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Traffic and Transport Assessment

Strategic Housing Development (SHD)

Heuston South Quarter, St. John's Road West, Kilmainham, Dublin 8

Client: HPREF HSQ Investments Ltd.

Job No. H087

October 2021

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STRATEGIC HOUSING DEVELOPMENT (SHD)

HEUSTON SOUTH QUARTER, ST. JOHN'S ROAD WEST, KILMAINHAM, DUBLIN 8

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1.0 INTRODUCTION

1.1 Scope

Cronin & Sutton Consulting Engineers (CS Consulting) have been commissioned by HPREF HSQ Investments Ltd. to prepare a Traffic and Transport Assessment for a proposed 399-unit Strategic Housing Development at Heuston South Quarter, St. John's Road West, Kilmainham, Dublin 8.

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

- Dublin City Development Plan 2016–2022
- TII Traffic and Transport Assessment Guidelines 2014
- TII Project Appraisal Guidelines
- Design Manual for Urban Roads and Streets 2019
- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities) 2020
- Institution of Structural Engineers (IStructE) Design Recommendations for Multi-storey and Underground Car Parks (2011, 4th edition)
- National Cycle Manual 2011
- Greater Dublin Area Cycle Network Plan
- Trip Rate Information Computer System (TRICS)
- CSO 2016 Census data
- BusConnects CBC 6 Draft Transport Modelling Report (NTA, 2020)
- Department of Transport, Tourism and Sport Smarter Travel guidelines

1.2 Objective

The objective of this report is to examine the traffic implications associated with the proposed development, in terms of integration with existing traffic in the area. The report determines the impact of the proposed

development on the existing road network, in particular through the operational assessment of 3no. key junctions on St. John's Road West and on Military Road. In these assessments, account is also taken of the cumulative impact resulting from the inclusion of further nearby committed and planned developments. The report also examines the proposed development's vehicular access arrangements, car and bicycle parking provision, site layout, public transport accessibility, and facilities for pedestrians and cyclists.

This report – in particular Sections 3, 4, and 5 – presents an analysis of the proposed development's traffic impact, which is also presented in Chapter 11 of the Environmental Impact Assessment Report (EIAR) submitted separately in support of this planning application. While this content is common to both documents, Chapter 11 of the EIAR adopts a different reporting structure, in accordance with EPA guidelines for EIARs. In addition, the present Traffic and Transport Assessment provides a more exhaustive range of junction assessment scenarios, as well as examining certain further aspects of the proposed development (e.g. internal layout) that are not pertinent to an EIAR.

1.3 Study Methodology

The assessment methodology adopted for this report is summarised as follows:

- Traffic flow data – Morning and evening classified vehicular traffic counts were undertaken on Tuesday the 19th of September 2017 by CS Consulting. These were conducted between 07:00 and 09:30, and between 16:30 and 18:30, at 3no. junctions on the surrounding road network. These traffic flow data were scaled up to 2021 baseline levels using TII growth factors (given in sub-section 4.9). As described in sub-section 3.1, COVID-related disruption to typical travel patterns precluded the use of a contemporary traffic survey.

- Trip generation – A development trip generation assessment has been carried out using data extracted from the Trip Rate Information Computer System (TRICS) database of traffic surveys, to determine the potential vehicular trips to and from the proposed development site during peak hours. The TRICS database is maintained by a consortium of English County Councils but covers the entirety of Great Britain and Ireland. The potential trip generation of associated intended future development on an adjacent site has also been established.
- Trip distribution – Based upon existing traffic characteristics and the surrounding road network, an appropriate distribution has been assigned to site development vehicular trips across the road network, as described in sub-section 4.2.
- Existing junction assessment – A spreadsheet model was created which contains the baseline year do-nothing traffic count data described above. The traffic count data were used to develop a computer model (using industry-standard TRANSYT software) of 3no. key junctions on St. John's Road West and on Military Road, including the subject site's 2no. existing vehicular accesses. The performance of these modelled junctions was then assessed for the baseline year 2021.
- Future junction operation assessments – Future year traffic forecasts were derived from TII growth factors and development trip generation figures. These traffic flows were applied to the TRANSYT model. The performance of the modelled junctions was assessed for the development's proposed year of opening (2024), 5 years after opening (2029), and 15 years after opening (2039; the Design Year assessment).
- Parking – Car, bicycle, and motorcycle parking provisions within the proposed development have been assessed with reference to the parking standards set out in the Local Authority development plan, as well as to the recommendations of the 2020 *Design Standards for New Apartments*.

1.4 Structure of Report

As outlined above, this report seeks to establish the traffic impact generated by the proposed development on the surrounding road network and subsequently ascertain the future operational performance of the elements of this network with the potential to be affected.

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

- Section 2 describes the proposed development location, existing land use, and the development proposals.
- Section 3 provides an overview of the existing traffic conditions and the local road network, identifying any existing issues related to traffic flow or road infrastructure of particular relevance to this transport appraisal.
- Sections 4 and 5 detail the analysis as described in the study methodology above. The analysis examines trip generation, trip distribution, and resulting junction operational performance with the development in place.
- Section 6 assesses the proposed car parking provision for the development, with reference to Local Authority standards and to the 2020 *Design Standards for New Apartments (Guidelines for Planning Authorities)*.
- Section 7 examines the development's vehicular access arrangements, internal layout, servicing arrangements, public transport accessibility, and pedestrian and cyclist facilities.
- Section 8 provides an overview of the relevant opinions and recommendations received from An Bord Pleanála and from Dublin City Council in the course of the Strategic Housing Development application process to date, and details the measures taken in response to these comments.

- Section 9 presents the conclusions of the report.

2.0 SITE LOCATION AND PROPOSED DEVELOPMENT

2.1 Site Location

The proposed development is located on St. John's Road West at the Heuston South Quarter (HSQ) complex in Dublin 8, within the administrative jurisdiction of Dublin City Council. The site has an area of 1.08ha and is bounded to the west by the gardens of the Royal Hospital Kilmainham, to the north by St. John's Road West, and to the east and south by existing office and residential buildings forming Phase 1 of the larger HSQ development (which extend to Military Road, further to the south-east).

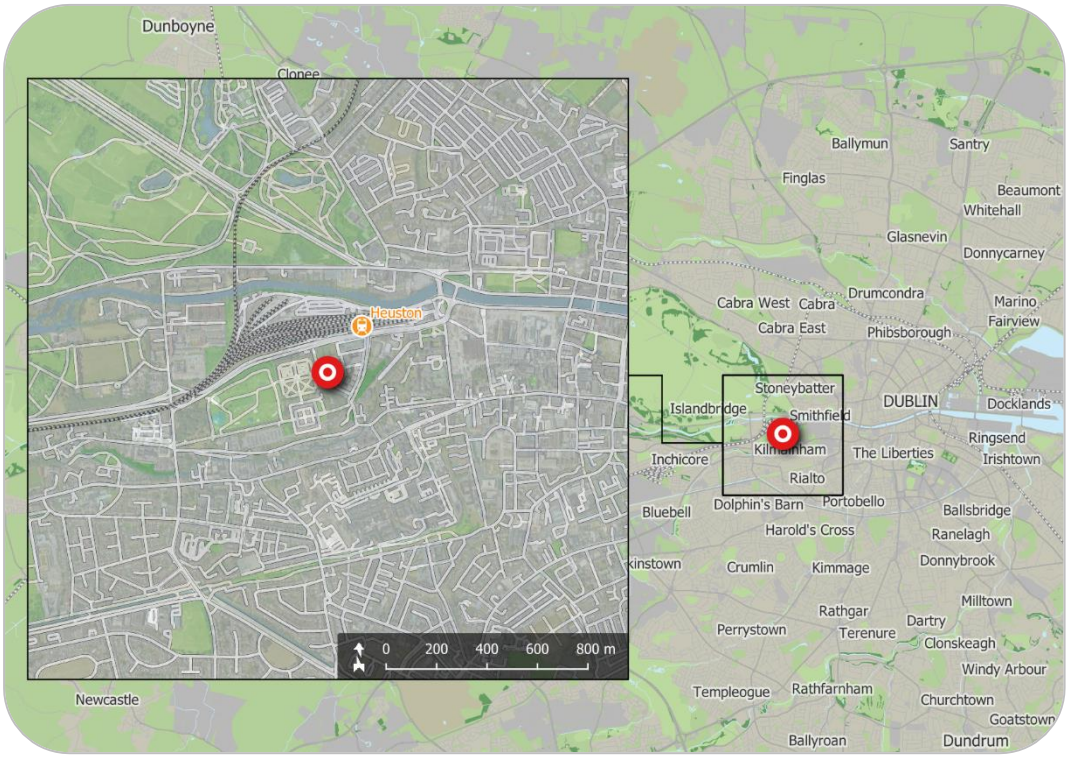

Figure 1 – Location of proposed development site
(*map data & imagery: EPA, OSi, OSM Contributors, Google*)

The location of the proposed development site is shown in Figure 1 above; the indicative extents of the development site, as well as relevant elements of the surrounding road network, are shown in more detail in Figure 2.

Figure 2 – Site extents and environs
(*map data & imagery: NTA, DCC, OSi, OSM Contributors, Google*)

2.2 Existing Land Use

The subject site is brownfield, comprising a partially developed section of the HSQ complex. Some surface level internal roads are present on the site, which benefits from the existing established HSQ vehicular accesses on St. John's Road West (R148) and Military Road. The site has been landscaped as an interim measure to improve its aesthetics pending its complete development. The subject site does not in itself generate any vehicular traffic but is traversed by traffic accessing the existing HSQ complex to/from St. John's Road West.

2.3 Description of Proposed Development

The proposed development will consist of a residential development of 399 no. 'Build To Rent' residential units and all ancillary and associated uses,

development and works, and a retail unit of 120 sq m, on a site of 1.08 ha. The proposed development consists of:

- Site clearance and localised demolitions to remove part of the podium and Basement Level -1 reinforced concrete slabs at the interface of the proposed Blocks A and B, together with the incorporation of part of the existing double basement level structure extending to approximately 7,613 sq.m over two levels (excluding an area of 3,318 sq.m that will be backfilled at Basement Level -1) within the proposed development.
- The construction of 5 no. buildings (Blocks A to E) ranging in height between 3- to 18-storeys over double basement level / podium level to provide a residential / mixed use development to provide 399 Specific BTR (Build to Rent) units with a total gross floor area of 29,391 sq.m, comprising 46 no. studios, 250 no. one bedroom units, 90 no. 2 bedroom / 4 person units and 13 no. 2 bedroom / 3 person units; internal communal ancillary residential services / amenities to include a shared co-working area / lounge (178 sq.m) and gym (102 sq.m) at lower ground floor level, and lounges on either side of a residential foyer at ground floor / podium level within Block A (196 sq.m), and a TV Room / lounge (57 sq.m) at ground floor / podium level within Block C.
- An independent retail unit (120 sq.m) is proposed at ground floor / podium level within Block B.
- A double basement is provided that will be integrated within the existing basement levels serving the wider HSQ development and will be accessed from the existing vehicular ramped accesses/egresses onto/off St. John's Road West and Military Road to the north and east, respectively. Basement level -1 provides: a refuse store; 80 no. car parking spaces (including 4 no. disabled spaces and 8 car club spaces); 4 no. motorcycle parking spaces; and, secure bicycle parking

/ storage in the form of 251 no. double stacked cycle parking spaces providing capacity for 502 no. secure bicycle storage spaces for residents. An additional 49 no. Sheffield type bicycle stands are provided at basement level -1 to provide 98 no. visitor cycle spaces (inclusive of 8 no. designated cargo bike spaces, that will also be available for the shared use with residents of the scheme) and a further 55 no. Sheffield type bicycle stands are provided at podium level to provide 110 no. cycle parking spaces (108 no. visitor cycle parking spaces (inclusive of 6 no. designated cargo bike spaces) and 2 no. cycle parking spaces in connection with the retail unit). All bicycle parking at basement level is accessed via a dedicated cycle lift from podium to basement level -1 that is situated to the south of Block B.

- Works proposed along the St John's Road West frontage include the omission of the existing left-turn filter lane to the vehicular ramped access to the HSQ development and re-configuration of the pedestrian crossings at the existing junction together with the re-configuration of the existing pedestrian crossing over the westbound lanes of St. John's Road West leading to an existing pedestrian refuge island. Re-alignment of the existing footpath along the site frontage onto St John's Road West to tie into the reconfigured junction arrangement and provision of a link to a new lift to provide wheelchair access from St John's Road West to the HSQ podium.
- Communal Outdoor Amenity space is provided for residents in the form of rooftop terraces (totalling 1,179sqm), and lower-level communal courtyards between blocks (totalling 960sqm).
- Hard and soft landscaping works are proposed at podium level which includes the extension and completion of the public plaza to the east of Block A; the provision of footpaths; a MUGA (Multi Use Games Area) and informal play areas for children (totalling 1,670sqm).

- A double ESB substation/switch room at ground / podium level within Block A, and a single substation/switch room at ground / podium level within Block B together with associated site development works, which includes the realignment / reprofiling of an existing vehicular access ramp at the southern end of the site between basement levels -1 and -2 and the closure / removal of a second vehicular access ramp between the subject site at basement level -1 and the raised basement level -1 under the Telford building.

For the purposes of the present assessment, it is assumed that the proposed development shall be completed and occupied by the year 2024.

3.0 RECEIVING ENVIRONMENT

3.1 Existing Traffic Flows

Full turning movement classified traffic counts were carried out by CS Consulting on Tuesday the 19th of September 2017, at the following 3no. junctions (see Figure 3):

J1. St. John's Road West (R148) / Military Road
(3-arm signal-controlled junction)

J2. Military Road / Heuston South Quarter (East Access)
(3-arm priority-controlled junction)

J3. St. John's Road West (R148) / Heuston South Quarter (North Access)
(3-arm signal-controlled junction)

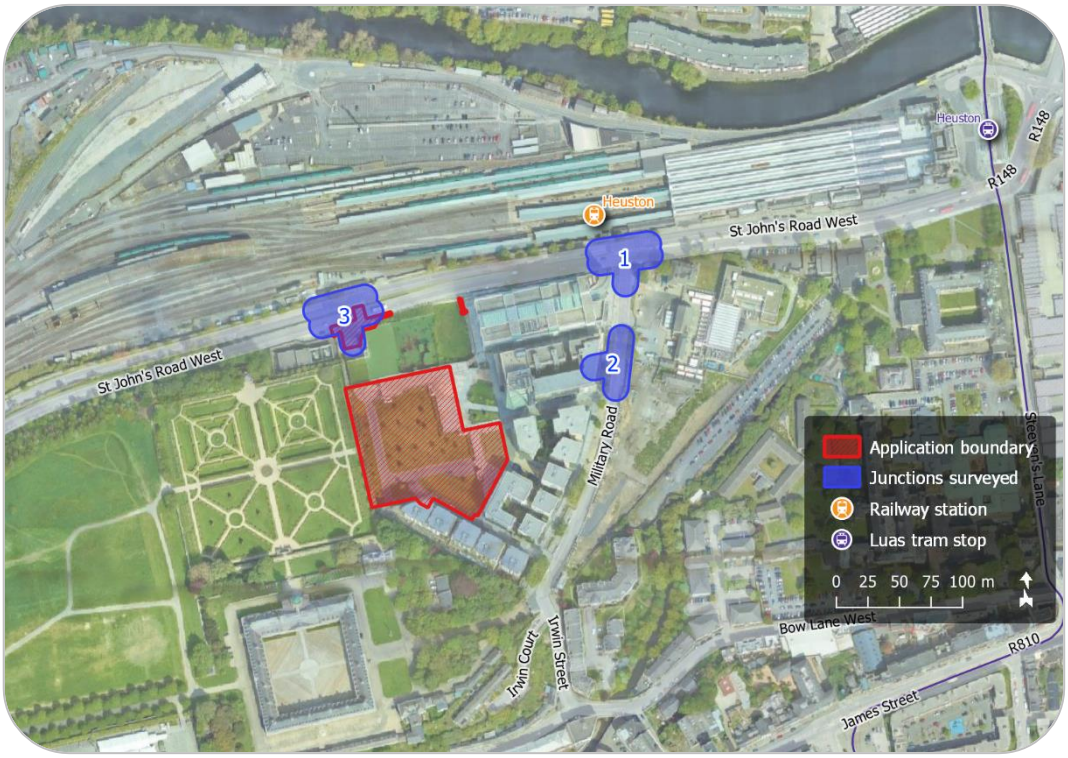

Figure 3 – Surveyed road junctions
(*map data & imagery: NTA, OSi, OSM Contributors, Google*)

The traffic counts were conducted between 07:00 and 09:30 in the morning, and between 16:30 and 18:30 in the evening. The peak hour traffic flows across all three surveyed junctions were found to occur between 07:30 and 08:30 (AM peak period) and between 16:30 and 17:30 (PM peak period).

Recent travel restrictions and varying working patterns resulting from the current COVID-19 public health emergency precluded conducting a contemporary traffic survey, as data obtained through such a survey would not be representative of typical traffic patterns.

The 2017 traffic movements at each of the surveyed junctions during the peak hours have therefore been isolated from the count data and have been scaled up to baseline levels for the year 2021 using standard TII growth factors (see sub-section 4.9). These total survey year and baseline year peak hour flows at the survey junctions are included in the traffic flow matrices given in Appendix C and are also given in Table 1.

Table 1 – Total Peak Hour Traffic Flows at Surveyed Junctions

Time Period	Total Surveyed Junction Traffic Movements (in Passenger Car Units)		
	J1	J2	J3
2017 – Survey Year			
AM Peak (07:30-08:30)	2018	284	1943
PM Peak (16:30-17:30)	2339	477	2286
2021 – Baseline Year			
AM Peak (07:30-08:30)	2152	303	2073
PM Peak (16:30-17:30)	2494	509	2437

3.2 Reallocation of Illegal Traffic Movements

At the northern access junction of the HSQ complex (surveyed junction J3), existing posted signage and road markings prohibit right-turn manoeuvres from HSQ onto St. John's Road West. The traffic survey recorded that

approximately 4% of vehicles exiting the HSQ complex at this location nevertheless make this manoeuvre, as the junction configuration and signal phasing do not create a conflict with other vehicular traffic movements or with protected pedestrian movements.

As existing traffic patterns are used to determine the predicted distribution of trips generated by the proposed development (as described in sub-section 4.2), and as the future implementation of the BusConnects Core Bus Corridor along St. John's Road West (see sub-section 3.5) will likely require measures to further enforce the existing turning restrictions at the HSQ access, the traffic survey data have been corrected as follows:

- vehicles currently exiting HSQ at junction J3 and turning right onto St. John's Road West have been removed from this junction;
- these vehicles have been reassigned to exit HSQ at junction J2, turning north onto Military Road; and
- the corresponding numbers of west-to-east traffic movements have been replaced at junction J1 by south-to-east movements.

Similarly, approximately 2% of surveyed traffic turning south onto Military Road from St. John's Road West (at junction J1) does so illegally from the west. These traffic movements, which are not accommodated by the existing signal phasing at this junction, have been replaced in the traffic data by west-to-east movements continuing straight along St. John's Road West. This is done for consistency but has no bearing on the distribution of traffic to and from the HSQ complex.

All traffic movement figures given in the main body of this report (including those in Table 1) refer to the corrected traffic flow patterns. Both the original unaltered survey figures and the corrected survey figures (for peak hours and as Annual Average Daily Traffic totals) are provided as part of the traffic flow matrices given in Appendix C.

3.3 Existing Road Network Characteristics

3.2.1 St. John's Road West (R148)

- Dual carriageway road with a pavement width of 9m on either side in the vicinity of the proposed development.
- Regional road with an east-west alignment overall, leading to the M50 and N4 in the west and leading to the city centre in the east.
- Subject to a 60km/h speed limit.
- Raised footpaths are present along both sides of St. John's Road West.
- Advisory cycle tracks are present in the eastbound direction.
- On-street parking is not prohibited along sections of St. John's Road West in the vicinity of the subject site.

3.2.2 Military Road

- Single carriageway road with a pavement width of approximately 8m in the vicinity of the proposed development.
- Local road with a north-southwest alignment, leading to Kilmainham Lane in the southwest and to St. John's Road West in the north.
- Subject to a 50km/h speed limit.
- Raised and segregated footpaths are present along the western side of Military Road.
- No cycle tracks or bus lanes are present along Military Road.
- On-street parking is not present on Military Road in the vicinity of the subject site.

3.4 Traffic Collision Data

Data on road traffic collisions in the years 2005 to 2016 have been collated and published by the Road Safety Authority. The locations and severity levels of recorded collisions in the area surrounding the development site during this period are shown in Figure 4.

Figure 4 – Recorded road traffic collisions on surrounding road network
(*map data & imagery: RSA, Google*)

3.5 Proposed Local Infrastructure Improvements

The NTA BusConnects Core Bus Corridor Project includes the implementation of Core Bus Corridor no. 6 (Lucan to City Centre) along St. John's Road West, in close proximity to the proposed development (see Figure 5). This entails a new westbound bus lane on this section of St. John's Road West and the removal of one westbound general-purpose lane.

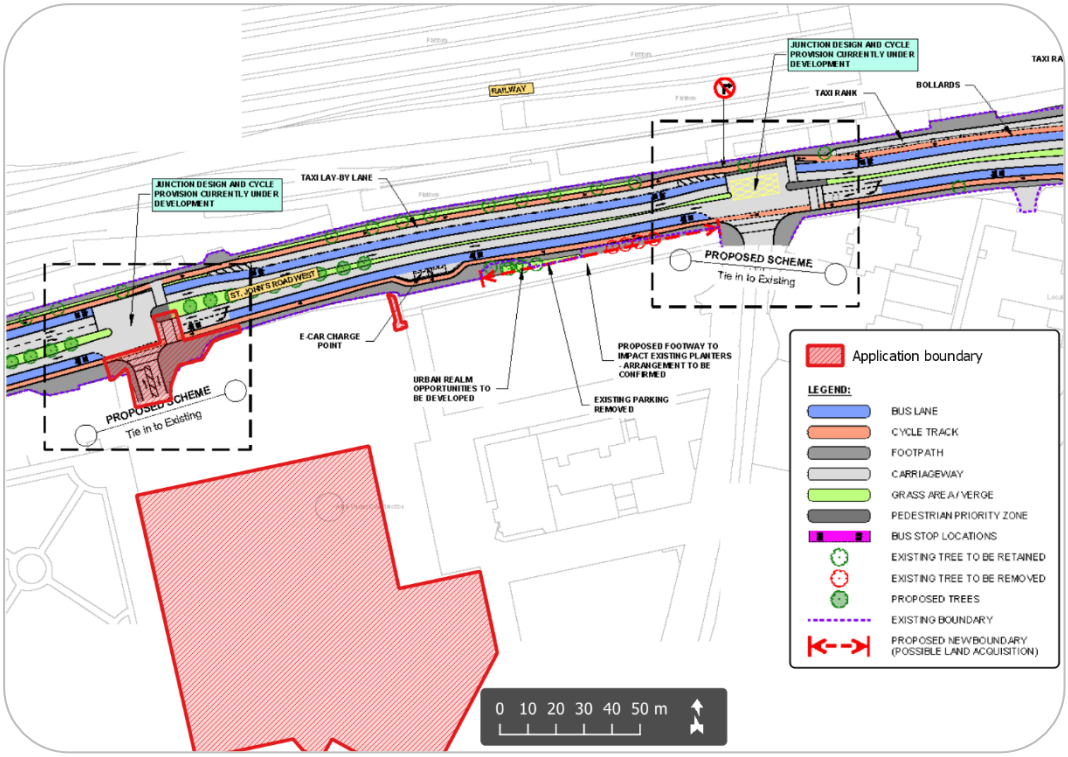

Figure 5 – Extract of Core Bus Corridor no. 6 route mapping
(*background imagery source: NTA*)

Changes are also indicated to the existing HSQ access junction St. John's Road West. These junction modifications are illustrated on the most recent route mapping as involving the removal of one lane on exit from HSQ, as well as the removal of the left-turn slip from the east into HSQ (see Figure 6). These are however only indicative interim proposals, as the final intended design of this junction has not been published. A supplementary assessment of this junction's performance in this indicative proposed configuration has been conducted, the results of which are presented in sub-section 5.8.

As part of the same BusConnects project, Core Bus Corridor no. 7 (Liffey Valley to City Centre) is to be implemented along James's Street, less than 10 minutes' walk to the south of the subject site.

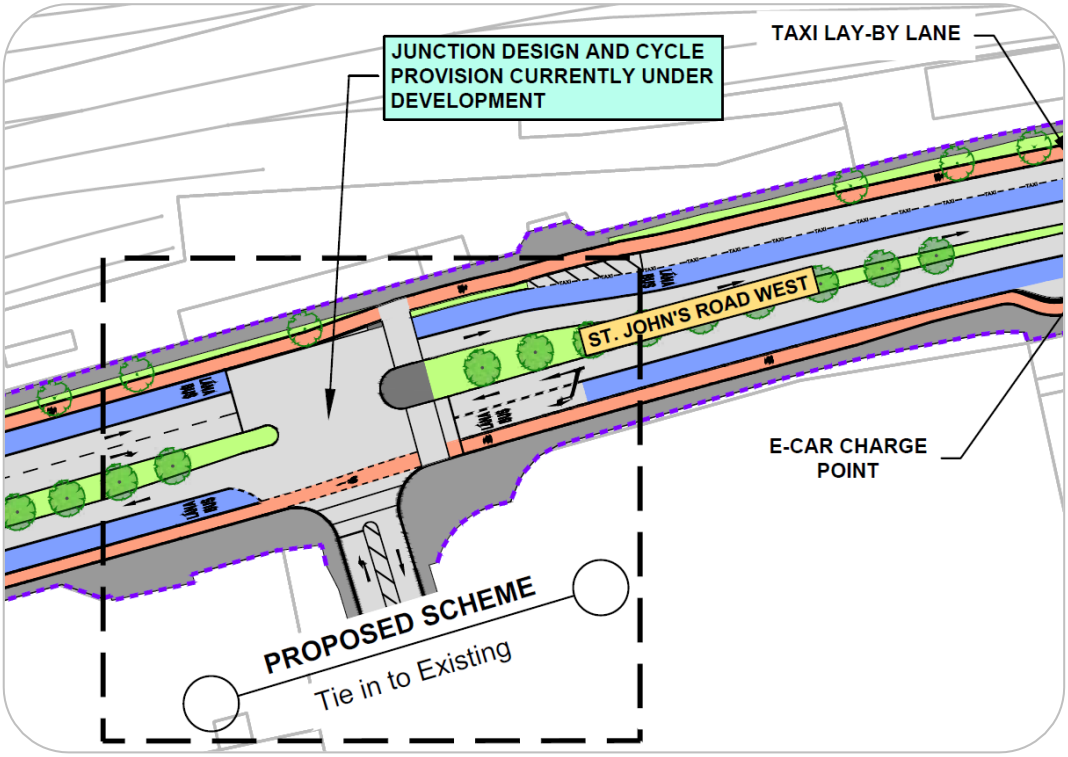

Figure 6 – Interim proposed CBC changes to HSQ western access junction (*source: NTA*)

Three rounds of Public Consultation have been conducted in respect of the Core Bus Corridor Project, and the NTA indicates that it will soon be presenting planning applications to An Bord Pleanála.

The Core Bus Corridor Project is accompanied within the BusConnects framework by the Dublin Area Revised Bus Network initiative, which seeks to improve the overall convenience and efficiency of the city's bus routes. Relevant changes to bus services proposed under this scheme are summarised in sub-section 7.6 of this report.

As part of the *Cycle Network Plan for the Greater Dublin Area*, administered by the National Transport Authority, it is proposed that a secondary cycle route (route no. 6A) be implemented along St. John's Road West, in close proximity to the proposed development. This shall continue eastward past Heuston Station and connect to primary cycle route no. 5, which is to run

along the North Quays into the city centre (see Figure 7). In addition to these, the proposed Camac Greenway is to pass through the grounds of the Royal Hospital Kilmainham, close to the subject site, and connect to secondary cycle route no. 6A close to Heuston Station.

No information is yet publicly available on the proposed design or delivery timeframe of the aforementioned cycle infrastructure objectives.

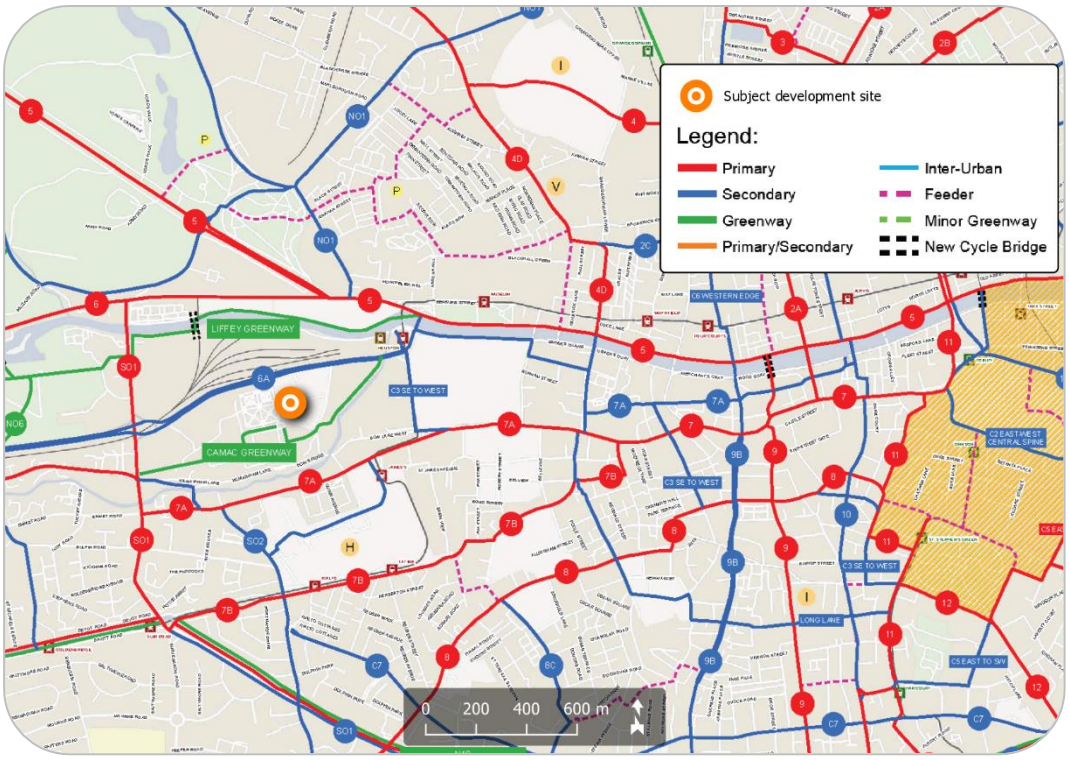

Figure 7 – Extract of GDA Cycle Network mapping
(background imagery source: NTA)

No further road development objectives or other relevant significant infrastructural improvements in the vicinity of the subject site are indicated in the *Dublin City Development Plan 2016-2022*.

3.6 Associated Planned Development

As previously illustrated in Figure 2 (page 7), the subject site forms the southern part of the applicant's landholding in the existing HSQ complex. In

the northern part of this landholding, it is intended to apply for permission for a commercial development, provisionally comprising:

- offices with a total Gross Floor Area of approx. 27,000m^2;
- a 250-bedroom hotel; and
- 95no. car parking spaces
  (60no. to serve offices and 35no. to serve the hotel).

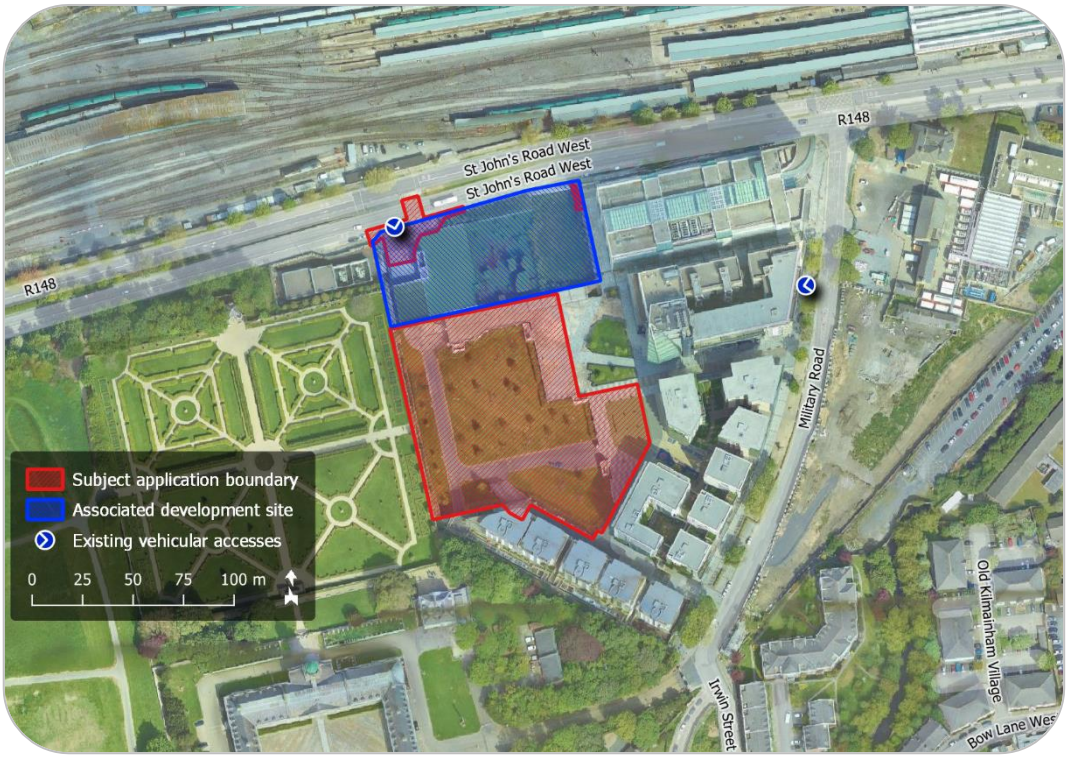

Figure 8 – Associated development site
(*map data & imagery: OSM Contributors, Google*)

For the purposes of this Traffic and Transport Assessment, it has been assumed that the future development of this associated site in the applicant's ownership shall proceed and shall be completed by the year 2024 (the projected opening year of the proposed development). The projected traffic to be generated by this planned development has been distributed across the local road network as described in sub-section 4.7 of this report and has been included in all future year assessment scenarios.

3.7 Nearby Committed Development

The Commissioners for the Public Works in Ireland have granted permission under Part 9 of the Planning and Development Regulations 2001 (as amended) for the construction of a new Garda Security and Crime Operations Centre (Garda SCOC) on a site to the east of Military Road, facing the existing HSQ complex.

Figure 9 – Committed Garda SCOC development location
(*map data & imagery: OSM Contributors, OPW, Google*)

CS Consulting understands that this development is to comprise a new four- to six-storey office building with a total office Gross Floor Area of 10,060m^2, over a two-storey basement car park, with vehicular access to/from Military Road (see Figure 9).

For the purposes of this Traffic and Transport Assessment, it has been assumed that this committed development shall be completed and

operational by the year 2024 (the projected opening year of the proposed development). The projected traffic to be generated by this committed development has been distributed across the local road network as described in sub-section 4.8 of this report and has been included in all future year assessment scenarios.

4.0 TRAFFIC GENERATION & TRIP DISTRIBUTION

4.1 Proposed development Trip Generation – Operational Phase

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

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

- 399no. apartments; and
- a retail unit with a gross floor area of 120m^2.

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

Due to its small size and the fact that it is expected to serve exclusively the proposed development (or those already passing through it), the development's retail unit is not considered to have any potential to generate external vehicular trips to and from the development. It has therefore been excluded from the trip generation calculations detailed here.

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

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

privately owned. Trip rates are calculated by Site Area, Dwellings, Housing Density, or Total Bedrooms."

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

- the population within 1 mile of the development site (55,000 approx.);
- the population within 5 miles of the development site (745,000 approx.);
- the aggregate mean car ownership rate within 5 miles of the development site (1.0 cars per household).

The trip rates selected are given in Table 2 and the resultant proposed development trip generation figures obtained are given in Table 3.

Table 2 – TRICS Apartment Trip Generation Rates

Time Period	Arrivals per hour per unit	Departures per hour per unit
AM Peak (07:30-08:30)	0.031	0.089
PM Peak (16:30-17:30)	0.127	0.092

Table 3 – Proposed development Trip Generation from TRICS

Time Period	Arrivals	Departures	Total Trips
AM Peak (07:30-08:30)	12	36	48
PM Peak (16:30-17:30)	51	37	88

4.2 Proposed development Trip Distribution – Operational Phase

It has been assumed that all vehicular traffic to and from the proposed development, once complete, shall be distributed across the surrounding road network in the same manner as the existing traffic arriving to and departing from the existing HSQ complex.

Table 4 – Distribution of Existing HSQ Traffic Between Accesses

Arrivals TO HSQ Complex			
	Eastern Access	Northern Access	TOTAL
AM Peak (07:30-08:30)	44%	56%	100%
PM Peak (16:30-17:30)	61%	39%	100%
Departures FROM HSQ Complex			
	Eastern Access	Northern Access	TOTAL
AM Peak (07:30-08:30)	62%	38%	100%
PM Peak (16:30-17:30)	37%	63%	100%

The traffic survey described in sub-section 3.1 encompassed both existing vehicular access junctions of the HSQ complex. From these survey data, it was possible to determine the distribution of existing HSQ traffic between its access junctions on Military Road (to the east) and on St. John's Road (to the north). This is given in Table 4.

Across the surrounding wider street network, trips to and from the existing HSQ complex may arrive or depart via the following points:

- from/to the east along St. John's Road (R148);
- from/to the south along Military Road; or
- from/to the west along St. John's Road (R148).

A distribution of existing HSQ traffic across these 3no. origin/destination points was derived from the balance of traffic between the complex's 2no. access junctions (given in Table 4), with the following specific assumptions made:

- all traffic departing via the northern access must turn left and head westward on St. John's Road.
- traffic departing via the eastern access is split north/south along Military Road in accordance with the directional splits surveyed at that junction (given in Table 5).

- all traffic departing northward along Military Road shall then head eastward on St. John's Road.
- traffic arriving via the northern access is split east/west along St. John's Road in accordance with the directional splits surveyed at that junction (given in Table 6).
- traffic arriving via the eastern access is split north/south along Military Road in accordance with the directional splits surveyed at that junction (given in Table 5).
- all traffic arriving from the north along Military Road has arrived from the east along St. John's Road.
- no traffic arriving to the northern access from the east (along St. John's Road) has travelled via Military Road.

Table 5 – Existing Surveyed Traffic Splits at Site J2
Military Road / HSQ Eastern Access

Arrivals TO HSQ Complex			
From	Military Rd North	Military Rd South	TOTAL
AM Peak	56%	44%	100%
PM Peak	38%	62%	100%
Departures FROM HSQ Complex			
To	Military Rd North	Military Rd South	TOTAL
AM Peak	26%	74%	100%
PM Peak	44%	56%	100%

Table 6 – Existing Surveyed Traffic Splits at Site J3 [1]
St. John's Road West (R148) / HSQ Northern Access

Arrivals TO HSQ Complex			
From	R148 East	R148 West	TOTAL
AM Peak	9%	91%	100%
PM Peak	31%	69%	100%
Departures FROM HSQ Complex			
To	R148 East	R148 West	TOTAL
AM Peak	0%	100%	100%
PM Peak	0%	100%	100%

The resultant distribution of existing HSQ traffic across the surrounding network is given in Table 7 and is illustrated in Figure 10 and Figure 11.

Table 7 – Network Origin/Destination Splits of Existing HSQ Traffic

Arrivals TO HSQ Complex				
From	R148 St. John's Rd (East)	Military Road (South)	R148 St. John's Rd (West)	TOTAL
AM Peak	29%	20%	51%	100%
PM Peak	36%	37%	27%	100%
Departures FROM HSQ Complex				
To	R148 St. John's Rd (East)	Military Road (South)	R148 St. John's Rd (West)	TOTAL
AM Peak	19%	43%	38%	100%
PM Peak	17%	20%	63%	100%

[1] Excluding illegal turning manoeuvres.

Figure 10 – HSQ vehicular trip origin/destination proportions – AM peak
(*map data & imagery: OSM Contributors*)

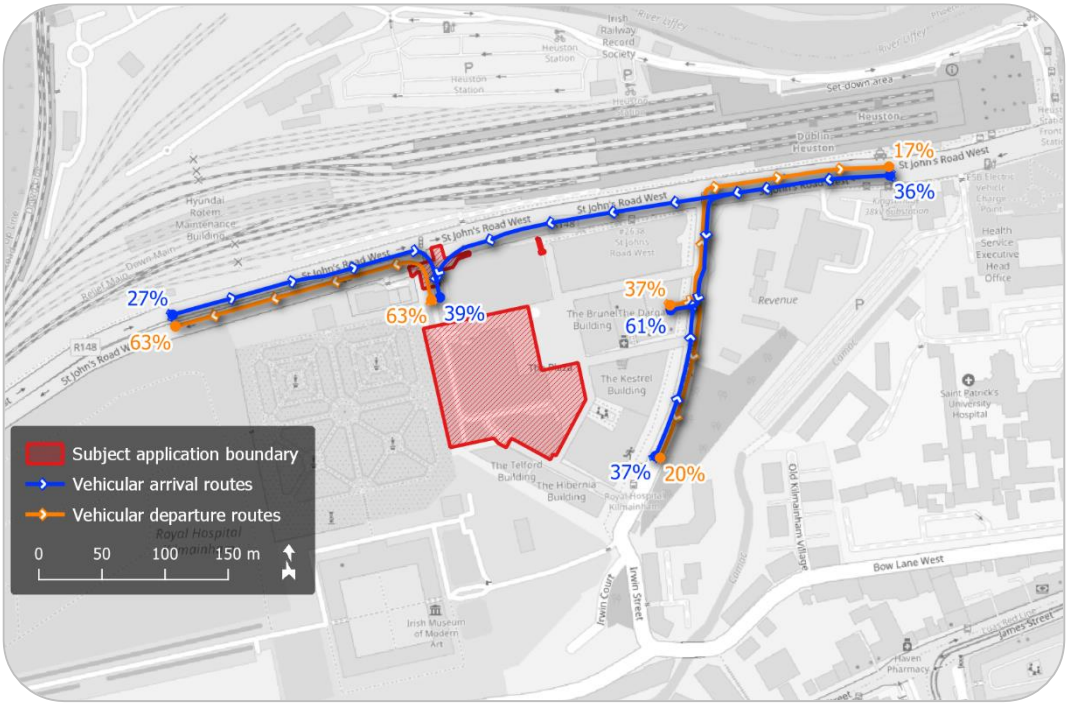

Figure 11 – HSQ vehicular trip origin/destination proportions – PM peak
(*map data & imagery: OSM Contributors*)

4.3 Proportional Changes in Traffic Flows

Table 8 gives the absolute and proportional changes in peak hour traffic flows that shall result from the proposed development (in its operational phase), at each of the 3no. existing surveyed road junctions (see Figure 3, page 11).

Table 8 – Changes in Traffic Flows at Junction Survey Sites

Junction Survey Site	Existing Traffic Flows at Junction [2]		Change in Flows Through Junction [3]		Proportional Change	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
J1	2152	2494	11	25	0.5%	1.0%
J2	303	509	28	44	9.2%	8.6%
J3	2073	2437	21	44	1.0%	1.8%

4.4 Proposed development Trip Generation – Construction Phase

Heavy Goods Vehicle (HGV) construction traffic to and from the site shall reach a peak during the breaking up and removal of existing hardstanding on the development site. As the subject site has already been partially developed and the ground level reduced, no significant excavation or reprofiling works will be required. Preliminary earthworks, requiring spoil removal or fill importation by HGVs, will therefore be minimal. Similar rates of HGV trip generation may also occur during concrete pouring, though at a later stage in construction. Other construction activities requiring HGV trips to and from the site include material delivery and heavy plant transfer; these will be sporadic in nature and also will not occur at the same time as

[2] Total 2021 baseline year vehicle movements (PCU/hour), with no additional development traffic.
[3] Trips generated by proposed development.

more HGV-intensive activities. The final programming and scheduling of all construction activities shall be determined by the lead Contractor appointed to the project.

As a 'worst-case' scenario, therefore, it is assumed that at most 4no. HGV trips may be made to the site each hour (one HGV arrival and one HGV departure every 15 minutes). This would equate to total traffic movements of 18 Passenger Car Units (PCU) in each of the background peak hours.

In addition to HGV traffic, periodic deliveries of materials to site shall be made by Light Goods Vehicles. To the extent possible, these shall be scheduled to take place outside of the background peak traffic hours. Such trips are also unlikely to occur frequently during the stages of construction that require frequent GHV trips; LGV trips are therefore unlikely to occur in significant numbers at the same time as HGV trips take place. For the purposes of estimating a worst-case construction traffic generation scenario, however, 6no. LGV arrivals and 6no. LGV departures (total traffic movements of 12 PCU) are assumed in each of the background peak hours.

Limited car parking for construction personnel is likely to be provided on site during construction works. Some additional vehicular trips shall therefore be made to and from the site each day by construction personnel commuting to and from work. The majority of these trips are expected to fall outside the background traffic peak hours. In the worst-case scenario, it is assumed that 25no. such light vehicle trips may be made to the site during the AM peak hour, and 25no. such trips may be made from the site during the PM peak hour.

The anticipated worst-case scenario vehicular trip generation of the subject site during construction is summarised in Table 9.

Table 9 – Maximum Peak Hour Construction Traffic Generation

Time Period	Heavy Goods Vehicles	Light Vehicles	TOTAL (PCU) [4]
Arrivals			
AM Peak	4	31	40
PM Peak	4	6	15
Departures			
AM Peak	4	6	15
PM Peak	4	31	40
Total Trips			
AM Peak	8	37	55
PM Peak	8	37	55

4.5 Proposed development Trip Distribution – Construction Phase

It is proposed to employ the existing northern HSQ access on St. John's Road West (R148) as the sole vehicular access to the subject site during construction. All HGV construction traffic will be required to follow a designated access route to and from the west along the R148, which continues as a dual carriageway as far as the M50 motorway.

Light vehicle construction traffic (cars and vans) exiting the site shall likewise be obliged to turn left onto the R148 westbound, as this is an existing restriction at this access junction. In the case of light vehicles entering the construction site, however, it is assumed that a proportion will arrive from the east along the R148. This proportion is assumed to be equivalent to the share of existing inbound trips to the HSQ complex currently accommodated by its eastern access on Military Road (see Table 4, page 24).

[4] 1 Light Vehicle (car or LGV) = 1 PCU; 1 HGV = 2.3 PCU

At the existing junction of the R148 with Military Road, it is assumed that all inbound light vehicle construction traffic passing through this junction will be distributed in accordance with the existing directional splits observed at this location. These are given in Table 10.

Table 10 – Existing Surveyed Traffic Splits at Site J1
St. John's Road West (R148) / Military Road

Arrivals TO R148 West			
From	R148 East	Military Road	TOTAL
AM Peak	93%	7%	100%
PM Peak	84%	16%	100%

A supplementary assessment of junction performance during the development's construction stage is provided in sub-section 5.9 of this report.

4.6 Reallocation of Existing HSQ Traffic during Construction

As it is proposed to employ the existing northern HSQ access on St. John's Road West (R148) as a construction access, it shall be necessary to temporarily restrict the use of this junction. With the exceptions of longer or taller vehicles (e.g. articulated trucks), all operational traffic currently using the northern HSQ access would be required to instead travel via the eastern HSQ access on Military Road for the duration of construction activity.

To account for this proposed temporary restriction, the following adjustments to background traffic flows have been made as part of the construction phase assessment detailed in sub-section 5.9:

1) All vehicular trips currently made via the northern HSQ access are removed from the local road network.
2) These trips are reassigned via the eastern HSQ access, being distributed in accordance with the observed network

origin/destination splits of existing traffic travelling via the northern HSQ access (given in Table 11).

Table 11 – Network Origin/Destination Splits of HSQ North Access Traffic

Arrivals TO HSQ North Access				
From	R148 St. John's Rd (East)	Military Road (South)	R148 St. John's Rd (West)	TOTAL
AM Peak	8%	0%	92%	100%
PM Peak	32%	0%	68%	100%
Departures FROM HSQ North Access				
To	R148 St. John's Rd (East)	Military Road (South)	R148 St. John's Rd (West)	TOTAL
AM Peak	0%	0%	100%	100%
PM Peak	0%	0%	100%	100%

4.7 Associated Development Trip Generation & Distribution

As for the proposed development, the predicted vehicular trip generation of the associated planned development (described in sub-section 3.6) has been calculated using trip generation factors sourced from the TRICS database. Full details of the TRICS information used in the assessments are provided in Appendix B.

The associated planned development is provisionally intended to comprise offices with a total Gross Floor Area of approx. 27,000m^2, as well as a 250-bedroom hotel. The TRICS sub-categories '02 Employment / A – Office' and '06 Hotel, Food & Drink / A – Hotels' have therefore been employed; these are described in the TRICS land use category definitions as follows:

Office

"Single office building. May include a number of different organisations within the same building. If there is more than one building, then only include if the buildings belong to the same organisation. If there are

different buildings for separate organisations then include as 02/B. Trip rates are calculated by Gross Floor Area, or Employees."

Hotels

"Hotels, guest houses and B&B's. Trip rates are calculated by Gross Floor Area, Bedrooms, or Employees."

Table 12 – TRICS Commercial Trip Generation Rates

Offices		
Time Period	Arrivals per hour per 100m²	Departures per hour per 100m²
AM Peak (07:30-08:30)	0.060	0.024
PM Peak (16:30-17:30)	0.042	0.083
Hotel		
Time Period	Arrivals per hour per bedroom	Departures per hour per bedroom
AM Peak (07:30-08:30)	0.055	0.114
PM Peak (16:30-17:30)	0.058	0.039

Table 13 – Associated Development Trip Generation from TRICS

Offices			
Time Period	Arrivals	Departures	Total Trips
AM Peak (07:30-08:30)	16	6	22
PM Peak (16:30-17:30)	11	22	33
Hotel			
Time Period	Arrivals	Departures	Total Trips
AM Peak (07:30-08:30)	14	29	43
PM Peak (16:30-17:30)	15	10	25
Development Totals			
Time Period	Arrivals	Departures	Total Trips
AM Peak (07:30-08:30)	30	35	65
PM Peak (16:30-17:30)	26	32	58

The trip rates selected are given in Table 12 and the resultant associated development trip generation figures obtained are given in Table 13.

All vehicular trips to and from the associated development have been distributed across the surrounding street network in the same manner as the trips to be generated by the proposed development (as described in sub-section 4.2).

These additional traffic flows to and from the HSQ complex have been included in all future year junction assessments.

4.8 Committed Development Trip Generation & Distribution

The predicted vehicular trip generation of the nearby committed Garda SCOC development (described in sub-section 3.7) has been calculated using the TRICS trip generation factors for offices given in Table 12. This committed development comprises 10,060m^2 Gross Floor Area of office space; the resultant trip generation figures are given in Table 14.

Table 14 – Committed Development Trip Generation from TRICS

Time Period	Arrivals	Departures	Total Trips
AM Peak (07:30-08:30)	6	2	8
PM Peak (16:30-17:30)	4	8	12

The committed development's vehicular access junction shall be located on Military Road, approx. 140m south of the existing HSQ eastern access. It is therefore assumed that vehicular traffic to and from this development shall be distributed north/south along Military Road in the same proportions as the existing traffic to and from the eastern HSQ access. These directional splits were given in Table 5 and are reproduced in Table 15.

Table 15 – Predicted Traffic Splits at Garda SCOC Access
Military Road / Garda SCOC

Arrivals TO Garda SCOC			
From	Military Rd North	Military Rd South	TOTAL
AM Peak	56%	44%	100%
PM Peak	38%	62%	100%
Departures FROM Garda SCOC			
To	Military Rd North	Military Rd South	TOTAL
AM Peak	26%	74%	100%
PM Peak	44%	56%	100%

At the existing junction of the R148 with Military Road, it is assumed that all Garda SCOC traffic passing through this junction will be distributed in accordance with the existing directional splits observed at this location. These are given in Table 16.

Table 16 – Existing Surveyed Traffic Splits at Site J1 [5]
St. John's Road West (R148) / Military Road

Arrivals TO Military Road			
From	R148 East	R148 West	TOTAL
AM Peak	100%	0%	100%
PM Peak	100%	0%	100%
Departures FROM Military Road			
To	R148 East	R148 West	TOTAL
AM Peak	58%	42%	100%
PM Peak	36%	64%	100%

The vehicular traffic flows to and from the committed Garda SCOC development have been included in all future year junction assessments.

[5] Excluding illegal turning manoeuvres.

4.9 Future Year Background Traffic Growth

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

- 2021 Baseline year
- 2024 Proposed opening year
- 2029 5 years after opening
- 2039 Design year (15 years after opening)

Unit 5.3 of the TII *Project Appraisal Guidelines* (PE-PAG-02017 *Travel Demand Projections*) has been used to apply growth factors to the existing surveyed background traffic flows for the future year junction assessments. The TII annual growth rates applied are given in Table 17, and the resultant cumulative growth in background traffic for each assessment year is given in Table 18.

Table 17 – TII Central Growth Rates (Light Vehicles)

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

Table 18 – Predicted Background Traffic Growth [6]

2021 Baseline year	2024 Year of opening	2029 Opening year +5	2039 Opening year +15
+ 6.7%	+ 11.9%	+ 21.2%	+ 29.0%

[6] Cumulative percentage increases over 2017 surveyed traffic levels.

5.0 OPERATIONAL ASSESSMENT

5.1 Introduction

To determine the likely traffic impact of the proposed development, operational assessments of 3no. key junctions have been undertaken using the industry-standard TRL computer program TRANSYT, for both the weekday AM peak hour (07:30-08:30) and the weekday PM peak hour (16:30-17:30).

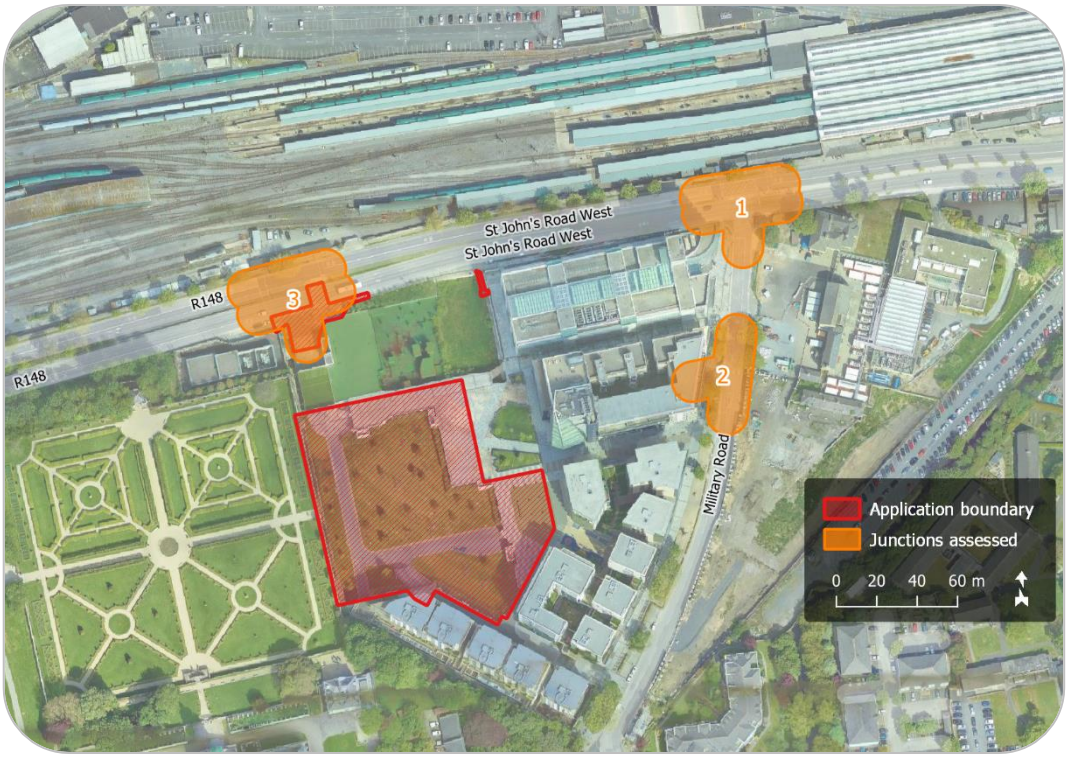

Figure 12 – Modelled road junctions
(*map data & imagery: OSM Contributors, Google*)

The following junctions have been modelled and assessed (see Figure 12):

J1. St. John's Road West (R148) / Military Road
(3-arm signal-controlled junction)

J2. Military Road / Heuston South Quarter (East Access)
(3-arm priority-controlled junction)

J3. St. John's Road West (R148) / Heuston South Quarter (North Access)
(3-arm signal-controlled junction)

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

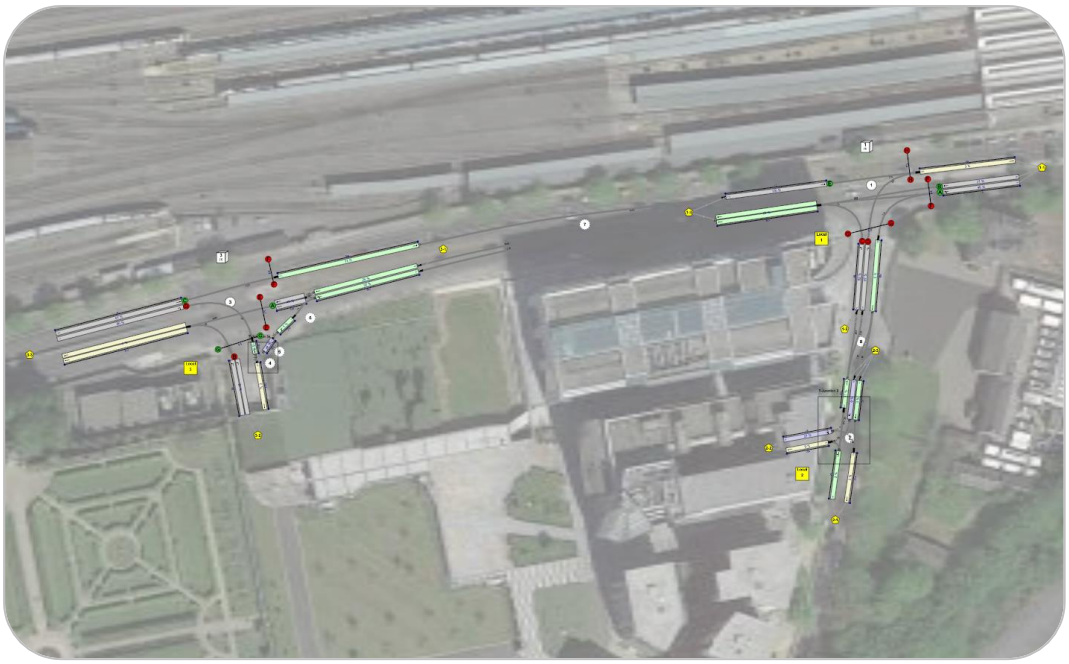

Figure 13 – TRANSYT model structure
(*background imagery: Google*)

5.2 Assessment Scenarios

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

- 2021 – existing baseline traffic conditions;
- 2024 (planned year of opening) – with & without proposed development;
- 2029 – with & without proposed development; and
- 2039 (design year) – with & without proposed development.

In respect of junction J3 (the northern access to the HSQ complex), assessments have been conducted both with the existing junction configuration and with the indicative junction configuration proposed as part of BusConnects Core Bus Corridor no.6 (see sub-section 3.5).

In addition to the operational phase junction performance assessments, a supplementary assessment of junction J2 (the eastern access to the HSQ complex) has been conducted in order to establish the impact of temporarily rerouting all HSQ traffic via this access during construction of the proposed development.

5.3 Definitions

Degree of Saturation:

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

Mean Maximum Queue:

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

Mean End of Red Queue:

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

Mean Delay per Vehicle:

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

Practical Reserve Capacity:

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

5.4 Signal Sequence Optimisation

The TRANSYT software used for junction performance assessment allocates green time between traffic signals in such a way as to ensure the most efficient possible operation of a junction under a given traffic load, within the parameters and restrictions imposed. This approximates the action of physical junction signal controllers, which optimise signal timings on the fly in response to traffic conditions.

The assessed junctions J1 and J3 both incorporate signal-controlled pedestrian crossings. At the time of the traffic survey conducted for this assessment, it was observed that, at each of these junctions, all pedestrian signals shared a common green signal phase, during which all vehicular traffic was given a red signal. As it is possible for certain pedestrian crossings and vehicular traffic streams to proceed at the same time without conflict, this signal sequence does not represent the optimum allocation of signal green time.

In the TRANSYT models constructed for this assessment, each signal-controlled pedestrian crossing has therefore been assigned an independent signal phase. The assessment software has been allowed to adjust the signal sequencing to run certain pedestrian and vehicular phases simultaneously, where these do not conflict and where this would result in a more efficient operation of the junction as a whole.

This represents a slight departure from the existing operation of assessed junctions J1 and J3. It is nevertheless consistent with the potential future operation of these junctions, as their respective signal controllers (in

conjunction with the Dublin-wide SCATS control system) have the capacity to effect a similar adjustment in response to higher traffic flows in future years.

5.5 Junction 1 Assessment Results

The following tables give the TRANSYT modelling results, for each of the assessment scenarios, at the existing junction of Military Road with St. John's Road West (R148).

- Arm A: St. John's Road West [R148] (to east)
- Arm B: Military Road (to south)
- Arm C: St. John's Road West [R148] (to west)

Table 19 – Junction 1 Assessment Results

Junction Approach Arm and Traffic Stream[7]		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2021 – baseline year assessment											
A	S / L	39	71	6	15	4	9	8	19	128	27
	S	30	60	4	12	3	7	5	13	197	51
B	L	52	77	2	8	2	7	60	57	74	17
	R	71	43	3	4	3	3	78	41	26	110
C	S	83	61	12	11	9	8	12	13	9	48
2024 – opening year assessment – WITHOUT proposed development											
A	S / L	43	75	7	17	5	10	8	21	109	20
	S	32	63	4	13	3	8	5	14	179	43
B	L	47	82	2	9	2	8	55	63	91	10
	R	70	47	3	4	3	4	72	42	28	92
C	S	88	64	15	11	12	8	17	14	2	41

[7] S = straight ahead, L = left turn, R = right turn

Table 20 – Junction 1 Assessment Results (continued)

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2024 – opening year assessment – WITH proposed development in place											
A	S / L	43	77	7	18	5	11	8	21	108	17
	S	32	63	4	13	3	8	5	14	179	43
B	L	47	82	2	9	2	8	55	63	91	10
	R	75	49	4	4	4	4	79	42	20	85
C	S	88	64	15	11	12	8	17	14	2	41
2029 assessment – WITHOUT proposed development											
A	S / L	46	83	7	21	5	12	8	26	97	9
	S	34	69	4	15	3	9	5	16	161	30
B	L	59	84	2	10	2	9	65	64	53	7
	R	87	48	5	4	5	4	114	41	4	88
C	S	94	70	21	18	14	11	24	21	-4	28
2029 assessment – WITH proposed development in place											
A	S / L	46	84	7	22	5	13	8	27	96	7
	S	34	69	4	15	3	9	5	16	161	30
B	L	59	84	2	10	2	9	65	64	53	7
	R	92	50	6	4	6	4	139	41	-2	81
C	S	94	70	21	18	14	11	24	21	-4	28
2039 – design year assessment – WITHOUT proposed development											
A	S / L	48	88	8	25	5	14	8	31	88	2
	S	36	74	5	17	3	10	5	18	149	22
B	L	72	89	3	11	3	10	85	76	25	1
	R	107	51	10	5	10	4	270	42	-16	77
C	S	99	75	50	20	23	12	46	23	-9	21
2039 – design year assessment – WITH proposed development in place											
A	S / L	49	90	8	26	5	15	9	33	84	0
	S	37	74	5	17	4	10	5	18	145	22
B	L	62	89	3	11	3	10	67	76	45	1
	R	98	53	8	5	8	4	175	42	-8	71
C	S	100	75	55	20	28	12	58	23	-10	21

The assessment results show that this junction currently operates within effective capacity on all approaches during both peak hour periods. Under the influence of background traffic growth, the junction is projected to:

- exceed effective capacity on its western approach during the AM peak by the year 2029 (but remain within ultimate capacity on this approach past the year 2039).
- slightly exceed ultimate capacity on its southern approach during the AM peak by the year 2039 (only without the proposed development).

In each of the future years assessed, the addition of the vehicular traffic generated by the proposed development is shown to have a moderate impact on junction performance, resulting in a maximum increase of 6 PCU in mean queue length on any approach in either peak hour period, and a maximum increase of 24 seconds in mean vehicle delay on any approach. As a result of signal timing redistribution, however, the addition of proposed development traffic shall result in queue and delay reductions on other junction approaches in the years 2029 and 2039.

5.6 Junction 2 Assessment Results

The following tables give the TRANSYT modelling results, for each of the assessment scenarios, at the existing HSQ eastern access junction on Military Road.

- Arm A: Military Road (to south)
- Arm B: HSQ access (to west)
- Arm C: Military Road (to north)

Table 21 – Junction 2 Assessment Results

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2021 – baseline year assessment											
A	S / L	2	4	0	0	n/a	n/a	0	0	513	216
B	L / R	9	11	0	0	n/a	n/a	1	1	893	715
C	S	3	2	0	0	n/a	n/a	0	0	314	366
	R	6	3	0	0	n/a	n/a	0	0	142	269

Table 22 – Junction 2 Assessment Results (continued)

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2024 – opening year assessment – WITHOUT proposed development											
A	S / L	2	4	0	0	n/a	n/a	0	0	471	199
B	L / R	14	14	0	0	n/a	n/a	1	1	549	528
C	S	3	3	0	0	n/a	n/a	0	0	279	334
	R	7	4	0	0	n/a	n/a	0	0	112	191
2024 – opening year assessment – WITH proposed development in place											
A	S / L	2	4	0	0	n/a	n/a	0	0	466	190
B	L / R	19	17	0	0	n/a	n/a	1	1	379	417
C	S	3	3	0	0	n/a	n/a	0	0	279	334
	R	8	7	0	0	n/a	n/a	0	0	104	126
2029 assessment – WITHOUT proposed development											
A	S / L	2	5	0	0	n/a	n/a	0	0	435	183
B	L / R	15	15	0	0	n/a	n/a	1	1	498	482
C	S	3	3	0	0	n/a	n/a	0	0	260	307
	R	8	5	0	0	n/a	n/a	0	0	102	174
2029 assessment – WITH proposed development in place											
A	S / L	2	5	0	0	n/a	n/a	0	0	431	176
B	L / R	20	19	0	0	n/a	n/a	1	1	350	384
C	S	3	3	0	0	n/a	n/a	0	0	260	307
	R	9	7	0	0	n/a	n/a	0	0	958	118
2039 – design year assessment – WITHOUT proposed development											
A	S / L	2	5	0	0	n/a	n/a	0	0	408	172
B	L / R	16	16	0	0	n/a	n/a	1	1	476	448
C	S	4	3	0	0	n/a	n/a	0	0	243	290
	R	8	5	0	0	n/a	n/a	0	0	973	166
2039 – design year assessment – WITH proposed development in place											
A	S / L	2	5	0	0	n/a	n/a	0	0	404	166
B	L / R	21	20	0	0	n/a	n/a	2	2	336	359
C	S	4	3	0	0	n/a	n/a	0	0	243	290
	R	9	7	0	0	n/a	n/a	0	0	915	113

The assessment results show that this junction currently operates well within its effective capacity on all approaches during both the AM and PM peak periods, with negligible vehicle queues and delays. All junction approaches are shown to continue operating well within their effective capacities past

the year 2039, with vehicle queues and delays on all junction approaches at levels similar to those currently existing.

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

5.7 Junction 3 Assessment Results – Existing/Proposed Configuration

The following tables give the TRANSYT modelling results, for each of the assessment scenarios, at the existing HSQ northern access junction on St. John's Road West (R148).

- Arm A: St. John's Road West [R148] (to east)
- Arm B: HSQ access (to south)
- Arm C: St. John's Road West [R148] (to west)

As described in sub-section 7.1, the proposed development includes changes to the configuration of this existing access junction, including the removal of the left-turn slip from the east into the HSQ complex. TRANSYT modelling of this junction has been conducted under all 'without development' scenarios using the existing junction configuration; modelling under all 'with development' scenarios has been conducted using the proposed new configuration.

The assessment results show that this junction currently operates within its effective capacity on all approaches during both the AM and PM peak periods, with moderate vehicle queues and delays. All junction approaches are shown to continue operating within their effective capacities past the year 2039.

Table 23 – Junction 3 Assessment Results – Existing/Proposed

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2021 – baseline year assessment											
A	S	37	71	11	19	9	15	9	11	141	27
	L	1	2	0	0	n/a	n/a	0	0	878	566
B	L	12	40	1	2	1	2	46	51	648	123
C	S	72	45	13	5	6	3	6	3	25	100
	R	48	14	2	1	2	1	53	44	87	534
2024 – opening year assessment – WITHOUT proposed development											
A	S	39	74	13	20	10	16	10	11	130	21
	L	1	2	0	0	n/a	n/a	0	0	675	441
B	L	19	52	1	3	1	3	47	54	386	74
C	S	76	47	14	5	6	3	7	3	19	91
	R	60	20	3	1	3	1	60	45	50	356
2024 – opening year assessment – WITH proposed development in place											
A	S/L	40	71	4	9	3	7	7	10	125	27
	S	37	65	3	8	3	6	5	7	144	38
B	L	14	63	1	4	1	4	41	59	560	44
C	S	76	47	14	5	6	3	7	3	19	91
	R	52	43	3	1	3	1	52	58	73	111
2029 assessment – WITHOUT proposed development											
A	S	42	81	12	39	9	11	9	10	112	12
	L	1	2	0	0	n/a	n/a	0	0	673	411
B	L	19	55	1	4	1	3	47	56	363	63
C	S	82	51	19	6	7	4	9	3	10	76
	R	64	21	3	1	3	1	63	45	40	329
2029 assessment – WITH proposed development in place											
A	S/L	49	76	10	9	7	8	16	11	85	18
	S	44	71	9	8	7	6	13	8	102	27
B	L	9	66	1	4	1	4	34	61	941	37
C	S	82	51	19	6	7	4	9	3	10	76
	R	34	44	3	1	3	1	39	59	165	103
2039 – design year assessment – WITHOUT proposed development											
A	S	45	86	14	24	11	20	10	15	99	5
	L	1	2	0	0	n/a	n/a	0	0	604	384
B	L	20	58	1	4	1	4	47	57	342	54
C	S	87	54	24	7	8	4	12	3	3	66
	R	67	22	4	1	3	1	66	45	34	317

Table 24 – Junction 3 Assessment Results – Existing/Proposed (cont.)

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2039 – design year assessment – WITH proposed development in place											
A	S/L	47	81	6	10	5	9	10	12	92	11
	S	43	75	6	9	5	7	8	9	109	20
B	L	13	69	1	5	1	5	40	64	570	30
C	S	87	54	24	7	8	4	12	3	3	66
	R	53	45	3	1	3	1	51	59	69	98

In each of the future years assessed, the addition of the vehicular traffic generated by the proposed development, in conjunction with the proposed changes to the junction configuration, is shown to have a minor impact on junction performance, resulting in a maximum increase of 9 PCU in mean queue length on any approach in either peak hour period, and a maximum increase of 14 seconds in mean vehicle delay on any approach. The proposed changes to the junction configuration, together with the addition of proposed development traffic and signal timing redistribution, shall however result in queue and delay reductions on certain approaches in each future assessment year.

5.8 Supplementary Junction 3 Assessment Results – BusConnects Configuration

As described in sub-section 3.5, current NTA proposals for the implementation of Core Bus Corridor no. 6 along St. John's Road West (R148) entail the following indicative changes to the existing HSQ northern access junction on the R148:

- the removal of one lane on exit from the HSQ complex; and
- the removal of the left-turn slip from the east into the HSQ complex.

The following table gives the TRANSYT modelling results, for each of the future year assessment scenarios, at this reconfigured junction.

- Arm A: St. John's Road West [R148] (to east)
- Arm B: HSQ access (to south)
- Arm C: St. John's Road West [R148] (to west)

Table 25 – Junction 3 Assessment Results – BusConnects Configuration

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2024 – opening year assessment – WITHOUT proposed development											
A	L	1	1	0	0	0	0	6	6	117	765
	S	76	142	18	288	10	266	16	547	19	-37
B	L	37	104	1	9	1	9	55	236	143	-13
C	S	78	48	17	6	7	4	9	4	15	86
	R	77	30	4	1	4	1	88	52	17	204
2024 – opening year assessment – WITH proposed development in place											
A	L	1	2	0	0	0	0	6	6	104	506
	S	77	142	19	288	10	266	17	547	17	-37
B	L	50	125	2	18	2	18	62	442	80	-28
C	S	79	48	19	6	8	4	10	4	14	86
	R	72	43	4	1	3	1	74	58	26	111
2029 assessment – WITHOUT proposed development											
A	L	1	1	0	0	0	0	6	6	117	742
	S	82	148	22	324	11	302	19	597	9	-39
B	L	39	110	1	11	1	11	56	296	131	-18
C	S	85	52	23	7	9	4	12	4	6	72
	R	83	31	4	1	4	1	101	53	9	186
2029 assessment – WITH proposed development in place											
A	L	1	2	0	0	0	0	6	6	104	504
	S	84	148	23	321	12	299	21	593	8	-39
B	L	52	131	2	21	2	21	63	502	74	-32
C	S	86	52	24	7	9	4	13	4	5	72
	R	76	44	4	1	4	1	82	59	18	103
2039 – design year assessment – WITHOUT proposed development											
A	L	1	1	0	0	0	0	6	6	105	740
	S	88	148	26	324	13	302	24	597	3	-39
B	L	41	117	1	14	1	14	57	361	121	-23
C	S	90	56	29	8	11	4	17	4	0	62
	R	87	32	5	1	5	1	114	53	4	178

Table 26 – Junction 3 Assessment Results – BusConnects Config. (cont.)

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2039 – design year assessment – WITH proposed development in place											
A	L	1	2	0	0	0	0	6	6	962	513
	S	88	148	26	321	13	299	24	593	3	-39
B	L	54	138	2	25	2	25	64	558	68	-35
C	S	90	56	29	8	11	4	17	4	0	62
	R	91	45	6	1	6	1	135	59	-1	98

The assessment results show that this junction – if reconfigured according to the current indicative BusConnects proposals – would exceed ultimate capacity on both its eastern and southern approaches during the PM peak by the year 2024. One traffic stream on the junction's western approach would reach effective capacity during the AM peak by the year 2039 but would remain within ultimate capacity.

In each of the years assessed under this scenario, the addition of the vehicular traffic generated by the proposed development is shown to significantly affect vehicle queueing and delay on the junction's southern approach (on exit from the HSQ complex). During the PM peak hour, this additional traffic is projected to increase mean vehicle queue length on this approach by up to 10 PCU and to increase mean vehicle delay by up to 207 seconds.

It must be noted that the BusConnects Core Bus Corridor proposals involve intentional reductions in motor vehicle capacity at junctions along these corridor routes, both to improve facilities for public transport, pedestrians and cyclists, and as a means of deterring unnecessary motor vehicle trips. In conjunction with this, the BusConnects Dublin Area Revised Bus Network initiative aims to provide more frequent and more convenient bus services

along these arterial routes, thereby providing a viable alternative to many of the private car journeys currently made along them.

It is therefore to be expected that the rate of background traffic growth along these corridor routes shall be lower than the general predicted traffic growth rate for the Dublin metropolitan area, as specified by TII (see sub-section 4.4). Following implementation of all BusConnects measures, the mainline traffic flows along St. John's Road West (R148) at the HSQ northern access junction will consequently be lower than those employed in the future year assessments conducted for this report. The *Draft Transport Modelling Report* for Core Bus Corridor no. 6 (prepared by Jacobs, ARUP, and SYSTRA, and published by the NTA in November 2020) gives an estimated reduction of between 200 and 300 inbound vehicles along this section of the R148 during the AM peak hour as a result of implementing Core Bus Corridor no. 6; at the location of the HSQ access junction, this would represent a decrease of up to 37% in the year 2024 and a decrease of up to 29% in the year 2039, in comparison to a 'do-nothing' scenario.

The assessment results given in Table 25 should therefore be treated as an unlikely 'worst-case' scenario, as they reflect the proposed reduction in capacity at the HSQ access junction but do not take account of reductions in traffic flows that may also result from the BusConnects interventions. Furthermore, as previously noted, the latest published BusConnects layout for this junction is indicative only; the final intended design of this junction has not been published but may have greater capacity than that used for the present assessment.

5.9 Construction Phase Assessment

Table 27 gives the TRANSYT modelling results for the 3no. assessed junctions under a worst-case scenario during the development's construction phase in the year 2024.

Table 27 – 2024 Construction Phase Assessment Results

Junction Approach Arm and Traffic Stream		Degree of Saturation (%)		Mean Maximum Queue (PCU)		Mean End of Red Queue (PCU)		Mean Delay per Vehicle (seconds)		Practical Reserve Capacity (%)	
Arm	Stream	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Junction 1											
A	S / L	44	83	7	20	5	12	8	29	107	8
	S	32	68	4	14	3	9	5	18	179	33
B	L	69	86	3	12	3	10	72	61	30	5
	R	70	37	3	4	3	3	72	35	28	145
C	S	88	69	19	18	11	11	16	25	2	30
Junction 2											
A	S / L	2	4	0	0	n/a	n/a	0	0	456	198
B	L / R	19	31	0	0	n/a	n/a	1	3	371	189
C	S	3	3	0	0	n/a	n/a	0	0	279	334
	R	21	10	0	0	n/a	n/a	1	1	334	772
Junction 3 (existing configuration)											
A	S	40	78	13	22	10	17	10	12	123	15
	L	2	1	0	0	n/a	n/a	0	0	383	896
B	L	13	30	1	2	1	2	46	49	570	199
C	S	81	49	18	5	7	3	8	3	12	85
	R	28	12	1	1	1	1	47	43	224	629

The traffic flows employed for this assessment are those surveyed in 2017, scaled up to 2024 levels using standard TII growth factors, and with the addition of:

- operational phase vehicular trips generated by the associated and committed developments described in sub-sections 3.6 and 3.7 (see also sub-sections 4.7 and 4.8);
- vehicular trips generated by the proposed development during its construction stage (see sub-sections 4.4 and 4.5); and
- the temporary reallocation of traffic currently travelling via the HSQ northern access (see sub-section 4.6).

The assessment results under this scenario are similar to those under the 2024 'with development' scenario for the development's operational phase. All

junctions are shown to operate within effective capacity on all approaches, in both peak hour periods.

In comparison to the 2024 'without development' assessment scenario, construction traffic to and from the proposed development (in conjunction with the temporary reallocation of existing HSQ traffic) shall result in the following temporary increases in vehicle queue lengths and delays at the 3no. junctions assessed:

Junction 1

- a maximum increase of 6 PCU in vehicle queue length on any junction approach, in either peak hour period; and
- a maximum increase of 17 seconds in mean vehicle delay on any junction approach, in either peak hour period.

Junction 2

- no discernible increase in vehicle queue lengths in either peak hour period; and
- a maximum increase of 1 second in mean vehicle delay on any junction approach, in either peak hour period.

Junction 3

- a maximum increase of 3 PCU in vehicle queue length on any junction approach, in either peak hour period; and
- a maximum increase of 2 seconds in mean vehicle delay on any junction approach, in either peak hour period.

It is noted that construction of the associated planned HSQ commercial development – if permitted – would likely proceed in tandem with that of the proposed development. It is therefore unlikely that this associated development would be completed and operational while the proposed development is still under construction. It is also unlikely, however, that significant additional construction traffic would be generated by the

associated development, as construction activities and storage/parking facilities across the two sites would be coordinated to avoid this.

The inclusion within this construction phase assessment of operational phase traffic generated by the associated development is therefore intended simply to ensure that a robust 'worst-case' scenario is considered.

6.0 PARKING

As previously described, the proposed development comprises the following principal elements:

- 296no. 1-bedroom studio/apartment units;
- 103no. 2-bedroom apartment units; and
- a retail unit with a gross floor area of 120m^2.

The development shall also include:

- 80no. car parking spaces (including 8no. spaces for shared vehicles);
- 508no. long-term bicycle parking spaces for residents (including 6no. cargo bike spaces);
- 202no. short-stay bicycle parking spaces for visitors and for the retail unit (including 8no. cargo bike spaces); and
- 4no. motorcycle parking spaces.

All car and motorcycle parking associated with the development shall be located internally at basement level, as shall residents' long-term bicycle parking spaces and a proportion of visitor bicycle parking spaces. Additional short-stay bicycle parking shall be provided externally at podium level. Refer to architectural drawings for the locations and uses of all parking spaces.

6.1 Overall Car Parking Provision

The car parking provision of the proposed development has been assessed with respect to the *Dublin City Development Plan 2016–2022*, which defines the standard maximum car parking provision for new developments by land use type. Table 28 shows the car parking standards applicable to the proposed development and illustrates that the total car parking provision does not exceed the maximum number permitted by the Local Authority development plan.

The *Dublin City Development Plan 2016–2022* specifies the following in relation to residential car parking in apartment developments:

> *"Car parking standards are maximum in nature and may be reduced in specific, mainly inner city locations where it is demonstrated that other modes of transport are sufficient for the needs of residents."*
>
> *"Where sites are constrained or provision of on-site car storage is not possible, alternative solutions will be considered such as residential car clubs or off-site storage."*

Table 28 – Overall Car Parking Provision

Land Use (Zone 2)	Car Parking Maxima	Quantum	Max. Parking Provision	Proposed Provision
Residential	1 space per dwelling	399 dwellings	399 spaces	72 spaces
Residential car club parking			n/a	8 spaces
Total			399 spaces	80 spaces

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

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

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

With respect to BTR developments such as the proposed development, the Apartment Guidelines further note (under Specific Planning Policy Requirement 8) that:

"There shall be a default of minimal or significantly reduced car parking provision on the basis of BTR development being more suitable for central locations and/or proximity to public transport services."

As detailed in the Residential Travel Plan framework document submitted under separate cover in support of this planning application (as well as in sub-section 7.6 of this report), the development site is situated within a 5-minute walk of Heuston railway station and within a 10-minute walk of its associated tram stop on the Luas Red Line. Residents shall therefore have convenient access to reliable, high-frequency light rail services through Dublin city centre to the Docklands, as well as towards Tallaght and Saggart in the south-west. Commuter and intercity rail services from Heuston station shall also be within easy reach.

In addition, as described in sub-section 7.9, the area surrounding the subject site is well served by commercial car-share services and by bicycle sharing schemes: 8no. DublinBikes stations and 4no. bases for the GoCar commercial car-sharing service are located within a 10-minute walk of the subject site, and a further 16no. GoCar and Yukõ car-share bases are located within a 15-minute walk. The development site is also situated within the 'purple zone' for the Bleeper Bikes commercial bicycle sharing service.

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

6.2 Disabled-Accessible Car Parking

The development includes a total of 4no. disabled-accessible car parking spaces, located at basement level in proximity to building cores and lifts.

The *Dublin City Development Plan 2016–2022* sets out the minimum requirement for the provision of disabled-accessible parking in new developments, as a proportion of the total development car parking provision. Table 29 applies this requirement to the proposed development.

Table 29 – Accessible Car Parking Provision

Proposed Car Parking Provision	Minimum Required Proportion	Accessible Spaces Required	Accessible Spaces Proposed
80 spaces	5%	4	4

The development's overall provision of disabled-accessible car parking facilities thereby satisfies the requirements of the *Dublin City Development Plan 2016–2022*.

6.3 Bicycle Parking Provision

The proposed development shall provide a total of 710no. bicycle parking spaces. These shall include:

- 502no. residents' spaces within a secure bicycle store at basement level;
- 6no. residents' cargo bike spaces at basement level (in the form of 3no. wide-spaced Sheffield stands);

- 90no. standard visitor spaces at basement level (in the form of 45no. Sheffield stands);
- 2no. visitor cargo bike spaces at basement level (in the form of 1no. wide-spaced Sheffield stand);
- 104no. standard visitor and retail spaces provided externally at podium level (in the form of 52no. Sheffield stands); and
- 6no. visitor cargo bike spaces provided externally at podium level (in the form of 3no. wide-spaced Sheffield stands).

The *Dublin City Development Plan 2016–2022* defines the minimum standard bicycle parking provision for new developments by land use type. Table 30 shows the application of these standards to the proposed development, illustrating that its proposed bicycle parking provision meets the requirements of the Local Authority development plan.

Table 30 – Bicycle Parking Provision (DCC Development Plan)

Land Use (Zone 2)	Cycle Parking Minima	Quantum	Min. Parking Provision	Proposed Provision
Residential	1 space per unit	399 units	399 spaces	508 spaces
Shops	1 space per 150m² GFA	120m² GFA	1 space	2 spaces
Visitor cycle parking			n/a	200 spaces
Total			400 spaces	710 spaces

As shown in Table 31, the development's residential bicycle parking provision also complies with the recommendations of the Apartment Guidelines, which state that:

"A general minimum standard of 1 cycle storage space per bedroom shall be applied. For studio units, at least 1 cycle storage space shall be

provided. Visitor cycle parking shall also be provided at a standard of 1 space per 2 residential units."

Table 31 – Residential Bicycle Parking Provision (Apartment Guidelines)

Cycle Parking Recommendation	Quantum	Recommended Provision	Proposed Provision
Long-term bicycle storage			
1 storage space per bedroom	502 bedrooms	502 spaces	508 spaces
Short-stay bicycle parking			
1 visitor parking space per 2 units	399 units	200 spaces	200 spaces
Total residential bicycle parking			
TOTALS		702 spaces	708 spaces

6.4 Motorcycle Parking Provision

The *Dublin City Development Plan 2016–2022* requires that motorcycle parking be provided "at a rate of 4% of the number of car parking spaces provided". Table 32 applies this requirement to the proposed development.

Table 32 – Motorcycle Parking Provision

Proposed Car Parking Provision	Standard Required Proportion	Motorcycle Spaces Required	Motorcycle Spaces Proposed
80 spaces	4%	3	4

4no. motorcycle parking spaces shall be provided at basement level within the proposed development; refer to architectural drawings for the locations of these. Suitable posts, rings, or hoops shall be provided at these spaces, to enable motorcycles to be secured.

6.5 Electric Vehicle Charging Facilities

Facilities for the charging of battery electric vehicles (BEVs) shall be provided at 8no. internal car parking spaces, representing 10% of the development's total car parking provision. All remaining car parking spaces within the development shall be 'future-proofed' by the inclusion of ducting and/or cabling to permit the rapid future installation of BEV charging points, as defined in the ESB ecars specification document no. 18017 (*Public Charge Points*, last reviewed February 2012).

Refer to documentation prepared by IN2 Engineering (mechanical & electrical engineering consultants) for further detail of the development's proposed BEV charging infrastructure.

Within the development's basement-level bicycle stores, electrical outlets shall be provided for the charging of electric bicycles.

6.6 Residential Car-Share Parking

It is proposed to establish a car-sharing club for residents of the development. 8no. dedicated shared vehicles shall be provided under this scheme, and 8no. car parking spaces within the development shall be reserved for these vehicles. The locations of these car-share spaces are shown on architectural drawings.

A recent study of car clubs in Scotland, commissioned and published by CoMoUK [8], concluded that a single shared car may replace 14 private cars. On this basis, the 8no. shared car parking spaces may therefore be considered to reduce residential parking demand within the development by approximately 104no. spaces.

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

Further details of the proposed residential car club arrangements are provided in sub-section 7.8 of this report.

6.7 Car Parking Management

All internal car parking spaces within the development (including the 4no. accessible spaces and 8no. car club spaces) shall be controlled by the development's Management Company. Parking spaces shall not be assigned to individual apartment units; spaces shall instead be allocated and/or leased to residents and staff on the basis of availability and need, in part by means of a permit/lottery system, in order to optimise the use of parking spaces.

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

Figure 14 – Development access points
(*map data & imagery: OSM Contributors, Google*)

7.1 Vehicular Access

Vehicular access to the development site is via the 2no. existing access junctions of the HSQ complex (see Figure 14):

J2. Military Road / Heuston South Quarter (East Access)
(3-arm priority-controlled junction)

J3. St. John's Road West (R148) / Heuston South Quarter (North Access)
(3-arm signal-controlled junction)

Existing ramps from both access junctions bring vehicular traffic down from street level to basement level.

As part of the proposed development, it is proposed to undertake works to the existing access junction on St. John's Road West. These works, shown on CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0119, will entail the following:

- the omission of the existing left-turn slip lane on approach from the east along St. John's Road West (westbound carriageway);
- reconfiguration of the pedestrian crossings at the existing junction, together with the reconfiguration of the existing pedestrian crossing over the westbound lanes of St. John's Road West leading to an existing pedestrian refuge island; and
- realignment of the existing footpath along St. John's Road West, to tie into the reconfigured junction arrangement.

7.2 Internal Basement Layout

The internal road layout of the proposed development is located entirely at basement level (with the exception of the existing ramp connecting it to the existing access junction on St. John's Road West). This internal basement layout comprises a one-way service road loop with a minimum carriageway width of 6.0m, including marked pedestrian walkways and crossing points. The 80no. new car parking spaces to serve the proposed development are arranged perpendicularly along this service road loop, as well as to either side of a short spur that extends south from the loop in the south-eastern corner of the proposed development.

The proposed service road loop shall also give access to a number of existing car parking spaces that are used by commercial elements of the existing HSQ complex, and which it is not proposed to alter as part of this development. The service road loop shall connect to the internal car parking of the existing HSQ complex at 2no. existing ramps, located on the subject site's eastern and south-eastern boundaries. An existing ramp at the southern boundary of the subject site, which gives access to and from car

parking areas at level -2 within the existing HSQ complex via the subject site, shall be realigned and reprofiled to integrate with the proposed development's internal layout. An additional existing ramp at the south-western corner of the subject site, which currently serves as an exit from a residential car parking area at lower ground floor within the existing HSQ complex, shall be extinguished and closed; alternative egress routes from this car parking area will be ensured within the existing HSQ complex.

The proposed development's internal service road loop shall also provide vehicular access to the existing commercial loading dock that serves the SuperValu retail unit within the existing HSQ complex, this loading dock having hitherto been accessed via existing roads within the subject site. The proposed development's internal basement layout (including road markings) has been designed to accommodate the swept path of an articulated Heavy Goods Vehicle accessing this loading dock.

Refer to CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0119 for further details of the proposed development's internal basement layout.

7.3 Pedestrians & Cyclists

The development site is well-situated to allow access to key amenities on foot and by bicycle: O'Connell Street is within approximately 35 minutes' walk, while the entirety of Dublin city centre is within a 10-minute bicycle journey (see Figure 15). Shops and schools located on Manor Street are within 500m (approx. 6-7 minutes' walk). In order to reduce dependency on car-based travel by residents, walking and cycling shall be supported and encouraged by the implementation of a Residential Travel Plan for the development.

The provision of good permeability for pedestrians and cyclists, as well as efficient access to public transport, are all key objectives of the proposed

development. Easy pedestrian and cyclist access to podium level is facilitated at multiple points via the existing HSQ complex:

- to/from Military Road, at the site's eastern boundary; and
- to/from St. John's Road West, at the site's northern boundary.

Access for cyclists to the basement-level bicycle parking facilities is provided via a dedicated bicycle lift from podium level, as well as via internal stair cores and lifts within the proposed buildings. Bicycle access to basement level is also possible via the existing bicycle access ramp at the HSQ complex's eastern access junction on Military Road. It is not intended that cyclists use the existing access ramp from St. John's Road West.

Pedestrian and cyclist permeability through the proposed development itself is ensured by the provision of clear and safe podium-level pedestrian and cyclist routes along the east/west and north/south axes. Provision is also made for pedestrian and cyclist connectivity between the proposed development and the adjacent Royal Hospital grounds, and a new lift to provides wheelchair access from St. John's Road West to the HSQ podium.

Figure 15 shows the reach of bicycle journey times to and from the proposed development, in 5-minute increments, based upon an average cycling speed of 15km/h.

Existing pedestrian facilities on the site's surrounding street network are generally of a good standard, including the provision of public lighting. An advisory cycle lane is in place on St. John's Road West on the northern boundary of the development site. No existing cycle facilities are in place on Military Road.

As detailed in sub-section 6.3, the proposed development shall include a total of 710no. bicycle parking spaces, comprising both long-term cycle storage spaces for residents and short-stay cycle parking spaces for visitors.

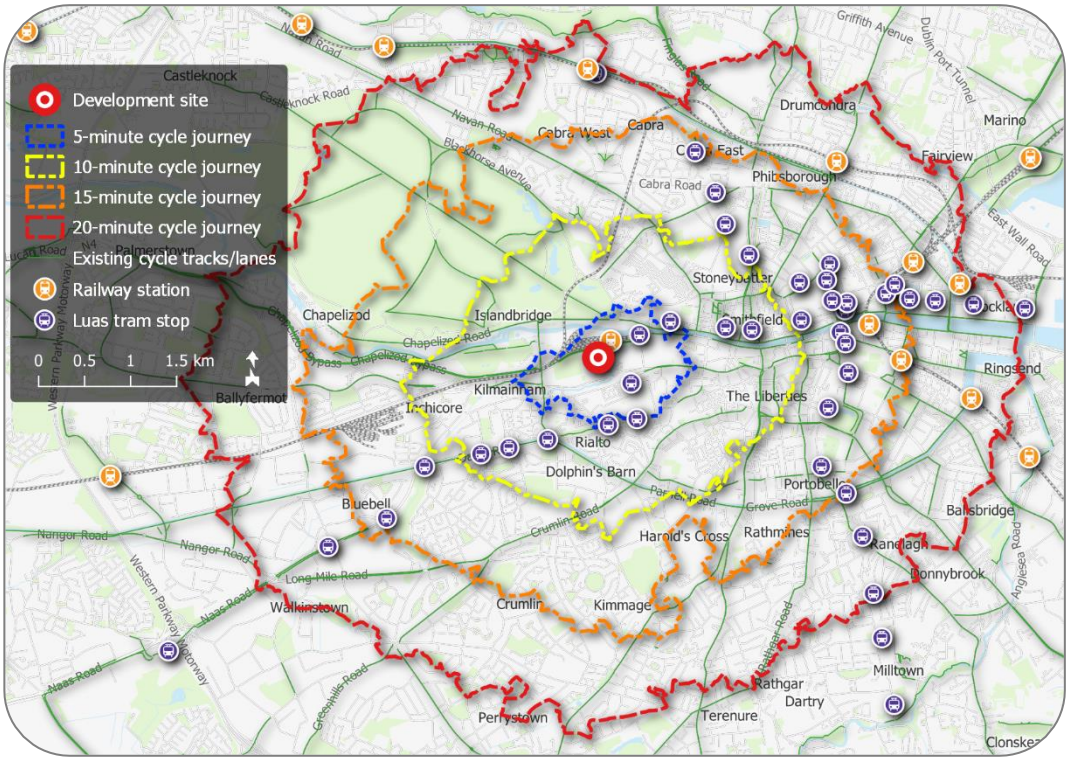

Figure 15 – Bicycle journey times and cycle facilities
(map data & imagery sources: EPA, NTA, OSi, OSM Contributors)

7.4 Development Servicing and Waste Collection

The internal layout of the development allows both development servicing (such as deliveries) and waste collection to be conducted within the development itself, thereby avoiding the obstruction of either vehicular or pedestrian traffic on the surrounding road network.

Further detail of the proposed development's servicing arrangements, including service vehicle routes, are given in the accompanying Development Servicing Management Plan document and on CS Consulting drawings HSQ-CSC-XX-XX-DR-C-0113 to HSQ-CSC-XX-XX-DR-C-0115.

7.5 Swept Path Analysis

Swept path analyses have been carried out for cars manoeuvring within the proposed development, as well as for a refuse vehicle and a fire tender. These analyses, provided on CS Consulting drawings HSQ-CSC-XX-XX-DR-C-0112, HSQ-CSC-XX-XX-DR-C-0113 and HSQ-CSC-XX-XX-DR-C-0115 within this planning application, indicate that the existing HSQ access junctions and the proposed development's internal layout can accommodate these vehicle movements where required.

In addition, CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0114 shows the swept path of an articulated HGV accessing and servicing the existing SuperValu loading dock within the existing HSQ complex, which shall be accessed via the proposed development's new internal basement-level service road loop.

7.6 Public Transport

The development site benefits from proximity to good quality public transport services. As shown in Figure 16, the development site is situated within a 5-minute walk of Heuston Station and within a 10-minute walk of the Heuston and James's stops on the Luas Red Line, which is served by frequent trams to and from Dublin city centre, as well as to/from Saggart and Tallaght in the south-west.

Bus stop no. 2638, located on St. John's Road West within a 5-minute walk of the site, is served by a total of 3no. Dublin Bus routes (nos. 51d, 79, 79a). Of these, one route (no. 79, between Aston Quay and Spiddal Park/Parkwest) operates at intervals of less than 10 minutes at peak times. A further 39no. bus routes serve stops within a 10-minute walk of the subject site.

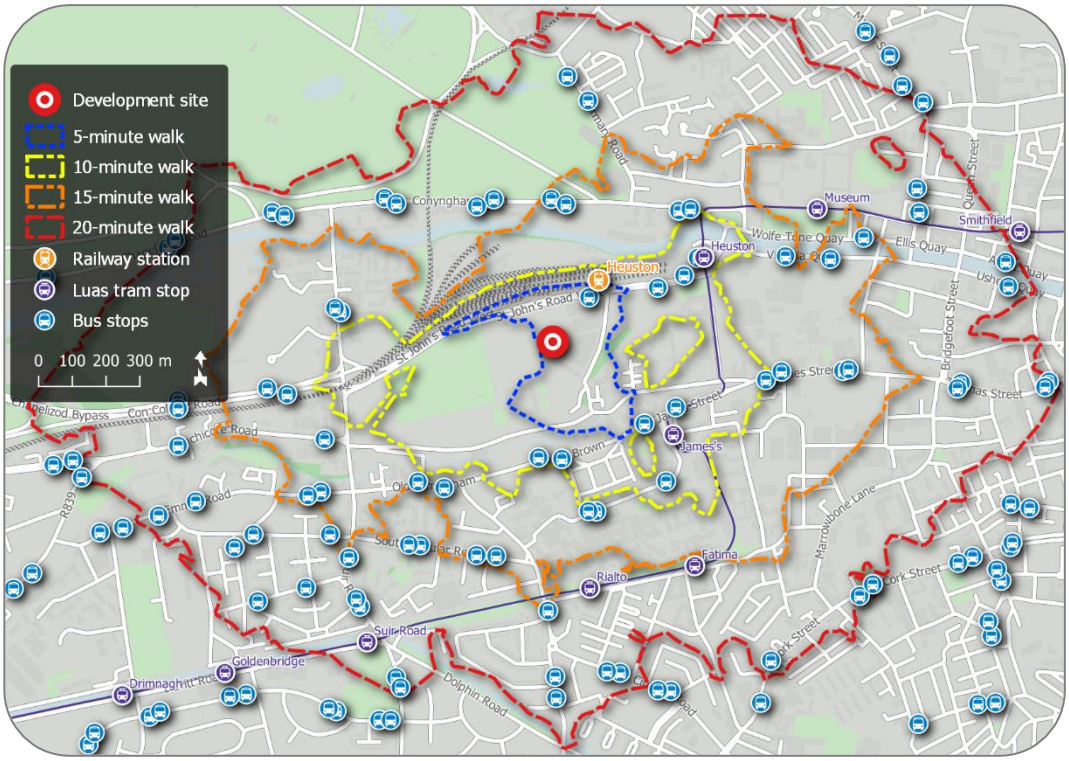

Figure 16 – Walking times and public transport service points
(map data & imagery sources: EPA, NTA, OSi, OSM Contributors)

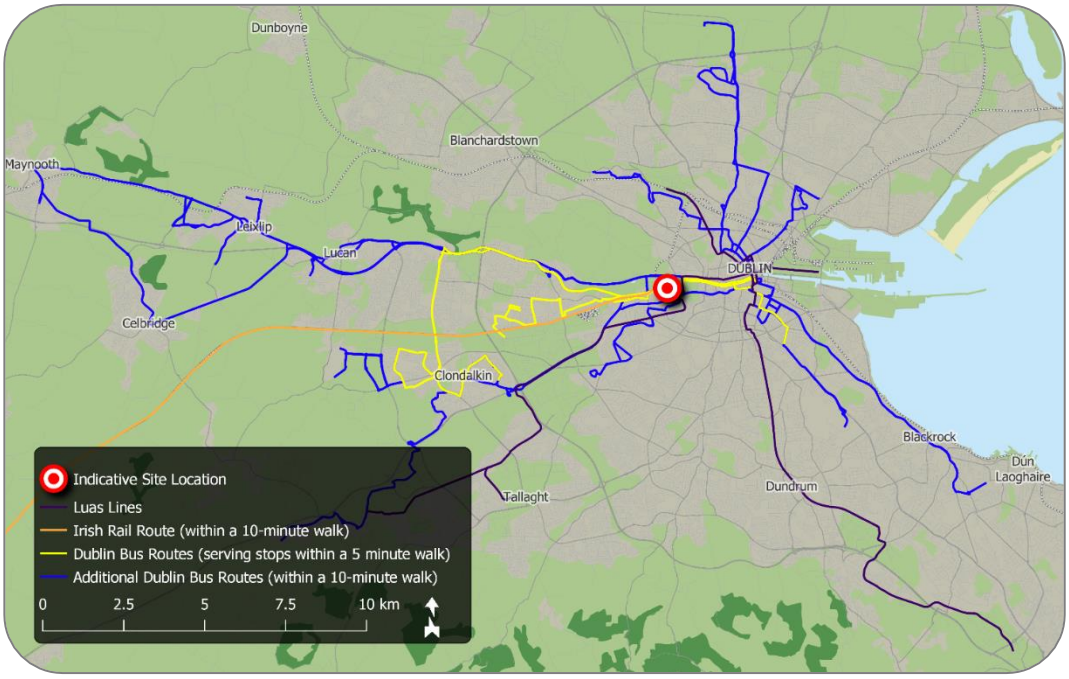

Figure 17 – Existing easily accessible public transport routes
(map data sources: EPA, NTA, OSi, OSM Contributors)

For further details of the existing public transport provision in the vicinity of the development site, refer to the Residential Travel Plan framework document prepared by CS Consulting and submitted under separate cover in support of this application.

Under the BusConnects Dublin Area Revised Bus Network proposals, it is proposed to implement new spine routes C1, C2, C3 and C4 along St. John's Road West, immediately to the north of the subject site (see Figure 18). These arterial routes, running between Lucan and Ringsend via the city centre, will operate at intervals of 8 minutes during peak times.

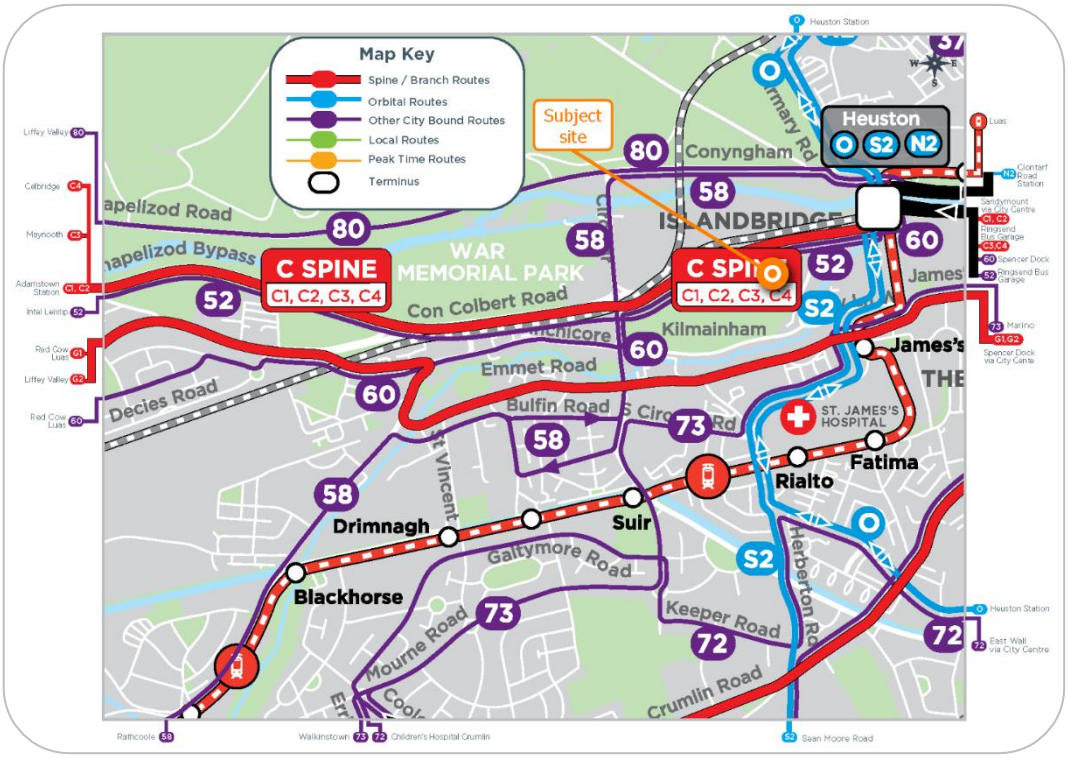

Figure 18 – Dublin Area Revised Bus Network Inchicore area map
(*background imagery source: NTA*)

7.7 Impact on Public Transport and Pedestrian/Cyclist Infrastructure

Table 33 shows both the assumed starting modal splits for the proposed development and the suggested initial target modal splits, as given in the

accompanying Residential Travel Plan (submitted under separate cover). These have been informed primarily by CSO census data from the year 2016, as well as by the car parking provision within the proposed development.

Table 33 – Initial Target Modal Splits for Development Occupants

Mode	Assumed Starting Proportion of Trips	Suggested Initial RTP Targets
Driving a Car	10%	7%
Passenger in a Car	3%	1%
Bicycle	14%	16%
Motorcycle	1%	1%
Bus	19%	20%
Train or Tram	32%	33%
Walking	21%	22%
TOTAL	100%	100%

The proposed development comprises 296no. 1-bedroom apartments and 103no. 2-bedroom apartments. Based on a maximum possible occupancy of 2no. residents per bedroom, the maximum possible population of the development is 1,004 residents (of which at most 798 residents are assumed to be adults). Applying the initial modal split targets given in Table 33, the development may therefore be expected to generate the following maximum possible numbers of public transport users, pedestrians, and cyclists during each weekday peak hour:

- 331no. Luas/train passengers
- 201no. bus passengers
- 221no. pedestrians
- 161no. cyclists

As is the case in respect of vehicular trip generation (see sub-section 4.1), the development's small retail unit is not considered likely to generate any

additional public transport, pedestrian, or bicycle trips to and from the development.

Table 34 – Maximum Peak Hour Non-Motorised Trip Generation

Transport Mode	Number of Users
Bicycle	161
Bus	201
Train or Tram	331
Walking	221
TOTAL	914

Given the high capacity of public transport services within easy reach of the subject site (including the Luas Red Line, mainline rail services, and numerous bus services), the proposed development is not expected to have any significant impact on the operation of these services. The proposed development is also not expected to impact upon the operation of adjacent pedestrian and cyclist facilities.

7.8 Residential Car-Share Club

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

Within the proposed development, it is intended to provide 8no. shared cars for the sole use of the development's residents. These may be owned and maintained by the development's management company. Alternatively, the development may 'host' a number of shared cars from a larger fleet, the use of which is restricted to development occupants. In this

model, vehicle supply and maintenance, as well as driver insurance, are all organised by an external car-sharing company.

7.9 External Shared Transport

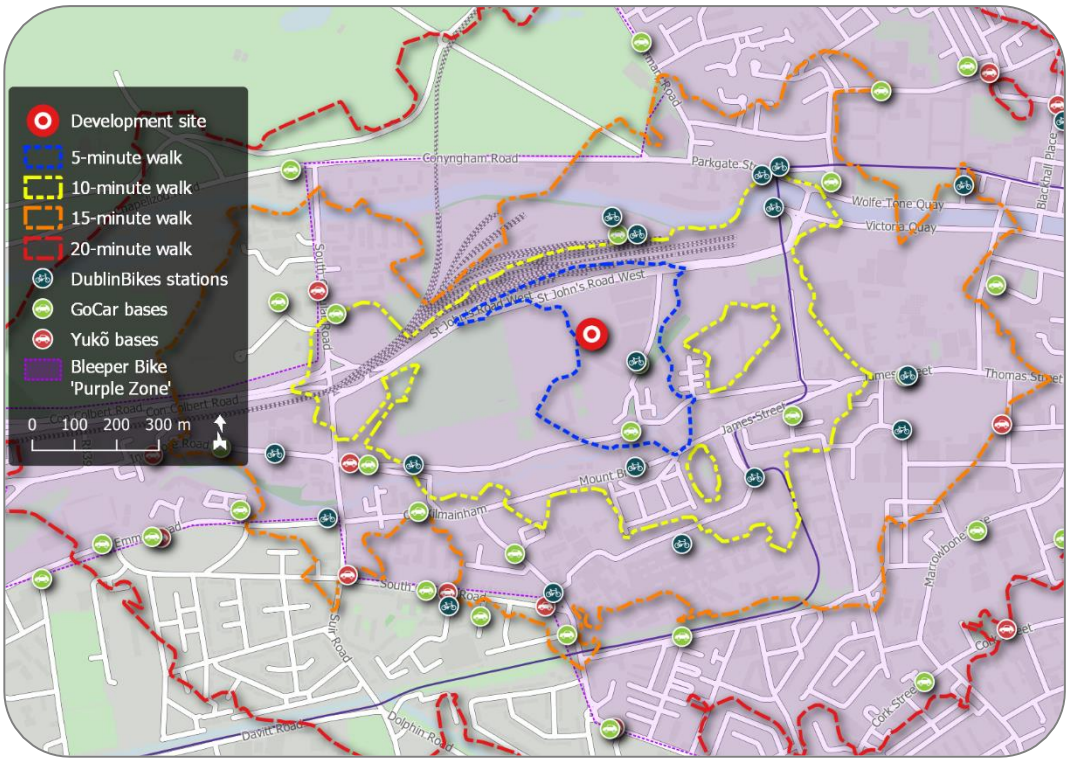

Figure 19 – Walking times and shared transport services
(map data & imagery sources: EPA, DCC, GoCar, Yuko, OSM Contributors)

In addition to the development's own residential car-share club and its internal bicycle parking provision, the area surrounding the subject site is well served by commercial car-share services and by the DublinBikes and Bleeper Bikes bicycle sharing schemes.

- 8no. DublinBikes stations are located within a 10-minute walk of the subject site (including one station on Military Road, adjacent to the HSQ complex).
- 4no. bases for the GoCar commercial car-sharing service are located within a 10-minute walk of the subject site (including one base on

Military Road, adjacent to the HSQ complex). A further 10no. GoCar bases are located within a 15-minute walk.

- 6no. bases for the Yukõ commercial car-sharing service are located within a 15-minute walk of the subject site.

The development site is also situated within the 'purple zone' for the Bleeper Bikes commercial bicycle sharing scheme. Within this area, a Bleeper Bike may be collected from or returned to any public bicycle parking stand.

Note:
The above car sharing locations represent the most up to date information available on the publicly-accessible GoCar and Yukõ bases at the time of preparing this report. These base locations are subject to periodic alteration by the scheme operators, in response to usage demand and to traffic management considerations.

7.10 Independent Quality Audit

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

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

The Quality Audit was completed in September 2021. Design changes have been made in response to the recommendations of the Quality Audit and the measures adopted have been accepted by the audit team. Refer to CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0119 for details of these design changes.

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

8.0 COMMENTS RECEIVED FROM PLANNING AUTHORITIES

Both An Bord Pleanála and Dublin City Council have reviewed the planning documentation submitted in respect of the proposed development during the pre-application consultation phase of the SHD process (including a previous version of the present Traffic and Transport Assessment). A tripartite pre-application consultation meeting has also been held with An Bord Pleanála and Dublin City Council.

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

8.1 Opinions Issued by An Bord Pleanála

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

8.1.1 ABP Item 7(a) – Traffic and Transport Impact Assessment

"A Traffic and Transport Impact Assessment (TTIA) which should consider cumulative impacts with existing and proposed adjoining development. The scope of this assessment should be discussed in advance with Dublin City Council."

Response to ABP Item 7(a)

The present document satisfies the requirement for submission of a Traffic and Transport Assessment. Account is taken of the proposed

development's traffic impact on the surrounding road network, as well as the cumulative impact of nearby committed and planned developments (as detailed in sub-sections 3.6, 3.7, 4.7, and 4.8).

8.1.2 ABP Item 7(b) – compliance with DMURS and NCM

"A report demonstrating compliance with the principles and specifications set out in DMURS and the National Cycle Manual. This should incorporate a Quality Audit that includes (i) a Road Safety Audit, (ii) an Access Audit, (ii) a Walking and Cycle Audit."

Response to ABP Item 7(b)

An independent Quality Audit of the proposed development layout and access arrangements has been conducted by PMCE Consulting Engineers on behalf of CS Consulting; this assessed the development proposals with respect to the standards set out in DMURS and the National Cycle Manual. Design changes have been made in response to the recommendations of the Quality Audit and the measures adopted have been accepted by the audit team. Refer to CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0119 for details of these design changes.

8.1.3 ABP Item 7(c) – Parking Strategy and Mobility Management Plan

"A Parking Strategy and Mobility Management Plan. This plan shall provide a justification for the quantum and design of cycle storage / parking facilities having regard to the provisions of the Apartment Design Guidelines."

Response to ABP Item 7(c)

A Residential Travel Plan has been prepared in respect of the proposed development and is submitted under separate cover in support of this planning application. Full details of the development's

parking management strategy, as well as an analysis of residential parking demand patterns, are provided in Section 6 of the present document.

As described in sub-section 6.3, the proposed development's bicycle parking provision satisfies both the requirements of the *Dublin City Development Plan 2016–2022* and the recommendations of the 2020 Apartment Guidelines.

8.1.4 ABP Item 7(d) – transportation items raised by DCC

"The items raised in the report of the Dublin City Council Transportation Planning Division, dated 26th January 2021."

Response to ABP Item 7(d)

Responses to points raised by Dublin City Council's Transportation Planning Division in its internal report are provided in sub-section 8.2.

8.2 Recommendations of Dublin City Council

The Transportation Planning Division of Dublin City Council issued an internal report on the 26th of January 2021, making the following recommendations relating to transportation.

8.2.1 DCC Point 1.1 – pedestrian, cyclist and vehicle routes

"The submitted existing and proposed site layout and floor plan drawings do not clearly detail pedestrian, cyclist and vehicle routes within the subject site and the interaction with the remainder of the Heuston South Quarter. Clearly annotated existing and proposed access details should be included in the application drawings."

Response to DCC Point 1.1

Refer to CS Consulting drawings HSQ-CSC-XX-XX-DR-C-0116 to HSQ-CSC-XX-XX-DR-C-0118, and HSQ-CSC-XX-XX-DR-C-0119 for full details

of the pedestrian, cyclist, and vehicle routes within the subject site, as well as their interaction with the remainder of the HSQ complex and the adjacent Royal Hospital grounds.

8.2.2 DCC Point 1.2 – pedestrian and cyclist access

"Pedestrian and cyclists routes in and out of the proposed development should be reviewed as well as access for cyclists to the cycle storage areas and access to accessible parking spaces which should be detailed on a layout drawing. Use of the ramp from St. John's Road West for cyclists shall be clarified along with access for pedestrians from St. John's Road West."

Response to DCC Point 1.2

Pedestrian and cyclist access and egress routes to/from the proposed development are described in sub-section 7.3 of this report, and are illustrated on CS Consulting drawings HSQ-CSC-XX-XX-DR-C-0116 to HSQ-CSC-XX-XX-DR-C-0118.

8.2.3 DCC Point 1.3 – impact on existing access arrangements

"The potential impact of proposed parking spaces on existing vehicle access arrangement including internal site traffic routing should be reviewed."

Response to DCC Point 1.3

CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0119 illustrates the changes to vehicular access arrangements that shall result from the proposed development; these are also discussed in sub-sections 7.1 and 7.2 of this report. While some changes will be effected, vehicular access to all parts of the existing HSQ complex will be maintained.

8.2.4 DCC Point 1.4 – access requirements for future commercial site

"Access requirements for the future commercial site should be shown within the application to ensure that an optimal arrangement is proposed for the full Heuston South Quarter development."

Response to DCC Point 1.4

The proposed development's internal basement-level layout maintains a clear buffer along its northern boundary, providing for vehicular access to a future development on the adjacent site.

8.2.5 DCC Point 2.1 – public realm along St. John's Road West

"The public realm along St. John's Road West does not provide a high quality environment for pedestrians. The applicant is requested to review existing pedestrian arrangements along the Heuston South Quarter, both footpath provision and existing car park junction, and submit drawings showing improvements to this area given the increased footfall as a result of the proposed development. Works proposed within the public domain and areas to be taken in charge shall be in accordance with Construction Standards for Roads and Street Works in Dublin City Council. Further discussion with the Transportation Planning Division would be welcome."

Response to DCC Point 2.1

Following consultation with the Transportation Planning Division of Dublin City Council, the proposed development includes works to the existing HSQ access junction on St. John's Road West and along the northern boundary of the HSQ complex. These works, shown on CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0119, will improve the public realm at these locations. A letter of consent for these works, issued by Dublin City Council, is included as Appendix F.

8.2.6 DCC Point 3.1 – servicing

"The applicant should be requested to provide a Service Management Plan in any future application."

Response to DCC Point 3.1

A Servicing Management Plan has been prepared in respect of the proposed development and is submitted under separate cover in support of this planning application. In conjunction with CS Consulting drawings HSQ-CSC-XX-XX-DR-C-0113 to HSQ-CSC-XX-XX-DR-C-0115, this provides details of the proposed development's servicing arrangements, including service vehicle routes.

8.2.7 DCC Point 4.1 – traffic impact assessment

"A construction and operational traffic impact assessment is required. The cumulative impact of the full masterplan site, existing and proposed including future commercial site should be assessed. The displacement of existing traffic from St. John's Road West to Old military Road as a result of the construction phase should also be assessed."

Response to DCC Point 4.1

The present Traffic and Transport Assessment includes a full assessment of the proposed development's impact on the operation of the surrounding road network. This comprises both operational phase assessments of nearby junctions' performance (including existing HSQ traffic, proposed development traffic, and traffic related to the adjacent planned commercial development), as well as an assessment of the eastern HSQ access junction's performance during the construction phase (accounting for the displacement of existing HSQ traffic from St. John's Road West to Military Road).

8.2.8 DCC Point 4.2 – preliminary CEMP

"A preliminary Construction Environmental Management Plan incorporating a Construction Traffic Management Plan should be provided as part of the EIAR. Construction traffic access arrangements including potential compounds should be considered as part of the EIAR in order to inform the sensitive receptors assessment. Consideration of on-site parking facilities during construction should also be reviewed."

Response to DCC Point 4.2

An Outline Construction Management Plan has been prepared in respect of the proposed development and is submitted under separate cover in support of this planning application. This includes details of construction traffic access arrangements, construction compound location, and on-site parking facilities during construction.

8.2.9 DCC Point 5.1 – car parking strategy

"The applicant is requested to provide a Car Parking Strategy as part of the overall Mobility Management Plan detailing how the car parking is to be managed including existing users of the basement car parking. The applicant should demonstrate that the proposed car share allocation is sufficient for the proposed development. Details to be provided on how the car share scheme is to be incorporated into the proposed and existing development at basement level and access to same (will access be for existing residents also?). The location of basement entrance barriers, gates, shutters etc. should be also be clarified. A letter of intent from a car share provider or management company was not included within the submission and should be provided in any forthcoming application. The internal pedestrian access route from accessible parking at level -1 should be

clearly shown, as only stairs are noted adjacent to the proposed accessible spaces in the southeast corner."

Response to DCC Point 5.1

The development's parking management strategy is discussed in Section 6 of the present document. Architectural and landscaping drawings submitted with this application identify all car, motorcycle, and bicycle parking facilities within the development. No new access control measures (e.g. barriers or shutters) are proposed within the development.

The proposed development's residential car club shall be controlled by the development's Management Company, which is yet to be constituted. As noted in sub-section 7.8, it is possible that the Management Company shall engage a third-party commercial care share provider to operate this service on its behalf; if this is not the case, the development's shared vehicles will be owned or leased directly by the Management Company. It is not intended that the proposed development's residential car club initially be open for use by existing residents of other parts of the HSQ complex. This may however be facilitated in future, subject to agreement with the relevant parties on financial contributions and the availability of car parking spaces for additional shared vehicles in other parts of the HSQ complex.

Marked pedestrian access routes within the proposed development's level -1 basement parking area are shown on CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0119.

8.2.10 DCC Point 5.2 – cycle parking

"The applicant is requested to submit detailed drawings showing the location and dimensions of proposed resident and visitor cycle parking. The revised drawings should include details of the proposed

stacking system for resident cycle parking (incl. charging points). Resident cycle parking should be located within secure rooms/compounds and require to be accessed by key/fob. The applicant should be requested to give consideration to including a cargo bike parking and a shared cargo bikes scheme (incl. charging points) for residents."

Response to DCC Point 5.2

The locations of all residents and visitor bicycle parking facilities are shown on the architectural and landscaping drawings submitted with this application. All long-term (residents') cycle parking spaces are located in a secure bike store requiring an access key/fob or security code, with the exception of 6no. cargo bike spaces at basement level. Please refer to architectural drawings for the dimensions of cycle parking facilities and details of the proposed bicycle stands/racks.

8.2.11 DCC Point 5.3 – mobility requirements of future commercial site

"Mobility requirements including car and cycle parking provision for the future commercial site should be reviewed as part of the application to ensure that the proposed development does not sterilise space required to facilitate the future commercial development."

Response to DCC Point 5.3

The associated planned commercial development adjacent to the subject site (provisionally intended to comprise offices with a total Gross Floor Area of 26,956m^2, as well as a 244-bedroom hotel) shall have a car parking provision of approx. 95no. car parking spaces, in keeping with its highly accessible location, and shall include at least 294no. bicycle parking spaces, in compliance with DCC development plan requirements. No difficulty is anticipated in

accommodating these car and bicycle parking facilities within the area of the planned commercial development.

9.0 SUMMARY & CONCLUSIONS

This report examines the impact of a proposed Strategic Housing Development at Heuston South Quarter, St. John's Road West, Kilmainham, Dublin 8 on the performance of the surrounding road network, and assesses the development's internal layout; car, bicycle, and motorcycle parking provision; cyclist and pedestrian facilities; and servicing arrangements.

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

- The proposed development shall not generate excessive vehicular traffic flows in its operational phase. Total vehicle trips (arrivals and departures combined) of 48 PCU are predicted during the AM peak hour, and total vehicle trips of 88 PCU in the PM peak hour.
- The 2no. existing junctions giving access to the Heuston South Quarter (HSQ) complex from the surrounding road network (on Military Road and on St. John's Road West) currently operate within their effective capacities on all approaches and shall continue to operate within their effective capacities past the design year 2039 with the proposed development in place. Operational traffic related to the proposed development shall not have a significant influence on the operation of these junctions, resulting in a maximum increase of 9 PCU in vehicle queues on any junction approach and a maximum increase of 14 seconds in the mean vehicle delay on any junction approach.
- The existing junction of Military Road with St. John's Road West, located between the two existing HSQ access junctions, currently operate within effective capacity on all approaches. Under the influence of background traffic growth (unrelated to the proposed development), this junction is however projected to exceed effective capacity on its western approach by the year 2029 and to slightly exceed ultimate capacity on its southern approach by the year 2039. Operational traffic related to the proposed development shall have a moderate influence

on the operation of this junction, resulting in a maximum increase of 6 PCU in vehicle queues on any junction approach and a maximum increase of 24 seconds in the mean vehicle delay on any junction approach.

- Reconfiguration of the existing northern access junction to the HSQ complex (on St. John's Road West), proposed by the NTA under the BusConnects scheme, would result in reduced capacity at this junction. The junction would consequently exceed ultimate capacity on both its eastern and southern approaches by the year 2024, under the projected future traffic loading (without the inclusion of traffic generated by the proposed development). These effects are however expected to be mitigated by a reduction in mainline traffic flows along St. John's Road West, which the NTA predicts as one of the benefits of the BusConnects scheme.
- In the proposed development's construction phase, during which it is proposed to temporarily route all traffic to/from the existing HSQ complex via its eastern access junction, this junction is shown to continue operating within effective capacity.
- The proposed provision of car, motorcycle, and bicycle parking within the development (including disabled-accessible car parking spaces) complies with Local Authority development plan standards, as well as with the recommendations of the 2020 Apartment Guidelines.
- Swept path analyses have been conducted for cars manoeuvring within the proposed development, as well as for a refuse vehicle, a fire tender, and an articulated HGV servicing the existing SuperValu loading dock within the existing HSQ complex. These indicate that the existing HSQ access junctions and the proposed development's internal layout can accommodate these vehicle movements where required.

- An independent Quality Audit of the proposed development layout and access arrangements has been conducted by PMCE Consulting Engineers on behalf of CS Consulting. Design changes have been made in response to the recommendations of the Quality Audit and the measures adopted have been accepted by the audit team. Refer to CS Consulting drawing HSQ-CSC-XX-XX-DR-C-0119 for details of these design changes.

In summary, the assessment indicates that the proposed development can be supported by the existing road infrastructure, that the parking provision for the proposed development conforms to Local Authority standards, and that the development's internal layout is fit for purpose and complies with the *Design Manual for Urban Roads and Streets*.

Appendix A

Traffic Survey Data

CS CONSULTING
GROUP

Junction 1 Traffic Counts

15-min Intervals		Traffic Flows (vehicles)												15-min Totals	Hourly Totals	1-hour Intervals	
From	To	A - B		A - C		B - A		B - C		C - A		C - B				From	To
		LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV				
07:00	07:15	23	0	115	31	16	0	10	0	222	21	1	0	439			
07:15	07:30	16	0	110	20	13	0	10	0	175	11	0	0	355			
07:30	07:45	18	0	127	13	8	0	10	0	195	15	0	0	386			
07:45	08:00	11	2	133	22	14	0	11	0	253	15	0	0	461	1641	07:00	08:00
08:00	08:15	20	0	177	23	33	0	26	0	305	19	0	0	603	1805	07:15	08:15
08:15	08:30	17	0	153	11	22	0	11	0	295	38	1	0	548	1998	07:30	08:30
08:30	08:45	17	0	175	16	30	0	25	0	309	28	0	0	600	2212	07:45	08:45
08:45	09:00	11	0	124	12	26	0	16	0	248	17	0	0	454	2205	08:00	09:00
09:00	09:15	18	0	159	14	23	0	22	0	293	14	0	0	543	2145	08:15	09:15
09:15	09:30	20	0	93	9	15	1	15	0	245	18	0	0	416	2013	08:30	09:30
16:30	16:45	21	0	340	12	35	0	48	2	120	17	0	0	595			
16:45	17:00	9	0	204	17	25	0	45	1	128	12	0	0	441			
17:00	17:15	7	0	203	13	29	0	37	2	139	10	0	0	440			
17:15	17:30	21	0	197	18	26	0	80	2	183	17	0	0	544	2020	16:30	17:30
17:30	17:45	23	0	169	25	31	0	60	4	140	16	0	0	468	1893	16:45	17:45
17:45	18:00	9	0	195	21	7	0	37	2	155	3	1	0	430	1882	17:00	18:00
18:00	18:15	12	0	231	28	34	0	63	5	177	10	0	0	560	2002	17:15	18:15
18:15	18:30	6	0	278	29	18	0	72	5	193	7	0	0	608	2066	17:30	18:30
TOTALS		279	2	3183	334	405	1	598	23	3775	288	3	0				
AADT		757	5	9385	985	1121	3	1617	62	8873	677	7	0				

Arm A	*R148 East*
Arm B	*Military Road*
Arm C	*R148 West*

Survey Date:
19/09/2017

Survey Location:
Heuston South Quarter

Weather Conditions:
AM: Clear, dry, calm
PM: Overcast, dry, calm

Job No:
H087

Enumerators:
AOK/KP

Junction 2 Traffic Counts

15-min Intervals		Traffic Flows (vehicles)												15-min Totals	Hourly Totals	1-hour Intervals	
From	To	A - B		A - C		B - A		B - C		C - A		C - B				From	To
		LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV				
07:00	07:15	16	0	24	0	10	0	2	0	13	0	8	0	73			
07:15	07:30	7	0	16	0	11	0	4	0	9	0	10	0	57			
07:30	07:45	15	0	18	0	7	0	0	0	10	0	12	0	62			
07:45	08:00	2	0	28	0	6	0	1	0	9	2	9	0	57	249	07:00	08:00
08:00	08:15	3	0	49	1	5	0	5	0	11	0	10	0	84	260	07:15	08:15
08:15	08:30	8	0	36	0	10	0	4	0	13	0	5	0	76	279	07:30	08:30
08:30	08:45	6	0	44	1	13	0	2	0	12	1	2	0	81	298	07:45	08:45
08:45	09:00	6	0	45	2	9	0	0	0	7	0	3	0	72	313	08:00	09:00
09:00	09:15	4	0	36	1	6	0	1	0	15	0	3	0	66	295	08:15	09:15
09:15	09:30	3	0	37	3	10	0	2	0	12	0	6	0	73	292	08:30	09:30
16:30	16:45	5	0	75	4	4	0	6	0	6	0	6	0	106			
16:45	17:00	7	0	96	2	5	0	6	0	10	0	2	0	128			
17:00	17:15	10	0	75	5	6	0	5	0	8	0	2	0	111			
17:15	17:30	7	0	65	5	10	0	3	0	16	0	8	0	114	459	16:30	17:30
17:30	17:45	9	0	82	4	10	0	5	0	11	0	4	0	125	478	16:45	17:45
17:45	18:00	6	0	66	2	10	0	8	0	6	0	2	0	100	450	17:00	18:00
18:00	18:15	3	0	65	5	4	0	7	0	9	0	6	0	99	438	17:15	18:15
18:15	18:30	11	0	70	3	4	0	5	0	7	0	1	0	101	425	17:30	18:30
TOTALS		128	0	927	38	140	0	66	0	184	3	99	0				
AADT		343	0	2487	102	376	0	177	0	494	8	266	0				

Arm A	*Military Rd South*
Arm B	*HSQ Parking*
Arm C	*Military Rd North*

Survey Date:
19/09/2017

Survey Location:
Heuston South Quarter

Weather Conditions:
AM: Clear, dry, calm
PM: Overcast, dry, calm

Job No:
H087

Enumerators:
DM

Junction 3 Traffic Counts

15-min Intervals		Traffic Flows (vehicles)												15-min Totals	Hourly Totals	1-hour Intervals	
From	To	A - B		A - C		B - A		B - C		C - A		C - B				From	To
		LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV				
07:00	07:15	0	0	120	27	0	0	2	0	208	19	21	0	397			
07:15	07:30	0	0	139	22	0	0	6	0	237	12	44	0	460			
07:30	07:45	1	0	168	19	0	0	7	0	232	18	23	0	468			
07:45	08:00	1	0	155	20	0	0	5	0	203	21	13	0	418	1743	07:00	08:00
08:00	08:15	3	1	154	20	2	0	7	0	197	28	15	0	427	1773	07:15	08:15
08:15	08:30	0	0	175	18	0	0	3	1	199	34	22	0	452	1765	07:30	08:30
08:30	08:45	1	0	167	17	0	0	9	0	176	32	19	0	421	1718	07:45	08:45
08:45	09:00	8	1	117	19	1	0	4	0	177	20	14	0	361	1661	08:00	09:00
09:00	09:15	4	0	143	20	0	0	2	0	237	12	21	0	439	1673	08:15	09:15
09:15	09:30	7	0	132	19	3	0	7	1	221	23	17	0	430	1651	08:30	09:30
16:30	16:45	2	0	385	18	0	0	17	0	118	13	3	0	556			
16:45	17:00	2	0	335	25	0	0	13	0	128	13	5	0	521			
17:00	17:15	3	0	323	21	1	0	32	0	137	13	7	1	538			
17:15	17:30	3	0	311	23	1	0	20	0	151	16	5	0	530	2145	16:30	17:30
17:30	17:45	4	0	301	28	1	0	28	0	129	14	12	0	517	2106	16:45	17:45
17:45	18:00	1	0	349	26	0	0	26	0	153	19	8	0	582	2167	17:00	18:00
18:00	18:15	0	0	293	33	0	0	17	0	111	12	7	0	473	2102	17:15	18:15
18:15	18:30	2	0	331	28	0	0	14	1	129	12	1	0	518	2090	17:30	18:30
TOTALS		42	2	4098	403	9	0	219	3	3143	331	257	1				
AADT		113	5	10996	1081	24	0	588	8	8434	888	690	3				

Arm A	*R148 East*
Arm B	*HSQ Parking*
Arm C	*R148 West*

Survey Date:
19/09/2017

Survey Location:
Heuston South Quarter

Weather Conditions:
AM: Clear, dry, calm
PM: Overcast, dry, calm

Job No:
H087

Enumerators:
GF

Appendix B

TRICS Data

CS CONSULTING
GROUP

Calculation Reference: AUDIT-656801-210421-0400

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

01	GREATER LONDON		
	BE	BEXLEY	1 days
	HO	HOUNSLOW	1 days
	KI	KINGSTON	1 days
	SK	SOUTHWARK	1 days
	WF	WALTHAM FOREST	1 days

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

Primary Filtering selection:

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

Parameter: No of Dwellings
Actual Range: 20 to 150 (units:)
Range Selected by User: 6 to 493 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 23/10/20

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	1 days
Wednesday	1 days
Friday	2 days

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

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town Centre	5

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:

Development Zone	1
Residential Zone	3
Built-Up 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:

C3	5 days

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

Population within 500m Range:

All Surveys Included

Population within 1 mile:

25,001 to 50,000	3 days
50,001 to 100,000	2 days

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

Population within 5 miles:

500,001 or More	5 days

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

Car ownership within 5 miles:

0.6 to 1.0	4 days
1.1 to 1.5	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.

Travel Plan:

Yes	1 days
No	4 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:

2 Poor	2 days
3 Moderate	1 days
5 Very Good	1 days
6b (High) Excellent	1 days

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

LIST OF SITES relevant to selection parameters

1	BE-03-C-01 CROOK LOG BEXLEYHEATH	BLOCKS OF FLATS		BEXLEY
	Edge of Town Centre Residential Zone Total No of Dwellings:		79	
	Survey date: WEDNESDAY		*19/09/18*	*Survey Type: MANUAL*
2	HO-03-C-03 COMMERCE ROAD BRENTFORD	BLOCKS OF FLATS		HOUNSLOW
	Edge of Town Centre Development Zone Total No of Dwellings:		150	
	Survey date: FRIDAY		*18/11/16*	*Survey Type: MANUAL*
3	KI-03-C-03 PORTSMOUTH ROAD SURBITON	BLOCK OF FLATS		KINGSTON
	Edge of Town Centre Residential Zone Total No of Dwellings:		20	
	Survey date: MONDAY		*11/07/16*	*Survey Type: MANUAL*
4	SK-03-C-01 PARK STREET SOUTHWARK	BLOCK OF FLATS		SOUTHWARK
	Edge of Town Centre Built-Up Zone Total No of Dwellings:		53	
	Survey date: FRIDAY		*19/09/14*	*Survey Type: MANUAL*
5	WF-03-C-01 ERSKINE ROAD WALTHAMSTOW	BLOCKS OF FLATS		WALTHAM FOREST
	Edge of Town Centre Residential Zone Total No of Dwellings:		73	
	Survey date: TUESDAY		*05/11/19*	*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 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	75	0.027	5	75	0.085	5	75	0.112
08:00 - 09:00	5	75	0.035	5	75	0.093	5	75	0.128
09:00 - 10:00	5	75	0.045	5	75	0.056	5	75	0.101
10:00 - 11:00	5	75	0.088	5	75	0.085	5	75	0.173
11:00 - 12:00	5	75	0.069	5	75	0.088	5	75	0.157
12:00 - 13:00	5	75	0.072	5	75	0.072	5	75	0.144
13:00 - 14:00	5	75	0.067	5	75	0.085	5	75	0.152
14:00 - 15:00	5	75	0.037	5	75	0.045	5	75	0.082
15:00 - 16:00	5	75	0.088	5	75	0.067	5	75	0.155
16:00 - 17:00	5	75	0.104	5	75	0.072	5	75	0.176
17:00 - 18:00	5	75	0.149	5	75	0.112	5	75	0.261
18:00 - 19:00	5	75	0.099	5	75	0.083	5	75	0.182
19:00 - 20:00	4	81	0.099	4	81	0.081	4	81	0.180
20:00 - 21:00	4	81	0.056	4	81	0.056	4	81	0.112
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.035			1.080			2.115

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:	20 - 150 (units:)
Survey date date range:	01/01/13 - 23/10/20
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	75	0.000	5	75	0.000	5	75	0.000
08:00 - 09:00	5	75	0.003	5	75	0.003	5	75	0.006
09:00 - 10:00	5	75	0.000	5	75	0.000	5	75	0.000
10:00 - 11:00	5	75	0.000	5	75	0.000	5	75	0.000
11:00 - 12:00	5	75	0.005	5	75	0.005	5	75	0.010
12:00 - 13:00	5	75	0.000	5	75	0.000	5	75	0.000
13:00 - 14:00	5	75	0.003	5	75	0.003	5	75	0.006
14:00 - 15:00	5	75	0.000	5	75	0.000	5	75	0.000
15:00 - 16:00	5	75	0.005	5	75	0.003	5	75	0.008
16:00 - 17:00	5	75	0.003	5	75	0.005	5	75	0.008
17:00 - 18:00	5	75	0.013	5	75	0.011	5	75	0.024
18:00 - 19:00	5	75	0.011	5	75	0.011	5	75	0.022
19:00 - 20:00	4	81	0.003	4	81	0.006	4	81	0.009
20:00 - 21:00	4	81	0.000	4	81	0.000	4	81	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.046			0.047			0.093

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

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	75	0.003	5	75	0.003	5	75	0.006
08:00 - 09:00	5	75	0.000	5	75	0.000	5	75	0.000
09:00 - 10:00	5	75	0.005	5	75	0.003	5	75	0.008
10:00 - 11:00	5	75	0.008	5	75	0.005	5	75	0.013
11:00 - 12:00	5	75	0.008	5	75	0.008	5	75	0.016
12:00 - 13:00	5	75	0.003	5	75	0.003	5	75	0.006
13:00 - 14:00	5	75	0.008	5	75	0.011	5	75	0.019
14:00 - 15:00	5	75	0.005	5	75	0.005	5	75	0.010
15:00 - 16:00	5	75	0.000	5	75	0.003	5	75	0.003
16:00 - 17:00	5	75	0.000	5	75	0.000	5	75	0.000
17:00 - 18:00	5	75	0.000	5	75	0.000	5	75	0.000
18:00 - 19:00	5	75	0.000	5	75	0.000	5	75	0.000
19:00 - 20:00	4	81	0.000	4	81	0.000	4	81	0.000
20:00 - 21:00	4	81	0.000	4	81	0.000	4	81	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.040			0.041			0.081

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

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	75	0.008	5	75	0.016	5	75	0.024
08:00 - 09:00	5	75	0.005	5	75	0.024	5	75	0.029
09:00 - 10:00	5	75	0.008	5	75	0.016	5	75	0.024
10:00 - 11:00	5	75	0.011	5	75	0.011	5	75	0.022
11:00 - 12:00	5	75	0.005	5	75	0.003	5	75	0.008
12:00 - 13:00	5	75	0.000	5	75	0.000	5	75	0.000
13:00 - 14:00	5	75	0.011	5	75	0.003	5	75	0.014
14:00 - 15:00	5	75	0.008	5	75	0.003	5	75	0.011
15:00 - 16:00	5	75	0.000	5	75	0.000	5	75	0.000
16:00 - 17:00	5	75	0.003	5	75	0.000	5	75	0.003
17:00 - 18:00	5	75	0.005	5	75	0.005	5	75	0.010
18:00 - 19:00	5	75	0.008	5	75	0.008	5	75	0.016
19:00 - 20:00	4	81	0.016	4	81	0.000	4	81	0.016
20:00 - 21:00	4	81	0.006	4	81	0.000	4	81	0.006
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.094			0.089			0.183

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

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	75	0.024	5	75	0.069	5	75	0.093
08:00 - 09:00	5	75	0.024	5	75	0.077	5	75	0.101
09:00 - 10:00	5	75	0.024	5	75	0.040	5	75	0.064
10:00 - 11:00	5	75	0.051	5	75	0.056	5	75	0.107
11:00 - 12:00	5	75	0.035	5	75	0.059	5	75	0.094
12:00 - 13:00	5	75	0.045	5	75	0.043	5	75	0.088
13:00 - 14:00	5	75	0.029	5	75	0.040	5	75	0.069
14:00 - 15:00	5	75	0.024	5	75	0.029	5	75	0.053
15:00 - 16:00	5	75	0.061	5	75	0.045	5	75	0.106
16:00 - 17:00	5	75	0.077	5	75	0.051	5	75	0.128
17:00 - 18:00	5	75	0.115	5	75	0.085	5	75	0.200
18:00 - 19:00	5	75	0.075	5	75	0.064	5	75	0.139
19:00 - 20:00	4	81	0.087	4	81	0.065	4	81	0.152
20:00 - 21:00	4	81	0.050	4	81	0.053	4	81	0.103
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.721			0.776			1.497

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

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	75	0.000	5	75	0.011	5	75	0.011
08:00 - 09:00	5	75	0.005	5	75	0.003	5	75	0.008
09:00 - 10:00	5	75	0.008	5	75	0.005	5	75	0.013
10:00 - 11:00	5	75	0.027	5	75	0.021	5	75	0.048
11:00 - 12:00	5	75	0.019	5	75	0.016	5	75	0.035
12:00 - 13:00	5	75	0.021	5	75	0.027	5	75	0.048
13:00 - 14:00	5	75	0.027	5	75	0.027	5	75	0.054
14:00 - 15:00	5	75	0.008	5	75	0.011	5	75	0.019
15:00 - 16:00	5	75	0.019	5	75	0.016	5	75	0.035
16:00 - 17:00	5	75	0.021	5	75	0.016	5	75	0.037
17:00 - 18:00	5	75	0.016	5	75	0.013	5	75	0.029
18:00 - 19:00	5	75	0.005	5	75	0.003	5	75	0.008
19:00 - 20:00	4	81	0.003	4	81	0.006	4	81	0.009
20:00 - 21:00	4	81	0.000	4	81	0.000	4	81	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.179			0.175			0.354

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

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	75	0.000	5	75	0.003	5	75	0.003
08:00 - 09:00	5	75	0.003	5	75	0.011	5	75	0.014
09:00 - 10:00	5	75	0.008	5	75	0.008	5	75	0.016
10:00 - 11:00	5	75	0.003	5	75	0.003	5	75	0.006
11:00 - 12:00	5	75	0.003	5	75	0.000	5	75	0.003
12:00 - 13:00	5	75	0.003	5	75	0.000	5	75	0.003
13:00 - 14:00	5	75	0.000	5	75	0.005	5	75	0.005
14:00 - 15:00	5	75	0.000	5	75	0.000	5	75	0.000
15:00 - 16:00	5	75	0.003	5	75	0.000	5	75	0.003
16:00 - 17:00	5	75	0.003	5	75	0.000	5	75	0.003
17:00 - 18:00	5	75	0.005	5	75	0.003	5	75	0.008
18:00 - 19:00	5	75	0.008	5	75	0.005	5	75	0.013
19:00 - 20:00	4	81	0.006	4	81	0.003	4	81	0.009
20:00 - 21:00	4	81	0.006	4	81	0.003	4	81	0.009
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.051			0.044			0.095

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.*

Calculation Reference: AUDIT-656801-210601-0604

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : A - OFFICE
TOTAL VEHICLES

Selected regions and areas:

01	GREATER LONDON		
	CI	CITY OF LONDON	2 days
	HM	HAMMERSMITH AND FULHAM	1 days
	LB	LAMBETH	1 days

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

Primary Filtering selection:

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

Parameter: Gross floor area
Actual Range: 1951 to 9803 (units: sqm)
Range Selected by User: 178 to 175000 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 09/11/20

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	1 days
Friday	2 days

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

Selected survey types:

Manual count	4 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:

Town Centre	4

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:

Commercial Zone	2
Built-Up Zone	1
High Street	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:

Not Known	4 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®.

Filter by Site Operations Breakdown:
All Surveys Included

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

50,001 to 100,000	4 days

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

Population within 5 miles:

500,001 or More	4 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	2 days
0.6 to 1.0	2 days

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

Travel Plan:

No	4 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:

4 Good	1 days
6a Excellent	1 days
6b (High) Excellent	2 days

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

LIST OF SITES relevant to selection parameters

1	CI-02-A-02	OFFICES		CITY OF LONDON
	GRACECHURCH STREET			
	CITY OF LONDON			
	MONUMENT			
	Town Centre			
	Commercial Zone			
	Total Gross floor area:		9803 sqm	
	Survey date: FRIDAY		*29/11/13*	*Survey Type: MANUAL*
2	CI-02-A-03	OFFICES		CITY OF LONDON
	MONUMENT STREET			
	CITY OF LONDON			
	MONUMENT			
	Town Centre			
	Commercial Zone			
	Total Gross floor area:		1951 sqm	
	Survey date: FRIDAY		*29/11/13*	*Survey Type: MANUAL*
3	HM-02-A-01	REGUS OFFICES		HAMMERSMITH AND FULHAM
	QUEEN CAROLINE STREET			
	HAMMERSMITH			
	Town Centre			
	Built-Up Zone			
	Total Gross floor area:		2036 sqm	
	Survey date: MONDAY		*13/11/17*	*Survey Type: MANUAL*
4	LB-02-A-02	MUSIC COMPANY		LAMBETH
	STREATHAM HIGH ROAD			
	STREATHAM			
	Town Centre			
	High Street			
	Total Gross floor area:		3054 sqm	
	Survey date: TUESDAY		*05/11/19*	*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 02 - EMPLOYMENT/A - OFFICE
TOTAL 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 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	4211	0.006	4	4211	0.000	4	4211	0.006
07:30 - 08:00	4	4211	0.018	4	4211	0.012	4	4211	0.030
08:00 - 08:30	4	4211	0.042	4	4211	0.012	4	4211	0.054
08:30 - 09:00	4	4211	0.059	4	4211	0.012	4	4211	0.071
09:00 - 09:30	4	4211	0.042	4	4211	0.018	4	4211	0.060
09:30 - 10:00	4	4211	0.006	4	4211	0.006	4	4211	0.012
10:00 - 10:30	4	4211	0.024	4	4211	0.018	4	4211	0.042
10:30 - 11:00	4	4211	0.018	4	4211	0.018	4	4211	0.036
11:00 - 11:30	4	4211	0.030	4	4211	0.006	4	4211	0.036
11:30 - 12:00	4	4211	0.024	4	4211	0.018	4	4211	0.042
12:00 - 12:30	4	4211	0.018	4	4211	0.030	4	4211	0.048
12:30 - 13:00	4	4211	0.030	4	4211	0.018	4	4211	0.048
13:00 - 13:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
13:30 - 14:00	4	4211	0.012	4	4211	0.012	4	4211	0.024
14:00 - 14:30	4	4211	0.018	4	4211	0.036	4	4211	0.054
14:30 - 15:00	4	4211	0.000	4	4211	0.006	4	4211	0.006
15:00 - 15:30	4	4211	0.024	4	4211	0.024	4	4211	0.048
15:30 - 16:00	4	4211	0.006	4	4211	0.024	4	4211	0.030
16:00 - 16:30	4	4211	0.000	4	4211	0.024	4	4211	0.024
16:30 - 17:00	4	4211	0.024	4	4211	0.030	4	4211	0.054
17:00 - 17:30	4	4211	0.018	4	4211	0.053	4	4211	0.071
17:30 - 18:00	4	4211	0.006	4	4211	0.036	4	4211	0.042
18:00 - 18:30	4	4211	0.000	4	4211	0.006	4	4211	0.006
18:30 - 19:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.431			0.425			0.856

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:	1951 - 9803 (units: sqm)
Survey date date range:	01/01/13 - 09/11/20
Number of weekdays (Monday-Friday):	4
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 02 - EMPLOYMENT/A - OFFICE
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 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
07:30 - 08:00	4	4211	0.006	4	4211	0.006	4	4211	0.012
08:00 - 08:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
08:30 - 09:00	4	4211	0.006	4	4211	0.006	4	4211	0.012
09:00 - 09:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
09:30 - 10:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
10:00 - 10:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
10:30 - 11:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
11:00 - 11:30	4	4211	0.006	4	4211	0.000	4	4211	0.006
11:30 - 12:00	4	4211	0.006	4	4211	0.006	4	4211	0.012
12:00 - 12:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
12:30 - 13:00	4	4211	0.000	4	4211	0.006	4	4211	0.006
13:00 - 13:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
13:30 - 14:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:00 - 14:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
14:30 - 15:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
15:00 - 15:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
15:30 - 16:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:00 - 16:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:30 - 17:00	4	4211	0.006	4	4211	0.006	4	4211	0.012
17:00 - 17:30	4	4211	0.012	4	4211	0.012	4	4211	0.024
17:30 - 18:00	4	4211	0.006	4	4211	0.006	4	4211	0.012
18:00 - 18:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
18:30 - 19:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.078			0.078			0.156

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 02 - EMPLOYMENT/A - OFFICE
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 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
07:30 - 08:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
08:00 - 08:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
08:30 - 09:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
09:00 - 09:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
09:30 - 10:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
10:00 - 10:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
10:30 - 11:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
11:00 - 11:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
11:30 - 12:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
12:00 - 12:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
12:30 - 13:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
13:00 - 13:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
13:30 - 14:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:00 - 14:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:30 - 15:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
15:00 - 15:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
15:30 - 16:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:00 - 16:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:30 - 17:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
17:00 - 17:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
17:30 - 18:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
18:00 - 18:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
18:30 - 19:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.006			0.006			0.012

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 02 - EMPLOYMENT/A - OFFICE
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 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
07:30 - 08:00	4	4211	0.012	4	4211	0.006	4	4211	0.018
08:00 - 08:30	4	4211	0.018	4	4211	0.000	4	4211	0.018
08:30 - 09:00	4	4211	0.018	4	4211	0.000	4	4211	0.018
09:00 - 09:30	4	4211	0.012	4	4211	0.000	4	4211	0.012
09:30 - 10:00	4	4211	0.012	4	4211	0.006	4	4211	0.018
10:00 - 10:30	4	4211	0.006	4	4211	0.000	4	4211	0.006
10:30 - 11:00	4	4211	0.006	4	4211	0.000	4	4211	0.006
11:00 - 11:30	4	4211	0.012	4	4211	0.000	4	4211	0.012
11:30 - 12:00	4	4211	0.018	4	4211	0.018	4	4211	0.036
12:00 - 12:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
12:30 - 13:00	4	4211	0.006	4	4211	0.012	4	4211	0.018
13:00 - 13:30	4	4211	0.024	4	4211	0.000	4	4211	0.024
13:30 - 14:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:00 - 14:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:30 - 15:00	4	4211	0.000	4	4211	0.006	4	4211	0.006
15:00 - 15:30	4	4211	0.000	4	4211	0.012	4	4211	0.012
15:30 - 16:00	4	4211	0.018	4	4211	0.012	4	4211	0.030
16:00 - 16:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
16:30 - 17:00	4	4211	0.000	4	4211	0.018	4	4211	0.018
17:00 - 17:30	4	4211	0.000	4	4211	0.012	4	4211	0.012
17:30 - 18:00	4	4211	0.000	4	4211	0.024	4	4211	0.024
18:00 - 18:30	4	4211	0.000	4	4211	0.006	4	4211	0.006
18:30 - 19:00	4	4211	0.000	4	4211	0.006	4	4211	0.006
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.174			0.150			0.324

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 02 - EMPLOYMENT/A - OFFICE
CARS
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 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
07:30 - 08:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
08:00 - 08:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
08:30 - 09:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
09:00 - 09:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
09:30 - 10:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
10:00 - 10:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
10:30 - 11:00	4	4211	0.006	4	4211	0.000	4	4211	0.006
11:00 - 11:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
11:30 - 12:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
12:00 - 12:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
12:30 - 13:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
13:00 - 13:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
13:30 - 14:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:00 - 14:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:30 - 15:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
15:00 - 15:30	4	4211	0.000	4	4211	0.006	4	4211	0.006
15:30 - 16:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:00 - 16:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:30 - 17:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
17:00 - 17:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
17:30 - 18:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
18:00 - 18:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
18:30 - 19:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.006			0.006			0.012

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 02 - EMPLOYMENT/A - OFFICE
LGVS
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 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
07:30 - 08:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
08:00 - 08:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
08:30 - 09:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
09:00 - 09:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
09:30 - 10:00	4	4211	0.006	4	4211	0.006	4	4211	0.012
10:00 - 10:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
10:30 - 11:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
11:00 - 11:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
11:30 - 12:00	4	4211	0.012	4	4211	0.012	4	4211	0.024
12:00 - 12:30	4	4211	0.012	4	4211	0.006	4	4211	0.018
12:30 - 13:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
13:00 - 13:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
13:30 - 14:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:00 - 14:30	4	4211	0.012	4	4211	0.012	4	4211	0.024
14:30 - 15:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
15:00 - 15:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
15:30 - 16:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:00 - 16:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:30 - 17:00	4	4211	0.012	4	4211	0.012	4	4211	0.024
17:00 - 17:30	4	4211	0.006	4	4211	0.006	4	4211	0.012
17:30 - 18:00	4	4211	0.000	4	4211	0.006	4	4211	0.006
18:00 - 18:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
18:30 - 19:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.072			0.072			0.144

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.

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TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
MOTOR CYCLES
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 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
07:30 - 08:00	4	4211	0.006	4	4211	0.000	4	4211	0.006
08:00 - 08:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
08:30 - 09:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
09:00 - 09:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
09:30 - 10:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
10:00 - 10:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
10:30 - 11:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
11:00 - 11:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
11:30 - 12:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
12:00 - 12:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
12:30 - 13:00	4	4211	0.012	4	4211	0.006	4	4211	0.018
13:00 - 13:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
13:30 - 14:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
14:00 - 14:30	4	4211	0.000	4	4211	0.006	4	4211	0.006
14:30 - 15:00	4	4211	0.000	4	4211	0.006	4	4211	0.006
15:00 - 15:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
15:30 - 16:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:00 - 16:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
16:30 - 17:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
17:00 - 17:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
17:30 - 18:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
18:00 - 18:30	4	4211	0.000	4	4211	0.000	4	4211	0.000
18:30 - 19:00	4	4211	0.000	4	4211	0.000	4	4211	0.000
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.018			0.018			0.036

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.

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Calculation Reference: AUDIT-656801-210526-0529

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 06 - HOTEL, FOOD & DRINK
Category : A - HOTELS
TOTAL VEHICLES

Selected regions and areas:

01	GREATER LONDON		
	GR	GREENWICH	1 days
05	EAST MIDLANDS		
	NT	NOTTINGHAMSHIRE	1 days
08	NORTH WEST		
	GM	GREATER MANCHESTER	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

Primary Filtering selection:

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

Parameter: Number of bedrooms
Actual Range: 24 to 151 (units:)
Range Selected by User: 4 to 483 (units:)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/13 to 26/11/20

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	2 days
Tuesday	1 days
Friday	1 days

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

Selected survey types:

Manual count	4 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:

Town Centre	2
Edge of Town Centre	2

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:

Built-Up Zone	3
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:

C1	4 days

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

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

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:

500,001 or More	4 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	4 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	4 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	3 days
4 Good	1 days

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

LIST OF SITES relevant to selection parameters

1	GM-06-A-08	IBIS		GREATER MANCHESTER
	PORTLAND STREET			
	MANCHESTER			
	Town Centre			
	Built-Up Zone			
	Total Number of bedrooms:		127	
	Survey date: MONDAY		*26/09/16*	*Survey Type: MANUAL*
2	GR-06-A-03	NOVOTEL		GREENWICH
	GREENWICH HIGH ROAD			
	GREENWICH			
	Edge of Town Centre			
	No Sub Category			
	Total Number of bedrooms:		151	
	Survey date: FRIDAY		*22/11/13*	*Survey Type: MANUAL*
3	NT-06-A-02	PREMIER INN		NOTTINGHAMSHIRE
	LONDON ROAD			
	NOTTINGHAM			
	Edge of Town Centre			
	Built-Up Zone			
	Total Number of bedrooms:		87	
	Survey date: MONDAY		*24/06/13*	*Survey Type: MANUAL*
4	TW-06-A-03	HOTEL		TYNE & WEAR
	SANDHILL			
	NEWCASTLE UPON TYNE			
	QUAYSIDE			
	Town Centre			
	Built-Up Zone			
	Total Number of bedrooms:		24	
	Survey date: TUESDAY		*14/06/16*	*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 06 - HOTEL, FOOD & DRINK/A - HOTELS
TOTAL VEHICLES
Calculation factor: 1 BEDRMS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	97	0.023	4	97	0.069	4	97	0.092
08:00 - 09:00	4	97	0.087	4	97	0.159	4	97	0.246
09:00 - 10:00	4	97	0.082	4	97	0.105	4	97	0.187
10:00 - 11:00	4	97	0.062	4	97	0.087	4	97	0.149
11:00 - 12:00	4	97	0.062	4	97	0.082	4	97	0.144
12:00 - 13:00	4	97	0.031	4	97	0.023	4	97	0.054
13:00 - 14:00	4	97	0.039	4	97	0.028	4	97	0.067
14:00 - 15:00	4	97	0.021	4	97	0.031	4	97	0.052
15:00 - 16:00	4	97	0.039	4	97	0.036	4	97	0.075
16:00 - 17:00	4	97	0.046	4	97	0.036	4	97	0.082
17:00 - 18:00	4	97	0.069	4	97	0.041	4	97	0.110
18:00 - 19:00	4	97	0.059	4	97	0.041	4	97	0.100
19:00 - 20:00	4	97	0.075	4	97	0.033	4	97	0.108
20:00 - 21:00	4	97	0.026	4	97	0.018	4	97	0.044
21:00 - 22:00	4	97	0.021	4	97	0.013	4	97	0.034
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.742			0.802			1.544

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

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

Parameter summary

Trip rate parameter range selected:	24 - 151 (units:)
Survey date date range:	01/01/13 - 26/11/20
Number of weekdays (Monday-Friday):	4
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 06 - HOTEL, FOOD & DRINK/A - HOTELS
TAXIS
Calculation factor: 1 BEDRMS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	97	0.005	4	97	0.005	4	97	0.010
08:00 - 09:00	4	97	0.005	4	97	0.005	4	97	0.010
09:00 - 10:00	4	97	0.008	4	97	0.008	4	97	0.016
10:00 - 11:00	4	97	0.005	4	97	0.005	4	97	0.010
11:00 - 12:00	4	97	0.008	4	97	0.008	4	97	0.016
12:00 - 13:00	4	97	0.000	4	97	0.000	4	97	0.000
13:00 - 14:00	4	97	0.008	4	97	0.008	4	97	0.016
14:00 - 15:00	4	97	0.003	4	97	0.003	4	97	0.006
15:00 - 16:00	4	97	0.003	4	97	0.003	4	97	0.006
16:00 - 17:00	4	97	0.003	4	97	0.003	4	97	0.006
17:00 - 18:00	4	97	0.010	4	97	0.010	4	97	0.020
18:00 - 19:00	4	97	0.010	4	97	0.010	4	97	0.020
19:00 - 20:00	4	97	0.015	4	97	0.015	4	97	0.030
20:00 - 21:00	4	97	0.005	4	97	0.005	4	97	0.010
21:00 - 22:00	4	97	0.008	4	97	0.008	4	97	0.016
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.096			0.096			0.192

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 06 - HOTEL, FOOD & DRINK/A - HOTELS
OGVS
Calculation factor: 1 BEDRMS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	97	0.003	4	97	0.003	4	97	0.006
08:00 - 09:00	4	97	0.005	4	97	0.005	4	97	0.010
09:00 - 10:00	4	97	0.005	4	97	0.005	4	97	0.010
10:00 - 11:00	4	97	0.000	4	97	0.000	4	97	0.000
11:00 - 12:00	4	97	0.000	4	97	0.000	4	97	0.000
12:00 - 13:00	4	97	0.005	4	97	0.005	4	97	0.010
13:00 - 14:00	4	97	0.000	4	97	0.000	4	97	0.000
14:00 - 15:00	4	97	0.000	4	97	0.000	4	97	0.000
15:00 - 16:00	4	97	0.000	4	97	0.000	4	97	0.000
16:00 - 17:00	4	97	0.000	4	97	0.000	4	97	0.000
17:00 - 18:00	4	97	0.000	4	97	0.000	4	97	0.000
18:00 - 19:00	4	97	0.000	4	97	0.000	4	97	0.000
19:00 - 20:00	4	97	0.000	4	97	0.000	4	97	0.000
20:00 - 21:00	4	97	0.000	4	97	0.000	4	97	0.000
21:00 - 22:00	4	97	0.000	4	97	0.000	4	97	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.018			0.018			0.036

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 06 - HOTEL, FOOD & DRINK/A - HOTELS
CYCLISTS
Calculation factor: 1 BEDRMS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	97	0.008	4	97	0.000	4	97	0.008
08:00 - 09:00	4	97	0.003	4	97	0.000	4	97	0.003
09:00 - 10:00	4	97	0.000	4	97	0.000	4	97	0.000
10:00 - 11:00	4	97	0.000	4	97	0.003	4	97	0.003
11:00 - 12:00	4	97	0.000	4	97	0.000	4	97	0.000
12:00 - 13:00	4	97	0.000	4	97	0.000	4	97	0.000
13:00 - 14:00	4	97	0.003	4	97	0.003	4	97	0.006
14:00 - 15:00	4	97	0.000	4	97	0.000	4	97	0.000
15:00 - 16:00	4	97	0.000	4	97	0.000	4	97	0.000
16:00 - 17:00	4	97	0.000	4	97	0.000	4	97	0.000
17:00 - 18:00	4	97	0.000	4	97	0.003	4	97	0.003
18:00 - 19:00	4	97	0.005	4	97	0.003	4	97	0.008
19:00 - 20:00	4	97	0.000	4	97	0.000	4	97	0.000
20:00 - 21:00	4	97	0.000	4	97	0.000	4	97	0.000
21:00 - 22:00	4	97	0.000	4	97	0.000	4	97	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.019			0.012			0.031

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 06 - HOTEL, FOOD & DRINK/A - HOTELS
CARS
Calculation factor: 1 BEDRMS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	97	0.013	4	97	0.033	4	97	0.046
08:00 - 09:00	4	97	0.072	4	97	0.111	4	97	0.183
09:00 - 10:00	4	97	0.046	4	97	0.077	4	97	0.123
10:00 - 11:00	4	97	0.044	4	97	0.075	4	97	0.119
11:00 - 12:00	4	97	0.036	4	97	0.046	4	97	0.082
12:00 - 13:00	4	97	0.018	4	97	0.013	4	97	0.031
13:00 - 14:00	4	97	0.021	4	97	0.008	4	97	0.029
14:00 - 15:00	4	97	0.010	4	97	0.013	4	97	0.023
15:00 - 16:00	4	97	0.013	4	97	0.023	4	97	0.036
16:00 - 17:00	4	97	0.028	4	97	0.021	4	97	0.049
17:00 - 18:00	4	97	0.046	4	97	0.018	4	97	0.064
18:00 - 19:00	4	97	0.028	4	97	0.010	4	97	0.038
19:00 - 20:00	4	97	0.021	4	97	0.026	4	97	0.047
20:00 - 21:00	4	97	0.013	4	97	0.008	4	97	0.021
21:00 - 22:00	4	97	0.008	4	97	0.000	4	97	0.008
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.417			0.482			0.899

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 06 - HOTEL, FOOD & DRINK/A - HOTELS
LGVS
Calculation factor: 1 BEDRMS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate	No. Days	Ave. BEDRMS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	97	0.003	4	97	0.005	4	97	0.008
08:00 - 09:00	4	97	0.003	4	97	0.008	4	97	0.011
09:00 - 10:00	4	97	0.015	4	97	0.010	4	97	0.025
10:00 - 11:00	4	97	0.013	4	97	0.010	4	97	0.023
11:00 - 12:00	4	97	0.010	4	97	0.015	4	97	0.025
12:00 - 13:00	4	97	0.008	4	97	0.003	4	97	0.011
13:00 - 14:00	4	97	0.000	4	97	0.008	4	97	0.008
14:00 - 15:00	4	97	0.000	4	97	0.000	4	97	0.000
15:00 - 16:00	4	97	0.005	4	97	0.005	4	97	0.010
16:00 - 17:00	4	97	0.003	4	97	0.003	4	97	0.006
17:00 - 18:00	4	97	0.003	4	97	0.000	4	97	0.003
18:00 - 19:00	4	97	0.003	4	97	0.000	4	97	0.003
19:00 - 20:00	4	97	0.000	4	97	0.000	4	97	0.000
20:00 - 21:00	4	97	0.000	4	97	0.000	4	97	0.000
21:00 - 22:00	4	97	0.000	4	97	0.000	4	97	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.066			0.067			0.133

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 C

Traffic Flow Matrices

CS CONSULTING
GROUP

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

2017 AM Peak (07:30-08:30) — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	82	756	**838**
Military Road	82	0	61	**143**
R148 West	1034	1	0	**1035**
TOTALS	**1117**	**83**	**816**	**2016**

2017 PM Peak (16:30-17:30) — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	58	1270	**1328**
Military Road	128	0	235	**363**
R148 West	646	0	0	**646**
TOTALS	**774**	**58**	**1505**	**2337**

2017 AM Peak — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	82	756	**838**
Military Road	84	0	61	**145**
R148 West	1035	0	0	**1035**
TOTALS	**1120**	**82**	**816**	**2018**

2017 PM Peak — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	58	1270	**1328**
Military Road	130	0	235	**365**
R148 West	646	0	0	**646**
TOTALS	**776**	**58**	**1505**	**2339**

2021 AM Peak — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	87	806	**893**
Military Road	90	0	65	**155**
R148 West	1104	0	0	**1104**
TOTALS	**1194**	**87**	**871**	**2152**

2021 PM Peak — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	62	1354	**1416**
Military Road	139	0	250	**389**
R148 West	689	0	0	**689**
TOTALS	**828**	**62**	**1604**	**2494**

2024 AM Peak — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	10	1	**11**
Military Road	8	0	0	**8**
R148 West	0	0	0	**0**
TOTALS	**8**	**10**	**1**	**19**

2024 PM Peak — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	8	3	**11**
Military Road	6	0	3	**9**
R148 West	0	0	0	**0**
TOTALS	**6**	**8**	**6**	**20**

2024 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	102	847	**949**
Military Road	102	0	68	**170**
R148 West	1159	0	0	**1159**
TOTALS	**1261**	**102**	**915**	**2278**

2024 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	73	1424	**1497**
Military Road	152	0	266	**418**
R148 West	723	0	0	**723**
TOTALS	**875**	**73**	**1690**	**2638**

2024 AM Peak — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	7	1	**8**
Military Road	0	0	32	**32**
R148 West	0	78	0	**78**
TOTALS	**0**	**85**	**33**	**118**

2024 PM Peak — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	11	-9	**2**
Military Road	0	0	89	**89**
R148 West	0	23	0	**23**
TOTALS	**0**	**34**	**80**	**114**

2024 AM Peak — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	109	848	**957**
Military Road	102	0	100	**202**
R148 West	1159	78	0	**1237**
TOTALS	**1261**	**187**	**948**	**2396**

2024 PM Peak — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	84	1415	**1499**
Military Road	152	0	355	**507**
R148 West	723	23	0	**746**
TOTALS	**875**	**107**	**1770**	**2752**

2024 AM Peak — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	3	1	**4**
Military Road	7	0	0	**7**
R148 West	0	0	0	**0**
TOTALS	**7**	**3**	**1**	**11**

2024 PM Peak — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	12	7	**19**
Military Road	6	0	0	**6**
R148 West	0	0	0	**0**
TOTALS	**6**	**12**	**7**	**25**

2024 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	105	848	**953**
Military Road	109	0	68	**177**
R148 West	1159	0	0	**1159**
TOTALS	**1268**	**105**	**916**	**2289**

2024 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	85	1431	**1516**
Military Road	158	0	266	**424**
R148 West	723	0	0	**723**
TOTALS	**881**	**85**	**1697**	**2663**

2029 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	109	917	**1026**
Military Road	110	0	74	**184**
R148 West	1255	0	0	**1255**
TOTALS	**1365**	**109**	**991**	**2465**

2029 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	78	1543	**1621**
Military Road	164	0	288	**452**
R148 West	783	0	0	**783**
TOTALS	**947**	**78**	**1831**	**2856**

2029 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	112	918	**1030**
Military Road	117	0	74	**191**
R148 West	1255	0	0	**1255**
TOTALS	**1372**	**112**	**992**	**2476**

2029 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	90	1550	**1640**
Military Road	170	0	288	**458**
R148 West	783	0	0	**783**
TOTALS	**953**	**90**	**1838**	**2881**

2039 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	116	976	**1092**
Military Road	117	0	78	**195**
R148 West	1336	0	0	**1336**
TOTALS	**1453**	**116**	**1054**	**2623**

2039 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	83	1641	**1724**
Military Road	174	0	306	**480**
R148 West	833	0	0	**833**
TOTALS	**1007**	**83**	**1947**	**3037**

2039 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	119	977	**1096**
Military Road	124	0	78	**202**
R148 West	1336	0	0	**1336**
TOTALS	**1460**	**119**	**1055**	**2634**

2039 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	95	1648	**1743**
Military Road	180	0	306	**486**
R148 West	833	0	0	**833**
TOTALS	**1013**	**95**	**1954**	**3062**

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

2017 Light Vehicles AADT — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	763	9388	**10150**
Military Road	1130	0	1628	**2758**
R148 West	8887	19	0	**8906**
TOTALS	**10017**	**782**	**11016**	**21814**

2017 Heavy Vehicles AADT — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	5	985	**990**
Military Road	3	0	62	**65**
R148 West	677	0	0	**677**
TOTALS	**680**	**5**	**1047**	**1732**

2017 Light Vehicles — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	763	9388	**10150**
Military Road	1154	0	1628	**2782**
R148 West	8906	0	0	**8906**
TOTALS	**10060**	**763**	**11016**	**21838**

2017 Heavy Vehicles — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	5	985	**990**
Military Road	3	0	62	**65**
R148 West	677	0	0	**677**
TOTALS	**680**	**5**	**1047**	**1732**

2021 Light Vehicles — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	814	10011	**10825**
Military Road	1230	0	1736	**2966**
R148 West	9497	0	0	**9497**
TOTALS	**10727**	**814**	**11747**	**23288**

2021 Heavy Vehicles — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	6	1106	**1112**
Military Road	3	0	70	**73**
R148 West	760	0	0	**760**
TOTALS	**763**	**6**	**1176**	**1945**

2024 Light Vehicles — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	49	16	**65**
Military Road	40	0	4	**44**
R148 West	0	0	0	**0**
TOTALS	**40**	**49**	**20**	**109**

2024 Heavy Vehicles — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	0	5	**5**
Military Road	0	0	0	**0**
R148 West	0	0	0	**0**
TOTALS	**0**	**0**	**5**	**5**

2024 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	903	10521	**11424**
Military Road	1331	0	1826	**3157**
R148 West	9967	0	0	**9967**
TOTALS	**11298**	**903**	**12347**	**24548**

2024 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	7	1212	**1219**
Military Road	3	0	76	**79**
R148 West	830	0	0	**830**
TOTALS	**833**	**7**	**1288**	**2128**

2024 Light Vehicles — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	120	-105	**15**
Military Road	0	0	647	**647**
R148 West	0	735	0	**735**
TOTALS	**0**	**855**	**542**	**1397**

2024 Heavy Vehicles — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	6	-6	**0**
Military Road	0	0	9	**9**
R148 West	0	3	0	**3**
TOTALS	**0**	**9**	**3**	**12**

2024 Light Vehicles — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	1023	10416	**11439**
Military Road	1331	0	2473	**3804**
R148 West	9967	735	0	**10702**
TOTALS	**11298**	**1758**	**12889**	**25945**

2024 Heavy Vehicles — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	13	1206	**1219**
Military Road	3	0	85	**88**
R148 West	830	3	0	**833**
TOTALS	**833**	**16**	**1291**	**2140**

2024 Light Vehicles — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	85	34	**119**
Military Road	78	0	0	**78**
R148 West	0	0	0	**0**
TOTALS	**78**	**85**	**34**	**197**

2024 Heavy Vehicles — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	0	11	**11**
Military Road	0	0	0	**0**
R148 West	0	0	0	**0**
TOTALS	**0**	**0**	**11**	**11**

2024 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	988	10555	**11543**
Military Road	1409	0	1826	**3235**
R148 West	9967	0	0	**9967**
TOTALS	**11376**	**988**	**12381**	**24745**

2024 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	7	1223	**1230**
Military Road	3	0	76	**79**
R148 West	830	0	0	**830**
TOTALS	**833**	**7**	**1299**	**2139**

2029 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	974	11400	**12374**
Military Road	1439	0	1978	**3417**
R148 West	10800	0	0	**10800**
TOTALS	**12239**	**974**	**13378**	**26591**

2029 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	8	1401	**1409**
Military Road	4	0	88	**92**
R148 West	960	0	0	**960**
TOTALS	**964**	**8**	**1489**	**2461**

2029 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	1059	11434	**12493**
Military Road	1517	0	1978	**3495**
R148 West	10800	0	0	**10800**
TOTALS	**12317**	**1059**	**13412**	**26788**

2029 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	8	1412	**1420**
Military Road	4	0	88	**92**
R148 West	960	0	0	**960**
TOTALS	**964**	**8**	**1500**	**2472**

2039 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	1033	12127	**13160**
Military Road	1529	0	2104	**3633**
R148 West	11490	0	0	**11490**
TOTALS	**13019**	**1033**	**14231**	**28283**

2039 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	9	1628	**1637**
Military Road	5	0	102	**107**
R148 West	1116	0	0	**1116**
TOTALS	**1121**	**9**	**1730**	**2860**

2039 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	1118	12161	**13279**
Military Road	1607	0	2104	**3711**
R148 West	11490	0	0	**11490**
TOTALS	**13097**	**1118**	**14265**	**28480**

2039 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	Military Road	R148 West	TOTALS
R148 East	0	9	1639	**1648**
Military Road	5	0	102	**107**
R148 West	1116	0	0	**1116**
TOTALS	**1121**	**9**	**1741**	**2871**

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

2017 AM Peak (07:30-08:30) — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	28	133	**161**
HSQ Parking	28	0	10	**38**
Military Rd North	47	36	0	**83**
TOTALS	**75**	**64**	**143**	**282**

2017 PM Peak (16:30-17:30) — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	29	343	**372**
HSQ Parking	25	0	20	**45**
Military Rd North	40	18	0	**58**
TOTALS	**65**	**47**	**363**	**475**

2017 AM Peak — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	28	133	**161**
HSQ Parking	28	0	12	**40**
Military Rd North	47	36	0	**83**
TOTALS	**75**	**64**	**145**	**284**

2017 PM Peak — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	29	343	**372**
HSQ Parking	25	0	22	**47**
Military Rd North	40	18	0	**58**
TOTALS	**65**	**47**	**365**	**477**

2021 AM Peak — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	30	142	**172**
HSQ Parking	30	0	13	**43**
Military Rd North	50	38	0	**88**
TOTALS	**80**	**68**	**155**	**303**

2021 PM Peak — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	31	366	**397**
HSQ Parking	27	0	23	**50**
Military Rd North	43	19	0	**62**
TOTALS	**70**	**50**	**389**	**509**

2024 AM Peak — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	6	1	**7**
HSQ Parking	15	0	7	**22**
Military Rd North	3	7	0	**10**
TOTALS	**18**	**13**	**8**	**39**

2024 PM Peak — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	10	4	**14**
HSQ Parking	6	0	5	**11**
Military Rd North	2	6	0	**8**
TOTALS	**8**	**16**	**9**	**33**

2024 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	37	150	**187**
HSQ Parking	46	0	20	**66**
Military Rd North	56	47	0	**103**
TOTALS	**102**	**84**	**170**	**356**

2024 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	42	388	**430**
HSQ Parking	34	0	30	**64**
Military Rd North	47	26	0	**73**
TOTALS	**81**	**68**	**418**	**567**

2024 AM Peak — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	6	**6**
HSQ Parking	0	0	26	**26**
Military Rd North	0	85	0	**85**
TOTALS	**0**	**85**	**32**	**117**

2024 PM Peak — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	2	**2**
HSQ Parking	0	0	87	**87**
Military Rd North	0	34	0	**34**
TOTALS	**0**	**34**	**89**	**123**

2024 AM Peak — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	37	156	**193**
HSQ Parking	46	0	46	**92**
Military Rd North	56	132	0	**188**
TOTALS	**102**	**169**	**202**	**473**

2024 PM Peak — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	42	390	**432**
HSQ Parking	34	0	117	**151**
Military Rd North	47	60	0	**107**
TOTALS	**81**	**102**	**507**	**690**

2024 AM Peak — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	2	0	**2**
HSQ Parking	16	0	7	**23**
Military Rd North	0	3	0	**3**
TOTALS	**16**	**5**	**7**	**28**

2024 PM Peak — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	19	0	**19**
HSQ Parking	7	0	6	**13**
Military Rd North	0	12	0	**12**
TOTALS	**7**	**31**	**6**	**44**

2024 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	39	150	**189**
HSQ Parking	62	0	27	**89**
Military Rd North	56	50	0	**106**
TOTALS	**118**	**89**	**177**	**384**

2024 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	61	388	**449**
HSQ Parking	41	0	36	**77**
Military Rd North	47	38	0	**85**
TOTALS	**88**	**99**	**424**	**611**

2029 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	40	162	**202**
HSQ Parking	49	0	22	**71**
Military Rd North	60	51	0	**111**
TOTALS	**109**	**91**	**184**	**384**

2029 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	45	420	**465**
HSQ Parking	36	0	32	**68**
Military Rd North	51	28	0	**79**
TOTALS	**87**	**73**	**452**	**612**

2029 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	42	162	**204**
HSQ Parking	65	0	29	**94**
Military Rd North	60	54	0	**114**
TOTALS	**125**	**96**	**191**	**412**

2029 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	64	420	**484**
HSQ Parking	43	0	38	**81**
Military Rd North	51	40	0	**91**
TOTALS	**94**	**104**	**458**	**656**

2039 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	42	173	**215**
HSQ Parking	51	0	22	**73**
Military Rd North	64	53	0	**117**
TOTALS	**115**	**95**	**195**	**405**

2039 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	47	446	**493**
HSQ Parking	38	0	33	**71**
Military Rd North	54	29	0	**83**
TOTALS	**92**	**76**	**479**	**647**

2039 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	44	173	**217**
HSQ Parking	67	0	29	**96**
Military Rd North	64	56	0	**120**
TOTALS	**131**	**100**	**202**	**433**

2039 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	66	446	**512**
HSQ Parking	45	0	39	**84**
Military Rd North	54	41	0	**95**
TOTALS	**99**	**107**	**485**	**691**

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

2017 Light Vehicles AADT — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	349	2490	**2839**
HSQ Parking	384	0	188	**572**
Military Rd North	510	279	0	**789**
TOTALS	**894**	**628**	**2678**	**4199**

2017 Heavy Vehicles AADT — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	102	**102**
HSQ Parking	0	0	0	**0**
Military Rd North	8	0	0	**8**
TOTALS	**8**	**0**	**102**	**110**

2017 Light Vehicles — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	349	2490	**2839**
HSQ Parking	384	0	212	**596**
Military Rd North	510	279	0	**789**
TOTALS	**894**	**628**	**2702**	**4224**

2017 Heavy Vehicles — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	102	**102**
HSQ Parking	0	0	0	**0**
Military Rd North	8	0	0	**8**
TOTALS	**8**	**0**	**102**	**110**

2021 Light Vehicles — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	372	2655	**3027**
HSQ Parking	409	0	226	**635**
Military Rd North	544	298	0	**842**
TOTALS	**953**	**670**	**2881**	**4504**

2021 Heavy Vehicles — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	115	**115**
HSQ Parking	0	0	0	**0**
Military Rd North	9	0	0	**9**
TOTALS	**9**	**0**	**115**	**124**

2024 Light Vehicles — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	51	7	**58**
HSQ Parking	68	0	37	**105**
Military Rd North	8	41	0	**49**
TOTALS	**76**	**92**	**44**	**212**

2024 Heavy Vehicles — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	0	**0**
HSQ Parking	0	0	0	**0**
Military Rd North	0	0	0	**0**
TOTALS	**0**	**0**	**0**	**0**

2024 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	441	2794	**3235**
HSQ Parking	497	0	274	**771**
Military Rd North	579	353	0	**932**
TOTALS	**1076**	**794**	**3068**	**4938**

2024 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	125	**125**
HSQ Parking	0	0	0	**0**
Military Rd North	10	0	0	**10**
TOTALS	**10**	**0**	**125**	**135**

2024 Light Vehicles — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	20	**20**
HSQ Parking	0	0	627	**627**
Military Rd North	0	855	0	**855**
TOTALS	**0**	**855**	**647**	**1502**

2024 Heavy Vehicles — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	0	**0**
HSQ Parking	0	0	9	**9**
Military Rd North	0	9	0	**9**
TOTALS	**0**	**9**	**9**	**18**

2024 Light Vehicles — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	441	2814	**3255**
HSQ Parking	497	0	901	**1398**
Military Rd North	579	1208	0	**1787**
TOTALS	**1076**	**1649**	**3715**	**6440**

2024 Heavy Vehicles — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	125	**125**
HSQ Parking	0	0	9	**9**
Military Rd North	10	9	0	**19**
TOTALS	**10**	**9**	**134**	**153**

2024 Light Vehicles — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	107	0	**107**
HSQ Parking	142	0	78	**220**
Military Rd North	0	85	0	**85**
TOTALS	**142**	**192**	**78**	**412**

2024 Heavy Vehicles — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	0	**0**
HSQ Parking	0	0	0	**0**
Military Rd North	0	0	0	**0**
TOTALS	**0**	**0**	**0**	**0**

2024 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	548	2794	**3342**
HSQ Parking	639	0	352	**991**
Military Rd North	579	438	0	**1017**
TOTALS	**1218**	**986**	**3146**	**5350**

2024 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	125	**125**
HSQ Parking	0	0	0	**0**
Military Rd North	10	0	0	**10**
TOTALS	**10**	**0**	**125**	**135**

2029 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	474	3027	**3501**
HSQ Parking	533	0	294	**827**
Military Rd North	626	379	0	**1005**
TOTALS	**1159**	**853**	**3321**	**5333**

2029 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	145	**145**
HSQ Parking	0	0	0	**0**
Military Rd North	11	0	0	**11**
TOTALS	**11**	**0**	**145**	**156**

2029 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	581	3027	**3608**
HSQ Parking	675	0	372	**1047**
Military Rd North	626	464	0	**1090**
TOTALS	**1301**	**1045**	**3399**	**5745**

2029 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	145	**145**
HSQ Parking	0	0	0	**0**
Military Rd North	11	0	0	**11**
TOTALS	**11**	**0**	**145**	**156**

2039 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	501	3219	**3720**
HSQ Parking	563	0	310	**873**
Military Rd North	666	401	0	**1067**
TOTALS	**1229**	**902**	**3529**	**5660**

2039 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	168	**168**
HSQ Parking	0	0	0	**0**
Military Rd North	13	0	0	**13**
TOTALS	**13**	**0**	**168**	**181**

2039 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	608	3219	**3827**
HSQ Parking	705	0	388	**1093**
Military Rd North	666	486	0	**1152**
TOTALS	**1371**	**1094**	**3607**	**6072**

2039 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	Military Rd South	HSQ Parking	Military Rd North	TOTALS
Military Rd South	0	0	168	**168**
HSQ Parking	0	0	0	**0**
Military Rd North	13	0	0	**13**
TOTALS	**13**	**0**	**168**	**181**

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

2017 AM Peak (07:30-08:30) — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	7	806	**813**
HSQ Parking	2	0	24	**26**
R148 West	1033	73	0	**1106**
TOTALS	**1035**	**80**	**830**	**1945**

2017 PM Peak (16:30-17:30) — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	10	1528	**1538**
HSQ Parking	2	0	82	**84**
R148 West	644	22	0	**666**
TOTALS	**646**	**32**	**1610**	**2288**

2017 AM Peak — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	7	806	**813**
HSQ Parking	0	0	24	**24**
R148 West	1033	73	0	**1106**
TOTALS	**1033**	**80**	**830**	**1943**

2017 PM Peak — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	10	1528	**1538**
HSQ Parking	0	0	82	**82**
R148 West	644	22	0	**666**
TOTALS	**644**	**32**	**1610**	**2286**

2021 AM Peak — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	7	860	**867**
HSQ Parking	0	0	26	**26**
R148 West	1102	78	0	**1180**
TOTALS	**1102**	**85**	**886**	**2073**

2021 PM Peak — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	11	1629	**1640**
HSQ Parking	0	0	87	**87**
R148 West	687	23	0	**710**
TOTALS	**687**	**34**	**1716**	**2437**

2024 AM Peak — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	1	0	**1**
HSQ Parking	0	0	13	**13**
R148 West	0	15	0	**15**
TOTALS	**0**	**16**	**13**	**29**

2024 PM Peak — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	3	3	**6**
HSQ Parking	0	0	20	**20**
R148 West	0	7	0	**7**
TOTALS	**0**	**10**	**23**	**33**

2024 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	9	902	**911**
HSQ Parking	0	0	40	**40**
R148 West	1156	97	0	**1253**
TOTALS	**1156**	**106**	**942**	**2204**

2024 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	14	1713	**1727**
HSQ Parking	0	0	112	**112**
R148 West	721	32	0	**753**
TOTALS	**721**	**46**	**1825**	**2592**

2024 AM Peak — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	7	26	**33**
HSQ Parking	0	0	-11	**-11**
R148 West	78	-52	0	**26**
TOTALS	**78**	**-45**	**15**	**48**

2024 PM Peak — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	-7	87	**80**
HSQ Parking	0	0	-47	**-47**
R148 West	23	-12	0	**11**
TOTALS	**23**	**-19**	**40**	**44**

2024 AM Peak — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	16	928	**944**
HSQ Parking	0	0	29	**29**
R148 West	1234	45	0	**1279**
TOTALS	**1234**	**61**	**957**	**2252**

2024 PM Peak — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	7	1800	**1807**
HSQ Parking	0	0	65	**65**
R148 West	744	20	0	**764**
TOTALS	**744**	**27**	**1865**	**2636**

2024 AM Peak — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	1	0	**1**
HSQ Parking	0	0	14	**14**
R148 West	0	6	0	**6**
TOTALS	**0**	**7**	**14**	**21**

2024 PM Peak — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	7	0	**7**
HSQ Parking	0	0	23	**23**
R148 West	0	14	0	**14**
TOTALS	**0**	**21**	**23**	**44**

2024 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	10	902	**912**
HSQ Parking	0	0	54	**54**
R148 West	1156	103	0	**1259**
TOTALS	**1156**	**113**	**956**	**2225**

2024 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	21	1713	**1734**
HSQ Parking	0	0	135	**135**
R148 West	721	46	0	**767**
TOTALS	**721**	**67**	**1848**	**2636**

2029 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	9	977	**986**
HSQ Parking	0	0	42	**42**
R148 West	1253	104	0	**1357**
TOTALS	**1253**	**113**	**1019**	**2385**

2029 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	15	1856	**1871**
HSQ Parking	0	0	119	**119**
R148 West	781	34	0	**815**
TOTALS	**781**	**49**	**1975**	**2805**

2029 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	10	977	**987**
HSQ Parking	0	0	56	**56**
R148 West	1253	110	0	**1363**
TOTALS	**1253**	**120**	**1033**	**2406**

2029 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	22	1856	**1878**
HSQ Parking	0	0	142	**142**
R148 West	781	48	0	**829**
TOTALS	**781**	**70**	**1998**	**2849**

2039 AM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	10	1040	**1050**
HSQ Parking	0	0	44	**44**
R148 West	1333	109	0	**1442**
TOTALS	**1333**	**119**	**1084**	**2536**

2039 PM Peak — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	16	1974	**1990**
HSQ Parking	0	0	126	**126**
R148 West	831	35	0	**866**
TOTALS	**831**	**51**	**2100**	**2982**

2039 AM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	11	1040	**1051**
HSQ Parking	0	0	58	**58**
R148 West	1333	115	0	**1448**
TOTALS	**1333**	**126**	**1098**	**2557**

2039 PM Peak — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	23	1974	**1997**
HSQ Parking	0	0	149	**149**
R148 West	831	49	0	**880**
TOTALS	**831**	**72**	**2123**	**3026**

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

2017 Light Vehicles AADT — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	113	10996	**11109**
HSQ Parking	24	0	588	**612**
R148 West	8434	690	0	**9123**
TOTALS	**8458**	**802**	**11584**	**20844**

2017 Heavy Vehicles AADT — **SURVEYED TRAFFIC FLOWS** (unaltered)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	5	1081	**1087**
HSQ Parking	0	0	8	**8**
R148 West	888	3	0	**891**
TOTALS	**888**	**8**	**1089**	**1986**

2017 Light Vehicles — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	113	10996	**11109**
HSQ Parking	0	0	588	**588**
R148 West	8434	690	0	**9123**
TOTALS	**8434**	**802**	**11584**	**20820**

2017 Heavy Vehicles — **SURVEYED TRAFFIC FLOWS** (illegal manoeuvres removed and reassigned)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	5	1081	**1087**
HSQ Parking	0	0	8	**8**
R148 West	888	3	0	**891**
TOTALS	**888**	**8**	**1089**	**1986**

2021 Light Vehicles — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	120	11726	**11846**
HSQ Parking	0	0	627	**627**
R148 West	8994	735	0	**9729**
TOTALS	**8994**	**855**	**12353**	**22202**

2021 Heavy Vehicles — **BASELINE TRAFFIC FLOWS** (surveyed flows + TII growth factor)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	6	1215	**1221**
HSQ Parking	0	0	9	**9**
R148 West	998	3	0	**1001**
TOTALS	**998**	**9**	**1224**	**2231**

2024 Light Vehicles — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	16	4	**20**
HSQ Parking	0	0	104	**104**
R148 West	0	101	0	**101**
TOTALS	**0**	**117**	**108**	**225**

2024 Heavy Vehicles — **OTHER DEVELOPMENT FLOWS** (committed OPW dev. + associated HSQ dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	5	0	**5**
HSQ Parking	0	0	7	**7**
R148 West	0	2	0	**2**
TOTALS	**0**	**7**	**7**	**14**

2024 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	142	12310	**12452**
HSQ Parking	0	0	762	**762**
R148 West	9438	873	0	**10311**
TOTALS	**9438**	**1015**	**13072**	**23525**

2024 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	12	1325	**1337**
HSQ Parking	0	0	17	**17**
R148 West	1089	5	0	**1094**
TOTALS	**1089**	**17**	**1342**	**2448**

2024 Light Vehicles — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	-85	627	**542**
HSQ Parking	0	0	-547	**-547**
R148 West	735	-690	0	**45**
TOTALS	**735**	**-775**	**80**	**40**

2024 Heavy Vehicles — **SUBJECT DEVELOPMENT FLOWS CONSTRUCTION STAGE**

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	-6	9	**3**
HSQ Parking	0	0	31	**31**
R148 West	3	37	0	**40**
TOTALS	**3**	**31**	**40**	**74**

2024 Light Vehicles — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	57	12937	**12994**
HSQ Parking	0	0	215	**215**
R148 West	10173	183	0	**10356**
TOTALS	**10173**	**240**	**13152**	**23565**

2024 Heavy Vehicles — **DURING SUBJECT DEVELOPMENT CONSTRUCTION** (surveyed + TII growth + other devs. + subject dev. const.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	6	1334	**1340**
HSQ Parking	0	0	48	**48**
R148 West	1092	42	0	**1134**
TOTALS	**1092**	**48**	**1382**	**2522**

2024 Light Vehicles — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	34	0	**34**
HSQ Parking	0	0	217	**217**
R148 West	0	211	0	**211**
TOTALS	**0**	**245**	**217**	**462**

2024 Heavy Vehicles — **SUBJECT DEVELOPMENT FLOWS OPERATIONAL STAGE**

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	11	0	**11**
HSQ Parking	0	0	17	**17**
R148 West	0	6	0	**6**
TOTALS	**0**	**17**	**17**	**34**

2024 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	176	12310	**12486**
HSQ Parking	0	0	979	**979**
R148 West	9438	1084	0	**10522**
TOTALS	**9438**	**1260**	**13289**	**23987**

2024 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	23	1325	**1348**
HSQ Parking	0	0	34	**34**
R148 West	1089	11	0	**1100**
TOTALS	**1089**	**34**	**1359**	**2482**

2029 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	153	13339	**13492**
HSQ Parking	0	0	817	**817**
R148 West	10228	937	0	**11165**
TOTALS	**10228**	**1090**	**14156**	**25474**

2029 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	13	1533	**1546**
HSQ Parking	0	0	18	**18**
R148 West	1259	6	0	**1265**
TOTALS	**1259**	**19**	**1551**	**2829**

2029 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	187	13339	**13526**
HSQ Parking	0	0	1034	**1034**
R148 West	10228	1148	0	**11376**
TOTALS	**10228**	**1335**	**14373**	**25936**

2029 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	24	1533	**1557**
HSQ Parking	0	0	35	**35**
R148 West	1259	12	0	**1271**
TOTALS	**1259**	**36**	**1568**	**2863**

2039 Light Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	161	14190	**14351**
HSQ Parking	0	0	862	**862**
R148 West	10880	991	0	**11871**
TOTALS	**10880**	**1152**	**15052**	**27084**

2039 Heavy Vehicles — **WITHOUT SUBJECT DEVELOPMENT** (surveyed flows + TII growth factor + other developments)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	14	1782	**1796**
HSQ Parking	0	0	20	**20**
R148 West	1464	6	0	**1470**
TOTALS	**1464**	**20**	**1802**	**3286**

2039 Light Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	195	14190	**14385**
HSQ Parking	0	0	1079	**1079**
R148 West	10880	1202	0	**12082**
TOTALS	**10880**	**1397**	**15269**	**27546**

2039 Heavy Vehicles — **WITH SUBJECT DEVELOPMENT IN PLACE** (surveyed + TII growth factor + other devs. + subject dev.)

From \ To	R148 East	HSQ Parking	R148 West	TOTALS
R148 East	0	25	1782	**1807**
HSQ Parking	0	0	37	**37**
R148 West	1464	12	0	**1476**
TOTALS	**1464**	**37**	**1819**	**3320**

Appendix D

TRANSYT Modelling Results

CS CONSULTING
GROUP

TRANSYT 16

Version: 16.0.1.8473

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:39:58

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2021 Baseline				
Network	D1	229.79	14.53	83% (TS 1C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D1 - 2021 Baseline, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:37:34	17/09/2021 20:37:37	3.18	07:30	100	229.79	14.53	82.88	1C/1	0	0	1C/1	3Ax/1	1C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2021 Baseline	AM				07:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	30	142
	2-2	30	0	13
	2-3	50	38	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	50
	3		2-1	2-2	2A/1, 2Bx/1	Normal	30
	4		2-1	2-3	2A/1, 2Cx/1	Normal	142
	5		2-2	2-3	2B/1, 2Cx/1	Normal	13
	6		2-2	2-1	2B/1, 2Ax/1	Normal	30
	7		2-3	2-2	2C/2, 2Bx/1	Normal	38

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	87	806
	1-2	90	0	65
	1-3	1104	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	1104
	2		1-1	1-3	1A/2, 1Cx/1	Normal	403
	3		1-1	1-3	1A/1, 1Cx/1	Normal	403
	4		1-1	1-2	1A/1, 1Bx/1	Normal	87
	6		1-2	1-3	1B/1, 1Cx/1	Normal	65
	7		1-2	1-1	1B/2, 1Ax/1	Normal	90

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	7	860
	3-2	0	0	26
	3-3	1102	78	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	26
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	78
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1102
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	430
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	430
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	7

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	59, 70, 78	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

		To							
		A	B	C	D	E	F	G	H
From	A			5	5		5	5	
	B			5	5		5		
	C	5	5					5	
	D	5	5			5		5	5
	E				5				5
	F	8	8						
	G	13		13	13				
	H				8	8			

Banned Stage transitions for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									

Interstage Matrix for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1	0	5	5	5	5	5	5	5	5
	2	8	0	8	5	8	8	5	8	5
	3	13	13	0	5	13	13	13	5	5
	4	13	13	8	0	13	13	13	8	5
	5	8	8	8	8	0	5	5	5	5
	6	8	8	8	8	5	0	5	5	5
	7	8	8	8	8	8	8	0	8	5
	8	13	13	8	8	13	13	13	0	5
	9	13	13	8	8	13	13	13	8	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,B,E	91	59	68	1	5
	2	✓	5	C,D,F	64	70	6	1	5
	3	✓	9	F,G,H	75	78	3	1	3

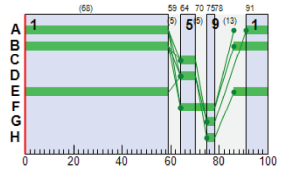
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	91	59	68
	B	1	✓	86	59	73
	C	1	✓	64	70	6
	D	1	✓	64	70	6
	E	1	✓	86	59	73
	F	1	✓	64	78	14
	G	1	✓	75	78	3
	H	1	✓	75	78	3

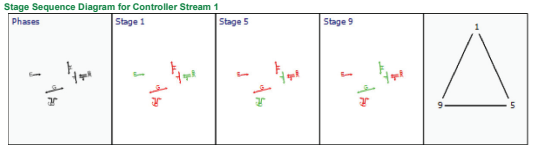
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	91	59	68
1A	2	1	1	B	86	59	73
1B	1	1	1	C	64	70	6
1B	2	1	1	D	64	70	6
1C	1	1	1	E	86	59	73

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	38, 57, 65	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5						5
	C						5	
	D	5						5
	E	10						
	F			8				
	G		14		14			

Banned Stage transitions for Controller Stream 3

		To						
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	14	14	14	5	14	5
	2	8	0	14	14	14	8	14	5
	3	10	10	0	5	0	5	5	5
	4	10	10	8	0	8	8	0	5
	5	10	10	0	5	0	5	5	5
	6	10	10	14	14	14	0	14	5
	7	10	10	8	0	8	8	0	5
	8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	75	38	63	1	5
	2	✓	3	B,C,E	52	57	5	1	5
	3	✓	7	D,E,F	62	65	3	1	3

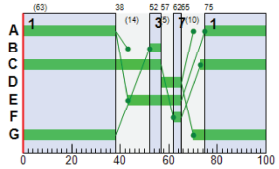
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	75	38	63
	B	1	✓	52	57	5
	C	1	✓	73	57	84
	D	1	✓	57	65	8
	E	1	✓	43	65	22
	F	1	✓	62	65	3
	G	1	✓	70	38	68

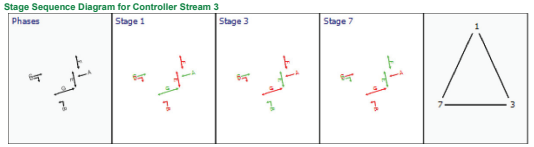
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	52	57	5
3C	1	3	3	C	73	57	84
3C	2	3	3	D	57	65	8
3A1	1	3	3	A	75	38	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	490 <	1800	68	0.00	39	128	11.01	7.55	41.28	5.85 +	4.35	100	100	0.00	17.13
	2	S	1	1	B	403	1800	73	0.00	30	197	8.41	4.95	32.00	3.76	2.98	100	100	0.00	9.48
1Ax	1					1194	Unrestricted	100	8.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	65	1800	6	0.00	52	74	65.84	59.74	109.12	2.00	1.95	100	100	0.00	16.21
	2	R	1	1	D	90	1800	6	0.00	71	26	84.58	78.45	126.17	3.25	3.15	100	100	0.00	29.27
1Bx	1		8			87	1800	100	31.00	5	1762	7.33	0.05	0.00	0.00		100	100	0.00	0.02

1C	1	S/R	1	1	E	1104	1800	73	0.00	83	9	31.12	12.60	42.10	14.06	9.85	100	100	0.00	60.69
1Cx	1		7			871	3600	100	9.00	24	272	9.57	0.16	0.00	0.04		100	100	0.00	0.55
2A	1	S/L	2			172	9999	100	0.00	2	5132	2.19	0.00	0.00	0.00		100	100	0.00	0.00
2Ax	1					80	Unrestricted	100	30.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			43	475	100	100.00	9	893	2.75	0.57	0.00	0.01		100	100	0.00	0.10
2Bx	1					68	Unrestricted	100	31.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			50	1800	100	82.00	3	3140	4.97	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			38	642	100	86.00	6	1421	5.24	0.26	0.00	0.00		100	100	0.00	0.04
2Cx	1		8			155	1800	100	0.00	9	945	3.02	0.09	0.00	0.00		100	100	0.00	0.06
3Ax	1		7			1102	1800	100	5.00	61	47	12.48	1.57	0.00	0.48		100	100	0.00	6.84
3B	1	L	3	3	B	26	3600	5	5.00	12	648	48.32	45.79	93.95	0.69	0.69	100	100	0.00	5.00
3C	1	S	3	3	C	1102 <	1800	84	0.00	72	25	11.75	5.91	37.34	12.55 +	5.51	100	100	0.00	30.84
	2	R	3	3	D	78	1800	8	0.00	48	87	59.28	53.44	103.49	2.28	2.19	100	100	0.00	17.45
3Cx	1					886	Unrestricted	100	19.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	860 <	3600	63	0.00	37	141	10.80	8.94	43.61	10.73 +	8.52	100	100	0.00	35.02
3Bx1	1		4			78	1800	100	90.00	4	1977	4.68	0.05	0.00	0.00		100	100	0.00	0.01
3A2	1		6			437	1800	100	28.00	24	271	18.64	0.32	0.00	0.04		100	100	0.00	0.55
	2		6			430	1800	100	28.00	24	277	18.66	0.31	0.00	0.04		100	100	0.00	0.53
3Bx2	1					85	Unrestricted	100	88.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			7	691	100	100.00	1	8785	1.09	0.03	0.00	0.00		100	100	0.00	0.00
3A4	1		5			7	1800	100	100.00	0	23043	2.33	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	757.03	39.76	19.04	9.41	5.12	206.31	23.47	0.00	229.79
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	757.03	39.76	19.04	9.41	5.12	206.31	23.47	0.00	229.79

- *< = 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***

H087 HSQ SHD TRANSYT Results

TRANSYT 16

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:42:49

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2021 Baseline				
Network	D2	348.25	22.16	77% (TS 1B/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D2 - 2021 Baseline, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:42:43	17/09/2021 20:42:46	3.72	16:30	100	348.25	22.16	77.16	1B/1	0	0	1B/1	3A2/1	1B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2021 Baseline	PM				16:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	31	366
	2-2	27	0	23
	2-3	43	19	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	43
	3		2-1	2-2	2A/1, 2Bx/1	Normal	31
	4		2-1	2-3	2A/1, 2Cx/1	Normal	366
	5		2-2	2-3	2B/1, 2Cx/1	Normal	23
	6		2-2	2-1	2B/1, 2Ax/1	Normal	27
	7		2-3	2-2	2C/2, 2Bx/1	Normal	19

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	62	1354
	1-2	139	0	250
	1-3	689	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	689
	2		1-1	1-3	1A/2, 1Cx/1	Normal	677
	3		1-1	1-3	1A/1, 1Cx/1	Normal	677
	4		1-1	1-2	1A/1, 1Bx/1	Normal	62
	6		1-2	1-3	1B/1, 1Cx/1	Normal	250
	7		1-2	1-1	1B/2, 1Ax/1	Normal	139

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	11	1629
	3-2	0	0	87
	3-3	687	23	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	87
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	23
	4		3-3	3-1	3C/1, 3Ax/1	Normal	687
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	815
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	815
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	11

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	93, 15, 23	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

From \ To	A	B	C	D	E	F	G	H
A			5	5		5	5	
B			5	5		5		
C	5	5					5	
D	5	5			5		5	5
E				5				5
F	8	8						
G	13		13	13				
H				8	8			

Banned Stage transitions for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

Interstage Matrix for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1	0	5	5	5	5	5	5	5	5
2	8	0	8	5	8	8	5	8	5
3	13	13	0	5	13	13	13	5	5
4	13	13	8	0	13	13	13	8	5
5	8	8	8	8	0	5	5	5	5
6	8	8	8	8	5	0	5	5	5
7	8	8	8	8	8	8	0	8	5
8	13	13	8	8	13	13	13	0	5
9	13	13	8	8	13	13	13	8	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,B,E	36	93	57	1	5
	2	✓	5	C,D,F	98	15	17	1	5
	3	✓	9	F,G,H	20	23	3	1	3

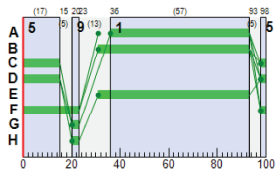
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	36	93	57
	B	1	✓	31	93	62
	C	1	✓	98	15	17
	D	1	✓	98	15	17
	E	1	✓	31	93	62
	F	1	✓	98	23	25
	G	1	✓	20	23	3
	H	1	✓	20	23	3

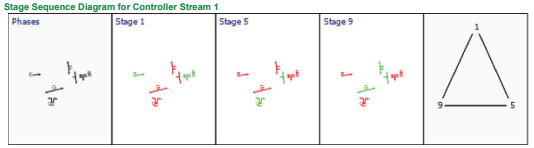
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	36	93	57
1A	2	1	1	B	31	93	62
1B	1	1	1	C	98	15	17
1B	2	1	1	D	98	15	17
1C	1	1	1	E	31	93	62

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	98, 17, 25	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5						5
C						5	
D	5						5
E	10						
F			8				
G		14		14			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	14	14	14	5	14	5
	2	8	0	14	14	14	8	14	5
	3	10	10	0	5	0	5	5	5
	4	10	10	8	0	8	8	0	5
	5	10	10	0	5	0	5	5	5
	6	10	10	14	14	14	0	14	5
	7	10	10	8	0	8	8	0	5
	8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	35	98	63	1	5
	2	✓	3	B,C,E	12	17	5	1	5
	3	✓	7	D,E,F	22	25	3	1	3

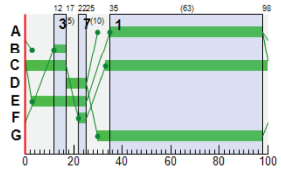
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	35	98	63
	B	1	✓	12	17	5
	C	1	✓	33	17	84
	D	1	✓	17	25	8
	E	1	✓	3	25	22
	F	1	✓	22	25	3
	G	1	✓	30	98	68

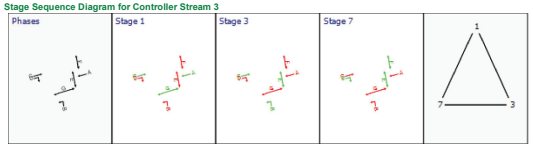
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	12	17	5
3C	1	3	3	C	33	17	84
3C	2	3	3	D	17	25	8
3A1	1	3	3	A	35	98	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	739 <	1800	57	0.00	71	27	22.56	19.10	72.48	15.42 +	9.47	100	100	0.00	62.39
	2	S	1	1	B	677 <	1800	62	0.00	60	51	16.78	13.31	58.95	11.54 +	7.40	100	100	0.00	40.56
1Ax	1					828	Unrestricted	100	12.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	250	1800	17	0.00	77	17	62.95	56.85	110.45	7.83	6.93	100	100	0.00	59.53

	2	R	1	1	D	139	1800	17	0.00	43	110	46.72	40.59	90.92	3.56	3.33	100	100	0.00	23.84
1Bx	1		8			62	1800	100	43.00	3	2513	7.32	0.04	0.00	0.00		100	100	0.00	0.01
1C	1	S/R	1	1	E	689	1800	62	0.00	61	48	32.02	13.49	56.77	11.05	7.57	100	100	0.00	41.57
1Cx	1		7			1604	3600	100	8.00	45	102	9.81	0.40	0.00	0.18		100	100	0.00	2.54
2A	1	S/L	2			397	9999	100	0.00	4	2167	2.19	0.01	0.00	0.00		100	100	0.00	0.01
2Ax	1					70	Unrestricted	100	43.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			50	453	100	100.00	11	715	2.92	0.74	0.00	0.01		100	100	0.00	0.15
2Bx	1					50	Unrestricted	100	71.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			43	1800	100	70.00	2	3667	4.97	0.02	0.00	0.00		100	100	0.00	0.00
	2	R	2			19	589	100	100.00	3	2691	5.13	0.15	0.00	0.00		100	100	0.00	0.01
2Cx	1		8			389	1800	100	0.00	22	316	3.20	0.28	0.00	0.03		100	100	0.00	0.42
3Ax	1		7			687	1800	100	7.00	38	136	11.53	0.62	0.00	0.12		100	100	0.00	1.67
3B	1	L	3	3	B	87	3600	5	0.00	40	123	53.42	50.89	100.31	2.45	2.41	100	100	0.00	18.56
3C	1	S	3	3	C	687	1800	84	0.00	45	100	8.62	2.78	22.49	4.76	3.05	100	100	0.00	9.47
	2	R	3	3	D	23	1800	8	7.00	14	534	49.67	43.83	92.64	0.60	0.59	100	100	0.00	4.24
3Cx	1					1716	Unrestricted	100	13.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	1629 <	3600	63	0.00	71	27	12.64	10.78	42.19	19.21 +	14.68	100	100	0.00	77.87
3Bx1	1		4			23	1800	100	94.00	1	6943	4.64	0.01	0.00	0.00		100	100	0.00	0.00
3A2	1		6			826	1800	100	44.00	46	96	19.17	0.85	0.00	0.19		100	100	0.00	2.75
	2		6			815	1800	100	44.00	45	99	19.17	0.83	0.00	0.19		100	100	0.00	2.65
3Bx2	1					34	Unrestricted	100	92.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			11	705	100	100.00	2	5667	1.11	0.04	0.00	0.00		100	100	0.00	0.00
3A4	1		5			11	1800	100	100.00	1	14627	2.33	0.01	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	889.23	51.80	17.17	17.11	5.05	314.66	33.59	0.00	348.25
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	889.23	51.80	17.17	17.11	5.05	314.66	33.59	0.00	348.25

- *< = 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*

TRANSYT 16

Version: 16.0.1.8473

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:43:48

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2024 Do Nothing				
Network	D3	286.48	18.01	88% (TS 1C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D3 - 2024 Do Nothing, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:43:43	17/09/2021 20:43:46	3.67	07:30	100	286.48	18.01	88.20	1C/1	0	0	1C/1	3Ax/1	1C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 Do Nothing	AM				07:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	37	150
	2-2	46	0	19
	2-3	56	47	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	56
	3		2-1	2-2	2A/1, 2Bx/1	Normal	37
	4		2-1	2-3	2A/1, 2Cx/1	Normal	150
	5		2-2	2-3	2B/1, 2Cx/1	Normal	19
	6		2-2	2-1	2B/1, 2Ax/1	Normal	46
	7		2-3	2-2	2C/2, 2Bx/1	Normal	47

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	102	847
	1-2	101	0	68
	1-3	1159	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	1159
	2		1-1	1-3	1A/2, 1Cx/1	Normal	424
	3		1-1	1-3	1A/1, 1Cx/1	Normal	424
	4		1-1	1-2	1A/1, 1Bx/1	Normal	102
	6		1-2	1-3	1B/1, 1Cx/1	Normal	68
	7		1-2	1-1	1B/2, 1Ax/1	Normal	101

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	9	902
	3-2	0	0	40
	3-3	1156	97	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	40
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	97
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1156
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	451
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	451
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	9

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	3, 15, 23	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

		To							
		A	B	C	D	E	F	G	H
From	A			5	5		5	5	
	B			5	5		5		
	C	5	5					5	
	D	5	5			5		5	5
	E				5				5
	F	8	8						
	G	13		13	13				
	H				8	8			

Banned Stage transitions for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									

Interstage Matrix for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1	0	5	5	5	5	5	5	5	5
	2	8	0	8	5	8	8	5	8	5
	3	13	13	0	5	13	13	13	5	5
	4	13	13	8	0	13	13	13	8	5
	5	8	8	8	8	0	5	5	5	5
	6	8	8	8	8	5	0	5	5	5
	7	8	8	8	8	8	8	0	8	5
	8	13	13	8	8	13	13	13	0	5
	9	13	13	8	8	13	13	13	8	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,B,E	36	3	67	1	5
	2	✓	5	C,D,F	8	15	7	1	5
	3	✓	9	F,G,H	20	23	3	1	3

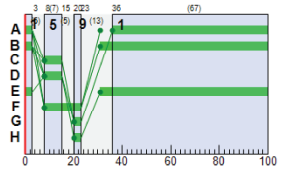
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	36	3	67
	B	1	✓	31	3	72
	C	1	✓	8	15	7
	D	1	✓	8	15	7
	E	1	✓	31	3	72
	F	1	✓	8	23	15
	G	1	✓	20	23	3
	H	1	✓	20	23	3

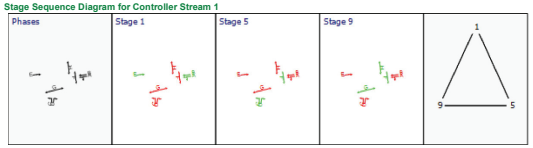
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	36	3	67
1A	2	1	1	B	31	3	72
1B	1	1	1	C	8	15	7
1B	2	1	1	D	8	15	7
1C	1	1	1	E	31	3	72

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	78, 97, 5	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5						5
	C						5	
	D	5						5
	E	10						
	F			8				
	G		14		14			

Banned Stage transitions for Controller Stream 3

	To							
	1	2	3	4	5	6	7	8
From 1								
From 2								
From 3								
From 4								
From 5								
From 6								
From 7								
From 8								

Interstage Matrix for Controller Stream 3

	To							
	1	2	3	4	5	6	7	8
From 1	0	5	14	14	14	5	14	5
From 2	8	0	14	14	14	8	14	5
From 3	10	10	0	5	0	5	5	5
From 4	10	10	8	0	8	8	0	5
From 5	10	10	0	5	0	5	5	5
From 6	10	10	14	14	14	0	14	5
From 7	10	10	8	0	8	8	0	5
From 8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	15	78	63	1	5
	2	✓	3	B,C,E	92	97	5	1	5
	3	✓	7	D,E,F	2	5	3	1	3

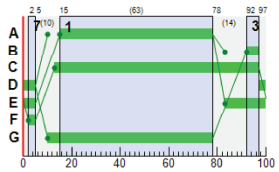
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	15	78	63
	B	1	✓	92	97	5
	C	1	✓	13	97	84
	D	1	✓	97	5	8
	E	1	✓	83	5	22
	F	1	✓	2	5	3
	G	1	✓	10	78	68

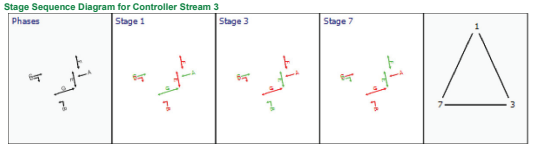
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	92	97	5
3C	1	3	3	C	13	97	84
3C	2	3	3	D	97	5	8
3A1	1	3	3	A	15	78	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	526 <	1800	67	0.00	43	109	11.81	8.34	43.94	6.74 +	4.84	100	100	0.00	20.21
	2	S	1	1	B	424	1800	72	0.00	32	179	8.89	5.42	33.90	4.20	3.26	100	100	0.00	10.87
1Ax	1					1260	Unrestricted	100	8.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	68	1800	7	0.00	47	91	61.10	55.00	104.51	2.00	1.95	100	100	0.00	15.64
	2	R	1	1	D	101	1800	7	0.00	70	28	78.48	72.34	121.49	3.49	3.35	100	100	0.00	30.36
1Bx	1		8			102	1800	100	31.00	6	1488	7.34	0.06	0.00	0.00		100	100	0.00	0.02

H087 HSQ SHD TRANSYT Results

1C	1	S/R	1	1	E	1159	1800	72	0.00	88	2	35.39	16.87	71.22	26.75	11.11	100	100	0.00	87.46
1Cx	1		7			916	3600	100	10.00	25	254	9.58	0.17	0.00	0.04		100	100	0.00	0.62
2A	1	S/L	2			187	9999	100	0.00	2	4712	2.19	0.00	0.00	0.00		100	100	0.00	0.00
2Ax	1					102	Unrestricted	100	26.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			65	468	100	0.00	14	549	3.11	0.93	0.00	0.02		100	100	0.00	0.24
2Bx	1					84	Unrestricted	100	29.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			56	1800	100	78.00	3	2793	4.97	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			47	639	100	81.00	7	1123	5.32	0.34	0.00	0.00		100	100	0.00	0.06
2Cx	1		8			169	1800	100	0.00	9	859	3.03	0.10	0.00	0.00		100	100	0.00	0.07
3Ax	1		7			1156	1800	100	5.00	64	40	12.70	1.79	0.00	0.57		100	100	0.00	8.15
3B	1	L	3	3	B	40	3600	5	4.00	19	386	49.12	46.59	95.63	1.08	1.07	100	100	0.00	7.83
3C	1	S	3	3	C	1156 <	1800	84	0.00	76	19	12.58	6.74	40.78	14.32 +	5.97	100	100	0.00	36.66
	2	R	3	3	D	97	1800	8	0.00	60	50	65.69	59.85	110.09	3.02	2.89	100	100	0.00	24.24
3Cx	1					943	Unrestricted	100	16.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	903 <	3600	63	0.00	39	130	12.33	10.47	48.66	12.57 +	9.78	100	100	0.00	42.79
3Bx1	1		4			97	1800	100	89.00	5	1570	4.69	0.06	0.00	0.00		100	100	0.00	0.02
3A2	1		6			461	1800	100	34.00	26	252	18.66	0.34	0.00	0.04		100	100	0.00	0.62
	2		6			451	1800	100	34.00	25	259	18.68	0.33	0.00	0.04		100	100	0.00	0.60
3Bx2	1					106	Unrestricted	100	87.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			9	686	100	100.00	1	6755	1.10	0.03	0.00	0.00		100	100	0.00	0.00
3A4	1		5			9	1800	100	100.00	1	17880	2.33	0.01	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	801.79	44.74	17.92	11.19	6.82	255.76	30.72	0.00	286.48
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	801.79	44.74	17.92	11.19	6.82	255.76	30.72	0.00	286.48

- *< = 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***

H087 HSQ SHD TRANSYT Results

TRANSYT 16

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:44:14

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2024 Do Nothing				
Network	D4	399.16	25.51	82% (TS 1B/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D4 - 2024 Do Nothing, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:44:10	17/09/2021 20:44:13	3.06	16:30	100	399.16	25.51	82.10	1B/1	0	0	1B/1	3A2/1	1B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 Do Nothing	PM				16:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	41	388
	2-2	34	0	30
	2-3	47	26	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	47
	3		2-1	2-2	2A/1, 2Bx/1	Normal	41
	4		2-1	2-3	2A/1, 2Cx/1	Normal	388
	5		2-2	2-3	2B/1, 2Cx/1	Normal	30
	6		2-2	2-1	2B/1, 2Ax/1	Normal	34
	7		2-3	2-2	2C/2, 2Bx/1	Normal	26

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	73	1424
	1-2	152	0	266
	1-3	723	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	723
	2		1-1	1-3	1A/2, 1Cx/1	Normal	712
	3		1-1	1-3	1A/1, 1Cx/1	Normal	712
	4		1-1	1-2	1A/1, 1Bx/1	Normal	73
	6		1-2	1-3	1B/1, 1Cx/1	Normal	266
	7		1-2	1-1	1B/2, 1Ax/1	Normal	152

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	14	1713
	3-2	0	0	112
	3-3	721	32	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	112
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	32
	4		3-3	3-1	3C/1, 3Ax/1	Normal	721
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	857
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	857
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	14

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	13, 35, 43	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

From \ To	A	B	C	D	E	F	G	H
A			5	5		5	5	
B			5	5		5		
C	5	5					5	
D	5	5			5		5	5
E				5				5
F	8	8						
G	13		13	13				
H				8	8			

Banned Stage transitions for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

Interstage Matrix for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1	0	5	5	5	5	5	5	5	5
2	8	0	8	5	8	8	5	8	5
3	13	13	0	5	13	13	13	5	5
4	13	13	8	0	13	13	13	8	5
5	8	8	8	8	0	5	5	5	5
6	8	8	8	8	5	0	5	5	5
7	8	8	8	8	8	8	0	8	5
8	13	13	8	8	13	13	13	0	5
9	13	13	8	8	13	13	13	8	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,B,E	56	13	57	1	5
	2	✓	5	C,D,F	18	35	17	1	5
	3	✓	9	F,G,H	40	43	3	1	3

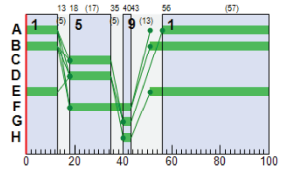
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	56	13	57
	B	1	✓	51	13	62
	C	1	✓	18	35	17
	D	1	✓	18	35	17
	E	1	✓	51	13	62
	F	1	✓	18	43	25
	G	1	✓	40	43	3
	H	1	✓	40	43	3

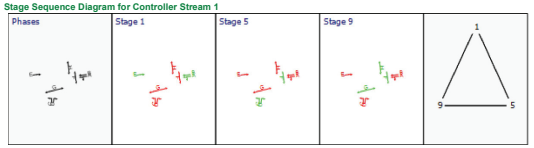
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	56	13	57
1A	2	1	1	B	51	13	62
1B	1	1	1	C	18	35	17
1B	2	1	1	D	18	35	17
1C	1	1	1	E	51	13	62

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	19, 38, 46	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5						5
C						5	
D	5						5
E	10						
F			8				
G		14		14			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	14	14	14	5	14	5
	2	8	0	14	14	14	8	14	5
	3	10	10	0	5	0	5	5	5
	4	10	10	8	0	8	8	0	5
	5	10	10	0	5	0	5	5	5
	6	10	10	14	14	14	0	14	5
	7	10	10	8	0	8	8	0	5
	8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	56	19	63	1	5
	2	✓	3	B,C,E	33	38	5	1	5
	3	✓	7	D,E,F	43	46	3	1	3

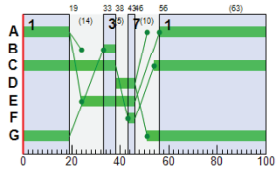
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	56	19	63
	B	1	✓	33	38	5
	C	1	✓	54	38	84
	D	1	✓	38	46	8
	E	1	✓	24	46	22
	F	1	✓	43	46	3
	G	1	✓	51	19	68

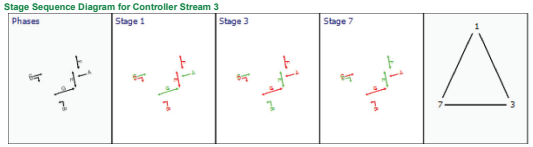
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	33	38	5
3C	1	3	3	C	54	38	84
3C	2	3	3	D	38	46	8
3A1	1	3	3	A	56	19	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	785 <	1800	57	0.00	75	20	24.26	20.79	76.61	17.26 +	10.28	100	100	0.00	71.93
	2	S	1	1	B	712 <	1800	62	0.00	63	43	17.45	13.99	61.06	12.59 +	7.84	100	100	0.00	44.74
1Ax	1					875	Unrestricted	100	12.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	266	1800	17	0.00	82	10	68.98	62.88	116.49	8.82	7.79	100	100	0.00	69.86

	2	R	1	1	D	152	1800	17	0.00	47	92	47.74	41.61	92.59	3.96	3.67	100	100	0.00	26.71
1Bx	1		8			73	1800	100	43.00	4	2119	7.32	0.04	0.00	0.00		100	100	0.00	0.01
1C	1	S/R	1	1	E	723	1800	62	0.00	64	41	32.70	14.17	58.33	11.87	8.02	100	100	0.00	45.70
1Cx	1		7			1690	3600	100	8.00	47	92	9.85	0.44	0.00	0.21		100	100	0.00	2.95
2A	1	S/L	2			429	9999	100	0.00	4	1998	2.19	0.01	0.00	0.00		100	100	0.00	0.01
2Ax	1					81	Unrestricted	100	40.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			64	447	100	0.00	14	528	3.19	1.01	0.00	0.02		100	100	0.00	0.25
2Bx	1					67	Unrestricted	100	43.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			47	1800	100	65.00	3	3347	4.97	0.03	0.00	0.00		100	100	0.00	0.00
	2	R	2			26	582	100	100.00	4	1914	5.20	0.22	0.00	0.00		100	100	0.00	0.02
2Cx	1		8			418	1800	100	0.00	23	288	3.23	0.30	0.00	0.04		100	100	0.00	0.50
3Ax	1		7			721	1800	100	7.00	40	125	11.58	0.67	0.00	0.13		100	100	0.00	1.90
3B	1	L	3	3	B	112	3600	5	0.00	52	74	56.97	54.44	103.78	3.29	3.20	100	100	0.00	25.51
3C	1	S	3	3	C	721	1800	84	0.00	47	91	8.76	2.92	23.18	5.22	3.21	100	100	0.00	10.41
	2	R	3	3	D	32	1800	8	7.00	20	356	50.78	44.94	93.52	0.84	0.83	100	100	0.00	6.05
3Cx	1					1825	Unrestricted	100	11.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	1713 <	3600	63	0.00	74	21	13.29	11.43	42.49	20.32 +	15.72	100	100	0.00	86.33
3Bx1	1		4			32	1800	100	92.00	2	4963	4.65	0.02	0.00	0.00		100	100	0.00	0.00
3A2	1		6			871	1800	100	47.00	48	86	19.26	0.94	0.00	0.23		100	100	0.00	3.21
	2		6			857	1800	100	47.00	48	89	19.25	0.91	0.00	0.22		100	100	0.00	3.06
3Bx2	1					46	Unrestricted	100	91.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			14	703	100	100.00	2	4417	1.12	0.05	0.00	0.00		100	100	0.00	0.00
3A4	1		5			14	1800	100	100.00	1	11471	2.34	0.01	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	941.31	56.88	16.55	18.94	6.56	362.18	36.98	0.00	399.16
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	941.31	56.88	16.55	18.94	6.56	362.18	36.98	0.00	399.16

- *< = 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*

TRANSYT 16

Version: 16.0.1.8473

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:50:31

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2024 Construction Stage				
Network	D15	295.34	18.63	88% (TS 1C/1)	0 (0%)

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D15 - 2024 Construction Stage, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Warning	OD Matrix Flows	Local Matrix 1	Flow Inconsistency between OD Matrix 1 and OD Matrix 1. (Traffic Stream 1Bx/1)
Warning	OD Matrix Flows	Local Matrix 2	Flow Inconsistency between OD Matrix 1 and OD Matrix 2.
Warning	Local Matrix	Local Matrix 1	Local Matrix 1: Resultant Flows have warnings in one or more time segments - see the Resultant Flows tab of the OD Matrix screen.
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:50:26	17/09/2021 20:50:28	2.44	07:30	100	295.34	18.63	88.20	1C/1	0	0	1C/1	3Ax/1	1C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 Construction Stage	AM				07:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	37	156
	2-2	46	0	45
	2-3	56	132	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
	2		2-3	2-1	2C/1, 2Ax/1	Normal	56
	3		2-1	2-2	2A/1, 2Bx/1	Normal	37
	4		2-1	2-3	2A/1, 2Cx/1	Normal	156

2	5		2-2	2-3	2B/1, 2Cx/1	Normal	45
	6		2-2	2-1	2B/1, 2Ax/1	Normal	46
	7		2-3	2-2	2C/2, 2Bx/1	Normal	132

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	109	848
	1-2	101	0	100
	1-3	1159	78	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	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	1159
	2		1-1	1-3	1A/2, 1Cx/1	Normal	424
	3		1-1	1-3	1A/1, 1Cx/1	Normal	424
	4		1-1	1-2	1A/1, 1Bx/1	Normal	109
	6		1-2	1-3	1B/1, 1Cx/1	Normal	100
	7		1-2	1-1	1B/2, 1Ax/1	Normal	101

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	16	928
	3-2	0	0	29
	3-3	1234	45	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	29
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	45
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1234
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	464
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	464
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	16

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	3, 15, 23	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

		To							
		A	B	C	D	E	F	G	H
From	A			5	5		5	5	
	B			5	5		5		
	C	5	5					5	
	D	5	5			5		5	5
	E				5				5
	F	8	8						
	G	13		13	13				
	H				8	8			

Banned Stage transitions for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									

Interstage Matrix for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1	0	5	5	5	5	5	5	5	5
	2	8	0	8	5	8	8	5	8	5
	3	13	13	0	5	13	13	13	5	5
	4	13	13	8	0	13	13	13	8	5
	5	8	8	8	8	0	5	5	5	5
	6	8	8	8	8	5	0	5	5	5
	7	8	8	8	8	8	8	0	8	5
	8	13	13	8	8	13	13	13	0	5
	9	13	13	8	8	13	13	13	8	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,B,E	36	3	67	1	5
	2	✓	5	C,D,F	8	15	7	1	5
	3	✓	9	F,G,H	20	23	3	1	3

Resultant Phase Green Periods

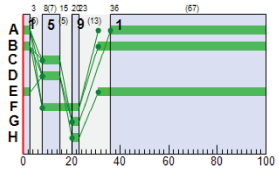
Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	36	3	67
	B	1	✓	31	3	72
	C	1	✓	8	15	7
	D	1	✓	8	15	7
	E	1	✓	31	3	72
	F	1	✓	8	23	15

	G	1	✓	20	23	3
	H	1	✓	20	23	3

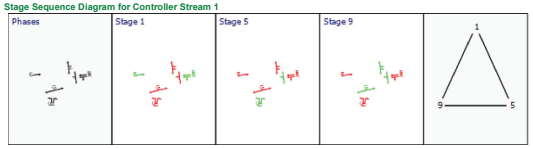
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	36	3	67
1A	2	1	1	B	31	3	72
1B	1	1	1	C	8	15	7
1B	2	1	1	D	8	15	7
1C	1	1	1	E	31	3	72

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	78, 97, 5	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5						5
	C						5	
	D	5						5
	E	10						

	F		8			
	G	14	14			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	14	14	14	5	14	5
	2	8	0	14	14	14	8	14	5
	3	10	10	0	5	0	5	5	5
	4	10	10	8	0	8	8	0	5
	5	10	10	0	5	0	5	5	5
	6	10	10	14	14	14	0	14	5
	7	10	10	8	0	8	8	0	5
	8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	15	78	63	1	5
	2	✓	3	B,C,E	92	97	5	1	5
	3	✓	7	D,E,F	2	5	3	1	3

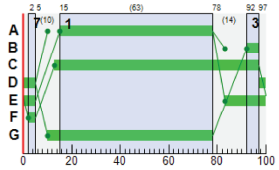
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	15	78	63
	B	1	✓	92	97	5
	C	1	✓	13	97	84
	D	1	✓	97	5	8
	E	1	✓	83	5	22
	F	1	✓	2	5	3
	G	1	✓	10	78	68

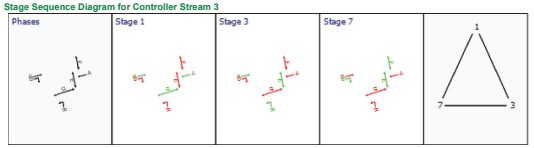
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	92	97	5
3C	1	3	3	C	13	97	84
3C	2	3	3	D	97	5	8
3A1	1	3	3	A	15	78	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	533 <	1800	67	0.00	44	107	11.87	8.41	44.31	6.83 +	4.91	100	100	0.00	20.64

	2	S	1	1	B	424	1800	72	0.00	32	179	8.89	5.42	33.90	4.20	3.26	100	100	0.00	10.87
1Ax	1					1260	Unrestricted	100	8.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	100	1800	7	0.00	69	30	77.61	71.50	120.77	3.44	3.30	100	100	0.00	29.72
	2	R	1	1	D	101	1800	7	0.00	70	28	78.48	72.34	121.49	3.49	3.35	100	100	0.00	30.36
1Bx	1		8			109	1800	100	31.00	6	1386	7.35	0.06	0.00	0.00		100	100	0.00	0.03
1C	1	S/R	1	1	E	1159	1800	72	0.00	88	2	35.01	16.49	63.69	25.71	11.11	100	100	0.00	84.62
1Cx	1		7			948	3600	100	8.00	26	242	9.59	0.18	0.00	0.05		100	100	0.00	0.67
2A	1	S/L	2			193	9999	100	0.00	2	4563	2.19	0.00	0.00	0.00		100	100	0.00	0.00
2Ax	1					102	Unrestricted	100	26.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			91	477	100	0.00	19	371	3.52	1.33	0.00	0.03		100	100	0.00	0.48
2Bx	1					169	Unrestricted	100	25.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			56	1800	100	77.00	3	2793	4.97	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			132	637	100	30.00	21	334	6.09	1.11	0.00	0.04		100	100	0.00	0.58
2Cx	1		8			201	1800	100	0.00	11	706	3.05	0.13	0.00	0.01		100	100	0.00	0.10
3Ax	1		7			1234	1800	100	5.00	69	31	13.08	2.17	0.00	0.74		100	100	0.00	10.56
3B	1	L	3	3	B	29	3600	5	5.00	13	570	48.47	45.94	94.10	0.77	0.77	100	100	0.00	5.60
3C	1	S	3	3	C	1234 <	1800	84	0.00	81	12	14.24	8.40	47.12	17.76 +	6.80	100	100	0.00	48.19
	2	R	3	3	D	45	1800	8	6.00	28	224	52.60	46.76	96.02	1.22	1.19	100	100	0.00	8.84
3Cx	1					957	Unrestricted	100	17.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	928 <	3600	63	0.00	40	123	12.05	10.18	47.12	12.52 +	9.75	100	100	0.00	42.75
3Bx1	1		4			45	1800	100	91.00	3	3500	4.66	0.03	0.00	0.00		100	100	0.00	0.00
3A2	1		6			480	1800	100	31.00	27	238	18.68	0.36	0.00	0.05		100	100	0.00	0.69
	2		6			464	1800	100	32.00	26	249	18.69	0.35	0.00	0.04		100	100	0.00	0.64
3Bx2	1					61	Unrestricted	100	90.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			16	699	100	100.00	2	3834	1.13	0.06	0.00	0.00		100	100	0.00	0.00
3A4	1		5			16	1800	100	100.00	1	10025	2.34	0.01	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	825.31	46.14	17.89	10.92	7.71	264.61	30.73	0.00	295.34
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	825.31	46.14	17.89	10.92	7.71	264.61	30.73	0.00	295.34

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

TRANSYT 16

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:51:11

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2024 Construction Stage				
Network	D16	468.28	30.09	86% (TS 1B/1)	0 (0%)

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D16 - 2024 Construction Stage, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Warning	OD Matrix Flows	Local Matrix 1	Flow Inconsistency between OD Matrix 1 and OD Matrix 1. (Traffic Stream 1Bx/1)
Warning	OD Matrix Flows	Local Matrix 2	Flow Inconsistency between OD Matrix 1 and OD Matrix 2.
Warning	Local Matrix	Local Matrix 1	Local Matrix 1: Resultant Flows have warnings in one or more time segments - see the Resultant Flows tab of the OD Matrix screen.
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:51:07	17/09/2021 20:51:09	2.62	16:30	100	468.28	30.09	85.75	1B/1	0	0	1B/1	3A2/1	1B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 Construction Stage	PM				16:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	41	390
	2-2	34	0	117
	2-3	47	60	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	47
	3		2-1	2-2	2A/1, 2Bx/1	Normal	41
	4		2-1	2-3	2A/1, 2Cx/1	Normal	390
	5		2-2	2-3	2B/1, 2Cx/1	Normal	117
	6		2-2	2-1	2B/1, 2Ax/1	Normal	34
	7		2-3	2-2	2C/2, 2Bx/1	Normal	60

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	84	1415
	1-2	152	0	355
	1-3	723	23	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	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	723
	2		1-1	1-3	1A/2, 1Cx/1	Normal	708
	3		1-1	1-3	1A/1, 1Cx/1	Normal	708
	4		1-1	1-2	1A/1, 1Bx/1	Normal	84
	6		1-2	1-3	1B/1, 1Cx/1	Normal	355
	7		1-2	1-1	1B/2, 1Ax/1	Normal	152

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	7	1800
	3-2	0	0	65
	3-3	744	20	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	65
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	20
	4		3-3	3-1	3C/1, 3Ax/1	Normal	744
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	900
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	900
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	7

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	20, 47, 55	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

From \ To	A	B	C	D	E	F	G	H
A			5	5		5	5	
B			5	5		5		
C	5	5					5	
D	5	5			5		5	5
E				5				5
F	8	8						
G	13		13	13				
H				8	8			

Banned Stage transitions for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

Interstage Matrix for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1	0	5	5	5	5	5	5	5	5
2	8	0	8	5	8	8	5	8	5
3	13	13	0	5	13	13	13	5	5
4	13	13	8	0	13	13	13	8	5
5	8	8	8	8	0	5	5	5	5
6	8	8	8	8	5	0	5	5	5
7	8	8	8	8	8	8	0	8	5
8	13	13	8	8	13	13	13	0	5
9	13	13	8	8	13	13	13	8	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,B,E	68	20	52	1	5
	2	✓	5	C,D,F	25	47	22	1	5
	3	✓	9	F,G,H	52	55	3	1	3

Resultant Phase Green Periods

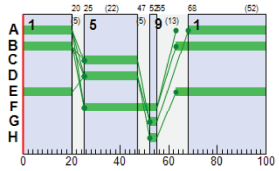
Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	68	20	52
	B	1	✓	63	20	57
	C	1	✓	25	47	22
	D	1	✓	25	47	22
	E	1	✓	63	20	57
	F	1	✓	25	55	30

	G	1	✓	52	55	3
	H	1	✓	52	55	3

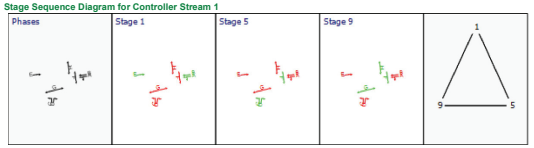
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	68	20	52
1A	2	1	1	B	63	20	57
1B	1	1	1	C	25	47	22
1B	2	1	1	D	25	47	22
1C	1	1	1	E	63	20	57

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	31, 50, 58	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5						5
C						5	
D	5						5
E	10						

	F			8				
	G		14		14			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	14	14	14	5	14	5
	2	8	0	14	14	14	8	14	5
	3	10	10	0	5	0	5	5	5
	4	10	10	8	0	8	8	0	5
	5	10	10	0	5	0	5	5	5
	6	10	10	14	14	14	0	14	5
	7	10	10	8	0	8	8	0	5
	8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	68	31	63	1	5
	2	✓	3	B,C,E	45	50	5	1	5
	3	✓	7	D,E,F	55	58	3	1	3

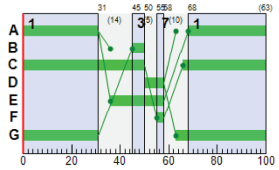
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	68	31	63
	B	1	✓	45	50	5
	C	1	✓	66	50	84
	D	1	✓	50	58	8
	E	1	✓	36	58	22
	F	1	✓	55	58	3
	G	1	✓	63	31	68

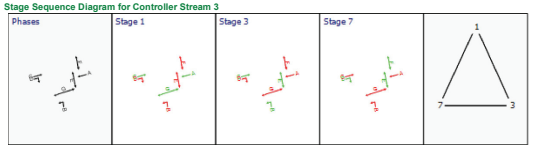
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	45	50	5
3C	1	3	3	C	66	50	84
3C	2	3	3	D	50	58	8
3A1	1	3	3	A	68	31	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
	1	S/L	1	1	A	792 <	1800	52	0.00	83	8	32.11	28.64	89.62	20.22 +	12.30	100	100	0.00	98.37

1A	2	S	1	1	B	708 <	1800	57	0.00	68	33	21.61	18.14	70.01	14.28 +	8.97	100	100	0.00	56.88
1Ax	1					875	Unrestricted	100	13.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	355 <	1800	22	0.00	86	5	66.65	60.54	115.95	11.70 +	9.92	100	100	0.00	89.94
	2	R	1	1	D	152	1800	22	0.00	37	145	41.03	34.90	84.88	3.65	3.36	100	100	0.00	22.54
1Bx	1		8			84	1800	100	47.00	5	1829	7.33	0.05	0.00	0.00		100	100	0.00	0.02
1C	1	S/R	1	1	E	723	1800	57	0.00	69	30	37.11	18.58	65.72	13.33	9.29	100	100	0.00	58.95
1Cx	1		7			1771	3600	100	8.00	49	83	9.89	0.48	0.00	0.24		100	100	0.00	3.38
2A	1	S/L	2			431	9999	100	0.00	4	1988	2.19	0.01	0.00	0.00		100	100	0.00	0.01
2Ax	1					81	Unrestricted	100	45.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			151	486	100	0.00	31	189	4.69	2.50	0.00	0.10		100	100	0.00	1.49
2Bx	1					101	Unrestricted	100	42.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			47	1800	100	60.00	3	3347	4.97	0.03	0.00	0.00		100	100	0.00	0.00
	2	R	2			60	581	100	50.00	10	772	5.51	0.53	0.00	0.01		100	100	0.00	0.13
2Cx	1		8			507	1800	100	0.00	28	220	3.32	0.39	0.00	0.06		100	100	0.00	0.78
3Ax	1		7			744	1800	100	7.00	41	118	11.61	0.70	0.00	0.15		100	100	0.00	2.07
3B	1	L	3	3	B	65	3600	5	0.00	30	199	51.14	48.62	97.36	1.78	1.76	100	100	0.00	13.26
3C	1	S	3	3	C	744	1800	84	0.00	49	85	8.87	3.03	23.85	5.40	3.33	100	100	0.00	11.12
	2	R	3	3	D	20	1800	8	8.00	12	629	49.28	43.44	92.08	0.52	0.51	100	100	0.00	3.66
3Cx	1					1866	Unrestricted	100	13.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	1801 <	3600	63	0.00	78	15	14.34	12.47	43.93	22.06 +	17.22	100	100	0.00	98.50
3Bx1	1		4			20	1800	100	94.00	1	8000	4.64	0.01	0.00	0.00		100	100	0.00	0.00
3A2	1		6			908	1800	100	50.00	50	79	19.34	1.02	0.00	0.26		100	100	0.00	3.63
	2		6			901	1800	100	50.00	50	80	19.35	1.00	0.00	0.25		100	100	0.00	3.55
3Bx2	1					27	Unrestricted	100	93.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			7	706	100	100.00	1	8967	1.09	0.03	0.00	0.00		100	100	0.00	0.00
3A4	1		5			7	1800	100	100.00	0	23030	2.33	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	976.48	62.64	15.59	21.46	8.63	427.26	41.02	0.00	468.28
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	976.48	62.64	15.59	21.46	8.63	427.26	41.02	0.00	468.28

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

TRANSYT 16

Version: 16.0.1.8473

Filename: H087 TRANSYT Model Proposed Config 20210910.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:53:01

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Proposed J3 Configuration - 2024 With Development				
Network	D5	306.20	19.44	88% (TS 1C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	10/09/2021
Version	Proposed Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Proposed J3 Configuration
D5 - 2024 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:52:45	17/09/2021 20:52:49	4.08	07:30	100	306.20	19.44	88.20	1C/1	0	0	1C/1	3Ax/1	1C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Proposed J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 With Development	AM				07:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	39	150
	2-2	62	0	26
	2-3	56	50	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	56
	3		2-1	2-2	2A/1, 2Bx/1	Normal	39
	4		2-1	2-3	2A/1, 2Cx/1	Normal	150
	5		2-2	2-3	2B/1, 2Cx/1	Normal	26
	6		2-2	2-1	2B/1, 2Ax/1	Normal	62
	7		2-3	2-2	2C/2, 2Bx/1	Normal	50

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	105	848
	1-2	108	0	68
	1-3	1159	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	1159
	2		1-1	1-3	1A/2, 1Cx/1	Normal	424
	3		1-1	1-3	1A/1, 1Cx/1	Normal	424
	4		1-1	1-2	1A/1, 1Bx/1	Normal	105
	6		1-2	1-3	1B/1, 1Cx/1	Normal	68
	7		1-2	1-1	1B/2, 1Ax/1	Normal	108

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	902
	3-2	0	0	54
	3-3	1156	103	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
3	3-1		3A/2, 3A/1	3Ax/1	#008000
	3-2		3B/1	3Bx1/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	54
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1156
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	226
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	226
	7		3-1	3-3	3A2/2, 3A1/2, 3Cx/1	Normal	226
	8		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	226
	9		3-1	3-2	3A2/2, 3A1/1, 3Bx1/1	Normal	5
	10		3-1	3-2	3A2/1, 3A1/1, 3Bx1/1	Normal	5
	11		3-3	3-2	3C/2, 3Bx1/1	Normal	103

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	58, 70, 78	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

		To							
		A	B	C	D	E	F	G	H
From	A			5	5		5	5	
	B			5	5		5		
	C	5	5					5	
	D	5	5			5		5	5
	E				5				5
	F	8	8						
	G	13		13	13				
	H				8	8			

Banned Stage transitions for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									

Interstage Matrix for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1	0	5	5	5	5	5	5	5	5
	2	8	0	8	5	8	8	5	8	5
	3	13	13	0	5	13	13	13	5	5
	4	13	13	8	0	13	13	13	8	5
	5	8	8	8	8	0	5	5	5	5
	6	8	8	8	8	5	0	5	5	5
	7	8	8	8	8	8	8	0	8	5
	8	13	13	8	8	13	13	13	0	5
	9	13	13	8	8	13	13	13	8	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,B,E	91	58	67	1	5
	2	✓	5	C,D,F	63	70	7	1	5
	3	✓	9	F,G,H	75	78	3	1	3

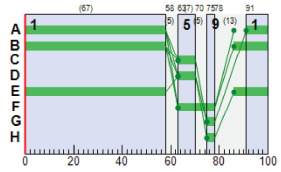
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	91	58	67
	B	1	✓	86	58	72
	C	1	✓	63	70	7
	D	1	✓	63	70	7
	E	1	✓	86	58	72
	F	1	✓	63	78	15
	G	1	✓	75	78	3
	H	1	✓	75	78	3

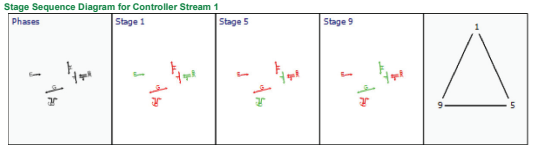
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	91	58	67
1A	2	1	1	B	86	58	72
1B	1	1	1	C	63	70	7
1B	2	1	1	D	63	70	7
1C	1	1	1	E	86	58	72

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			10	NetworkDefault	100	35

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, C, H	1	1	100
	3	A, F, G	1	1	100
	4	A, F, H	1	1	100
	5	B, C, D, E	1	1	100
	6	B, D, E, F	1	1	100
	7	C, E, G	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 2, 6	23, 60, 90	38	
	2	(untitled)	Single	1, 4, 5	22, 58, 90	38	
	3	(untitled)	Single	1, 4, 6	25, 61, 90	40	
	4	(untitled)	Single	1, 5, 4	22, 60, 92	41	
	5	(untitled)	Single	1, 6, 2	23, 62, 95	40	
	6	(untitled)	Single	1, 6, 4	24, 61, 92	45	
	7	(untitled)	Single	2, 3, 5	23, 51, 90	40	
	8	(untitled)	Single	2, 3, 6	25, 52, 90	40	
	9	(untitled)	Single	2, 5, 3	23, 53, 86	38	
	10	(untitled)	Single	2, 5, 8	79, 94, 2	35	

Intergreen Matrix for Controller Stream 3

		To							
		A	B	C	D	E	F	G	H
From	A		5		5	5			
	B	5						5	5
	C						5		
	D	5						5	5
	E	10							10
	F			8					
	G		14		14				14
	H		5		5	5		5	

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	14	5	14	14	14	5	5
	2	5	0	5	5	5	5	5	5
	3	8	14	0	14	14	14	8	5
	4	8	8	5	0	8	5	8	5
	5	10	10	10	10	0	5	5	5
	6	10	10	10	10	8	0	8	5
	7	10	14	10	14	14	14	0	5
	8	10	14	10	14	14	14	8	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)
3	1	✓	2	A,C,H	16	79	63	1	3
	2	✓	5	B,C,D,E	84	94	10	1	5
	3	✓	8	E,F,G	99	2	3	1	3

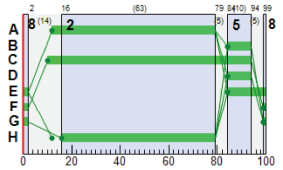
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	12	79	67
	B	1	✓	84	94	10
	C	1	✓	10	94	84
	D	1	✓	84	94	10
	E	1	✓	84	2	18
	F	1	✓	99	2	3
	G	1	✓	99	2	3
	H	1	✓	16	79	63

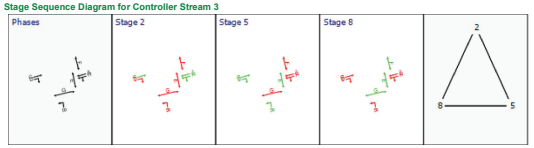
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	84	94	10
3C	1	3	3	C	10	94	84
3C	2	3	3	D	84	94	10
3A1	1	3	3	H	16	79	63
3A1	2	3	3	A	12	79	67

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	
1A	1	S/L	1	1	A	529 <	1800	67	0.00	43	108	11.84	8.37	44.12	6.78 +	4.87	100	100	0.00	20.39
	2	S	1	1	B	424	1800	72	0.00	32	179	8.89	5.42	33.90	4.20	3.26	100	100	0.00	10.87
1Ax	1					1267	Unrestricted	100	8.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00

1B	1	L	1	1	C	68	1800	7	0.00	47	91	61.10	55.00	104.51	2.00	1.95	100	100	0.00	15.64
	2	R	1	1	D	108	1800	7	0.00	75	20	85.31	79.18	127.21	3.93	3.78	100	100	0.00	35.45
1Bx	1		8			105	1800	100	31.00	6	1443	7.34	0.06	0.00	0.00		100	100	0.00	0.03
1C	1	S/R	1	1	E	1159 <	1800	72	0.00	88	2	42.28	23.76	83.52	27.09 +	13.76	100	100	0.00	120.75
1Cx	1		7			916	3600	100	10.00	25	254	9.58	0.17	0.00	0.04		100	100	0.00	0.62
2A	1	S/L	2			189	9999	100	0.00	2	4661	2.19	0.00	0.00	0.00		100	100	0.00	0.00
2Ax	1					118	Unrestricted	100	0.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			88	468	100	0.00	19	379	3.52	1.33	0.00	0.03		100	100	0.00	0.46
2Bx	1					89	Unrestricted	100	28.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			56	1800	100	78.00	3	2793	4.97	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			50	638	100	80.00	8	1049	5.34	0.36	0.00	0.00		100	100	0.00	0.07
2Cx	1		8			176	1800	100	0.00	10	820	3.03	0.11	0.00	0.01		100	100	0.00	0.08
3Ax	1		7			1156	1800	100	5.00	64	40	12.70	1.79	0.00	0.57		100	100	0.00	8.15
3B	1	L	3	3	B	54	3600	10	9.00	14	560	43.53	41.00	89.53	1.36	1.35	100	100	0.00	9.34
3C	1	S	3	3	C	1156 <	1800	84	0.00	76	19	12.58	6.74	40.78	14.32 +	5.97	100	100	0.00	36.66
	2	R	3	3	D	103	1800	10	0.00	52	73	57.56	51.72	102.25	2.97	2.82	100	100	0.00	22.33
3Cx	1					956	Unrestricted	100	15.00	0	Unrestricted	9.48	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S/L	3	3	H	461 <	1800	63	0.00	40	125	8.40	6.51	27.89	4.14 +	2.78	100	100	0.00	13.45
	2	S	3	3	A	451 <	1800	67	0.00	37	144	7.18	5.29	21.56	2.77 +	2.55	100	100	0.00	10.64
3Bx1	1		4			113	1800	100	87.00	6	1334	6.23	0.07	0.00	0.00		100	100	0.00	0.03
3A2	1		6			456	1800	100	12.00	25	255	18.66	0.34	0.00	0.04		100	100	0.00	0.61
	2		6			456	1800	100	12.00	25	255	18.69	0.34	0.00	0.04		100	100	0.00	0.61

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	807.38	46.35	17.42	12.40	7.04	276.05	30.15	0.00	306.20
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	807.38	46.35	17.42	12.40	7.04	276.05	30.15	0.00	306.20

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

TRANSYT 16

Filename: H087 TRANSYT Model Proposed Config 20210910.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:53:53

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Proposed J3 Configuration - 2024 With Development				
Network	D6	397.45	25.43	82% (TS 1B/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	10/09/2021
Version	Proposed Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Proposed J3 Configuration
D6 - 2024 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:53:48	17/09/2021 20:53:50	2.97	16:30	100	397.45	25.43	82.10	1B/1	0	0	1B/1	3A2/1	1B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Proposed J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 With Development	PM				16:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	60	388
	2-2	41	0	36
	2-3	47	38	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	47
	3		2-1	2-2	2A/1, 2Bx/1	Normal	60
	4		2-1	2-3	2A/1, 2Cx/1	Normal	388
	5		2-2	2-3	2B/1, 2Cx/1	Normal	36
	6		2-2	2-1	2B/1, 2Ax/1	Normal	41
	7		2-3	2-2	2C/2, 2Bx/1	Normal	38

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	85	1431
	1-2	158	0	266
	1-3	723	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	723
	2		1-1	1-3	1A/2, 1Cx/1	Normal	716
	3		1-1	1-3	1A/1, 1Cx/1	Normal	716
	4		1-1	1-2	1A/1, 1Bx/1	Normal	85
	6		1-2	1-3	1B/1, 1Cx/1	Normal	266
	7		1-2	1-1	1B/2, 1Ax/1	Normal	158

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	21	1713
	3-2	0	0	135
	3-3	721	46	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx1/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	135
	4		3-3	3-1	3C/1, 3Ax/1	Normal	721
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	428
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	428
	7		3-1	3-3	3A2/2, 3A1/2, 3Cx/1	Normal	428
	8		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	428
	9		3-1	3-2	3A2/2, 3A1/1, 3Bx1/1	Normal	11
	10		3-1	3-2	3A2/1, 3A1/1, 3Bx1/1	Normal	11
	11		3-3	3-2	3C/2, 3Bx1/1	Normal	46

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	10, 32, 40	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

From \ To	A	B	C	D	E	F	G	H
A			5	5		5	5	
B			5	5		5		
C	5	5					5	
D	5	5			5		5	5
E				5				5
F	8	8						
G	13		13	13				
H				8	8			

Banned Stage transitions for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

Interstage Matrix for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1	0	5	5	5	5	5	5	5	5
2	8	0	8	5	8	8	5	8	5
3	13	13	0	5	13	13	13	5	5
4	13	13	8	0	13	13	13	8	5
5	8	8	8	8	0	5	5	5	5
6	8	8	8	8	5	0	5	5	5
7	8	8	8	8	8	8	0	8	5
8	13	13	8	8	13	13	13	0	5
9	13	13	8	8	13	13	13	8	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,B,E	53	10	57	1	5
	2	✓	5	C,D,F	15	32	17	1	5
	3	✓	9	F,G,H	37	40	3	1	3

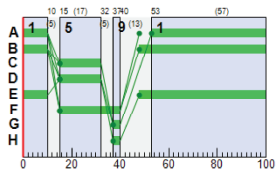
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	53	10	57
	B	1	✓	48	10	62
	C	1	✓	15	32	17
	D	1	✓	15	32	17
	E	1	✓	48	10	62
	F	1	✓	15	40	25
	G	1	✓	37	40	3
	H	1	✓	37	40	3

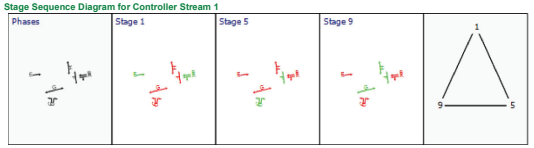
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	53	10	57
1A	2	1	1	B	48	10	62
1B	1	1	1	C	15	32	17
1B	2	1	1	D	15	32	17
1C	1	1	1	E	48	10	62

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			10	NetworkDefault	100	35

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, C, H	1	1	100
	3	A, F, G	1	1	100
	4	A, F, H	1	1	100
	5	B, C, D, E	1	1	100
	6	B, D, E, F	1	1	100
	7	C, E, G	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 2, 6	23, 60, 90	38	
	2	(untitled)	Single	1, 4, 5	22, 58, 90	38	
	3	(untitled)	Single	1, 4, 6	25, 61, 90	40	
	4	(untitled)	Single	1, 5, 4	22, 60, 92	41	
	5	(untitled)	Single	1, 6, 2	23, 62, 95	40	
	6	(untitled)	Single	1, 6, 4	24, 61, 92	45	
	7	(untitled)	Single	2, 3, 5	23, 51, 90	40	
	8	(untitled)	Single	2, 3, 6	25, 52, 90	40	
	9	(untitled)	Single	2, 5, 3	23, 53, 86	38	
	10	(untitled)	Single	2, 5, 8	25, 35, 43	35	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G	H
A		5		5	5			
B	5						5	5
C						5		
D	5						5	5
E	10							10
F			8					
G		14		14				14
H		5		5	5		5	

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	14	5	14	14	14	5	5
2	5	0	5	5	5	5	5	5
3	8	14	0	14	14	14	8	5
4	8	8	5	0	8	5	8	5
5	10	10	10	10	0	5	5	5
6	10	10	10	10	8	0	8	5
7	10	14	10	14	14	14	0	5
8	10	14	10	14	14	14	8	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)
3	1	✓	2	A,C,H	57	25	68	1	3
	2	✓	5	B,C,D,E	30	35	5	1	5
	3	✓	8	E,F,G	40	43	3	1	3

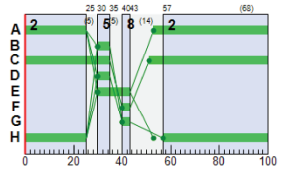
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	53	25	72
	B	1	✓	30	35	5
	C	1	✓	51	35	84
	D	1	✓	30	35	5
	E	1	✓	30	43	13
	F	1	✓	40	43	3
	G	1	✓	40	43	3
	H	1	✓	57	25	68

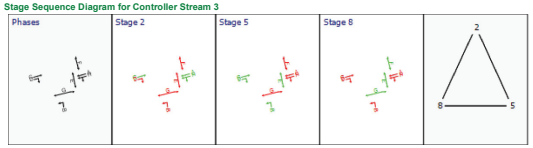
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	30	35	5
3C	1	3	3	C	51	35	84
3C	2	3	3	D	30	35	5
3A1	1	3	3	H	57	25	68
3A1	2	3	3	A	53	25	72

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	801 <	1800	57	0.00	77	17	24.95	21.48	78.19	17.93 +	10.59	100	100	0.00	75.73
	2	S	1	1	B	716 <	1800	62	0.00	63	43	17.54	14.07	61.36	12.67	7.90	100	100	0.00	45.25

1Ax	1					881	Unrestricted	100	12.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	266	1800	17	0.00	82	10	68.98	62.88	116.49	8.82	7.79	100	100	0.00	69.86
	2	R	1	1	D	158	1800	17	0.00	49	85	48.24	42.10	92.99	4.14	3.83	100	100	0.00	28.08
1Bx	1		8			85	1800	100	42.00	5	1806	7.33	0.05	0.00	0.00		100	100	0.00	0.02
1C	1	S/R	1	1	E	723	1800	62	0.00	64	41	32.70	14.17	58.33	11.87	8.02	100	100	0.00	45.70
1Cx	1		7			1698	3600	100	8.00	47	91	9.85	0.45	0.00	0.21		100	100	0.00	2.99
2A	1	S/L	2			448	9999	100	0.00	4	1909	2.19	0.01	0.00	0.00		100	100	0.00	0.01
2Ax	1					88	Unrestricted	100	39.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			77	443	100	0.00	17	417	3.47	1.28	0.00	0.03		100	100	0.00	0.39
2Bx	1					98	Unrestricted	100	0.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			47	1800	100	64.00	3	3347	4.97	0.03	0.00	0.00		100	100	0.00	0.00
	2	R	2			38	577	100	68.00	7	1267	5.31	0.33	0.00	0.00		100	100	0.00	0.05
2Cx	1		8			424	1800	100	0.00	24	282	3.23	0.31	0.00	0.04		100	100	0.00	0.52
3Ax	1		7			721	1800	100	7.00	40	125	11.58	0.67	0.00	0.13		100	100	0.00	1.90
3B	1	L	3	3	B	135	3600	5	0.00	63	44	61.97	59.44	108.88	4.14	4.03	100	100	0.00	33.50
3C	1	S	3	3	C	721	1800	84	0.00	47	91	8.76	2.92	23.18	5.22	3.21	100	100	0.00	10.41
	2	R	3	3	D	46	1800	5	3.00	43	111	63.36	57.52	106.59	1.38	1.36	100	100	0.00	11.05
3Cx	1					1849	Unrestricted	100	8.00	0	Unrestricted	9.48	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S/L	3	3	H	878 <	1800	68	0.00	71	27	11.50	9.61	35.33	8.68 +	7.04	100	100	0.00	37.17
	2	S	3	3	A	857 <	1800	72	0.00	65	38	9.25	7.36	33.17	8.03 +	5.76	100	100	0.00	28.45
3Bx1	1		4			67	1800	100	91.00	4	2317	6.20	0.04	0.00	0.00		100	100	0.00	0.01
3A2	1		6			868	1800	100	38.00	48	87	19.25	0.93	0.00	0.22		100	100	0.00	3.18
	2		6			868	1800	100	38.00	48	87	19.28	0.93	0.00	0.22		100	100	0.00	3.18

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	955.23	57.27	16.68	17.94	7.49	361.07	36.39	0.00	397.45
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	955.23	57.27	16.68	17.94	7.49	361.07	36.39	0.00	397.45

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

TRANSYT 16

Version: 16.0.1.8473

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:48:00

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2029 Do Nothing				
Network	D7	386.21	24.88	94% (TS 1C/1)	1 (3%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D7 - 2029 Do Nothing, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:47:56	17/09/2021 20:47:58	2.45	07:30	100	386.21	24.88	94.22	1C/1	1	3	1C/1	3Ax/1	1C/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2029 Do Nothing	AM				07:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	40	162
	2-2	49	0	21
	2-3	60	51	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	60
	3		2-1	2-2	2A/1, 2Bx/1	Normal	40
	4		2-1	2-3	2A/1, 2Cx/1	Normal	162
	5		2-2	2-3	2B/1, 2Cx/1	Normal	21
	6		2-2	2-1	2B/1, 2Ax/1	Normal	49
	7		2-3	2-2	2C/2, 2Bx/1	Normal	51

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	109	917
	1-2	109	0	74
	1-3	1255	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	1255
	2		1-1	1-3	1A/2, 1Cx/1	Normal	459
	3		1-1	1-3	1A/1, 1Cx/1	Normal	459
	4		1-1	1-2	1A/1, 1Bx/1	Normal	109
	6		1-2	1-3	1B/1, 1Cx/1	Normal	74
	7		1-2	1-1	1B/2, 1Ax/1	Normal	109

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	9	977
	3-2	0	0	42
	3-3	1253	104	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	42
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	104
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1253
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	489
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	489
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	9

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	89, 0, 8	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

		To							
		A	B	C	D	E	F	G	H
From	A			5	5		5	5	
	B			5	5		5		
	C	5	5					5	
	D	5	5			5		5	5
	E				5				5
	F	8	8						
	G	13		13	13				
	H				8	8			

Banned Stage transitions for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									

Interstage Matrix for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1	0	5	5	5	5	5	5	5	5
	2	8	0	8	5	8	8	5	8	5
	3	13	13	0	5	13	13	13	5	5
	4	13	13	8	0	13	13	13	8	5
	5	8	8	8	8	0	5	5	5	5
	6	8	8	8	8	5	0	5	5	5
	7	8	8	8	8	8	8	0	8	5
	8	13	13	8	8	13	13	13	0	5
	9	13	13	8	8	13	13	13	8	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,B,E	21	89	68	1	5
	2	✓	5	C,D,F	94	0	6	1	5
	3	✓	9	F,G,H	5	8	3	1	3

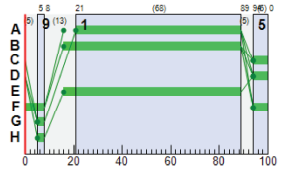
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	21	89	68
	B	1	✓	16	89	73
	C	1	✓	94	0	6
	D	1	✓	94	0	6
	E	1	✓	16	89	73
	F	1	✓	94	8	14
	G	1	✓	5	8	3
	H	1	✓	5	8	3

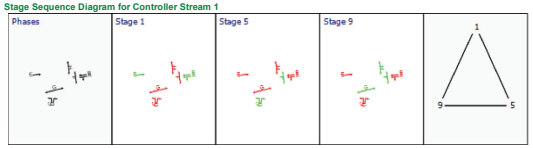
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	21	89	68
1A	2	1	1	B	16	89	73
1B	1	1	1	C	94	0	6
1B	2	1	1	D	94	0	6
1C	1	1	1	E	16	89	73

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	78, 97, 5	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5						5
C						5	
D	5						5
E	10						
F			8				
G		14		14			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	14	14	14	5	14	5
2	8	0	14	14	14	8	14	5
3	10	10	0	5	0	5	5	5
4	10	10	8	0	8	8	0	5
5	10	10	0	5	0	5	5	5
6	10	10	14	14	14	0	14	5
7	10	10	8	0	8	8	0	5
8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	15	78	63	1	5
	2	✓	3	B,C,E	92	97	5	1	5
	3	✓	7	D,E,F	2	5	3	1	3

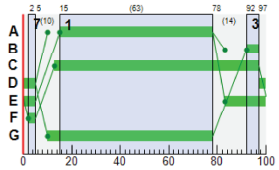
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	15	78	63
	B	1	✓	92	97	5
	C	1	✓	13	97	84
	D	1	✓	97	5	8
	E	1	✓	83	5	22
	F	1	✓	2	5	3
	G	1	✓	10	78	68

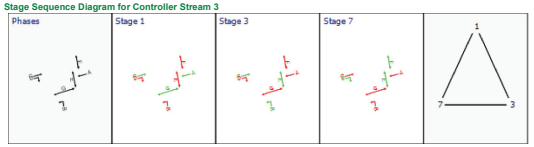
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	92	97	5
3C	1	3	3	C	13	97	84
3C	2	3	3	D	97	5	8
3A1	1	3	3	A	15	78	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	568 <	1800	68	0.00	46	97	11.71	8.24	44.08	7.29 <	5.08	100	100	0.00	21.60
	2	S	1	1	B	459	1800	73	0.00	34	161	8.71	5.25	33.24	4.43	3.41	100	100	0.00	11.41
1Ax	1					1364	Unrestricted	100	7.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	74	1800	6	0.00	59	53	70.79	64.69	113.48	2.38	2.31	100	100	0.00	19.93
	2	R	1	1	D	109	1800	6	0.00	87	4	120.38	114.24	154.61	5.03	4.88	100	100	0.00	51.23
1Bx	1		8			109	1800	100	30.00	6	1386	7.35	0.06	0.00	0.00		100	100	0.00	0.03

1C	1	S/R	1	1	E	1255	1800	73	0.00	94	-4	45.21	26.69	62.55	23.05	15.59	100	100	0.00	141.94
1Cx	1		7			992	3600	100	9.00	28	227	9.60	0.19	0.00	0.05		100	100	0.00	0.74
2A	1	S/L	2			202	9999	100	0.00	2	4355	2.19	0.00	0.00	0.00		100	100	0.00	0.00
2Ax	1					109	Unrestricted	100	24.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			70	465	100	0.00	15	498	3.21	1.03	0.00	0.02		100	100	0.00	0.28
2Bx	1					91	Unrestricted	100	27.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			60	1800	100	33.00	3	2600	4.98	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			51	635	100	79.00	8	1021	5.35	0.37	0.00	0.01		100	100	0.00	0.07
2Cx	1		8			183	1800	100	0.00	10	785	3.04	0.11	0.00	0.01		100	100	0.00	0.08
3Ax	1		7			1253	1800	100	5.00	70	29	13.19	2.28	0.00	0.79		100	100	0.00	11.26
3B	1	L	3	3	B	42	3600	5	4.00	19	363	49.28	46.75	95.81	1.13	1.12	100	100	0.00	8.25
3C	1	S	3	3	C	1253 <	1800	84	0.00	82	10	14.77	8.92	48.99	18.87 +	7.04	100	100	0.00	51.81
	2	R	3	3	D	104	1800	8	0.00	64	40	68.94	63.10	113.07	3.33	3.18	100	100	0.00	27.36
3Cx	1					1020	Unrestricted	100	18.00	0	Unrestricted	9.28	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	978 <	3600	63	0.00	42	112	10.56	8.69	42.01	11.75 +	9.33	100	100	0.00	38.69
3Bx1	1		4			104	1800	100	88.00	6	1458	4.69	0.06	0.00	0.00		100	100	0.00	0.03
3A2	1		6			498	1800	100	29.00	28	225	18.70	0.38	0.00	0.05		100	100	0.00	0.75
	2		6			489	1800	100	29.00	27	231	18.72	0.37	0.00	0.05		100	100	0.00	0.72
3Bx2	1					113	Unrestricted	100	87.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			9	684	100	100.00	1	6738	1.10	0.04	0.00	0.00		100	100	0.00	0.00
3A4	1		5			9	1800	100	100.00	1	17882	2.33	0.01	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	867.80	53.81	16.13	12.15	12.73	353.32	32.89	0.00	386.21
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	867.80	53.81	16.13	12.15	12.73	353.32	32.89	0.00	386.21

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

TRANSYT 16

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:48:30

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2029 Do Nothing				
Network	D8	482.48	30.53	84% (TS 1B/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D8 - 2029 Do Nothing, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:48:26	17/09/2021 20:48:28	2.42	16:30	100	482.48	30.53	84.21	1B/1	0	0	1B/1	3A2/1	1B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2029 Do Nothing	PM				16:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	44	420
	2-2	36	0	32
	2-3	51	28	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	51
	3		2-1	2-2	2A/1, 2Bx/1	Normal	44
	4		2-1	2-3	2A/1, 2Cx/1	Normal	420
	5		2-2	2-3	2B/1, 2Cx/1	Normal	32
	6		2-2	2-1	2B/1, 2Ax/1	Normal	36
	7		2-3	2-2	2C/2, 2Bx/1	Normal	28

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	78	1543
	1-2	164	0	288
	1-3	783	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	783
	2		1-1	1-3	1A/2, 1Cx/1	Normal	772
	3		1-1	1-3	1A/1, 1Cx/1	Normal	772
	4		1-1	1-2	1A/1, 1Bx/1	Normal	78
	6		1-2	1-3	1B/1, 1Cx/1	Normal	288
	7		1-2	1-1	1B/2, 1Ax/1	Normal	164

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	15	1856
	3-2	0	0	119
	3-3	781	34	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	119
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	34
	4		3-3	3-1	3C/1, 3Ax/1	Normal	781
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	928
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	928
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	15

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	47, 70, 78	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

From \ To	A	B	C	D	E	F	G	H
A			5	5		5	5	
B			5	5		5		
C	5	5					5	
D	5	5			5		5	5
E				5				5
F	8	8						
G	13		13	13				
H				8	8			

Banned Stage transitions for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

Interstage Matrix for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1	0	5	5	5	5	5	5	5	5
2	8	0	8	5	8	8	5	8	5
3	13	13	0	5	13	13	13	5	5
4	13	13	8	0	13	13	13	8	5
5	8	8	8	8	0	5	5	5	5
6	8	8	8	8	5	0	5	5	5
7	8	8	8	8	8	8	0	8	5
8	13	13	8	8	13	13	13	0	5
9	13	13	8	8	13	13	13	8	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,B,E	91	47	56	1	5
	2	✓	5	C,D,F	52	70	18	1	5
	3	✓	9	F,G,H	75	78	3	1	3

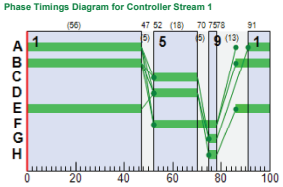
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	91	47	56
	B	1	✓	86	47	61
	C	1	✓	52	70	18
	D	1	✓	52	70	18
	E	1	✓	86	47	61
	F	1	✓	52	78	26
	G	1	✓	75	78	3
	H	1	✓	75	78	3

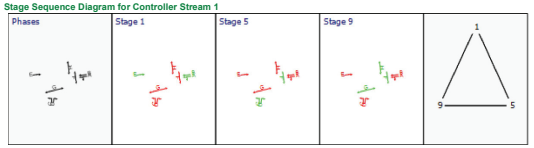
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	91	47	56
1A	2	1	1	B	86	47	61
1B	1	1	1	C	52	70	18
1B	2	1	1	D	52	70	18
1C	1	1	1	E	86	47	61

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	78, 97, 5	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5						5
C						5	
D	5						5
E	10						
F			8				
G		14		14			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	14	14	14	5	14	5
	2	8	0	14	14	14	8	14	5
	3	10	10	0	5	0	5	5	5
	4	10	10	8	0	8	8	0	5
	5	10	10	0	5	0	5	5	5
	6	10	10	14	14	14	0	14	5
	7	10	10	8	0	8	8	0	5
	8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	15	78	63	1	5
	2	✓	3	B,C,E	92	97	5	1	5
	3	✓	7	D,E,F	2	5	3	1	3

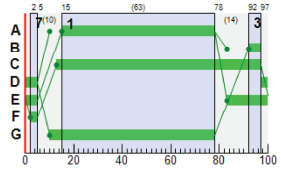
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	15	78	63
	B	1	✓	92	97	5
	C	1	✓	13	97	84
	D	1	✓	97	5	8
	E	1	✓	83	5	22
	F	1	✓	2	5	3
	G	1	✓	10	78	68

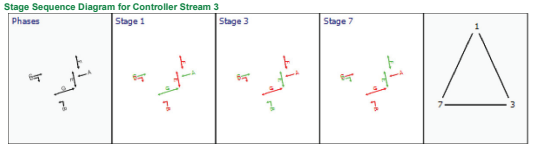
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	92	97	5
3C	1	3	3	C	13	97	84
3C	2	3	3	D	97	5	8
3A1	1	3	3	A	15	78	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	850 <	1800	56	0.00	83	9	29.20	25.73	86.34	21.06 +	12.09	100	100	0.00	95.48
	2	S	1	1	B	772 <	1800	61	0.00	69	30	19.70	16.23	67.18	14.92 +	8.92	100	100	0.00	55.93
1Ax	1					947	Unrestricted	100	12.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	288 <	1800	18	0.00	84	7	70.54	64.44	118.37	9.71 +	8.51	100	100	0.00	77.47

	2	R	1	1	D	164	1800	18	0.00	48	88	47.04	40.91	92.15	4.27	3.91	100	100	0.00	28.36
1Bx	1		8			78	1800	100	44.00	4	1977	7.33	0.05	0.00	0.00		100	100	0.00	0.01
1C	1	S/R	1	1	E	783	1800	61	0.00	70	28	40.46	21.93	83.23	18.57	10.95	100	100	0.00	75.91
1Cx	1		7			1832	3600	100	8.00	51	77	9.93	0.52	0.00	0.26		100	100	0.00	3.74
2A	1	S/L	2			464	9999	100	0.00	5	1839	2.19	0.01	0.00	0.00		100	100	0.00	0.02
2Ax	1					87	Unrestricted	100	41.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			68	439	100	0.00	15	482	3.31	1.12	0.00	0.02		100	100	0.00	0.30
2Bx	1					72	Unrestricted	100	42.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			51	1800	100	58.00	3	3076	4.97	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			28	574	100	100.00	5	1744	5.22	0.24	0.00	0.00		100	100	0.00	0.03
2Cx	1		8			452	1800	100	0.00	25	258	3.26	0.34	0.00	0.04		100	100	0.00	0.60
3Ax	1		7			781	1800	100	6.00	43	107	11.68	0.77	0.00	0.17		100	100	0.00	2.36
3B	1	L	3	3	B	119	3600	5	0.00	55	63	58.28	55.76	105.58	3.54	3.44	100	100	0.00	27.75
3C	1	S	3	3	C	781	1800	84	0.00	51	76	9.05	3.21	24.77	5.91	3.52	100	100	0.00	12.32
	2	R	3	3	D	34	1800	8	7.00	21	329	51.03	45.19	93.74	0.90	0.89	100	100	0.00	6.46
3Cx	1					1976	Unrestricted	100	13.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	1857 <	3600	63	0.00	81	12	11.86	10.00	62.39	38.95 +	11.48	100	100	0.00	87.74
3Bx1	1		4			34	1800	100	92.00	2	4665	4.65	0.02	0.00	0.00		100	100	0.00	0.00
3A2	1		6			944	1800	100	63.00	52	72	19.42	1.10	0.00	0.29		100	100	0.00	4.09
	2		6			929	1800	100	63.00	52	74	19.41	1.06	0.00	0.27		100	100	0.00	3.89
3Bx2	1					49	Unrestricted	100	91.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			15	702	100	100.00	2	4110	1.12	0.06	0.00	0.00		100	100	0.00	0.00
3A4	1		5			15	1800	100	100.00	1	10694	2.34	0.01	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	1019.50	64.51	15.80	21.41	9.12	433.51	48.97	0.00	482.48
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	1019.50	64.51	15.80	21.41	9.12	433.51	48.97	0.00	482.48

- *< = 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*

TRANSYT 16

Version: 16.0.1.8473

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: H087 TRANSYT Model Proposed Config 20210910.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:54:57

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Proposed J3 Configuration - 2029 With Development				
Network	D9	428.02	27.10	96% (TS 1C/1)	1 (3%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	10/09/2021
Version	Proposed Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Proposed J3 Configuration
D9 - 2029 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:54:52	17/09/2021 20:54:55	3.31	07:30	100	428.02	27.10	95.51	1C/1	1	3	1C/1	3Ax/1	1C/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Proposed J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2029 With Development	AM				07:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	42	162
	2-2	65	0	28
	2-3	60	54	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	60
	3		2-1	2-2	2A/1, 2Bx/1	Normal	42
	4		2-1	2-3	2A/1, 2Cx/1	Normal	162
	5		2-2	2-3	2B/1, 2Cx/1	Normal	28
	6		2-2	2-1	2B/1, 2Ax/1	Normal	65
	7		2-3	2-2	2C/2, 2Bx/1	Normal	54

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	112	918
	1-2	116	0	74
	1-3	1255	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	1255
	2		1-1	1-3	1A/2, 1Cx/1	Normal	459
	3		1-1	1-3	1A/1, 1Cx/1	Normal	459
	4		1-1	1-2	1A/1, 1Bx/1	Normal	112
	6		1-2	1-3	1B/1, 1Cx/1	Normal	74
	7		1-2	1-1	1B/2, 1Ax/1	Normal	116

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	977
	3-2	0	0	56
	3-3	1253	110	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
3	3-1		3A/2, 3A/1	3Ax/1	#008000
	3-2		3B/1	3Bx1/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	56
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1253
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	244
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	244
	7		3-1	3-3	3A2/2, 3A1/2, 3Cx/1	Normal	244
	8		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	244
	9		3-1	3-2	3A2/2, 3A1/1, 3Bx1/1	Normal	5
	10		3-1	3-2	3A2/1, 3A1/1, 3Bx1/1	Normal	5
	11		3-3	3-2	3C/2, 3Bx1/1	Normal	110

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	50, 62, 70	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

		To							
		A	B	C	D	E	F	G	H
From	A			5	5		5	5	
	B			5	5		5		
	C	5	5					5	
	D	5	5			5		5	5
	E				5				5
	F	8	8						
	G	13		13	13				
	H				8	8			

Banned Stage transitions for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									

Interstage Matrix for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1	0	5	5	5	5	5	5	5	5
	2	8	0	8	5	8	8	5	8	5
	3	13	13	0	5	13	13	13	5	5
	4	13	13	8	0	13	13	13	8	5
	5	8	8	8	8	0	5	5	5	5
	6	8	8	8	8	5	0	5	5	5
	7	8	8	8	8	8	8	0	8	5
	8	13	13	8	8	13	13	13	0	5
	9	13	13	8	8	13	13	13	8	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,B,E	83	50	67	1	5
	2	✓	5	C,D,F	55	62	7	1	5
	3	✓	9	F,G,H	67	70	3	1	3

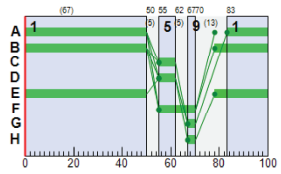
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	83	50	67
	B	1	✓	78	50	72
	C	1	✓	55	62	7
	D	1	✓	55	62	7
	E	1	✓	78	50	72
	F	1	✓	55	70	15
	G	1	✓	67	70	3
	H	1	✓	67	70	3

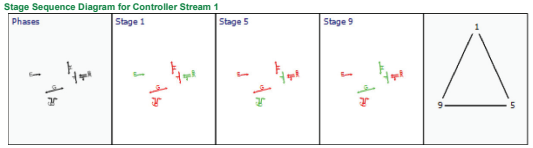
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	83	50	67
1A	2	1	1	B	78	50	72
1B	1	1	1	C	55	62	7
1B	2	1	1	D	55	62	7
1C	1	1	1	E	78	50	72

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			10	NetworkDefault	100	35

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, C, H	1	1	100
	3	A, F, G	1	1	100
	4	A, F, H	1	1	100
	5	B, C, D, E	1	1	100
	6	B, D, E, F	1	1	100
	7	C, E, G	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 2, 6	23, 60, 90	38	
	2	(untitled)	Single	1, 4, 5	22, 58, 90	38	
	3	(untitled)	Single	1, 4, 6	25, 61, 90	40	
	4	(untitled)	Single	1, 5, 4	22, 60, 92	41	
	5	(untitled)	Single	1, 6, 2	23, 62, 95	40	
	6	(untitled)	Single	1, 6, 4	24, 61, 92	45	
	7	(untitled)	Single	2, 3, 5	23, 51, 90	40	
	8	(untitled)	Single	2, 3, 6	25, 52, 90	40	
	9	(untitled)	Single	2, 5, 3	23, 53, 86	38	
	10	(untitled)	Single	2, 5, 8	97, 19, 27	35	

Intergreen Matrix for Controller Stream 3

		To							
		A	B	C	D	E	F	G	H
From	A		5		5	5			
	B	5						5	5
	C						5		
	D	5						5	5
	E	10							10
	F			8					
	G		14		14				14
	H		5		5	5		5	

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	14	5	14	14	14	5	5
	2	5	0	5	5	5	5	5	5
	3	8	14	0	14	14	14	8	5
	4	8	8	5	0	8	5	8	5
	5	10	10	10	10	0	5	5	5
	6	10	10	10	10	8	0	8	5
	7	10	14	10	14	14	14	0	5
	8	10	14	10	14	14	14	8	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)
3	1	✓	2	A,C,H	41	97	56	1	3
	2	✓	5	B,C,D,E	2	19	17	1	5
	3	✓	8	E,F,G	24	27	3	1	3

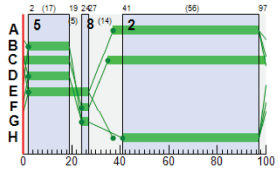
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	37	97	60
	B	1	✓	2	19	17
	C	1	✓	35	19	84
	D	1	✓	2	19	17
	E	1	✓	2	27	25
	F	1	✓	24	27	3
	G	1	✓	24	27	3
	H	1	✓	41	97	56

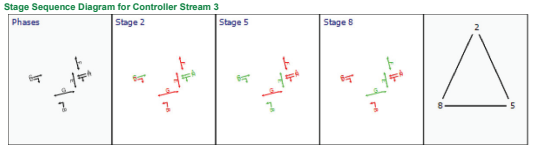
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	2	19	17
3C	1	3	3	C	35	19	84
3C	2	3	3	D	2	19	17
3A1	1	3	3	H	41	97	56
3A1	2	3	3	A	37	97	60

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	
1A	1	S/L	1	1	A	571 <	1800	67	0.00	47	93	12.25	8.78	45.63	7.50 +	5.28	100	100	0.00	23.05
	2	S	1	1	B	459	1800	72	0.00	35	158	9.09	5.63	34.76	4.68	3.54	100	100	0.00	12.19
1Ax	1					1371	Unrestricted	100	7.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00

1B	1	L	1	1	C	74	1800	7	0.00	51	75	63.17	57.07	106.34	2.22	2.16	100	100	0.00	17.64
	2	R	1	1	D	116	1800	7	0.00	81	12	96.04	89.91	136.76	4.60	4.40	100	100	0.00	43.13
1Bx	1		8			112	1800	100	31.00	6	1346	7.35	0.07	0.00	0.00		100	100	0.00	0.03
1C	1	S/R	1	1	E	1255 <	1800	72	0.00	96	-6	50.45	31.93	108.87	39.98 +	14.13	100	100	0.00	175.19
1Cx	1		7			992	3600	100	9.00	28	227	9.60	0.19	0.00	0.05		100	100	0.00	0.74
2A	1	S/L	2			204	9999	100	0.00	2	4311	2.19	0.00	0.00	0.00		100	100	0.00	0.00
2Ax	1					125	Unrestricted	100	0.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			93	465	100	0.00	20	350	3.64	1.45	0.00	0.04		100	100	0.00	0.53
2Bx	1					96	Unrestricted	100	28.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			60	1800	100	34.00	3	2800	4.98	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			54	635	100	77.00	9	958	5.38	0.40	0.00	0.01		100	100	0.00	0.08
2Cx	1		8			190	1800	100	0.00	11	753	3.04	0.12	0.00	0.01		100	100	0.00	0.09
3Ax	1		7			1253	1800	100	5.00	70	29	13.19	2.28	0.00	0.79		100	100	0.00	11.26
3B	1	L	3	3	B	56	3600	17	16.00	9	941	37.01	34.48	82.08	1.30	1.28	100	100	0.00	8.19
3C	1	S	3	3	C	1253 <	1800	84	0.00	82	10	14.77	8.92	48.99	18.87 +	7.04	100	100	0.00	51.81
	2	R	3	3	D	110	1800	17	0.00	34	165	44.51	38.67	88.58	2.75	2.59	100	100	0.00	18.00
3Cx	1					1033	Unrestricted	100	17.00	0	Unrestricted	9.48	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S/L	3	3	H	499 <	1800	56	0.00	49	85	17.90	16.02	70.39	9.96 +	7.44	100	100	0.00	35.90
	2	S	3	3	A	489 <	1800	60	0.00	44	102	14.71	12.82	64.51	8.95 +	6.66	100	100	0.00	28.66
3Bx1	1		4			120	1800	100	81.00	7	1250	6.24	0.07	0.00	0.00		100	100	0.00	0.03
3A2	1		6			494	1800	100	44.00	27	228	18.70	0.38	0.00	0.05		100	100	0.00	0.73
	2		6			494	1800	100	44.00	27	228	18.73	0.38	0.00	0.05		100	100	0.00	0.73

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	873.48	56.21	15.54	13.95	13.15	384.79	43.22	0.00	428.02
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	873.48	56.21	15.54	13.95	13.15	384.79	43.22	0.00	428.02

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

TRANSYT 16

Filename: H087 TRANSYT Model Proposed Config 20210910.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:55:24

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Proposed J3 Configuration - 2029 With Development				
Network	D10	475.28	30.55	84% (TS 1A/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	10/09/2021
Version	Proposed Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Proposed J3 Configuration
D10 - 2029 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:55:19	17/09/2021 20:55:21	2.87	16:30	100	475.28	30.55	84.31	1A/1	0	0	1A/1	3A2/1	1A/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Proposed J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2029 With Development	PM				16:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	63	420
	2-2	43	0	38
	2-3	51	40	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	51
	3		2-1	2-2	2A/1, 2Bx/1	Normal	63
	4		2-1	2-3	2A/1, 2Cx/1	Normal	420
	5		2-2	2-3	2B/1, 2Cx/1	Normal	38
	6		2-2	2-1	2B/1, 2Ax/1	Normal	43
	7		2-3	2-2	2C/2, 2Bx/1	Normal	40

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	90	1550
	1-2	170	0	288
	1-3	783	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	783
	2		1-1	1-3	1A/2, 1Cx/1	Normal	775
	3		1-1	1-3	1A/1, 1Cx/1	Normal	775
	4		1-1	1-2	1A/1, 1Bx/1	Normal	90
	6		1-2	1-3	1B/1, 1Cx/1	Normal	288
	7		1-2	1-1	1B/2, 1Ax/1	Normal	170

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	22	1856
	3-2	0	0	142
	3-3	781	48	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx1/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	142
	4		3-3	3-1	3C/1, 3Ax/1	Normal	781
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	464
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	464
	7		3-1	3-3	3A2/2, 3A1/2, 3Cx/1	Normal	464
	8		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	464
	9		3-1	3-2	3A2/2, 3A1/1, 3Bx1/1	Normal	11
	10		3-1	3-2	3A2/1, 3A1/1, 3Bx1/1	Normal	11
	11		3-3	3-2	3C/2, 3Bx1/1	Normal	48

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	21, 44, 52	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

From \ To	A	B	C	D	E	F	G	H
A			5	5		5	5	
B			5	5		5		
C	5	5					5	
D	5	5			5		5	5
E				5				5
F	8	8						
G	13		13	13				
H				8	8			

Banned Stage transitions for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

Interstage Matrix for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1	0	5	5	5	5	5	5	5	5
2	8	0	8	5	8	8	5	8	5
3	13	13	0	5	13	13	13	5	5
4	13	13	8	0	13	13	13	8	5
5	8	8	8	8	0	5	5	5	5
6	8	8	8	8	5	0	5	5	5
7	8	8	8	8	8	8	0	8	5
8	13	13	8	8	13	13	13	0	5
9	13	13	8	8	13	13	13	8	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,B,E	65	21	56	1	5
	2	✓	5	C,D,F	26	44	18	1	5
	3	✓	9	F,G,H	49	52	3	1	3

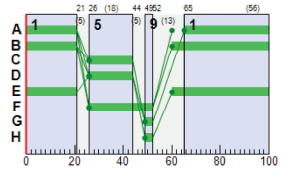
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	65	21	56
	B	1	✓	60	21	61
	C	1	✓	26	44	18
	D	1	✓	26	44	18
	E	1	✓	60	21	61
	F	1	✓	26	52	26
	G	1	✓	49	52	3
	H	1	✓	49	52	3

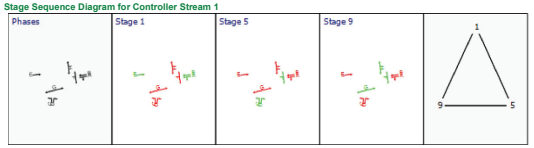
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	65	21	56
1A	2	1	1	B	60	21	61
1B	1	1	1	C	26	44	18
1B	2	1	1	D	26	44	18
1C	1	1	1	E	60	21	61

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			10	NetworkDefault	100	35

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, C, H	1	1	100
	3	A, F, G	1	1	100
	4	A, F, H	1	1	100
	5	B, C, D, E	1	1	100
	6	B, D, E, F	1	1	100
	7	C, E, G	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 2, 6	23, 60, 90	38	
	2	(untitled)	Single	1, 4, 5	22, 58, 90	38	
	3	(untitled)	Single	1, 4, 6	25, 61, 90	40	
	4	(untitled)	Single	1, 5, 4	22, 60, 92	41	
	5	(untitled)	Single	1, 6, 2	23, 62, 95	40	
	6	(untitled)	Single	1, 6, 4	24, 61, 92	45	
	7	(untitled)	Single	2, 3, 5	23, 51, 90	40	
	8	(untitled)	Single	2, 3, 6	25, 52, 90	40	
	9	(untitled)	Single	2, 5, 3	23, 53, 86	38	
	10	(untitled)	Single	2, 5, 8	40, 50, 58	35	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G	H
A		5		5	5			
B	5						5	5
C						5		
D	5						5	5
E	10							10
F			8					
G		14		14				14
H		5		5	5		5	

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	14	5	14	14	14	5	5
	2	5	0	5	5	5	5	5	5
	3	8	14	0	14	14	14	8	5
	4	8	8	5	0	8	5	8	5
	5	10	10	10	10	0	5	5	5
	6	10	10	10	10	8	0	8	5
	7	10	14	10	14	14	14	0	5
	8	10	14	10	14	14	14	8	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)
3	1	✓	2	A,C,H	72	40	68	1	3
	2	✓	5	B,C,D,E	45	50	5	1	5
	3	✓	8	E,F,G	55	58	3	1	3

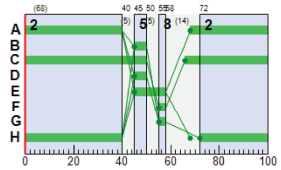
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	68	40	72
	B	1	✓	45	50	5
	C	1	✓	66	50	84
	D	1	✓	45	50	5
	E	1	✓	45	58	13
	F	1	✓	55	58	3
	G	1	✓	55	58	3
	H	1	✓	72	40	68

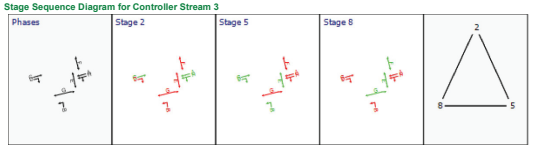
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	45	50	5
3C	1	3	3	C	66	50	84
3C	2	3	3	D	45	50	5
3A1	1	3	3	H	72	40	68
3A1	2	3	3	A	68	40	72

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	865 <	1800	56	0.00	84	7	30.35	26.88	88.44	21.89 +	12.51	100	100	0.00	101.32
	2	S	1	1	B	775 <	1800	61	0.00	69	30	19.78	16.31	67.42	14.99	8.96	100	100	0.00	56.42

1Ax	1					953	Unrestricted	100	12.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	288 <	1800	18	0.00	84	7	70.54	64.44	118.37	9.71 +	8.51	100	100	0.00	77.47
	2	R	1	1	D	170	1800	18	0.00	50	81	47.53	41.40	92.80	4.45	4.07	100	100	0.00	29.74
1Bx	1		8			90	1800	100	42.00	5	1700	7.34	0.05	0.00	0.00		100	100	0.00	0.02
1C	1	S/R	1	1	E	783	1800	61	0.00	70	28	35.12	16.60	63.95	14.07	9.17	100	100	0.00	57.54
1Cx	1		7			1838	3600	100	8.00	51	76	9.93	0.52	0.00	0.27		100	100	0.00	3.78
2A	1	S/L	2			483	9999	100	0.00	5	1763	2.19	0.01	0.00	0.00		100	100	0.00	0.02
2Ax	1					94	Unrestricted	100	39.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			81	435	100	0.00	19	384	3.60	1.42	0.00	0.03		100	100	0.00	0.45
2Bx	1					103	Unrestricted	100	0.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			51	1800	100	57.00	3	3076	4.97	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			40	569	100	62.00	7	1181	5.34	0.36	0.00	0.00		100	100	0.00	0.06
2Cx	1		8			458	1800	100	0.00	25	254	3.27	0.34	0.00	0.04		100	100	0.00	0.62
3Ax	1		7			781	1800	100	6.00	43	107	11.68	0.77	0.00	0.17		100	100	0.00	2.36
3B	1	L	3	3	B	142	3600	5	0.00	66	37	64.00	61.47	110.70	4.44	4.32	100	100	0.00	36.40
3C	1	S	3	3	C	781	1800	84	0.00	51	76	9.05	3.21	24.77	5.91	3.52	100	100	0.00	12.32
	2	R	3	3	D	48	1800	5	3.00	44	103	64.34	58.50	107.46	1.45	1.43	100	100	0.00	11.72
3Cx	1					1998	Unrestricted	100	8.00	0	Unrestricted	9.48	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S/L	3	3	H	950 <	1800	68	0.00	76	18	12.52	10.64	33.80	8.97 +	7.80	100	100	0.00	43.88
	2	S	3	3	A	928 <	1800	72	0.00	71	27	9.92	8.03	31.71	8.26 +	6.43	100	100	0.00	33.09
3Bx1	1		4			70	1800	100	91.00	4	2214	6.21	0.04	0.00	0.00		100	100	0.00	0.01
3A2	1		6			939	1800	100	40.00	52	73	19.41	1.09	0.00	0.28		100	100	0.00	4.03
	2		6			939	1800	100	40.00	52	73	19.44	1.09	0.00	0.28		100	100	0.00	4.03

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	1032.99	64.99	15.90	20.29	10.26	433.85	41.43	0.00	475.28
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	1032.99	64.99	15.90	20.29	10.26	433.85	41.43	0.00	475.28

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

TRANSYT 16

Version: 16.0.1.8473

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:49:07

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2039 Do Nothing				
Network	D11	633.79	41.31	107% (TS 1B/2)	2 (5%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D11 - 2039 Do Nothing, AM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:49:01	17/09/2021 20:49:04	3.30	07:30	100	633.79	41.31	107.41	1B/2	2	5	1B/2	3Ax/1	1B/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2039 Do Nothing	AM				07:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	42	173
	2-2	51	0	21
	2-3	64	53	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	64
	3		2-1	2-2	2A/1, 2Bx/1	Normal	42
	4		2-1	2-3	2A/1, 2Cx/1	Normal	173
	5		2-2	2-3	2B/1, 2Cx/1	Normal	21
	6		2-2	2-1	2B/1, 2Ax/1	Normal	51
	7		2-3	2-2	2C/2, 2Bx/1	Normal	53

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	116	976
	1-2	116	0	78
	1-3	1336	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	1336
	2		1-1	1-3	1A/2, 1Cx/1	Normal	488
	3		1-1	1-3	1A/1, 1Cx/1	Normal	488
	4		1-1	1-2	1A/1, 1Bx/1	Normal	116
	6		1-2	1-3	1B/1, 1Cx/1	Normal	78
	7		1-2	1-1	1B/2, 1Ax/1	Normal	116

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	1040
	3-2	0	0	44
	3-3	1333	109	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	44
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	109
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1333
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	520
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	520
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	10

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	0, 10, 18	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

		To							
		A	B	C	D	E	F	G	H
From	A			5	5		5	5	
	B			5	5		5		
	C	5	5					5	
	D	5	5			5		5	5
	E				5				5
	F	8	8						
	G	13		13	13				
	H				8	8			

Banned Stage transitions for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									

Interstage Matrix for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1	0	5	5	5	5	5	5	5	5
	2	8	0	8	5	8	8	5	8	5
	3	13	13	0	5	13	13	13	5	5
	4	13	13	8	0	13	13	13	8	5
	5	8	8	8	8	0	5	5	5	5
	6	8	8	8	8	5	0	5	5	5
	7	8	8	8	8	8	8	0	8	5
	8	13	13	8	8	13	13	13	0	5
	9	13	13	8	8	13	13	13	8	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,B,E	31	0	69	1	5
	2	✓	5	C,D,F	5	10	5	1	5
	3	✓	9	F,G,H	15	18	3	1	3

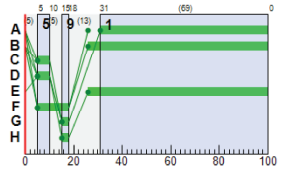
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	31	0	69
	B	1	✓	26	0	74
	C	1	✓	5	10	5
	D	1	✓	5	10	5
	E	1	✓	26	0	74
	F	1	✓	5	18	13
	G	1	✓	15	18	3
	H	1	✓	15	18	3

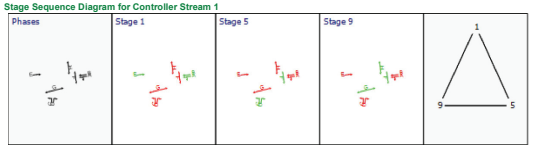
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	31	0	69
1A	2	1	1	B	26	0	74
1B	1	1	1	C	5	10	5
1B	2	1	1	D	5	10	5
1C	1	1	1	E	26	0	74

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	78, 97, 5	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5						5
	C						5	
	D	5						5
	E	10						
	F			8				
	G		14		14			

Banned Stage transitions for Controller Stream 3

		To						
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	14	14	14	5	14	5
	2	8	0	14	14	14	8	14	5
	3	10	10	0	5	0	5	5	5
	4	10	10	8	0	8	8	0	5
	5	10	10	0	5	0	5	5	5
	6	10	10	14	14	14	0	14	5
	7	10	10	8	0	8	8	0	5
	8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	15	78	63	1	5
	2	✓	3	B,C,E	92	97	5	1	5
	3	✓	7	D,E,F	2	5	3	1	3

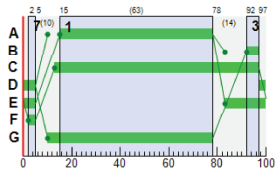
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	15	78	63
	B	1	✓	92	97	5
	C	1	✓	13	97	84
	D	1	✓	97	5	8
	E	1	✓	83	5	22
	F	1	✓	2	5	3
	G	1	✓	10	78	68

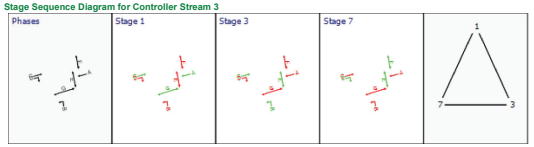
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	92	97	5
3C	1	3	3	C	13	97	84
3C	2	3	3	D	97	5	8
3A1	1	3	3	A	15	78	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	604 <	1800	69	0.00	48	88	11.55	8.09	43.88	7.77 +	5.25	100	100	0.00	22.59
	2	S	1	1	B	488	1800	74	0.00	36	149	8.51	5.04	32.82	4.71	3.49	100	100	0.00	11.72
1Ax	1					1444	Unrestricted	100	6.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	78	1800	5	0.00	72	25	91.54	85.44	132.40	2.97	2.89	100	100	0.00	27.58
	2	R	1	1	D	116 <	1800	5	0.00	107	-16	275.66	269.53	245.31	10.24 +	10.09	100	100	0.00	126.65

H087 HSQ SHD TRANSYT Results

1Bx	1		8			116	1800	100	29.00	6	1297	7.35	0.07	0.00	0.00		100	100	0.00	0.03
1C	1	S/R	1	1	E	1336 <	1800	74	0.00	99	-9	65.84	47.32	114.24	50.20 +	23.85	100	100	0.00	268.51
1Cx	1		7			1054	3600	100	7.00	29	207	9.61	0.21	0.00	0.06		100	100	0.00	0.86
2A	1	S/L	2			215	9999	100	0.00	2	4086	2.19	0.00	0.00	0.00		100	100	0.00	0.00
2Ax	1					115	Unrestricted	100	22.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			72	461	100	0.00	16	476	3.27	1.08	0.00	0.02		100	100	0.00	0.31
2Bx	1					95	Unrestricted	100	26.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			64	1800	100	32.00	4	2431	4.98	0.04	0.00	0.00		100	100	0.00	0.01
	2	R	2			53	632	100	78.00	8	973	5.37	0.39	0.00	0.01		100	100	0.00	0.08
2Cx	1		8			194	1800	100	0.00	11	735	3.05	0.12	0.00	0.01		100	100	0.00	0.09
3Ax	1		7			1333	1800	100	5.00	74	22	13.74	2.83	0.00	1.05		100	100	0.00	14.89
3B	1	L	3	3	B	44	3600	5	4.00	20	342	49.43	46.91	95.93	1.19	1.17	100	100	0.00	8.67
3C	1	S	3	3	C	1333 <	1800	84	0.00	87	3	17.85	12.01	58.86	23.95 +	8.39	100	100	0.00	72.98
	2	R	3	3	D	109	1800	8	0.00	67	34	71.68	65.84	115.44	3.57	3.41	100	100	0.00	29.89
3Cx	1					1084	Unrestricted	100	16.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	1040 <	3600	63	0.00	45	99	11.86	10.00	47.48	14.27 +	10.58	100	100	0.00	47.20
3Bx1	1		4			109	1800	100	88.00	6	1386	4.70	0.06	0.00	0.00		100	100	0.00	0.03
3A2	1		6			530	1800	100	34.00	29	206	18.74	0.42	0.00	0.06		100	100	0.00	0.87
	2		6			520	1800	100	34.00	29	212	18.75	0.41	0.00	0.06		100	100	0.00	0.83
3Bx2	1					119	Unrestricted	100	87.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			10	683	100	100.00	1	6049	1.11	0.04	0.00	0.00		100	100	0.00	0.00
3A4	1		5			10	1800	100	100.00	1	16100	2.33	0.01	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	922.23	72.05	12.80	13.26	28.05	586.57	47.22	0.00	633.79
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	922.23	72.05	12.80	13.26	28.05	586.57	47.22	0.00	633.79

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

TRANSYT 16

Filename: H087 TRANSYT Model Existing Config 20210911.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:49:49

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Existing J3 Configuration - 2039 Do Nothing				
Network	D12	573.18	37.01	89% (TS 1B/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	11/09/2021
Version	Existing Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Existing J3 Configuration
D12 - 2039 Do Nothing, PM

Summary

Data Errors and Warnings

Severity	Area	Item	Description
Info	T-Junction Geometry	T-Junction 3a	T-Junction 3a: TRANSYT using double the user-specified Total Carriageway Width.

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:49:37	17/09/2021 20:49:39	2.61	16:30	100	573.18	37.01	89.47	1B/1	0	0	1B/1	3A2/1	1B/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Existing J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2039 Do Nothing	PM				16:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓
3a			✓	TrafficStream	Entry Only		3Bx1/1		Entry Only		3A3/1		Exit Only			3Bx2/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00
3a	4.00	4.00	0.00	2.20	0.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00
3a	4.00	2.20	20.00	35.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23
3a	711	0.10	0.25	461	0.08	0.19	0.12	0.28	574	0.20	0.20

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	46	446
	2-2	38	0	33
	2-3	54	29	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	54
	3		2-1	2-2	2A/1, 2Bx/1	Normal	46
	4		2-1	2-3	2A/1, 2Cx/1	Normal	446
	5		2-2	2-3	2B/1, 2Cx/1	Normal	33
	6		2-2	2-1	2B/1, 2Ax/1	Normal	38
	7		2-3	2-2	2C/2, 2Bx/1	Normal	29

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	83	1641
	1-2	174	0	306
	1-3	833	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	833
	2		1-1	1-3	1A/2, 1Cx/1	Normal	821
	3		1-1	1-3	1A/1, 1Cx/1	Normal	821
	4		1-1	1-2	1A/1, 1Bx/1	Normal	83
	6		1-2	1-3	1B/1, 1Cx/1	Normal	306
	7		1-2	1-1	1B/2, 1Ax/1	Normal	174

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	16	1974
	3-2	0	0	126
	3-3	831	35	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	126
	2		3-3	3-2	3C/2, 3Bx1/1, 3Bx2/1	Normal	35
	4		3-3	3-1	3C/1, 3Ax/1	Normal	831
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	987
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	987
	7		3-1	3-2	3A2/1, 3A4/1, 3A3/1, 3Bx2/1	Normal	16

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	21, 44, 52	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

From \ To	A	B	C	D	E	F	G	H
A			5	5		5	5	
B			5	5		5		
C	5	5					5	
D	5	5			5		5	5
E				5				5
F	8	8						
G	13		13	13				
H				8	8			

Banned Stage transitions for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

Interstage Matrix for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1	0	5	5	5	5	5	5	5	5
2	8	0	8	5	8	8	5	8	5
3	13	13	0	5	13	13	13	5	5
4	13	13	8	0	13	13	13	8	5
5	8	8	8	8	0	5	5	5	5
6	8	8	8	8	5	0	5	5	5
7	8	8	8	8	8	8	0	8	5
8	13	13	8	8	13	13	13	0	5
9	13	13	8	8	13	13	13	8	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,B,E	65	21	56	1	5
	2	✓	5	C,D,F	26	44	18	1	5
	3	✓	9	F,G,H	49	52	3	1	3

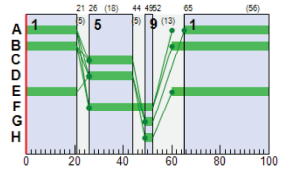
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	65	21	56
	B	1	✓	60	21	61
	C	1	✓	26	44	18
	D	1	✓	26	44	18
	E	1	✓	60	21	61
	F	1	✓	26	52	26
	G	1	✓	49	52	3
	H	1	✓	49	52	3

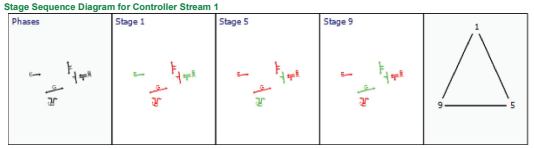
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	65	21	56
1A	2	1	1	B	60	21	61
1B	1	1	1	C	26	44	18
1B	2	1	1	D	26	44	18
1C	1	1	1	E	60	21	61

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	42

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	32, 51, 59	42	
	2	(untitled)	Single	1, 4, 5	23, 60, 90	43	
	3	(untitled)	Single	1, 4, 7	24, 62, 90	39	
	4	(untitled)	Single	1, 5, 4	24, 62, 90	42	
	5	(untitled)	Single	1, 7, 3	23, 60, 90	43	
	6	(untitled)	Single	1, 7, 4	24, 62, 90	39	
	7	(untitled)	Single	2, 3, 5	24, 62, 90	39	
	8	(untitled)	Single	2, 3, 7	24, 62, 90	40	
	9	(untitled)	Single	2, 4, 5	23, 60, 90	47	
	10	(untitled)	Single	2, 5, 3	24, 62, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5						5
C						5	
D	5						5
E	10						
F			8				
G		14		14			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	14	14	14	5	14	5
	2	8	0	14	14	14	8	14	5
	3	10	10	0	5	0	5	5	5
	4	10	10	8	0	8	8	0	5
	5	10	10	0	5	0	5	5	5
	6	10	10	14	14	14	0	14	5
	7	10	10	8	0	8	8	0	5
	8	10	10	14	14	14	8	14	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)
3	1	✓	1	A,C,G	69	32	63	1	5
	2	✓	3	B,C,E	46	51	5	1	5
	3	✓	7	D,E,F	56	59	3	1	3

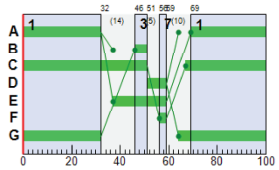
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	69	32	63
	B	1	✓	46	51	5
	C	1	✓	67	51	84
	D	1	✓	51	59	8
	E	1	✓	37	59	22
	F	1	✓	56	59	3
	G	1	✓	64	32	68

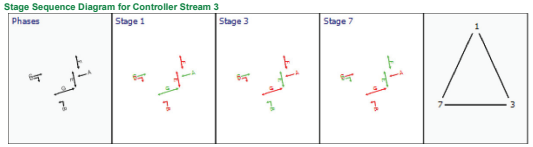
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	46	51	5
3C	1	3	3	C	67	51	84
3C	2	3	3	D	51	59	8
3A1	1	3	3	A	69	32	63

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	904 <	1800	56	0.00	88	2	34.25	30.78	94.85	24.66 +	13.86	100	100	0.00	120.52
	2	S	1	1	B	821 <	1800	61	0.00	74	22	21.18	17.71	71.17	16.75 +	9.68	100	100	0.00	64.68
1Ax	1					1007	Unrestricted	100	12.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
	1	L	1	1	C	306 <	1800	18	0.00	89	1	82.24	76.14	129.06	11.36 +	10.00	100	100	0.00	96.85

1B	2	R	1	1	D	174	1800	18	0.00	51	77	47.86	41.73	93.11	4.56	4.18	100	100	0.00	30.67
1Bx	1		8			83	1800	100	44.00	5	1852	7.33	0.05	0.00	0.00		100	100	0.00	0.02
1C	1	S/R	1	1	E	833	1800	61	0.00	75	21	36.72	18.20	66.50	15.52	10.01	100	100	0.00	66.74
1Cx	1		7			1948	3600	100	7.00	54	66	10.00	0.59	0.00	0.32		100	100	0.00	4.53
2A	1	S/L	2			492	9999	100	0.00	5	1729	2.20	0.01	0.00	0.00		100	100	0.00	0.02
2Ax	1					92	Unrestricted	100	40.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			71	433	100	0.00	16	448	3.41	1.22	0.00	0.02		100	100	0.00	0.34
2Bx	1					75	Unrestricted	100	41.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			54	1800	100	52.00	3	2900	4.97	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			29	567	100	100.00	5	1660	5.24	0.26	0.00	0.00		100	100	0.00	0.03
2Cx	1		8			479	1800	100	0.00	27	238	3.29	0.36	0.00	0.05		100	100	0.00	0.68
3Ax	1		7			831	1800	100	6.00	46	95	11.77	0.86	0.00	0.20		100	100	0.00	2.81
3B	1	L	3	3	B	126	3600	5	0.00	58	54	59.76	57.23	106.92	3.79	3.69	100	100	0.00	30.13
3C	1	S	3	3	C	831	1800	84	0.00	54	66	9.33	3.49	26.15	6.55	3.78	100	100	0.00	14.15
	2	R	3	3	D	35	1800	8	7.00	22	317	51.16	45.32	93.84	0.92	0.91	100	100	0.00	6.67
3Cx	1					2101	Unrestricted	100	10.00	0	Unrestricted	9.26	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S	3	3	A	1975 <	3600	63	0.00	86	5	16.48	14.61	43.53	24.07 +	20.08	100	100	0.00	124.62
3Bx1	1		4			35	1800	100	92.00	2	4529	4.65	0.02	0.00	0.00		100	100	0.00	0.00
3A2	1		6			1004	1800	100	53.00	56	61	19.58	1.26	0.00	0.35		100	100	0.00	4.98
	2		6			988	1800	100	53.00	55	64	19.56	1.21	0.00	0.33		100	100	0.00	4.72
3Bx2	1					51	Unrestricted	100	90.00	0	Unrestricted	2.65	0.00	0.00	0.00		100	100	0.00	0.00
3A3	1	L	4			16	702	100	100.00	2	3846	1.13	0.06	0.00	0.00		100	100	0.00	0.00
3A4	1		5			16	1800	100	100.00	1	10020	2.34	0.01	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	1083.93	73.14	14.82	23.93	13.08	525.56	47.61	0.00	573.18
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	1083.93	73.14	14.82	23.93	13.08	525.56	47.61	0.00	573.18

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

TRANSYT 16

Version: 16.0.1.8473

Filename: H087 TRANSYT Model Proposed Config 20210910.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:55:52

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Proposed J3 Configuration - 2039 With Development				
Network	D13	653.11	42.76	100% (TS 1C/1)	2 (5%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	10/09/2021
Version	Proposed Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Proposed J3 Configuration
D13 - 2039 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:55:47	17/09/2021 20:55:50	3.44	07:30	100	653.11	42.76	100.30	1C/1	2	5	1C/1	3Ax/1	1C/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Proposed J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2039 With Development	AM				07:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	44	173
	2-2	67	0	28
	2-3	64	56	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	64
	3		2-1	2-2	2A/1, 2Bx/1	Normal	44
	4		2-1	2-3	2A/1, 2Cx/1	Normal	173
	5		2-2	2-3	2B/1, 2Cx/1	Normal	28
	6		2-2	2-1	2B/1, 2Ax/1	Normal	67
	7		2-3	2-2	2C/2, 2Bx/1	Normal	56

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	119	977
	1-2	123	0	78
	1-3	1336	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	1336
	2		1-1	1-3	1A/2, 1Cx/1	Normal	489
	3		1-1	1-3	1A/1, 1Cx/1	Normal	489
	4		1-1	1-2	1A/1, 1Bx/1	Normal	119
	6		1-2	1-3	1B/1, 1Cx/1	Normal	78
	7		1-2	1-1	1B/2, 1Ax/1	Normal	123

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	11	1040
	3-2	0	0	58
	3-3	1333	115	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
3	3-1		3A/2, 3A/1	3Ax/1	#008000
	3-2		3B/1	3Bx1/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	58
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1333
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	260
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	260
	7		3-1	3-3	3A2/2, 3A1/2, 3Cx/1	Normal	260
	8		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	260
	9		3-1	3-2	3A2/2, 3A1/1, 3Bx1/1	Normal	6
	10		3-1	3-2	3A2/1, 3A1/1, 3Bx1/1	Normal	6
	11		3-3	3-2	3C/2, 3Bx1/1	Normal	115

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	62, 73, 81	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

		To							
		A	B	C	D	E	F	G	H
From	A			5	5		5	5	
	B			5	5		5		
	C	5	5					5	
	D	5	5			5		5	5
	E				5				5
	F	8	8						
	G	13		13	13				
	H				8	8			

Banned Stage transitions for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									

Interstage Matrix for Controller Stream 1

		To								
		1	2	3	4	5	6	7	8	9
From	1	0	5	5	5	5	5	5	5	5
	2	8	0	8	5	8	8	5	8	5
	3	13	13	0	5	13	13	13	5	5
	4	13	13	8	0	13	13	13	8	5
	5	8	8	8	8	0	5	5	5	5
	6	8	8	8	8	5	0	5	5	5
	7	8	8	8	8	8	8	0	8	5
	8	13	13	8	8	13	13	13	0	5
	9	13	13	8	8	13	13	13	8	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,B,E	94	62	68	1	5
	2	✓	5	C,D,F	67	73	6	1	5
	3	✓	9	F,G,H	78	81	3	1	3

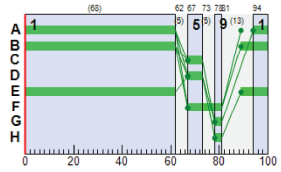
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	94	62	68
	B	1	✓	89	62	73
	C	1	✓	67	73	6
	D	1	✓	67	73	6
	E	1	✓	89	62	73
	F	1	✓	67	81	14
	G	1	✓	78	81	3
	H	1	✓	78	81	3

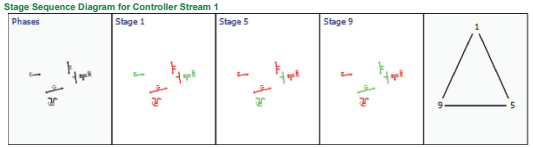
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	94	62	68
1A	2	1	1	B	89	62	73
1B	1	1	1	C	67	73	6
1B	2	1	1	D	67	73	6
1C	1	1	1	E	89	62	73

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			10	NetworkDefault	100	35

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, C, H	1	1	100
	3	A, F, G	1	1	100
	4	A, F, H	1	1	100
	5	B, C, D, E	1	1	100
	6	B, D, E, F	1	1	100
	7	C, E, G	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 2, 6	23, 60, 90	38	
	2	(untitled)	Single	1, 4, 5	22, 58, 90	38	
	3	(untitled)	Single	1, 4, 6	25, 61, 90	40	
	4	(untitled)	Single	1, 5, 4	22, 60, 92	41	
	5	(untitled)	Single	1, 6, 2	23, 62, 95	40	
	6	(untitled)	Single	1, 6, 4	24, 61, 92	45	
	7	(untitled)	Single	2, 3, 5	23, 51, 90	40	
	8	(untitled)	Single	2, 3, 6	25, 52, 90	40	
	9	(untitled)	Single	2, 5, 3	23, 53, 86	38	
	10	(untitled)	Single	2, 5, 8	57, 73, 81	35	

Intergreen Matrix for Controller Stream 3

		To							
		A	B	C	D	E	F	G	H
From	A		5		5	5			
	B	5						5	5
	C					5			
	D	5						5	5
	E	10							10
	F			8					
	G		14		14				14
	H		5		5	5		5	

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	14	5	14	14	14	5	5
	2	5	0	5	5	5	5	5	5
	3	8	14	0	14	14	14	8	5
	4	8	8	5	0	8	5	8	5
	5	10	10	10	10	0	5	5	5
	6	10	10	10	10	8	0	8	5
	7	10	14	10	14	14	14	0	5
	8	10	14	10	14	14	14	8	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)
3	1	✓	2	A,C,H	95	57	62	1	3
	2	✓	5	B,C,D,E	62	73	11	1	5
	3	✓	8	E,F,G	78	81	3	1	3

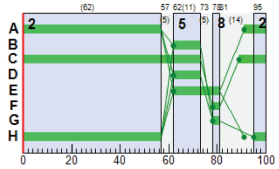
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	91	57	66
	B	1	✓	62	73	11
	C	1	✓	89	73	84
	D	1	✓	62	73	11
	E	1	✓	62	81	19
	F	1	✓	78	81	3
	G	1	✓	78	81	3
	H	1	✓	95	57	62

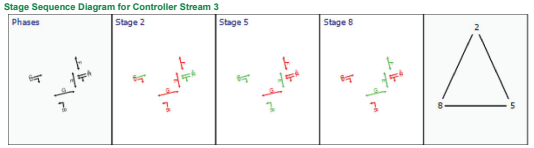
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	62	73	11
3C	1	3	3	C	89	73	84
3C	2	3	3	D	62	73	11
3A1	1	3	3	H	95	57	62
3A1	2	3	3	A	91	57	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	
1A	1	S/L	1	1	A	608 <	1800	68	0.00	49	84	12.11	8.64	45.63	8.00 +	5.47	100	100	0.00	24.21
	2	S	1	1	B	489	1800	73	0.00	37	145	8.89	5.43	34.18	4.86	3.64	100	100	0.00	12.56
1Ax	1					1455	Unrestricted	100	6.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00

1B	1	L	1	1	C	78	1800	6	0.00	62	45	73.52	67.42	116.74	2.58	2.50	100	100	0.00	21.89
	2	R	1	1	D	123	1800	6	0.00	98	-8	181.12	174.99	192.65	7.78	7.57	100	100	0.00	87.87
1Bx	1		8			119	1800	100	30.00	7	1261	7.35	0.07	0.00	0.00		100	100	0.00	0.03
1C	1	S/R	1	1	E	1336 <	1800	73	0.00	100	-10	79.13	60.61	113.57	55.37 +	28.90	100	100	0.00	338.37
1Cx	1		7			1056	3600	100	8.00	29	207	9.62	0.21	0.00	0.06		100	100	0.00	0.86
2A	1	S/L	2			217	9999	100	0.00	2	4047	2.19	0.00	0.00	0.00		100	100	0.00	0.00
2Ax	1					131	Unrestricted	100	0.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			95	460	100	0.00	21	336	3.71	1.52	0.00	0.04		100	100	0.00	0.57
2Bx	1					100	Unrestricted	100	26.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			64	1800	100	33.00	4	2431	4.98	0.04	0.00	0.00		100	100	0.00	0.01
	2	R	2			56	632	100	76.00	9	915	5.40	0.42	0.00	0.01		100	100	0.00	0.09
2Cx	1		8			201	1800	100	0.00	11	706	3.05	0.13	0.00	0.01		100	100	0.00	0.10
3Ax	1		7			1333	1800	100	5.00	74	22	13.74	2.83	0.00	1.05		100	100	0.00	14.89
3B	1	L	3	3	B	58	3600	11	10.00	13	570	42.60	40.07	88.46	1.44	1.43	100	100	0.00	9.81
3C	1	S	3	3	C	1333 <	1800	84	0.00	87	3	17.85	12.01	58.86	23.95 +	8.39	100	100	0.00	72.98
	2	R	3	3	D	115	1800	11	0.00	53	69	56.54	50.70	100.99	3.27	3.11	100	100	0.00	24.45
3Cx	1					1099	Unrestricted	100	16.00	0	Unrestricted	9.48	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S/L	3	3	H	532 <	1800	62	1.00	47	92	11.83	9.95	42.62	6.40 +	5.17	100	100	0.00	23.69
	2	S	3	3	A	520 <	1800	66	1.00	43	109	9.88	7.99	39.12	5.84 +	4.60	100	100	0.00	18.95
3Bx1	1		4			126	1800	100	86.00	7	1186	6.24	0.08	0.00	0.00		100	100	0.00	0.04
3A2	1		6			526	1800	100	32.00	29	208	18.73	0.41	0.00	0.06		100	100	0.00	0.86
	2		6			526	1800	100	32.00	29	208	18.76	0.41	0.00	0.06		100	100	0.00	0.86

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	929.00	73.72	12.60	13.92	28.84	607.12	45.99	0.00	653.11
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	929.00	73.72	12.60	13.92	28.84	607.12	45.99	0.00	653.11

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

TRANSYT 16

Filename: H087 TRANSYT Model Proposed Config 20210910.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:56:17

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	Proposed J3 Configuration - 2039 With Development				
Network	D14	567.31	36.68	90% (TS 1A/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	10/09/2021
Version	Proposed Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - Proposed J3 Configuration
D14 - 2039 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:56:12	17/09/2021 20:56:14	2.55	16:30	100	567.31	36.68	89.57	1A/1	0	0	1A/1	3A2/1	1A/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
Proposed J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2039 With Development	PM				16:30		✓

T-Junctions

T-Junctions

T-Junction	Name	Description	Auto assign priority	Type	Traffic direction on Arm A	Entry aB	Entry aC	Exit a	Traffic direction on Arm B	Entry bA	Entry bC	Exit b	Traffic direction on Arm C	Entry cA	Entry cB	Exit c	Calculate Slope and Intercept
2			✓	TrafficStream	Two-Way	2A/1	2A/1	2Ax/1	Two-Way	2B/1	2B/1	2Bx/1	Two-Way	2C/1	2C/2	2Cx/1	✓

T-Junction Majors

T-Junction	Left Carriageway Width (m)	Right Carriageway Width (m)	Kerbed Central Reserve Width (m)	Width for C-B traffic (m)	Visibility for C-B traffic (m)
2	8.60	8.60	0.00	2.50	150.00

T-Junction Minors

T-Junction	B-C Lane Width (m)	B-A Lane Width (m)	B-C Visibility (m)	B-A Visibility (m)
2	2.40	2.40	64.00	43.00

T-Junction Slope Intercept

T-Junction	BCIntercept (PCU/hr)	BC- aBSlope	BC- aCSlope	BAIntercept (PCU/hr)	BA- aBSlope	BA- aCSlope	BA- cASlope	BA- cBSlope	CBIntercept (PCU/hr)	CB- aBSlope	CB- aCSlope
2	612	0.08	0.21	488	0.08	0.20	0.13	0.28	682	0.23	0.23

Local OD Matrix - Local Matrix: 2

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
2		✓	✓	Lane Balancing			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		2-1	2-2	2-3
From	2-1	0	65	446
	2-2	45	0	39
	2-3	54	41	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
2	2-1		2A/1	2Ax/1	#FF0000
	2-2		2B/1	2Bx/1	#00FF00
	2-3		2C/1, 2C/2	2Cx/1	#0000FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
2	2		2-3	2-1	2C/1, 2Ax/1	Normal	54
	3		2-1	2-2	2A/1, 2Bx/1	Normal	65
	4		2-1	2-3	2A/1, 2Cx/1	Normal	446
	5		2-2	2-3	2B/1, 2Cx/1	Normal	39
	6		2-2	2-1	2B/1, 2Ax/1	Normal	45
	7		2-3	2-2	2C/2, 2Bx/1	Normal	41

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	Limit paths by flow	Low path flow threshold
1		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		1-1	1-2	1-3
From	1-1	0	95	1648
	1-2	180	0	306
	1-3	833	0	0

Bus Input Flows not shown as they are blank.

Tram Input Flows not shown as they are blank.

Pedestrian Input Flows not shown as they are blank.

Locations

OD Matrix	Location	Name	Entries	Exits	Colour
1	1-1		1A/2, 1A/1	1Ax/1	#FFFF00
	1-2		1B/1, 1B/2	1Bx/1	#00FFFF
	1-3		1C/1	1Cx/1	#FF00FF

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
1	1		1-3	1-1	1C/1, 1Ax/1	Normal	833
	2		1-1	1-3	1A/2, 1Cx/1	Normal	824
	3		1-1	1-3	1A/1, 1Cx/1	Normal	824
	4		1-1	1-2	1A/1, 1Bx/1	Normal	95
	6		1-2	1-3	1B/1, 1Cx/1	Normal	306
	7		1-2	1-1	1B/2, 1Ax/1	Normal	180

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	23	1974
	3-2	0	0	149
	3-3	831	49	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
3	3-1		3A2/2, 3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx1/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	1		3-2	3-3	3B/1, 3Cx/1	Normal	149
	4		3-3	3-1	3C/1, 3Ax/1	Normal	831
	5		3-1	3-3	3A2/2, 3A1/1, 3Cx/1	Normal	494
	6		3-1	3-3	3A2/1, 3A1/1, 3Cx/1	Normal	494
	7		3-1	3-3	3A2/2, 3A1/2, 3Cx/1	Normal	494
	8		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	494
	9		3-1	3-2	3A2/2, 3A1/1, 3Bx1/1	Normal	12
	10		3-1	3-2	3A2/1, 3A1/1, 3Bx1/1	Normal	12
	11		3-3	3-2	3C/2, 3Bx1/1	Normal	49

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 1

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
1			3	NetworkDefault	100	36

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	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
1	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		5	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
1	1	A, B, E	1	1	100
	2	A, B, H	1	1	100
	3	B, E, G	1	1	100
	4	B, G, H	1	1	100
	5	C, D, F	1	1	100
	6	C, E, F	1	1	100
	7	C, F, H	1	1	100
	8	E, F, G	1	1	100
	9	F, G, H	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
1	1	(untitled)	Single	1, 4, 5	26, 54, 92	39	
	2	(untitled)	Single	1, 5, 4	26, 56, 87	37	
	3	(untitled)	Single	1, 5, 9	18, 41, 49	36	
	4	(untitled)	Single	1, 9, 5	26, 54, 92	39	
	5	(untitled)	Single	2, 3, 5	24, 56, 92	44	
	6	(untitled)	Single	2, 5, 3	24, 56, 87	41	
	7	(untitled)	Single	2, 5, 8	25, 58, 87	41	
	8	(untitled)	Single	2, 8, 5	24, 56, 92	44	
	9	(untitled)	Single	1, 2, 3, 5	17, 37, 62, 92	49	
	10	(untitled)	Single	1, 2, 4, 5	19, 39, 61, 92	42	

Intergreen Matrix for Controller Stream 1

From \ To	A	B	C	D	E	F	G	H
A			5	5		5	5	
B			5	5		5		
C	5	5					5	
D	5	5			5		5	5
E				5				5
F	8	8						
G	13		13	13				
H				8	8			

Banned Stage transitions for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1									
2									
3									
4									
5									
6									
7									
8									
9									

Interstage Matrix for Controller Stream 1

From \ To	1	2	3	4	5	6	7	8	9
1	0	5	5	5	5	5	5	5	5
2	8	0	8	5	8	8	5	8	5
3	13	13	0	5	13	13	13	5	5
4	13	13	8	0	13	13	13	8	5
5	8	8	8	8	0	5	5	5	5
6	8	8	8	8	5	0	5	5	5
7	8	8	8	8	8	8	0	8	5
8	13	13	8	8	13	13	13	0	5
9	13	13	8	8	13	13	13	8	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,B,E	62	18	56	1	5
	2	✓	5	C,D,F	23	41	18	1	5
	3	✓	9	F,G,H	46	49	3	1	3

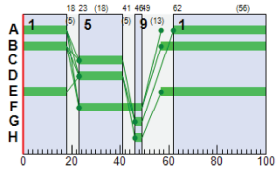
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
1	A	1	✓	62	18	56
	B	1	✓	57	18	61
	C	1	✓	23	41	18
	D	1	✓	23	41	18
	E	1	✓	57	18	61
	F	1	✓	23	49	26
	G	1	✓	46	49	3
	H	1	✓	46	49	3

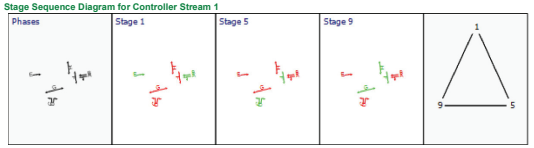
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1A	1	1	1	A	62	18	56
1A	2	1	1	B	57	18	61
1B	1	1	1	C	23	41	18
1B	2	1	1	D	23	41	18
1C	1	1	1	E	57	18	61

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			10	NetworkDefault	100	35

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown
	H		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, C, H	1	1	100
	3	A, F, G	1	1	100
	4	A, F, H	1	1	100
	5	B, C, D, E	1	1	100
	6	B, D, E, F	1	1	100
	7	C, E, G	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 2, 6	23, 60, 90	38	
	2	(untitled)	Single	1, 4, 5	22, 58, 90	38	
	3	(untitled)	Single	1, 4, 6	25, 61, 90	40	
	4	(untitled)	Single	1, 5, 4	22, 60, 92	41	
	5	(untitled)	Single	1, 6, 2	23, 62, 95	40	
	6	(untitled)	Single	1, 6, 4	24, 61, 92	45	
	7	(untitled)	Single	2, 3, 5	23, 51, 90	40	
	8	(untitled)	Single	2, 3, 6	25, 52, 90	40	
	9	(untitled)	Single	2, 5, 3	23, 53, 86	38	
	10	(untitled)	Single	2, 5, 8	39, 49, 57	35	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G	H
A		5		5	5			
B	5						5	5
C						5		
D	5						5	5
E	10							10
F			8					
G		14		14				14
H		5		5	5		5	

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	14	5	14	14	14	5	5
	2	5	0	5	5	5	5	5	5
	3	8	14	0	14	14	14	8	5
	4	8	8	5	0	8	5	8	5
	5	10	10	10	10	0	5	5	5
	6	10	10	10	10	8	0	8	5
	7	10	14	10	14	14	14	0	5
	8	10	14	10	14	14	14	8	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)
3	1	✓	2	A,C,H	71	39	68	1	3
	2	✓	5	B,C,D,E	44	49	5	1	5
	3	✓	8	E,F,G	54	57	3	1	3

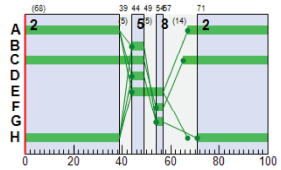
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	67	39	72
	B	1	✓	44	49	5
	C	1	✓	65	49	84
	D	1	✓	44	49	5
	E	1	✓	44	57	13
	F	1	✓	54	57	3
	G	1	✓	54	57	3
	H	1	✓	71	39	68

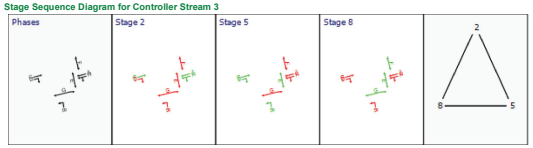
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	44	49	5
3C	1	3	3	C	65	49	84
3C	2	3	3	D	44	49	5
3A1	1	3	3	H	71	39	68
3A1	2	3	3	A	67	39	72

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	(ALL)	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)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1A	1	S/L	1	1	A	919 <	1800	56	0.00	90	0	36.27	32.80	97.84	25.76 +	14.53	100	100	0.00	130.18
	2	S	1	1	B	824 <	1800	61	0.00	74	22	21.28	17.81	71.39	17.05	9.73	100	100	0.00	65.27

1Ax	1					1013	Unrestricted	100	12.00	0	Unrestricted	8.67	0.00	0.00	0.00		100	100	0.00	0.00
1B	1	L	1	1	C	306 <	1800	18	0.00	89	1	82.24	76.14	129.06	11.36 +	10.00	100	100	0.00	96.85
	2	R	1	1	D	180	1800	18	0.00	53	71	48.37	42.24	93.52	4.74	4.34	100	100	0.00	32.10
1Bx	1		8			95	1800	100	42.00	5	1605	7.34	0.06	0.00	0.00		100	100	0.00	0.02
1C	1	S/R	1	1	E	833	1800	61	0.00	75	21	36.84	18.31	67.50	15.78	10.03	100	100	0.00	67.22
1Cx	1		7			1954	3600	100	7.00	54	66	10.00	0.59	0.00	0.32		100	100	0.00	4.57
2A	1	S/L	2			511	9999	100	0.00	5	1661	2.20	0.01	0.00	0.00		100	100	0.00	0.02
2Ax	1					99	Unrestricted	100	38.00	0	Unrestricted	3.83	0.00	0.00	0.00		100	100	0.00	0.00
2B	1	L/R	2			84	429	100	0.00	20	359	3.72	1.53	0.00	0.04		100	100	0.00	0.51
2Bx	1					106	Unrestricted	100	0.00	0	Unrestricted	3.08	0.00	0.00	0.00		100	100	0.00	0.00
2C	1	S	2			54	1800	100	51.00	3	2900	4.97	0.03	0.00	0.00		100	100	0.00	0.01
	2	R	2			41	563	100	57.00	7	1135	5.36	0.38	0.00	0.00		100	100	0.00	0.06
2Cx	1		8			485	1800	100	0.00	27	234	3.29	0.37	0.00	0.05		100	100	0.00	0.71
3Ax	1		7			831	1800	100	6.00	46	95	11.77	0.86	0.00	0.20		100	100	0.00	2.81
3B	1	L	3	3	B	149	3600	5	0.00	69	30	66.40	63.87	113.43	4.79	4.63	100	100	0.00	39.66
3C	1	S	3	3	C	831	1800	84	0.00	54	66	9.33	3.49	26.15	6.55	3.78	100	100	0.00	14.15
	2	R	3	3	D	49	1800	5	3.00	45	98	64.85	59.01	107.92	1.49	1.46	100	100	0.00	12.07
3Cx	1					2123	Unrestricted	100	7.00	0	Unrestricted	9.48	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	S/L	3	3	H	1010 <	1800	68	0.00	81	11	14.04	12.16	34.28	9.75 +	8.61	100	100	0.00	52.77
	2	S	3	3	A	987 <	1800	72	0.00	75	20	10.78	8.90	31.61	8.74 +	7.06	100	100	0.00	38.54
3Bx1	1		4			72	1800	100	91.00	4	2150	6.21	0.04	0.00	0.00		100	100	0.00	0.01
3A2	1		6			999	1800	100	44.00	55	62	19.56	1.24	0.00	0.34		100	100	0.00	4.90
	2		6			999	1800	100	44.00	55	62	19.59	1.24	0.00	0.34		100	100	0.00	4.90

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	1097.67	73.26	14.98	22.21	14.46	520.79	46.52	0.00	567.31
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	1097.67	73.26	14.98	22.21	14.46	520.79	46.52	0.00	567.31

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:57:12

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2024 Do Nothing				
Network	D3	161.96	10.19	78% (TS 3C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D3 - 2024 Do Nothing, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:57:05	17/09/2021 20:57:05	0.48	07:30	100	161.96	10.19	78.32	3C/1	0	0	3C/1	3A2/1	3C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 Do Nothing	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	9	902
	3-2	0	0	40
	3-3	1156	97	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	40
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	97
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1156
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	9
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	902

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase		Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A			5	300	0	0	Unknown
	B			5	300	0	0	Unknown
	C			5	300	0	0	Unknown
	D			5	300	0	0	Unknown
	E			3	300	0	0	Unknown
	F			3	300	0	0	Unknown

	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 80	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

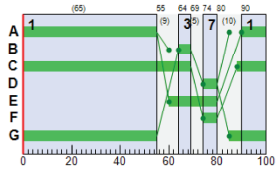
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

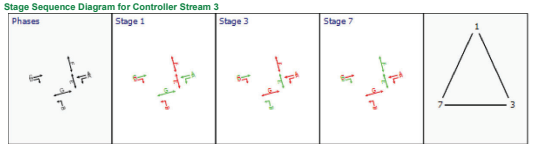
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1156	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	40	1800	5	3.00	37	143	57.77	54.88	104.22	1.17	1.15	100	100	0.00	9.18
3C	1	S	3	3	C	1156 <	1800	81	0.00	78	15	15.01	8.87	49.91	17.45 +	7.18	100	100	0.00	47.70
	2	R	3	3	D	97	1800	6	0.00	77	17	94.11	87.98	134.84	3.78	3.64	100	100	0.00	35.30
3Cx	1					942	Unrestricted	100	16.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	9	1800	65	65.00	1	11780	8.79	5.96	32.83	0.09	0.09	100	100	0.00	0.25
	2	S	3	3	A	902 <	1800	65	0.00	76	19	19.02	16.30	69.44	18.22 +	9.70	100	100	0.00	65.85
3A2	1		6			911	1800	100	57.00	51	78	5.09	1.02	0.00	0.26		100	100	0.00	3.68
3Bx2	1					106	Unrestricted	100	86.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	296.07	20.06	14.76	6.11	4.08	144.67	17.29	0.00	161.96
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	296.07	20.06	14.76	6.11	4.08	144.67	17.29	0.00	161.96

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:58:13

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2024 Do Nothing				
Network	D4	4003.85	277.66	142% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D4 - 2024 Do Nothing, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:58:11	17/09/2021 20:58:11	0.83	16:30	100	4003.85	277.66	142.04	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 Do Nothing	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	14	1713
	3-2	0	0	112
	3-3	721	32	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	112
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	32
	4		3-3	3-1	3C/1, 3Ax/1	Normal	721
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	14
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1713

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

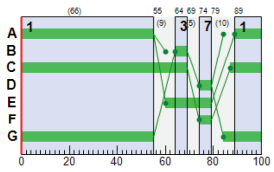
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

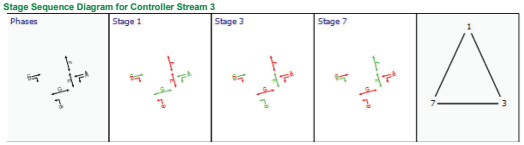
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			721	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	112 <	1800	5	0.00	104	-13	238.55	235.65	226.98	8.89 +	8.74	100	100	0.00	107.18
3C	1	S	3	3	C	721	1800	82	0.00	48	86	9.67	3.53	26.69	5.83	3.63	100	100	0.00	12.46
	2	R	3	3	D	32	1800	5	4.00	30	204	58.13	51.99	100.65	0.91	0.90	100	100	0.00	6.97
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	14	1800	66	66.00	1	7653	8.45	5.63	31.83	0.13	0.13	100	100	0.00	0.37
	2	S	3	3	A	1713 <	1800	66	0.00	142	-37	549.56	546.84	364.53	287.84 +	265.73	100	100	0.00	3750.06
3A2	1		6			1727 <	1800	100	100.00	96	-6	22.69	18.62	0.00	8.93 +		100	100	0.00	126.81
3Bx2	1					46	Unrestricted	100	89.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	305.53	287.84	1.06	7.84	269.82	3942.78	61.07	0.00	4003.85
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	305.53	287.84	1.06	7.84	269.82	3942.78	61.07	0.00	4003.85

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:58:32

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2024 With Development				
Network	D5	171.45	10.79	79% (TS 3C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D5 - 2024 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:58:31	17/09/2021 20:58:31	0.47	07:30	100	171.45	10.79	79.29	3C/1	0	0	3C/1	3A2/1	3C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 With Development	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	902
	3-2	0	0	54
	3-3	1156	103	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	54
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	103
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1156
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	10
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	902

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase		Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A			5	300	0	0	Unknown
	B			5	300	0	0	Unknown
	C			5	300	0	0	Unknown
	D			5	300	0	0	Unknown
	E			3	300	0	0	Unknown
	F			3	300	0	0	Unknown

	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 81	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	91	55	64	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	81	7	1	5

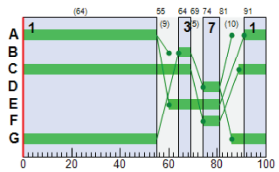
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	91	55	64
	B	1	✓	64	69	5
	C	1	✓	89	69	80
	D	1	✓	74	81	7
	E	1	✓	60	81	21
	F	1	✓	74	81	7
	G	1	✓	86	55	69

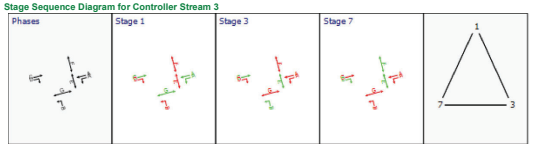
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	89	69	80
3C	2	3	3	D	74	81	7
3A1	1	3	3	A	91	55	64
3A1	2	3	3	A	91	55	64

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1156	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	54	1800	5	3.00	50	80	64.68	61.78	110.40	1.68	1.65	100	100	0.00	13.91
3C	1	S	3	3	C	1156 <	1800	80	0.00	79	14	15.84	9.70	52.99	18.51 +	7.60	100	100	0.00	51.91
	2	R	3	3	D	103	1800	7	0.00	72	26	80.25	74.11	122.99	3.61	3.47	100	100	0.00	31.70
3Cx	1					956	Unrestricted	100	15.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	10	1800	64	64.00	1	10430	9.14	6.31	33.83	0.10	0.10	100	100	0.00	0.29
	2	S	3	3	A	902 <	1800	64	0.00	77	17	20.09	17.38	71.82	18.82 +	10.05	100	100	0.00	69.95
3A2	1		6			912	1800	100	60.00	51	78	5.10	1.03	0.00	0.26		100	100	0.00	3.69
3Bx2	1					113	Unrestricted	100	84.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	298.20	20.73	14.38	6.68	4.11	153.27	18.18	0.00	171.45
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	298.20	20.73	14.38	6.68	4.11	153.27	18.18	0.00	171.45

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:58:49

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2024 With Development				
Network	D6	4150.04	287.85	142% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D6 - 2024 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:58:47	17/09/2021 20:58:48	1.23	16:30	100	4150.04	287.85	142.04	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2024 With Development	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	21	1713
	3-2	0	0	135
	3-3	721	46	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	135
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	46
	4		3-3	3-1	3C/1, 3Ax/1	Normal	721
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	21
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1713

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

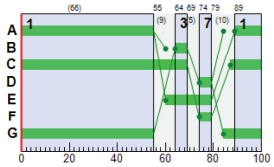
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

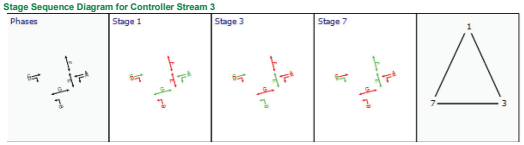
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			721	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	135 <	1800	5	0.00	125	-28	445.06	442.17	316.93	18.14 +	17.99	100	100	0.00	239.75
3C	1	S	3	3	C	721	1800	82	0.00	48	86	9.67	3.53	26.69	5.83	3.63	100	100	0.00	12.46
	2	R	3	3	D	46	1800	5	3.00	43	111	63.66	57.52	106.59	1.38	1.36	100	100	0.00	11.05
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	21	1800	66	66.00	2	5069	8.46	5.64	31.84	0.19	0.19	100	100	0.00	0.55
	2	S	3	3	A	1713 <	1800	66	0.00	142	-37	549.56	546.84	364.53	287.84 +	265.73	100	100	0.00	3750.06
3A2	1		6			1734 <	1800	100	100.00	96	-7	23.98	19.91	0.00	9.59 +		100	100	0.00	136.17
3Bx2	1					67	Unrestricted	100	87.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	308.26	298.13	1.03	8.03	279.82	4087.52	62.53	0.00	4150.04
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	308.26	298.13	1.03	8.03	279.82	4087.52	62.53	0.00	4150.04

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:59:07

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2029 Do Nothing				
Network	D7	211.50	13.38	85% (TS 3C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D7 - 2029 Do Nothing, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:59:05	17/09/2021 20:59:06	1.26	07:30	100	211.50	13.38	84.89	3C/1	0	0	3C/1	3A2/1	3C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2029 Do Nothing	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	9	977
	3-2	0	0	42
	3-3	1253	104	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	42
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	104
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1253
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	9
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	977

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase		Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A			5	300	0	0	Unknown
	B			5	300	0	0	Unknown
	C			5	300	0	0	Unknown
	D			5	300	0	0	Unknown
	E			3	300	0	0	Unknown
	F			3	300	0	0	Unknown

	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 80	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

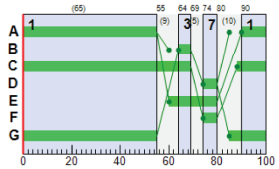
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

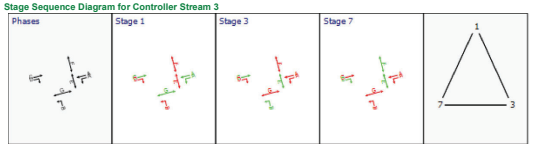
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1253	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	42	1800	5	3.00	39	131	58.61	55.72	104.99	1.24	1.22	100	100	0.00	9.78
3C	1	S	3	3	C	1253 <	1800	81	0.00	85	6	18.13	11.99	60.26	22.85 +	8.58	100	100	0.00	68.75
	2	R	3	3	D	104	1800	6	0.00	83	9	107.44	101.30	145.19	4.43	4.29	100	100	0.00	43.45
3Cx	1					1019	Unrestricted	100	15.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	9	1800	65	65.00	1	11780	8.79	5.96	32.83	0.09	0.09	100	100	0.00	0.25
	2	S	3	3	A	977 <	1800	65	0.00	82	9	22.20	19.48	77.43	21.94 +	11.08	100	100	0.00	84.57
3A2	1		6			986	1800	100	67.00	55	64	5.28	1.21	0.00	0.33		100	100	0.00	4.70
3Bx2	1					113	Unrestricted	100	85.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	320.49	24.07	13.32	7.16	6.23	190.07	21.44	0.00	211.50
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	320.49	24.07	13.32	7.16	6.23	190.07	21.44	0.00	211.50

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 20:59:25

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2029 Do Nothing				
Network	D8	5086.96	352.73	148% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D8 - 2029 Do Nothing, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 20:59:23	17/09/2021 20:59:23	0.56	16:30	100	5086.96	352.73	148.06	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2029 Do Nothing	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	15	1856
	3-2	0	0	119
	3-3	781	34	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	119
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	34
	4		3-3	3-1	3C/1, 3Ax/1	Normal	781
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	15
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1856

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G		9		9			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

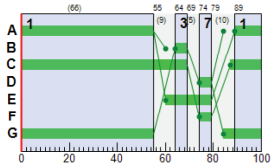
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

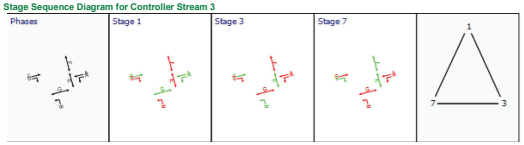
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			781	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	119 <	1800	5	0.00	110	-18	299.22	296.32	258.38	11.36 +	11.21	100	100	0.00	142.59
3C	1	S	3	3	C	781	1800	82	0.00	52	72	10.01	3.87	28.31	6.79	3.97	100	100	0.00	14.69
	2	R	3	3	D	34	1800	5	4.00	31	186	58.79	52.65	101.25	0.97	0.96	100	100	0.00	7.49
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	14	1800	66	66.00	1	7421	8.45	5.63	31.84	0.13	0.13	100	100	0.00	0.38
	2	S	3	3	A	1786 <	1800	66	0.00	148	-39	600.20	597.48	380.33	323.98 +	301.87	100	100	0.00	4265.61
3A2	1		6			1871 <	1800	100	100.00	104	-13	91.11	87.04	61.46	45.23 +		100	100	0.00	656.20
3Bx2	1					48	Unrestricted	100	89.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	320.82	363.43	0.88	7.94	344.79	5008.82	78.14	0.00	5086.96
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	320.82	363.43	0.88	7.94	344.79	5008.82	78.14	0.00	5086.96

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

TRANSYT 16

Version: 16.0.1.8473

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 21:00:28

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2029 With Development				
Network	D9	223.01	14.12	86% (TS 3C/1)	0 (0%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D9 - 2029 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 21:00:26	17/09/2021 21:00:26	0.81	07:30	100	223.01	14.12	85.94	3C/1	0	0	3C/1	3A2/1	3C/1	✓

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2029 With Development	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	977
	3-2	0	0	56
	3-3	1253	110	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	56
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	110
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1253
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	10
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	977

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown

	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 81	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	91	55	64	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	81	7	1	5

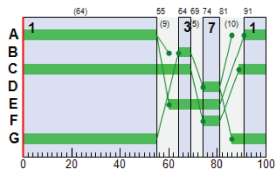
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	91	55	64
	B	1	✓	64	69	5
	C	1	✓	89	69	80
	D	1	✓	74	81	7
	E	1	✓	60	81	21
	F	1	✓	74	81	7
	G	1	✓	86	55	69

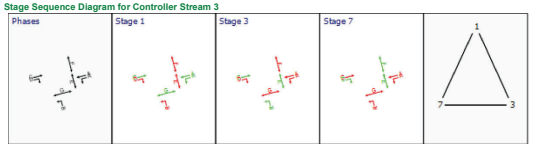
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	89	69	80
3C	2	3	3	D	74	81	7
3A1	1	3	3	A	91	55	64
3A1	2	3	3	A	91	55	64

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1253	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	56	1800	5	2.00	52	74	65.92	63.02	111.81	1.78	1.73	100	100	0.00	14.71
3C	1	S	3	3	C	1253 <	1800	80	0.00	86	5	19.38	13.24	64.17	24.12 +	9.16	100	100	0.00	75.54
	2	R	3	3	D	110	1800	7	0.00	76	18	87.65	81.51	129.13	4.08	3.92	100	100	0.00	37.15
3Cx	1					1033	Unrestricted	100	15.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	10	1800	64	64.00	1	10430	9.14	6.31	33.83	0.10	0.10	100	100	0.00	0.29
	2	S	3	3	A	977 <	1800	64	0.00	84	8	23.68	20.96	80.30	22.68 +	11.55	100	100	0.00	90.61
3A2	1		6			987	1800	100	70.00	55	64	5.28	1.21	0.00	0.33		100	100	0.00	4.72
3Bx2	1					120	Unrestricted	100	84.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	322.62	24.87	12.97	7.81	6.31	200.48	22.53	0.00	223.01
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	322.62	24.87	12.97	7.81	6.31	200.48	22.53	0.00	223.01

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 21:00:48

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2029 With Development				
Network	D10	5229.25	362.64	148% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D10 - 2029 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 21:00:46	17/09/2021 21:00:46	0.81	16:30	100	5229.25	362.64	147.51	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2029 With Development	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	22	1856
	3-2	0	0	142
	3-3	781	48	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	142
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	48
	4		3-3	3-1	3C/1, 3Ax/1	Normal	781
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	22
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1856

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

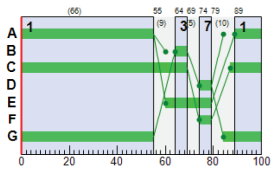
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

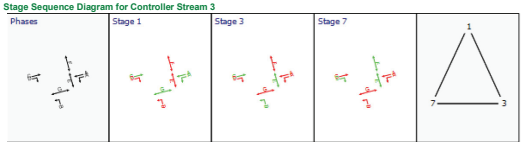
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			781	Unrestricted	100	9.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	142 <	1800	5	0.00	131	-32	504.95	502.05	337.42	21.36 +	21.21	100	100	0.00	285.77
3C	1	S	3	3	C	781	1800	82	0.00	52	72	10.01	3.87	28.31	6.79	3.97	100	100	0.00	14.69
	2	R	3	3	D	48	1800	5	3.00	44	103	64.64	58.50	107.46	1.45	1.43	100	100	0.00	11.72
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	21	1800	66	66.00	2	5047	8.46	5.64	31.84	0.19	0.19	100	100	0.00	0.55
	2	S	3	3	A	1779 <	1800	66	0.00	148	-39	595.72	593.01	378.93	320.67 +	298.56	100	100	0.00	4218.32
3A2	1		6			1878 <	1800	100	100.00	104	-14	96.38	92.31	63.74	48.16 +		100	100	0.00	698.19
3Bx2	1					69	Unrestricted	100	87.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	323.38	373.42	0.87	8.13	354.51	5149.50	79.76	0.00	5229.25
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	323.38	373.42	0.87	8.13	354.51	5149.50	79.76	0.00	5229.25

- *< = 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*

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 21:01:05

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2039 Do Nothing				
Network	D11	277.73	17.71	90% (TS 3C/1)	1 (7%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D11 - 2039 Do Nothing, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 21:01:04	17/09/2021 21:01:04	0.51	07:30	100	277.73	17.71	90.31	3C/1	1	7	3C/1	3A2/1	3C/1	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2039 Do Nothing	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	10	1040
	3-2	0	0	44
	3-3	1333	109	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	44
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	109
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1333
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	10
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1040

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase		Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A			5	300	0	0	Unknown
	B			5	300	0	0	Unknown
	C			5	300	0	0	Unknown
	D			5	300	0	0	Unknown
	E			3	300	0	0	Unknown
	F			3	300	0	0	Unknown

	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 80	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

		To						
		A	B	C	D	E	F	G
From	A		5		5	5		
	B	5			5			5
	C						5	
	D	5	5					5
	E	10						
	F			8				
	G		9		9			

Banned Stage transitions for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

Interstage Matrix for Controller Stream 3

		To							
		1	2	3	4	5	6	7	8
From	1	0	5	9	9	9	5	9	5
	2	8	0	9	9	9	8	9	5
	3	10	10	0	5	5	5	5	5
	4	10	10	8	0	8	8	5	5
	5	10	10	5	5	0	5	5	5
	6	10	10	9	9	9	0	9	5
	7	10	10	8	5	8	8	0	5
	8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

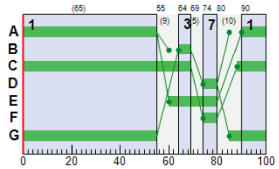
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

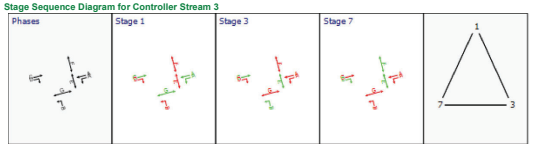
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1333	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	44	1800	5	3.00	41	121	59.49	56.60	105.77	1.31	1.29	100	100	0.00	10.41
3C	1	S	3	3	C	1333 <	1800	81	0.00	90	0	23.03	16.89	73.26	29.49 +	10.61	100	100	0.00	101.06
	2	R	3	3	D	109	1800	6	0.00	87	4	120.38	114.24	154.61	5.03	4.88	100	100	0.00	51.23
3Cx	1					1084	Unrestricted	100	15.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	10	1800	65	65.00	1	10592	8.79	5.96	32.83	0.09	0.09	100	100	0.00	0.28
	2	S	3	3	A	1040 <	1800	65	0.00	88	3	26.53	23.82	86.44	26.04 +	12.75	100	100	0.00	108.98
3A2	1		6			1050	1800	100	77.00	58	54	5.47	1.40	0.00	0.41		100	100	0.00	5.78
3Bx2	1					119	Unrestricted	100	84.00	0	Unrestricted	8.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	340.85	29.07	11.72	8.23	9.48	251.48	26.25	0.00	277.73
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	340.85	29.07	11.72	8.23	9.48	251.48	26.25	0.00	277.73

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 21:01:23

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2039 Do Nothing				
Network	D12	5904.65	409.93	148% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D12 - 2039 Do Nothing, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 21:01:21	17/09/2021 21:01:21	0.89	16:30	100	5904.65	409.93	148.05	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2039 Do Nothing	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	16	1974
	3-2	0	0	126
	3-3	831	35	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	126
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	35
	4		3-3	3-1	3C/1, 3Ax/1	Normal	831
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	16
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1974

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

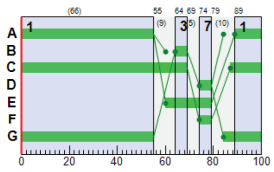
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

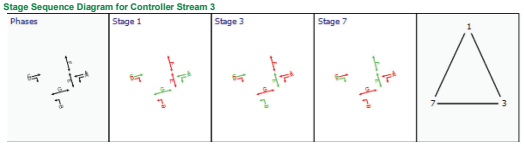
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	
3Ax	1		7			831	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	126 <	1800	5	0.00	117	-23	363.59	360.69	286.32	14.18 +	14.03	100	100	0.00	183.14
3C	1	S	3	3	C	831	1800	82	0.00	56	62	10.33	4.19	29.97	7.50	4.27	100	100	0.00	16.86
	2	R	3	3	D	35	1800	5	4.00	32	178	59.13	52.99	101.57	1.00	0.99	100	100	0.00	7.76
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	14	1800	66	66.00	1	7400	8.45	5.63	31.84	0.13	0.13	100	100	0.00	0.38
	2	S	3	3	A	1786 <	1800	66	0.00	148	-39	600.17	597.45	380.32	323.96 +	301.85	100	100	0.00	4265.32
3A2	1		6			1990 <	1800	100	100.00	111	-19	184.03	179.96	82.37	99.48 +		100	100	0.00	1431.19
3Bx2	1					49	Unrestricted	100	89.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	332.10	421.00	0.79	8.02	401.91	5821.05	83.60	0.00	5904.65
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	332.10	421.00	0.79	8.02	401.91	5821.05	83.60	0.00	5904.65

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

TRANSYT 16

Version: 16.0.1.8473

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Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 21:01:40

Summary of network performance

	AM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2039 With Development				
Network	D13	295.46	18.92	91% (TS 3C/2)	2 (13%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D13 - 2039 With Development, AM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 21:01:39	17/09/2021 21:01:39	0.40	07:30	100	295.46	18.92	91.27	3C/2	2	13	3C/2	3A2/1	3C/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2039 With Development	AM				07:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	11	1040
	3-2	0	0	58
	3-3	1333	115	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	58
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	115
	4		3-3	3-1	3C/1, 3Ax/1	Normal	1333
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	11
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1040

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase		Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A			5	300	0	0	Unknown
	B			5	300	0	0	Unknown
	C			5	300	0	0	Unknown
	D			5	300	0	0	Unknown
	E			3	300	0	0	Unknown
	F			3	300	0	0	Unknown

	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 80	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	90	55	65	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	80	6	1	5

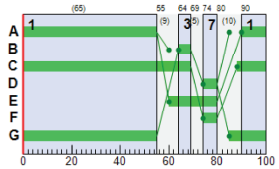
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	90	55	65
	B	1	✓	64	69	5
	C	1	✓	88	69	81
	D	1	✓	74	80	6
	E	1	✓	60	80	20
	F	1	✓	74	80	6
	G	1	✓	85	55	70

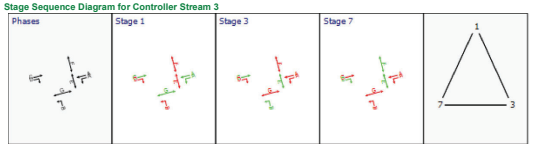
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	88	69	81
3C	2	3	3	D	74	80	6
3A1	1	3	3	A	90	55	65
3A1	2	3	3	A	90	55	65

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
07:30-08:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
3Ax	1		7			1333	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	58	1800	5	2.00	54	68	67.27	64.38	113.55	1.86	1.82	100	100	0.00	15.55
3C	1	S	3	3	C	1333 <	1800	81	0.00	90	0	23.03	16.89	73.26	29.49 +	10.61	100	100	0.00	101.06
	2	R	3	3	D	115	1800	6	0.00	91	-1	141.32	135.19	169.57	6.00	5.81	100	100	0.00	63.77
3Cx	1					1098	Unrestricted	100	14.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	11	1800	65	65.00	1	9620	8.79	5.96	32.83	0.10	0.10	100	100	0.00	0.30
	2	S	3	3	A	1040 <	1800	65	0.00	88	3	26.53	23.82	86.44	26.04 +	12.75	100	100	0.00	108.98
3A2	1		6			1051	1800	100	77.00	58	54	5.47	1.40	0.00	0.41		100	100	0.00	5.80
3Bx2	1					126	Unrestricted	100	84.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	342.98	30.35	11.30	8.50	10.42	268.63	26.83	0.00	295.46
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	342.98	30.35	11.30	8.50	10.42	268.63	26.83	0.00	295.46

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

TRANSYT 16

Version: 16.0.1.8473

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: H087 TRANSYT Model J3 with BusConnects 20210714.t16
Path: J:\H_JOBS\Job-H087\B_Documents\C_Civil\A_CS Reports\Traffic\Modelling
Report generation date: 17/09/2021 21:01:58

Summary of network performance

	PM				
	Set ID	PI (£ per hr)	Total delay (PCU-hr/hr)	Highest DOS	Number oversaturated
	BusConnects J3 Configuration - 2039 With Development				
Network	D14	6062.12	420.94	148% (TS 3A1/2)	3 (20%)

File summary

File description

File title	Heuston South Quarter SHD
Location	Dublin 8
Site number	
UTCRegion	
Driving side	Left
Date	14/07/2021
Version	Junction 3 BusConnects Layout
Status	
Identifier	
Client	
Jobnumber	
Enumerator	GF
Description	

Model and Results

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

Units

Cost units	Speed units	Distance units	Fuel economy units	Fuel rate units	Mass units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
£	kph	m	l/100km	l/h	kg	PCU	PCU	perHour	s	-Hour	perHour

Sorting

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

Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Average animation capture interval (s)	Use quick response	Do flow sampling	Uniform vehicle generation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	3.00	999	200	-1	3	60	✓			0	0	0.00

A1 - BusConnects J3 Configuration
D14 - 2039 With Development, PM

Summary

Data Errors and Warnings

No errors or warnings

Run Summary

Analysis set used	Run start time	Run finish time	Run duration (s)	Modelling start time (HH:mm)	Network Cycle Time (s)	Performance Index (£ per hr)	Total network delay (PCU-hr/hr)	Highest DOS (%)	Item with highest DOS	Number of oversaturated items	Percentage of oversaturated items (%)	Item with worst signalised PRC	Item with worst unsignalised PRC	Item with worst overall PRC	Network within capacity
1	17/09/2021 21:01:57	17/09/2021 21:01:57	0.37	16:30	100	6062.12	420.94	147.53	3A1/2	3	20	3A1/2	3A2/1	3A1/2	

Analysis Set Details

Name	Use Simulation	Description	Use specific Demand Set(s)	Optimise specific Demand Set(s)	Include in report	Locked
BusConnects J3 Configuration					✓	

Demand Set Details

Scenario name	Time Period name	Description	Composite	Demand sets	Start time (HH:mm)	Locked	Run automatically
2039 With Development	PM				16:30		✓

Local OD Matrix - Local Matrix: 3

Local Matrix Options

OD Matrix	Name	Use for point to point table	Auto calculate	Allocation mode	Allow paths past exit locations	Allow looped paths on arms	Allow looped paths on traffic nodes	Copy flows	Matrix to copy flows from	Limit paths by length	Path length limit multiplier	Limit paths by number	Path number limit	Limit paths by flow	Low path flow threshold
3		✓	✓	Path Equalisation			✓			✓	1.25				

Normal Input Flows (PCU/hr)

		To		
		3-1	3-2	3-3
From	3-1	0	23	1974
	3-2	0	0	149
	3-3	831	49	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
3	3-1		3A2/1	3Ax/1	#008000
	3-2		3B/1	3Bx2/1	#FFA500
	3-3		3C/1, 3C/2	3Cx/1	#A52A2A

Normal Paths and Flows

OD Matrix	Path	Description	From location	To location	Path items	Allocation type	Normal Calculated Flow (PCU/hr)
3	2		3-2	3-3	3B/1, 3Cx/1	Normal	149
	3		3-3	3-2	3C/2, 3Bx2/1	Normal	49
	4		3-3	3-1	3C/1, 3Ax/1	Normal	831
	5		3-1	3-2	3A2/1, 3A1/1, 3Bx2/1	Normal	23
	6		3-1	3-3	3A2/1, 3A1/2, 3Cx/1	Normal	1974

Signal Timings

Network Default: 100s cycle time; 100 steps

Controller Stream 3

Controller Stream	Name	Description	Use sequence	Cycle time source	Cycle time (s)	Minimum possible cycle time (s)
3			1	NetworkDefault	100	39

Controller Stream 3 - Properties

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

Controller Stream 3 - Optimisation

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

Phases

Controller Stream	Phase	Name	Street minimum green (s)	Maximum green (s)	Relative start displacement (s)	Relative end displacement (s)	Type
3	A		5	300	0	0	Unknown
	B		5	300	0	0	Unknown
	C		5	300	0	0	Unknown
	D		5	300	0	0	Unknown
	E		3	300	0	0	Unknown
	F		3	300	0	0	Unknown
	G		3	300	0	0	Unknown

Library Stages

Controller Stream	Library Stage	Phases in stage	User stage minimum (s)	Run every N cycles	Probability of running (%)
3	1	A, C, G	1	1	100
	2	A, F, G	1	1	100
	3	B, C, E	1	1	100
	4	B, E, F	1	1	100
	5	C, D, E	1	1	100
	6	C, E, G	1	1	100
	7	D, E, F	1	1	100
	8	E, F, G	1	1	100

Stage Sequences

Controller Stream	Sequence	Name	Multiple cycling	Stage IDs	Stage ends	Minimum possible cycle time (s)	Exclude from analysis
3	1	(untitled)	Single	1, 3, 7	55, 69, 79	39	
	2	(untitled)	Single	1, 4, 5	25, 58, 90	39	
	3	(untitled)	Single	1, 4, 7	26, 60, 90	39	
	4	(untitled)	Single	1, 5, 4	26, 60, 90	39	
	5	(untitled)	Single	1, 7, 3	25, 58, 90	39	
	6	(untitled)	Single	1, 7, 4	26, 60, 90	39	
	7	(untitled)	Single	2, 3, 5	26, 60, 90	39	
	8	(untitled)	Single	2, 3, 7	26, 60, 90	39	
	9	(untitled)	Single	2, 4, 5	25, 58, 90	42	
	10	(untitled)	Single	2, 5, 3	26, 60, 90	39	

Intergreen Matrix for Controller Stream 3

From \ To	A	B	C	D	E	F	G
A		5		5	5		
B	5			5			5
C						5	
D	5	5					5
E	10						
F			8				
G		9		9			

Banned Stage transitions for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Interstage Matrix for Controller Stream 3

From \ To	1	2	3	4	5	6	7	8
1	0	5	9	9	9	5	9	5
2	8	0	9	9	9	8	9	5
3	10	10	0	5	5	5	5	5
4	10	10	8	0	8	8	5	5
5	10	10	5	5	0	5	5	5
6	10	10	9	9	9	0	9	5
7	10	10	8	5	8	8	0	5
8	10	10	9	9	9	8	9	0

Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
3	1	✓	1	A,C,G	89	55	66	1	5
	2	✓	3	B,C,E	64	69	5	1	5
	3	✓	7	D,E,F	74	79	5	1	5

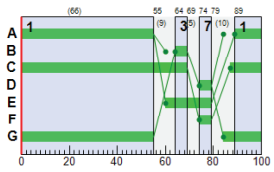
Resultant Phase Green Periods

Controller Stream	Phase	Green period	Is base green period	Start time (s)	End time (s)	Duration (s)
3	A	1	✓	89	55	66
	B	1	✓	64	69	5
	C	1	✓	87	69	82
	D	1	✓	74	79	5
	E	1	✓	60	79	19
	F	1	✓	74	79	5
	G	1	✓	84	55	71

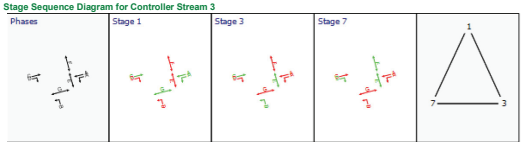
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
3B	1	3	3	B	64	69	5
3C	1	3	3	C	87	69	82
3C	2	3	3	D	74	79	5
3A1	1	3	3	A	89	55	66
3A1	2	3	3	A	89	55	66

Phase Timings Diagram for Controller Stream 3



Stage Sequence Diagram for Controller Stream 3



Resultant penalties

Time Segment	Controller stream	Phase min max penalty (£ per hr)	Intergreen broken penalty (£ per hr)	Stage constraint broken penalty (£ per hr)	Cost of controller stream penalties (£ per hr)
16:30-17:30	3	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	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (PCU)	Mean end of red queue (PCU)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	
3Ax	1		7			831	Unrestricted	100	8.00	0	Unrestricted	10.58	0.00	0.00	0.00		100	100	0.00	0.00
3B	1	L	3	3	B	149 <	1800	5	0.00	138	-35	561.03	558.13	355.84	24.66 +	24.51	100	100	0.00	332.85
3C	1	S	3	3	C	831	1800	82	0.00	56	62	10.33	4.19	29.97	7.50	4.27	100	100	0.00	16.86
	2	R	3	3	D	49	1800	5	3.00	45	98	65.14	59.01	107.92	1.49	1.46	100	100	0.00	12.07
3Cx	1					1314	Unrestricted	100	10.00	0	Unrestricted	9.20	0.00	0.00	0.00		100	100	0.00	0.00
3A1	1	L	3	3	A	21	1800	66	66.00	2	5136	8.46	5.64	31.84	0.19	0.19	100	100	0.00	0.54
	2	S	3	3	A	1779 <	1800	66	0.00	148	-39	595.96	593.25	379.00	320.84 +	298.73	100	100	0.00	4220.84
3A2	1		6			1997 <	1800	100	100.00	111	-19	189.45	185.38	82.94	102.83 +		100	100	0.00	1478.96
3Bx2	1					70	Unrestricted	100	87.00	0	Unrestricted	6.06	0.00	0.00	0.00		100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Uniform delay (PCU-hr/hr)	Random plus oversat delay (PCU-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	334.63	432.10	0.77	8.21	412.74	5977.40	84.72	0.00	6062.12
Bus									
Tram									
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	334.63	432.10	0.77	8.21	412.74	5977.40	84.72	0.00	6062.12

- *< = 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*

Appendix E

Independent Quality Audit

CS CONSULTING
GROUP

Cronin & Sutton Consulting

Housing Development, Heuston South Quarter (HSQ), Kilmainham, Dublin 8

Quality Audit

P·M·C·E

September 2021

Cronin & Sutton Consulting

Housing Development, Heuston South Quarter (HSQ), Kilmainham, Dublin 8

Quality Audit

Document Ref:	P21-093-UQA-GEN-RP-001

Rev	Prepared By	Reviewed By	Approved By	Issue Date	Reason for Revision
3.0	AOR	TAG	AOR	17th Sept 2021	Final
2.0	AOR	TAG	AOR	17th Sept 2021	Revised layout provided
1.0	AOR	TAG	AOR	15th Sept 2021	Draft Report

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Table of Contents

1 Introduction

1.1 General

This report was prepared in response to a request from Mr Gordon Finn of Cronin & Sutton Consulting to provide a Quality Audit for a Housing Development at Heuston South Quarter (HSQ), Kilmainham, Dublin 8. The Quality Audit shall consider the following elements:

- Stage 1 & 2 Road Safety Audit;
- Access Audit;
- Walking Audit;
- Non-Motorised User Audit; and
- Cycle Audit.

The Quality Audit took place during September 2021 and comprised an examination of the documents provided by the designers (see Section 3.7).

The Quality Audit followed a site visit on the 14th September 2021. At the time of the site visit the weather was dry and the ground surface was dry, traffic volumes were low and vehicle speeds were considered to be within the posted speed limit. Pedestrian and cyclist volumes were moderate.

This report contains three primary sections, with each section focussing on different implications to the users of the scheme. The Stage 1 & 2 Road Safety Audit identifies safety implications of the scheme, whilst the Accessibility & Walking Audit focusses more on accessibility implications for vehicles and pedestrians associated with the development. Finally, the Non-Motorised User and Cycle Audit predominantly focusses on cycle use, as pedestrians have been discussed as part of the accessibility and walking audit, and there are currently no requirements for equestrians as part of this development.

2 Background

The Heuston South Quarter (HSQ) is located opposite Heuston Train Station in Dublin City Centre and adjoins the Gardens at the Royal Hospital Kilmainham at its western boundary. It is an area that supports commercial, retail and residential use, including offices, a café, a supermarket and existing apartments. The HSQ has an existing basement carpark which has two accesses/egresses, a priority controlled access on Military Road and a signal controlled T-junction accessed from St. John's Road West.

Military Road is a two-way single carriageway road with one traffic lane in each direction and a 30kph speed limit. A right turn lane is provided at the entrance to the HSQ carpark and also on approach to the signalised junction with St. John's Road West. Footpaths are provided on both sides of the carriageway. Access to the existing HSQ Plaza is provided from the footpath on the western side of Military Road.

St. John's Road West is a dual carriageway in the vicinity of the access to the existing HSQ carpark. Each carriageway on St. John's Road West provides a Bus Lane and one general traffic lane. A right turn lane develops upstream of the junction with the HSQ carpark access on the eastbound carriageway while a dedicated left-turn slip is provided from the westbound carriageway at the access. Footpaths are provided on both sides of the carriageway at the access and a crossing of St. John's Road West is provided adjacent the access junction. On-road cycle facilities are also provided on each carriageway.

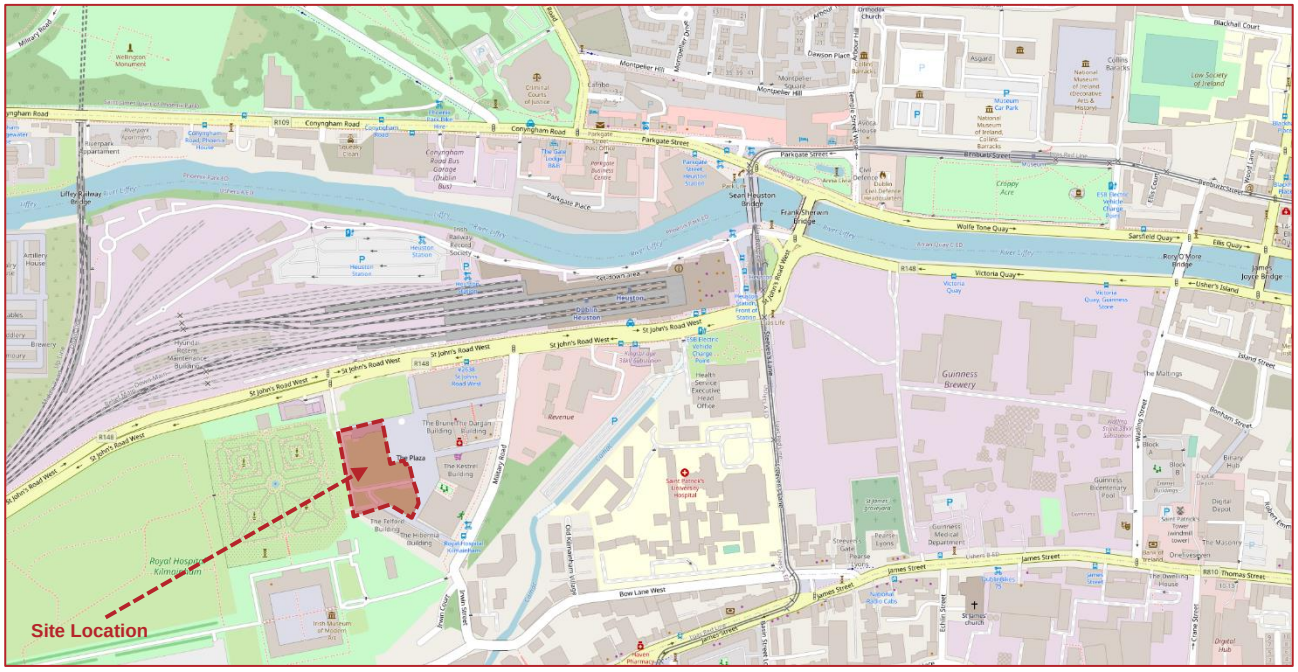


FIGURE 2.1: SITE LOCATION PLAN (SOURCE: WWW.OPENSTREETMAPS.ORG)

The proposed development will be located on a greenfield site to the west of the existing HSQ Plaza and will tie-into the Plaza at ground level. The development will include 402No residential apartment units distributed between two blocks. Leisure areas will also be provided at surface level within the development. The existing basment carpark will be extended to provide an additional 80No standard parking spaces, 4No mobility parking spaces and 4No motorcycle parking spaces. The new carpark will be directly accessed from the existing access ramp on St. John's Road West but can also be accessed from the section of existing carpark accessible from the access ramp on Military Road. A one-way system will be provided within the carpark and drivers will be advised of this via arrow, and hatched, road markings. The carpark will also provide a number of cycle parking stands.

It is also proposed to amend the layout of the signalised junction on St. John's Road West at the carpark access by building out the kerbs and removing the dedicated left-turn entry slip lane. New tactile paving will be provided at the existing pedestrian crossings at the junction to replace that which will be removed to facilitate the construction of the build-out. Existing cyclist facilities are provided on St. John's Road West and between Military Road and the HSQ Plaza. A new pedestrian route is proposed between St. John's Road West and the HSQ Plaza via the footpath on the southern side of St. John's Road West and a proposed new public lift between this footpath and the HSQ Plaza above.

3 Road Safety Audit

3.1 Introduction

This Stage 1 & 2 Road Safety Audit has been carried out in accordance with the requirements of GE-STY-01024 (previously NRA HD19/15) dated December 2017, contained on the Transport Infrastructure Ireland (TII) Publication's website.

The members of the Road Safety Audit Team are independent of the design team, and include:

Mr. Alan O'Reilly
(BA BAI MSc CEng MIEI RSACert)
Road Safety Audit Team Leader

Mr. Aly Gleeson
(MBA, MEng, BSc, RSACert, CEng, FIEI)
Road Safety Audit Team Member

The Stage 1 & 2 Road Safety Audit took place during September 2021 and comprised an examination of the documents provided by the designers (see section 3.7). A site visit was undertaken on the 14th September 2021. At the time of the site visit the weather was dry, the ground surface was dry, traffic volumes were low and vehicle speeds were considered to be within the posted speed limit. Pedestrian and cyclist volumes were moderate.

At the time of the site visit, roadworks were underway on Military Road with the road closed to traffic from its junction with St. John's Road West. Local access to Military Road was permitted from its other end and controlled via a Stop/Go Shuttle arrangement to provide access to the HSQ carpark access/egress.

Where problems are relevant to specific locations these are shown on drawing extracts within the main body of the report. Where problems are general to the proposals sample drawing extracts are within the main body of the report, where considered necessary. Road Safety problem locations are also shown in Appendix A.

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety and considers the perspective of all road users. It has not been examined or verified for compliance with any other standards or criteria. The problems identified in this report are considered to require action in order to improve the safety of the scheme and minimise collision occurrence.

If any of the recommendations within this road safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments made within the report under the heading of Observations are intended to be for information only. Written responses to Observations are not required.

3.2 Collision History

The Road Safety Authority website (www.rsa.ie) was consulted to identify historical collisions in the vicinity of the proposed development. The website includes summary information on recorded collision occurrence for the period 2005 to 2016 (see Figure 3.1).

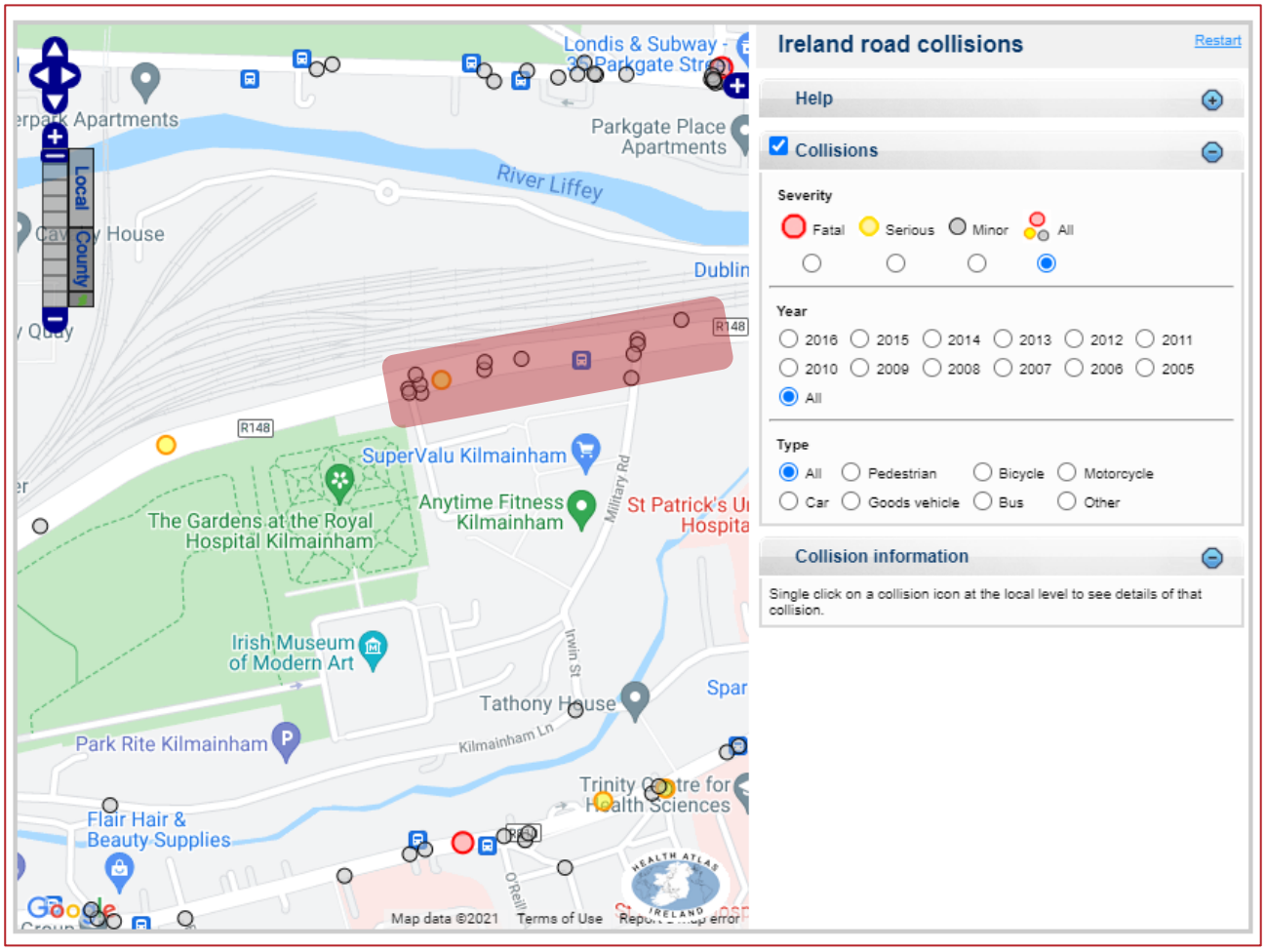


FIGURE 3.1: HISTORICAL COLLISIONS WITHIN THE VICINITY OF THE PROPOSED RESIDENTIAL DEVELOPMENT (SOURCE WWW.RSA.IE)

One Serious Injury Collision and thirteen Minor Injury Collisions were recorded within the vicinity of the proposed development during this period. Table 3.1 below summarises the total number of collisions recorded within the vicinity of the development. A number of these collisions were recorded at either the signalised junction of the basement carpark access and St. John's Road West or the signalised junction of Military Road and St. John's Road West.

Severity	Year	Vehicle	Circumstances	No. of Casualties	Day of week	Time	Reference Location
Minor	2016	Motorcycle	Rear end, right turn	1	Wednesday	4pm – 7pm	St. John's Rd W/Site Access
Minor	2016	Goods Vehicle	Other	1	Tuesday	3am – 7am	St. John's Rd W/Military Rd
Minor	2014	Car	Read end, straight	1	Friday	10am – 4pm	St. John's Rd W/Site Access
Serious	2013	Car	Pedestrian	1	Sunday	10am – 4pm	St. John's Rd W/Site Access
Minor	2013	Car	Rear end, straight	1	Saturday	10am – 4pm	St. John's Rd W
Minor	2012	Car	Rear end, straight	2	Monday	7pm – 11pm	St. John's Rd W/Site Access
Minor	2012	Car	Pedestrian	1	Tuesday	4pm – 7pm	St. John's Rd W/Military Rd
Minor	2011	Car	Angle, both straight	1	Friday	10am – 4pm	St. John's Rd W/Military Rd
Minor	2010	Car	Rear end, straight	1	Sunday	10am – 4pm	St. John's Rd W
Minor	2009	Car	Rear end, straight	5	Saturday	7pm – 11pm	St. John's Rd W/Military Rd
Minor	2007	Car	Rear end, straight	2	Thursday	4pm – 7pm	St. John's Rd W/Military Rd
Minor	2006	Undefined	Angle, right turn	1	Monday	7pm – 11pm	St. John's Rd W/Site Access
Minor	2006	Car	Other	1	Saturday	10am – 4pm	St. John's Rd W/Site Access
Minor	2006	Goods vehicle	Pedestrian	1	Monday	10am – 4pm	St. John's Rd W

TABLE 3.1: SUMMARY OF COLLISIONS RECORDED WITHIN THE VICINITY OF THE PROPOSED DEVELOPMENT ON THE ROAD SAFETY AUTHORITY COLLISION DATABASE BETWEEN 2005 AND 2016 (SOURCE WWW.RSA.IE)

3.3 Stage 1 & 2 Road Safety Audit

3.3.1 Problem

Location: *Drawing HSQ-CSC-XX-XX-SK-C-0009 (Rev. P3)*

Summary: *Improved signage and road marking provision may be required within the proposed basement carpark to better guide drivers through the one-way system.*

A one-way system has been indicated in the proposed basement carpark. Road markings have been indicated to guide drivers through the carpark layout and to advise them of the direction of traffic flow, including where left/right turns are permitted, and when drivers are required to give-way to other vehicles entering the one-way system. The Audit Team have, however, noted a number of locations within the carpark where sufficient measures may not have been provided to clearly advise drivers of the carpark layout and one-way system. These locations include the examples listed below: -

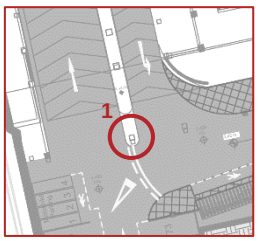
1. The central splitter island at the basement carpark access ramp does not currently include 'keep left' signs/bollards, nor are any proposed, which may lead to drivers being insufficiently aware of the island resulting in kerb strikes and material damage.

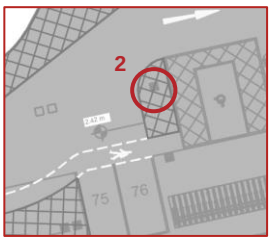
2. A column is indicated within the hatched road markings adjacent the mobility parking space and space no. 76 which may not be sufficiently visible to drivers resulting in collisions with the column.

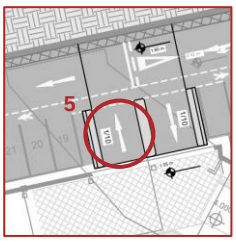
3. Drivers entering the one-way system from the ramps between parking spaces C03 and C04 may be insufficiently aware of the one-way system, as right and left turns are currently permitted here, resulting in them turning against the flow of traffic and head-on collisions.

4. If access to the services area is prohibited for public vehicles, the straight-ahead arrow may confuse drivers leading to them turning left into the service area resulting in unsafe reversing manoeuvres.

5. Drivers exiting the proposed amended ramp from the existing HSQ carpark level 2 may be insufficiently aware of the need to turn left at the bottom of the ramp, as a straight-ahead arrow has been indicated rather than a turn left arrow, resulting in them turning against the flow of traffic and head-on collisions.







A failure to provide sufficient measures to guide drivers through the one-way system and to highlight physical obstructions may lead to material damage collisions and the potential for drivers to enter the one-way system against the flow of traffic and head-on collisions or to enter unauthorised areas resulting in unsafe exit manoeuvres.

Recommendation

The signs and road markings within the proposed carpark should be reviewed and amended to ensure drivers are provided with sufficient information regarding the permitted manoeuvres at conflict points within the carpark and that physical obstacles (e.g. columns/kerbs) are clearly defined to drivers through the provision of signs/hazard tape as necessary.

3.3.2 Problem

Location: *Site visit observation*

Summary: *The likely increase in the volume of cyclists travelling to/from the development may result in the existing signalised crossing on Military Road, south of the carpark access, failing to accommodate both pedestrians and cyclists.*

The proposed development will likely lead to an increase in the volume of cyclists travelling to/from the development via Military Road. While on-road cycle facilities are provided on St. John's Road West, Military Road does not provide dedicated cycle facilities and therefore cyclists are required to continue within the southbound traffic lane or on the adjacent footpath, if less confident. This may therefore lead to an increase in the volume of cyclists entering the basement carpark via the existing cycle ramp at the Military Road access.

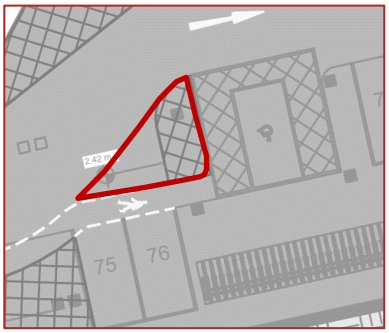
Whilst cyclists within the traffic lane are likely to enter the footpath at the access from the carriageway less confident cyclists, particularly children, may continue to the existing signalised crossing south of the carpark access. This crossing is currently not a Toucan crossing nor is it proposed to upgrade the crossing. There is therefore a risk that the crossing, in its current layout, will fail to accommodate the future volume of pedestrians and cyclists travelling to/from the basement carpark access leading to an increased risk of pedestrians and cyclists blocking the footpath when waiting at the crossing or conflicts between pedestrians and cyclists when crossing the carriageway.

Recommendation

The signalised pedestrian crossing should be upgraded to a Toucan crossing.

3.4 Observations

3.4.1 The effective carriageway within the proposed carpark to the east of the access ramp is wide and the proposed mobility impaired parking space encroaches into the carriageway at the location where the cross-section narrows resulting in an abrupt narrowing of the carriageway. The hatched marking adjacent this parking space should be amended to gradually guide drivers through the narrowing of the carriageway.



3.5 Road Safety Audit Team Statement

We certify that we have examined the drawings referred to in this report. The examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme.

The problems identified have been noted in this report together with associated safety improvement suggestions, which we would recommend should be studied for implementation.

The Road Safety Audit Team has not been involved in the design of this scheme.

ROAD SAFETY AUDIT TEAM LEADER

Alan O'Reilly Signed: 

Dated: 17th September 2021

ROAD SAFETY AUDIT TEAM MEMBER

Aly Gleeson Signed: 

Dated: 17th September 2021

3.6 Road Safety Audit Brief Checklist

Have the following been included in the audit brief?: (*if 'No', reasons should be given below)*

		Yes	No
1.	The Design Brief	☐	☑
2.	Departures from Standard	☐	☑
3.	Scheme Drawings	☑	☐
4.	Scheme Details such as signs schedules, traffic signal staging	☐	☑
5.	Collision data for existing roads affected by scheme	☐	☑
6.	Traffic surveys	☐	☑
7.	Previous Road Safety Audit Reports and Designer's Responses/Feedback Form	☐	☑
8.	Previous Exception Reports	☐	☑
9.	Start date for construction and expected opening date	☐	☐
10.	Any elements to be excluded from audit	☐	☑

Any other information? ☐ ☑
(if 'Yes', describe below)

3.7 Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
Permeability Podium level	HSQ-CSC-XX-XX-DR-C-0117	
Podium Level	HSQ-CSC-XX-XX-DR-C-0117	
Proposed Basement Road Markings	HSQ-CSC-XX-XX-SK-C-0009	P3

3.8 Road Safety Audit Feedback Form

Scheme: Housing Development, Heuston South Quarter (HSQ), Kilmainham, Dublin

Route No.: Heuston South Quarter – Military Road, St. John's Road West

Audit Stage: Stage 1 & 2 RSA **Date Audit Completed:** 15th September 2021

	To Be Completed by Designer			To Be Completed by Audit Team Leader
Paragraph No. in Safety Audit Report	**Problem Accepted (Yes/No)**	**Recommended Measure(s) Accepted (Yes/No)**	**Describe Alternative Measure(s). Give reasons for not accepting recommended measure**	**Alternative Measures or Reasons Accepted by Auditors (Yes/No)**
3.3.1	Yes	Yes		
3.3.2	Yes	Yes	Agree that upgrade to Toucan crossing is desirable but existing crossing is located on DCC lands outside applicant's control. Applicant will cooperate with DCC in any manner required to facilitate such upgrade.	

Signed: _____ Designer **Date** 17.09.2021

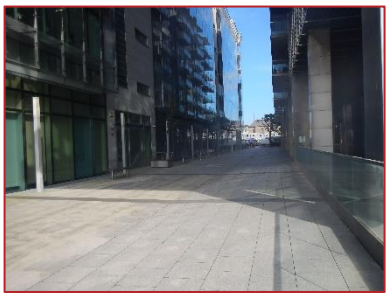
Signed: _____ Audit Team Leader **Date** 17th September 2021

Signed: _____ Employer **Date** 17/09/21

4 Accessibility & Walkability Audit

4.1 Introduction

The proposed development is in a central location close to Dublin City Centre where there are high quality pedestrian facilities. Pedestrian access to the proposed development is available to the north from the existing footpath on the southern side of St. John's Road West. This footpath will provide access to a proposed public lift which will travel between the level of the footpath on St. John's Road West and the existing HSQ Plaza from which the development can be directly accessed.



Existing footpaths are also provided on Military Road which tie-into two 'boulevards' between the various buildings within the HSQ campus connecting this footpath to the HSQ Plaza. These boulevards provide direct access to offices, a café, a supermarket and the HSQ basement carpark. They include planting, bicycle parking stands and benches adjacent the building frontage. The existing HSQ Plaza, onto which the proposed development will front, provides a number of large seating and landscaped areas and a playground.

Whilst the footpath on the southern side of St. John's Road west terminates in places steps are provided between the footpath and the HSQ Plaza. Access to the Plaza for mobility impaired pedestrians is provided from Military Road.

Existing footpath links are also provided further east along the Quays which provide access to Dublin City Centre. Heuston Train Station, which is located on St. John's Road West, to the north of the proposed development is accessible via an existing signalised pedestrian crossing adjacent the carpark access junction.

4.1.1 Access to public transport network

Due to the developments location close to Dublin City Centre, it is well served by Transport for Ireland bus routes, the Luas light rail system and the Iarnród Éireann rail lines which are located within walking distance of the development.

A list of bus routes serving the area is provided in Table 4.1, including the distance from these bus stops to the proposed development. The distances indicated have their origin at the proposed site access.

The nearest Luas stop to the proposed development is Heuston, this stop is located approximately 550m (7-mins walk) from the site. The Heuston Luas stop is on the Luas Red Line which connects Saggart and Tallaght to the city centre via a number of stops before terminating at Connolly Train Station and the Point. Figure 4.1 shows the routes taken by each Luas Line.

The Dublin Bikes shared bicycle scheme also have a station in close proximity to the proposed development. This scheme allows subscribers to rent a bicycle from any Dublin Bikes station within Dublin which can then be returned and locked at any station in Dublin. This Dublin Bikes station is located approximately 600m from the main pedestrian access to the proposed development and can be reached on foot in 8 minutes.

The Heuston Railway Station is also located close to the proposed development, approximately 400m to the north. This can be accessed on foot from the main pedestrian access to the proposed development in 5 minutes, or in 7 minutes from the carpark access on St. John's Road West. This train station provides commuter services to and from Dublin City Centre as well as national rail lines throughout the country.

The proposed development will, therefore, have access to good quality public transport networks.

TABLE 4.1: BUS ROUTES CLOSE TO THE PROPOSED RESIDENTIAL DEVELOPMENT

Bus Stop (Name)	Bus Stop (Number)	Proximity to the development	Bus Route	Travelling between
St Johns Road West	**2638**	270m	51d	Aston Quay to Clondalkin
			79/a	Aston Quay to Spiddal Park / Park West
			717	Dublin Airport to Clonmel
Outside Heuston Station (WB)	**2367**	350m	736	Waterford to Dublin Airport
			817	Kilkenny to Dublin
			824	Market St. Mountmelick to UCD Stillorgan Rd.
			845	Birr to UCD Stillorgan Rd.
			847	Portumna to Merrion, Belfield Slip Rd.
Heuston Station	**4413**	350m	4	Dublin Airport to New Ross
			22	Ballina to Busaras
			25a/b/d	Merrion Square to Lucan / Adamstown Rail Station
			25x	UCD Belfield to Lucan
			51d	Aston Quay to Clondalkin
			66x	UCD Belfield to Maynooth
			67x	UCD Belfield to Celbridge
			69	Hawkins St. to Rathcoole
			79/a	Aston Quay to Spiddal Park / Park West
			115	Belfield to Outside Train Station
			120/b/f/x	Parnell St. to Ashtown Rail Station / Newbridge / Newbridge / Edenderry
			126/a/d/t/x	Dublin to Rathangan / Rathangan / Newbridge / Newbridge / Rathangan
			130	Dublin to Athy
			735	Ballynanty, Limerick to Dublin Airport
			737	Esmondale Naas to Dublin Airport
			763	Galway City to Dublin Airport
			768	Heuston to UCD
			842	Newcastle, Longford to Dublin Airport
			860	Temple Bar to Parkwest
Outside Heuston Station (EB)		450m	842	Newcastle, Longford to Dublin Airport
Outside Heuston Trian Station		500m	782	Dublin City South, George's Quay to Dublin Airport
Heuston Station	**4320**	550m	145	Outside Heuston Train Station to Kilmacanogue
Heuston Station, Victoria Quay	**4319**	550m	860	Temple Bar to Parkwest

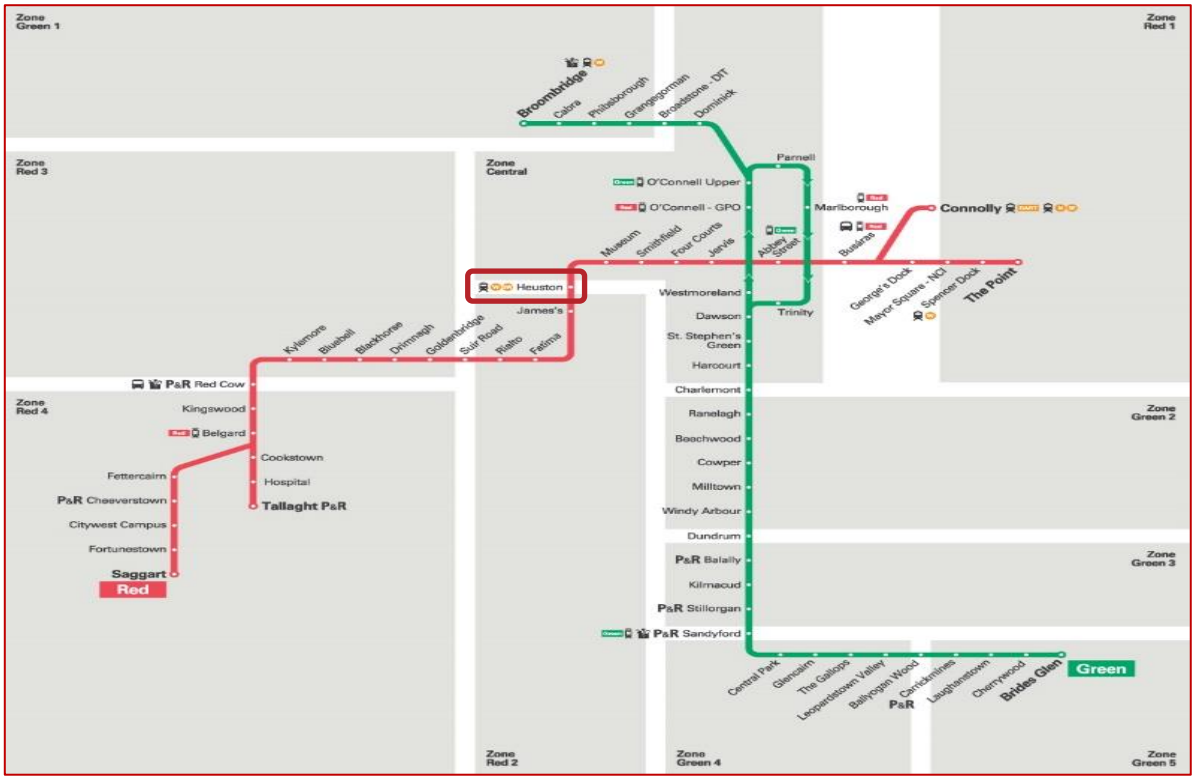


FIGURE 4.1: LUAS MAP SHOWING BOTH THE RED, AND GREEN, LUAS LINES AND THE HEUSTON STATION LUAS STOP

4.1.2 Local Amenities

The proposed development is located in very close proximity to Dublin City Centre which provides a wide range of amenities within walking distance of the development including various retail outlets, cafes, restaurants, bars, shopping centres, supermarkets, department stores, universities, museums, Dublin Castle, the Aviva Stadium, Merrion Square, St. Stephen's Green Park, breweries, cinemas, theatres, hotels, hostels, hospitals and many more. Table 4.2 includes a selection of amenities which can be accessed in a short journey time, on foot or by bicycle, from the proposed development.

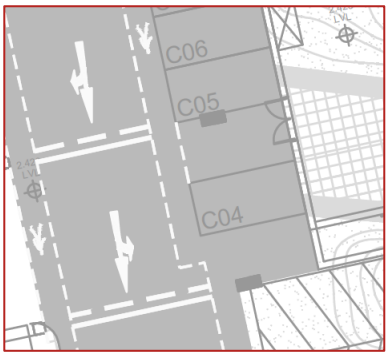
TABLE 4.2: LOCAL AMENITIES CLOSE TO THE PROPOSED DEVELOPMENT

Amenity	Distance (approx.)	Journey Time on Foot / Bicycle (approx.)	Direction from Development
Dublin City Centre (O'Connell Bridge)	2.9km	36mins / 14mins	East
Grafton Street (Shopping Area)	3.1km / 3.3km	38mins / 12mins	East
Mary Street / Henry Street (Shopping Area)	2.5km / 2.7km	31mins / 12 mins	East
St. Patrick's University Hospital	850m	11mins / 3mins	Southeast
Guinness Storehouse	1.3km / 1.7km	15mins / 6mins	Southeast
Heuston Luas Stop	550m / 500m	7mins / 3mins	Northeast
Heuston Train Station	400m / 600m	5mins / 3mins	Northeast
Kilmainham Gaol	1km / 1.1km	12mins / 5mins	Southwest
St James's Hospital	1.2km / 1.7km	15mins / 6mins	Southeast

Amenity	Distance (approx.)	Journey Time on Foot / Bicycle (approx.)	Direction from Development
South-eastern Access to Phoenix Park	1km / 2km	12mins / 7mins	Northeast
Dublin Zoo	1.8km / 1.9km	23mins / 9mins	Northwest
Supervalu Kilmainham	130m	1min / <1min	Southeast
National Museum of Ireland	1.2km / 1.4km	15mins / 7mins	Northeast
Croppies Acre Memorial Park	950m	12mins / 5mins	Northeast

Given the variety of amenities available to residents of the proposed development, as highlighted in Table 4.2, the development is considered to be well served by both essential, and recreational, amenities.

4.2 Building Accesses



4.2.1 Issue

A gap has been indicated between parking spaces no. C04 and C05 to allow access to the adjacent building/room. This gap in the parking provision may be mistaken for a carparking space. Should a driver mistake this for a parking space and park their vehicle here access to the building/room will be restricted.

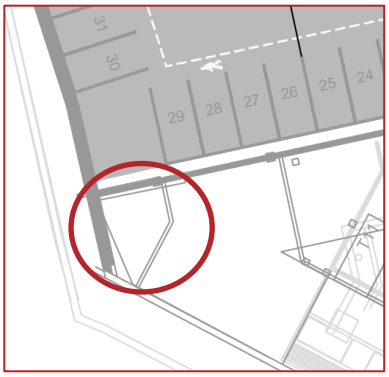
Recommendation

Road markings (e.g. hatched yellow box) should be provided between spaces no. C04 and C05 to clearly advise drivers that this is not a parking space.

4.2.2 Issue

An exit from an existing carpark is located in the south-western corner of the site of the proposed carpark. Parking spaces no. 29 and 30 are indicated in front of this access. It is unclear if it is proposed to retain this exit ramp however, if retained and should these spaces be occupied, egress from the existing carpark will be restricted at this location.

Recommendation



If this exit ramp is to be retained sufficient space within the parking provision should be provided to allow vehicles to safely exit onto the one-way system. It should also be ensured that sufficient visibility for a driver exiting this ramp, and forward visibility for drivers towards this exit, is provided.

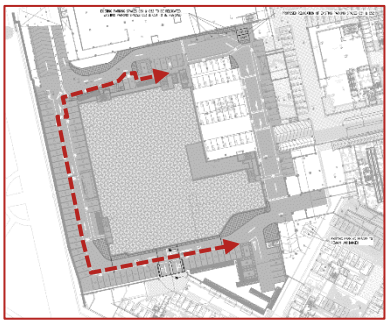
4.3 Pedestrian Crossing Facilities

Issues relating to the Pedestrian Crossing Facilities within/adjacent the proposed development have been discussed in Section 3.3.2.

4.4 Target Groups (i.e. visually & mobility impaired etc.)

4.4.1 Issue

3No mobility parking spaces have been indicated adjacent parking spaces no. 1 – 6 within the proposed carpark. Whilst a stairwell has been indicated adjacent space no. 1, a lift has not been indicated in close proximity to these mobility parking spaces.



The only lifts indicated within the carpark appear to be located to the rear of spaces no. 78 and 79, on the opposite side of the carpark. This would therefore result in a long route for mobility impaired drivers/passengers to access the lifts and thus the proposed development.

Recommendation

A lift should be provided in close proximity to these mobility impaired parking spaces, or the spaces relocated to where they will be located in close proximity to a lift.

4.5 Subways

No accessibility issues have been identified relating to Subways.

4.6 Junctions

No accessibility issues have been identified relating to Junctions within the proposed development.

4.7 Signage

Issues relating to the Signage within the proposed development have been discussed in Section 3.3.1.

4.8 Public Transport

No accessibility issues have been identified relating to Public Transport.

4.9 Lighting

No accessibility issues have been identified relating to Lighting.

4.10 Visibility

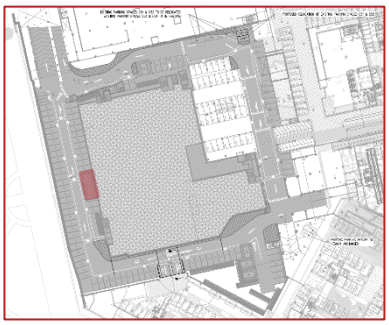
No accessibility issues have been identified relating to Visibility.

4.11 Waste Facilities within the Development

4.11.1 Issue

Bin Stores have been indicated within the proposed carpark on its western side. The swept path analysis provided for a large articulated vehicle indicates that a refuse truck will be able to safely traverse the carpark. It is therefore assumed that refuse will be collected directly from the bin stores.

It is unclear however how bins will be transported from the apartments within the development to the store within the basement carpark. This could lead to maintenance operatives having to transport large bins long distances, and potentially along ramps/lifts, for collection. The absence of a detailed refuse strategy could lead to refuse trucks having difficulty in accessing the bins during collection, if not collected from the bin stores, or to maintenance operatives having difficultly transporting bins from the development's surface level to the bin stores, or from the bin stores to the collection points, if at a different location.



Recommendation

Ensure a refuse strategy is developed clearly explaining how refuse is to be transported, and collected, and how refuse vehicles are to access the bin stores/collection points.

4.12 Carriageway Markings for Pedestrians

No accessibility issues have been identified relating to Carriageway Markings for Pedestrians.

4.13 Parking

4.13.1 Issue

Electric Vehicle (EV) parking spaces have not been indicated within the basement carpark. It is likely that there will be a requirement for a proportion of the proposed parking provision to be designated for EVs. EV parking spaces generally require increased dimensions to accommodate the charging infrastructure including a buffer zone to account for vehicles with varying charging port locations. The size of the parking spaces proposed within the carpark, however, with the exception of those indicated as mobility impaired parking spaces, all appear to be the same.

Should any of these spaces be designated for EVs, there is a risk that the required space will not be available to accommodate the necessary buffer zone and infrastructure resulting in parking spaces having to be removed potentially compromising the level of parking required, and potentially preventing the required number of EV parking spaces being provided.

Recommendation

If EV parking spaces are required, space should be provided in accordance with section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings.'

Other accessibility issues relating to the Parking within the proposed development have been discussed in Sections 4.2.1 and 4.4.1.

5 Non-motorised User and Cycle Audit

5.1 External Cycle Provision

One-way cycle lanes are provided on each carriageway of St. John's Road West. The boulevards between Military Road and the HSQ Plaza are wide enough to accommodate both pedestrians and cyclists and bicycle parking stands are also provided along the building frontages throughout the boulevards. These boulevards are accessed via dropped kerbs on Military Road. No dedicated cycle facilities are provided on Military Road where cyclists are required to continue in the footpath or share the traffic lane with motorised vehicles. Military Lane is within a slow zone with a 30kph speed limit. Access to the basement carpark for cyclists is currently provided via a ramp adjacent the vehicular ramp on Military Road. This is a shared access with pedestrians and cyclists are required to dismount at the top of the ramp before entering.

Figure 5.1 shows the existing, and proposed, cycle routes to/from the proposed development.

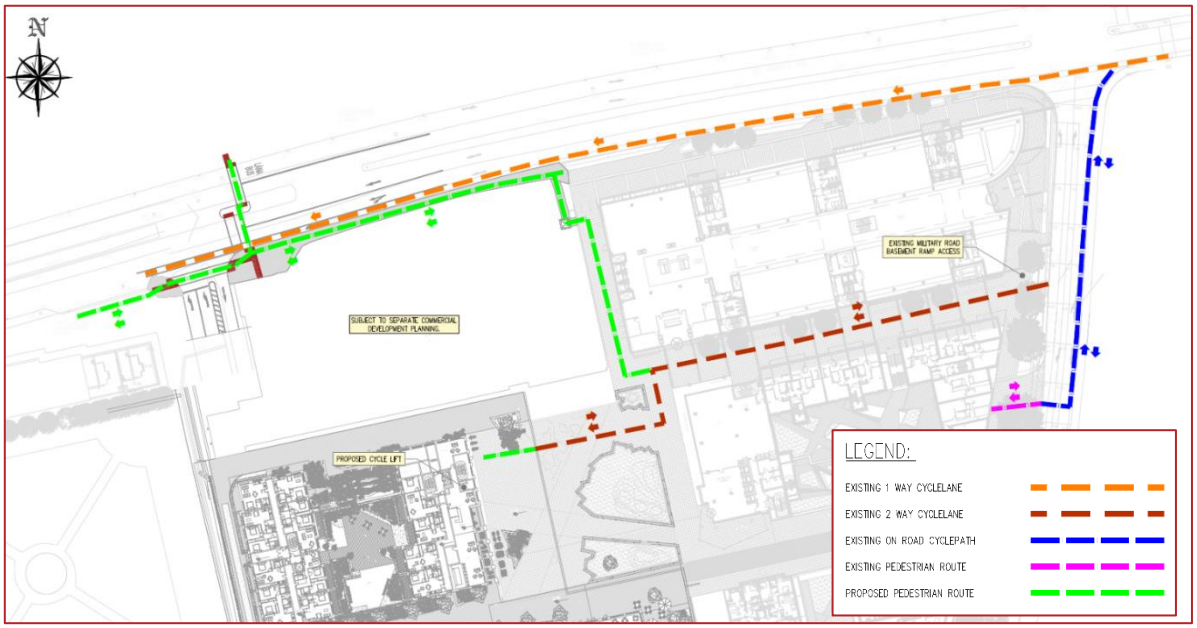


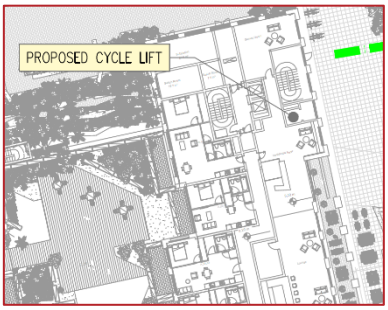
FIGURE 5.1: PROPOSED PEDESTRIAN AND CYCLIST ROUTES BETWEEN THE PROPOSED DEVELOPMENT AND EXISTING CYCLE INFRASTRUCTURE

A review of the Road Safety Authority's collision records does not highlight a pattern of cycling collisions during the period 2005 to 2016.

5.2 Internal Cycle Provision

The proposed development is accessible from the existing HSQ Plaza where existing access is provided for cyclists via the boulevards linking the Plaza and Military Road. A cycle lift is proposed within the development accessed from the HSQ Plaza which will transport cyclists to the basement carpark where a number of bicycle parking stands are proposed.

5.2.1 Issue



A cycle lift is proposed at surface level within the proposed development, accessible from the existing HSQ Plaza. It is unclear if this is the only facility for cyclists wishing to enter/exit the basement carpark, where the cycle stands are provided. The provision of a lift is unlikely to effectively and efficiently support cycle movement between the basement cycle parking facilities and the local road network, which may discourage cycle use and thus, the number of residents choosing to use bicycles for commuting or leisure travel.

Additionally, cyclists accessing the development via the Military Road access ramp are required to dismount before entry. This too may discourage cycle use, as residents may be unwilling to accept delays or inefficiencies when travelling to/from the development.

Recommendation

A more direct cycle route should be provided for cyclists wishing to gain efficient access to the basement carpark. Any new cycle access or route should be capable of efficiently accommodating the volume of residents within the development, particularly during the morning and evening peak.

5.3 Quality Audit Action Plan

Issue	Situation	Action/Adjustment	Priority	Cost
4.2.1	A gap has been indicated between parking spaces no. C04 and C05 to allow access to the adjacent building/room. This gap in the parking provision may be mistaken for a carparking space. Should a driver mistake this for a parking space and park their vehicle here access to the building/room will be restricted.	Road markings (e.g. hatched yellow box) should be provided between spaces no. C04 and C05 to clearly advise drivers that this is not a parking space.	1	A
4.2.2	An exit from an existing carpark is located in the south-western corner of the site of the proposed carpark. Parking spaces no. 27 – 29 are indicated in front of this access. It is unclear if it is proposed to retain this exit ramp however, if retained and should these spaces be occupied, egress from the existing carpark will be restricted at this location.	If this exit ramp is to be retained sufficient space within the parking provision should be provided to allow vehicles to safely exit onto the one-way system. It should also be ensured that sufficient visibility for a driver exiting this ramp, and forward visibility for drivers towards this exit, is provided.	1	B
4.3	The likely increase in the volume of cyclists travelling to/from the development may result in the existing signalised crossing on Military Road, south of the carpark access, failing to accommodate both pedestrians and cyclists.	The signalised pedestrian crossing should be upgraded to a Toucan crossing.	3	D
4.4.1	3No mobility parking spaces have been indicated adjacent parking spaces no. 1 – 6 within the proposed carpark. Whilst a stairwell has been indicated adjacent space no. 1, a lift has not been indicated in close proximity to these mobility parking spaces. The only lifts indicated within the carpark appear to be located to the rear of spaces no. 78 and 79, on the opposite side of the carpark. This would therefore result in a long route for mobility impaired drivers/passengers to access the lifts and thus the proposed development.	A lift should be provided in close proximity to these mobility impaired parking spaces or the spaces relocated to where they will be located in close proximity to a lift.	1	D
4.7	Improved signage and road marking provision may be required within the proposed basement carpark to better guide drivers through the one-way system.	The signs and road markings within the proposed carpark should be review and amended to ensure drivers are provided with sufficient information regarding the permitted manoeuvres at conflict points within the carpark and that physical obstacles (e.g. columns/kerbs) are clearly defined to drivers through the provision of signs/hazard tape as necessary.	1	B

Issue	Situation	Action/Adjustment	Priority	Cost
4.11.1	It is unclear how bins will be transported from the apartments within the development to the store within the basement carpark. This could lead to maintenance operatives having to transport large bins long distances, and potentially along ramps/lifts, for collection. The absence of a detailed refuse strategy could lead to refuse trucks having difficulty in accessing the bins during collection, if not collected from the bin stores, or to maintenance operatives having difficultly transporting bins from the development's surface level to the bin stores, or from the bin stores to the collection points, if at a different location.	Ensure a refuse strategy is developed clearly explaining how refuse is to be transported, and collected, and how refuse vehicles are to access the bin stores/collection points.	1	A
4.13.1	Electric Vehicle (EV) parking spaces have not been indicated within the basement carpark. It is likely that there will be a requirement for a proportion of the proposed parking provision to be designated for EVs. EV parking spaces generally require increased dimensions to accommodate the charging infrastructure including a buffer zone to account for vehicles with varying charging port locations. The size of the parking spaces proposed within the carpark, however, with the exception of those indicated as mobility impaired parking spaces, all appear to be the same. Should any of these spaces be designated for EVs, there is a risk that the required space will not be available to accommodate the necessary buffer zone and infrastructure resulting in parking spaces having to be removed potentially compromising the level of parking required, and potentially preventing the required number of EV parking spaces being provided.	If EV parking spaces are required, space should be provided in accordance with section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings.'	1	C
4.13	A gap has been indicated between parking spaces no. C04 and C05 to allow access to the adjacent building/room. This gap in the parking provision may be mistaken for a carparking space. Should a driver mistake this for a parking space and park their vehicle here access to the building/room will be restricted.	Road markings (e.g. hatched yellow box) should be provided between spaces no. C04 and C05 to clearly advise drivers that this is not a parking space.	1	A
	An exit from an existing carpark is located in the south-western corner of the site of the proposed carpark. Parking spaces no. 27 – 29 are indicated in front of this access. It is unclear if it is proposed to retain this exit ramp however, if retained and should these spaces be occupied, egress from the existing carpark will be restricted at this location.	If this exit ramp is to be retained sufficient space within the parking provision should be provided to allow vehicles to safely exit onto the one-way system. It should also be ensured that sufficient visibility for a driver exiting this ramp, and forward visibility for drivers towards this exit, is provided.	1	B

Issue	Situation	Action/Adjustment	Priority	Cost
5.2.1	A cycle lift is proposed at surface level within the proposed development, accessible from the existing HSQ Plaza. It is unclear if this is the only facility for cyclists wishing to enter/exit the basement carpark, where the cycle stands are provided. The provision of a lift is unlikely to effectively and efficiently support cycle movement between the basement cycle parking facilities and the local road network, which may discourage cycle use and thus, the number of residents choosing to use bicycles for commuting or leisure travel. Additionally, cyclists accessing the development via the Military Road access ramp are required to dismount before entry. This too may discourage cycle use, as residents may be unwilling to accept delays or inefficiencies when travelling to/from the development.	A more direct cycle route should be provided for cyclists wishing to gain efficient access to the basement carpark. Any new cycle access or route should be capable of efficiently accommodating the volume of residents within the development, particularly during the morning and evening peak.	1	D

Priority

1 – Immediate works required;
2 – Essential works required within 1 year;
3 - Desirable works required within 2 years;
4 – Long term works;
5 - Specific needs (e.g. pedestrian desire line not catered for)

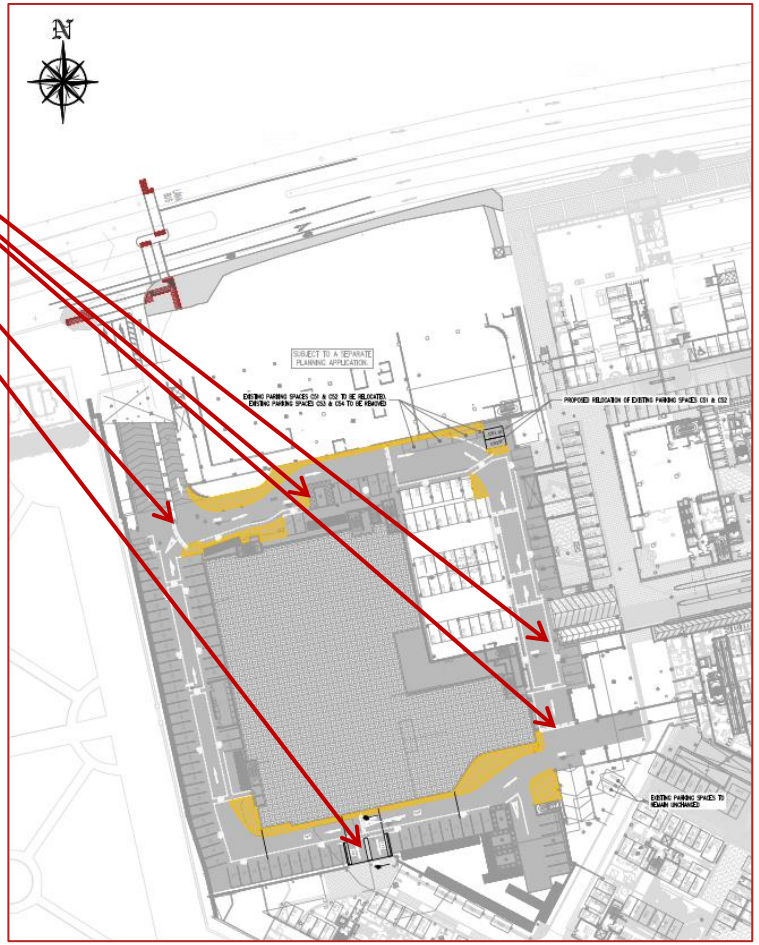
Cost (Indicative cost only)

A – Up to €2,500
B – From €2,500 up to €10,000
C - Between €10,000 up to €20,000
D – Above €20,000

6 Appendix A – Stage 1 & 2 Road Safety Audit Problem Locations

Problem 3.3.2

Problem 3.3.1



Appendix F

DCC Letter of Consent

CS CONSULTING
GROUP

Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

Environment and Transportation Department,
Civic Offices, Wood Quay, Dublin 8

Roinn Comhshaoil agus Iompair, Oifigí na Cathrach
An Ché Adhmaid, Baile Átha Cliath 8
T.(01) 2222046 E: transportplanning@dublincity.ie

HPREF HSQ Investments Ltd
32 Molesworth Street
Dublin 2

7th September 2021

Re: Letter of Consent to Strategic Housing Development Planning Application

Site: Heuston South Quarter, St. John's Road West, Kilmainham, Dublin 8.

To Whom It May Concern,

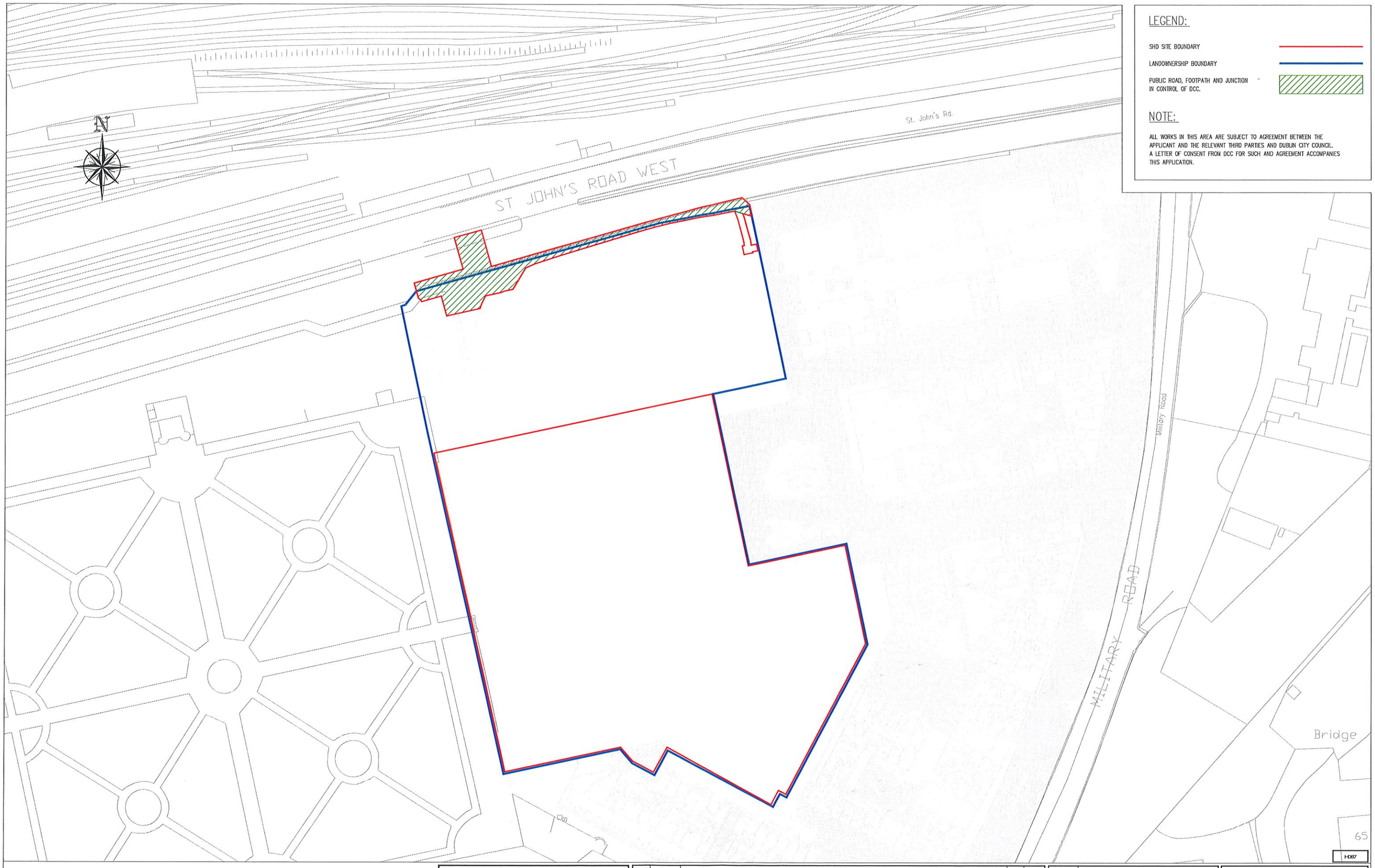
I refer to the above intended planning application by HPREF HSQ Investments Ltd, the site of which includes lands in the control of Dublin City Council, specifically lands within the footpath and roadway on St. John's Road West as hatched in green on drawing 'Site Location' HSQ-CSC-XX-XX-SK-C-0010 (rev. P03).

I wish to confirm that the City Council has no objection to the inclusion of these lands for the purpose of making a planning application. This is without prejudice to the outcome of the planning application process.

In the event that planning permission is granted and the development requires acquisition of Dublin City Council property including air rights, disposal will be subject to terms and conditions agreed with the Chief Valuer's Office. Any disposal of Dublin City Council property is also subject to Council approval under Section 183 of the Local Government Act 2001.

Yours faithfully,

Dermot Collins
Executive Manager



LEGEND:

SHD SITE BOUNDARY

LANDOWNERSHIP BOUNDARY

PUBLIC ROAD, FOOTPATH AND JUNCTION IN CONTROL OF DCC.

NOTE:

ALL WORKS IN THIS AREA ARE SUBJECT TO AGREEMENT BETWEEN THE APPLICANT AND THE RELEVANT THIRD PARTIES AND DUBLIN CITY COUNCIL. A LETTER OF CONSENT FROM DCC FOR SUCH AND AGREEMENT ACCOMPANIES THIS APPLICATION.

H087

INFORMATION ONLY

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NOTES

1. For setting out refer to Architect's drawings.
2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
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Rev. No	Date	REVISION NOTE	Drn. By	Chkd. By
P1	01.09.2021	LADOWNERSHIP BOUNDARY ADDED	JS	NB
P2	02.09.2021	AREA FOR LETTER OF CONSENT REVISED	JS	NB
P3	07.09.2021	LEGEND REVISED	JS	NB

Architect	Reddy Architecture
Project	HEUSTON SOUTH QUARTER, ST. JOHNS ROAD WEST, KILMAINHAM
Title	SITE LOCATION
Drg. No.	HSQ-CSC-XX-XX-SK-C-0010

Date	Drn by	Chkd by	Apvd by	Scale	Revision
AUG 2021	JS	NB	NB	1:500 @ A1	P3

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NSAI Certified

Quality	IS EN ISO 9001 2008
Environment	IS EN ISO 14001 2004
Energy	IS EN ISO 50001 2011
Health & Safety	OHSAS 18001 2007