local Matrix: 1

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
1	(untitled)	✓	✓	Path Equalisation			✓			✓	1.25		

Normal Input Flows (PCU/hr)

		To			
		1	2	3	4
From	1	0	59	0	74
	2	15	0	7	919
	3	0	66	0	59
	4	12	712	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
1	1	(untitled)	A/1	Ax/1	#0000FF
	2	(untitled)	B2/1	Bx/1	#00FF00
	3	(untitled)	C/1	Cx/1	#FFFF00
	4	(untitled)	D2/1	Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	14		4	2	D2/1, D/1, Bx/1	Normal	712
	30		1	3	A/1, Cx/1	Normal	0
	31		1	4	A/1, Dx/1	Normal	74
	32		1	2	A/1, Bx/1	Normal	59
	34		2	3	B2/1, B/1, Cx/1	Normal	7
	38		2	1	B2/1, B/2, Ax/1	Normal	15
	39		4	1	D2/1, D/1, Ax/1	Normal	12
	40		4	3	D2/1, D/2, Cx/1	Normal	7
	42		2	4	B2/1, B/1, Dx/1	Normal	919
	43		3	4	C/1, Dx/1	Normal	59
	44		3	1	C/1, Ax/1	Normal	0
	45		3	2	C/1, Bx/1	Normal	66

Signal Timings

Network Default: 240s cycle time; 240 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)
1	(untitled)		1	NetworkDefault	240

Controller Stream 1 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
1	Unspecified						Absolute

Controller Stream 1 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
1	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
1	A	(untitled)	7	14	0	0	Traffic	
	B	(untitled)	7	300	0	0	Traffic	
	C	(untitled)	7	300	0	0	Indicative arrow	
	D	(untitled)	7	300	0	0	Traffic	
	E	(untitled)	7	300	0	0	Traffic	
	F	(untitled)	7	300	0	0	Indicative arrow	
	G	(untitled)	7	300	0	0	Pedestrian	0
	H	(untitled)	7	300	0	0	Pedestrian	0
	I	(untitled)	7	300	0	0	Pedestrian	0
	J	(untitled)	7	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)
1	1	A, D	1
	2	D	1
	3	E, F, C, B	1
	4	F, C	1
	5	G, J, H, I	1

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends
1	1	(untitled)	Single	1, 3, 4, 5, 1, 3, 4	29, 137, 138, 152, 176, 9, 10

Intergreen Matrix for Controller Stream 1

		To									
From		A	B	C	D	E	F	G	H	I	J
	A		5	5		5	5	0	0	0	0

	B	0			0						
	C	5			5			7	7	7	7
	D		5	5		5	5	0	0	0	0
	E	0			0						
	F	5			5			7	7	7	7
	G	10		0	10		0				
	H	10		0	10		0				
	I	10		0	10		0				
	J	10		0	10		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)
1	**1**	✓	1	A,D	15	29	14	1	7
	2	✓	3	E,F,C,B	34	137	103	1	7
	3	✓	4	F,C	137	138	1	1	1
	4	✓	5	G,J,H,I	145	152	7	1	7
	5	✓	1	A,D	162	176	14	1	7
	6	✓	3	E,F,C,B	181	9	68	1	7
	7	✓	4	F,C	9	10	1	1	1

Resultant Phase Green Periods

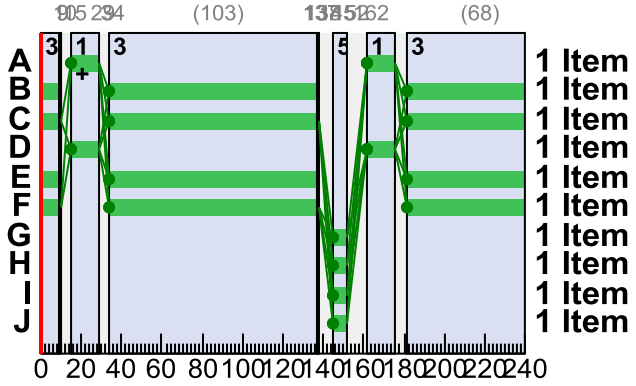
Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	**A**	**1**	✓	162	176	14
		2	✓	15	29	14
	B	**1**	✓	34	137	103
		2	✓	181	9	68
	C	**1**	✓	34	138	104
		2	✓	181	10	69
	D	**1**	✓	162	176	14
		2	✓	15	29	14
	E	**1**	✓	34	137	103
		2	✓	181	9	68
	F	**1**	✓	34	138	104
		2	✓	181	10	69
	G	**1**	✓	145	152	7
	H	**1**	✓	145	152	7
	I	**1**	✓	145	152	7
	J	**1**	✓	145	152	7

Traffic Stream Green Times

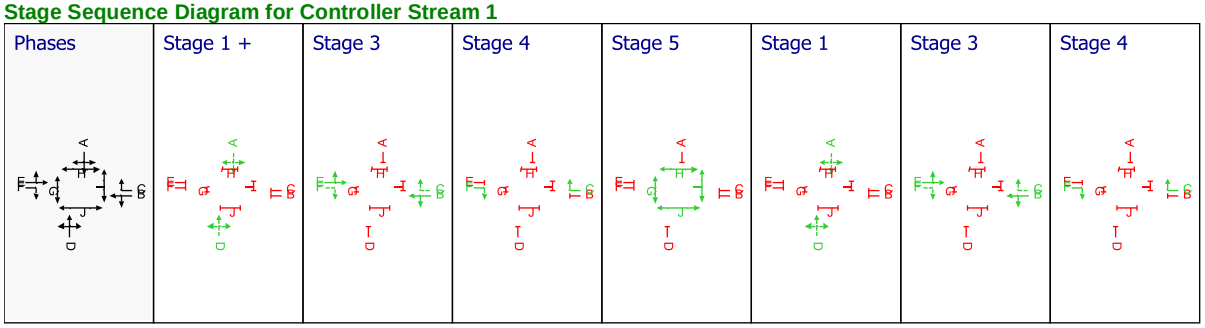
Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1			Green Period 2		
					Start	End	Duration	Start	End	Duration

A	1	J	1	A	162	176	14	15	29	14
B	1	J	1	B	34	137	103	181	9	68
B	2	J	1	C	34	138	104	181	10	69
C	1	J	1	D	162	176	14	15	29	14
D	1	J	1	E	34	137	103	181	9	68
D	2	J	1	F	34	138	104	181	10	69

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
07:15-08:15	A	1	80	12	133	1328	28	93.02	6.82	26.14	48.80	2.09	50.89
	B	1	68	32	926	1877	171	12.84	22.34	428.26	46.89	6.35	53.24
		2	2	5179	15	1207	173	4.95	0.18	3.36	0.29	0.05	0.34
	C	1	75	20	125	1337	28	83.55	6.06	17.42	41.19	1.85	43.04
	D	1	53	70	724	1896	171	9.65	14.17	262.91	27.57	4.01	31.58
		2	1	11217	7	1207	173	4.93	0.08	1.52	0.14	0.02	0.16
	Ax	1	0	Unrestricted	27	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	B2	1	49	83	941	1915	240	0.91	0.24	0.68	3.37	0.00	3.37

	Bx	**1**	0	Unrestricted	837	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	Cx	**1**	0	Unrestricted	14	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	D2	**1**	38	136	731	1915	240	0.58	0.12	0.34	1.67	0.00	1.67
	Dx	**1**	0	Unrestricted	1052	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (PCU/hr)**	**Calculated sat flow (PCU/hr)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (PCU)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
A	**1**	(untitled)	J	1	A	133	1328	28	0.00	80	12	111.02	93.02	125.35	6.82	100	100	0.00	50.89
B	**1**	(untitled)	J	1	B	926 <	1877	171	0.00	68	32	16.44	12.84	54.71	22.34 +	100	100	0.00	53.24
	2	(untitled)	J	1	C	15	1207	173	173.00	2	5179	8.55	4.95	26.11	0.18	100	100	0.00	0.34
C	**1**	(untitled)	J	1	D	125	1337	28	0.00	75	20	107.55	83.55	118.08	6.06	100	100	0.00	43.04
D	**1**	(untitled)	J	1	E	724 <	1896	171	0.00	53	70	13.37	9.65	44.15	14.17 +	100	100	0.00	31.58
	2	(untitled)	J	1	F	7	1207	173	173.00	1	11217	8.65	4.93	26.10	0.08	100	100	0.00	0.16
Ax	**1**	(untitled)				27	Unrestricted	240	231.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
B2	**1**	(untitled)	1			941	1915	240	97.00	49	83	24.91	0.91	0.00	0.24	100	100	0.00	3.37
Bx	**1**	(untitled)				837	Unrestricted	240	0.00	0	Unrestricted	36.00	0.00	0.00	0.00	100	100	0.00	0.00
Cx	**1**	(untitled)				14	Unrestricted	240	240.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
D2	**1**	(untitled)	2			731	1915	240	57.00	38	136	24.58	0.58	0.00	0.12	100	100	0.00	1.67
Dx	**1**	(untitled)				1052	Unrestricted	240	5.00	0	Unrestricted	24.00	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)	Total 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	899.94	41.96	21.45	11.97	169.92	14.37	0.00	184.29
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	899.94	41.96	21.45	11.97	169.92	14.37	0.00	184.29

- *< = 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***

A4 - PM 2026 DS
D9 - PM 2026 DS*

Summary

Data Errors and Warnings
No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU - hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
4	24/04/2019 10:04:25	24/04/2019 10:04:26	17:00	240	135.16	8.62	71.70	A/1	0	0	A/1	D2/1	A/1	✓

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
PM 2026 DS		D9	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
PM 2026 DS				17:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
240		60	1	60

Signals options

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

Advanced

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

Traffic options

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

Advanced

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

Normal Traffic parameters

Dispersion type	Dispersion coefficient
Default	35

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Bus	1.00	70	15	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Tram	1.00	0	0	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

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

Advanced

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

Economics

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

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
(ALL)	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	Site Access		J
B	Scholarstown Rd East		J
C	Woodfield		J
D	Scholarstown Rd West		J
Ax	(untitled)		
B2	(untitled)		1
Bx	(untitled)		
Cx	(untitled)		
D2	(untitled)		2
Dx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			150.00	✓	Sum of lanes	1532	✓	✓	Normal	
B	1	(untitled)			30.00	✓	Sum of lanes	1877	✓		Normal	
	2	(untitled)			30.00	✓	Sum of lanes	1787	✓	✓	Normal	
C	1	(untitled)			200.00	✓	Sum of lanes	1532	✓	✓	Normal	
D	1	(untitled)			31.00	✓	Sum of lanes	1896	✓		Normal	
	2	(untitled)			31.00	✓	Sum of lanes	1823	✓	✓	Normal	
Ax	1	(untitled)			200.00						Normal	
B2	1	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Bx	1	(untitled)			300.00						Normal	
Cx	1	(untitled)			200.00						Normal	
D2	1	(untitled)			200.00	✓	Sum of lanes	1915			Normal	

Dx	**1**	(untitled)			200.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	**1**	**1**	Site Access		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
B	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		8	6.00	✓	1877
	2	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	10.00		1787
C	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
D	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		4	6.00	✓	1896
	2	**1**	(untitled)		✓	N/A	N/A	0	2.50		100	15.00		1823
Ax	**1**	**1**	(untitled)											
B2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Bx	**1**	**1**	(untitled)											
Cx	**1**	**1**	(untitled)											
D2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Dx	**1**	**1**	(untitled)											

Modelling

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

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	**(ALL)**	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	240

Normal - Modelling

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

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	**1**	77	77
B	**1**	851	851
	2	52	52
C	**1**	58	58

D	**1**	988	988
	2	72	72
Ax	**1**	111	111
B2	**1**	903	903
Bx	**1**	989	989
Cx	**1**	130	130
D2	**1**	1060	1060
Dx	**1**	868	868

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	**1**	1	A	
B	**1**	1	B	
	2	1	C	
C	**1**	1	D	
D	**1**	1	E	
	2	1	F	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	**1**	18.00	30.00
C	**1**	24.00	30.00
B2	**1**	24.00	30.00
D2	**1**	24.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
B	**1**	**1**	B2/1	B/1	3.60	30.00	✓	Straight	Straight Movement
	2	**1**	B2/1	B/2	3.60	30.00	✓	Straight	Straight Movement
D	**1**	**1**	D2/1	D/1	3.72	30.00	✓	Straight	Straight Movement
	2	**1**	D2/1	D/2	3.72	30.00	✓	Straight	Straight Movement
Ax	**1**	**1**	B/2	Ax/1	24.00	30.00	✓	Offside	54.27
Bx	**1**	**1**	D/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	**1**	**1**	A/1	Cx/1	24.00	30.00	✓	Straight	Straight Movement
Dx	**1**	**1**	C/1	Dx/1	24.00	30.00	✓	Nearside	74.98
Ax	**1**	**2**	D/1	Ax/1	24.00	30.00	✓	Nearside	31.42
Bx	**1**	**2**	A/1	Bx/1	36.00	30.00	✓	Nearside	39.43
Cx	**1**	**2**	B/1	Cx/1	24.00	30.00	✓	Nearside	68.72
Dx	**1**	**2**	A/1	Dx/1	24.00	30.00	✓	Offside	83.90
Ax	**1**	**3**	C/1	Ax/1	24.00	30.00	✓	Straight	Straight Movement

Bx	**1**	**3**	C/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	**1**	**3**	D/2	Cx/1	24.00	30.00	✓	Offside	94.21
Dx	**1**	**3**	B/1	Dx/1	24.00	30.00	✓	Straight	Straight Movement

Give Way Data

Arm	Traffic Stream	Opposed traffic	Use Step-wise Opposed Turn Model	Visibility restricted
A	**1**	Movement		
B	**2**	AllTraffic		
C	**1**	Movement		
D	**2**	Movement		

Give Way Data - All Movements - Conflicts

Traffic Stream	Description	Controlling type	Controlling traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
2		TrafficStream	D/1	100	0.00		0	0

Give Way Data - Movements

Arm	Traffic Stream	Movement	Destination traffic stream	Max Flow (Opposed) (PCU/hr)	Max Flow (Unopposed) (PCU/hr)	Percentage opposed (%)
A	**1**	**1**	Cx/1	0	1532	100
		2	Dx/1	1200	1532	100
		3	Bx/1	0	1532	100
C	**1**	**1**	Dx/1	0	1532	100
		2	Bx/1	1200	1532	100
		3	Ax/1	0	1532	100
D	**2**	**1**	Cx/1	1200	1823	100

Give Way Data - Movements - Conflicts

Arm	Traffic Stream	Movement	Destination traffic stream	Description	Controlling type	Controlling traffic stream	Controlling from traffic stream	Controlling to traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
A	**1**	**2**	**Dx/1**		TrafficStreamMovement		C/1	Dx/1	100	0.00		0	0
					TrafficStreamMovement		C/1	Ax/1	100	0.00		0	0
C	**1**	**2**	**Bx/1**		TrafficStreamMovement		A/1	Bx/1	100	0.00		0	0
					TrafficStreamMovement		A/1	Cx/1	100	0.00		0	0
D	**2**	**1**	**Cx/1**		TrafficStream	B/1			100	0.00		0	0

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
1	(untitled)		J		Farside	11.60	7.73	5.40

2	(untitled)		J		Farside	9.80	6.53	5.40
3	(untitled)		J		Farside	12.00	8.00	5.40
4	(untitled)		J		Farside	10.20	6.80	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
1	1	H	
2	1	I	
3	1	J	
4	1	G	

Pedestrian Crossings - Sides

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

Pedestrian Crossings - Modelling

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

Local OD Matrix - Local Matrix: 1

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
1	(untitled)	✓	✓	Path Equalisation			✓			✓	1.25		

Normal Input Flows (PCU/hr)

		To			
		1	**2**	**3**	**4**
From	**1**	0	41	0	36
	2	52	0	58	793
	3	0	19	0	39
	4	59	929	72	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
1	**1**	(untitled)	A/1	Ax/1	#0000FF
	2	(untitled)	B2/1	Bx/1	#00FF00

	3	(untitled)	C/1	Cx/1	#FFFF00
	4	(untitled)	D2/1	Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	**14**		4	2	D2/1, D/1, Bx/1	Normal	929
	30		1	3	A/1, Cx/1	Normal	0
	31		1	4	A/1, Dx/1	Normal	36
	32		1	2	A/1, Bx/1	Normal	41
	34		2	3	B2/1, B/1, Cx/1	Normal	58
	38		2	1	B2/1, B/2, Ax/1	Normal	52
	39		4	1	D2/1, D/1, Ax/1	Normal	59
	40		4	3	D2/1, D/2, Cx/1	Normal	72
	42		2	4	B2/1, B/1, Dx/1	Normal	793
	43		3	4	C/1, Dx/1	Normal	39
	44		3	1	C/1, Ax/1	Normal	0
	45		3	2	C/1, Bx/1	Normal	19

Signal Timings

Network Default: 240s cycle time; 240 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)
1	(untitled)		1	NetworkDefault	240

Controller Stream 1 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
1	Unspecified						Absolute

Controller Stream 1 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
1	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
1	**A**	(untitled)	7	14	0	0	Traffic	
	B	(untitled)	7	300	0	0	Traffic	
	C	(untitled)	7	300	0	0	Indicative arrow	
	D	(untitled)	7	300	0	0	Traffic	
	E	(untitled)	7	300	0	0	Traffic	
	F	(untitled)	7	300	0	0	Indicative arrow	

	G	(untitled)	7	300	0	0	Pedestrian	0
	H	(untitled)	7	300	0	0	Pedestrian	0
	I	(untitled)	7	300	0	0	Pedestrian	0
	J	(untitled)	7	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)
1	**1**	A, D	1
	2	D	1
	3	E, F, C, B	1
	4	F, C	1
	5	G, J, H, I	1

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends
1	**1**	(untitled)	Single	1, 3, 4, 5, 1, 3, 4	30, 136, 137, 151, 169, 15, 16

Intergreen Matrix for Controller Stream 1

		To									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
From	**A**		5	5		5	5	0	0	0	0
	B	0			0						
	C	5			5			7	7	7	7
	D		5	5		5	5	0	0	0	0
	E	0			0						
	F	5			5			7	7	7	7
	G	10		0	10		0				
	H	10		0	10		0				
	I	10		0	10		0				
	J	10		0	10		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)
1	**1**	✓	1	A,D	21	30	9	1	7
	2	✓	3	E,F,C,B	35	136	101	1	7
	3	✓	4	F,C	136	137	1	1	1
	4	✓	5	G,J,H,I	144	151	7	1	7
	5	✓	1	A,D	161	169	8	1	7
	6	✓	3	E,F,C,B	174	15	81	1	7
	7	✓	4	F,C	15	16	1	1	1

Resultant Phase Green Periods

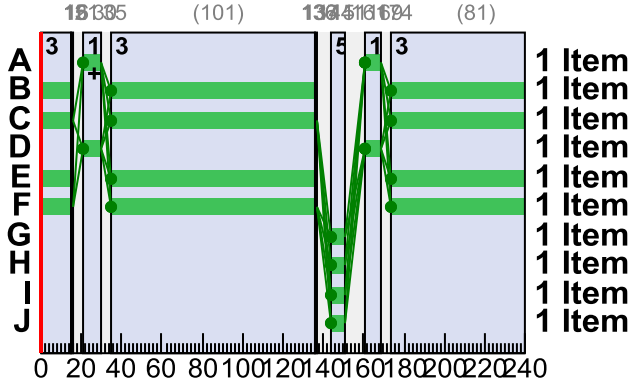
Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	**A**	**1**	✓	161	169	8

		2	✓	21	30	9
	B	1	✓	35	136	101
		2	✓	174	15	81
	C	1	✓	35	137	102
		2	✓	174	16	82
	D	1	✓	161	169	8
		2	✓	21	30	9
	E	1	✓	35	136	101
		2	✓	174	15	81
	F	1	✓	35	137	102
		2	✓	174	16	82
	G	1	✓	144	151	7
	H	1	✓	144	151	7
	I	1	✓	144	151	7
	J	1	✓	144	151	7

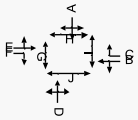
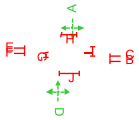
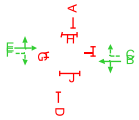
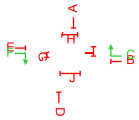
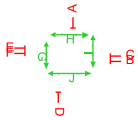
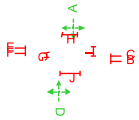
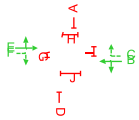
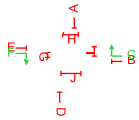
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1			Green Period 2		
					Start	End	Duration	Start	End	Duration
A	1	J	1	A	161	169	8	21	30	9
B	1	J	1	B	35	136	101	174	15	81
B	2	J	1	C	35	137	102	174	16	82
C	1	J	1	D	161	169	8	21	30	9
D	1	J	1	E	35	136	101	174	15	81
D	2	J	1	F	35	137	102	174	16	82

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1

Phases	Stage 1 +	Stage 3	Stage 4	Stage 5	Stage 1	Stage 3	Stage 4
							

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
17:00-18:00	A	1	72	26	77	1357	17	94.20	3.76	14.40	28.61	1.21	29.83
	B	1	59	52	851	1877	182	8.40	16.26	311.74	28.19	4.44	32.64
		2	6	1518	52	1206	184	3.66	0.54	10.27	0.75	0.14	0.89
	C	1	52	73	58	1405	17	71.87	2.45	7.05	16.44	0.79	17.23
	D	1	68	32	988	1896	182	10.14	21.85	405.27	39.51	5.94	45.45
		2	8	1069	72	1207	184	3.76	0.76	14.16	1.07	0.21	1.27
	Ax	1	0	Unrestricted	111	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	B2	1	47	91	903	1915	240	0.84	0.21	0.60	2.98	0.00	2.98
	Bx	1	0	Unrestricted	989	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	Cx	1	0	Unrestricted	130	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	D2	1	55	63	1060	1915	240	1.16	0.34	0.98	4.86	0.00	4.86
	Dx	1	0	Unrestricted	868	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
A	1	(untitled)	J	1	A	77	1357	17	0.00	72	26	112.20	94.20	125.79	3.76	100	100	0.00	29.83

B	1	(untitled)	J	1	B	851 <	1877	182	0.00	59	52	12.00	8.40	41.64	16.26 +	100	100	0.00	32.64
	2	(untitled)	J	1	C	52	1206	184	183.00	6	1518	7.26	3.66	21.98	0.54	100	100	0.00	0.89
C	1	(untitled)	J	1	D	58	1405	17	9.00	52	73	95.87	71.87	108.21	2.45	100	100	0.00	17.23
D	1	(untitled)	J	1	E	988 <	1896	182	0.00	68	32	13.86	10.14	47.96	21.85 +	100	100	0.00	45.45
	2	(untitled)	J	1	F	72	1207	184	0.00	8	1069	7.48	3.76	22.76	0.76	100	100	0.00	1.27
Ax	1	(untitled)				111	Unrestricted	240	48.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
B2	1	(untitled)	1			903	1915	240	61.00	47	91	24.84	0.84	0.00	0.21	100	100	0.00	2.98
Bx	1	(untitled)				989	Unrestricted	240	0.00	0	Unrestricted	36.00	0.00	0.00	0.00	100	100	0.00	0.00
Cx	1	(untitled)				130	Unrestricted	240	44.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
D2	1	(untitled)	2			1060	1915	240	82.00	55	63	25.16	1.16	0.00	0.34	100	100	0.00	4.86
Dx	1	(untitled)				868	Unrestricted	240	6.00	0	Unrestricted	24.00	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)	Total 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	994.20	41.76	23.81	8.62	122.42	12.74	0.00	135.16
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	994.20	41.76	23.81	8.62	122.42	12.74	0.00	135.16

- *< = 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***

A5 - AM 2021 DS
D10 - AM 2021 DS*

Summary

Data Errors and Warnings
No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
5	24/04/2019 10:04:30	24/04/2019 10:04:31	07:15	240	168.09	10.92	80.14	A/1	0	0	A/1	B2/1	A/1	✓

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
AM 2021 DS		D10	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
AM 2021 DS				07:15	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
240		60	1	60

Signals options

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

Advanced

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

Traffic options

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

Advanced

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

Normal Traffic parameters

Dispersion type	Dispersion coefficient
Default	35

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Bus	1.00	70	15	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Tram	1.00	0	0	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

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

Advanced

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

Economics

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

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
(ALL)	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	Site Access		J
B	Scholarstown Rd East		J
C	Woodfield		J

D	Scholarstown Rd West		J
Ax	(untitled)		
B2	(untitled)		1
Bx	(untitled)		
Cx	(untitled)		
D2	(untitled)		2
Dx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	**1**	(untitled)			150.00	✓	Sum of lanes	1532	✓	✓	Normal	
B	**1**	(untitled)			30.00	✓	Sum of lanes	1877	✓		Normal	
	2	(untitled)			30.00	✓	Sum of lanes	1787	✓	✓	Normal	
C	**1**	(untitled)			200.00	✓	Sum of lanes	1532	✓	✓	Normal	
D	**1**	(untitled)			31.00	✓	Sum of lanes	1896	✓		Normal	
	2	(untitled)			31.00	✓	Sum of lanes	1823	✓	✓	Normal	
Ax	**1**	(untitled)			200.00						Normal	
B2	**1**	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Bx	**1**	(untitled)			300.00						Normal	
Cx	**1**	(untitled)			200.00						Normal	
D2	**1**	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Dx	**1**	(untitled)			200.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	**1**	**1**	Site Access		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
B	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		8	6.00	✓	1877
	2	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	10.00		1787
C	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
D	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		4	6.00	✓	1896
	2	**1**	(untitled)		✓	N/A	N/A	0	2.50		100	15.00		1823
Ax	**1**	**1**	(untitled)											
B2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915

Bx	**1**	**1**	(untitled)										
Cx	**1**	**1**	(untitled)										
D2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Dx	**1**	**1**	(untitled)										

Modelling

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

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	**(ALL)**	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	240

Normal - Modelling

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

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	**1**	133	133
B	**1**	871	871
	2	15	15
C	**1**	118	118
D	**1**	680	680
	2	6	6
Ax	**1**	27	27
B2	**1**	886	886
Bx	**1**	789	789
Cx	**1**	13	13
D2	**1**	686	686
Dx	**1**	994	994

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	**1**	1	A	
B	**1**	1	B	
	2	1	C	
C	**1**	1	D	
D	**1**	1	E	
	2	1	F	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	1	18.00	30.00
C	1	24.00	30.00
B2	1	24.00	30.00
D2	1	24.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
B	1	1	B2/1	B/1	3.60	30.00	✓	Straight	Straight Movement
	2	1	B2/1	B/2	3.60	30.00	✓	Straight	Straight Movement
D	1	1	D2/1	D/1	3.72	30.00	✓	Straight	Straight Movement
	2	1	D2/1	D/2	3.72	30.00	✓	Straight	Straight Movement
Ax	1	1	B/2	Ax/1	24.00	30.00	✓	Offside	54.27
Bx	1	1	D/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	1	1	A/1	Cx/1	24.00	30.00	✓	Straight	Straight Movement
Dx	1	1	C/1	Dx/1	24.00	30.00	✓	Nearside	74.98
Ax	1	2	D/1	Ax/1	24.00	30.00	✓	Nearside	31.42
Bx	1	2	A/1	Bx/1	36.00	30.00	✓	Nearside	39.43
Cx	1	2	B/1	Cx/1	24.00	30.00	✓	Nearside	68.72
Dx	1	2	A/1	Dx/1	24.00	30.00	✓	Offside	83.90
Ax	1	3	C/1	Ax/1	24.00	30.00	✓	Straight	Straight Movement
Bx	1	3	C/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	1	3	D/2	Cx/1	24.00	30.00	✓	Offside	94.21
Dx	1	3	B/1	Dx/1	24.00	30.00	✓	Straight	Straight Movement

Give Way Data

Arm	Traffic Stream	Opposed traffic	Use Step-wise Opposed Turn Model	Visibility restricted
A	1	Movement		
B	2	AllTraffic		
C	1	Movement		
D	2	Movement		

Give Way Data - All Movements - Conflicts

Traffic Stream	Description	Controlling type	Controlling traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
2		TrafficStream	D/1	100	0.00		0	0

Give Way Data - Movements

Arm	Traffic Stream	Movement	Destination traffic stream	Max Flow (Opposed) (PCU/hr)	Max Flow (Unopposed) (PCU/hr)	Percentage opposed (%)

A	1	1	Cx/1	0	1532	100
		2	Dx/1	1200	1532	100
		3	Bx/1	0	1532	100
C	1	1	Dx/1	0	1532	100
		2	Bx/1	1200	1532	100
		3	Ax/1	0	1532	100
D	2	1	Cx/1	1200	1823	100

Give Way Data - Movements - Conflicts

Arm	Traffic Stream	Movement	Destination traffic stream	Description	Controlling type	Controlling traffic stream	Controlling from traffic stream	Controlling to traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
A	1	2	Dx/1		TrafficStreamMovement		C/1	Dx/1	100	0.00		0	0
					TrafficStreamMovement		C/1	Ax/1	100	0.00		0	0
C	1	2	Bx/1		TrafficStreamMovement		A/1	Bx/1	100	0.00		0	0
					TrafficStreamMovement		A/1	Cx/1	100	0.00		0	0
D	2	1	Cx/1		TrafficStream	B/1			100	0.00		0	0

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
1	(untitled)		J		Farside	11.60	7.73	5.40
2	(untitled)		J		Farside	9.80	6.53	5.40
3	(untitled)		J		Farside	12.00	8.00	5.40
4	(untitled)		J		Farside	10.20	6.80	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
1	1	H	
2	1	I	
3	1	J	
4	1	G	

Pedestrian Crossings - Sides

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

Pedestrian Crossings - Modelling

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

Local OD Matrix - Local Matrix: 1

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
1	(untitled)	✓	✓	Path Equalisation			✓			✓	1.25		

Normal Input Flows (PCU/hr)

		To			
		1	2	3	4
From	1	0	59	0	74
	2	15	0	7	864
	3	0	62	0	56
	4	12	668	6	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
1	1	(untitled)	A/1	Ax/1	#0000FF
	2	(untitled)	B2/1	Bx/1	#00FF00
	3	(untitled)	C/1	Cx/1	#FFFF00
	4	(untitled)	D2/1	Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	14		4	2	D2/1, D/1, Bx/1	Normal	668
	30		1	3	A/1, Cx/1	Normal	0
	31		1	4	A/1, Dx/1	Normal	74
	32		1	2	A/1, Bx/1	Normal	59
	34		2	3	B2/1, B/1, Cx/1	Normal	7
	38		2	1	B2/1, B/2, Ax/1	Normal	15
	39		4	1	D2/1, D/1, Ax/1	Normal	12
	40		4	3	D2/1, D/2, Cx/1	Normal	6
	42		2	4	B2/1, B/1, Dx/1	Normal	864
	43		3	4	C/1, Dx/1	Normal	56
	44		3	1	C/1, Ax/1	Normal	0
	45		3	2	C/1, Bx/1	Normal	62

Signal Timings

Network Default: 240s cycle time; 240 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)
1	(untitled)		1	NetworkDefault	240

Controller Stream 1 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
1	Unspecified						Absolute

Controller Stream 1 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
1	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
1	A	(untitled)	7	14	0	0	Traffic	
	B	(untitled)	7	300	0	0	Traffic	
	C	(untitled)	7	300	0	0	Indicative arrow	
	D	(untitled)	7	300	0	0	Traffic	
	E	(untitled)	7	300	0	0	Traffic	
	F	(untitled)	7	300	0	0	Indicative arrow	
	G	(untitled)	7	300	0	0	Pedestrian	0
	H	(untitled)	7	300	0	0	Pedestrian	0
	I	(untitled)	7	300	0	0	Pedestrian	0
	J	(untitled)	7	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)
1	1	A, D	1
	2	D	1
	3	E, F, C, B	1
	4	F, C	1
	5	G, J, H, I	1

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends
1	1	(untitled)	Single	1, 3, 4, 5, 1, 3, 4	29, 137, 138, 152, 176, 9, 10

Intergreen Matrix for Controller Stream 1

		To									
From		A	B	C	D	E	F	G	H	I	J
	A		5	5		5	5	0	0	0	0

	B	0			0						
	C	5			5			7	7	7	7
	D		5	5		5	5	0	0	0	0
	E	0			0						
	F	5			5			7	7	7	7
	G	10		0	10		0				
	H	10		0	10		0				
	I	10		0	10		0				
	J	10		0	10		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)
1	**1**	✓	1	A,D	15	29	14	1	7
	2	✓	3	E,F,C,B	34	137	103	1	7
	3	✓	4	F,C	137	138	1	1	1
	4	✓	5	G,J,H,I	145	152	7	1	7
	5	✓	1	A,D	162	176	14	1	7
	6	✓	3	E,F,C,B	181	9	68	1	7
	7	✓	4	F,C	9	10	1	1	1

Resultant Phase Green Periods

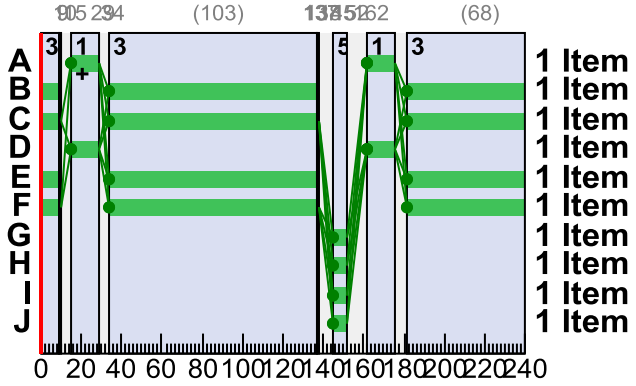
Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	**A**	**1**	✓	162	176	14
		2	✓	15	29	14
	B	**1**	✓	34	137	103
		2	✓	181	9	68
	C	**1**	✓	34	138	104
		2	✓	181	10	69
	D	**1**	✓	162	176	14
		2	✓	15	29	14
	E	**1**	✓	34	137	103
		2	✓	181	9	68
	F	**1**	✓	34	138	104
		2	✓	181	10	69
	G	**1**	✓	145	152	7
	H	**1**	✓	145	152	7
	I	**1**	✓	145	152	7
	J	**1**	✓	145	152	7

Traffic Stream Green Times

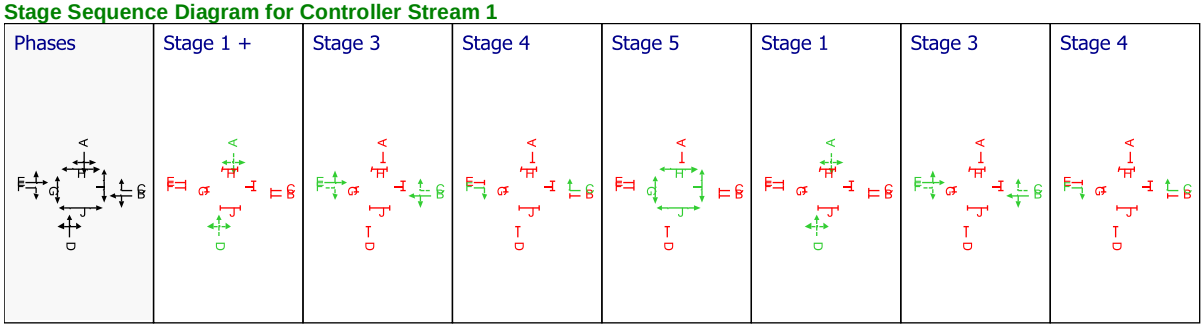
Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1			Green Period 2		
					Start	End	Duration	Start	End	Duration

A	1	J	1	A	162	176	14	15	29	14
B	1	J	1	B	34	137	103	181	9	68
B	2	J	1	C	34	138	104	181	10	69
C	1	J	1	D	162	176	14	15	29	14
D	1	J	1	E	34	137	103	181	9	68
D	2	J	1	F	34	138	104	181	10	69

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
07:15-08:15	A	1	80	12	133	1328	28	93.02	6.82	26.14	48.80	2.09	50.89
	B	1	64	40	871	1877	171	11.82	19.93	382.07	40.61	5.62	46.23
		2	2	5179	15	1207	173	4.95	0.18	3.36	0.29	0.05	0.34
	C	1	71	28	118	1338	28	78.06	5.52	15.86	36.33	1.68	38.02
	D	1	50	81	680	1896	171	9.18	12.90	239.30	24.62	3.62	28.24
		2	1	13103	6	1207	173	4.93	0.07	1.30	0.12	0.02	0.14
	Ax	1	0	Unrestricted	27	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	B2	1	46	95	886	1915	240	0.81	0.20	0.57	2.82	0.00	2.82

	Bx	**1**	0	Unrestricted	789	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	Cx	**1**	0	Unrestricted	13	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	D2	**1**	36	151	686	1915	240	0.52	0.10	0.29	1.42	0.00	1.42
	Dx	**1**	0	Unrestricted	994	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (PCU/hr)**	**Calculated sat flow (PCU/hr)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (PCU)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
A	**1**	(untitled)	J	1	A	133	1328	28	0.00	80	12	111.02	93.02	125.35	6.82	100	100	0.00	50.89
B	**1**	(untitled)	J	1	B	871 <	1877	171	0.00	64	40	15.42	11.82	51.46	19.93 +	100	100	0.00	46.23
	2	(untitled)	J	1	C	15	1207	173	173.00	2	5179	8.55	4.95	26.11	0.18	100	100	0.00	0.34
C	**1**	(untitled)	J	1	D	118	1338	28	0.00	71	28	102.06	78.06	113.70	5.52	100	100	0.00	38.02
D	**1**	(untitled)	J	1	E	680 <	1896	171	0.00	50	81	12.90	9.18	42.41	12.90 +	100	100	0.00	28.24
	2	(untitled)	J	1	F	6	1207	173	173.00	1	13103	8.65	4.93	26.10	0.07	100	100	0.00	0.14
Ax	**1**	(untitled)				27	Unrestricted	240	231.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
B2	**1**	(untitled)	1			886	1915	240	86.00	46	95	24.81	0.81	0.00	0.20	100	100	0.00	2.82
Bx	**1**	(untitled)				789	Unrestricted	240	0.00	0	Unrestricted	36.00	0.00	0.00	0.00	100	100	0.00	0.00
Cx	**1**	(untitled)				13	Unrestricted	240	240.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
D2	**1**	(untitled)	2			686	1915	240	50.00	36	151	24.52	0.52	0.00	0.10	100	100	0.00	1.42
Dx	**1**	(untitled)				994	Unrestricted	240	5.00	0	Unrestricted	24.00	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)**	**Total 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	849.30	39.23	21.65	10.92	155.01	13.08	0.00	168.09
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	849.30	39.23	21.65	10.92	155.01	13.08	0.00	168.09

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

A6 - PM 2021 DS
D11 - PM 2021 DS*

Summary

Data Errors and Warnings
No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
6	24/04/2019 10:04:35	24/04/2019 10:04:35	17:00	240	121.25	7.73	71.70	A/1	0	0	A/1	D2/1	A/1	✓

Analysis Set Details

Name	Description	Demand set	Include in report	Locked
PM 2021 DS		D11	✓	

Demand Set Details

Name	Description	Composite	Demand sets	Start time (HH:mm)	Locked
PM 2021 DS				17:00	

Network Options

Network timings

Network cycle time (s)	Restrict to SCOOT cycle times	Time segment length (min)	Number of time segments	Modelled time period (min)
240		60	1	60

Signals options

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

Advanced

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

Traffic options

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

Advanced

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

Normal Traffic parameters

Dispersion type	Dispersion coefficient
Default	35

Normal Traffic Types

Name	PCU Factor
Normal	1.00

Bus parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Bus	1.00	70	15	0.94	30	85

Tram parameters

Name	PCU Factor	Dispersion coefficient1	Dispersion coefficient2	Acceleration (ms^[-2])	Travel time coefficient1	Travel time coefficient2
Tram	1.00	0	0	0.94	100	100

Pedestrian parameters

Dispersion type
Default

Optimisation options

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

Advanced

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

Economics

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

Traffic Nodes

Traffic Nodes

Traffic node	Name	Description
(ALL)	(untitled)	

Arms and Traffic Streams

Arms

Arm	Name	Description	Traffic node
A	Site Access		J
B	Scholarstown Rd East		J
C	Woodfield		J
D	Scholarstown Rd West		J
Ax	(untitled)		
B2	(untitled)		1
Bx	(untitled)		
Cx	(untitled)		
D2	(untitled)		2
Dx	(untitled)		

Traffic Streams

Arm	Traffic Stream	Name	Description	Auto length	Length (m)	Has Saturation Flow	Saturation flow source	Saturation flow (PCU/hr)	Is signal controlled	Is give way	Traffic type	Allow Nearside Turn On Red
A	1	(untitled)			150.00	✓	Sum of lanes	1532	✓	✓	Normal	
B	1	(untitled)			30.00	✓	Sum of lanes	1877	✓		Normal	
	2	(untitled)			30.00	✓	Sum of lanes	1787	✓	✓	Normal	
C	1	(untitled)			200.00	✓	Sum of lanes	1532	✓	✓	Normal	
D	1	(untitled)			31.00	✓	Sum of lanes	1896	✓		Normal	
	2	(untitled)			31.00	✓	Sum of lanes	1823	✓	✓	Normal	
Ax	1	(untitled)			200.00						Normal	
B2	1	(untitled)			200.00	✓	Sum of lanes	1915			Normal	
Bx	1	(untitled)			300.00						Normal	
Cx	1	(untitled)			200.00						Normal	
D2	1	(untitled)			200.00	✓	Sum of lanes	1915			Normal	

Dx	**1**	(untitled)			200.00						Normal	

Lanes

Arm	Traffic Stream	Lane	Name	Description	Use RR67	Surface condition	Site quality factor	Gradient (%)	Width (m)	Use connector turning radius	Proportion that turn (%)	Turning radius (m)	Nearside lane	Saturation flow (PCU/hr)
A	**1**	**1**	Site Access		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
B	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		8	6.00	✓	1877
	2	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	10.00		1787
C	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		100	6.00	✓	1532
D	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00		4	6.00	✓	1896
	2	**1**	(untitled)		✓	N/A	N/A	0	2.50		100	15.00		1823
Ax	**1**	**1**	(untitled)											
B2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Bx	**1**	**1**	(untitled)											
Cx	**1**	**1**	(untitled)											
D2	**1**	**1**	(untitled)		✓	N/A	N/A	0	3.00	✓	0	99999.00	✓	1915
Dx	**1**	**1**	(untitled)											

Modelling

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

Modelling - Advanced

Arm	Traffic Stream	Initial queue (PCU)	Type of Vehicle-in-Service	Vehicle-in-Service	Type of random parameter	Random parameter	Auto cycle time	Cycle time
(ALL)	**(ALL)**	0.00	NetworkDefault	Not-Included	NetworkDefault	0.50	✓	240

Normal - Modelling

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

Flows

Arm	Traffic Stream	Total Flow (PCU/hr)	Normal Flow (PCU/hr)
A	**1**	77	77
B	**1**	798	798
	2	52	52
C	**1**	54	54

D	**1**	932	932
	2	68	68
Ax	**1**	111	111
B2	**1**	850	850
Bx	**1**	932	932
Cx	**1**	122	122
D2	**1**	1000	1000
Dx	**1**	816	816

Signals

Arm	Traffic Stream	Controller stream	Phase	Second phase enabled
A	**1**	1	A	
B	**1**	1	B	
	2	1	C	
C	**1**	1	D	
D	**1**	1	E	
	2	1	F	

Entry Sources

Arm	Traffic Stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)
A	**1**	18.00	30.00
C	**1**	24.00	30.00
B2	**1**	24.00	30.00
D2	**1**	24.00	30.00

Sources

Arm	Traffic Stream	Source	Source traffic stream	Destination traffic stream	Cruise time for Normal Traffic (s)	Cruise speed for Normal Traffic (kph)	Auto turning radius	Traffic turn style	Turning radius (m)
B	**1**	**1**	B2/1	B/1	3.60	30.00	✓	Straight	Straight Movement
	2	**1**	B2/1	B/2	3.60	30.00	✓	Straight	Straight Movement
D	**1**	**1**	D2/1	D/1	3.72	30.00	✓	Straight	Straight Movement
	2	**1**	D2/1	D/2	3.72	30.00	✓	Straight	Straight Movement
Ax	**1**	**1**	B/2	Ax/1	24.00	30.00	✓	Offside	54.27
Bx	**1**	**1**	D/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	**1**	**1**	A/1	Cx/1	24.00	30.00	✓	Straight	Straight Movement
Dx	**1**	**1**	C/1	Dx/1	24.00	30.00	✓	Nearside	74.98
Ax	**1**	**2**	D/1	Ax/1	24.00	30.00	✓	Nearside	31.42
Bx	**1**	**2**	A/1	Bx/1	36.00	30.00	✓	Nearside	39.43
Cx	**1**	**2**	B/1	Cx/1	24.00	30.00	✓	Nearside	68.72
Dx	**1**	**2**	A/1	Dx/1	24.00	30.00	✓	Offside	83.90
Ax	**1**	**3**	C/1	Ax/1	24.00	30.00	✓	Straight	Straight Movement

Bx	**1**	**3**	C/1	Bx/1	36.00	30.00	✓	Straight	Straight Movement
Cx	**1**	**3**	D/2	Cx/1	24.00	30.00	✓	Offside	94.21
Dx	**1**	**3**	B/1	Dx/1	24.00	30.00	✓	Straight	Straight Movement

Give Way Data

Arm	Traffic Stream	Opposed traffic	Use Step-wise Opposed Turn Model	Visibility restricted
A	**1**	Movement		
B	**2**	AllTraffic		
C	**1**	Movement		
D	**2**	Movement		

Give Way Data - All Movements - Conflicts

Traffic Stream	Description	Controlling type	Controlling traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
2		TrafficStream	D/1	100	0.00		0	0

Give Way Data - Movements

Arm	Traffic Stream	Movement	Destination traffic stream	Max Flow (Opposed) (PCU/hr)	Max Flow (Unopposed) (PCU/hr)	Percentage opposed (%)
A	**1**	**1**	Cx/1	0	1532	100
		2	Dx/1	1200	1532	100
		3	Bx/1	0	1532	100
C	**1**	**1**	Dx/1	0	1532	100
		2	Bx/1	1200	1532	100
		3	Ax/1	0	1532	100
D	**2**	**1**	Cx/1	1200	1823	100

Give Way Data - Movements - Conflicts

Arm	Traffic Stream	Movement	Destination traffic stream	Description	Controlling type	Controlling traffic stream	Controlling from traffic stream	Controlling to traffic stream	Percentage opposing (%)	Slope coefficient	Upstream signals visible	Conflict shift	Conflict duration
A	**1**	**2**	**Dx/1**		TrafficStreamMovement		C/1	Dx/1	100	0.00		0	0
					TrafficStreamMovement		C/1	Ax/1	100	0.00		0	0
C	**1**	**2**	**Bx/1**		TrafficStreamMovement		A/1	Bx/1	100	0.00		0	0
					TrafficStreamMovement		A/1	Cx/1	100	0.00		0	0
D	**2**	**1**	**Cx/1**		TrafficStream	B/1			100	0.00		0	0

Pedestrian Crossings

Pedestrian Crossings

Crossing	Name	Description	Traffic node	Allow walk on red	Crossing type	Length (m)	Cruise time (seconds)	Cruise speed (kph)
1	(untitled)		J		Farside	11.60	7.73	5.40

2	(untitled)		J		Farside	9.80	6.53	5.40
3	(untitled)		J		Farside	12.00	8.00	5.40
4	(untitled)		J		Farside	10.20	6.80	5.40

Pedestrian Crossings - Signals

Crossing	Controller stream	Phase	Second phase enabled
1	1	H	
2	1	I	
3	1	J	
4	1	G	

Pedestrian Crossings - Sides

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

Pedestrian Crossings - Modelling

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

Local OD Matrix - Local Matrix: 1

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
1	(untitled)	✓	✓	Path Equalisation			✓			✓	1.25		

Normal Input Flows (PCU/hr)

		To			
		1	**2**	**3**	**4**
From	**1**	0	41	0	36
	2	52	0	54	744
	3	0	18	0	36
	4	59	873	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
1	**1**	(untitled)	A/1	Ax/1	#0000FF
	2	(untitled)	B2/1	Bx/1	#00FF00

	3	(untitled)	C/1	Cx/1	#FFFF00
	4	(untitled)	D2/1	Dx/1	#FFFF00

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	**14**		4	2	D2/1, D/1, Bx/1	Normal	873
	30		1	3	A/1, Cx/1	Normal	0
	31		1	4	A/1, Dx/1	Normal	36
	32		1	2	A/1, Bx/1	Normal	41
	34		2	3	B2/1, B/1, Cx/1	Normal	54
	38		2	1	B2/1, B/2, Ax/1	Normal	52
	39		4	1	D2/1, D/1, Ax/1	Normal	59
	40		4	3	D2/1, D/2, Cx/1	Normal	68
	42		2	4	B2/1, B/1, Dx/1	Normal	744
	43		3	4	C/1, Dx/1	Normal	36
	44		3	1	C/1, Ax/1	Normal	0
	45		3	2	C/1, Bx/1	Normal	18

Signal Timings

Network Default: 240s cycle time; 240 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)
1	(untitled)		1	NetworkDefault	240

Controller Stream 1 - Properties

Controller Stream	Manufacturer name	Type	Model number	(Telephone) Line Number	Site number	Grid reference	Gaining delay type
1	Unspecified						Absolute

Controller Stream 1 - Optimisation

Controller Stream	Allow offset optimisation	Allow green split optimisation	Optimisation level	Auto redistribute	Enable stage constraint
1	✓	✓	Offsets And Green Splits	✓	

Phases

Controller Stream	Phase	Name	Minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type	Blackout Time (s)
1	**A**	(untitled)	7	14	0	0	Traffic	
	B	(untitled)	7	300	0	0	Traffic	
	C	(untitled)	7	300	0	0	Indicative arrow	
	D	(untitled)	7	300	0	0	Traffic	
	E	(untitled)	7	300	0	0	Traffic	
	F	(untitled)	7	300	0	0	Indicative arrow	

	G	(untitled)	7	300	0	0	Pedestrian	0
	H	(untitled)	7	300	0	0	Pedestrian	0
	I	(untitled)	7	300	0	0	Pedestrian	0
	J	(untitled)	7	300	0	0	Pedestrian	0

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)
1	**1**	A, D	1
	2	D	1
	3	E, F, C, B	1
	4	F, C	1
	5	G, J, H, I	1

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends
1	**1**	(untitled)	Single	1, 3, 4, 5, 1, 3, 4	29, 137, 138, 152, 169, 13, 14

Intergreen Matrix for Controller Stream 1

		To									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
From	**A**		5	5		5	5	0	0	0	0
	B	0			0						
	C	5			5			7	7	7	7
	D		5	5		5	5	0	0	0	0
	E	0			0						
	F	5			5			7	7	7	7
	G	10		0	10		0				
	H	10		0	10		0				
	I	10		0	10		0				
	J	10		0	10		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)
1	**1**	✓	1	A,D	19	29	10	1	7
	2	✓	3	E,F,C,B	34	137	103	1	7
	3	✓	4	F,C	137	138	1	1	1
	4	✓	5	G,J,H,I	145	152	7	1	7
	5	✓	1	A,D	162	169	7	1	7
	6	✓	3	E,F,C,B	174	13	79	1	7
	7	✓	4	F,C	13	14	1	1	1

Resultant Phase Green Periods

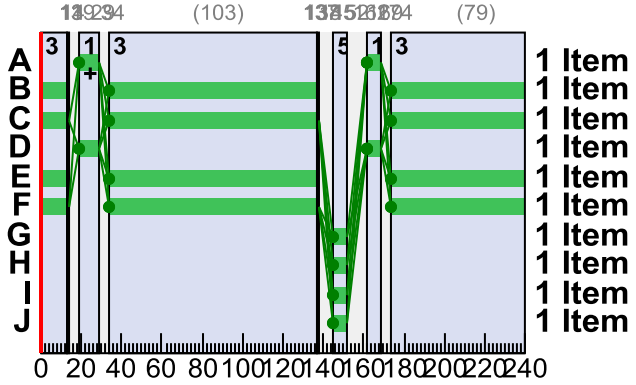
Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	**A**	**1**	✓	162	169	7

		2	✓	19	29	10
	B	1	✓	34	137	103
		2	✓	174	13	79
	C	1	✓	34	138	104
		2	✓	174	14	80
	D	1	✓	162	169	7
		2	✓	19	29	10
	E	1	✓	34	137	103
		2	✓	174	13	79
	F	1	✓	34	138	104
		2	✓	174	14	80
	G	1	✓	145	152	7
	H	1	✓	145	152	7
	I	1	✓	145	152	7
	J	1	✓	145	152	7

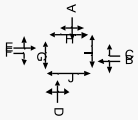
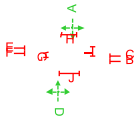
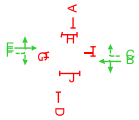
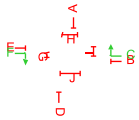
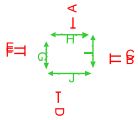
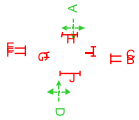
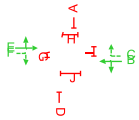
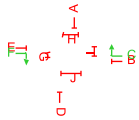
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1			Green Period 2		
					Start	End	Duration	Start	End	Duration
A	1	J	1	A	162	169	7	19	29	10
B	1	J	1	B	34	137	103	174	13	79
B	2	J	1	C	34	138	104	174	14	80
C	1	J	1	D	162	169	7	19	29	10
D	1	J	1	E	34	137	103	174	13	79
D	2	J	1	F	34	138	104	174	14	80

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1

Phases	Stage 1 +	Stage 3	Stage 4	Stage 5	Stage 1	Stage 3	Stage 4
							

Traffic Stream Results

Traffic Stream Results: Vehicle summary

Time Segment	Arm	Traffic Stream	Degree of saturation (%)	Practical reserve capacity (%)	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Mean Delay per Veh (s)	Mean max queue (PCU)	Utilised storage (%)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Performance Index (£ per hr)
17:00-18:00	A	1	72	26	77	1357	17	94.56	3.80	14.56	28.72	1.21	29.93
	B	1	55	62	798	1877	182	7.70	14.09	270.01	24.24	3.95	28.19
		2	6	1518	52	1206	184	3.58	0.52	10.00	0.74	0.14	0.88
	C	1	49	85	54	1403	17	69.91	2.28	6.55	14.89	0.72	15.61
	D	1	64	40	932	1896	182	9.15	18.69	346.71	33.65	5.25	38.90
		2	7	1138	68	1207	184	3.66	0.70	13.02	0.98	0.19	1.18
	Ax	1	0	Unrestricted	111	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	B2	1	44	103	850	1915	240	0.75	0.18	0.51	2.51	0.00	2.51
	Bx	1	0	Unrestricted	932	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	Cx	1	0	Unrestricted	122	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00
	D2	1	52	72	1000	1915	240	1.03	0.28	0.82	4.04	0.00	4.04
	Dx	1	0	Unrestricted	816	Unrestricted	240	0.00	0.00	0.00	0.00	0.00	0.00

Final Prediction Table

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (PCU/hr)	Calculated sat flow (PCU/hr)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
A	1	(untitled)	J	1	A	77	1357	17	0.00	72	26	112.56	94.56	125.77	3.80	100	100	0.00	29.93

B	**1**	(untitled)	J	1	B	798 <	1877	182	0.00	55	62	11.30	7.70	39.47	14.09 +	100	100	0.00	28.19
	2	(untitled)	J	1	C	52	1206	184	183.00	6	1518	7.18	3.58	21.98	0.52	100	100	0.00	0.88
C	**1**	(untitled)	J	1	D	54	1403	17	9.00	49	85	93.91	69.91	106.52	2.28	100	100	0.00	15.61
D	**1**	(untitled)	J	1	E	932 <	1896	182	0.00	64	40	12.87	9.15	44.96	18.69 +	100	100	0.00	38.90
	2	(untitled)	J	1	F	68	1207	184	0.00	7	1138	7.38	3.66	22.64	0.70	100	100	0.00	1.18
Ax	**1**	(untitled)				111	Unrestricted	240	48.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
B2	**1**	(untitled)	1			850	1915	240	54.00	44	103	24.75	0.75	0.00	0.18	100	100	0.00	2.51
Bx	**1**	(untitled)				932	Unrestricted	240	0.00	0	Unrestricted	36.00	0.00	0.00	0.00	100	100	0.00	0.00
Cx	**1**	(untitled)				122	Unrestricted	240	46.00	0	Unrestricted	24.00	0.00	0.00	0.00	100	100	0.00	0.00
D2	**1**	(untitled)	2			1000	1915	240	73.00	52	72	25.03	1.03	0.00	0.28	100	100	0.00	4.04
Dx	**1**	(untitled)				816	Unrestricted	240	6.00	0	Unrestricted	24.00	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)	Total 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	938.25	39.01	24.05	7.73	109.77	11.48	0.00	121.25
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	938.25	39.01	24.05	7.73	109.77	11.48	0.00	121.25

- *< = 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***