local transport projects

traffic engineering and transport planning

Keepmoat

Proposed Residential Development
Lincolnshire Lakes, Scunthorpe
Revised Transport Assessment

December 2023

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Client Commission			
Client:	Keepmoat	Date Commissioned:	February 2022

LTP Quality Control			
Job No:	LTP/22/4772	File Ref:	Lincolnshire Lakes Revised TA (Final Issue 2A)

Issue	Revision	Description	Author	Checked	Date
2	A	Minor text updates	JH	SW	13/12/2023
2	-	Revised for NLC Highways, NH and ATE comments	JH	SW	08/12/2023
1	B	Revised for client comments	JH	SW	30/05/2023
1	A	Updated site plan	KN/ZB	SW	19/01/2023
1	-	Final issue	ZB	JH	17/06/2022
			Authorised for Issue:		SW

LTP PROJECT TEAM

As part of our commitment to quality the following team of transport professionals was assembled specifically for the delivery of this project. Relevant qualifications are shown and CVs are available upon request to demonstrate our experience and credentials.

Team Member	LTP Designation	Qualifications
Steven Windass	*Technical Director (Developments)*	*BSc(Hons) MSc(Eng) CEng FIHE MCIHT*
Jack Hearnshaw	*Principal Transport Planner*	*BA(Hons) MIHE*
Zoe Boote	*Transport Planner*	*BA(Hons) EngTech MIHE*
Kieran Newlove	*Transport Planner*	*BA(Hons) AMIHE*

PROPOSED RESIDENTIAL DEVELOPMENT LINCOLNSHIRE LAKES, SCUNTHORPE TRANSPORT ASSESSMENT

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EXECUTIVE SUMMARY

This Transport Assessment (TA) provides a detailed appraisal of the expected transport impact associated with a proposed residential development of 599 dwellings at a site which is to form part of the wider Lincolnshire Lakes development in Scunthorpe, North Lincolnshire. The key findings of this TA are summarised below:

- The proposed development site forms part of the wider Lincolnshire Lakes development, although the application represents a new full planning application and does not form a reserved matters application associated with the previous outline consent.
- Vehicular access to the site to be provided via a new simple priority T-junction, which is to serve up to 250 dwellings, and a roundabout with Burringham Road on the southern boundary of the site which is to be delivered as part of the development. Two full accesses will therefore be provided to the site once fully constructed. Pedestrian and cycle access to the site will also be provided via the accesses with Burringham Road, with footways and shared foot/cycleways to be provided internal to the site.
- The application site is well placed to generate trips by sustainable modes of transport, particularly when considering that improvements to sustainable infrastructure within the vicinity of the site are to be provided as part of the wider development, with walking and cycling realistic travel modes for local journeys. There are a number of local amenities, including schools and retail facilities within a 2km walk of the site. There are bus stops on Burringham Road within an 900m walk of the site that accommodate services to Ashby and Scunthorpe town centre. A Travel Plan (LTP, 2023) that provides a strategy for encouraging sustainable travel at the proposed development site has been produced in conjunction with this TA as a separate document.
- A road casualty study showed that 22 Personal Injury Collisions (PICs) occurred within the study area around the proposed development site during the five-year study period. If the proposed access junctions and internal roads of the development are designed with due consideration to road safety, then the proposals should not have a detrimental road safety impact on the local transport network and should not adversely affect the safety of pedestrians and cyclists.
- The proposed development could be expected to generate up to 396 two-way vehicle trips during the AM peak hour and 316 two-way vehicle trips during the PM peak hour. The distribution of trips across the local highway network has been predicted utilising a gravity model based upon commuting patterns of existing residents within the local area.
- Based on the capacity assessments within this TA, it is considered that the proposed development would not be expected to have a significant impact on the local highway network or SRN.

This TA demonstrates that the proposed development would not be expected to have a severe impact in road safety, traffic and highway terms. As the impact of the proposals is not expected to be severe, the proposals are therefore considered to be in accordance with the National Planning Policy Framework (NPPF).

1. INTRODUCTION

1.1 Background

1.1.1 Local Transport Projects Ltd (LTP) has been commissioned to produce a Transport Assessment (TA) in support of a planning application (ref: PA/2023/1124) for a residential development which is to form part of the wider Lincolnshire Lakes development in Scunthorpe, North Lincolnshire. This TA provides a detailed appraisal of the expected transport impacts of the proposals. A plan of the proposed site layout is attached as Appendix 1.

1.1.2 The local planning and highway authority for the site is North Lincolnshire Council (NLC), with National Highways (NH) also a key consultee of the scheme given the proximity of the site to the Strategic Road Network (SRN).

1.1.3 LTP has also been commissioned to prepare a Travel Plan (LTP, 2023) for the proposed development, which outlines the approach to encouraging travel by sustainable modes at the site. Although the TP has been prepared as a standalone document, both the TA and TP are linked and should be read in conjunction with each other.

1.1.4 This revised TA has been produced to address comments on the application provided by NLC Highways, NH and Active Travel England (ATE).

1.2 Scope

1.2.1 The scope of this report has been written in accordance with the Government's *'National Planning Policy Framework'* (DLUHC, 2023), *'Planning Practice Guidance'* (DLUHC, 2014) and *'Strategic road network and the delivery of sustainable development'* (DfT, 2022), as summarised below:

- ***Executive Summary:*** A non-technical summary of the report outlining the key outcomes of the assessment.
- ***Introduction & Description of Proposals***:
  - Description of the development site, including location and any existing access arrangements;
  - Summary of relevant planning and allocation history for the site;
  - Description of the proposed development including site layout, pedestrian/cycle facilities and proposed access arrangements.
- ***Site Assessment***:
  - Site assessments to determine existing traffic conditions, such as posted speed limits, road restrictions, highway geometry, on-street parking restrictions and any other relevant features of the local area;
  - Assessment of the sustainable transport infrastructure (pedestrian, cycle and public transport) local to the site;
- ***Road Casualty Appraisal:*** Examination of road collision records (5-year study period) and assessment of the road safety impact of the proposed development on the local highway network.

- ***Traffic Impact***:
  - Calculation of the projected trip generation for the proposed development;
  - Consideration of any relevant consented developments within the local area, including consideration of the wider Lincolnshire Lakes development;
  - Assessment of the likely traffic impact of the proposed development on the operation of the local highway network.
- ***Access, Parking & Internal Layout:*** Description of the proposed access arrangements and internal layout of the site, including consideration of the proposed parking provision and access/servicing arrangements.
- ***Conclusions:*** Conclusions summarising the outcomes of the TA, including a commentary on the suitability of the proposals in terms of sustainable travel, traffic impact and road safety.

1.2.2 This TA report has been prepared in accordance with the above scope and reference has been made to the following documents where appropriate:

- National Planning Policy Framework (DLUHC, 2023);
- Planning for the future. A guide to working with National Highways on planning matters (NH, 2023);
- Strategic road network and the delivery of sustainable development (DfT, 2022);
- North Lincolnshire Housing and Employment Land Allocations Development Plan Document (DPD) (NLC, 2016a);
- Lincolnshire Lakes Area Action Plan (NLC, 2016b);
- Planning Practice Guidance (DLUHC, 2014);
- North Lincolnshire Local Development Framework: Core Strategy (NLC, 2011a);
- North Lincolnshire Local Transport Plan 2011-2026 (NLC, 2011b);
- Manual for Streets 2: Wider Application of the Principles (CIHT, 2010);
- Guidance on Transport Assessment (DfT, 2007a);
- Manual for Streets (DfT, 2007b);
- North Lincolnshire Local Plan (Saved Policies) (NLC, 2003); and
- North Lincolnshire Council Residential Roads Design Guide (NLC, undated).

2. SITE BACKGROUND

2.1 Site Location & Existing Use

2.1.1 The proposed development site is located to the north of Burringham Road in Scunthorpe and currently forms agricultural land. The site is bound by agricultural land to the north, Carisbrooke Manor Lane which serves an assisted living facility (Carisbrooke Manor) to the east, Burringham Road to the south and the M181 to the west. The approximate boundary of the site is highlighted in red in Figure 1:

Figure 1: Site Location

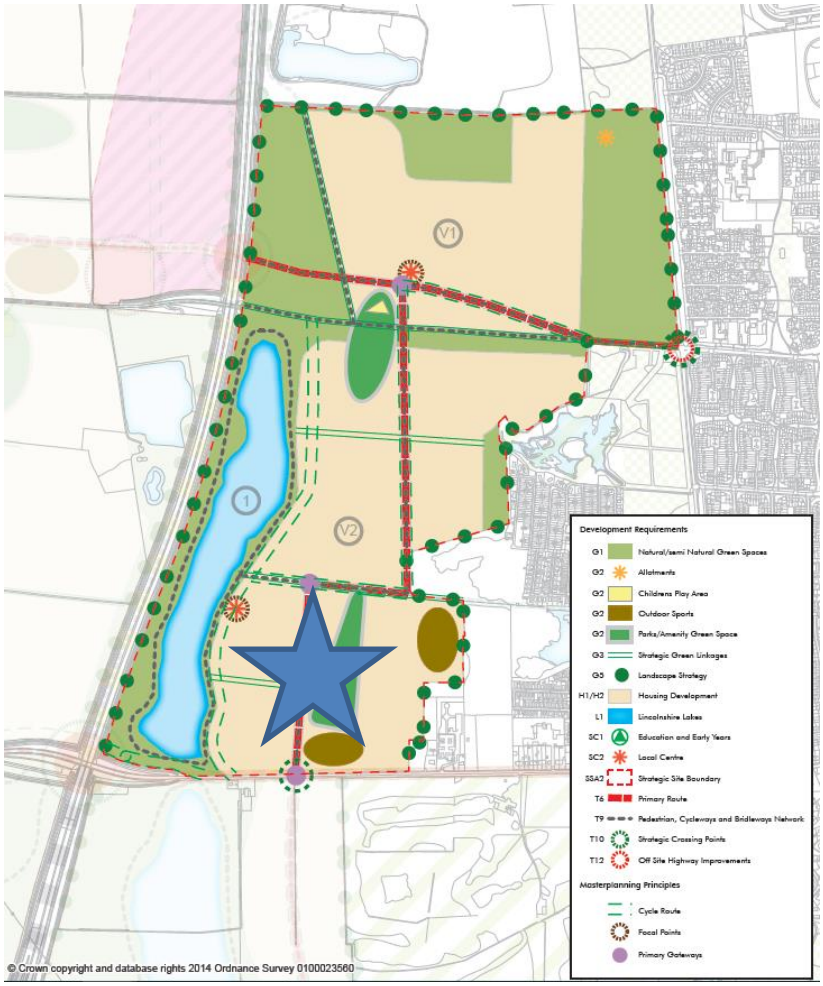
Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

2.2 Allocation Status & Planning History

2.2.1 The proposed development site forms part of the Lincolnshire Lakes development located at land east of M181 and north of Burringham Road, Scunthorpe. The wider Lincolnshire Lakes development involves the provision of up to 6,000 new homes along with recreation and sports facilities in a series of waterside village settlements. The *'Lincolnshire Lakes Area Action Plan (AAP)'* (NLC, 2016b) was adopted in 2016 and sets out the strategy for bringing forward the delivery of the development.

2.2.2 The proposed development site forms approximately half of *'Village 2'*, which is identified for approximately 1,188 dwellings, a local centre and a primary school within the Lincolnshire Lakes AAP. An indicative land use plan of Village 2 is provided within Figure 2, with the blue star highlighting the approximate location of the development within the wider site.

Figure 2: Lincolnshire Lakes AAP – Village 2



Source: NLC, 2016b

2.2.3 There are no relevant recent planning applications relating to the exact boundary of the proposed development site, however there are a number of applications pertinent to the wider Lincolnshire Lakes development in which the site is situated.

2.2.4 An outline planning application (ref: PA/2015/0396) was submitted to NLC in May 2015 for '*…the development of up to 2500 new homes including a village centre (Use Classes A1, A2, A3, A4, A5, B1 and D1), a health care facility (Use Class D1), community facilities (Use Class D1), a 3 form of entry primary school (Use Class D1), new roads and footpaths, informal areas of open space, play spaces and new wildlife habitats, water bodies and wetlands with all matters reserved for subsequent approval*'. The application relates to land to the north of Burringham Road (B1450) and to the east and west of the M181 motorway and was submitted alongside two other applications, including an application for amendments to the local highway infrastructure, namely a new M181 terminating roundabout and associated roundabouts (ref: PA/2015/0627) and an application for landscaping, lakes and a great lake (ref: PA/2015/0628). The applications were all subsequently approved in August 2021. A TA was produced in support of all three applications (ARUP, 2016).

2.2.5 The outline approval (ref: PA/2015/0396) is subject to a number of planning conditions, including trigger points for the implementation of highway mitigation measures/improvement schemes, including the following:

- **Condition 35:** "*Prior to the occupation of the 601st dwelling approved under PA/2015/0396 a comprehensive mitigation scheme covering works to the existing Burringham Road/Scotter Road roundabout to mitigate traffic impact generated by the development and provision of enhanced footway/cycleway facilities along Burringham Road shall be submitted to and approved in writing by the Local Planning Authority*";
- **Condition 36:** *"Prior to the occupation of the 801st dwelling approved under PA/2015/0396 all highway improvement measures identified in condition 35 shall be completed in accordance with the approved details and shall be operational and accessible to all users"*; and
- **Condition 37:** *"Prior to the occupation of the 250th dwelling approved under PA/2015/0396 (served off Burringham Road), works to the M181 southern (terminating) junction roundabout including connection to the existing Burringham Road and associated roundabouts approved under PA/2015/0627, must be constructed and operational and accessible to motor vehicles"*.

2.2.6 The mitigation scheme identified within Condition #35 is also secured within the Section 106 agreement for the outline consent, with a preliminary design of the proposed roundabout layout identified and approved as part of a separate planning application (ref: PA/2020/1295).

2.2.7 A separate subsequent full planning application (ref: PA/2017/1386) was submitted to NLC in August 2017 and was approved in January 2019 for *'highway works to deliver a new terminating junction to the M181 motorway comprising a new at-grade roundabout to access the B1450 Burringham Road from the M181, new B1450 side roads and realignment of the existing B1450, two new additional roundabouts on the realigned B1450, drainage ponds and outfalls, landscaping and associated re-profiling and ancillary works'*. The works involve the de-trunking of the existing M181 and the provision of a new four-arm roundabout connecting the M181 with Burringham Road (B1450). The M181 will be de-trunked to the north of the proposed roundabout and become part of the A1077. Two new roundabouts will also be provided to the east and west of the proposed M181 roundabout and will serve Village 2 and Village 6 of the Lincolnshire Lakes development, which were previously given outline approval (ref: PA/2015/0396) in August 2021, as outlined previously. The proposed highway works will facilitate links between the Lincolnshire Lakes development (including the proposed development site) and the Strategic Road Network (SRN).

2.3 Development Proposals & Access Arrangements

2.3.1 The current proposals involve the development of 599no. dwellings and lake, along with associated infrastructure, including landscaping, public open space and play area, pedestrian and cycle links, pumping station and sub-station. A mix of dwelling types are expected to be provided at the site, with a range of property sizes. A proposed site layout plan is attached as Appendix 1.

2.3.2 It should be noted that the application represents a new full planning application for the development and does not form a reserved matters application associated with the previous outline consent, although the context of the wider outline consent and Lincolnshire Lakes development is still considered to be pertinent.

2.3.3 Although the planning application for the development is currently seeking consent for 599 dwellings, it is intended that the development will be extended to the north in the future to accommodate additional dwellings as part of the wider Lincolnshire Lakes development. The proposed site access arrangements and internal roads have therefore been designed with these future development aspirations in mind.

2.3.4 The proposed residential development is to be served via a new simple priority T-junction with Burringham Road, which is to serve up to 250 dwellings before a roundabout is constructed to the west of this access, which is also to provide access to the site. The proposed roundabout will form the eastern roundabout previously approved as part of a separate full planning application (ref: PA/2017/1386), as detailed in Section 2.2 above and will be provided by the developer after the occupation of 250 dwellings at the site. This will ensure that the full development is not served via a single point of access.

2.3.5 The visibility splays from the access junctions are understood to have been designed to provide sufficient SSD in line with Manual for Streets (MfS) (DfT 2007b) and Design Manual for Roads and Bridges (DMRB) (NH, 2021), respectively.

2.3.6 The main spine road is expected to have a carriageway width of approximately 6.75m, in line with the requirements for Secondary Distributor Roads outlined in the *'North Lincolnshire Council Residential Roads Design Guide'* (NLC, undated), and is to provide access to off-street parking areas for residents rather than providing direct access to driveways. The main spine road is to provide access to culs-de-sacs which are generally expected to have a carriageway width of 5.5m, with 2m wide footways to be provided on at least one side.

2.3.7 Footways measuring 2m in width will be provided on one side of the primary streets within the development, with a 3m shared foot/cycleway on the other side, as indicated by the blue lines on the plan within Figure 3. The foot/cycleways will be extended to the northern boundary of the site to facilitate future extensions to any future development to the north. A crushed stone pedestrian footpath will also be provided along the full northern boundary of the site, with the potential for this to be extended into the land to the north in the future as part of a wider leisure walking route.

Figure 3: Proposed Foot/Cycleways

Source: nineteen47, 2023

2.3.8 Raised tables are to be provided in various locations on the primary streets to reduce vehicle speeds and create a pedestrian/cycle friendly environment to facilitate crossing movements. The detailed design of the street layout will be undertaken post-planning and be subject to agreement with NLC Highways as part of the Section 38 agreement process, therefore the detailed design of crossing points will be undertaken at this stage and will align with LTN 1/20 (DfT, 2020) and Inclusive Mobility (DfT, 2021).

2.3.9 A 3m foot/cycleway will also be provided on the northern side of Burringham Road within the site frontage, connecting with the existing provision to the east of Carisbrooke Manor Lane to the east of the site. Cyclists are to access the site via the proposed cycle/footway.

2.3.10 The internal highway network of the site has been designed to ensure that refuse vehicles can utilise the highway alignment to enter and exit the site in a forward gear, with appropriate turning heads provided in connecting culs-de-sac.

2.3.11 NLC's adopted parking standards are provided within the *'North Lincolnshire Council Residential Roads Design Guide'* (NLC, undated) and state that dwellings with two or three beds should be provided with 1 off-street parking space, with two spaces required at dwellings with more than four beds. The standards also state that 0.5 communal spaces should be provided per dwelling. At least one allocated car parking space will be provided per dwelling at the site, with the majority of the larger dwellings provided with a driveway suitable to accommodate at least two off-street car parking spaces. Visitor car parking spaces will also be provided throughout the development. The proposed parking provision therefore accords with the adopted standards.

2.3.12 Cycle parking in line with NLC and LTN 1/20 guidance will be provided within the boundary of each dwelling.

3. SITE ASSESSMENT

3.1 Local Highway Network

3.1.1 As previously outlined, the proposed development will be accessed via a new roundabout and simple priority T-junction on the southern boundary of the site. As mentioned in Section 2.2, up to 250 dwelling will be served via the proposed simple priority T-junction prior to the construction of the site access roundabout.

3.1.2 As existing, Burringham Road is a two-way single carriageway that measures approximately 5.5m in width and is subject to a derestricted speed limit (60mph) along the majority of the site frontage, decreasing to a 40mph speed limit approximately 250m to the east of the proposed site access roundabout. There are not any parking or waiting restrictions on Burringham Road within the vicinity of the site. Approximately 400m to the west of the proposed roundabout location, Burringham Road forms a bridge crossing over the M181 and forms South View approximately 1.7km further west, before providing access to Burringham village. Approximately 1.2km to the east, Burringham Road provides access to the four-arm Scotter Road/Scotter Road South roundabout.

Photo 1: Burringham Road

3.1.3 Burringham Road continues to the east of the Scotter Road roundabout, connecting with Messingham Road/Priory Road at a four-arm signalised junction, and Ashby Road/Ashby High Street/The Link at a four-arm signalised junction approximately 3km east of the site.

3.1.4 Scotter Road continues to the north of the Burringham Road roundabout, connecting with West Common Lane/Brumby Common Lane at a priority crossroads approximately 1.1km to the north, Brumby Wood Lane at a priority T-junction approximately 2.2km to the north, and with Doncaster Road/Kingsway/A18 at the five-arm 'Berkeley Roundabout' approximately 2.8km to the north.

3.1.5 The A18 continues west of Berkeley Roundabout, connecting with the A1077(M) at 'Frodingham Grange Roundabout' approximately 1km to the west. The A1077(M) continues to the south, becoming the M181 at a roundabout approximately 1.3km to the south.

3.1.6 Approximately 360m to the west of the access roundabout, Burringham Road is to provide access to the M181 via an approved roundabout (ref: PA/2017/1386), with the M181 is to be de-trunked as part of the wider Lincolnshire Lakes scheme. As existing, the M181 is a dual carriageway that measures approximately 24m in width, comprising two hard shoulders, two traffic lanes in both directions and a central reservation. The road currently forms part of the Strategic Road Network (SRN) and is subject to a derestricted speed limit (70mph) within the vicinity of the Burringham Road bridge. Approximately 990m to the south of Burringham Road, the M181 provides access to the M180 at Midmoor Interchange.

3.1.7 Proposed changes to the local highway network are discussed further within Section 2.2 of this report, including the construction of the new roundabout with the M181 motorway at Burringham Road to facilitate improved access to the SRN.

3.2 Pedestrian Provision

3.2.1 Guidance from the Chartered Institution of Highways & Transportation (CIHT) suggests a preferred maximum walking distance of 2km for a number of trips, including commuting and school trips (IHT, 2000). The proposed development site is located within a 2km walking distance of a number of local trip attractors, as outlined within Table 1.

Table 1: Key Trip Attractors by Foot

Trip Attractor	Walking Route	Walking Distance*
Education		
Westcliffe Primary School	Burringham Road – Dryden Road	1.8km
Mellior Community College (south site)	Burringham Road – Enderby Road	2km
Retail/Commercial		
Asda Scunthorpe Superstore	Burringham Road	900m
Silicia Lodge Garden Centre	Burringham Road – Scotter Road South	1.6km
South Park Industrial Estate	Burringham Road – Scotter Road South	1.9km
Leisure		
Ashby Decoy Golf Club/Oglesby Park	Burringham Road	500m
Ashfield Caravan Site	Burringham Road	700m
The Iron Forge Public House	Burringham Road	900m
Church of Jesus Christ of Latter Day Saints	Burringham Road – Whitestone Road	1.4km
Silica Country Park	Burringham Road – Scotter Road South	1.5km

Trip Attractor	Walking Route	Walking Distance*
Manor Park	Burringham Road	1.6km
Healthcare		
Lindsey Lodge Hospice	Burringham Road	300m

*Walking distances are approximate (measured along footways, rather than as the crow flies) and have been measured from the proposed site access on Burringham Road.

3.2.2 Table 1 shows that the proposed development site is located within a reasonable walking distance (up to 2km) of local amenities, including education, retail and leisure facilities.

3.2.3 As discussed within Section 1.5 of this report, the wider Lincolnshire Lakes development is expected to include a variety of new amenities, including local centres, primary schools and recreation/sports facilities. It is stated in the AAP that "*all new dwellings will be within 800m of a Local Centre and education provision. Where they are not, they will be accessible via bus routes and/or children will attend existing schools on the western edge of Scunthorpe''* (NLC, 2016b).

3.2.4 Whilst it is acknowledged that these new amenities may be delivered after the proposed development, it is unlikely that they could be sustained in isolation without the surrounding dwellings. The delivery of dwellings in the first instance will therefore encourage the future provision of amenities at the site within a short walk of the development, but in the meantime the amenities listed within Table 1 are available and accessible via Burringham Road.

3.2.5 There is a footway provided on the northern side of Burringham Road which measures approximately 2m in width and is accessible directly east of the site, extending to Scotter Road/Burringham Road roundabout, providing access to local amenities and the wider pedestrian infrastructure in Scunthorpe. This footway is proposed to be widened to form a 3m wide shared foot/cycleway as part of a separate planning application (ref: PA/2020/1295).

Photo 2: Footway on Burringham Road

3.2.6 The local footways are complemented by existing crossing facilities, including a pedestrian refuge island on the Scotter Road and Burringham Road (east) arms of the roundabout to the east of the site.

Photo 3: Pedestrian Refuge Island on Scotter Road

3.2.7 There are no Public Rights of Way (ProW) within the vicinity of the site.

3.2.8 Whilst it is acknowledged that there are no pedestrian facilities along the site frontage as existing, as part of the proposals the footway to the east of the site is to be extended along the site frontage and further pedestrian infrastructure is proposed as part of the wider Lincolnshire Lakes site to ensure connectivity.

3.2.9 The existing and proposed pedestrian infrastructure within the vicinity of the site appears to generally be sufficient to facilitate the movements of mobility and visually impaired people, with provision of dropped kerbs at most local junctions and crossing points within the local area. The footways are generally of sufficient width and surface quality to accommodate the passage of wheelchairs (DfT, 2021).

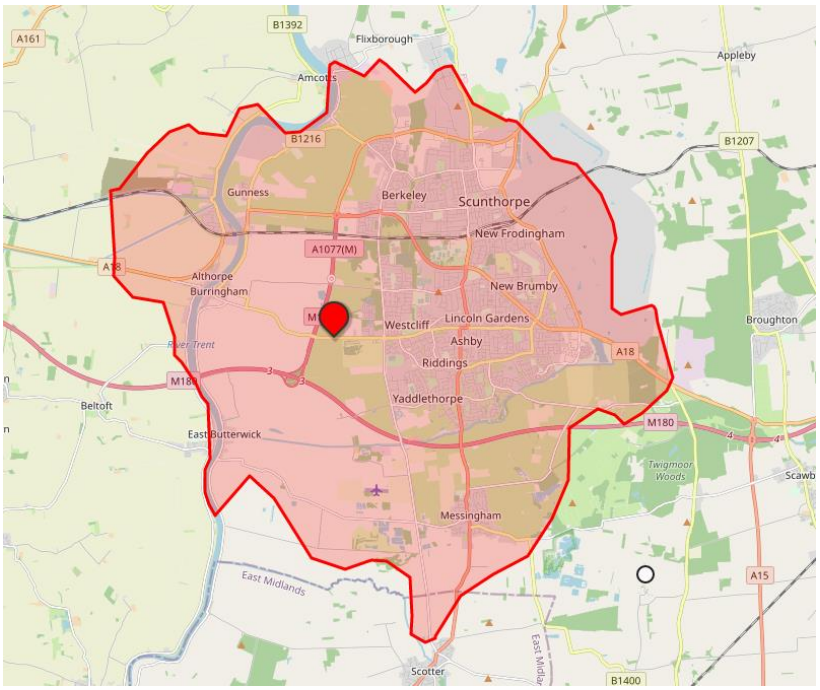
3.2.10 The proposed internal pedestrian routes are expected to be of adequate width, with step-free access between the site and the local footway network. It is therefore considered that the site can be suitably accessed on foot by all users, including those accompanied by young children and the mobility impaired.

3.2.11 A number of measures to promote walking trips to and from the site are outlined within the site Travel Plan (LTP, 2023).

3.3 Cycling Provision

3.3.1 Cycling is a low cost and healthy alternative to car use, which can substitute for short car trips, or can form part of a longer journey by public transport. The Department for Transport (DfT) state that journeys up to five miles (circa 8km) are *"an achievable distance to cycle for most people"* (DfT, 2020). The site is located within a reasonable cycle ride, up to 8km (approximately 25 minutes at the average cycling speed of 12mph), of a number of settlements within Scunthorpe, including Riddings, Yaddlethorpe, Westcliff, Ashby and Burringham as shown in Figure 4.

Figure 4: 8km Cycling Isochrone Map



Source: ORS, 2022

3.3.2 National Cycle Network (NCN) Route 169 is accessible approximately 2.2km to the north-east of the site on Burringham Road. The NCN Route 169 is a short north-south route through Scunthorpe. The majority of the length of the route is off-road, with some of it on-road. The Trent Valley Way is within cycling distance of the site; approximately 2.6km to the west, running between Newark-on-Trent and Barton-upon-Humber.

3.3.3 As discussed within Section 3.2 above, the wider Lincolnshire Lakes development is expected to include a variety of local amenities, all of which are expected to be within a short cycle ride of the site.

3.3.4 As discussed in Section 2.3, shared foot/cycleways measuring 3m in width are to be provided on at least one side of the main spine roads within the site, and will connect with wider future provision within the Lincolnshire Lakes development. As discussed in Section 3.2 above, a 3m shared foot/cycleway is proposed to be provided on the northern side of Burringham Road between the site boundary and Scotter Road/Burringham Road roundabout as part of a separate planning application (ref: PA/2020/1295).

3.3.5 A number of measures to promote cycling trips to and from the site are outlined within the site Travel Plan (LTP, 2023).

3.4 Public Transport Provision

3.4.1 Guidance outlined within *'Guidelines for Public Transport in Development'* (IHT, 1999) states that the generally acceptable maximum walking distance that a bus stop should be located from a development site is 400m, although it is acknowledged that actual walking distances can be notably longer.

3.4.2 The nearest bus stops to the proposed development site are located on Burringham Road approximately 900m east of the site adjacent to Asda Superstore, providing travel in both directions. This stop is served by route #12, which operates on an hourly basis and serves Riddings, Ashby, Old Brumby and Scunthorpe Bus Station, where a number of additional services are available. The service is operated by Hornsby Travel.

Photo 4: Bus Stop on Burringham Road

3.4.3 As previously mentioned in Section 2.2 of this report, the proposed site is part of the wider Lincolnshire Lakes development and it is expected that the '*primary route network*' identified within the AAP will accommodate bus routes and cover the proposed site, providing better access to bus services (NLC, 2016b).

3.4.4 The nearest rail station to the site is Scunthorpe Rail Station, located approximately 5.3km to the north-east of the site and accessible by bus via service #12. Scunthorpe Rail Station is operated by TransPennine Express and provides services to local, regional and national destinations. The station is served by hourly TransPennine Express services between Manchester Piccadilly and Cleethorpes via Doncaster, with additional hourly Northern services also available between Scunthorpe and Doncaster.

3.4.5 A number of measures to encourage public transport use to and from the site are outlined within the site Travel Plan (LTP, 2023).

4. ROAD CASUALTY APPRAISAL

4.1 Collision Record

4.1.1 Personal Injury Collision (PIC) data for the highway network local to the site for the most recent available five-year study period (01/01/2016 to 31/12/2020) was obtained via a search of the Department for Transport's (DfT) road safety data (DfT, 2021).

4.1.2 A total of 22 collisions occurred within the study area, which includes sections of Burringham Road, the M181 and a number of local junctions. The study area extents and the locations of the collisions are indicated on the plan attached as Appendix 2. Table 2 below outlines the collision history of the study area:

Table 2: Collision History

Year	2016	2017	2018	2019	2020	Total
Fatal	0	0	0	0	0	**0**
Serious	0	1	2	2	0	**5**
Slight	4	5	1	3	4	**17**
Total	**4**	**6**	**3**	**5**	**4**	**22**

4.1.3 The collision records show that the number of recorded collisions was relatively consistent across the study period, with a peak of six collisions in 2017. There were five KSI (Killed or Seriously Injured) collisions recorded during the study period, resulting in a severity ratio of 22.7%, with no fatal collisions were recorded.

4.2 Collision Conditions

4.2.1 Table 3 below summarises the collisions by road surface, weather and lighting conditions:

Table 3: Collision Conditions

Road Surface	Collisions	%
Dry	18	**81.8%**
Wet or damp	4	**18.2%**
Weather	**Collisions**	**%**
Fine	19	**86.4%**
Rain	3	**13.6%**
Lighting	**Collisions**	**%**
Daylight	16	**72.7%**
Dark	6	**27.3%**

4.2.2 As illustrated in Table 3, the majority of collisions occurred with no adverse weather, road surface or lighting conditions.

4.3 Collision Times

4.3.1 Table 4 below summarises the collisions by time of year:

Table 4: Collisions by Time of Year

Time of Year	Collisions	%
Winter (Dec-Feb)	5	**27.3%**
Spring (Mar-May)	6	**22.7%**
Summer (Jun-Aug)	5	**27.3%**
Autumn (Sep-Nov)	6	**22.7%**

4.3.2 Table 4 shows that collisions were relatively evenly spread across seasons, with slight peaks of six collisions (27.3%) during the summer and winter months, respectively.

4.3.3 Table 5 below summarises the collisions by day of week and also the time of day:

Table 5: Collisions by Day & Time

	Morning (06:00-11:00)	Lunch (11:00-14:00)	Afternoon (14:00-19:00)	Evening (19:00-01:00)	Night (01:00-06:00)	Total	%
Monday	0	1	1	0	0	**2**	**9.1%**
Tuesday	0	1	0	1	0	**2**	**9.1%**
Wednesday	0	1	0	0	0	**1**	**4.5%**
Thursday	0	1	1	1	0	**3**	**13.6%**
Friday	0	1	1	1	0	**3**	**13.6%**
Saturday	1	1	1	3	0	**6**	**27.3%**
Sunday	0	0	2	3	0	**5**	**22.7%**
Total	**1**	**6**	**6**	**9**	**0**	**22**	
%	**4.5%**	**27.3%**	**27.3%**	**40.9%**	**0.0%**		

4.3.4 Table 5 shows that almost half of the collisions occurred during the evening period (40.9%), with no collisions recorded during the night period. Most collisions were recorded on a weekend, with just over a quarter of collisions recorded on a Saturday (27.3%).

4.4 Collision Locations

4.4.1 The locations of the 22 study collisions (shown on the plot attached as Appendix 2) can be summarised as follows:

- 7 PICs occurred on Burringham Road (not at a junction), west of the Scotter Road roundabout;
- 5 PICs occurred at the Burringham Road/Scotter Road (B1450) roundabout;
- 4 PICs occurred on the M181; and
- 3 PICs occurred at the Scotter Road/Asda signalised access junction; and
- 2 PICs occurred on Burringham Road (not at a junction), east of the Scotter Road roundabout;

- 1 PIC occurred on Whitestone Road (not at a junction).

4.4.2 It should be noted that no collisions occurred along the site frontage during the study period.

4.5 Casualties

4.5.1 A total of 31 casualties occurred as a result of the 22 recorded injury collisions during the study period. Table 6 below provides a breakdown of the casualties according to the mode of travel and age group:

Table 6: Casualty Road User Groups

	Age (years)							
Road User Group	**0 to 15**	**16 to 20**	**21 to 25**	**26 to 45**	**46 to 65**	**66 +**	**Total**	**%**
Pedestrian	1	0	1	2	1	0	**5**	**16.1%**
Cyclist	0	0	0	1	1	0	**2**	**6.5%**
Powered Two-Wheeler	0	1	0	0	0	0	**1**	**3.2%**
Car Driver	0	1	3	5	2	1	**12**	**38.7%**
Car Passenger	0	0	1	3	1	0	**5**	**16.1%**
Goods Vehicle Occupant	0	0	0	3	2	0	**5**	**16.1%**
Minibus/Bus passenger	0	0	0	1	0	0	**1**	**3.2%**
Total	**1**	**2**	**5**	**15**	**7**	**1**	**31**	
%	**3.2%**	**6.5%**	**16.1%**	**48.4%**	**22.6%**	**3.2%**		

4.5.2 Table 6 shows that almost half of casualties were aged between 26 and 45 years (48.4%), whilst those aged 66 and over only represented 3.2% of casualties. The majority of casualties were vehicle occupants (74.1%), with low proportions of vulnerable road users (pedestrians, cyclists and powered two-wheelers).

4.6 Road Safety Impact

4.6.1 A total of 22 collisions, resulting in 31 casualties, have occurred within the study period during the five-year study period. Analysis of the study collisions has not revealed any identifiable existing collision issues associated with the expected movements of the proposed development, therefore it is considered that there are no existing road safety issues pertinent to the development of the site.

4.6.2 If the proposed site access junctions and internal roads are designed with consideration to road safety, with appropriate highway design features incorporated into the detailed design, then the potential development should not have a detrimental road safety impact on the local highway network and should not adversely affect the safety of pedestrians and cyclists.

4.7 2021 Update

4.7.1 The DfT has released provisional part-year 2021 collision data covering the period 01/01/2021 to 30/06/2021. Given that the data is provisional, it does not contain all the information to allow a full analysis to be undertaken, however an additional slight collision occurred at the Burringham Road/Scotter Road (B1450) roundabout within the study area in 2021. Given the low number of additional collisions, it is considered that the findings of the above appraisal are still pertinent.

5. TRIP GENERATION PROJECTIONS

5.1 Consented Trip Rates

5.1.1 As previously outlined, a TA (ARUP, 2016) was submitted in association with a previously approved outline planning application for a development of up to 2,500 dwellings at the site (ref: PA/2015/0396). The consented person trip rates utilised within the outline application TA were derived from a previous TA (WSP, 2013) submitted in support of an application for a wider section of the Lincolnshire Lakes site.

5.1.1 The modal split predicted as part of the TA submitted in support of the outline application (ARUP, 2016) was forecast based on existing local travel patterns derived using the *'Method of Travel to Work'* data from the 2011 National Census (ONS, 2011). The site modal split was predicted based on the average for the workplace population of eight Middle-Layer Super Output Areas (MSOAs) in Scunthorpe *'Burringham & Guinness', 'Frodingham Town', 'Crosby & Park', 'Bottlesford, 'Kingsway with Lincoln Gardens', 'Ashby'* and *'Brumby'*.

5.1.2 The consented person trip rates and modal split, along with the projected person trip generation for the development is shown within Table 7:

Table 7: Consented Modal Split & Projected Vehicle Trip Generation

	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
Person Trip Rate	0.220	0.844	0.634	0.404
Person Trips (599 Dwellings)	132	506	380	242

Person Trips	Modal Split	Arrivals	Departures	Arrivals	Departures
Driving a Car or Van	65.94%	87	334	251	160
Motorcycle, scooter or moped	1.33%	2	7	5	3
Taxi or minicab	0.44%	1	2	2	1
Vehicle Trip Generating	**67.71%**	**90**	**343**	**258**	**164**
Passenger in a Car or Van	8.77%	12	44	33	21
On foot	13.04%	17	66	50	32
Bicycle	5.97%	8	30	23	14
Bus, minibus or coach	3.56%	5	18	14	9
Train	0.35%	0	2	1	1
Other	0.59%	1	3	2	1
TOTAL PERSON TRIPS	**100%**	**132**	**506**	**380**	**242**

*The total may not represent the sum of its parts due to rounding

5.1.3 Table 7 demonstrates that, based on the approved person trip rates and modal split, the proposed development could be expected to generate up to 433 two-way vehicle trips during the AM peak hour (08:00-09:00) and 422 two-way vehicle trips during the PM peak hour (17:00-18:00).

5.2 Proposed Trip Rates

5.2.1 As requested by NH, the consented trip rates have been revisited to determine whether they are appropriate for use.

5.2.2 The TRICS database is an industry-standard collection of traffic counts and trip generation statistics for calculating trip rates at development sites. The TRICS database has been interrogated to find suitable data to assist in projecting the trip generation of the proposed development.

5.2.3 In order to derive reflective trip rates, vehicle trip generation statistics within the '*Houses Privately Owned*' (03-A) category of the TRICS database have been interrogated. To ensure that only trip generation statistics for comparable sites were used in calculations, the TRICS sites were filtered to the following criteria:

- Database Version: 7.10.3;
- Survey Type: Multi-Modal sites;
- Size: 300 to 900 dwellings;
- TRICS Location Type: 'Edge of Town';
- Regions: UK (excluding Greater London and Ireland sites);
- Weekday Survey Data only (exclusion of Saturday and Sunday surveys);
- Recent survey data inly (exclusion of surveys undertaken prior to 01/01/2015);
- Exclusion of any surveys undertaken during the Covid-19 pandemic.

5.2.4 As there were less than 20 comparable sites in the database after filtering (6 survey sites), mean trip rates (as weighed and calculated by the TRICS software) have been used to project the person trip generation of the proposed development, in accordance with good practice guidelines (TCL, 2022). The person trip rates and projected trip generation associated with the proposed development are shown in Table 8, with full details of the trip generation for the site attached as Appendix 3.

Table 8: Projected Person Trip Generation

	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
Houses Privately Owned (03-A)	**Arrivals**	**Departures**	**Arrivals**	**Departures**
Person Trip Rates (per dwelling)	0.222	0.810	0.545	0.279
Development Person Trips (599 dwellings)	**133**	**485**	**326**	**167**

5.2.5 The person trip generation projections shown in Table 8 indicate that the proposed development could be expected to generate up to 618 two-way person trip movements during the AM peak hour and 493 during the PM peak hour. The projected person trip rates are largely comparable to the consented trip rates during the AM peak hour, but are significantly reduced during the PM peak hour. It is also noted that the assessed PM peak hour of 17:00-18:00 also represents the development PM peak hour, so trip levels are not expected to be higher during any other hourly periods in the afternoon.

5.2.6 The TRICS sites utilised to predict the person trip generation of the development contain multi-modal information, therefore the modal split and vehicle trip generation of the development has been predicted based on travel pattern information from the comparable residential development sites in the TRICS database, with the number of trips generated by each mode summarised in Table 9.

Table 9: Projected Modal Split & Vehicle Trip Generation

Mode of Travel	Modal Split	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)		12-Hour (07:00-19:00)	
		Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Vehicle Drivers	64%	85	311	209	107	1,375	1,417
Vehicle Passengers	22%	29	107	72	37	472	486
Pedestrians	10.6%	14	51	35	18	228	235
Cyclists	1.7%	2	8	6	3	37	38
Public Transport Users	1.6%	2	8	5	3	299	308
TOTAL	**100%**	**133**	**485**	**326**	**167**	**2,148**	**2,213**

* Total may not represent the sum of its parts due to rounding.

5.2.7 Based on the modal split projections, the development would be expected to generate 396 two-way vehicle trips during the AM peak hour (08:00-09:00), and 316 during the PM peak hour (17:00-18:00). It is recognised that the predicted modal split of vehicle drivers from this TRICS analysis (64%) is consistent with the comparable vehicle trip generating mode split from the consented trip rates (68%).

5.2.8 As requested by NH and in line with DfT Circular 01/22 *'Strategic road network and the delivery of sustainable development'* (DfT, 2022), the residual multi-modal trip generation of the development has also been considered.

5.2.9 A Travel Plan (TP) (LTP, 2023) has been produced in association with this TA to help promote and encourage sustainable travel to/from the proposed development. The TP includes a target to reduce the proportion of trips made by vehicle drivers by 5% over five years, from a baseline of 64% to a five-year target of 59%, with a corresponding increase in the proportion of trips made by sustainable modes. The residual modal split and person trip generation based on the achievement of these targets is shown in Table 10:

Table 10: Residual Modal Split & Vehicle Trip Generation

Mode of Travel	Modal Split	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)		12-Hour (07:00-19:00)	
		Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Vehicle Drivers	59%	78	286	192	99	1,268	1,306
Vehicle Passengers	23%	31	111	75	38	494	509
Pedestrians	12.6%	17	61	41	21	271	279
Cyclists	2.7%	4	13	9	5	58	60
Public Transport Users	2.6%	3	13	8	4	56	58
TOTAL	**100%**	**133**	**485**	**326**	**167**	**2,148**	**2,213**

* Total may not represent the sum of its parts due to rounding.

5.2.10 Table 10 demonstrates that the achievement of the TP targets would reduce the vehicle trip generation of the development by 32 two-way trips in the AM peak, 25 in the PM peak and 218 over the 07:00-19:00 period.

5.2.11 In order to ensure that the traffic impact assessments robustly analyse a *'worst-case scenario'*, the potential vehicle trip reducing benefits of the site Travel Plan have not been considered within the Chapter 6 of this TA.

6. TRAFFIC IMPACT

6.1 Baseline Network Traffic Flows

6.1.1 In order to establish the baseline traffic situation at junctions within the local area, fully classified turning count surveys were undertaken on Tuesday 7th November 2023, a neutral weekday during school term-time. The study area was based on the outline TA (ARUP, 2016) and the surveys were undertaken between the hours of 07:00 and 19:00 at the following junctions:

- Burringham Road/Scotter Road roundabout;
- Scotter Road/Brumby Wood Lane junction;
- Scotter Road/Brumby Common Lane/West Common Lane crossroads;
- Berkeley Roundabout (A18/Scotter Road/Doncaster Road);
- A18/A1077 'Frodingham Grange' roundabout; and
- Burringham Road/Messingham Road/Priory Road signalised junction;
- Burringham Road/Ashby Road/The Link signalised junction.

6.1.2 The turning count surveys were supplemented by a classified link count survey undertaken on Burringham Road within the vicinity of the M181 overbridge and site access roundabout.

6.2 Peak Hours

6.2.1 The results of the surveys, which are aggregated into 15 minute intervals, indicate slightly varying peak hours for each junction, in terms of total traffic throughput, as shown in Table 11:

Table 11: Junction AM & PM Peaks

Junction	AM Peak	PM Peak
Burringham Road/Scotter Road Roundabout	08:00-09:00	16:00-17:00
Scotter Road/Brumby Wood Lane	08:00-09:00	16:00-17:00
Scooter Road /Brumby Common Lane/West Common Lane	08:00-09:00	16:00-17:00
A18/Scotter Road Roundabout	07:45-08:45	16:00-17:00
A18/A1077 Roundabout	07:30-08:30	16:00-17:00
Burringham Road/Priory Road/Messingham Road	08:00-09:00	15:30-16:30
Burringham Road/Ashby Road/The Link	08:15-09:15	15:30-16:30
Burringham Road (Site Access)	07:30-08:30	16:00-17:00

6.2.2 The recorded traffic flows during the peak hours are illustrated in the network diagrams included as Appendix 4.

6.2.3 The trip generation projections outlined within Section 5 of this TA are detailed to the hour, rather than every 15 minutes, therefore the predicted traffic generation for the worst-case 08:00-09:00 and 17:00-18:00 development peak hours has been applied to the network traffic peaks at each junction for the AM and PM peak hours.

6.3 Committed Developments

6.3.1 An outline planning application for a residential development of 200 dwellings at land to the south of Moorwell Road was submitted to NLC in October 2019 and was approved in April 2020 (ref: PA/2019/1782). The application was supported by a TA Addendum (ADC, 2019) which includes trip generation and traffic distribution projections for the local highway network. A TA (ADC, 2018) was produced as part of a previously refused application for the development of the site (ref: PA/2018/1966), which was also submitted as part of the approved application. The traffic flow projections have been explicitly included within the traffic impact assessments of this TA.

6.3.2 An outline planning application for a residential development of 144 dwellings at land to the north of Burringham Road was submitted to NLC in August 2020 and was approved in June 2021 (ref: PA/2020/1333). The application was supported by a TA (BWB, 2019) and the traffic flow projections have been explicitly included within the traffic impact assessments of this TA.

6.3.3 A full planning application for a residential development of 81 dwellings at land south of Silica Lodge Garden Centre on Scotter Road South was submitted to NLC in September 2023 and is currently pending consideration (ref: PA/2023/1585). The application was supported by a TA (BGH, 2023) and the traffic flow projections have been explicitly included within the traffic impact assessments of this TA, for robustness.

6.3.4 Whilst it is acknowledged that the wider Lincolnshire Lakes development has outline planning consent, as discussed in Section 2.2, this application would supersede part of the approved outline development. A number of highway improvements were secured as part of the outline application, including the provision of a new junction with the M181 and improvements to the Scotter Road/Burringham Road roundabout. It is therefore considered prudent to test the impact of the proposed development without the addition of traffic associated with the outline application to determine the development impact without the improvement schemes in place.

6.4 Assessment Scenarios

6.4.1 The proposals have been tested against the following weekday AM and PM peak hour traffic flow scenarios:

- ***2023 Existing*** – Traffic flows recorded and observed during the November 2023 traffic surveys;
- ***2033 Do Nothing*** - '2023 Existing' network traffic flows, growthed to 2033 with the addition of committed development traffic (see Section 6.3);
- ***2033 With Development*** – '2033 Do Nothing' with the addition of traffic associated with the full proposed development.

6.4.2 Based on the scale of the development and expected build-out rate, a 2033 horizon year has been adopted (+10 years) for the purposes of this TA as this is expected to reflect the opening year of the full proposed development. The network traffic flows in 2033 have been predicted using the DfT's *'National Traffic Model'* (NTM) for the 'Core' scenario. The growth factor obtained from the NTM has been adjusted to reflect local circumstances using TEMPro software (Ref: Yorkshire and Humber dataset Version 8.0), see Appendix 5.

6.4.3 The flows associated with the identified committed developments (see Section 6.3) have been explicitly included within the future year scenarios.

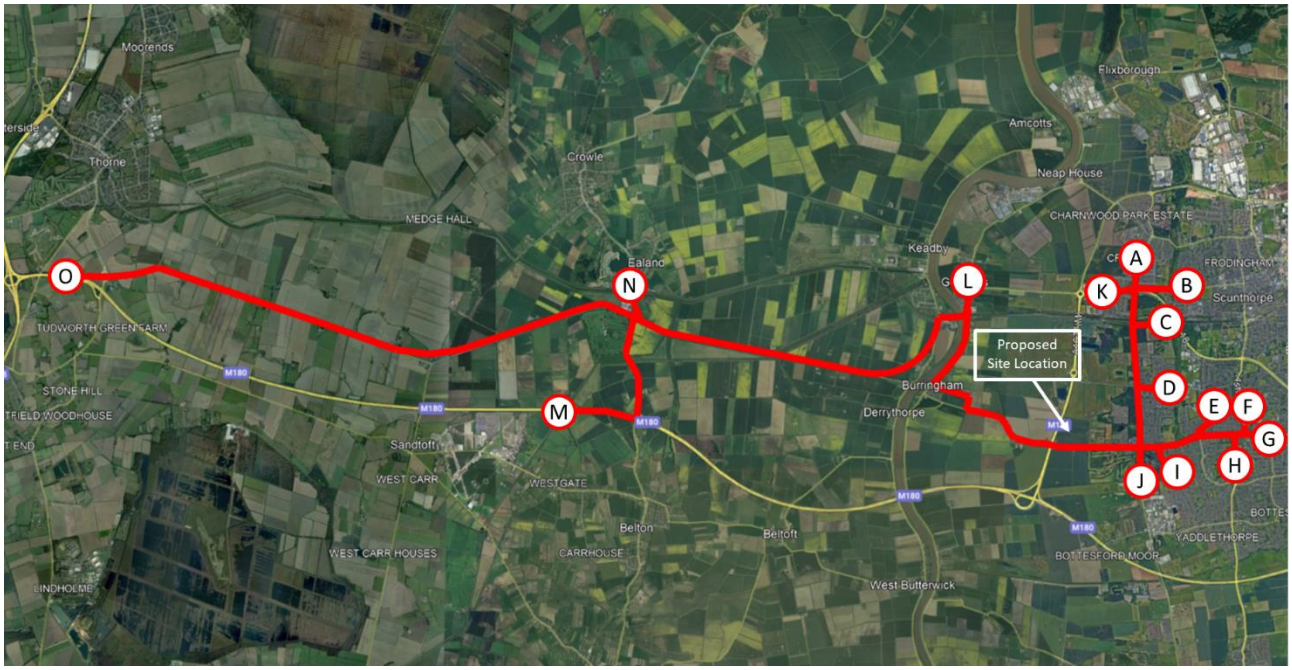
6.5 Trip Distribution & Assignment

6.5.1 The distribution of traffic associated with the site has been predicted utilising a gravity model based upon commuting patterns of existing residents within the *'North Lincolnshire 016'* Middle-Layer Super Output Area (MSOA), which covers the existing residential area immediately to the east of the site. Whilst it is acknowledged that the site is located within the *'North Lincolnshire 005'* MSOA, this covers the outlying villages of Burringham and Gunness to the west, and Flixborough, Burton upon Stather and Alkborough to the north, which are likely to have different commuting characteristics given that the latter settlements are more than 10km away from the site. It is therefore considered that the *'North Lincolnshire 016'* MSOA better reflects the characteristics of the proposed development.

6.5.2 *'Location of usual residence and place of work by method of travel to work'* data from the 2011 National Census (ONS, 2014) shows the proportion of existing residents travelling to each workplace destination (MSOAs and local authority districts) by mode of travel. The 2021 Census data has not been considered as it does not include origin-destination data by mode of travel.

6.5.3 This trip distribution data has been combined with an assessment of route choice (traffic assignment) to determine the likely distribution of development traffic across the highway network. The predicted traffic assignment has been undertaken utilising journey planning tools to help determine the relative attractiveness of alternative routes, with consideration of influences such as the location and size of settlements and employment areas within each workplace destination, and known existing traffic conditions on the relevant routes. The defined zones utilised within the gravity model calculations are illustrated in Figure 5.

Figure 5: Gravity Model Zones



Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

6.5.4 The detailed calculations of the gravity model are attached as Appendix 6, with the results summarised in Table 12.

Table 12: Gravity Model Results

Zone	Route	Distribution Split	AM Two-Way Trips	PM Two-Way Trips
A	Scotter Road (N)	18.4%	73	58
B	Doncaster Road (E)	4.5%	18	14
C	Brumby Wood Lane	13.9%	55	44
D	West Common Lane	14.6%	58	46
E	Priory Lane	2.2%	9	7
F	Ashby Road	1.8%	7	6
G	Ashby High Street	18.1%	72	57
H	Messingham Road (S)	1.6%	6	5
I	Enderby Road	2.4%	9	7
J	Scotter Road (S)	10.4%	41	33
K	Gallagher Retail Park	3.0%	12	10
L	B1216	3.8%	15	12
M	M180 (W) via J2	2.2%	9	7
N	A161 (N)	1.9%	8	6
O	A18 (W)	1.2%	5	4
TOTAL		**100%**	**396**	**316**

6.5.5 Network diagrams showing the distribution of proposed development trips across key local junctions are included as Appendix 7.

6.5.6 As discussed in Section 2.2, there are proposals to de-trunk the M181 motorway as part of the wider Lincolnshire Lakes development and provide new roundabout connections with Burringham Road. This will result in the re-distribution of traffic to/from the proposed development, with a significant proportion of trips expected to re-route away from Burringham Road and the Scotter Road roundabout, to the new direct link with the de-trunked M181.

6.5.7 The timescales for the implementation of the full scheme are currently unknown and are understood to be under discussion with NLC, however completion may come after the development that is the subject of this planning application is constructed and occupied. The proposed development includes the provision of the easternmost roundabout of the new M181 junction, as this will also provide access to the development, but does not include the roundabout connection with the M181.

6.5.8 The impact of the proposed development has therefore only been tested on the existing local highway network for the purposes of this TA, as this provides a worst-case assessment of the associated impact. A full assessment of the impact of the new M181 junction and wider development is provided as part of the TA (ARUP, 2016) which supports the approved outline application.

6.6 Impact on Local Junctions

6.6.1 The predicted increase in traffic at key local junctions as a result of the development is summarised in Table 13.

Table 13: Predicted Traffic Impact at Key Local Junctions

Junction	Zones Included	Development Impact (Two-Way Trips)
AM Peak		
Site Access/Burringham Road Roundabout	All	**+396**
Burringham Road/Scotter Road Roundabout	A-K	**+360**
Scotter Road/West Common Lane Junction	A-D, K	**+216**
Scotter Road/Brumby Wood Lane Junction	A-C, K	**+158**
Berkeley Circle Roundabout	A, B, K	**+103**
Burringham Road/Messingham Road Signalised Junction	F, G, H	**+85**
Burringham Road/Ashbv Road Signalised Junction	F, G	**+79**
M180 J2	M	**+9**
M180 J1	O	**+5**
PM Peak		
Site Access/Burringham Road Roundabout	All	**+316**
Burringham Road/Scotter Road Roundabout	A-K	**+287**
Scotter Road/West Common Lane Junction	A-D, K	**+172**
Scotter Road/Brumby Wood Lane Junction	A-C, K	**+126**
Berkeley Circle Roundabout	A, B, K	**+82**
Burringham Road/Messingham Road Signalised Junction	F, G, H	**+68**
Burringham Road/Ashbv Road Signalised Junction	F, G	**+63**

Junction	Zones Included	Development Impact (Two-Way Trips)
M180 J2	M	**+7**
M180 J1	O	**+4**

6.6.2 The DfT has previously issued guidance that transport assessment of development impacts could be based on a threshold of *"30 two-way peak hour vehicle trips"* (DfT, 2007a). This guidance acknowledged that this threshold was not to be applied rigidly, but rather that it provided *"a useful point of reference from which to commence discussions"*.

6.6.3 This national DfT guidance has now been superseded and replaced with the *'National Planning Policy Framework'* (NPPF) (MHCLG, 2021) and its accompanying *'Planning Practice Guidance'* (PPG) (MHCLG, 2014). NPPF and PPG require that transport assessment is undertaken for *"developments that generate significant amounts of movement"*, although this is not defined. It is therefore acknowledged that there is no set threshold for assessment within the current national planning policy.

6.6.4 Given that significantly more than 30 two-way trips are expected to occur at the following junctions, the available capacity has been assessed in greater detail, as discussed in Section 7. This study area matches the study area of the TA (ARUP, 2016) approved as part of the outline application and is therefore considered to be suitable:

- Site Access/Burringham Road Roundabout;
- Burringham Road/Scotter Road Roundabout;
- Scotter Road/West Common Lane Junction;
- Scotter Road/Brumby Wood Lane Junction;
- Berkeley Roundabout;
- Burringham Road/Messingham Road Signalised Junction; and
- Burringham Road/Ashby Road Signalised Junction.

6.6.5 The proposed development would be expected to result in a maximum of 9 two-way peak hour trips at M180 Junction 2, and a maximum of 5 two-way peak hour trips at M180 Junction 1. The proposals would therefore not be expected to have a significant impact on this part of the Strategic Road Network.

6.6.6 It should be noted that the assignment of traffic is likely to change upon completion of the proposed new roundabout with the M181, with a greater proportion of trips using M180 Junction 3, and the majority of trips being removed from J2 and J1. The new roundabout with the M181 may not be completed prior to the completion of the development, therefore the initial development impact is expected to be as per Table 13 and without any re-distribution associated with the new roundabout. The distribution and assignment of traffic with the new junction with the M181 in place was considered as part of the outline TA (ARUP, 2016).

7. JUNCTION CAPACITY ASSESSMENTS

7.1 Site Access/Burringham Road Roundabout

7.1.1 In order to assess the ability of the proposed site access roundabout with Burringham Road to accommodate the traffic associated with the proposed development, a roundabout capacity assessment has been undertaken using the industry-standard Junctions 9 modelling software (ARCADY module), which is a software package produced by TRL that provides an industry-standard method for assessing capacity, queuing and delay at priority junctions (PICADY) and roundabouts (ARCADY).

7.1.2 The geometric input parameters are based upon the proposed design of the roundabout. The projected future peak hour traffic flows have been assessed against the proposed roundabout layout, the results of which are shown in full within the complete modelling output (see Appendix 8), and are summarised in Table 14:

Table 14: Site Access/Burringham Road Roundabout

Arm	2033 With Development			
	Max. RFC	Max. End Q	Max. RFC	Max. End Q
	AM Peak (08:00-09:00)		PM Peak (16:00-17:00)	
Site Access	20.7%	0.3	2.2%	0.0
Burringham Road (E)	14.4%	0.2	20.1%	0.3
Burringham Road (W)	11.1%	0.1	16.5%	0.2
TOTAL	**20.7%**	**0.3**	**20.1%**	**0.3**

7.1.3 The capacity assessment results shown in Table 14 indicate that the Site Access/Burringham Road roundabout is projected to operate within the typical target Ratio of Flow to Capacity (RFC) level of 85% during both peak hours with the development in place. It is acknowledged that this only represents the situation with the proposed development in place, and not the wider Lincolnshire Lakes site or the traffic redistribution associated with the full new junction with the M181, however it is understood that the roundabout has been designed to accommodate this future traffic.

7.2 Burringham Road/Scotter Road Roundabout

7.2.1 In order to assess the ability of the Scotter Road/Burringham Road roundabout to accommodate the traffic associated with the proposed development, a junction capacity assessment has been undertaken using Junctions 9 modelling software (ARCADY module).

7.2.2 For consistency with a previously approved model, the geometric input parameters for the roundabout have been extracted from a TA (ADC, 2018) produced in support of a planning application on land to the south of Moorwell Road in Yaddlethorpe (ref: PA/2019/1782).

7.2.3 The existing and projected future peak hour traffic flows have been assessed against the existing junction layout. The results of the capacity assessment are shown in full within the complete modelling output (see Appendix 9), and are summarised in Table 15:

Table 15: Scotter Road/Burringham Road Roundabout Capacity Assessment

Arm	2023 Base		2033 Do Nothing		2033 With Development		Development Impact	
	Max. RFC	Max. End Q	Max. RFC	Max. End Q	Max. RFC	Max. End Q	Max. RFC	Max. End Q
AM Peak (08:00-09:00)								
Burringham Road (E)	36.2%	0.6	41.7%	0.7	44.4%	0.8	+2.7%	+0.1
Scotter Road (S)	58.6%	1.5	71.2%	2.5	72.7%	2.7	+1.5%	+0.2
Burringham Road (W)	36.3%	0.6	49.2%	1.0	86.4%	5.9	+37.2%	+4.9
Scotter Road (N)	46.1%	0.9	54.4%	1.3	57.4%	1.4	+3.0%	+0.1
TOTAL	**58.6%**	**1.5**	**71.2%**	**2.5**	**86.4%**	**5.9**	**+15.2%**	**+3.4**
PM Peak (17:00-18:00)								
Burringham Road (E)	51.6%	1.1	63.2%	1.7	68.4%	2.1	+5.2%	+0.4
Scotter Road (S)	54.2%	1.2	65.1%	1.9	68.7%	2.2	+3.6%	+0.3
Burringham Road (W)	77.3%	3.3	92.3%	9.1	96.1%	13.0	+3.8%	+3.9
Scotter Road (N)	75.7%	3.1	92.1%	9.4	92.4%	9.7	+0.3%	+0.2
TOTAL	**77.3%**	**3.3**	**92.3%**	**9.4**	**96.1%**	**13.0**	**+3.8%**	**+3.6**

7.2.4 The capacity assessment results shown in Table 15 indicate that the Scotter Road/Burringham Road roundabout currently operates within capacity, with a worst-case RFC value of 77.3% (Burringham Road W, PM peak).

7.2.5 The roundabout would be expected to continue to operate within 100% capacity with the development in place, with a worst-case RFC value of 86.4% during the AM peak hour and 96.1% during the PM peak hour.

7.2.6 As outlined within Section 6.5 above, the impact of the proposed development at the roundabout would be reduced once the new roundabout between Burringham Road and the M181 is constructed, however the results within Table 15 represent the situation with the full proposed development in place, and before any redistribution benefits are realised.

7.2.7 Conditions #35 and #36 of the outline planning consent relate to the roundabout improvements, with condition #36 stating that a scheme to mitigate the impact of the development at the roundabout should be completed prior to the occupation of the 801st dwelling. This is still considered to be suitable given the assessment results presented above, which assume that the new roundabout with the M181 has not been constructed.

7.3 Scotter Road/West Common Lane/Brumby Common Lane Junction

7.3.1 In order to assess the ability of the Scotter Road/West Common Lane/Brumby Common Lane priority crossroads to accommodate the traffic associated with the proposed development, a junction capacity assessment has been undertaken using Junctions 9 modelling software (PICADY module).

7.3.2 The geometric input parameters are based on scaled aerial imagery of the junction. The existing and projected future peak hour traffic flows have been assessed against the existing junction layout. The results of the capacity assessment are shown in full within the complete modelling output (see Appendix 10), and are summarised in Table 16:

Table 16: Scotter Road/West Common Lane/Brumby Common Lane Capacity Assessment

Arm	2023 Base		2033 Do Nothing		2033 With Development		Development Impact	
	Max. RFC	Max. End Q	Max. RFC	Max. End Q	Max. RFC	Max. End Q	Max. RFC	Max. End Q
AM Peak (08:00-09:00)								
West Common Lane (Left-Turn)	23.8%	0.3	27.8%	0.4	32.1%	0.5	+4.3%	+0.1
West Common Lane (Right-Turn)	20.1%	0.3	28.1%	0.4	39.1%	0.6	+11.0%	+0.2
Scotter Road (N)	0.4%	0.0	0.5%	0.0	0.6%	0.0	+0.1%	-
Brumby Common Lane	0.0%	0.0	0.0%	0.0	0.0%	0.0	-	-
Scotter Road (S)	34.0%	0.5	40.1%	0.7	49.3%	1.0	+9.2%	+0.3
TOTAL	**34.0%**	**0.5**	**40.1%**	**0.7**	**49.3%**	**1.0**	**+9.2%**	**+0.3**
PM Peak (17:00-18:00)								
West Common Lane (Left-Turn)	36.0%	0.6	46.4%	0.9	57.7%	1.3	+11.3%	+0.4
West Common Lane (Right-Turn)	27.3%	0.4	42.3%	0.8	52.7%	1.1	+10.4%	+0.3
Scotter Road (N)	0.1%	0.0	1.1%	0.0	1.1%	0.0	-	-
Brumby Common Lane	2.7%	0.0	3.5%	0.0	4.0%	0.0	+0.5%	-
Scotter Road (S)	30.0%	0.4	35.7%	0.6	38.8%	0.6	+3.1%	-
TOTAL	**36.0%**	**0.6**	**46.4%**	**0.8**	**57.7%**	**1.3**	**+11.3%**	**+0.4**

7.3.3 The capacity assessment results shown in Table 16 demonstrate that the junction would be expected to operate within capacity during all modelled scenarios, with a worst-case RFC value of 57.7% on the West Common Lane arm during the PM peak hour with the full development in place.

7.3.4 The proposed development would therefore not be expected to have a significant impact on the capacity of the Scotter Road/West Common Lane/Brumby Common Lane priority crossroads.

7.4 Scotter Road/Brumby Wood Lane Junction

7.4.1 In order to assess the ability of the Scotter Road/Brumby Wood Lane priority junction to accommodate the traffic associated with the proposed development, a junction capacity assessment has been undertaken using Junctions 9 modelling software (PICADY module).

7.4.2 The geometric input parameters are based on scaled aerial imagery of the junction. The existing and projected future peak hour traffic flows have been assessed against the existing junction layout. The results of the capacity assessment are shown in full within the complete modelling output (see Appendix 11), and are summarised in Table 17:

Table 17: Scotter Road/Brumby Wood Lane Capacity Assessment

Arm	2023 Base		2033 Do Nothing		2033 With Development		Development Impact	
	Max. RFC	Max. End Q	Max. RFC	Max. End Q	Max. RFC	Max. End Q	Max. RFC	Max. End Q
AM Peak (08:00-09:00)								
Brumby Wood Lane (Left-Turn)	21.8%	0.3	26.7%	0.4	29.4%	0.4	+2.7%	-
Brumby Wood Lane (Right-Turn)	2.7%	0.0	3.4%	0.0	4.3%	0.0	+0.9%	-
Scotter Road (S)	32.2%	0.5	40.0%	0.5	48.6%	0.9	+8.6%	+0.4
TOTAL	**32.2%**	**0.5**	**40.0%**	**0.5**	**48.6%**	**0.9**	**+8.6%**	**+0.4**
PM Peak (17:00-18:00)								
Brumby Wood Lane (Left-Turn)	51.8%	1.1	66.3%	1.9	74.7%	2.8	+8.4%	+0.9
Brumby Wood Lane (Right-Turn)	13.2%	0.2	21.1%	0.3	26.8%	0.3	+5.7%	-
Scotter Road (S)	21.1%	0.3	26.6%	0.4	28.3%	0.4	+1.7%	-
TOTAL	**51.8%**	**1.1**	**66.3%**	**1.9**	**74.7%**	**2.8**	**+8.4%**	**+0.9**

7.4.3 The capacity assessment results shown in Table 17 demonstrate that the junction would be expected to operate within capacity during all modelled scenarios, with a worst-case RFC value of 74.7% on the Brumby Wood Lane arm during the PM peak hour with the full development in place.

7.4.4 The proposed development would therefore not be expected to have a significant impact on the capacity of the Scotter Road/Brumby Wood Lane priority junction.

7.5 A18/Doncaster Road 'Berkeley' Roundabout

7.5.1 In order to assess the ability of the A18/Doncaster Road 'Berkeley' Roundabout to accommodate the traffic associated with the proposed development, a junction capacity assessment has been undertaken using Junctions 9 modelling software (ARCADY module).

7.5.2 The geometric input parameters are based on scaled aerial imagery and Ordnance Survey (OS) mapping of the junction. The existing and projected future peak hour traffic flows have been assessed against the existing junction layout. The results of the capacity assessment are shown in full within the complete modelling output (see Appendix 12), and are summarised in Table 18:

Table 18: A18/Doncaster Road 'Berkeley' Roundabout Capacity Assessment

Arm	2023 Base		2033 Do Nothing		2033 With Development		Development Impact	
	Max. RFC	Max. End Q	Max. RFC	Max. End Q	Max. RFC	Max. End Q	Max. RFC	Max. End Q
AM Peak (08:00-09:00)								
Scotter Road (N)	84.5%	4.9	102.3%	20.2	106.9%	29.0	+4.6%	+8.8
Doncaster Road	23.9%	0.3	27.4%	0.4	27.8%	0.4	+0.4%	-
Kingsway	43.4%	0.8	48.2%	1.0	48.4%	1.0	+0.2%	-
Scotter Road (S)	60.4%	1.6	70.8%	2.5	77.3%	3.4	+6.5%	+0.9
A18 (W)	73.7%	2.9	82.6%	4.8	85.5%	5.8	+2.9%	+1.0
TOTAL	**84.5%**	**4.9**	**102.3%**	**20.2**	**106.9%**	**29.0**	**+4.6%**	**+8.8**
PM Peak (17:00-18:00)								
Scotter Road (N)	83.8%	4.7	105.2%	25.8	112.1%	41.8	+6.9%	+16.0
Doncaster Road	37.8%	0.6	44.1%	0.8	45.1%	0.8	+1.0%	-
Kingsway	56.4%	1.3	64.7%	1.8	65.6%	1.9	+0.9%	+0.1
Scotter Road (S)	56.4%	1.3	63.0%	1.7	63.6%	1.8	+0.6%	+0.1
A18 (W)	72.6%	2.7	79.9%	3.9	80.4%	4.1	+0.5%	+0.2
TOTAL	**83.8%**	**4.7**	**105.2%**	**25.8**	**112.1%**	**41.8**	**+6.9%**	**+16.0**

7.5.3 The capacity assessment results shown in Table 18 indicate that the A18/Doncaster Road 'Berkeley' Roundabout currently operates at around the typical target capacity of 85%, with a worst-case RFC of 84.5% during the AM peak hour. The roundabout would be expected to operate over 100% capacity during both peak hours in the 'Do Nothing' scenario, albeit only on the Scotter Road (N) arm.

7.5.4 The roundabout would continue to operate over 100% capacity in the With Development scenario, although only on the Scotter Road (N) arm, with all other arms of the roundabout operating within capacity, and with minimal development impact on the Scotter Road (N) arm. It is noted that the modelling results are unstable when the RFC is expected to be over 100%, with the impact of additional traffic flows exaggerated. The development impact on the Scotter Road (N) arm may therefore be exaggerated because of this.

7.5.5 As discussed in Section 2.2, the M181 is proposed to be de-trunked as part of the wider Lincolnshire Lakes development, with new roundabout connections with Burringham Road. Whilst the timescales for the implementation of this scheme are unclear, it is noted that the scheme is expected to result to a significant re-distribution of traffic, with the majority of development traffic to/from the north routing via the de-trunked M181 compared to Scotter Road and Berkeley Roundabout. This would also be expected to reduce non development traffic at Berkeley Roundabout.

7.5.6 Whilst the development impacts in Table 18 may materialise, there will be wider future benefits delivered by the de-trunking of the M181, which is expected to result in a significantly reduced flow at Berkeley Roundabout and it likely operating within capacity.

7.5.7 Given the limited impact of the proposed development, and the future changes associated with the de-trunking of the M181, it is considered that the development will not have a significant impact on the operation of Berkeley Roundabout.

7.6 Burringham Road/Messingham Road/Priory Road Signalised Junction

7.6.1 In order to assess the ability of the Burringham Road/Messingham Road/Priory Road signalised junction to accommodate the projected future traffic flows, a junction capacity assessment has been undertaken using LinSig v3 software.

7.6.2 The geometric input parameters used to create the junction model were taken from scaled aerial imagery, and the phasing, staging and intergreens were taken from the signal controller specification.

7.6.3 The overall cycle time and green time allocated to each traffic stage at the junction is understood to be dependent on the measured demand. The following traffic stages are understood to be in operation at the junction during the peak hours:

2) Burringham Road (E) and Burringham Road (W), Phases A and B

4) Priory Road, Phase C

5) Messingham Road, Phase D

6) Messingham Road and Burringham Road (E) left-turn filter, Phases D and E.

7.6.4 A cycle time of 90 seconds has been assumed in all scenarios during both peak hours. The existing and projected future peak hour traffic flows have been assessed against the existing junction layout and operation, the results of which are summarised in Table 19, with the complete modelling output in Appendix 13.

Table 19: Burringham Road/Messingham Road/Priory Road Capacity Assessment

Movement From	2023 Base		2033 Do Nothing		2033 With Development		Development Impact	
	DoS	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
AM Peak (08:00-09:00)								
Priory Road	57.1%	2.9	61.3%	3.2	61.3%	3.2	-	-
Burringham Road (E)	42.2%	3.6	53.2%	5.3	53.5%	5.5	+0.3%	+0.2
Messingham Road	68.5%	12.4	75.5%	14.4	79.6%	15.3	+4.1%	+0.9
Burringham Road (W)	63.4%	8.5	69.3%	9.8	75.6%	11.8	+6.3%	+2.0
Practical Reserve Capacity (PRC)	**+31.3%**		**+19.2%**		**+13.1%**		**-6.1%**	
PM Peak (15:30-16:30)								
Priory Road	70.9%	5.4	76.1%	6.1	76.1%	6.1	-	-
Burringham Road (E)	68.0%	7.4	75.2%	9.3	79.0%	11.5	+3.8%	+2.2

Movement From	2023 Base		2033 Do Nothing		2033 With Development		Development Impact	
	DoS	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
Messingham Road	70.7%	10.1	76.3%	11.4	79.6%	11.9	+3.3%	+0.5
Burringham Road (W)	47.3%	6.8	51.7%	7.7	51.3%	7.7	-0.4%	-
Practical Reserve Capacity (PRC)	**+27.0%**		**+18.0%**		**+13.0%**		**-5.0%**	

7.6.5 The results within Table 19 demonstrate that the junction would be expected to operate within capacity during all modelled scenarios. The worst-case Degree of Saturation (DoS) is projected to be 79.6% during both peak hours with the development in place, well within the target capacity of 90% and within overall capacity of 100%.

7.6.6 It is noted that the projected highest MMQ of 11.5 PCUs on the Burringham Road (E) arm of the junction, equivalent to a queue of approximately 69m, could be suitably accommodated on this arm of the junction without impacting the adjacent Burringham Road/Ashby Road signalised junction.

7.6.7 The proposed development would therefore not be expected to have a significant impact on the capacity of the Burringham Road/Messingham Road/Priory Road signalised junction.

7.7 Burringham Road/Ashby Road/The Link Signalised Junction

7.7.1 In order to assess the ability of the Burringham Road/Ashby Road/The Link signalised junction to accommodate the projected future traffic flows, a junction capacity assessment has been undertaken using LinSig v3 software.

7.7.2 The geometric input parameters used to create the junction model were taken from scaled aerial imagery, and the phasing, staging and intergreens were taken from the signal controller specification.

7.7.3 The overall cycle time and green time allocated to each traffic stage at the junction is understood to be dependent on the measured demand. The following traffic stages are understood to be in operation at the junction during the peak hours:

1) The Link, Phase F

2) Burringham Road (W) left-turn filter and Ashby Road, Phases B and E

3) Burringham Road (W), Phase A

4) Ashby High Street, Phases D and C

5) Pedestrian crossings, Phases G, H, I and J

7.7.4 A cycle time of 90 seconds has been assumed in all scenarios during both peak hours. The existing and projected future peak hour traffic flows have been assessed against the existing junction layout and operation, the results of which are summarised in Table 20, with the complete modelling output in Appendix 14.

Table 20: Burringham Road/Ashby Road/The Link Capacity Assessment

Movement From	2023 Base		2033 Do Nothing		2033 With Development		Development Impact	
	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)	DoS (%)	MMQ (PCU)
AM Peak (08:15-09:15)								
Ashby Road (Left and Ahead)	49.7%	5.0	50.7%	5.3	59.2%	5.7	+8.5%	+0.4
Ashby Road (Right Turn)	38.0%	3.9	40.6%	4.4	47.9%	4.7	+7.3%	+0.3
Ashby High Street	46.8%	4.5	52.8%	5.1	49.9%	5.1	-2.9%	-
The Link	39.2%	1.5	41.5%	1.6	41.5%	1.6	-	-
Burringham Road	75.4%	7.8	83.0%	10.1	93.7%	14.0	+10.7%	+3.9
Practical Reserve Capacity (PRC)	**+19.4%**		**+8.5%**		**-4.1%**		**-12.6%**	
PM Peak (15:30-16:30)								
Ashby Road (Left and Ahead)	52.1%	5.9	55.8%	6.5	58.4%	6.6	+2.6%	+0.1
Ashby Road (Right Turn)	64.9%	8.3	72.8%	9.9	76.7%	10.3	+3.9%	+0.4
Ashby High Street	67.5%	9.0	72.8%	10.7	75.8%	12.1	+3.0%	+1.4
The Link	64.5%	3.2	69.2%	3.6	69.2%	3.6	-	-
Burringham Road	69.5%	6.8	75.0%	7.7	74.1%	7.7	-0.9%	-
Practical Reserve Capacity (PRC)	**+29.4%**		**+20.0%**		**+17.3%**		**-2.7%**	

7.7.5 The results within Table 20 demonstrate that the junction would be expected to operate within 100% capacity during all modelled scenarios. The worst-case DoS is projected to be 93.7% (Burringham Road arm) during the AM peak hour with the development in place, with all other arms operating well within capacity. The junction would also be expected to operate well within capacity during the PM peak hour on all arms.

7.7.6 It should be noted that the staging assumes that all stages will be called in every cycle, including the 'all red' pedestrian stage, however if there is no pedestrian demand then the pedestrian stage is unlikely to be called, with associated queuing and delay benefits.

7.7.7 It is also noted that the projected highest MMQ of 14 PCUs on the Burringham Road arm of the junction, equivalent to a queue of approximately 84m, could be suitably accommodated on this arm of the junction without impacting the adjacent Burringham Road/Messingham Road signalised junction.

7.7.8 The proposed development would therefore not be expected to have a significant impact on the capacity of the Burringham Road/Ashby Road/The Link signalised junction.

7.8 Traffic Impact Summary

7.8.1 Based on the capacity assessments within this section, it is considered that the proposed development would not be expected to have a significant impact on the local highway network or SRN.

7.8.2 The future provision of a new terminating junction with the M181 will result in the re-distribution of traffic across the highway network, which will result in a reduced impact on the junctions assessed within this section.

7.8.3 Therefore, as the impact of the development is not expected to be severe, the proposals are considered to be in accordance with the *'National Planning Policy Framework'*, which states that *"development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe"* (DLUHC, 2023).

8. CONCLUSIONS

8.1.1 This TA provides a detailed appraisal of the expected transport impacts associated with a planning application (ref: PA/2023/1124) for a residential development of 599 dwellings which is to form part of the wider Lincolnshire Lakes development in Scunthorpe, North Lincolnshire. Vehicular access to the site to be provided via a new simple priority T-junction, which is to serve up to 250 dwellings, and a roundabout with Burringham Road on the southern boundary of the site which is to be delivered as part of the development. Two full accesses will therefore be provided to the site once fully constructed.

8.1.2 Pedestrian and cycle access to the site will also be provided via the accesses with Burringham Road, with footways and shared foot/cycleways to be provided internal to the site, to connect with existing provision on Burringham Road to the east of Carisbrooke Manor Lane. A shared foot/cycleway will be provided on at least one side of the primary roads within the site.

8.1.3 It should be noted that the application represents a new full planning application for the development and does not form a reserved matters application associated with the previous outline consent (ref: PA/2015/0396), although the context of the wider outline consent and Lincolnshire Lakes development is still considered to be pertinent.

8.1.4 The application site is well placed to generate trips by sustainable modes of transport with walking and cycling realistic travel modes for local journeys given that much of the greater Scunthorpe area lies within 8km of the site, with a number of local amenities (including schools and retail facilities) within a 2km walking distance. Bus services are available from Burringham Road within an approximately 900m walk to the east of the site and provides access to services to areas including Ashby and Scunthorpe town centre. Scunthorpe Rail Station is located approximately 5.3km north-east of the site and accommodates hourly services between Manchester Airport and Cleethorpes. A Travel Plan (LTP, 2023) that provides a strategy for encouraging sustainable travel at the proposed development site has been produced in conjunction with this TA as a separate document.

8.1.5 A road casualty study showed that 22 collisions occurred within the study area around the proposed development site during a 5-year study period. Analysis of the study collisions has not revealed any identifiable existing collision issues associated with the expected movements of the proposed development, therefore it is considered that there are no existing road safety issues pertinent to the development of the site. If the proposed access junction and internal roads of the proposed development are designed with due consideration to road safety, then the proposals should not have a detrimental road safety impact on the local transport network and should not adversely affect the safety of pedestrians and cyclists.

8.1.6 The trip generation projections demonstrate that the proposed development could be expected to generate up to 396 two-way vehicle trips during the AM peak hour (08:00-09:00) and 316 two-way vehicle trips during the PM peak hour (17:00-18:00). The multi-modal trip generation of the development has also been considered, and the residual trip generation with the Travel Plan measures in place has been calculated as requested by National Highways (NH).

8.1.7 The distribution of trips across the local highway network has been predicted utilising a gravity model based upon commuting patterns of existing residents within the *'North Lincolnshire 016'* Middle-Layer Super Output Area (MSOA).

8.1.8 The baseline traffic situation within the vicinity of the site has been established using fully classified turning count surveys were undertaken on Tuesday 7th November 2023, a neutral weekday during school term-time. The peak hour at each junction has been calculated and the predicted development traffic generation during the worst-case peak hours has been applied to the network peak at each junction.

8.1.9 The proposals have been tested based on a 2033 horizon year, in line with the expected build-out rate of the development. The network traffic flows in 2033 have been projected using the DfT's *'National Traffic Model'* (NTM) for the 'Core' scenario, with the growth factor obtained from the NTM adjusted to reflect local circumstances using TEMPro software. The traffic impact associated with a number of committed developments within the vicinity of the site has been explicitly included within the assessment included within the future year scenario.

8.1.10 Based on the capacity assessments within this TA, it is considered that the proposed development would not be expected to have a significant impact on the local highway network or SRN.

8.1.11 The future provision of a new terminating junction with the M181 will result in the re-distribution of traffic across the highway network, which will result in a reduced impact on the junctions assessed within this section.

8.1.12 Therefore, as the impact of the development is not expected to be severe, the proposals are considered to be in accordance with the *'National Planning Policy Framework',* which states that *"development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe"* (DLUHC, 2023).

8.1.13 It is concluded from the assessments within this TA that the proposed development would not be expected to have a significant impact in terms of sustainable travel, traffic impact and road safety.

9. REFERENCES

ADC, 2019. Proposed Residential Development, Land South of Moorwell Road, Yaddlethorpe, Scunthorpe. Transport Assessment Addendum.

ADC, 2018. Proposed Residential Development, Land South of Moorwell Road, Yaddlethorpe, Scunthorpe. Transport Assessment.

ARUP, 2016. Lincolnshire Lakes Transport Assessment.

CIHT (Chartered Institution of Highways and Transportation), 2010. Manual for Streets 2: Wider Application of the Principles.

DfT (Department for Transport), 2022. Strategic road network and the delivery of sustainable development.

DfT, 2021. Inclusive Mobility.

DfT, 2021. Road Safety Data [online: http://data.gov.uk/dataset/road-accidents-safety-data].

DfT, 2020. LTN 1/20 – Cycle Infrastructure Design.

DfT, 2019. Transport Analysis Guidance (TAG) Unit M4 – Forecasting and Uncertainty (May 2019).

DfT, 2008b, LTN 02/08 – Cycle Infrastructure Design.

DfT, 2007a. Guidance on Transport Assessment.

DfT, 2007b. Manual for Streets.

DLUHC (Department for Levelling Up, Housing and Communities), 2023. National Planning Policy Framework.

DLUHC, 2014. Planning Practice Guidance – Travel Plans, Transport Assessments and Statements in Decision-Taking (ID: 42-06/03/2014) [online: http://planningguidance.planningportal.gov.uk].

IHT (Institution of Highways and Transportation), 2000. Guidelines for Providing for Journeys on Foot.

IHT, 1999. Guidelines for Public Transport in Development.

LTP (Local Transport Projects Ltd), 2023. Proposed Residential Development, Lincolnshire Lakes, Scunthorpe. Travel Plan.

NH (National Highways), 2023. Planning for the future. A guide to working with National Highways on planning matters.

NH, 2021. CD 123 Geometric design of at-grade priority and signal-control junctions.

NLC (North Lincolnshire Council), undated. North Lincolnshire Council Residential Roads Design Guide.

NLC, 2022. North Lincolnshire Local Plan Submission (November 2022).

NLC, 2016a. North Lincolnshire Housing and Employment Land Allocations Development Plan Document (DPD).

NLC, 2016b. Lincolnshire Lakes Area Action Plan.

NLC, 2011a. North Lincolnshire Local Development Framework: Core Strategy.

NLC, 2011b. North Lincolnshire Local Transport Plan.

NLC, 2003. North Lincolnshire Local Plan (Saved Policies).

ONS (Office for National Statistics), 2011. Method of Travel to work (2001 specification) (Workplace population) WP703EW.

ORS Map, 2021. Openroute Service Map [online: https://maps.openrouteservice.org] (accessed February 2022).

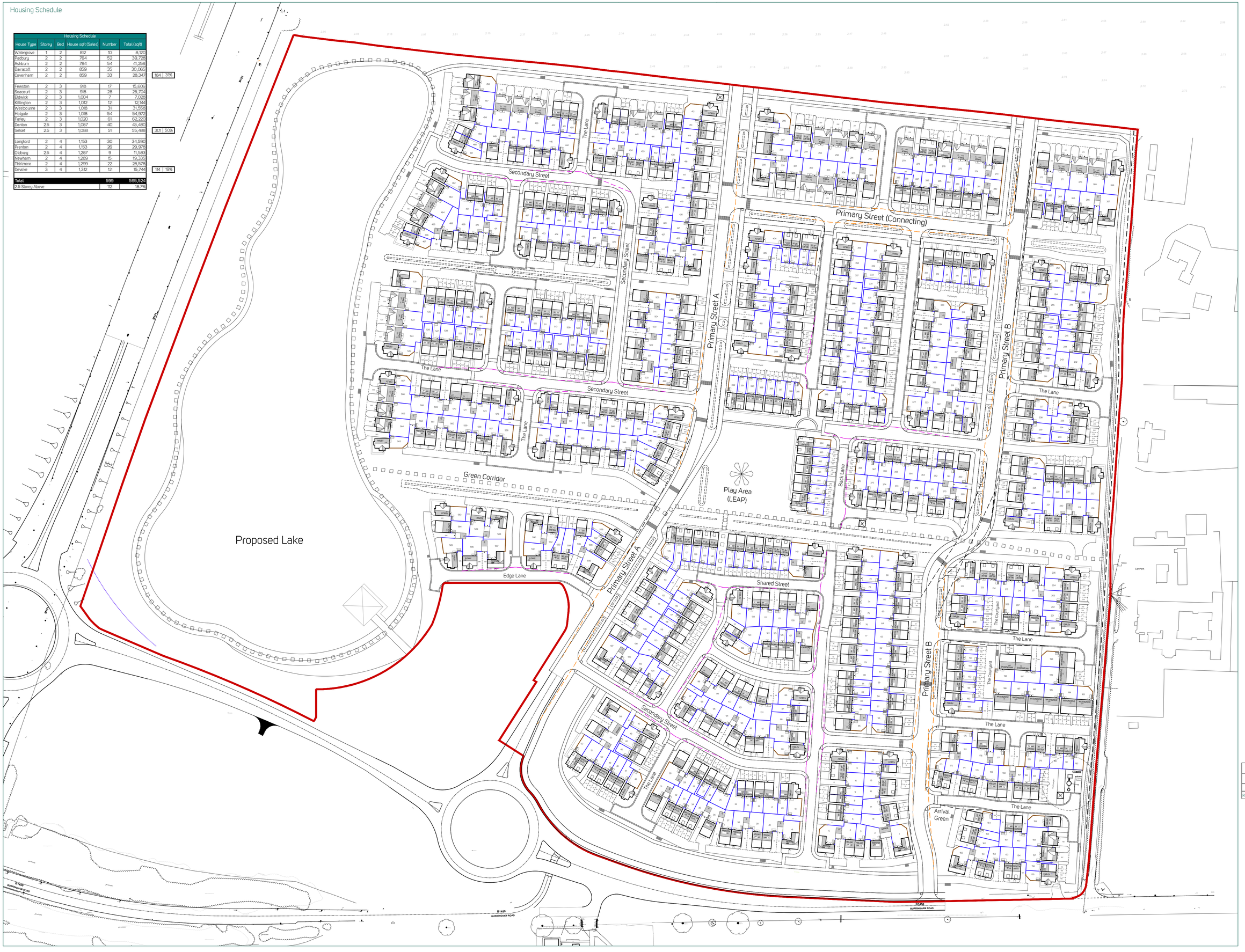
TCL (TRICS Consortium Ltd), 2022. TRICS Good Practice Guide 2023.

WSP, 2013. Transport Assessment – Lincolnshire Lakes, Scunthorpe.

Appendix 1 – Site Layout Plan

Housing Schedule

Housing Schedule					
House Type	Storey	Bed	House sqft (Sales)	Number	Total (sqft)
Watergrove	1	2	812	10	8,120
Padbury	2	2	764	52	39,728
Ashburn	2	2	764	54	41,256
Darracott	2	2	859	35	30,065
Covenham	2	2	859	33	28,347
				184	31%
Fewston	2	3	918	17	15,606
Seacourt	2	3	918	28	25,704
Eldwick	2	3	1,004	7	7,028
Killington	2	3	1,012	12	12,144
Westbourne	2	3	1,018	31	31,558
Holgate	2	3	1,018	54	54,972
Farley	2	3	1,020	61	62,220
Denton	2.5	3	1,087	40	43,480
Selset	2.5	3	1,088	51	55,488
				301	50%
Longford	2	4	1,153	30	34,590
Prenton	2	4	1,153	26	29,978
Oldbury	2.5	4	1,287	9	11,583
Newham	2	4	1,289	15	19,335
Thirlmere	2	4	1,299	22	28,578
Devoke	3	4	1,312	12	15,744
				114	19%
Total				599	595,524
2.5 Storey Above				112	18.7%



Key

- Application boundary
- Private bin storage
- Shared drive bin collection point (only to be used on collection days)
- Indicates block paving areas
- Gates
- 1.8m high screen wall
- 1.8m high timber fence
- 1.5m high timber fence with 0.3m trellis & 1.8m high privacy panel between dwellings

Revision	Date	Revision Note	Issued
C	18.12.23	Layout amended to accommodate highway changes	n47
B	Nov 2023	Amendments to highway made and layout updated accordingly	n47
A	-	Planning Layout Issue Revision	n47

Keepmoat Homes

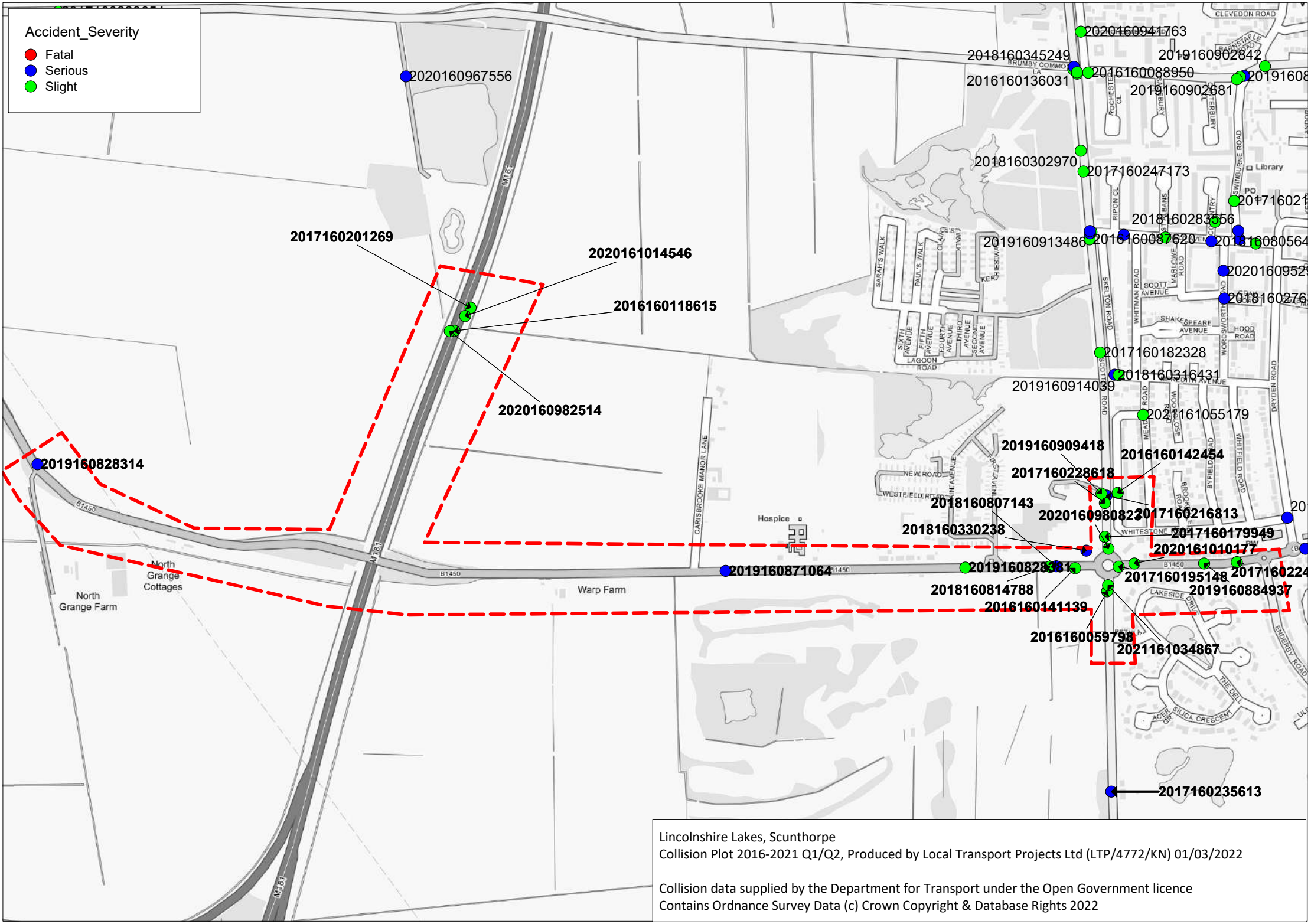
nineteen47
CHARTERED TOWN PLANNERS & URBAN DESIGNERS

Project
Lincolnshire Lakes

Drawing Title
Planning Layout

Project Code	Drawing Nr	Rev.	Drawing Scale
n1720	008	C	1:1000 @ A1

Appendix 2 – Collision Plot



Lincolnshire Lakes, Scunthorpe
Collision Plot 2016-2021 Q1/Q2, Produced by Local Transport Projects Ltd (LTP/4772/KN) 01/03/2022

Appendix 3 – Trip Generation Projections

Calculation Reference: AUDIT-342901-231114-1124

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	SC	SURREY	1 days
	WS	WEST SUSSEX	1 days
04	EAST ANGLIA		
	NF	NORFOLK	3 days
05	EAST MIDLANDS		
	DY	DERBY	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: 300 to 799 (units:)
Range Selected by User: 300 to 900 (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: 01/01/15 to 20/03/23

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

Selected survey days:

Tuesday	3 days
Wednesday	2 days
Thursday	1 days

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

Selected survey types:

Manual count	6 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town	6

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

Selected Location Sub Categories:

Residential Zone	5
Out of Town	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.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	2 days - Selected
Servicing vehicles Excluded	5 days - Selected

Secondary Filtering selection:

Use Class:

C3	6 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 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:

5,001 to 10,000	4 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days

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

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	1 days
75,001 to 100,000	2 days
125,001 to 250,000	2 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	2 days
1.1 to 1.5	3 days
1.6 to 2.0	1 days

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

Travel Plan:

Yes	5 days
No	1 days

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

PTAL Rating:

No PTAL Present	6 days

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

LIST OF SITES relevant to selection parameters

1 DY-03-A-01 MIXED HOUSES DERBY
RADBOURNE LANE
DERBY

Edge of Town
Residential Zone
Total No of Dwellings: 371
Survey date: TUESDAY *10/07/18* *Survey Type: MANUAL*

2 NF-03-A-23 MIXED HOUSES & FLATS NORFOLK
SILFIELD ROAD
WYMONDHAM

Edge of Town
Out of Town
Total No of Dwellings: 514
Survey date: WEDNESDAY *22/09/21* *Survey Type: MANUAL*

3 NF-03-A-38 MIXED HOUSES NORFOLK
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total No of Dwellings: 537
Survey date: TUESDAY *20/09/22* *Survey Type: MANUAL*

4 NF-03-A-46 MIXED HOUSES & FLATS NORFOLK
BURGH ROAD
AYLSHAM

Edge of Town
Residential Zone
Total No of Dwellings: 300
Survey date: TUESDAY *14/09/21* *Survey Type: MANUAL*

5 SC-03-A-08 MIXED HOUSES SURREY
REIGATE ROAD
HORLEY

Edge of Town
Residential Zone
Total No of Dwellings: 790
Survey date: WEDNESDAY *04/05/22* *Survey Type: MANUAL*

6 WS-03-A-06 MIXED HOUSES WEST SUSSEX
ELLIS ROAD
WEST HORSHAM
S BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total No of Dwellings: 799
Survey date: THURSDAY *02/03/17* *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.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
KC-03-A-11	Unusually low peak hour trip rates

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.56

	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	6	552	0.084	6	552	0.377	6	552	0.461
08:00 - 09:00	6	552	0.169	6	552	0.434	6	552	0.603
09:00 - 10:00	6	552	0.147	6	552	0.164	6	552	0.311
10:00 - 11:00	6	552	0.124	6	552	0.134	6	552	0.258
11:00 - 12:00	6	552	0.133	6	552	0.146	6	552	0.279
12:00 - 13:00	6	552	0.150	6	552	0.145	6	552	0.295
13:00 - 14:00	6	552	0.146	6	552	0.142	6	552	0.288
14:00 - 15:00	6	552	0.133	6	552	0.174	6	552	0.307
15:00 - 16:00	6	552	0.257	6	552	0.155	6	552	0.412
16:00 - 17:00	6	552	0.279	6	552	0.150	6	552	0.429
17:00 - 18:00	6	552	0.370	6	552	0.165	6	552	0.535
18:00 - 19:00	6	552	0.332	6	552	0.152	6	552	0.484
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.324			2.338			4.662

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:	300 - 799 (units:)
Survey date date range:	01/01/15 - 20/03/23
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	1

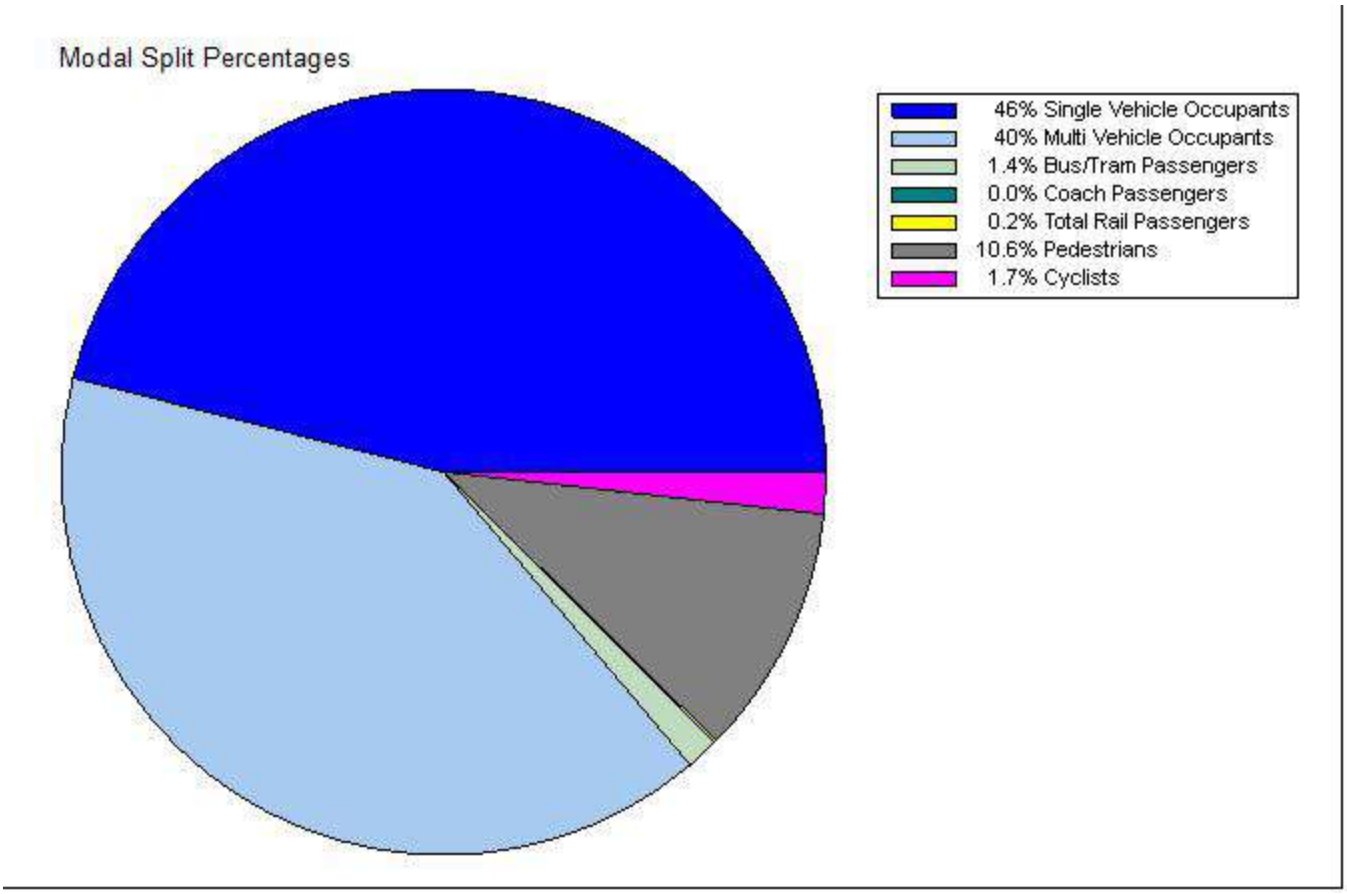
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected 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/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.56

	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	6	552	0.120	6	552	0.545	6	552	0.665
08:00 - 09:00	6	552	0.222	6	552	0.810	6	552	1.032
09:00 - 10:00	6	552	0.210	6	552	0.239	6	552	0.449
10:00 - 11:00	6	552	0.174	6	552	0.189	6	552	0.363
11:00 - 12:00	6	552	0.194	6	552	0.217	6	552	0.411
12:00 - 13:00	6	552	0.212	6	552	0.221	6	552	0.433
13:00 - 14:00	6	552	0.214	6	552	0.198	6	552	0.412
14:00 - 15:00	6	552	0.212	6	552	0.265	6	552	0.477
15:00 - 16:00	6	552	0.551	6	552	0.244	6	552	0.795
16:00 - 17:00	6	552	0.470	6	552	0.245	6	552	0.715
17:00 - 18:00	6	552	0.545	6	552	0.279	6	552	0.824
18:00 - 19:00	6	552	0.462	6	552	0.244	6	552	0.706
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.586			3.696			7.282

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.*



Time Range/Peak Period Selection
Direction: Totals / Use All Times

599 dwellings

Projected Person Trip Generation

Person Trip Rates (per dwelling) | *Person Trips*

Time	IN	OUT	TOTAL	IN	OUT	TOTAL
07:00-08:00	0.120	0.545	0.665	72	326	398
08:00-09:00	0.222	0.810	1.032	133	485	618
09:00-10:00	0.210	0.239	0.449	126	143	269
10:00-11:00	0.174	0.189	0.363	104	113	217
11:00-12:00	0.194	0.217	0.411	116	130	246
12:00-13:00	0.212	0.221	0.433	127	132	259
13:00-14:00	0.214	0.198	0.412	128	119	247
14:00-15:00	0.212	0.265	0.477	127	159	286
15:00-16:00	0.551	0.244	0.795	330	146	476
16:00-17:00	0.470	0.245	0.715	282	147	429
17:00-18:00	0.545	0.279	0.824	326	167	493
18:00-19:00	0.462	0.244	0.706	277	146	423
TOTAL	**3.586**	**3.696**	**7.282**	**2148**	**2213**	**4361**

MM, Mean 03-A, 300-900 dwells, England (exc. GL), Wales & Scotland, Edge of Town only, exc. Sat/Sun, 15+ (6)

TRICS v7.10.3

Projected Modal Split

Proportion of Vehicle Trips

Time	IN	OUT	TOTAL
07:00-08:00	70.0%	69.2%	69.3%
08:00-09:00	76.1%	53.6%	58.4%
09:00-10:00	70.0%	68.6%	69.3%
10:00-11:00	71.3%	70.9%	71.1%
11:00-12:00	68.6%	67.3%	67.9%
12:00-13:00	70.8%	65.6%	68.1%
13:00-14:00	68.2%	71.7%	69.9%
14:00-15:00	62.7%	65.7%	64.4%
15:00-16:00	46.6%	63.5%	51.8%
16:00-17:00	59.4%	61.2%	60.0%
17:00-18:00	67.9%	59.1%	64.9%
18:00-19:00	71.9%	62.3%	68.6%
TOTAL	**64.8%**	**63.3%**	**64.0%**

Projected Modal Trip Generation

		AM Peak			Network PM Peak			Development PM Peak			Daily (07:00-19:00)		
Mode	**Split**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**
Vehicle Drivers	64.0%	85	311	396	181	94	275	209	107	316	1375	1417	2792
Vehicle Passengers	22.0%	29	107	136	62	32	94	72	37	109	472	486	958
Vehicle Occupants Sub-Total	**86.0%**	**114**	**418**	**532**	**243**	**126**	**369**	**281**	**144**	**425**	**1847**	**1903**	**3750**
Pedestrian	10.6%	14	51	65	30	16	46	35	18	53	228	235	463
Pedal-cycle	1.7%	2	8	10	5	2	7	6	3	9	37	38	75
Public Transport	1.6%	2	8	10	5	2	7	5	3	8	34	35	69
	13.9%	18	67	85	40	20	60	46	24	70	299	308	607
Total Person Trips	**100%**	**133**	**485**	**618**	**282**	**147**	**429**	**326**	**167**	**493**	**2148**	**2213**	**4361**

Residual Trip Generation

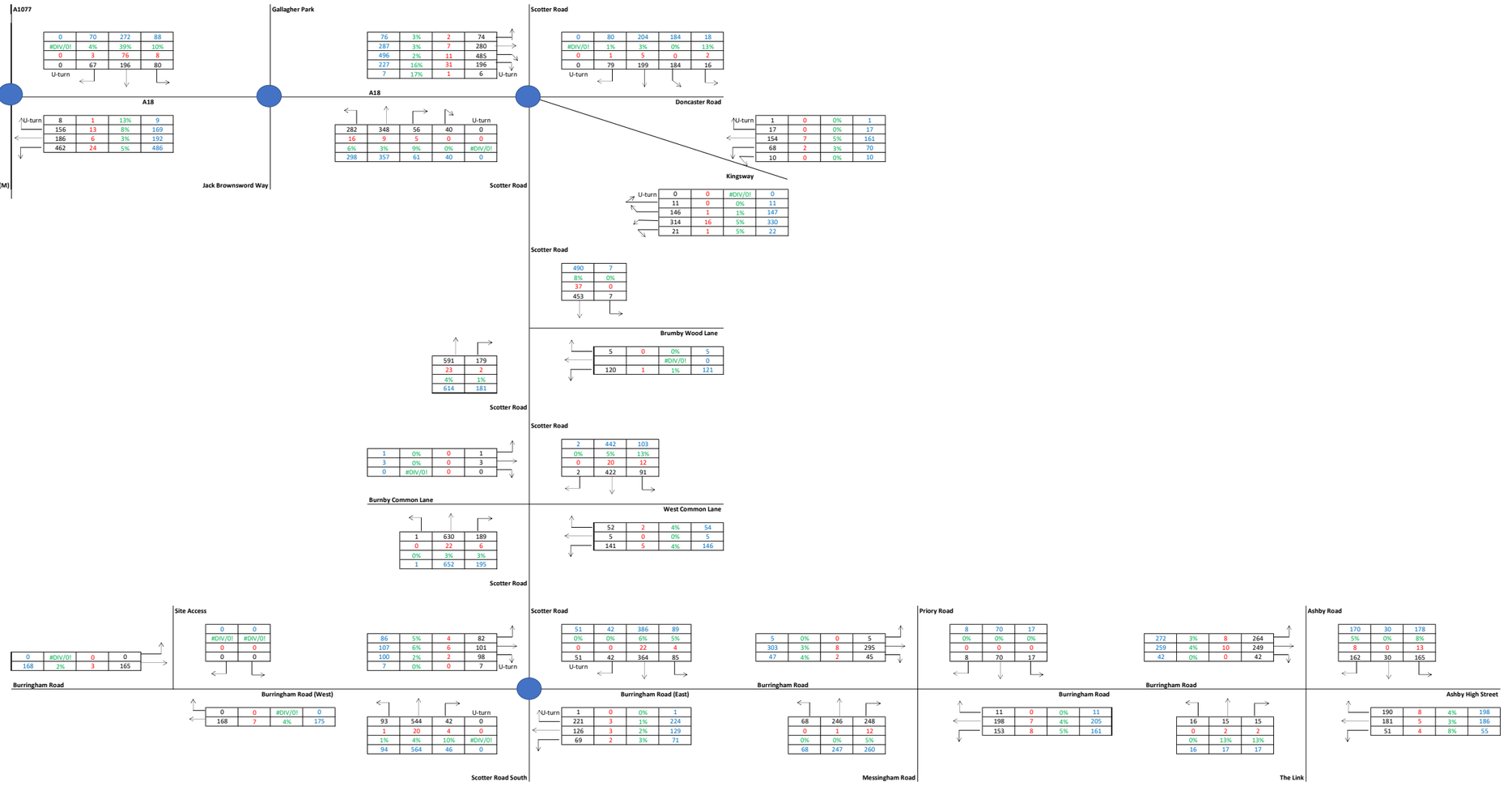
Assumes a 5% reduction in Vehicle Driver trips in favour of more sustainable modes, as per the Travel Plan

		AM Peak			Network PM Peak			Development PM Peak			Daily (07:00-19:00)		
Mode	**Split**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**
Vehicle Drivers	59.0%	78	286	365	166	87	253	192	99	291	1268	1306	2574
Vehicle Passengers	23.0%	31	111	142	65	34	99	75	38	113	494	509	1002
Vehicle Occupants Sub-Total	**82.0%**	**109**	**398**	**507**	**231**	**121**	**352**	**267**	**137**	**404**	**1761**	**1815**	**3576**
Pedestrian	12.6%	17	61	78	36	19	54	41	21	62	271	279	549
Pedal-cycle	2.7%	4	13	17	8	4	12	9	5	13	58	60	118
Public Transport	2.6%	3	13	16	7	4	11	8	4	13	56	58	113
	17.9%	24	87	111	50	26	77	58	30	88	384	396	781
Total Person Trips	**100%**	**133**	**485**	**618**	**282**	**147**	**429**	**326**	**167**	**493**	**2148**	**2213**	**4361**

Appendix 4 – Baseline Traffic Flows

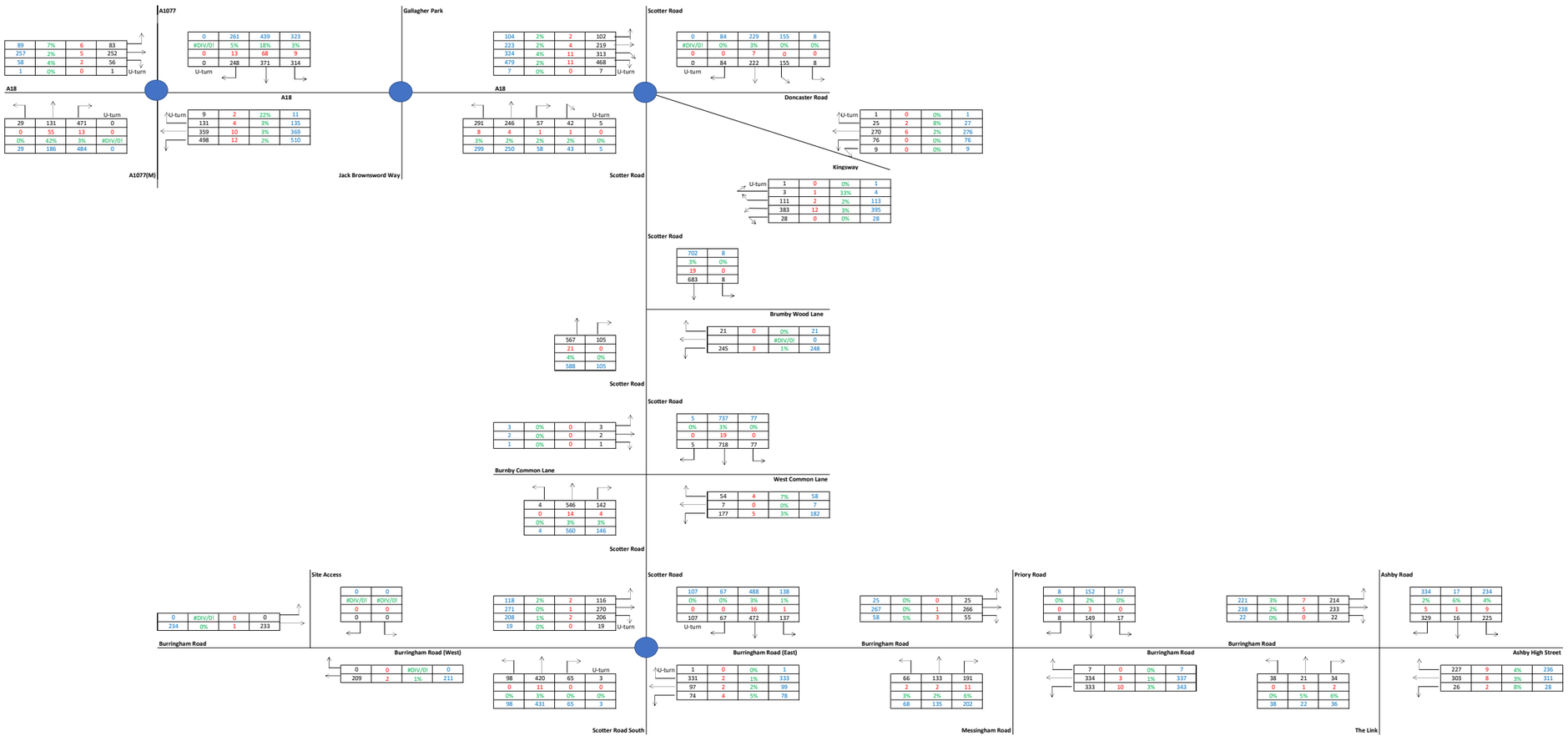
2023 Base
AM Peak (08:00-09:00)

Vehicles
HCVs
HCV (%)
PCUs



2023 Base
PM Peak (16:00-17:00)

Vehicles
HCVs
HCV (%)
PCUs



Appendix 5 – TEMPro Growth Projections

Traffic Growth Forecasts

Base Year:	2023
Assessment Year:	2033
Period (years):	10
Area Type:	N/A
Road Type:	Minor
Area Served:	Region
NTM Dataset:	NTEMv80_Core_Scenario_260522
Region Data Set Version:	YH
Software Version:	TEMPRO v8.1
Area:	North Lincolnshire

Scenario	Weekday AM Peak Period (07:00-09:59)	Weekday PM Peak Period (16:00-18:59)
Unadjusted	**1.0745**	**1.0731**
Adjusted Growth Factor:	**7.5%**	**7.3%**

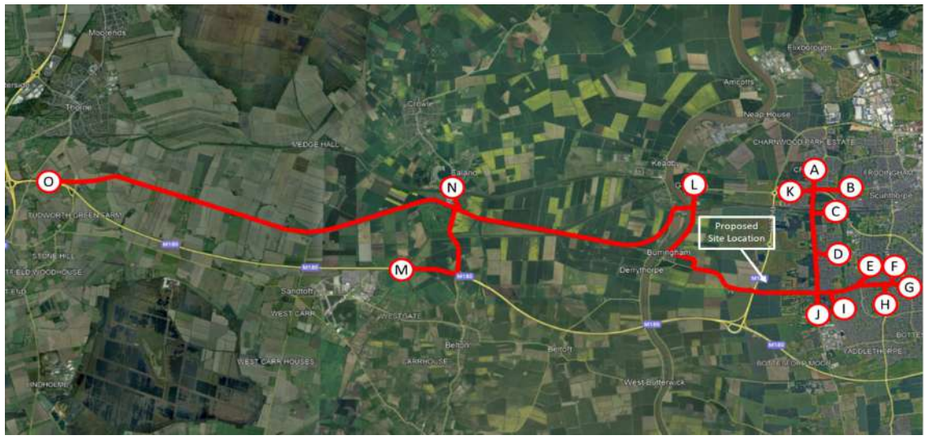
Appendix 6 – Gravity Model

Proposed Trip Distribution & Assignment - Gravity Model

Origin MSOA: North Lincolnshire 016

Stage 1: Trip Distribution

Area of Workplace	Type	All people	Works mainly at or from home	Underground, metro, light rail or tram	Train	Bus, minibus or coach	Taxi or minicab	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot	Other	Vehicle Trip Generating Mode	%	Description
E02002755 : North Lincolnshire 007	MSOA	320	0	0	0	17	2	7	216	47	23	6	2	225	19.31%	
E02002758 : North Lincolnshire 010	MSOA	265	0	0	0	4	0	8	191	22	29	9	2	199	17.08%	
E02002756 : North Lincolnshire 008	MSOA	194	0	0	2	40	0	6	112	22	7	5	0	118	10.13%	
E02002753 : North Lincolnshire 005	MSOA	147	0	0	0	11	2	1	85	22	11	13	2	88	7.55%	
E02002757 : North Lincolnshire 009	MSOA	91	0	0	0	14	0	0	54	12	4	7	0	54	4.64%	
E02002764 : North Lincolnshire 016	MSOA	160	0	0	0	4	1	2	51	10	8	83	1	54	4.64%	
E02002767 : North Lincolnshire 019	MSOA	86	0	0	1	1	1	3	48	13	11	8	0	52	4.46%	
North East Lincolnshire	Local Authority	57	0	0	1	3	0	0	44	3	1	5	0	44	3.78%	
E02002759 : North Lincolnshire 011	MSOA	50	0	0	0	1	0	0	36	5	0	8	0	36	3.09%	
E02002765 : North Lincolnshire 017	MSOA	69	0	0	0	1	1	2	35	10	1	19	0	38	3.26%	
E02002760 : North Lincolnshire 012	MSOA	69	0	0	0	5	0	0	34	6	3	21	0	34	2.92%	
Doncaster	Local Authority	39	0	0	0	1	0	0	29	3	1	5	0	29	2.49%	
E02002763 : North Lincolnshire 015	MSOA	44	0	1	0	4	0	2	27	7	1	2	0	29	2.49%	
West Lindsey	Local Authority	26	0	0	0	1	0	1	19	1	1	3	0	20	1.72%	
E02002761 : North Lincolnshire 013	MSOA	21	0	0	0	1	0	0	18	2	0	0	0	18	1.55%	
Kingston upon Hull, City of	Local Authority	27	0	0	0	2	0	1	17	3	0	4	0	18	1.55%	
E02002754 : North Lincolnshire 006	MSOA	22	0	0	0	1	0	0	15	4	0	2	0	15	1.29%	
E02002752 : North Lincolnshire 004	MSOA	14	0	0	0	0	0	0	14	0	0	0	0	14	1.20%	
E02002749 : North Lincolnshire 001	MSOA	15	0	0	0	0	0	0	13	0	1	1	0	13	1.12%	
E02002762 : North Lincolnshire 014	MSOA	22	0	0	0	2	0	0	13	2	2	3	0	13	1.12%	
East Riding of Yorkshire	Local Authority	15	0	0	0	1	0	0	12	1	1	0	0	12	1.03%	
E02002769 : North Lincolnshire 021	MSOA	16	0	0	0	0	0	0	11	1	2	2	0	11	0.94%	
Leeds	Local Authority	14	0	0	2	0	0	0	11	0	0	1	0	11	0.94%	
E02002770 : North Lincolnshire 022	MSOA	10	0	0	0	0	0	0	10	0	0	0	0	10	0.86%	
Lincoln	Local Authority	12	0	0	0	2	0	0	10	0	0	0	0	10	0.86%	
													TOTAL:	1,165	100.00%	



Stage 2: Traffic assignment for each O-D pair

Area of Workplace	Type	Route Assignment A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	TOTAL
E02002755 : North Lincolnshire 007	MSOA	80.0%		10.0%	10.0%												100%
E02002758 : North Lincolnshire 010	MSOA			10.0%	50.0%			40.0%									100%
E02002756 : North Lincolnshire 008	MSOA		40.0%	40.0%	20.0%												100%
E02002753 : North Lincolnshire 005	MSOA	10.0%										40.0%	50.0%				100%
E02002757 : North Lincolnshire 009	MSOA		10.0%	90.0%													100%
E02002764 : North Lincolnshire 016	MSOA				30.0%					30.0%	40.0%						100%
E02002767 : North Lincolnshire 019	MSOA										100.0%						100%
North East Lincolnshire	Local Authority					20.0%	20.0%	60.0%									100%
E02002759 : North Lincolnshire 011	MSOA	10.0%						90.0%									100%
E02002765 : North Lincolnshire 017	MSOA							20.0%	50.0%	30.0%							100%
E02002760 : North Lincolnshire 012	MSOA			70.0%	20.0%	10.0%											100%
Doncaster	Local Authority													50.0%		50.0%	100%
E02002763 : North Lincolnshire 015	MSOA							100.0%									100%
West Lindsey	Local Authority										100.0%						100%
E02002761 : North Lincolnshire 013	MSOA	10.0%				20.0%	20.0%	50.0%									100%
Kingston upon Hull, City of	Local Authority	40.0%						60.0%									100%
E02002754 : North Lincolnshire 006	MSOA														100.0%		100%
E02002752 : North Lincolnshire 004	MSOA					20.0%	20.0%	60.0%									100%
E02002749 : North Lincolnshire 001	MSOA	90.0%						10.0%									100%
E02002762 : North Lincolnshire 014	MSOA				10.0%	50.0%	40.0%										100%
East Riding of Yorkshire	Local Authority	10.0%						30.0%							60.0%		100%
E02002769 : North Lincolnshire 021	MSOA							20.0%			80.0%						100%
Leeds	Local Authority													100.0%			100%
E02002770 : North Lincolnshire 022	MSOA							10.0%			90.0%						100%
Lincoln	Local Authority										100.0%						100%

Stage 3: Total zonal distribution of traffic

Area of Workplace	Type	Route Assignment A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	TOTAL
E02002755 : North Lincolnshire 007	MSOA	15.45%	0.00%	1.93%	1.93%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	19.31%
E02002758 : North Lincolnshire 010	MSOA	0.00%	0.00%	1.71%	8.54%	0.00%	0.00%	6.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	17.08%
E02002756 : North Lincolnshire 008	MSOA	0.00%	4.05%	4.05%	2.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.13%
E02002753 : North Lincolnshire 005	MSOA	0.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.02%	3.78%	0.00%	0.00%	0.00%	7.55%
E02002757 : North Lincolnshire 009	MSOA	0.00%	0.46%	4.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.64%
E02002764 : North Lincolnshire 016	MSOA	0.00%	0.00%	0.00%	1.39%	0.00%	0.00%	0.00%	0.00%	1.39%	1.85%	0.00%	0.00%	0.00%	0.00%	0.00%	4.64%
E02002767 : North Lincolnshire 019	MSOA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.46%	0.00%	0.00%	0.00%	0.00%	0.00%	4.46%
North East Lincolnshire	Local Authority	0.00%	0.00%	0.00%	0.00%	0.76%	0.76%	2.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.78%
E02002759 : North Lincolnshire 011	MSOA	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	2.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.09%
E02002765 : North Lincolnshire 017	MSOA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.65%	1.63%	0.98%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.26%
E02002760 : North Lincolnshire 012	MSOA	0.00%	0.00%	2.04%	0.58%	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.92%
Doncaster	Local Authority	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.24%	0.00%	1.24%	2.49%
E02002763 : North Lincolnshire 015	MSOA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.49%
West Lindsey	Local Authority	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.72%	0.00%	0.00%	0.00%	0.00%	0.00%	1.72%
E02002761 : North Lincolnshire 013	MSOA	0.15%	0.00%	0.00%	0.00%	0.31%	0.31%	0.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.55%
Kingston upon Hull, City of	Local Authority	0.62%	0.00%	0.00%	0.00%	0.00%	0.00%	0.93%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.55%
E02002754 : North Lincolnshire 006	MSOA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.29%	0.00%	1.29%
E02002752 : North Lincolnshire 004	MSOA	0.00%	0.00%	0.00%	0.00%	0.24%	0.24%	0.72%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%
E02002749 : North Lincolnshire 001	MSOA	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.12%
E02002762 : North Lincolnshire 014	MSOA	0.00%	0.00%	0.00%	0.11%	0.56%	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.12%
East Riding of Yorkshire	Local Authority	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.62%	0.00%	1.03%
E02002769 : North Lincolnshire 021	MSOA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.19%	0.00%	0.00%	0.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.94%
Leeds	Local Authority	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.94%	0.00%	0.00%	0.94%
E02002770 : North Lincolnshire 022	MSOA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	0.00%	0.00%	0.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.86%
Lincoln	Local Authority	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.86%
Sub-total		**18.4%**	**4.5%**	**13.9%**	**14.6%**	**2.2%**	**1.8%**	**18.1%**	**1.6%**	**2.4%**	**10.4%**	**3.0%**	**3.8%**	**2.2%**	**1.9%**	**1.2%**	**100.00%**

A	Scotter Road (N)
B	Doncaster Road (E)
C	Brumby Wood Lane
D	West Common Lane
E	Priory Lane
F	Ashby Road
G	Ashby High Street
H	Messingham Road (S)
I	Enderby Road
J	Scotter Road (S)
K	Gallagher Retail Park
L	B1216
M	M180 (W) via J2
N	A161 (N)
O	A18 (W)

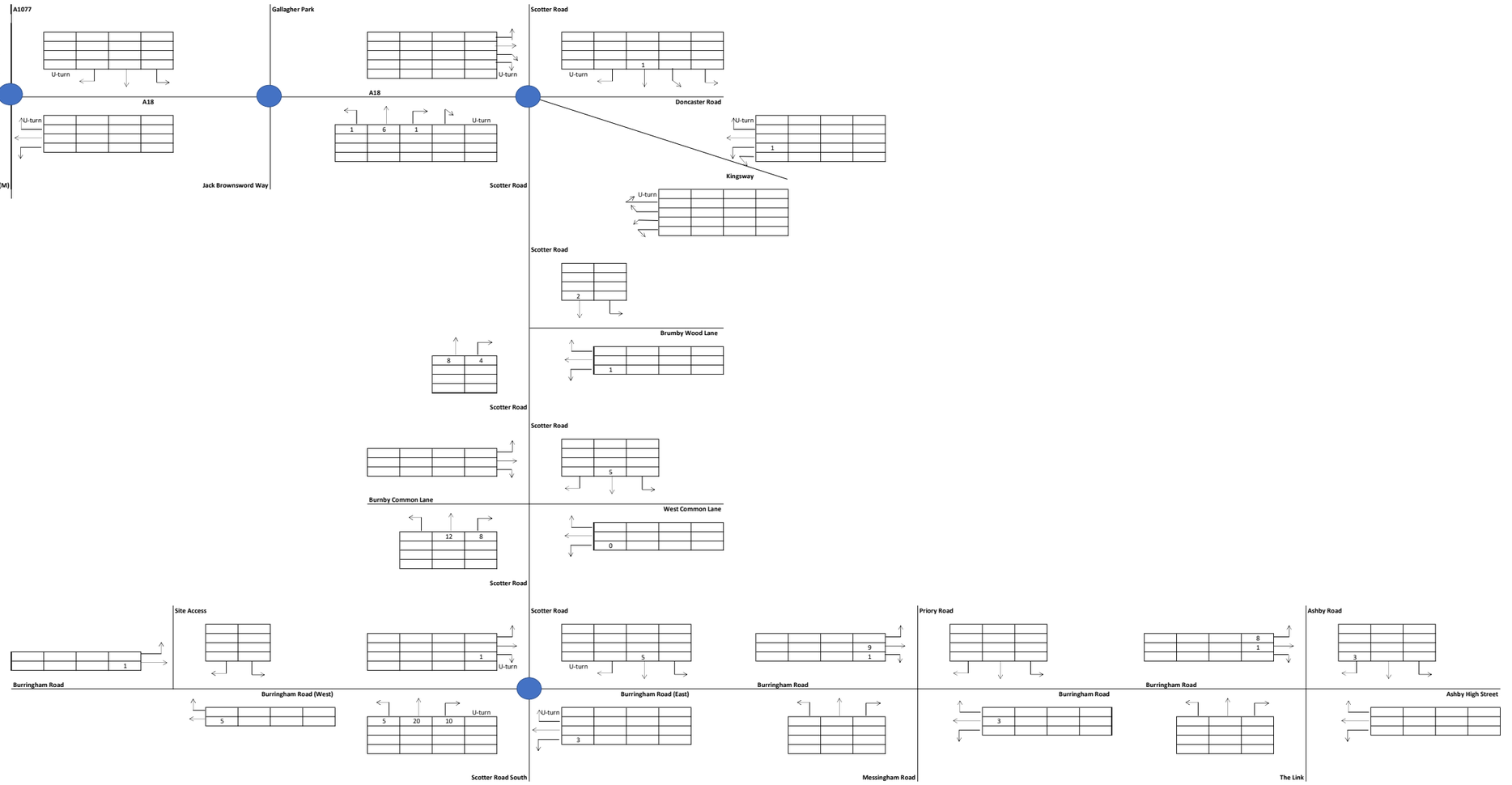
		Application Site	
Zone	Distribution Split	AM 2-Way	PM 2-Way
A	18.4%	73	58
B	4.5%	18	14
C	13.9%	55	44
D	14.6%	58	46
E	2.2%	9	7
F	1.8%	7	6
G	18.1%	72	57
H	1.6%	6	5
I	2.4%	9	7
J	10.4%	41	33
K	3.0%	12	10
L	3.8%	15	12
M	2.2%	9	7
N	1.9%	8	6
O	1.2%	5	4
TOTAL	100%	396	316

Zones	Junction	AM	PM
A,B,C,D,E,F,G,H,I,J,K	Burringham Road/Scotter Road Roundabout	360	287
A,B,C,D,,K	Scotter Road/West Common Lane	216	172
A,B,C,K	Scotter Road/Brumby Wood Lane	158	126
A,B,K	Berkeley Circle	103	82
-	A18/A1077 Roundabout	-	-
F,G,H	Burringham Road/Messingham Road Signals	85	68
F,G	Burringham Road/Ashbv Road Signals	79	63
-	M180 J3	-	-
M	M180 J2	9	7
O	M180 J1	5	4
-	New Burringham Road/M181 Junction	-	-

Appendix 7 – Network Diagrams

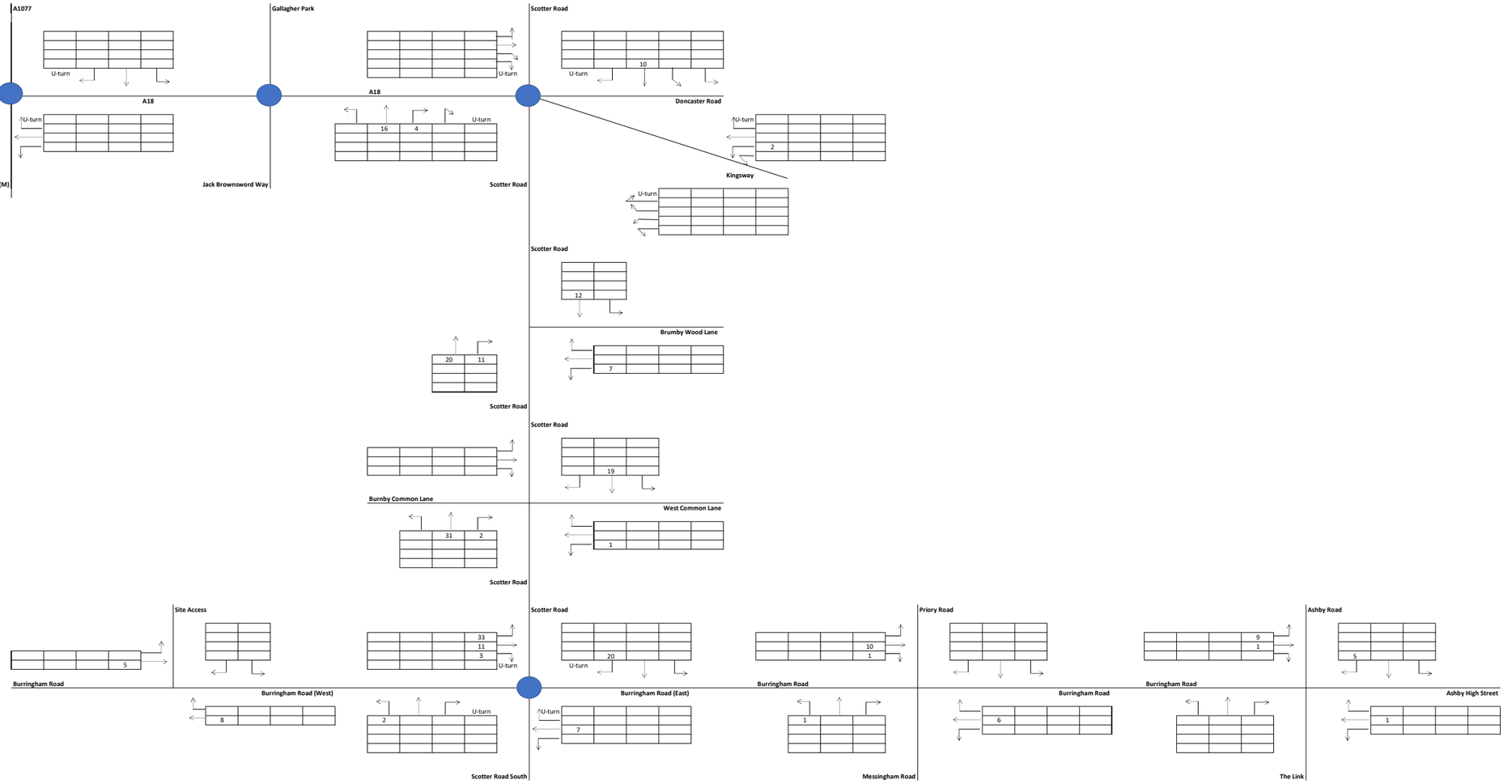
Silica Lodge (PA/2023/1585) Development Trips
AM Peak (08:00-09:00)

Vehicles
HCVs
HCV (%)
PCUs



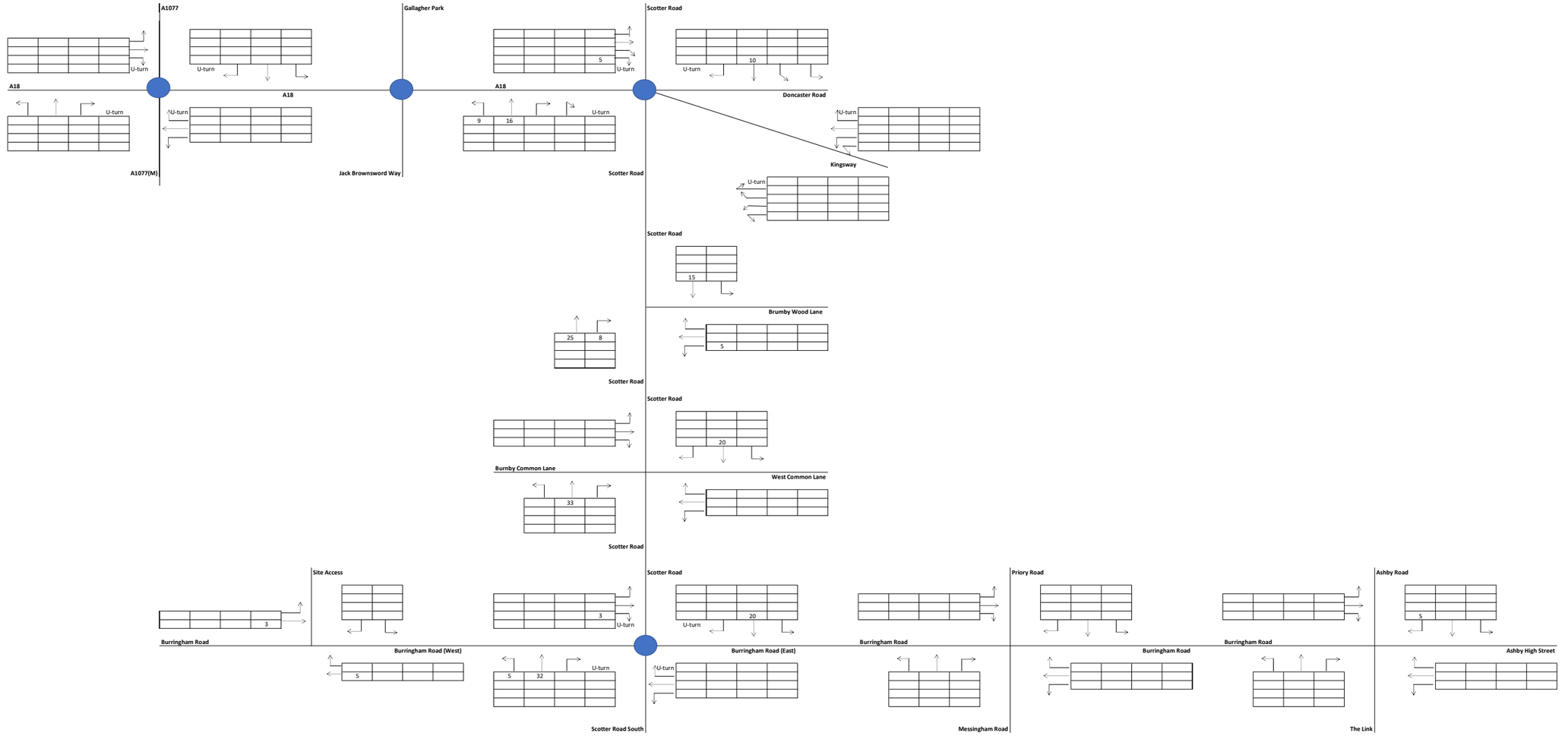
PA/2020/1333 Development Trips
AM Peak (08:00-09:00)

Vehicles
HCVs
HCV (%)
PCUs



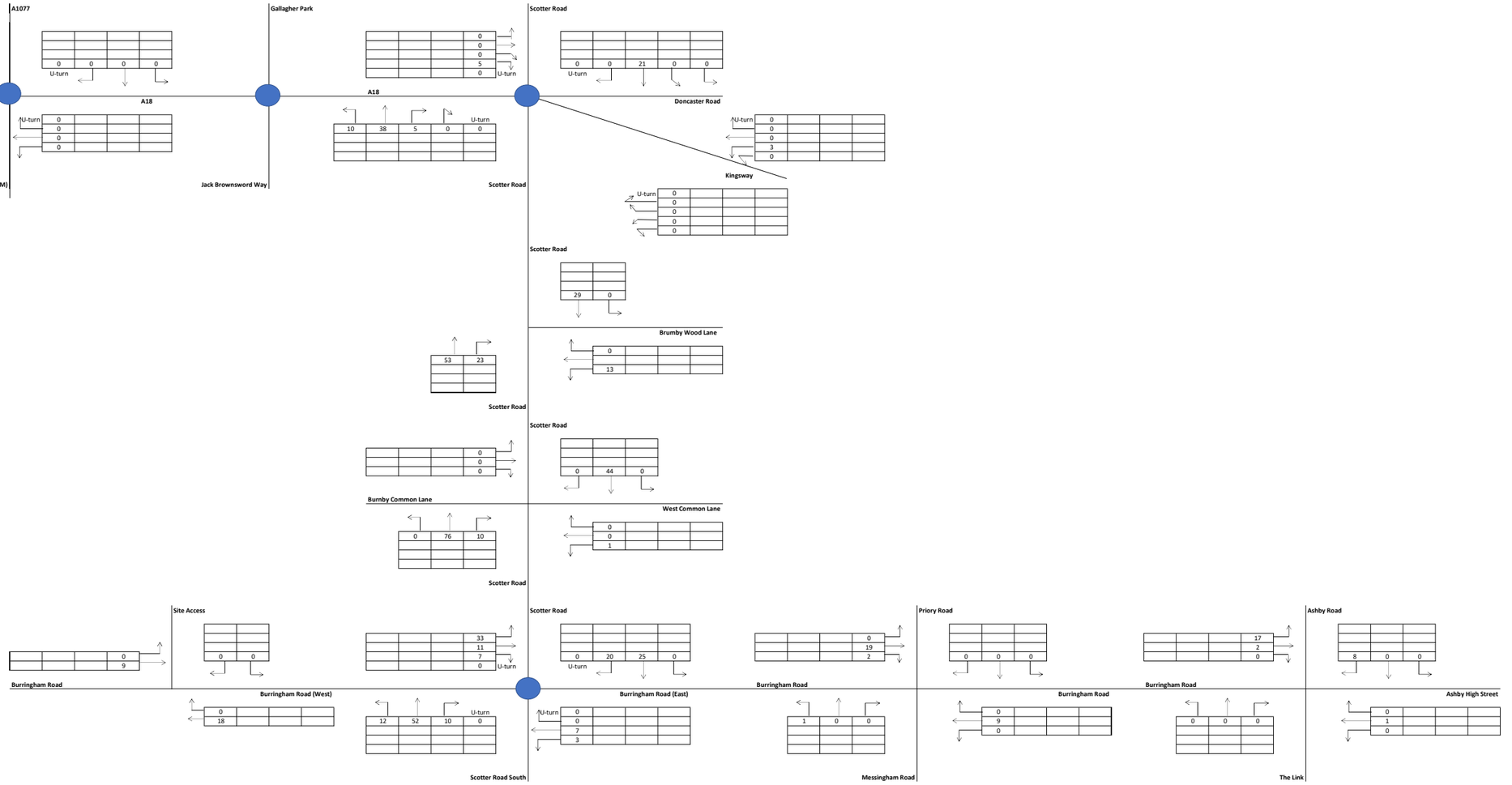
PA/2019/1782 Development Trips
AM Peak (08:00-09:00)

Vehicles
HCVs
HCV (%)
PCUs



Commited Development Trips
AM Peak (08:00-09:00)

Vehicles
HCVs
HCV (%)
PCUs



2033 Do Nothing

AM Peak (08:00-09:00)

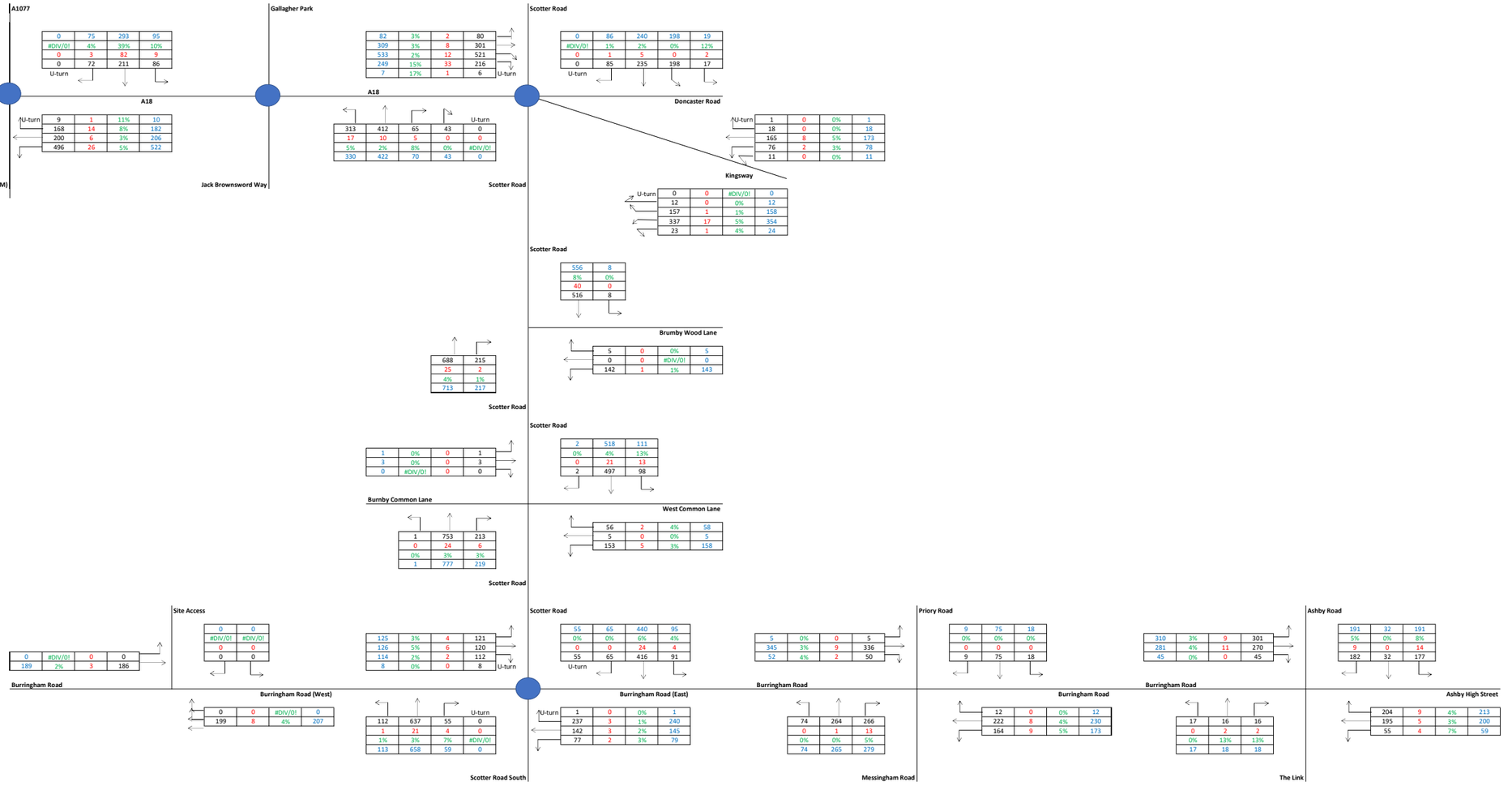
TEMPro Traffic Growth 2023 to 2033: 7.5%

Vehicles

HCVs

HCV (%)

PCUs

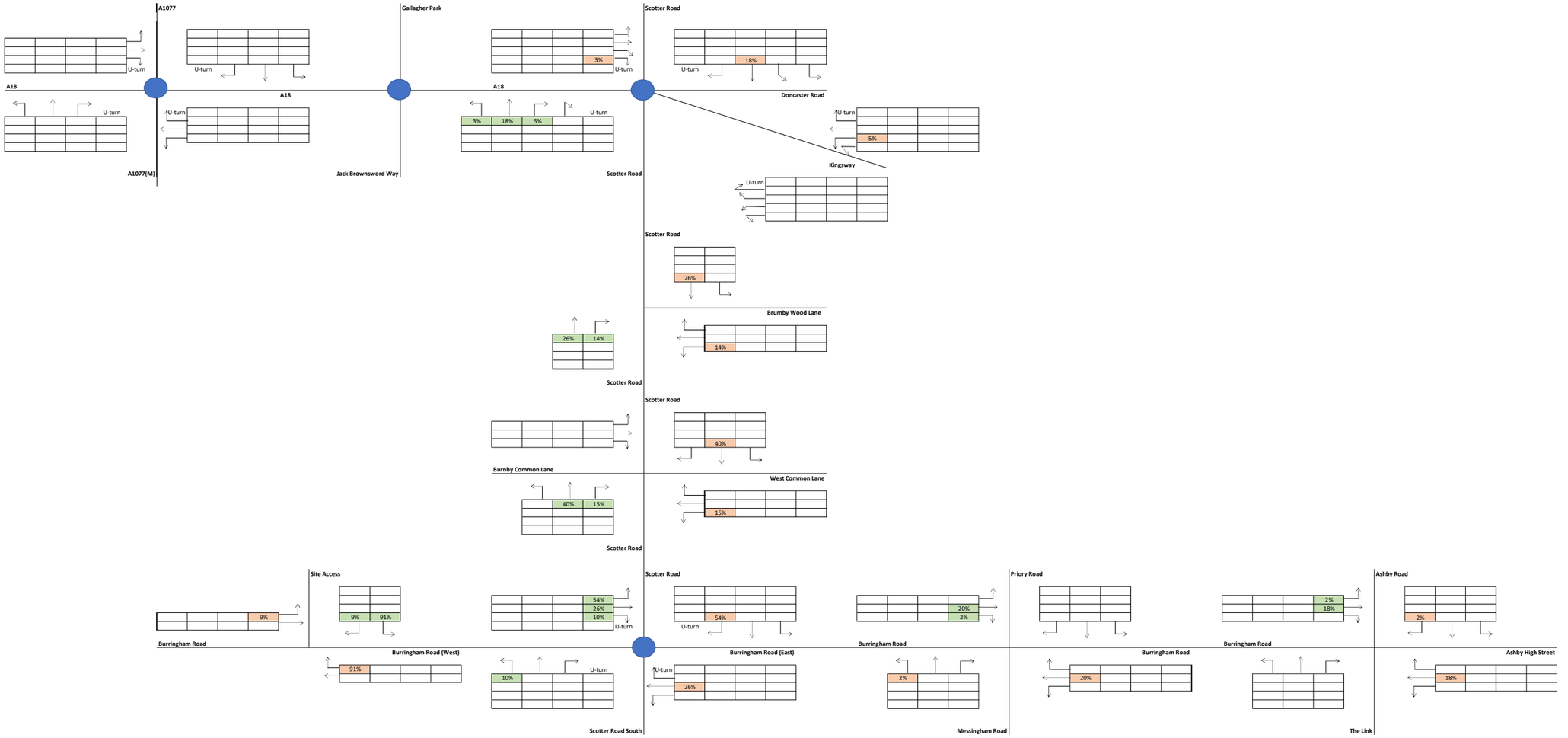


Proposed Trip distrubution

AM Peak (08:00-09:00)

Vehicles
HCVs
HCV (%)
PCUs

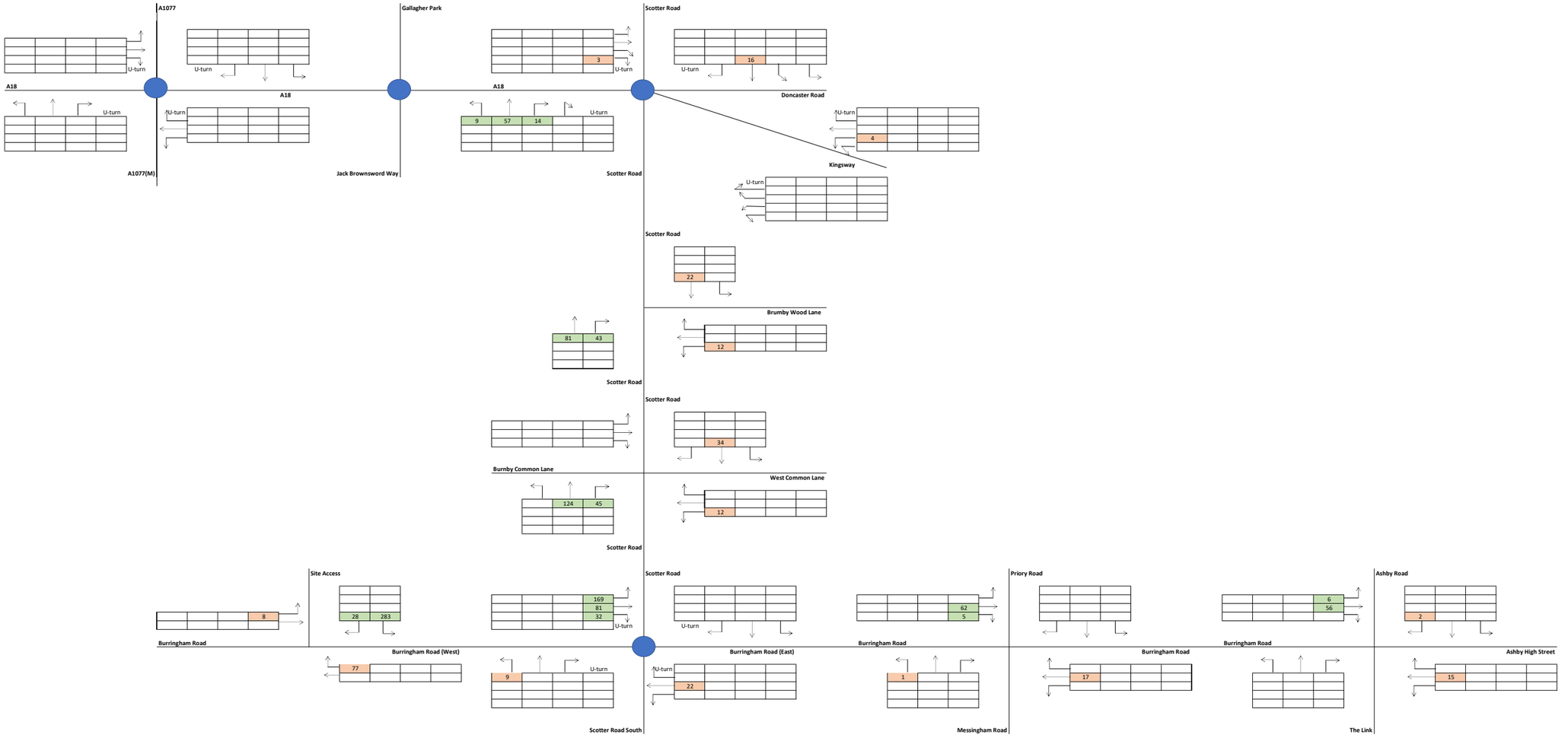
A	18.4%
B	4.5%
C	13.9%
D	14.6%
E	2.2%
F	1.8%
G	18.1%
H	1.6%
I	2.4%
J	10.4%
K	3.0%
L	3.8%
M	2.2%
N	1.9%
O	1.2%
	100.0%



Proposed development trips
AM Peak (08:00-09:00)

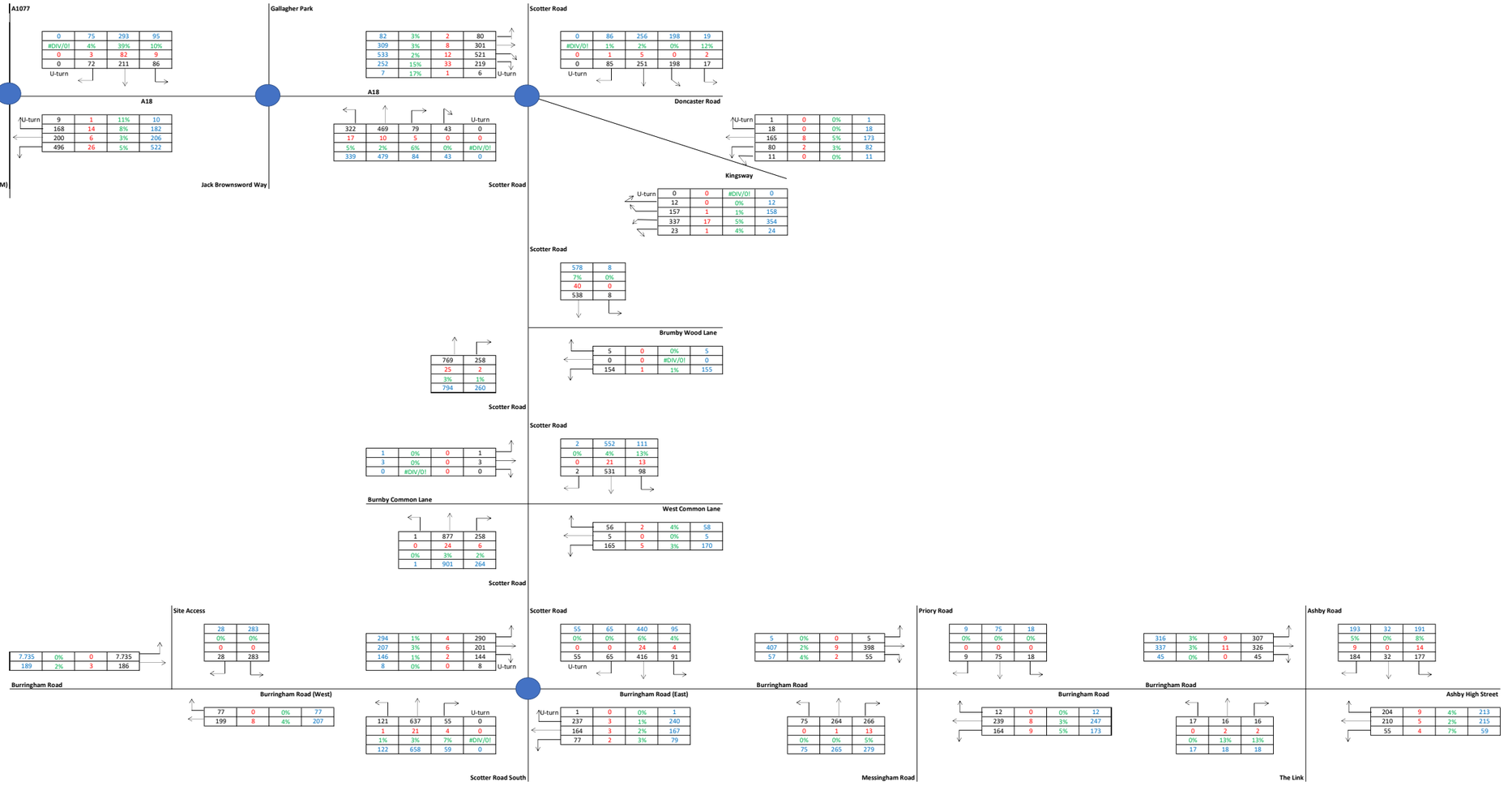
Vehicles
HCVs
HCV (%)
PCUs

	08:00-09:00
Arrivals	85
Departures	311



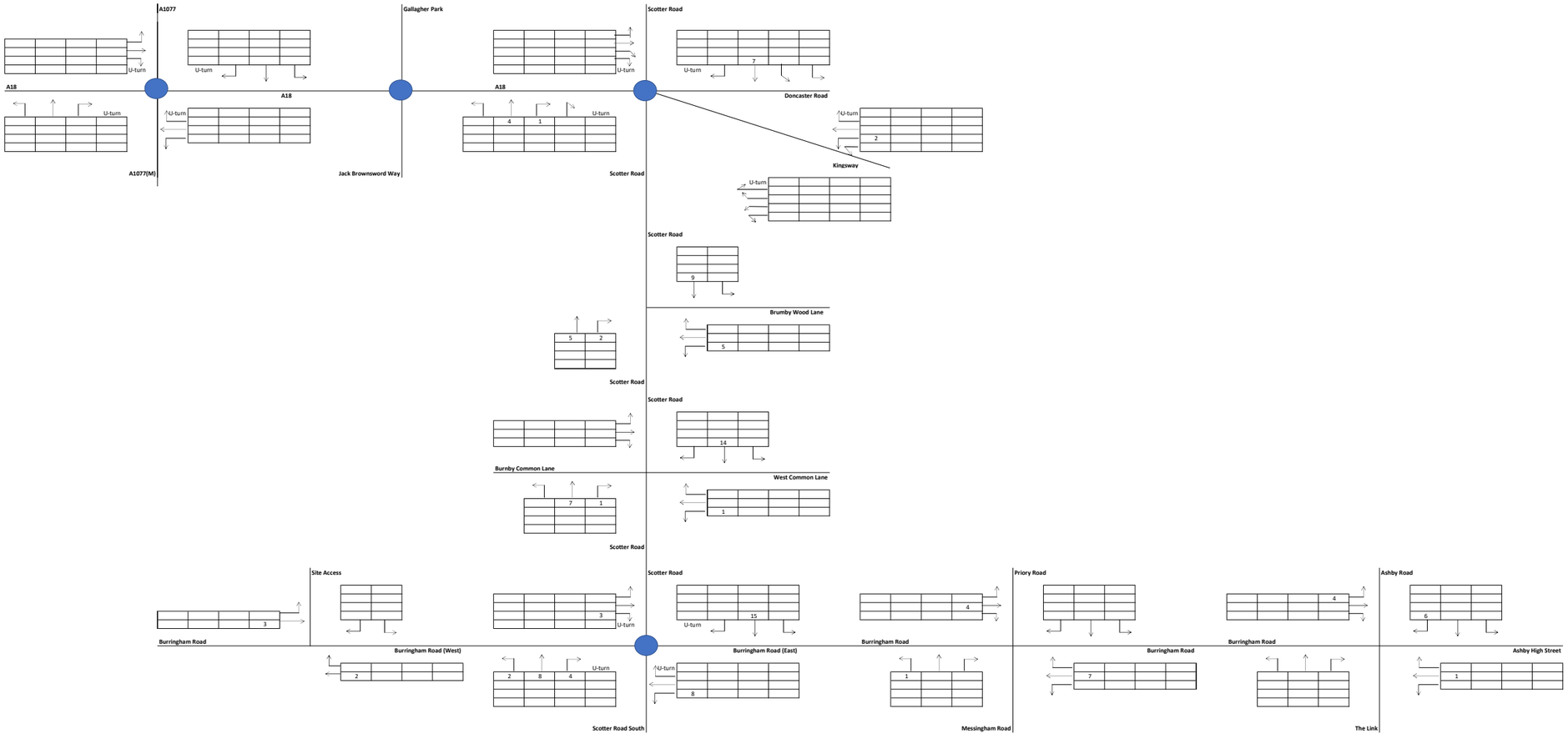
2033 with Development
AM Peak (08:00-09:00)

Vehicles
HCVs
HCV (%)
PCUs



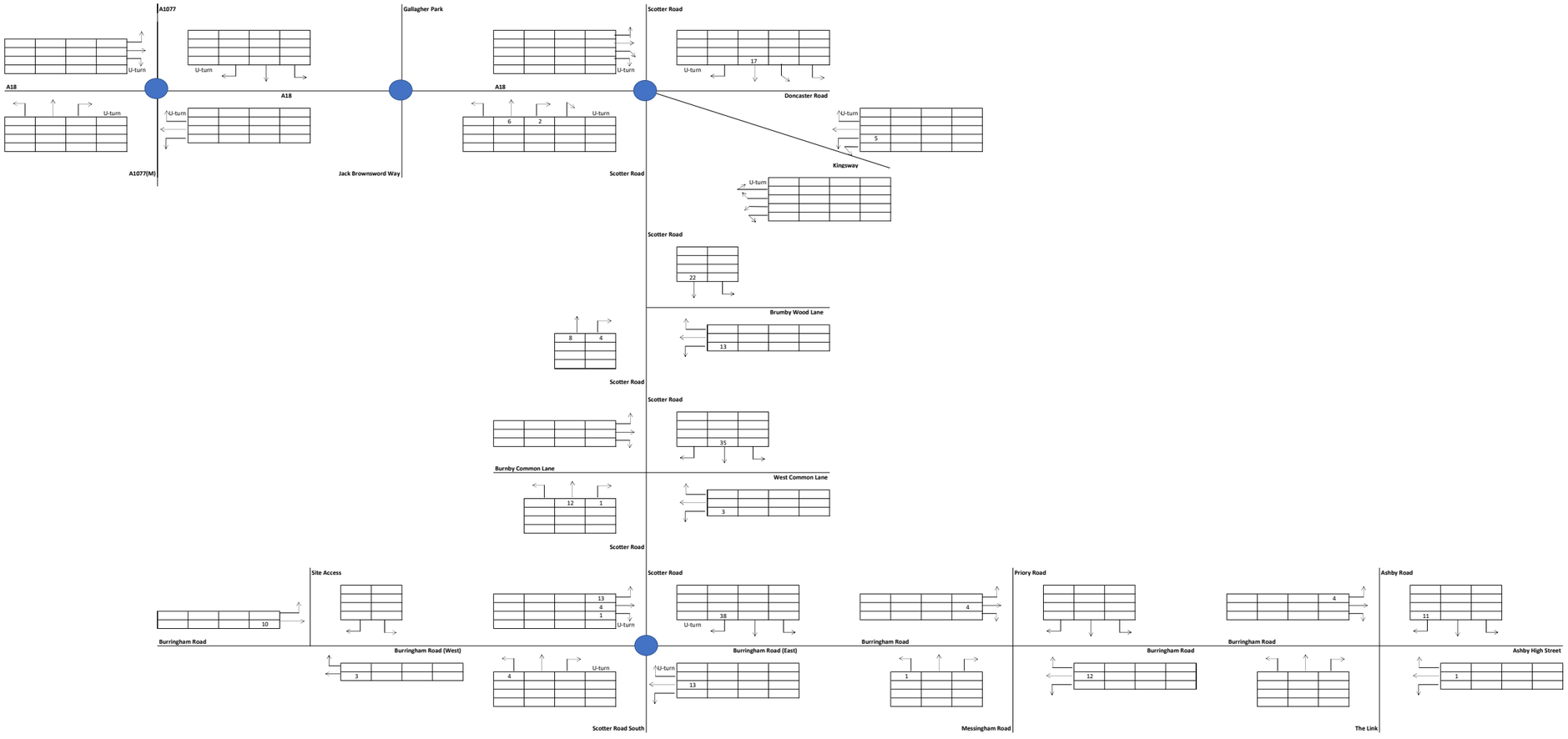
Silica Lodge (PA/2023/1585) Development Trips
PM Peak (16:00-17:00)

Vehicles
HCVs
HCV (%)
PCUs



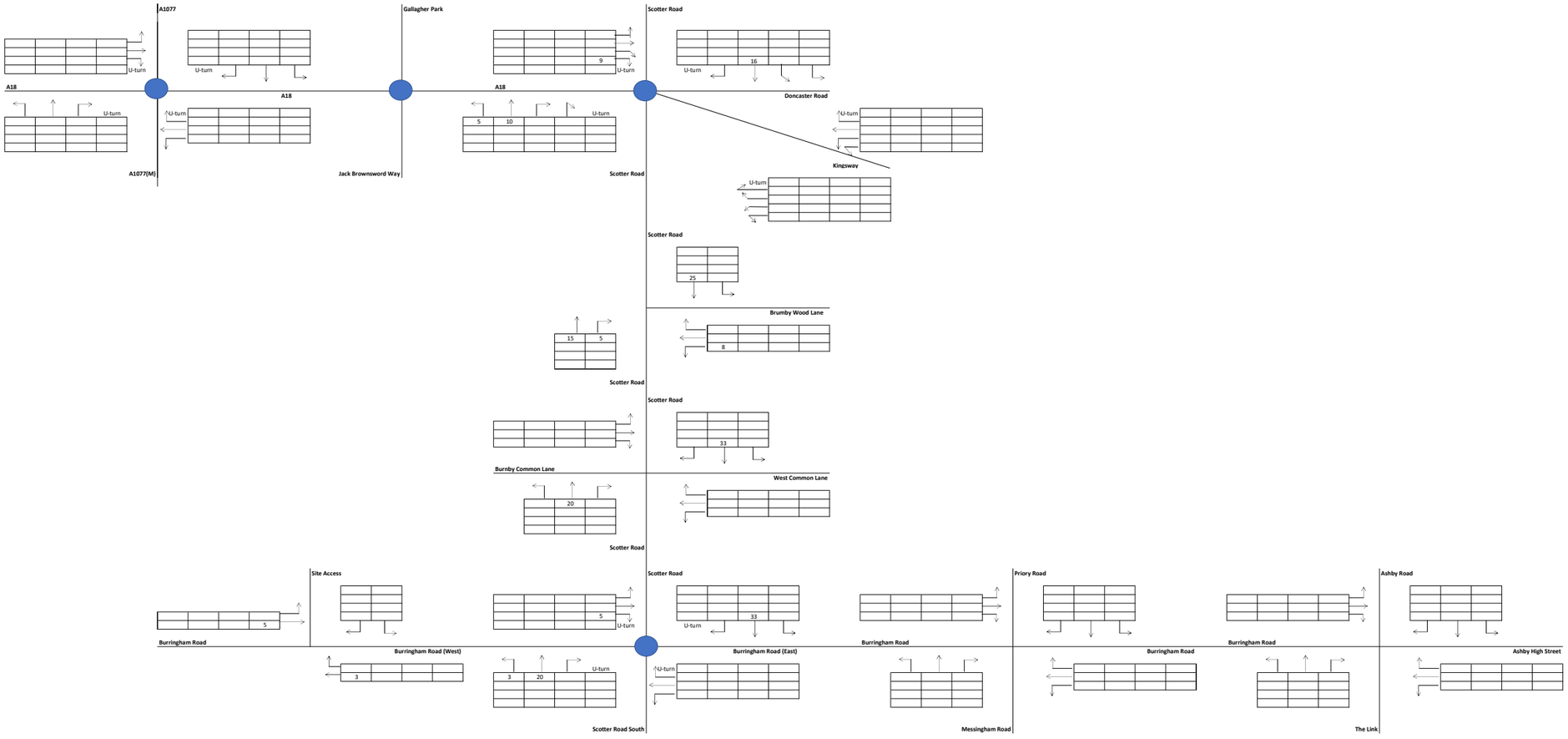
PA/2020/1333 Development Trips
PM Peak (16:00-17:00)

Vehicles
HCVs
HCV (%)
PCUs



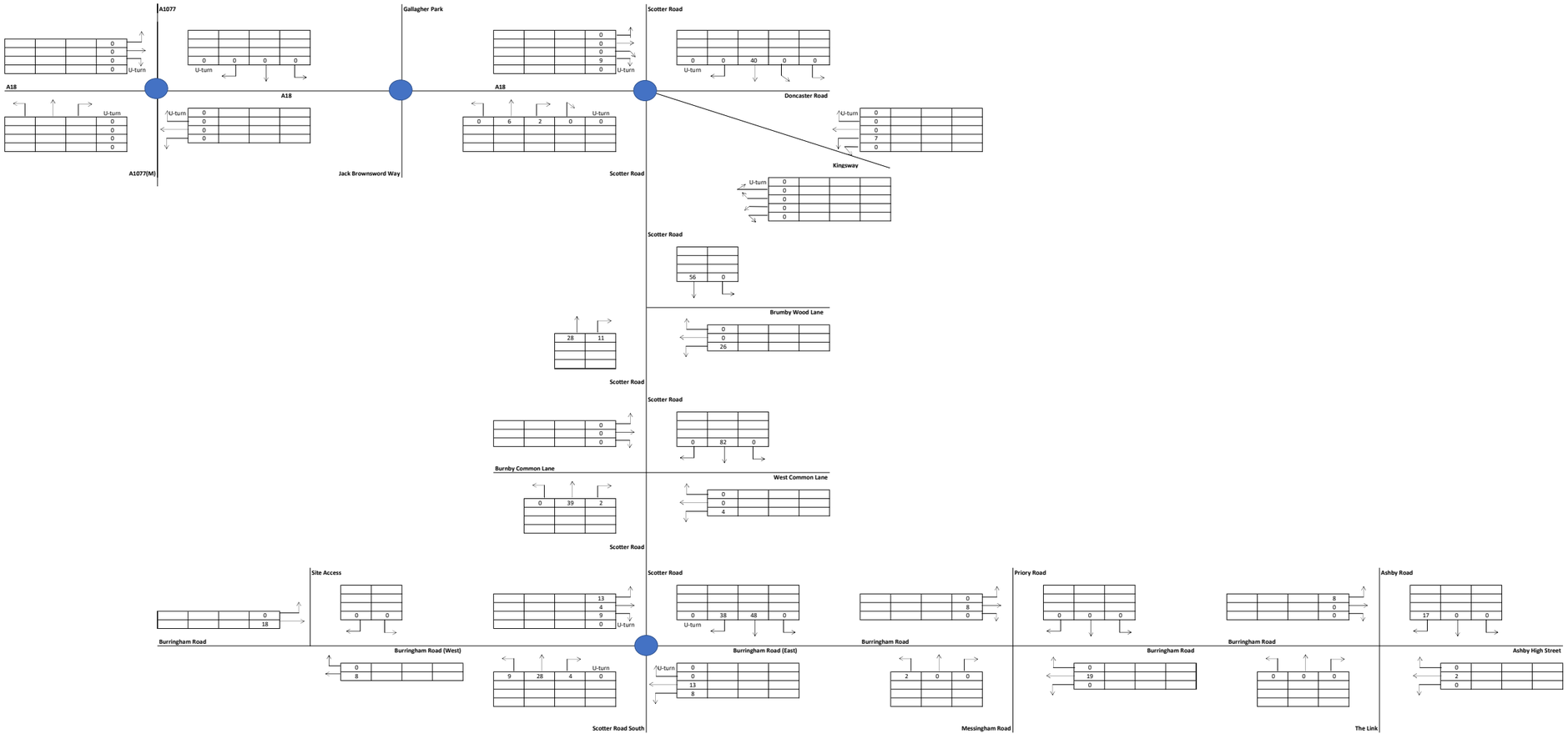
PA/2019/1782 Development Trips
PM Peak (16:00-17:00)

Vehicles
HCVs
HCV (%)
PCUs



Commited Development Trips
PM Peak (16:00-17:00)

Vehicles
HCVs
HCV (%)
PCUs



2033 Do Nothing

PM Peak (16:00-17:00)

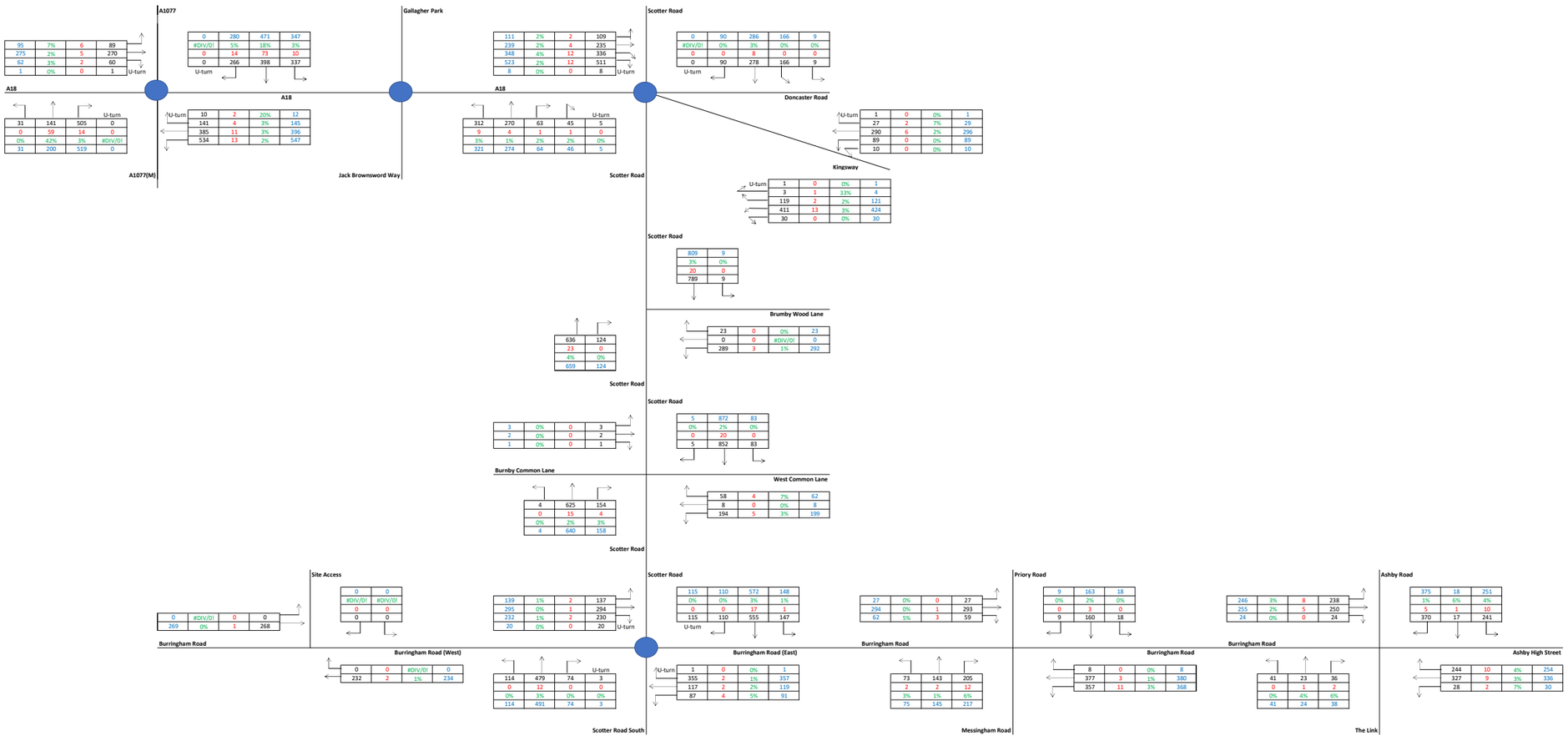
TEMPro Traffic Growth 2023 to 2033: 7.3%

Vehicles

HCVs

HCV (%)

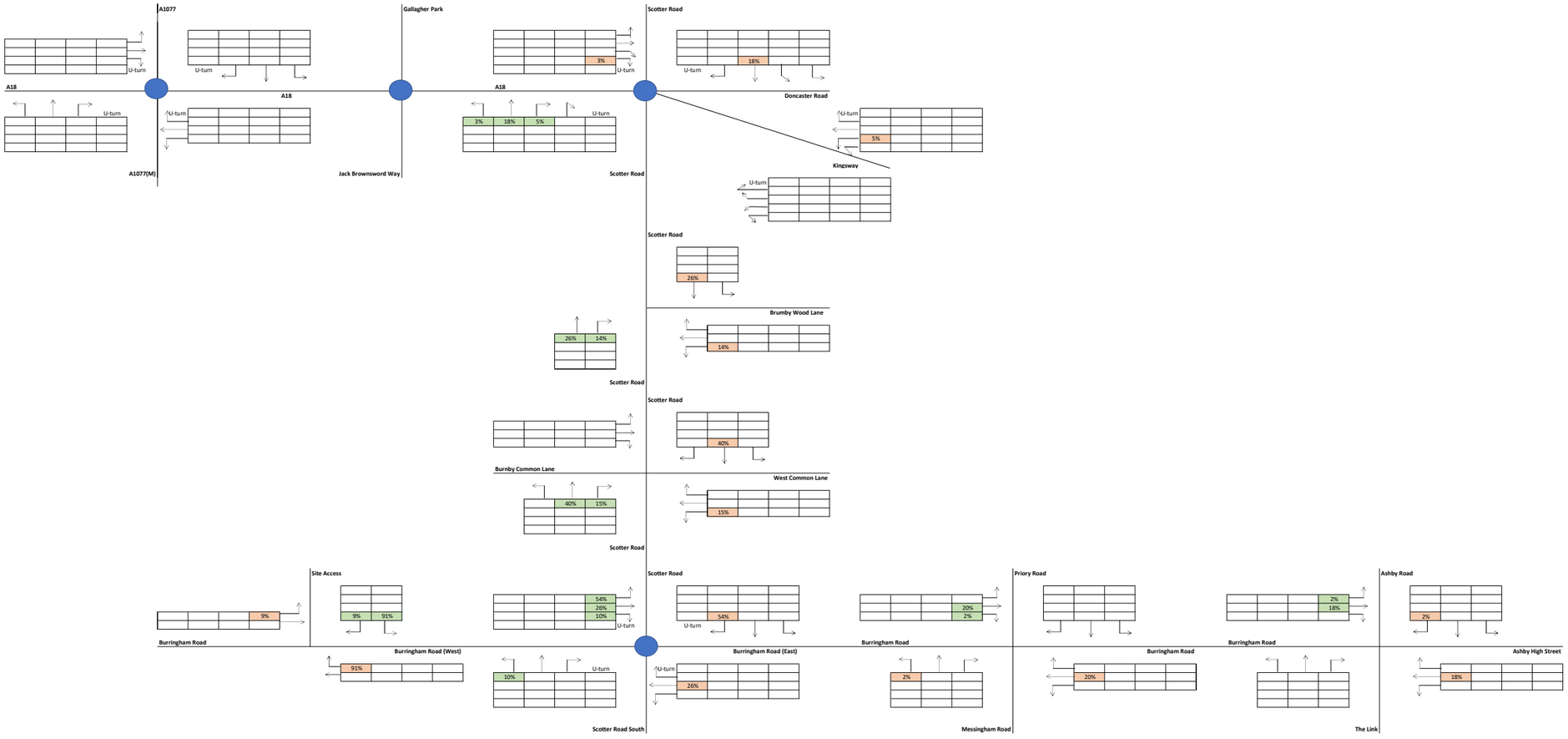
PCUs



Proposed Trip distrubution
PM Peak (16:00-17:00)

Vehicles
HCVs
HCV (%)
PCUs

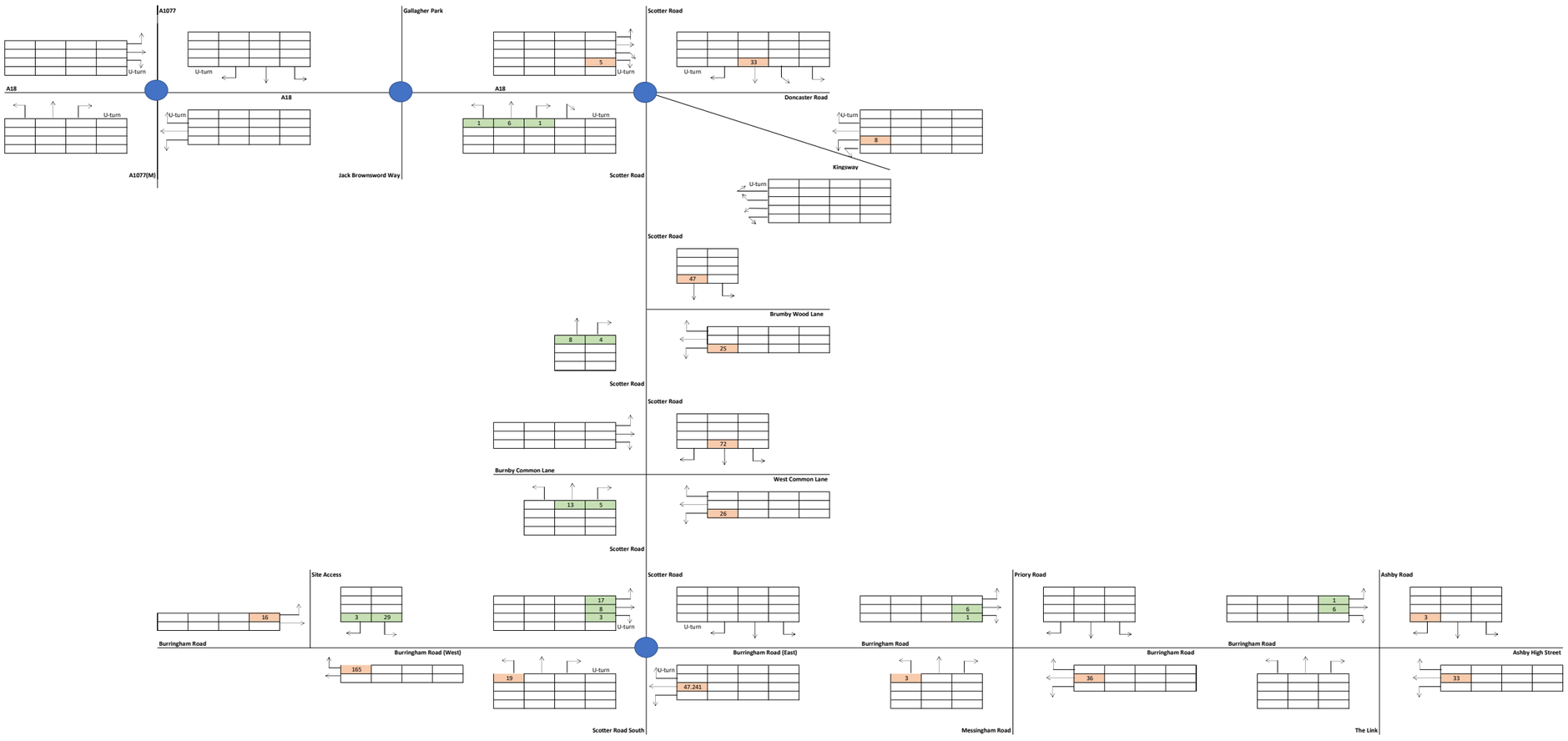
A	18.4%
B	4.5%
C	13.9%
D	14.6%
E	2.2%
F	1.8%
G	18.1%
H	1.6%
I	2.4%
J	10.4%
K	3.0%
L	3.8%
M	2.2%
N	1.9%
O	1.2%
	100.0%



Proposed development trips
PM Peak (16:00-17:00)

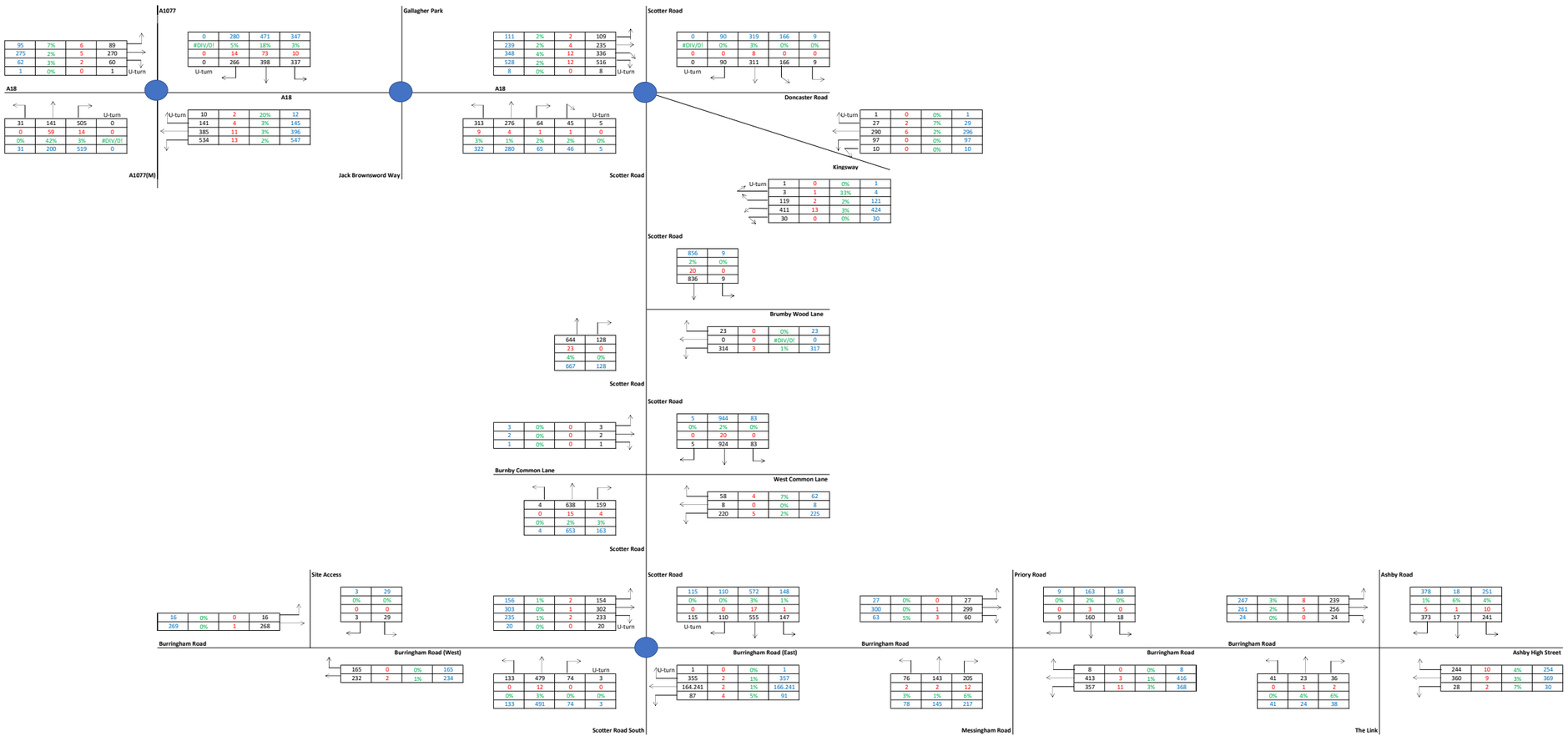
Vehicles
HCVs
HCV (%)
PCUs

	16:00-17:00
Arrivals	181
Departures	32



2033 with Development
PM Peak (16:00-17:00)

Vehicles
HCVs
HCV (%)
PCUs



Appendix 8 – Burringham Road/Site Access Junction Modelling

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462

Filename: Site Access Roundabout.j9
Path: Z:\Projects\4772 Lincolnshire Lakes\Data\Modelling\Site Access-Burringham Road junction
Report generation date: 05/12/2023 15:19:28

»2033 With Development, AM
»2033 With Development, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2033 With Development									
1 - Site Access	D5	0.3	2.74	0.21	A	D6	0.0	2.29	0.02	A
2 - Burringham Road (E)		0.2	2.00	0.14	A		0.3	2.07	0.20	A
3 - Burringham Road (W)		0.1	2.11	0.11	A		0.2	2.27	0.17	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

File summary

File Description

Title	
Location	
Site number	
Date	22/11/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	LTP\Rhuriel
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2033 With Development	AM	ONE HOUR	07:15	08:45	15
D6	2033 With Development	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2033 With Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Burringham Road (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	3 - Burringham Road (W) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Burringham Road/Site Access Roundabout	Standard Roundabout		1, 2, 3	2.32	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Site Access	
2	Burringham Road (E)	
3	Burringham Road (W)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Site Access	3.65	7.64	28.0	17.8	65.0	54.0	
2 - Burringham Road (E)	3.65	8.56	90.0	24.0	65.0	55.0	
3 - Burringham Road (W)	3.65	8.20	50.0	20.6	65.0	53.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Site Access	0.518	1763
2 - Burringham Road (E)	0.590	2186
3 - Burringham Road (W)	0.560	2003

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2033 With Development	AM	ONE HOUR	07:15	08:45	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Site Access		✓	311	100.000
2 - Burringham Road (E)		✓	284	100.000
3 - Burringham Road (W)		✓	197	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Site Access	2 - Burringham Road (E)	3 - Burringham Road (W)
From	1 - Site Access	0	283	28
	2 - Burringham Road (E)	77	0	207
	3 - Burringham Road (W)	8	189	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Site Access	2 - Burringham Road (E)	3 - Burringham Road (W)
From	1 - Site Access	0	0	0
	2 - Burringham Road (E)	0	0	4
	3 - Burringham Road (W)	0	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Site Access	0.21	2.74	0.3	A
2 - Burringham Road (E)	0.14	2.00	0.2	A
3 - Burringham Road (W)	0.11	2.11	0.1	A

Main Results for each time segment

07:15 - 07:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	234	142	1690	0.139	233	0.2	2.470	A
2 - Burringham Road (E)	214	21	2174	0.098	213	0.1	1.888	A
3 - Burringham Road (W)	148	58	1971	0.075	148	0.1	2.012	A

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	280	170	1675	0.167	279	0.2	2.578	A
2 - Burringham Road (E)	255	25	2171	0.118	255	0.1	1.932	A
3 - Burringham Road (W)	177	69	1965	0.090	177	0.1	2.052	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	342	208	1656	0.207	342	0.3	2.740	A
2 - Burringham Road (E)	313	31	2168	0.144	313	0.2	1.996	A
3 - Burringham Road (W)	217	85	1956	0.111	217	0.1	2.109	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	342	208	1656	0.207	342	0.3	2.740	A
2 - Burringham Road (E)	313	31	2168	0.144	313	0.2	1.996	A
3 - Burringham Road (W)	217	85	1956	0.111	217	0.1	2.109	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	280	170	1675	0.167	280	0.2	2.581	A
2 - Burringham Road (E)	255	25	2171	0.118	255	0.1	1.933	A
3 - Burringham Road (W)	177	69	1964	0.090	177	0.1	2.052	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	234	142	1690	0.139	234	0.2	2.473	A
2 - Burringham Road (E)	214	21	2174	0.098	214	0.1	1.892	A
3 - Burringham Road (W)	148	58	1971	0.075	148	0.1	2.014	A

2033 With Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Burringham Road (E) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	3 - Burringham Road (W) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Burringham Road/Site Access Roundabout	Standard Roundabout		1, 2, 3	2.16	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2033 With Development	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Site Access		✓	32	100.000
2 - Burringham Road (E)		✓	399	100.000
3 - Burringham Road (W)		✓	285	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1 - Site Access	2 - Burringham Road (E)	3 - Burringham Road (W)
From	1 - Site Access	0	29	3
	2 - Burringham Road (E)	165	0	234
	3 - Burringham Road (W)	16	269	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		1 - Site Access	2 - Burringham Road (E)	3 - Burringham Road (W)
From	1 - Site Access	0	0	0
	2 - Burringham Road (E)	0	0	1
	3 - Burringham Road (W)	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Site Access	0.02	2.29	0.0	A
2 - Burringham Road (E)	0.20	2.07	0.3	A
3 - Burringham Road (W)	0.17	2.27	0.2	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	24	202	1659	0.015	24	0.0	2.202	A
2 - Burringham Road (E)	300	2	2185	0.137	300	0.2	1.921	A
3 - Burringham Road (W)	215	124	1934	0.111	214	0.1	2.093	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	29	242	1638	0.018	29	0.0	2.236	A
2 - Burringham Road (E)	359	3	2184	0.164	359	0.2	1.982	A
3 - Burringham Road (W)	256	148	1920	0.133	256	0.2	2.163	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	35	296	1610	0.022	35	0.0	2.285	A
2 - Burringham Road (E)	439	3	2184	0.201	439	0.3	2.074	A
3 - Burringham Road (W)	314	182	1902	0.165	314	0.2	2.266	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	35	296	1610	0.022	35	0.0	2.285	A
2 - Burringham Road (E)	439	3	2184	0.201	439	0.3	2.074	A
3 - Burringham Road (W)	314	182	1902	0.165	314	0.2	2.267	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	29	242	1638	0.018	29	0.0	2.236	A
2 - Burringham Road (E)	359	3	2184	0.164	359	0.2	1.985	A
3 - Burringham Road (W)	256	148	1920	0.133	256	0.2	2.165	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Site Access	24	203	1658	0.015	24	0.0	2.202	A
2 - Burringham Road (E)	300	2	2185	0.137	301	0.2	1.923	A
3 - Burringham Road (W)	215	124	1934	0.111	215	0.1	2.094	A

Appendix 9 – Burringham Road/Scotter Road Modelling

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462

Filename: Scotter Road-Burringham Road Roundabout v4.j9
Path: Z:\Projects\4772 Lincolnshire Lakes\Data\Modelling\Scotter Road-Burringham Road Roundabout
Report generation date: 04/12/2023 11:36:01

Summary of junction performance

	AM						PM					
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
Scotter Road/Burringham Road Roundabout - 2018 (Base)												
1 - Burringham Road (E)	D1	0.6	4.47	0.36	A	43 % [2 - Scotter Road (S)]	D2	1.1	6.85	0.52	A	8 % [3 - Burringham Road (W)]
2 - Scotter Road (S)		1.5	6.83	0.59	A			1.2	6.56	0.54	A	
3 - Burringham Road (W)		0.6	6.48	0.36	A			3.3	18.00	0.77	C	
4 - Scotter Road (N)		0.9	5.22	0.46	A			3.1	12.85	0.76	B	
Scotter Road/Burringham Road Roundabout - 2032 (Do Nothing)												
1 - Burringham Road (E)	D3	0.7	5.11	0.42	A	22 % [2 - Scotter Road (S)]	D4	1.7	9.92	0.63	A	-3 % [3 - Burringham Road (W)]
2 - Scotter Road (S)		2.5	10.06	0.71	B			1.9	9.03	0.65	A	
3 - Burringham Road (W)		1.0	8.85	0.49	A			9.1	46.33	0.92	E	
4 - Scotter Road (N)		1.3	6.31	0.54	A			9.4	34.77	0.92	D	
Scotter Road/Burringham Road Roundabout - 2032 (With Development)												
1 - Burringham Road (E)	D5	0.8	5.45	0.44	A	1 % [3 - Burringham Road (W)]	D6	2.1	11.58	0.68	B	-5 % [3 - Burringham Road (W)]
2 - Scotter Road (S)		2.7	10.77	0.73	B			2.2	10.31	0.69	B	
3 - Burringham Road (W)		5.9	31.29	0.86	D			13.0	62.43	0.96	F	
4 - Scotter Road (N)		1.4	7.13	0.57	A			9.7	35.85	0.92	E	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Proposed Residential Development, Silica Lodge, Scunthorpe
Location	Scotter Road/Burringham Road Roundabout
Site number	
Date	19/06/2019
Version	
Status	(new file)
Identifier	
Client	Harron Homes
Jobnumber	3692
Enumerator	LTP\EamonnT
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2018 (Base)	AM	ONE HOUR	07:45	09:15	15
D2	2018 (Base)	PM	ONE HOUR	16:45	18:15	15
D3	2032 (Do Nothing)	AM	ONE HOUR	07:45	09:15	15
D4	2032 (Do Nothing)	PM	ONE HOUR	16:45	18:15	15
D5	2032 (With Development)	AM	ONE HOUR	07:45	09:15	15
D6	2032 (With Development)	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Scotter Road/Burringham Road Roundabout	100.000

Scotter Road/Burringham Road Roundabout - 2018 (Base), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Scotter Road/Burringham Road Roundabout	Standard Roundabout		1, 2, 3, 4	5.82	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	43	2 - Scotter Road (S)

Arms

Arms

Arm	Name	Description
1	Burringham Road (E)	
2	Scotter Road (S)	
3	Burringham Road (W)	
4	Scotter Road (N)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Burringham Road (E)	3.80	6.60	10.5	21.8	54.0	19.0	
2 - Scotter Road (S)	4.10	6.50	7.6	18.4	54.0	28.0	
3 - Burringham Road (W)	3.40	7.40	6.7	19.6	54.0	32.0	
4 - Scotter Road (N)	3.90	7.60	3.8	25.0	54.0	20.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Burringham Road (E)	0.597	1677
2 - Scotter Road (S)	0.573	1608
3 - Burringham Road (W)	0.539	1435
4 - Scotter Road (N)	0.569	1519

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2018 (Base)	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Burringham Road (E)		✓	425	100.000
2 - Scotter Road (S)		✓	704	100.000
3 - Burringham Road (W)		✓	300	100.000
4 - Scotter Road (N)		✓	568	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	1	71	129	224
	2 - Scotter Road (S)	46	0	94	564
	3 - Burringham Road (W)	107	100	7	86
	4 - Scotter Road (N)	89	386	42	51

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	0	3	1	3
	2 - Scotter Road (S)	2	0	4	4
	3 - Burringham Road (W)	5	2	11	5
	4 - Scotter Road (N)	3	7	5	5

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Burringham Road (E)	0.36	4.47	0.6	A
2 - Scotter Road (S)	0.59	6.83	1.5	A
3 - Burringham Road (W)	0.36	6.48	0.6	A
4 - Scotter Road (N)	0.46	5.22	0.9	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	320	439	1415	0.226	319	0.3	3.361	A
2 - Scotter Road (S)	530	340	1413	0.375	528	0.6	4.206	A
3 - Burringham Road (W)	226	664	1077	0.210	225	0.3	4.400	A
4 - Scotter Road (N)	428	196	1408	0.304	426	0.5	3.872	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	382	526	1363	0.280	382	0.4	3.755	A
2 - Scotter Road (S)	633	408	1375	0.460	632	0.9	5.022	A
3 - Burringham Road (W)	270	795	1007	0.268	269	0.4	5.092	A
4 - Scotter Road (N)	511	234	1386	0.369	510	0.6	4.347	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	468	644	1293	0.362	467	0.6	4.463	A
2 - Scotter Road (S)	775	499	1322	0.586	773	1.4	6.771	A
3 - Burringham Road (W)	330	973	911	0.363	329	0.6	6.450	A
4 - Scotter Road (N)	625	287	1356	0.461	624	0.9	5.190	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	468	645	1292	0.362	468	0.6	4.474	A
2 - Scotter Road (S)	775	500	1322	0.586	775	1.5	6.833	A
3 - Burringham Road (W)	330	975	910	0.363	330	0.6	6.482	A
4 - Scotter Road (N)	625	287	1355	0.461	625	0.9	5.217	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	382	528	1362	0.281	383	0.4	3.767	A
2 - Scotter Road (S)	633	409	1374	0.461	635	0.9	5.071	A
3 - Burringham Road (W)	270	799	1005	0.268	271	0.4	5.123	A
4 - Scotter Road (N)	511	235	1385	0.369	512	0.6	4.367	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	320	442	1413	0.226	320	0.3	3.376	A
2 - Scotter Road (S)	530	342	1412	0.375	531	0.6	4.244	A
3 - Burringham Road (W)	226	668	1075	0.210	226	0.3	4.426	A
4 - Scotter Road (N)	428	197	1407	0.304	428	0.5	3.896	A

Scotter Road/Burringham Road Roundabout - 2018 (Base), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Scotter Road/Burringham Road Roundabout	Standard Roundabout		1, 2, 3, 4	11.40	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	8	3 - Burringham Road (W)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2018 (Base)	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Burringham Road (E)		✓	511	100.000
2 - Scotter Road (S)		✓	597	100.000
3 - Burringham Road (W)		✓	616	100.000
4 - Scotter Road (N)		✓	800	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	1	78	99	333
	2 - Scotter Road (S)	65	3	98	431
	3 - Burringham Road (W)	271	208	19	118
	4 - Scotter Road (N)	138	488	67	107

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	0	0	3	0
	2 - Scotter Road (S)	3	0	1	1
	3 - Burringham Road (W)	1	1	0	0
	4 - Scotter Road (N)	1	2	2	1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Burringham Road (E)	0.52	6.85	1.1	A
2 - Scotter Road (S)	0.54	6.56	1.2	A
3 - Burringham Road (W)	0.77	18.00	3.3	C
4 - Scotter Road (N)	0.76	12.85	3.1	B

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	385	667	1279	0.301	383	0.4	4.037	A
2 - Scotter Road (S)	449	469	1339	0.336	447	0.5	4.082	A
3 - Burringham Road (W)	464	704	1056	0.439	461	0.8	6.059	A
4 - Scotter Road (N)	602	424	1278	0.471	599	0.9	5.358	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	459	799	1200	0.383	459	0.6	4.881	A
2 - Scotter Road (S)	537	562	1286	0.417	536	0.7	4.858	A
3 - Burringham Road (W)	554	844	981	0.565	552	1.3	8.422	A
4 - Scotter Road (N)	719	508	1230	0.585	717	1.4	7.102	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	563	974	1095	0.514	561	1.0	6.753	A
2 - Scotter Road (S)	657	686	1215	0.541	655	1.2	6.503	A
3 - Burringham Road (W)	678	1031	879	0.771	671	3.1	16.795	C
4 - Scotter Road (N)	881	618	1167	0.755	875	3.0	12.238	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	563	982	1091	0.516	563	1.1	6.852	A
2 - Scotter Road (S)	657	689	1213	0.542	657	1.2	6.564	A
3 - Burringham Road (W)	678	1035	878	0.773	678	3.3	18.000	C
4 - Scotter Road (N)	881	624	1164	0.757	880	3.1	12.846	B

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	459	810	1193	0.385	461	0.6	4.957	A
2 - Scotter Road (S)	537	566	1284	0.418	539	0.7	4.909	A
3 - Burringham Road (W)	554	849	978	0.566	562	1.3	8.857	A
4 - Scotter Road (N)	719	516	1225	0.587	726	1.5	7.406	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	385	674	1275	0.302	385	0.4	4.078	A
2 - Scotter Road (S)	449	473	1337	0.336	450	0.5	4.117	A
3 - Burringham Road (W)	464	709	1053	0.440	466	0.8	6.193	A
4 - Scotter Road (N)	602	429	1275	0.472	604	0.9	5.472	A

Scotter Road/Burringham Road Roundabout - 2032 (Do Nothing), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Scotter Road/Burringham Road Roundabout	Standard Roundabout		1, 2, 3, 4	7.82	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	22	2 - Scotter Road (S)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2032 (Do Nothing)	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Burringham Road (E)		✓	465	100.000
2 - Scotter Road (S)		✓	830	100.000
3 - Burringham Road (W)		✓	373	100.000
4 - Scotter Road (N)		✓	655	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	1	79	145	240
	2 - Scotter Road (S)	59	0	113	658
	3 - Burringham Road (W)	126	114	8	125
	4 - Scotter Road (N)	95	440	65	55

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	0	3	1	2
	2 - Scotter Road (S)	2	0	4	4
	3 - Burringham Road (W)	5	2	11	5
	4 - Scotter Road (N)	3	7	5	5

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Burringham Road (E)	0.42	5.11	0.7	A
2 - Scotter Road (S)	0.71	10.06	2.5	B
3 - Burringham Road (W)	0.49	8.85	1.0	A
4 - Scotter Road (N)	0.54	6.31	1.3	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	350	511	1372	0.255	349	0.3	3.577	A
2 - Scotter Road (S)	625	385	1387	0.450	622	0.8	4.849	A
3 - Burringham Road (W)	281	759	1026	0.274	279	0.4	5.010	A
4 - Scotter Road (N)	493	231	1388	0.355	491	0.6	4.242	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	418	612	1312	0.319	418	0.5	4.098	A
2 - Scotter Road (S)	746	461	1344	0.555	744	1.3	6.207	A
3 - Burringham Road (W)	335	909	946	0.355	335	0.6	6.130	A
4 - Scotter Road (N)	589	276	1362	0.432	588	0.8	4.926	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	512	749	1230	0.416	511	0.7	5.091	A
2 - Scotter Road (S)	914	565	1284	0.711	909	2.5	9.812	A
3 - Burringham Road (W)	411	1111	837	0.491	409	1.0	8.731	A
4 - Scotter Road (N)	721	338	1327	0.544	719	1.2	6.261	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	512	751	1229	0.417	512	0.7	5.113	A
2 - Scotter Road (S)	914	566	1284	0.712	914	2.5	10.064	B
3 - Burringham Road (W)	411	1115	834	0.492	411	1.0	8.848	A
4 - Scotter Road (N)	721	339	1326	0.544	721	1.3	6.307	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	418	615	1310	0.319	419	0.5	4.121	A
2 - Scotter Road (S)	746	463	1343	0.556	751	1.3	6.355	A
3 - Burringham Road (W)	335	915	942	0.356	337	0.6	6.218	A
4 - Scotter Road (N)	589	278	1360	0.433	591	0.8	4.967	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	350	514	1370	0.256	351	0.4	3.597	A
2 - Scotter Road (S)	625	388	1386	0.451	627	0.9	4.923	A
3 - Burringham Road (W)	281	765	1023	0.274	282	0.4	5.063	A
4 - Scotter Road (N)	493	233	1387	0.356	494	0.6	4.279	A

Scotter Road/Burringham Road Roundabout - 2032 (Do Nothing), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Scotter Road/Burringham Road Roundabout	Standard Roundabout		1, 2, 3, 4	26.53	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-3	3 - Burringham Road (W)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2032 (Do Nothing)	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Burringham Road (E)		✓	568	100.000
2 - Scotter Road (S)		✓	682	100.000
3 - Burringham Road (W)		✓	686	100.000
4 - Scotter Road (N)		✓	945	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	1	91	119	357
	2 - Scotter Road (S)	74	3	114	491
	3 - Burringham Road (W)	295	232	20	139
	4 - Scotter Road (N)	148	572	110	115

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	0	0	3	0
	2 - Scotter Road (S)	3	0	1	1
	3 - Burringham Road (W)	1	1	0	0
	4 - Scotter Road (N)	1	2	2	1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Burringham Road (E)	0.63	9.92	1.7	A
2 - Scotter Road (S)	0.65	9.03	1.9	A
3 - Burringham Road (W)	0.92	46.33	9.1	E
4 - Scotter Road (N)	0.92	34.77	9.4	D

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	428	786	1208	0.354	425	0.5	4.616	A
2 - Scotter Road (S)	513	540	1298	0.395	511	0.7	4.607	A
3 - Burringham Road (W)	516	780	1015	0.509	512	1.0	7.145	A
4 - Scotter Road (N)	711	467	1253	0.568	706	1.3	6.614	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	511	941	1115	0.458	509	0.8	5.967	A
2 - Scotter Road (S)	613	647	1237	0.496	612	1.0	5.808	A
3 - Burringham Road (W)	617	934	932	0.662	613	1.9	11.226	B
4 - Scotter Road (N)	850	559	1201	0.707	845	2.4	10.146	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	625	1131	1002	0.624	622	1.6	9.461	A
2 - Scotter Road (S)	751	786	1157	0.649	748	1.8	8.808	A
3 - Burringham Road (W)	755	1139	822	0.919	732	7.6	34.249	D
4 - Scotter Road (N)	1040	670	1138	0.914	1018	8.0	26.525	D

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	625	1151	990	0.632	625	1.7	9.922	A
2 - Scotter Road (S)	751	793	1153	0.651	751	1.9	9.031	A
3 - Burringham Road (W)	755	1145	818	0.923	749	9.1	46.330	E
4 - Scotter Road (N)	1040	683	1130	0.921	1035	9.4	34.767	D

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	511	979	1093	0.467	514	0.9	6.292	A
2 - Scotter Road (S)	613	659	1230	0.498	616	1.0	5.962	A
3 - Burringham Road (W)	617	944	927	0.666	645	2.1	14.024	B
4 - Scotter Road (N)	850	585	1186	0.716	876	2.7	12.719	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	428	798	1201	0.356	429	0.6	4.702	A
2 - Scotter Road (S)	513	546	1295	0.396	515	0.7	4.672	A
3 - Burringham Road (W)	516	786	1012	0.511	521	1.1	7.436	A
4 - Scotter Road (N)	711	474	1249	0.569	717	1.4	6.922	A

Scotter Road/Burringham Road Roundabout - 2032 (With Development), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Scotter Road/Burringham Road Roundabout	Standard Roundabout		1, 2, 3, 4	13.98	B

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	1	3 - Burringham Road (W)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2032 (With Development)	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Burringham Road (E)		✓	487	100.000
2 - Scotter Road (S)		✓	839	100.000
3 - Burringham Road (W)		✓	655	100.000
4 - Scotter Road (N)		✓	655	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	1	79	167	240
	2 - Scotter Road (S)	59	0	122	658
	3 - Burringham Road (W)	207	146	8	294
	4 - Scotter Road (N)	95	440	65	55

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	0	3	1	2
	2 - Scotter Road (S)	2	0	4	4
	3 - Burringham Road (W)	5	2	11	5
	4 - Scotter Road (N)	3	7	5	5

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Burringham Road (E)	0.44	5.45	0.8	A
2 - Scotter Road (S)	0.73	10.77	2.7	B
3 - Burringham Road (W)	0.86	31.29	5.9	D
4 - Scotter Road (N)	0.57	7.13	1.4	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	367	535	1358	0.270	365	0.4	3.686	A
2 - Scotter Road (S)	632	402	1378	0.458	628	0.9	4.963	A
3 - Burringham Road (W)	493	759	1026	0.480	489	1.0	6.948	A
4 - Scotter Road (N)	493	315	1340	0.368	491	0.6	4.480	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	438	640	1295	0.338	437	0.5	4.270	A
2 - Scotter Road (S)	754	481	1332	0.566	752	1.3	6.424	A
3 - Burringham Road (W)	589	909	946	0.623	586	1.7	10.362	B
4 - Scotter Road (N)	589	377	1305	0.451	588	0.9	5.315	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	536	781	1211	0.443	535	0.8	5.413	A
2 - Scotter Road (S)	924	589	1271	0.727	918	2.7	10.453	B
3 - Burringham Road (W)	721	1110	837	0.862	706	5.3	26.263	D
4 - Scotter Road (N)	721	455	1260	0.572	719	1.4	7.023	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	536	786	1208	0.444	536	0.8	5.452	A
2 - Scotter Road (S)	924	590	1270	0.727	924	2.7	10.772	B
3 - Burringham Road (W)	721	1115	834	0.864	719	5.9	31.286	D
4 - Scotter Road (N)	721	462	1256	0.574	721	1.4	7.130	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	438	648	1290	0.339	439	0.5	4.308	A
2 - Scotter Road (S)	754	483	1331	0.567	760	1.4	6.601	A
3 - Burringham Road (W)	589	916	942	0.625	605	1.8	11.676	B
4 - Scotter Road (N)	589	388	1298	0.454	591	0.9	5.411	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	367	539	1355	0.271	367	0.4	3.710	A
2 - Scotter Road (S)	632	404	1376	0.459	634	0.9	5.044	A
3 - Burringham Road (W)	493	765	1023	0.482	496	1.0	7.173	A
4 - Scotter Road (N)	493	319	1337	0.369	494	0.6	4.531	A

Scotter Road/Burringham Road Roundabout - 2032 (With Development), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	Scotter Road/Burringham Road Roundabout	Standard Roundabout		1, 2, 3, 4	31.19	D

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	-5	3 - Burringham Road (W)

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2032 (With Development)	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Burringham Road (E)		✓	615	100.000
2 - Scotter Road (S)		✓	701	100.000
3 - Burringham Road (W)		✓	714	100.000
4 - Scotter Road (N)		✓	945	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	1	91	166	357
	2 - Scotter Road (S)	74	3	133	491
	3 - Burringham Road (W)	303	235	20	156
	4 - Scotter Road (N)	148	572	110	115

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Burringham Road (E)	2 - Scotter Road (S)	3 - Burringham Road (W)	4 - Scotter Road (N)
From	1 - Burringham Road (E)	0	0	3	0
	2 - Scotter Road (S)	2	0	1	1
	3 - Burringham Road (W)	1	1	0	0
	4 - Scotter Road (N)	1	2	2	1

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
1 - Burringham Road (E)	0.68	11.58	2.1	B
2 - Scotter Road (S)	0.69	10.31	2.2	B
3 - Burringham Road (W)	0.96	62.43	13.0	F
4 - Scotter Road (N)	0.92	35.85	9.7	E

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	463	788	1207	0.384	461	0.6	4.849	A
2 - Scotter Road (S)	528	575	1278	0.413	525	0.7	4.814	A
3 - Burringham Road (W)	538	779	1015	0.529	533	1.1	7.439	A
4 - Scotter Road (N)	711	475	1249	0.570	706	1.3	6.668	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	553	943	1114	0.496	551	1.0	6.434	A
2 - Scotter Road (S)	630	689	1213	0.519	629	1.1	6.209	A
3 - Burringham Road (W)	642	933	932	0.688	638	2.1	12.122	B
4 - Scotter Road (N)	850	568	1196	0.711	845	2.4	10.294	B

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	677	1131	1002	0.676	673	2.0	10.892	B
2 - Scotter Road (S)	772	837	1128	0.684	768	2.1	9.972	A
3 - Burringham Road (W)	786	1138	822	0.956	755	10.0	41.588	E
4 - Scotter Road (N)	1040	675	1135	0.917	1018	8.1	27.001	D

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	677	1152	989	0.684	677	2.1	11.581	B
2 - Scotter Road (S)	772	845	1124	0.687	772	2.2	10.311	B
3 - Burringham Road (W)	786	1145	818	0.961	774	13.0	62.425	F
4 - Scotter Road (N)	1040	691	1126	0.924	1034	9.7	35.853	E

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	553	987	1088	0.508	557	1.1	6.890	A
2 - Scotter Road (S)	630	703	1205	0.523	634	1.1	6.419	A
3 - Burringham Road (W)	642	945	926	0.693	684	2.4	17.405	C
4 - Scotter Road (N)	850	605	1175	0.723	877	2.8	13.323	B

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Burringham Road (E)	463	801	1199	0.386	465	0.6	4.951	A
2 - Scotter Road (S)	528	582	1275	0.414	529	0.7	4.894	A
3 - Burringham Road (W)	538	787	1011	0.532	542	1.2	7.799	A
4 - Scotter Road (N)	711	483	1244	0.572	717	1.4	6.996	A

Appendix 10 – Scotter Road/West Common Lane Modelling

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462

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

Filename: Scotter Road - West Common Lane - Brumby Common Lane Crossroads.j9
Path: Z:\Projects\4772 Lincolnshire Lakes\Data\Modelling\Scotter Road-Brumby Common Lane-West Common Lane Crossroads
Report generation date: 05/12/2023 15:13:03

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2023 Base									
Stream B-CD	D1	0.3	7.14	0.24	A	D2	0.6	10.16	0.36	B
Stream B-AD		0.3	15.22	0.20	C		0.4	21.59	0.27	C
Stream A-BCD		0.0	7.28	0.00	A		0.0	6.59	0.01	A
Stream D-ABC		0.0	0.00	0.00	A		0.0	15.04	0.03	C
Stream C-ABD		0.5	8.91	0.34	A		0.4	9.88	0.30	A
	2033 Do Nothing									
Stream B-CD	D3	0.4	8.05	0.28	A	D4	0.9	14.22	0.46	B
Stream B-AD		0.4	22.13	0.28	C		0.8	39.66	0.42	E
Stream A-BCD		0.0	8.20	0.00	A		0.0	7.02	0.01	A
Stream D-ABC		0.0	0.00	0.00	A		0.0	19.68	0.03	C
Stream C-ABD		0.7	10.28	0.40	B		0.6	11.83	0.36	B
	2033 With Development									
Stream B-CD	D5	0.5	9.18	0.32	A	D6	1.3	19.59	0.58	C
Stream B-AD		0.6	36.53	0.39	E		1.1	60.06	0.53	F
Stream A-BCD		0.0	9.64	0.01	A		0.0	7.12	0.01	A
Stream D-ABC		0.0	0.00	0.00	A		0.0	22.94	0.04	C
Stream C-ABD		1.0	12.25	0.49	B		0.6	13.10	0.39	B

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

File summary

File Description

Title	
Location	
Site number	
Date	17/11/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	LTP\Rhuriel
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2023 Base	AM	ONE HOUR	07:45	09:15	15
D2	2023 Base	PM	ONE HOUR	15:45	17:15	15
D3	2033 Do Nothing	AM	ONE HOUR	07:45	09:15	15
D4	2033 Do Nothing	PM	ONE HOUR	15:45	17:15	15
D5	2033 With Development	AM	ONE HOUR	07:45	09:15	15
D6	2033 With Development	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2023 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		2.29	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Scotter Road (north)		Major
B	West Common Lane		Minor
C	Scotter Road (south)		Major
D	Brumby Common Lane		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Scotter Road (north)	6.24		✓	3.50	250.0	✓	4.00
C - Scotter Road (south)	6.24		✓	3.50	250.0	✓	10.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - West Common Lane	One lane plus flare		10.00	10.00	9.70	7.16	6.52		5.70	250	250
D - Brumby Common Lane	One lane	2.35								20	52

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	820	-	-	-	-	-	-	0.315	0.449	0.315	-	-	-
B-A	749	0.135	0.341	0.341	-	-	-	0.215	0.488	-	0.341	0.341	0.171
B-C	932	0.141	0.357	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	832	0.150	0.379	0.379	-	-	-	0.238	0.541	0.238	-	-	-
B-D, offside lane	749	0.135	0.341	0.341	-	-	-	0.215	0.488	0.215	-	-	-
C-B	820	0.315	0.315	0.449	-	-	-	-	-	-	-	-	-
D-A	614	-	-	-	-	-	-	0.235	-	0.093	-	-	-
D-B, nearside lane	476	0.137	0.137	0.310	-	-	-	0.217	0.217	0.086	-	-	-
D-B, offside lane	476	0.137	0.137	0.310	-	-	-	0.217	0.217	0.086	-	-	-
D-C	476	-	0.137	0.310	0.109	0.217	0.217	0.217	0.217	0.086	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2023 Base	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Scotter Road (north)		✓	547	100.000
B - West Common Lane		✓	205	100.000
C - Scotter Road (south)		✓	848	100.000
D - Brumby Common Lane		✓	4	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	103	442	2
	B - West Common Lane	54	0	146	5
	C - Scotter Road (south)	652	195	0	1
	D - Brumby Common Lane	1	3	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	13	5	0
	B - West Common Lane	4	0	4	0
	C - Scotter Road (south)	3	3	0	0
	D - Brumby Common Lane	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.24	7.14	0.3	A
B-AD	0.20	15.22	0.3	C
A-BCD	0.00	7.28	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.34	8.91	0.5	A
C-D				
C-A				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	112	775	0.145	111	0.2	5.634	A
B-AD	42	448	0.095	42	0.1	9.204	A
A-BCD	2	600	0.003	1	0.0	6.016	A
A-B	78			78			
A-C	333			333			
D-ABC	0	310	0.000	0	0.0	0.000	A
C-ABD	147	691	0.213	146	0.3	6.790	A
C-D	0.75			0.75			
C-A	491			491			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	134	740	0.181	134	0.2	6.164	A
B-AD	51	389	0.130	50	0.2	11.044	B
A-BCD	2	557	0.003	2	0.0	6.489	A
A-B	93			93			
A-C	397			397			
D-ABC	0	269	0.000	0	0.0	0.000	A
C-ABD	175	666	0.263	175	0.4	7.554	A
C-D	0.90			0.90			
C-A	586			586			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	164	688	0.238	164	0.3	7.126	A
B-AD	62	308	0.201	61	0.3	15.155	C
A-BCD	2	497	0.004	2	0.0	7.272	A
A-B	113			113			
A-C	487			487			
D-ABC	0	212	0.000	0	0.0	0.000	A
C-ABD	215	631	0.340	214	0.5	8.900	A
C-D	1			1			
C-A	718			718			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	164	688	0.238	164	0.3	7.139	A
B-AD	62	307	0.201	62	0.3	15.224	C
A-BCD	2	497	0.004	2	0.0	7.276	A
A-B	113			113			
A-C	487			487			
D-ABC	0	212	0.000	0	0.0	0.000	A
C-ABD	215	631	0.340	215	0.5	8.913	A
C-D	1			1			
C-A	718			718			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	134	740	0.181	134	0.2	6.179	A
B-AD	51	388	0.130	51	0.2	11.097	B
A-BCD	2	556	0.003	2	0.0	6.494	A
A-B	93			93			
A-C	397			397			
D-ABC	0	269	0.000	0	0.0	0.000	A
C-ABD	175	666	0.263	176	0.4	7.585	A
C-D	0.90			0.90			
C-A	586			586			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	112	774	0.145	112	0.2	5.655	A
B-AD	42	447	0.095	43	0.1	9.248	A
A-BCD	2	599	0.003	2	0.0	6.023	A
A-B	78			78			
A-C	333			333			
D-ABC	0	309	0.000	0	0.0	0.000	A
C-ABD	147	691	0.213	147	0.3	6.828	A
C-D	0.75			0.75			
C-A	491			491			

2023 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		2.68	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2023 Base	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Scotter Road (north)		✓	819	100.000
B - West Common Lane		✓	247	100.000
C - Scotter Road (south)		✓	710	100.000
D - Brumby Common Lane		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	77	737	5
	B - West Common Lane	58	0	182	7
	C - Scotter Road (south)	560	146	0	4
	D - Brumby Common Lane	3	2	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	0	3	0
	B - West Common Lane	7	0	3	0
	C - Scotter Road (south)	3	3	0	0
	D - Brumby Common Lane	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.36	10.16	0.6	B
B-AD	0.27	21.59	0.4	C
A-BCD	0.01	6.59	0.0	A
A-B				
A-C				
D-ABC	0.03	15.04	0.0	C
C-ABD	0.30	9.88	0.4	A
C-D				
C-A				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	140	698	0.200	139	0.3	6.615	A
B-AD	46	404	0.114	45	0.1	10.690	B
A-BCD	4	637	0.006	4	0.0	5.680	A
A-B	58			58			
A-C	555			555			
D-ABC	5	351	0.013	4	0.0	10.396	B
C-ABD	110	626	0.176	109	0.2	7.161	A
C-D	3			3			
C-A	422			422			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	167	648	0.258	167	0.4	7.702	A
B-AD	55	337	0.163	55	0.2	13.573	B
A-BCD	4	602	0.007	4	0.0	6.028	A
A-B	69			69			
A-C	663			663			
D-ABC	5	309	0.017	5	0.0	11.857	B
C-ABD	131	588	0.223	131	0.3	8.104	A
C-D	4			4			
C-A	503			503			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	205	571	0.360	204	0.6	10.093	B
B-AD	67	245	0.272	66	0.4	21.390	C
A-BCD	6	552	0.010	5	0.0	6.582	A
A-B	85			85			
A-C	811			811			
D-ABC	7	246	0.027	7	0.0	15.023	C
C-ABD	161	536	0.300	160	0.4	9.851	A
C-D	4			4			
C-A	617			617			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	205	570	0.360	205	0.6	10.157	B
B-AD	67	245	0.273	67	0.4	21.586	C
A-BCD	6	552	0.010	6	0.0	6.585	A
A-B	85			85			
A-C	811			811			
D-ABC	7	246	0.027	7	0.0	15.044	C
C-ABD	161	536	0.300	161	0.4	9.880	A
C-D	4			4			
C-A	617			617			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	167	647	0.259	168	0.4	7.753	A
B-AD	55	337	0.163	56	0.2	13.693	B
A-BCD	4	601	0.007	5	0.0	6.035	A
A-B	69			69			
A-C	663			663			
D-ABC	5	309	0.017	5	0.0	11.875	B
C-ABD	131	588	0.223	132	0.3	8.133	A
C-D	4			4			
C-A	503			503			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	140	697	0.201	140	0.3	6.658	A
B-AD	46	403	0.114	46	0.1	10.756	B
A-BCD	4	637	0.006	4	0.0	5.685	A
A-B	58			58			
A-C	555			555			
D-ABC	5	350	0.013	5	0.0	10.410	B
C-ABD	110	626	0.176	110	0.2	7.193	A
C-D	3			3			
C-A	422			422			

2033 Do Nothing, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		2.65	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2033 Do Nothing	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Scotter Road (north)		✓	631	100.000
B - West Common Lane		✓	221	100.000
C - Scotter Road (south)		✓	997	100.000
D - Brumby Common Lane		✓	4	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	111	518	2
	B - West Common Lane	58	0	158	5
	C - Scotter Road (south)	777	219	0	1
	D - Brumby Common Lane	1	3	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	13	4	0
	B - West Common Lane	4	0	3	0
	C - Scotter Road (south)	3	3	0	0
	D - Brumby Common Lane	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.28	8.05	0.4	A
B-AD	0.28	22.13	0.4	C
A-BCD	0.00	8.20	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.40	10.28	0.7	B
C-D				
C-A				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	121	749	0.162	120	0.2	5.886	A
B-AD	45	398	0.114	45	0.1	10.564	B
A-BCD	2	562	0.003	1	0.0	6.421	A
A-B	84			84			
A-C	390			390			
D-ABC	0	275	0.000	0	0.0	0.000	A
C-ABD	165	671	0.246	164	0.3	7.291	A
C-D	0.75			0.75			
C-A	585			585			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	145	707	0.205	144	0.3	6.581	A
B-AD	54	329	0.164	54	0.2	13.546	B
A-BCD	2	511	0.004	2	0.0	7.064	A
A-B	100			100			
A-C	466			466			
D-ABC	0	227	0.000	0	0.0	0.000	A
C-ABD	197	642	0.307	196	0.5	8.316	A
C-D	0.90			0.90			
C-A	699			699			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	177	639	0.278	177	0.4	8.013	A
B-AD	66	235	0.280	65	0.4	21.898	C
A-BCD	2	442	0.005	2	0.0	8.188	A
A-B	122			122			
A-C	570			570			
D-ABC	0	158	0.000	0	0.0	0.000	A
C-ABD	241	602	0.401	240	0.7	10.230	B
C-D	1			1			
C-A	855			855			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	177	638	0.278	177	0.4	8.045	A
B-AD	66	235	0.281	66	0.4	22.134	C
A-BCD	2	441	0.005	2	0.0	8.196	A
A-B	122			122			
A-C	570			570			
D-ABC	0	158	0.000	0	0.0	0.000	A
C-ABD	241	602	0.401	241	0.7	10.282	B
C-D	1			1			
C-A	855			855			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	145	706	0.205	145	0.3	6.609	A
B-AD	54	329	0.164	55	0.2	13.678	B
A-BCD	2	511	0.004	2	0.0	7.075	A
A-B	100			100			
A-C	466			466			
D-ABC	0	227	0.000	0	0.0	0.000	A
C-ABD	197	642	0.307	198	0.5	8.369	A
C-D	0.90			0.90			
C-A	699			699			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	121	748	0.162	121	0.2	5.914	A
B-AD	45	397	0.114	46	0.1	10.638	B
A-BCD	2	561	0.003	2	0.0	6.430	A
A-B	84			84			
A-C	390			390			
D-ABC	0	275	0.000	0	0.0	0.000	A
C-ABD	165	671	0.246	165	0.3	7.342	A
C-D	0.75			0.75			
C-A	585			585			

2033 Do Nothing, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		3.68	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2033 Do Nothing	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Scotter Road (north)		✓	960	100.000
B - West Common Lane		✓	269	100.000
C - Scotter Road (south)		✓	802	100.000
D - Brumby Common Lane		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	83	872	5
	B - West Common Lane	62	0	199	8
	C - Scotter Road (south)	640	158	0	4
	D - Brumby Common Lane	3	2	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	0	2	0
	B - West Common Lane	7	0	3	0
	C - Scotter Road (south)	2	3	0	0
	D - Brumby Common Lane	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.46	14.22	0.9	B
B-AD	0.42	39.66	0.8	E
A-BCD	0.01	7.02	0.0	A
A-B				
A-C				
D-ABC	0.03	19.68	0.0	C
C-ABD	0.36	11.83	0.6	B
C-D				
C-A				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	153	656	0.234	152	0.3	7.341	A
B-AD	49	351	0.140	49	0.2	12.648	B
A-BCD	4	614	0.006	4	0.0	5.894	A
A-B	62			62			
A-C	656			656			
D-ABC	5	320	0.014	4	0.0	11.403	B
C-ABD	119	593	0.201	118	0.3	7.796	A
C-D	3			3			
C-A	482			482			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	183	593	0.309	183	0.5	9.013	A
B-AD	59	274	0.214	58	0.3	17.732	C
A-BCD	4	574	0.008	4	0.0	6.320	A
A-B	75			75			
A-C	784			784			
D-ABC	5	270	0.020	5	0.0	13.627	B
C-ABD	142	548	0.259	142	0.4	9.107	A
C-D	4			4			
C-A	575			575			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	225	488	0.462	224	0.9	13.948	B
B-AD	71	168	0.423	69	0.7	38.285	E
A-BCD	6	519	0.011	5	0.0	7.015	A
A-B	91			91			
A-C	960			960			
D-ABC	7	190	0.035	7	0.0	19.605	C
C-ABD	174	487	0.357	173	0.6	11.774	B
C-D	4			4			
C-A	705			705			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	225	486	0.464	225	0.9	14.222	B
B-AD	71	167	0.423	71	0.8	39.660	E
A-BCD	6	518	0.011	6	0.0	7.020	A
A-B	91			91			
A-C	960			960			
D-ABC	7	190	0.035	7	0.0	19.681	C
C-ABD	174	487	0.357	174	0.6	11.834	B
C-D	4			4			
C-A	705			705			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	183	591	0.310	185	0.5	9.153	A
B-AD	59	274	0.214	60	0.3	18.156	C
A-BCD	4	573	0.008	5	0.0	6.326	A
A-B	75			75			
A-C	784			784			
D-ABC	5	269	0.020	5	0.0	13.668	B
C-ABD	142	548	0.259	143	0.4	9.163	A
C-D	4			4			
C-A	575			575			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	153	655	0.234	154	0.3	7.409	A
B-AD	49	351	0.141	50	0.2	12.773	B
A-BCD	4	614	0.006	4	0.0	5.900	A
A-B	62			62			
A-C	656			656			
D-ABC	5	320	0.014	5	0.0	11.425	B
C-ABD	119	593	0.201	119	0.3	7.844	A
C-D	3			3			
C-A	482			482			

2033 With Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		3.41	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2033 With Development	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Scotter Road (north)		✓	665	100.000
B - West Common Lane		✓	233	100.000
C - Scotter Road (south)		✓	1166	100.000
D - Brumby Common Lane		✓	4	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	111	552	2
	B - West Common Lane	58	0	170	5
	C - Scotter Road (south)	901	264	0	1
	D - Brumby Common Lane	1	3	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	13	4	0
	B - West Common Lane	4	0	3	0
	C - Scotter Road (south)	3	2	0	0
	D - Brumby Common Lane	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.32	9.18	0.5	A
B-AD	0.39	36.53	0.6	E
A-BCD	0.01	9.64	0.0	A
A-B				
A-C				
D-ABC	0.00	0.00	0.0	A
C-ABD	0.49	12.25	1.0	B
C-D				
C-A				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	130	737	0.177	129	0.2	6.091	A
B-AD	45	352	0.129	45	0.2	12.134	B
A-BCD	2	518	0.003	1	0.0	6.975	A
A-B	84			84			
A-C	416			416			
D-ABC	0	242	0.000	0	0.0	0.000	A
C-ABD	199	663	0.300	197	0.4	7.856	A
C-D	0.75			0.75			
C-A	678			678			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	156	688	0.226	155	0.3	6.947	A
B-AD	54	275	0.196	54	0.2	16.877	C
A-BCD	2	458	0.004	2	0.0	7.892	A
A-B	100			100			
A-C	496			496			
D-ABC	0	186	0.000	0	0.0	0.000	A
C-ABD	237	632	0.375	237	0.6	9.266	A
C-D	0.90			0.90			
C-A	810			810			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	191	597	0.320	190	0.5	9.094	A
B-AD	66	168	0.390	64	0.6	35.400	E
A-BCD	2	376	0.006	2	0.0	9.621	A
A-B	122			122			
A-C	608			608			
D-ABC	0	103	0.000	0	0.0	0.000	A
C-ABD	291	591	0.493	290	1.0	12.137	B
C-D	1			1			
C-A	992			992			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	191	595	0.321	191	0.5	9.181	A
B-AD	66	168	0.391	65	0.6	36.531	E
A-BCD	2	376	0.006	2	0.0	9.638	A
A-B	122			122			
A-C	608			608			
D-ABC	0	103	0.000	0	0.0	0.000	A
C-ABD	291	591	0.493	291	1.0	12.247	B
C-D	1			1			
C-A	992			992			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	156	686	0.227	156	0.3	7.003	A
B-AD	54	274	0.197	55	0.3	17.244	C
A-BCD	2	457	0.004	2	0.0	7.909	A
A-B	100			100			
A-C	496			496			
D-ABC	0	185	0.000	0	0.0	0.000	A
C-ABD	237	632	0.375	239	0.6	9.368	A
C-D	0.90			0.90			
C-A	810			810			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	130	736	0.177	130	0.2	6.124	A
B-AD	45	351	0.129	46	0.2	12.258	B
A-BCD	2	516	0.003	2	0.0	6.991	A
A-B	84			84			
A-C	416			416			
D-ABC	0	241	0.000	0	0.0	0.000	A
C-ABD	199	663	0.300	199	0.4	7.938	A
C-D	0.75			0.75			
C-A	678			678			

2033 With Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		4.97	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2033 With Development	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Scotter Road (north)		✓	1032	100.000
B - West Common Lane		✓	295	100.000
C - Scotter Road (south)		✓	820	100.000
D - Brumby Common Lane		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	83	944	5
	B - West Common Lane	62	0	225	8
	C - Scotter Road (south)	653	163	0	4
	D - Brumby Common Lane	3	2	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - Scotter Road (north)	B - West Common Lane	C - Scotter Road (south)	D - Brumby Common Lane
From	A - Scotter Road (north)	0	0	2	0
	B - West Common Lane	7	0	2	0
	C - Scotter Road (south)	2	3	0	0
	D - Brumby Common Lane	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-CD	0.58	19.59	1.3	C
B-AD	0.53	60.06	1.1	F
A-BCD	0.01	7.12	0.0	A
A-B				
A-C				
D-ABC	0.04	22.94	0.0	C
C-ABD	0.39	13.10	0.6	B
C-D				
C-A				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	173	637	0.271	171	0.4	7.852	A
B-AD	49	328	0.150	49	0.2	13.693	B
A-BCD	4	610	0.006	4	0.0	5.940	A
A-B	62			62			
A-C	711			711			
D-ABC	5	308	0.015	4	0.0	11.847	B
C-ABD	123	576	0.213	122	0.3	8.150	A
C-D	3			3			
C-A	492			492			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	207	569	0.363	206	0.6	10.077	B
B-AD	59	247	0.237	58	0.3	20.283	C
A-BCD	4	568	0.008	4	0.0	6.384	A
A-B	75			75			
A-C	849			849			
D-ABC	5	254	0.021	5	0.0	14.503	B
C-ABD	147	528	0.278	146	0.4	9.697	A
C-D	4			4			
C-A	587			587			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	254	445	0.571	252	1.3	18.659	C
B-AD	70	134	0.525	67	1.0	55.636	F
A-BCD	6	512	0.011	5	0.0	7.113	A
A-B	91			91			
A-C	1039			1039			
D-ABC	7	165	0.040	7	0.0	22.754	C
C-ABD	179	462	0.388	178	0.6	13.017	B
C-D	4			4			
C-A	719			719			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	255	441	0.577	254	1.3	19.592	C
B-AD	70	133	0.527	70	1.1	60.059	F
A-BCD	6	511	0.011	6	0.0	7.119	A
A-B	91			91			
A-C	1039			1039			
D-ABC	7	164	0.040	7	0.0	22.940	C
C-ABD	179	462	0.388	179	0.6	13.103	B
C-D	4			4			
C-A	719			719			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	207	566	0.365	210	0.6	10.379	B
B-AD	58	246	0.237	62	0.3	21.138	C
A-BCD	4	568	0.008	5	0.0	6.392	A
A-B	75			75			
A-C	849			849			
D-ABC	5	253	0.021	5	0.0	14.575	B
C-ABD	147	528	0.278	148	0.4	9.770	A
C-D	4			4			
C-A	587			587			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	173	636	0.272	174	0.4	7.949	A
B-AD	49	327	0.150	50	0.2	13.860	B
A-BCD	4	609	0.006	4	0.0	5.950	A
A-B	62			62			
A-C	711			711			
D-ABC	5	308	0.015	5	0.0	11.875	B
C-ABD	123	576	0.213	123	0.3	8.206	A
C-D	3			3			
C-A	492			492			

Appendix 11 – Scotter Road/Brumby Wood Lane Modelling

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462

Filename: Scotter Road - Brumby Wood Lane T-junction.j9
Path: Z:\Projects\4772 Lincolnshire Lakes\Data\Modelling\Scotter Road - Brumby Wood Lane
Report generation date: 05/12/2023 15:08:24

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2023 Base									
Stream B-C	D1	0.3	7.60	0.22	A	D2	1.1	14.30	0.52	B
Stream B-A		0.0	18.06	0.03	C		0.2	23.74	0.13	C
Stream C-AB		0.5	8.67	0.32	A		0.3	8.31	0.21	A
	2033 Do Nothing									
Stream B-C	D3	0.4	8.42	0.27	A	D4	1.9	22.09	0.66	C
Stream B-A		0.0	23.08	0.03	C		0.3	38.05	0.21	E
Stream C-AB		0.7	10.15	0.40	B		0.4	9.55	0.27	A
	2033 With Development									
Stream B-C	D5	0.4	8.86	0.29	A	D6	2.8	30.23	0.75	D
Stream B-A		0.0	29.09	0.04	D		0.3	51.85	0.27	F
Stream C-AB		0.9	11.91	0.49	B		0.4	10.08	0.28	B

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

File summary

File Description

Title	
Location	
Site number	
Date	17/11/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	LTP\Rhuriel
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2023 Base	AM	ONE HOUR	07:45	09:15	15
D2	2023 Base	PM	ONE HOUR	15:45	17:15	15
D3	2033 Do Nothing	AM	ONE HOUR	07:45	09:15	15
D4	2033 Do Nothing	PM	ONE HOUR	15:45	17:15	15
D5	2033 With Development	AM	ONE HOUR	07:45	09:15	15
D6	2033 With Development	PM	ONE HOUR	15:45	17:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2023 Base, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.82	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Scotter Road (north)		Major
B	Brumby Wood Lane		Minor
C	Scotter Road (south)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.40		✓	3.00	250.0	✓	7.56

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	5.66	4.81	4.14	4.14	✓	2.00	52	73

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	475	0.085	0.215	0.135	0.307
B-C	776	0.117	0.295	-	-
C-B	781	0.297	0.297	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2023 Base	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	497	100.000
B		✓	126	100.000
C		✓	795	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	7	490
	B	5	0	121
	C	614	181	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	8
	B	0	0	1
	C	4	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.22	7.60	0.3	A
B-A	0.03	18.06	0.0	C
C-AB	0.32	8.67	0.5	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	91	664	0.137	90	0.2	6.330	A
B-A	4	291	0.013	4	0.0	12.536	B
C-AB	136	670	0.203	135	0.3	6.787	A
C-A	462			462			
A-B	5			5			
A-C	369			369			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	109	642	0.169	109	0.2	6.812	A
B-A	4	255	0.018	4	0.0	14.385	B
C-AB	163	648	0.251	162	0.3	7.476	A
C-A	552			552			
A-B	6			6			
A-C	440			440			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	133	612	0.218	133	0.3	7.591	A
B-A	6	205	0.027	5	0.0	18.040	C
C-AB	199	619	0.322	199	0.5	8.648	A
C-A	676			676			
A-B	8			8			
A-C	540			540			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	133	612	0.218	133	0.3	7.601	A
B-A	6	205	0.027	6	0.0	18.058	C
C-AB	199	619	0.322	199	0.5	8.670	A
C-A	676			676			
A-B	8			8			
A-C	540			540			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	109	642	0.169	109	0.2	6.822	A
B-A	4	254	0.018	5	0.0	14.404	B
C-AB	163	648	0.251	163	0.3	7.501	A
C-A	552			552			
A-B	6			6			
A-C	440			440			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	91	664	0.137	91	0.2	6.347	A
B-A	4	290	0.013	4	0.0	12.557	B
C-AB	136	670	0.203	137	0.3	6.822	A
C-A	462			462			
A-B	5			5			
A-C	369			369			

2023 Base, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		2.94	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2023 Base	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	710	100.000
B		✓	269	100.000
C		✓	693	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	8	702
	B	21	0	248
	C	588	105	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	1
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.52	14.30	1.1	B
B-A	0.13	23.74	0.2	C
C-AB	0.21	8.31	0.3	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	187	608	0.307	185	0.4	8.553	A
B-A	16	277	0.057	16	0.1	13.778	B
C-AB	79	622	0.127	78	0.1	6.612	A
C-A	443			443			
A-B	6			6			
A-C	529			529			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	223	575	0.388	222	0.6	10.281	B
B-A	19	235	0.080	19	0.1	16.627	C
C-AB	94	591	0.160	94	0.2	7.238	A
C-A	529			529			
A-B	7			7			
A-C	631			631			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	273	527	0.518	271	1.1	14.112	B
B-A	23	175	0.132	23	0.1	23.616	C
C-AB	116	549	0.211	115	0.3	8.298	A
C-A	647			647			
A-B	9			9			
A-C	773			773			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	273	527	0.518	273	1.1	14.300	B
B-A	23	175	0.132	23	0.2	23.744	C
C-AB	116	549	0.211	116	0.3	8.310	A
C-A	647			647			
A-B	9			9			
A-C	773			773			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	223	575	0.388	225	0.7	10.431	B
B-A	19	235	0.080	19	0.1	16.709	C
C-AB	94	591	0.160	95	0.2	7.253	A
C-A	529			529			
A-B	7			7			
A-C	631			631			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	187	608	0.307	187	0.5	8.660	A
B-A	16	276	0.057	16	0.1	13.831	B
C-AB	79	622	0.127	79	0.1	6.630	A
C-A	443			443			
A-B	6			6			
A-C	529			529			

2033 Do Nothing, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		2.15	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2033 Do Nothing	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	564	100.000
B		✓	148	100.000
C		✓	930	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	8	556
	B	5	0	143
	C	713	217	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	8
	B	0	0	1
	C	4	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.27	8.42	0.4	A
B-A	0.03	23.08	0.0	C
C-AB	0.40	10.15	0.7	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	650	0.166	107	0.2	6.689	A
B-A	4	261	0.014	4	0.0	13.968	B
C-AB	163	655	0.249	162	0.3	7.356	A
C-A	537			537			
A-B	6			6			
A-C	419			419			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	625	0.206	128	0.3	7.323	A
B-A	4	219	0.020	4	0.0	16.744	C
C-AB	195	631	0.309	195	0.4	8.330	A
C-A	641			641			
A-B	7			7			
A-C	500			500			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	157	589	0.267	157	0.4	8.401	A
B-A	6	162	0.034	5	0.0	23.021	C
C-AB	239	597	0.400	238	0.7	10.101	B
C-A	785			785			
A-B	9			9			
A-C	612			612			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	157	589	0.267	157	0.4	8.420	A
B-A	6	162	0.034	6	0.0	23.076	C
C-AB	239	597	0.400	239	0.7	10.149	B
C-A	785			785			
A-B	9			9			
A-C	612			612			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	624	0.206	129	0.3	7.345	A
B-A	4	219	0.021	5	0.0	16.789	C
C-AB	195	631	0.309	196	0.5	8.383	A
C-A	641			641			
A-B	7			7			
A-C	500			500			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	650	0.166	108	0.2	6.715	A
B-A	4	261	0.014	4	0.0	14.009	B
C-AB	163	655	0.249	164	0.3	7.408	A
C-A	537			537			
A-B	6			6			
A-C	419			419			

2033 Do Nothing, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		4.44	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2033 Do Nothing	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	818	100.000
B		✓	315	100.000
C		✓	783	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	9	809
	B	23	0	292
	C	659	124	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	1
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.66	22.09	1.9	C
B-A	0.21	38.05	0.3	E
C-AB	0.27	9.55	0.4	A
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	220	583	0.377	217	0.6	9.876	A
B-A	17	245	0.071	17	0.1	15.768	C
C-AB	93	598	0.156	93	0.2	7.111	A
C-A	496			496			
A-B	7			7			
A-C	609			609			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	263	544	0.482	261	0.9	12.795	B
B-A	21	195	0.106	21	0.1	20.584	C
C-AB	111	563	0.198	111	0.2	7.972	A
C-A	592			592			
A-B	8			8			
A-C	727			727			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	321	486	0.662	318	1.9	21.171	C
B-A	25	121	0.209	25	0.3	37.200	E
C-AB	137	513	0.266	136	0.4	9.528	A
C-A	726			726			
A-B	10			10			
A-C	891			891			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	321	485	0.663	321	1.9	22.093	C
B-A	25	120	0.211	25	0.3	38.050	E
C-AB	137	513	0.266	137	0.4	9.550	A
C-A	726			726			
A-B	10			10			
A-C	891			891			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	263	543	0.483	266	1.0	13.289	B
B-A	21	194	0.106	21	0.1	20.867	C
C-AB	111	563	0.198	112	0.2	7.995	A
C-A	592			592			
A-B	8			8			
A-C	727			727			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	220	583	0.377	221	0.6	10.090	B
B-A	17	244	0.071	17	0.1	15.874	C
C-AB	93	598	0.156	94	0.2	7.138	A
C-A	496			496			
A-B	7			7			
A-C	609			609			

2033 With Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		2.57	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2033 With Development	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	586	100.000
B		✓	160	100.000
C		✓	1054	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	8	578
	B	5	0	155
	C	794	260	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	8
	B	0	0	1
	C	4	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.29	8.86	0.4	A
B-A	0.04	29.09	0.0	D
C-AB	0.49	11.91	0.9	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	117	645	0.181	116	0.2	6.864	A
B-A	4	239	0.016	4	0.0	15.265	C
C-AB	196	650	0.301	194	0.4	7.944	A
C-A	598			598			
A-B	6			6			
A-C	435			435			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	139	618	0.225	139	0.3	7.579	A
B-A	4	193	0.023	4	0.0	19.070	C
C-AB	234	625	0.374	233	0.6	9.264	A
C-A	714			714			
A-B	7			7			
A-C	520			520			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	171	581	0.294	170	0.4	8.838	A
B-A	6	130	0.042	5	0.0	28.962	D
C-AB	288	593	0.486	287	0.9	11.812	B
C-A	872			872			
A-B	9			9			
A-C	636			636			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	171	581	0.294	171	0.4	8.861	A
B-A	6	129	0.043	6	0.0	29.093	D
C-AB	288	593	0.486	288	0.9	11.912	B
C-A	872			872			
A-B	9			9			
A-C	636			636			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	139	618	0.225	140	0.3	7.605	A
B-A	4	193	0.023	5	0.0	19.156	C
C-AB	234	625	0.374	235	0.6	9.360	A
C-A	714			714			
A-B	7			7			
A-C	520			520			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	117	645	0.181	117	0.2	6.897	A
B-A	4	239	0.016	4	0.0	15.323	C
C-AB	196	650	0.301	196	0.4	8.027	A
C-A	598			598			
A-B	6			6			
A-C	435			435			

2033 With Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		6.03	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2033 With Development	PM	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	865	100.000
B		✓	340	100.000
C		✓	795	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	9	856
	B	23	0	317
	C	667	128	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	1
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.75	30.23	2.8	D
B-A	0.27	51.85	0.3	F
C-AB	0.28	10.08	0.4	B
C-A				
A-B				
A-C				

Main Results for each time segment

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	239	573	0.417	236	0.7	10.702	B
B-A	17	233	0.074	17	0.1	16.605	C
C-AB	96	588	0.164	96	0.2	7.317	A
C-A	502			502			
A-B	7			7			
A-C	644			644			

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	285	531	0.536	283	1.1	14.558	B
B-A	21	179	0.115	20	0.1	22.611	C
C-AB	115	550	0.209	115	0.3	8.266	A
C-A	600			600			
A-B	8			8			
A-C	770			770			

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	349	468	0.745	343	2.6	27.754	D
B-A	25	97	0.261	25	0.3	49.125	E
C-AB	141	498	0.283	140	0.4	10.052	B
C-A	734			734			
A-B	10			10			
A-C	942			942			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	349	467	0.747	348	2.8	30.227	D
B-A	25	94	0.268	25	0.3	51.852	F
C-AB	141	498	0.283	141	0.4	10.079	B
C-A	734			734			
A-B	10			10			
A-C	942			942			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	285	530	0.537	291	1.2	15.584	C
B-A	21	178	0.116	22	0.1	23.184	C
C-AB	115	550	0.209	116	0.3	8.297	A
C-A	600			600			
A-B	8			8			
A-C	770			770			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	239	572	0.417	241	0.7	11.017	B
B-A	17	233	0.074	18	0.1	16.749	C
C-AB	96	588	0.164	97	0.2	7.338	A
C-A	502			502			
A-B	7			7			
A-C	644			644			

Appendix 12 – Berkeley Roundabout Modelling

Junctions 9

ARCADY 9 - Roundabout Module

Filename: BERKELEY CIRCLE EXISTING.j9
Path: Z:\Projects\4772 Lincolnshire Lakes\Data\Modelling\A18-Scotter Road-Doncaster Road 5-arm Roundabout
Report generation date: 05/12/2023 15:07:29

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (min)	RFC	LOS	Set ID	Queue (PCU)	Delay (min)	RFC	LOS
	Existing Layout - 2023 Base									
1 - Scotter Road (N)	D1	4.9	0.59	0.84	E	D2	4.7	0.57	0.84	D
2 - Doncaster Road		0.3	0.07	0.24	A		0.6	0.09	0.38	A
3 - Kingsway		0.8	0.09	0.43	A		1.3	0.13	0.56	A
4 - Scotter Road (S)		1.6	0.11	0.60	A		1.3	0.11	0.56	A
5 - A18 West		2.9	0.15	0.74	A		2.7	0.13	0.73	A
	Existing Layout - 2033 Do Nothing									
1 - Scotter Road (N)	D3	20.2	1.99	1.02	F	D4	25.8	2.44	1.05	F
2 - Doncaster Road		0.4	0.08	0.27	A		0.8	0.10	0.44	A
3 - Kingsway		1.0	0.10	0.48	A		1.8	0.18	0.65	B
4 - Scotter Road (S)		2.5	0.16	0.71	A		1.7	0.13	0.63	A
5 - A18 West		4.8	0.23	0.83	B		3.9	0.18	0.80	B
	Existing Layout - 2033 With Development									
1 - Scotter Road (N)	D5	29.0	2.66	1.07	F	D6	41.8	3.59	1.12	F
2 - Doncaster Road		0.4	0.08	0.28	A		0.8	0.11	0.45	A
3 - Kingsway		1.0	0.10	0.48	A		1.9	0.18	0.66	B
4 - Scotter Road (S)		3.4	0.20	0.77	B		1.8	0.14	0.64	A
5 - A18 West		5.8	0.28	0.85	C		4.1	0.18	0.80	B

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

File summary

File Description

Title	Berkeley Circle
Location	Scunthorpe
Site number	
Date	15/03/2015
Version	001
Status	
Identifier	
Client	North Lincolnshire Council
Jobnumber	2064
Enumerator	LTP\Ryand
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (min)	Queue threshold (PCU)
5.75				0.85	0.60	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2023 Base	AM	ONE HOUR	07:30	09:00	15	✓
D2	2023 Base	PM	ONE HOUR	15:45	17:15	15	✓
D3	2033 Do Nothing	AM	ONE HOUR	07:30	09:00	15	✓
D4	2033 Do Nothing	PM	ONE HOUR	15:45	17:15	15	✓
D5	2033 With Development	AM	ONE HOUR	07:30	09:00	15	✓
D6	2033 With Development	PM	ONE HOUR	15:45	17:15	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Existing Layout	✓	100.000	100.000

Existing Layout - 2023 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Doncaster Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Scotter Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	5 - A18 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Pedestrian Crossing	4 - Scotter Road (S) - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	5 - A18 West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (min)	Junction LOS
1	Berkeley Circle	Standard Roundabout		1, 2, 3, 4, 5	0.19	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Scotter Road (N)	
2	Doncaster Road	
3	Kingsway	
4	Scotter Road (S)	
5	A18 West	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Scotter Road (N)	3.36	4.00	8.0	26.5	62.4	21.0	
2 - Doncaster Road	3.80	7.30	58.0	18.5	62.4	36.0	
3 - Kingsway	5.35	7.55	7.5	11.5	62.4	54.0	
4 - Scotter Road (S)	3.00	7.00	34.0	35.6	62.4	25.0	
5 - A18 West	5.40	6.53	43.0	39.7	62.4	20.0	

Pelican/Puffin Crossings

Arm	Space between crossing and junc. entry (Signalised) (PCU)	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)
4 - Scotter Road (S)	1.00	3.00	2.90	1.00	6.00	6.00	7.00
5 - A18 West	1.00	3.00	2.90	1.00	6.00	6.00	7.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Scotter Road (N)	0.474	1223
2 - Doncaster Road	0.586	1990
3 - Kingsway	0.518	1730
4 - Scotter Road (S)	0.581	1859
5 - A18 West	0.621	2067

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2023 Base	AM	ONE HOUR	07:30	09:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotter Road (N)		ONE HOUR	✓	486	100.000
2 - Doncaster Road		ONE HOUR	✓	259	100.000
3 - Kingsway		ONE HOUR	✓	510	100.000
4 - Scotter Road (S)		ONE HOUR	✓	756	100.000
5 - A18 West		ONE HOUR	✓	1093	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - Scotter Road (N)		
2 - Doncaster Road		
3 - Kingsway		
4 - Scotter Road (S)	[ONEHOUR]	0.00
5 - A18 West	[ONEHOUR]	0.00

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	18	184	204	80
	2 - Doncaster Road	17	1	10	70	161
	3 - Kingsway	147	11	0	22	330
	4 - Scotter Road (S)	357	61	40	0	298
	5 - A18 West	76	287	496	227	7

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	13	0	3	1
	2 - Doncaster Road	0	0	0	3	5
	3 - Kingsway	1	0	0	5	5
	4 - Scotter Road (S)	3	9	0	0	6
	5 - A18 West	3	3	2	16	17

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotter Road (N)	0.84	0.59	4.9	E	446	669
2 - Doncaster Road	0.24	0.07	0.3	A	238	356
3 - Kingsway	0.43	0.09	0.8	A	468	702
4 - Scotter Road (S)	0.60	0.11	1.6	A	694	1041
5 - A18 West	0.74	0.15	2.9	A	1003	1504

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	366	91	847		822	0.445	363	448	0.0	0.8	0.132	A
2 - Doncaster Road	195	49	926		1446	0.135	194	283	0.0	0.2	0.050	A
3 - Kingsway	384	96	574		1433	0.268	382	547	0.0	0.4	0.059	A
4 - Scotter Road (S)	569	142	565	0.00	1531	0.372	567	391	0.0	0.6	0.065	A
5 - A18 West	823	206	475	0.00	1772	0.464	819	657	0.0	0.9	0.066	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	437	109	1014		742	0.589	434	536	0.8	1.4	0.197	B
2 - Doncaster Road	233	58	1109		1339	0.174	233	339	0.2	0.2	0.056	A
3 - Kingsway	458	115	687		1374	0.334	458	654	0.4	0.5	0.068	A
4 - Scotter Road (S)	680	170	677	0.00	1466	0.464	679	469	0.6	0.9	0.079	A
5 - A18 West	983	246	569	0.00	1714	0.573	981	786	0.9	1.4	0.086	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	535	134	1238		636	0.841	523	655	1.4	4.5	0.495	D
2 - Doncaster Road	285	71	1347		1200	0.238	285	414	0.2	0.3	0.068	A
3 - Kingsway	562	140	836		1297	0.433	560	796	0.5	0.8	0.084	A
4 - Scotter Road (S)	832	208	827	0.00	1379	0.604	830	569	0.9	1.6	0.114	A
5 - A18 West	1203	301	696	0.00	1635	0.736	1198	960	1.4	2.8	0.142	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	535	134	1244		633	0.845	533	657	4.5	4.9	0.588	E
2 - Doncaster Road	285	71	1361		1192	0.239	285	416	0.3	0.3	0.069	A
3 - Kingsway	562	140	843		1293	0.434	561	803	0.8	0.8	0.085	A
4 - Scotter Road (S)	832	208	830	0.00	1377	0.604	832	575	1.6	1.6	0.115	A
5 - A18 West	1203	301	698	0.00	1634	0.737	1203	964	2.8	2.9	0.146	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	437	109	1022		739	0.591	451	539	4.9	1.5	0.221	B
2 - Doncaster Road	233	58	1130		1327	0.175	233	342	0.3	0.2	0.057	A
3 - Kingsway	458	115	699		1368	0.335	460	664	0.8	0.5	0.069	A
4 - Scotter Road (S)	680	170	681	0.00	1463	0.464	682	477	1.6	0.9	0.081	A
5 - A18 West	983	246	572	0.00	1712	0.574	988	792	2.9	1.4	0.088	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	366	91	853		819	0.447	369	450	1.5	0.8	0.137	A
2 - Doncaster Road	195	49	936		1441	0.135	195	285	0.2	0.2	0.050	A
3 - Kingsway	384	96	580		1430	0.269	385	552	0.5	0.4	0.060	A
4 - Scotter Road (S)	569	142	569	0.00	1529	0.372	570	395	0.9	0.6	0.065	A
5 - A18 West	823	206	478	0.00	1770	0.465	825	661	1.4	0.9	0.067	A

Existing Layout - 2023 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Doncaster Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Scotter Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	5 - A18 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Pedestrian Crossing	4 - Scotter Road (S) - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	5 - A18 West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (min)	Junction LOS
1	Berkeley Circle	Standard Roundabout		1, 2, 3, 4, 5	0.19	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2023 Base	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotter Road (N)		ONE HOUR	✓	476	100.000
2 - Doncaster Road		ONE HOUR	✓	389	100.000
3 - Kingsway		ONE HOUR	✓	541	100.000
4 - Scotter Road (S)		ONE HOUR	✓	655	100.000
5 - A18 West		ONE HOUR	✓	1137	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - Scotter Road (N)		
2 - Doncaster Road		
3 - Kingsway		
4 - Scotter Road (S)	[ONEHOUR]	0.00
5 - A18 West	[ONEHOUR]	0.00

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	8	155	229	84
	2 - Doncaster Road	27	1	9	76	276
	3 - Kingsway	113	4	1	28	395
	4 - Scotter Road (S)	250	58	43	5	299
	5 - A18 West	104	223	324	479	7

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	0	0	3	0
	2 - Doncaster Road	8	0	0	0	2
	3 - Kingsway	2	33	0	0	3
	4 - Scotter Road (S)	2	2	2	0	3
	5 - A18 West	2	2	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotter Road (N)	0.84	0.57	4.7	D	437	655
2 - Doncaster Road	0.38	0.09	0.6	A	357	535
3 - Kingsway	0.56	0.13	1.3	A	496	745
4 - Scotter Road (S)	0.56	0.11	1.3	A	601	902
5 - A18 West	0.73	0.13	2.7	A	1043	1565

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	358	90	858		816	0.439	355	370	0.0	0.8	0.131	A
2 - Doncaster Road	293	73	993		1407	0.208	292	220	0.0	0.3	0.055	A
3 - Kingsway	407	102	887		1271	0.321	405	398	0.0	0.5	0.071	A
4 - Scotter Road (S)	493	123	680	0.00	1464	0.337	491	612	0.0	0.5	0.063	A
5 - A18 West	856	214	376	0.00	1833	0.467	852	795	0.0	0.9	0.062	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	428	107	1027		736	0.581	426	443	0.8	1.4	0.195	B
2 - Doncaster Road	350	87	1189		1292	0.271	349	264	0.3	0.4	0.065	A
3 - Kingsway	486	122	1062		1180	0.412	485	477	0.5	0.7	0.089	A
4 - Scotter Road (S)	589	147	815	0.00	1386	0.425	588	732	0.5	0.8	0.077	A
5 - A18 West	1022	256	451	0.00	1787	0.572	1020	952	0.9	1.4	0.080	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	524	131	1256		628	0.835	512	542	1.4	4.3	0.486	D
2 - Doncaster Road	428	107	1446		1142	0.375	427	322	0.4	0.6	0.086	A
3 - Kingsway	596	149	1293		1060	0.562	593	580	0.7	1.3	0.131	A
4 - Scotter Road (S)	721	180	995	0.00	1281	0.563	719	891	0.8	1.3	0.109	A
5 - A18 West	1252	313	551	0.00	1725	0.726	1247	1163	1.4	2.6	0.127	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	524	131	1261		625	0.838	522	544	4.3	4.7	0.571	D
2 - Doncaster Road	428	107	1459		1134	0.378	428	324	0.6	0.6	0.087	A
3 - Kingsway	596	149	1302		1055	0.564	596	585	1.3	1.3	0.134	A
4 - Scotter Road (S)	721	180	999	0.00	1279	0.564	721	899	1.3	1.3	0.110	A
5 - A18 West	1252	313	553	0.00	1724	0.726	1252	1168	2.6	2.7	0.130	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	428	107	1034		733	0.584	441	446	4.7	1.5	0.217	B
2 - Doncaster Road	350	87	1209		1280	0.273	351	266	0.6	0.4	0.066	A
3 - Kingsway	486	122	1076		1173	0.415	489	484	1.3	0.7	0.091	A
4 - Scotter Road (S)	589	147	822	0.00	1382	0.426	591	743	1.3	0.8	0.078	A
5 - A18 West	1022	256	453	0.00	1786	0.572	1027	959	2.7	1.4	0.082	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	358	90	864		813	0.441	361	373	1.5	0.8	0.135	A
2 - Doncaster Road	293	73	1003		1401	0.209	293	222	0.4	0.3	0.055	A
3 - Kingsway	407	102	894		1267	0.322	408	402	0.7	0.5	0.072	A
4 - Scotter Road (S)	493	123	685	0.00	1461	0.338	494	617	0.8	0.5	0.064	A
5 - A18 West	856	214	379	0.00	1832	0.467	858	801	1.4	0.9	0.063	A

Existing Layout - 2033 Do Nothing, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Doncaster Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Scotter Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	5 - A18 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Pedestrian Crossing	4 - Scotter Road (S) - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	5 - A18 West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (min)	Junction LOS
1	Berkeley Circle	Standard Roundabout		1, 2, 3, 4, 5	0.46	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2033 Do Nothing	AM	ONE HOUR	07:30	09:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotter Road (N)		ONE HOUR	✓	543	100.000
2 - Doncaster Road		ONE HOUR	✓	281	100.000
3 - Kingsway		ONE HOUR	✓	548	100.000
4 - Scotter Road (S)		ONE HOUR	✓	865	100.000
5 - A18 West		ONE HOUR	✓	1180	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - Scotter Road (N)		
2 - Doncaster Road		
3 - Kingsway		
4 - Scotter Road (S)	[ONEHOUR]	0.00
5 - A18 West	[ONEHOUR]	0.00

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	19	198	240	86
	2 - Doncaster Road	18	1	11	78	173
	3 - Kingsway	158	12	0	24	354
	4 - Scotter Road (S)	422	70	43	0	330
	5 - A18 West	82	309	533	249	7

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	12	0	2	1
	2 - Doncaster Road	0	0	0	3	5
	3 - Kingsway	1	0	0	4	5
	4 - Scotter Road (S)	3	8	0	0	6
	5 - A18 West	3	3	2	16	17

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotter Road (N)	1.02	1.99	20.2	F	498	747
2 - Doncaster Road	0.27	0.08	0.4	A	258	387
3 - Kingsway	0.48	0.10	1.0	A	503	754
4 - Scotter Road (S)	0.71	0.16	2.5	A	794	1191
5 - A18 West	0.83	0.23	4.8	B	1083	1624

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	409	102	917		788	0.519	405	510	0.0	1.1	0.157	A
2 - Doncaster Road	212	53	1014		1395	0.152	211	308	0.0	0.2	0.053	A
3 - Kingsway	413	103	637		1400	0.295	411	587	0.0	0.4	0.063	A
4 - Scotter Road (S)	651	163	606	0.00	1507	0.432	648	442	0.0	0.8	0.073	A
5 - A18 West	888	222	543	0.00	1730	0.513	884	712	0.0	1.1	0.074	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	488	122	1097		703	0.695	484	610	1.1	2.2	0.272	C
2 - Doncaster Road	253	63	1213		1279	0.198	252	368	0.2	0.3	0.061	A
3 - Kingsway	493	123	762		1335	0.369	492	703	0.4	0.6	0.074	A
4 - Scotter Road (S)	778	194	726	0.00	1438	0.541	776	529	0.8	1.2	0.094	A
5 - A18 West	1061	265	650	0.00	1664	0.638	1058	852	1.1	1.8	0.104	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	598	149	1337		589	1.014	554	745	2.2	13.2	1.124	F
2 - Doncaster Road	309	77	1443		1144	0.271	309	448	0.3	0.4	0.075	A
3 - Kingsway	603	151	909		1259	0.479	602	843	0.6	0.9	0.094	A
4 - Scotter Road (S)	952	238	882	0.00	1347	0.707	947	629	1.2	2.4	0.155	A
5 - A18 West	1299	325	794	0.00	1574	0.825	1288	1036	1.8	4.6	0.212	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	598	149	1347		584	1.023	570	749	13.2	20.2	1.990	F
2 - Doncaster Road	309	77	1465		1130	0.274	309	451	0.4	0.4	0.076	A
3 - Kingsway	603	151	921		1253	0.482	603	854	0.9	1.0	0.096	A
4 - Scotter Road (S)	952	238	886	0.00	1344	0.708	952	638	2.4	2.5	0.159	A
5 - A18 West	1299	325	797	0.00	1572	0.826	1298	1041	4.6	4.8	0.229	B

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	488	122	1112		696	0.701	559	615	20.2	2.6	0.631	E
2 - Doncaster Road	253	63	1295		1230	0.205	253	375	0.4	0.3	0.064	A
3 - Kingsway	493	123	811		1310	0.376	494	737	1.0	0.6	0.076	A
4 - Scotter Road (S)	778	194	740	0.00	1429	0.544	783	565	2.5	1.3	0.098	A
5 - A18 West	1061	265	654	0.00	1661	0.639	1072	868	4.8	1.9	0.109	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	409	102	925		785	0.521	415	513	2.6	1.1	0.167	B
2 - Doncaster Road	212	53	1029		1386	0.153	212	311	0.3	0.2	0.053	A
3 - Kingsway	413	103	646		1395	0.296	413	595	0.6	0.4	0.063	A
4 - Scotter Road (S)	651	163	611	0.00	1504	0.433	653	448	1.3	0.8	0.074	A
5 - A18 West	888	222	546	0.00	1728	0.514	891	718	1.9	1.1	0.076	A

Existing Layout - 2033 Do Nothing, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Doncaster Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Scotter Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	5 - A18 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Pedestrian Crossing	4 - Scotter Road (S) - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	5 - A18 West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (min)	Junction LOS
1	Berkeley Circle	Standard Roundabout		1, 2, 3, 4, 5	0.52	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2033 Do Nothing	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotter Road (N)		ONE HOUR	✓	551	100.000
2 - Doncaster Road		ONE HOUR	✓	425	100.000
3 - Kingsway		ONE HOUR	✓	580	100.000
4 - Scotter Road (S)		ONE HOUR	✓	710	100.000
5 - A18 West		ONE HOUR	✓	1229	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - Scotter Road (N)		
2 - Doncaster Road		
3 - Kingsway		
4 - Scotter Road (S)	[ONEHOUR]	0.00
5 - A18 West	[ONEHOUR]	0.00

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	9	166	286	90
	2 - Doncaster Road	29	1	10	89	296
	3 - Kingsway	121	4	1	30	424
	4 - Scotter Road (S)	274	64	46	5	321
	5 - A18 West	111	239	348	523	8

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	0	0	3	0
	2 - Doncaster Road	7	0	0	0	2
	3 - Kingsway	2	33	0	0	3
	4 - Scotter Road (S)	1	2	2	0	3
	5 - A18 West	2	2	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotter Road (N)	1.05	2.44	25.8	F	506	758
2 - Doncaster Road	0.44	0.10	0.8	A	390	585
3 - Kingsway	0.65	0.18	1.8	B	532	798
4 - Scotter Road (S)	0.63	0.13	1.7	A	652	977
5 - A18 West	0.80	0.18	3.9	B	1128	1692

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	415	104	929		783	0.530	410	401	0.0	1.1	0.162	A
2 - Doncaster Road	320	80	1101		1344	0.238	319	238	0.0	0.3	0.060	A
3 - Kingsway	437	109	993		1216	0.359	434	427	0.0	0.6	0.079	A
4 - Scotter Road (S)	535	134	729	0.00	1435	0.372	532	698	0.0	0.6	0.068	A
5 - A18 West	925	231	408	0.00	1814	0.510	921	853	0.0	1.1	0.069	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	495	124	1111		696	0.712	490	480	1.1	2.4	0.289	C
2 - Doncaster Road	382	96	1317		1217	0.314	381	284	0.3	0.5	0.073	A
3 - Kingsway	521	130	1188		1115	0.468	520	511	0.6	0.9	0.104	A
4 - Scotter Road (S)	638	160	873	0.00	1352	0.472	637	835	0.6	0.9	0.086	A
5 - A18 West	1105	276	489	0.00	1764	0.627	1102	1021	1.1	1.7	0.093	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	607	152	1356		580	1.046	552	586	2.4	16.0	1.297	F
2 - Doncaster Road	468	117	1562		1074	0.436	467	346	0.5	0.8	0.100	A
3 - Kingsway	639	160	1419		995	0.642	635	610	0.9	1.8	0.170	B
4 - Scotter Road (S)	782	195	1059	0.00	1244	0.628	779	995	0.9	1.7	0.131	A
5 - A18 West	1353	338	597	0.00	1696	0.798	1345	1240	1.7	3.8	0.171	B

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	607	152	1364		576	1.052	567	589	16.0	25.8	2.435	F
2 - Doncaster Road	468	117	1583		1062	0.441	468	348	0.8	0.8	0.103	A
3 - Kingsway	639	160	1434		987	0.647	638	617	1.8	1.8	0.177	B
4 - Scotter Road (S)	782	195	1066	0.00	1240	0.630	782	1007	1.7	1.7	0.133	A
5 - A18 West	1353	338	600	0.00	1695	0.799	1353	1247	3.8	3.9	0.179	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	495	124	1122		691	0.717	587	484	25.8	2.9	0.924	F
2 - Doncaster Road	382	96	1421		1156	0.330	383	288	0.8	0.5	0.079	A
3 - Kingsway	521	130	1261		1077	0.484	525	544	1.8	1.0	0.112	A
4 - Scotter Road (S)	638	160	895	0.00	1339	0.477	641	891	1.7	0.9	0.088	A
5 - A18 West	1105	276	492	0.00	1761	0.627	1114	1044	3.9	1.8	0.096	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	415	104	935		780	0.532	422	404	2.9	1.2	0.173	B
2 - Doncaster Road	320	80	1118		1334	0.240	321	239	0.5	0.3	0.060	A
3 - Kingsway	437	109	1006		1209	0.361	438	433	1.0	0.6	0.080	A
4 - Scotter Road (S)	535	134	736	0.00	1431	0.373	536	707	0.9	0.6	0.068	A
5 - A18 West	925	231	411	0.00	1812	0.511	928	861	1.8	1.1	0.070	A

Existing Layout - 2033 With Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Doncaster Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Scotter Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	5 - A18 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Pedestrian Crossing	4 - Scotter Road (S) - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	5 - A18 West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (min)	Junction LOS
1	Berkeley Circle	Standard Roundabout		1, 2, 3, 4, 5	0.59	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2033 With Development	AM	ONE HOUR	07:30	09:00	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotter Road (N)		ONE HOUR	✓	559	100.000
2 - Doncaster Road		ONE HOUR	✓	285	100.000
3 - Kingsway		ONE HOUR	✓	548	100.000
4 - Scotter Road (S)		ONE HOUR	✓	945	100.000
5 - A18 West		ONE HOUR	✓	1183	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - Scotter Road (N)		
2 - Doncaster Road		
3 - Kingsway		
4 - Scotter Road (S)	[ONEHOUR]	0.00
5 - A18 West	[ONEHOUR]	0.00

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	19	198	256	86
	2 - Doncaster Road	18	1	11	82	173
	3 - Kingsway	158	12	0	24	354
	4 - Scotter Road (S)	479	84	43	0	339
	5 - A18 West	82	309	533	252	7

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	12	0	2	1
	2 - Doncaster Road	0	0	4	5	1
	3 - Kingsway	1	0	0	4	5
	4 - Scotter Road (S)	3	8	0	0	6
	5 - A18 West	3	3	2	16	17

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotter Road (N)	1.07	2.66	29.0	F	513	769
2 - Doncaster Road	0.28	0.08	0.4	A	262	392
3 - Kingsway	0.48	0.10	1.0	A	503	754
4 - Scotter Road (S)	0.77	0.20	3.4	B	867	1301
5 - A18 West	0.85	0.28	5.8	C	1086	1628

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	421	105	929		782	0.538	416	552	0.0	1.2	0.164	A
2 - Doncaster Road	215	54	1027		1387	0.155	214	318	0.0	0.2	0.052	A
3 - Kingsway	413	103	654		1391	0.297	411	587	0.0	0.4	0.063	A
4 - Scotter Road (S)	711	178	606	0.00	1507	0.472	708	459	0.0	0.9	0.078	A
5 - A18 West	891	223	596	0.00	1697	0.525	886	718	0.0	1.1	0.077	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	503	126	1112		696	0.722	497	661	1.2	2.5	0.299	C
2 - Doncaster Road	256	64	1229		1269	0.202	256	381	0.2	0.3	0.060	A
3 - Kingsway	493	123	782		1325	0.372	492	702	0.4	0.6	0.075	A
4 - Scotter Road (S)	850	212	726	0.00	1438	0.591	847	549	0.9	1.5	0.106	A
5 - A18 West	1063	266	713	0.00	1624	0.655	1060	860	1.1	2.0	0.111	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	615	154	1352		582	1.058	556	806	2.5	17.3	1.366	F
2 - Doncaster Road	314	78	1447		1141	0.275	313	462	0.3	0.4	0.074	A
3 - Kingsway	603	151	924		1252	0.482	602	837	0.6	1.0	0.096	A
4 - Scotter Road (S)	1040	260	880	0.00	1348	0.772	1033	646	1.5	3.3	0.194	B
5 - A18 West	1303	326	870	0.00	1527	0.853	1288	1043	2.0	5.5	0.251	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	615	154	1365		576	1.069	568	811	17.3	29.0	2.657	F
2 - Doncaster Road	314	78	1468		1129	0.278	314	466	0.4	0.4	0.075	A
3 - Kingsway	603	151	934		1246	0.484	603	847	1.0	1.0	0.097	A
4 - Scotter Road (S)	1040	260	883	0.00	1346	0.773	1040	654	3.3	3.4	0.204	B
5 - A18 West	1303	326	875	0.00	1524	0.855	1301	1048	5.5	5.8	0.279	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	503	126	1131		687	0.731	606	668	29.0	3.2	1.174	F
2 - Doncaster Road	256	64	1346		1200	0.213	257	390	0.4	0.3	0.065	A
3 - Kingsway	493	123	854		1288	0.383	494	749	1.0	0.6	0.078	A
4 - Scotter Road (S)	850	212	745	0.00	1427	0.596	857	603	3.4	1.6	0.111	A
5 - A18 West	1063	266	720	0.00	1620	0.656	1079	882	5.8	2.1	0.120	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	421	105	938		778	0.541	429	557	3.2	1.2	0.178	B
2 - Doncaster Road	215	54	1045		1377	0.156	215	321	0.3	0.2	0.053	A
3 - Kingsway	413	103	665		1386	0.298	413	595	0.6	0.4	0.064	A
4 - Scotter Road (S)	711	178	611	0.00	1504	0.473	714	467	1.6	0.9	0.079	A
5 - A18 West	891	223	600	0.00	1694	0.526	894	725	2.1	1.2	0.079	A

Existing Layout - 2033 With Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	2 - Doncaster Road - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	4 - Scotter Road (S) - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	5 - A18 West - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Pedestrian Crossing	4 - Scotter Road (S) - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	5 - A18 West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (min)	Junction LOS
1	Berkeley Circle	Standard Roundabout		1, 2, 3, 4, 5	0.73	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2033 With Development	PM	ONE HOUR	15:45	17:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotter Road (N)		ONE HOUR	✓	584	100.000
2 - Doncaster Road		ONE HOUR	✓	433	100.000
3 - Kingsway		ONE HOUR	✓	580	100.000
4 - Scotter Road (S)		ONE HOUR	✓	718	100.000
5 - A18 West		ONE HOUR	✓	1234	100.000

Demand overview (Pedestrians)

Arm	Profile type	Average pedestrian flow (Ped/hr)
1 - Scotter Road (N)		
2 - Doncaster Road		
3 - Kingsway		
4 - Scotter Road (S)	[ONEHOUR]	0.00
5 - A18 West	[ONEHOUR]	0.00

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	9	166	319	90
	2 - Doncaster Road	29	1	10	97	296
	3 - Kingsway	121	4	1	30	424
	4 - Scotter Road (S)	280	65	46	5	322
	5 - A18 West	111	239	348	528	8

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotter Road (N)	2 - Doncaster Road	3 - Kingsway	4 - Scotter Road (S)	5 - A18 West
From	1 - Scotter Road (N)	0	0	0	3	0
	2 - Doncaster Road	7	0	0	0	2
	3 - Kingsway	2	33	0	0	3
	4 - Scotter Road (S)	1	2	2	0	3
	5 - A18 West	2	2	4	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (min)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotter Road (N)	1.12	3.59	41.8	F	536	804
2 - Doncaster Road	0.45	0.11	0.8	A	397	596
3 - Kingsway	0.66	0.18	1.9	B	532	798
4 - Scotter Road (S)	0.64	0.14	1.8	A	659	988
5 - A18 West	0.80	0.18	4.1	B	1132	1699

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	440	110	933		781	0.563	435	405	0.0	1.3	0.174	B
2 - Doncaster Road	326	81	1129		1327	0.246	325	238	0.0	0.3	0.061	A
3 - Kingsway	437	109	1027		1198	0.364	434	427	0.0	0.6	0.081	A
4 - Scotter Road (S)	541	135	729	0.00	1436	0.377	538	732	0.0	0.6	0.068	A
5 - A18 West	929	232	414	0.00	1810	0.513	925	854	0.0	1.1	0.069	A

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	525	131	1117		694	0.757	518	485	1.3	2.9	0.336	C
2 - Doncaster Road	389	97	1350		1198	0.325	389	285	0.3	0.5	0.075	A
3 - Kingsway	521	130	1228		1094	0.477	520	511	0.6	0.9	0.107	A
4 - Scotter Road (S)	645	161	873	0.00	1352	0.477	644	875	0.6	0.9	0.086	A
5 - A18 West	1109	277	495	0.00	1760	0.630	1107	1022	1.1	1.7	0.094	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	643	161	1362		577	1.114	560	593	2.9	23.6	1.723	F
2 - Doncaster Road	477	119	1576		1066	0.447	475	347	0.5	0.8	0.103	A
3 - Kingsway	639	160	1449		980	0.652	635	602	0.9	1.9	0.177	B
4 - Scotter Road (S)	791	198	1055	0.00	1246	0.634	787	1028	0.9	1.7	0.132	A
5 - A18 West	1359	340	605	0.00	1691	0.803	1350	1237	1.7	4.0	0.176	B

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	643	161	1370		573	1.121	570	596	23.6	41.8	3.594	F
2 - Doncaster Road	477	119	1591		1057	0.451	477	349	0.8	0.8	0.105	A
3 - Kingsway	639	160	1460		973	0.656	638	608	1.9	1.9	0.184	B
4 - Scotter Road (S)	791	198	1061	0.00	1243	0.636	790	1038	1.7	1.8	0.135	A
5 - A18 West	1359	340	608	0.00	1690	0.804	1358	1244	4.0	4.1	0.185	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	525	131	1128		688	0.763	672	489	41.8	5.2	2.250	F
2 - Doncaster Road	389	97	1509		1105	0.352	390	290	0.8	0.6	0.086	A
3 - Kingsway	521	130	1342		1035	0.504	525	558	1.9	1.1	0.122	A
4 - Scotter Road (S)	645	161	902	0.00	1335	0.483	649	964	1.8	1.0	0.090	A
5 - A18 West	1109	277	499	0.00	1757	0.631	1119	1052	4.1	1.8	0.098	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Pedestrian demand (Ped/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (min)	Unsignalised level of service
1 - Scotter Road (N)	440	110	940		777	0.566	455	409	5.2	1.4	0.198	B
2 - Doncaster Road	326	81	1155		1313	0.248	327	240	0.6	0.3	0.062	A
3 - Kingsway	437	109	1047		1188	0.368	438	435	1.1	0.6	0.083	A
4 - Scotter Road (S)	541	135	738	0.00	1430	0.378	542	747	1.0	0.6	0.069	A
5 - A18 West	929	232	417	0.00	1808	0.514	932	863	1.8	1.1	0.070	A

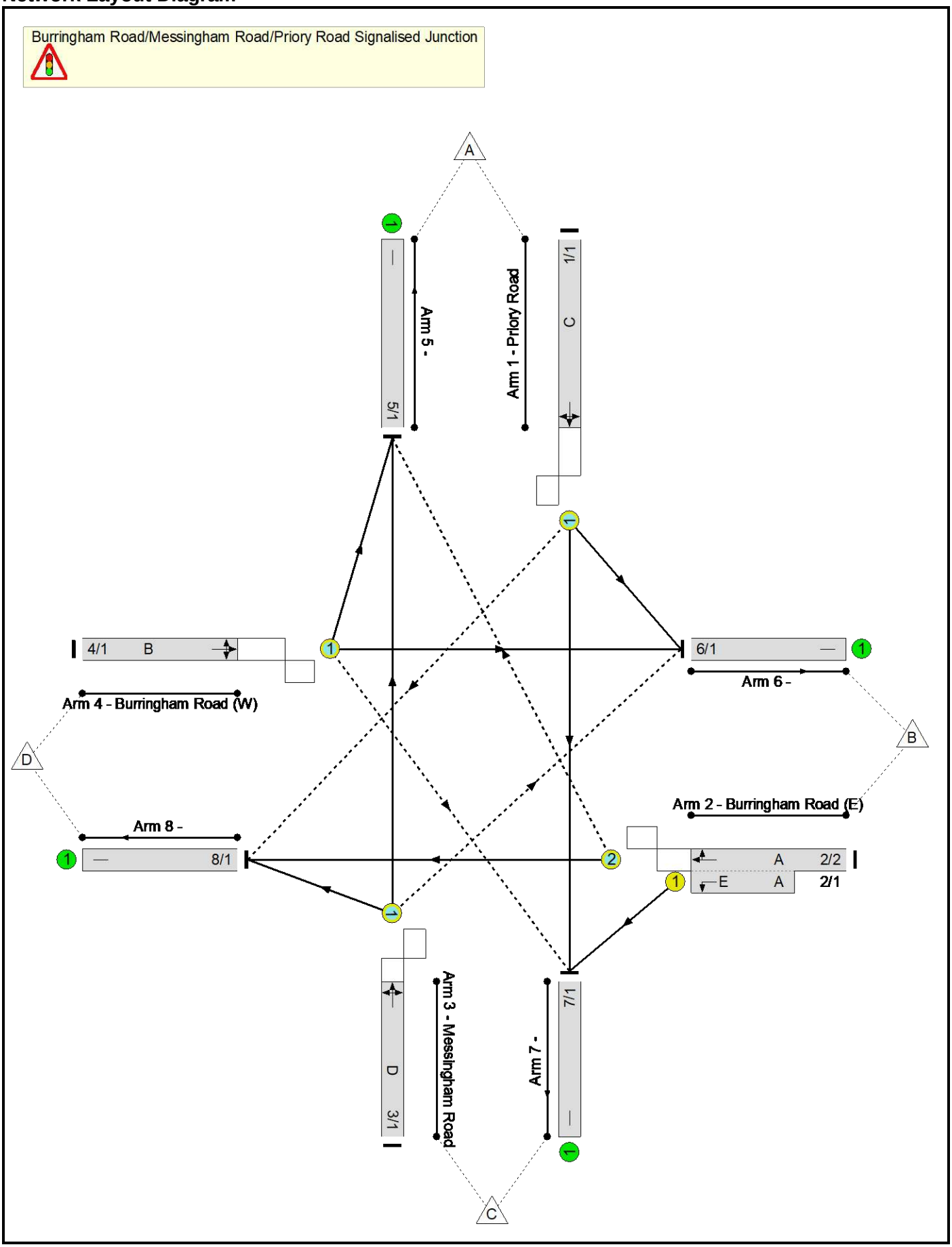
Appendix 13 – Burringham Road/Messingham Road Modelling

LTP LinSig Output

User and Project Details

Project:	**4772 Lincolnshire Lakes**
Title:	**Burringham Road/Messingham Road/Priory Road Signalised Junction**
Location:	Burringham Road/Messingham Road/Priory Road Signalised Junction, Scunthorpe
Design Layout Ref:	Existing Junction Layout
Additional detail:	
File name:	Burringham Road_Messingham Road_Priory Road Signalised Junction.lsg3x
Author:	RC
Company:	Local Transport Projects Ltd
Address:	

Network Layout Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Filter	A	7	2
F	Dummy		7	7
G	Dummy		7	7
H	Dummy		7	7
I	Dummy		7	7

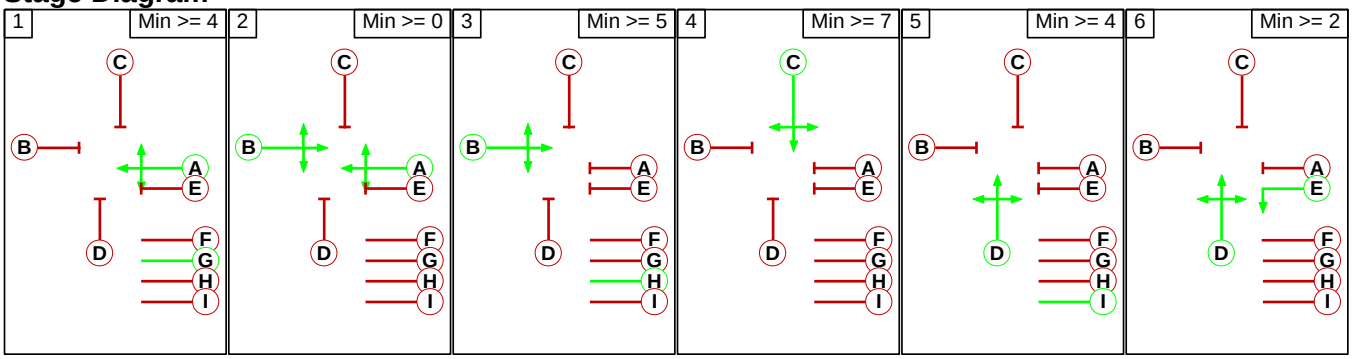
Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I
A		-	5	5	-	3	-	3	3
B	-		5	5	10	3	3	-	3
C	6	5		6	6	3	3	3	3
D	5	5	5		-	3	3	3	-
E	-	0	0	-		3	3	3	3
F	2	2	2	2	2		3	3	3
G	-	2	2	2	2	2		3	3
H	2	-	2	2	2	2	2		3
I	2	2	2	-	2	2	2	2	

Phases in Stage

Stage No.	Phases in Stage
1	A G
2	A B
3	B H
4	C
5	D I
6	D E

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage					
		1	2	3	4	5	6
From Stage	1		2	3	5	5	5
	2	3		3	5	5	10
	3	3	2		5	5	10
	4	6	6	5		6	6
	5	5	5	5	5		2
	6	8	5	X	X	X	

Give-Way Lane Input Data

Junction: Burringham Road/Messingham Road/Priory Road Signalised Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Priory Road)	8/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 6/1 (Right)	5.27	2.00	0.50	5	2.00
2/2 (Burringham Road (E))	5/1 (Right)	1439	0	4/1	1.09	To 5/1 (Left) To 6/1 (Ahead)	4.35	2.00	0.50	4	2.00
3/1 (Messingham Road)	6/1 (Right)	1439	0	1/1	1.09	To 6/1 (Left) To 7/1 (Ahead)	3.57	2.00	0.50	4	2.00
4/1 (Burringham Road (W))	7/1 (Right)	1439	0	2/2	1.09	All	5.23	2.00	0.50	5	2.00

Lane Input Data

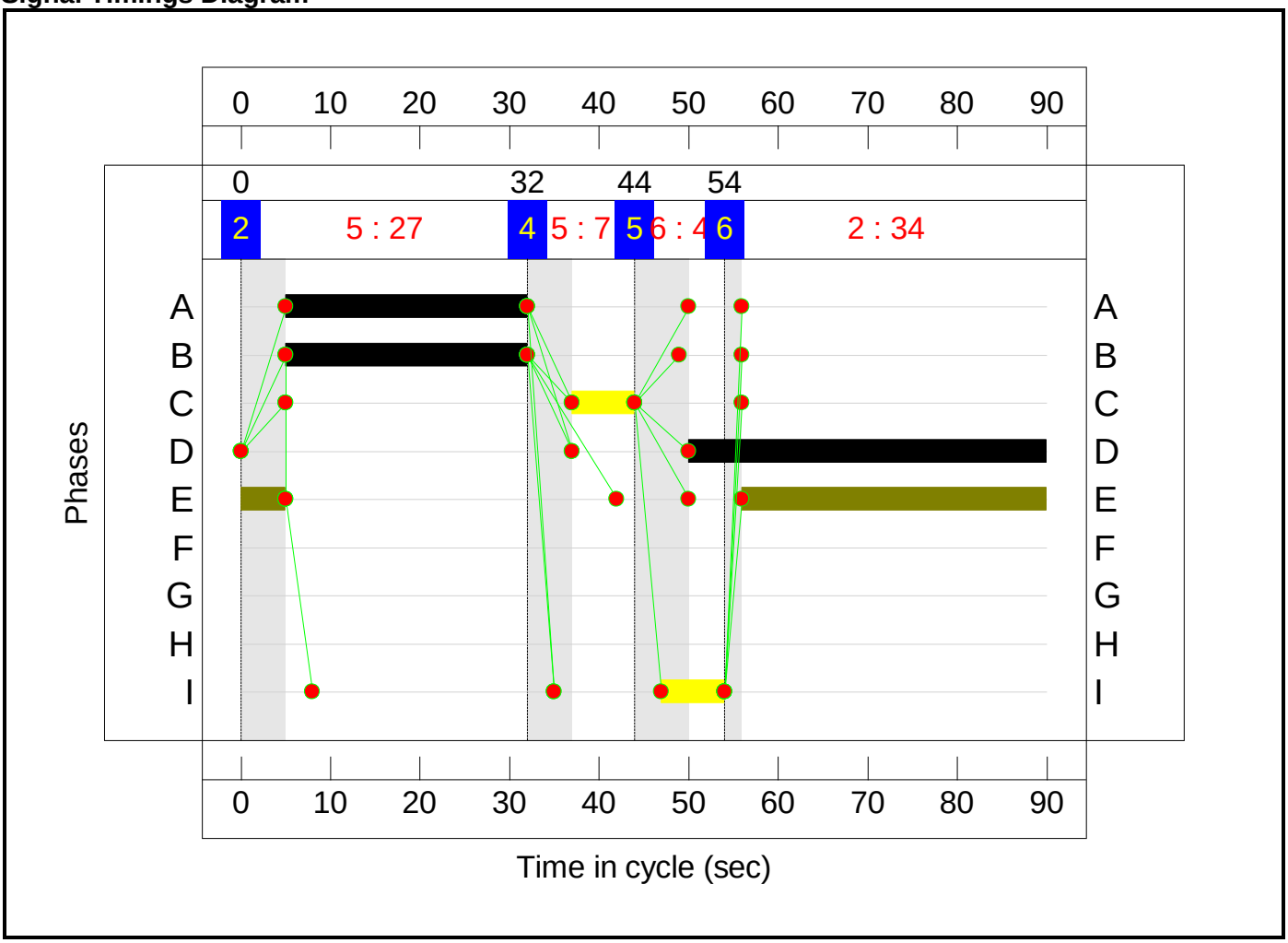
Junction: Burringham Road/Messingham Road/Priory Road Signalised Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Priory Road)	O	C	2	3	60.0	Geom	-	2.58	0.00	Y	Arm 6 Left	Inf
											Arm 7 Ahead	Inf
											Arm 8 Right	Inf
2/1 (Burringham Road (E))	U	A E	2	3	7.0	User	1800	-	-	-	-	-
2/2 (Burringham Road (E))	O	A	2	3	60.0	User	1800	-	-	-	-	-
3/1 (Messingham Road)	O	D	2	3	60.0	User	1842	-	-	-	-	-
4/1 (Burringham Road (W))	O	B	2	3	60.0	User	1801	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2023 Base AM'	08:00	09:00	01:00	
2: '2023 Base PM'	15:30	16:30	01:00	
3: '2033 Do Nothing AM'	08:00	09:00	01:00	
4: '2033 Do Nothing PM'	15:30	16:30	01:00	
5: '2033 With Development AM'	08:00	09:00	01:00	
6: '2033 With Development PM'	15:30	16:30	01:00	

Scenario 1: '2023 Base AM' (FG1: '2023 Base AM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

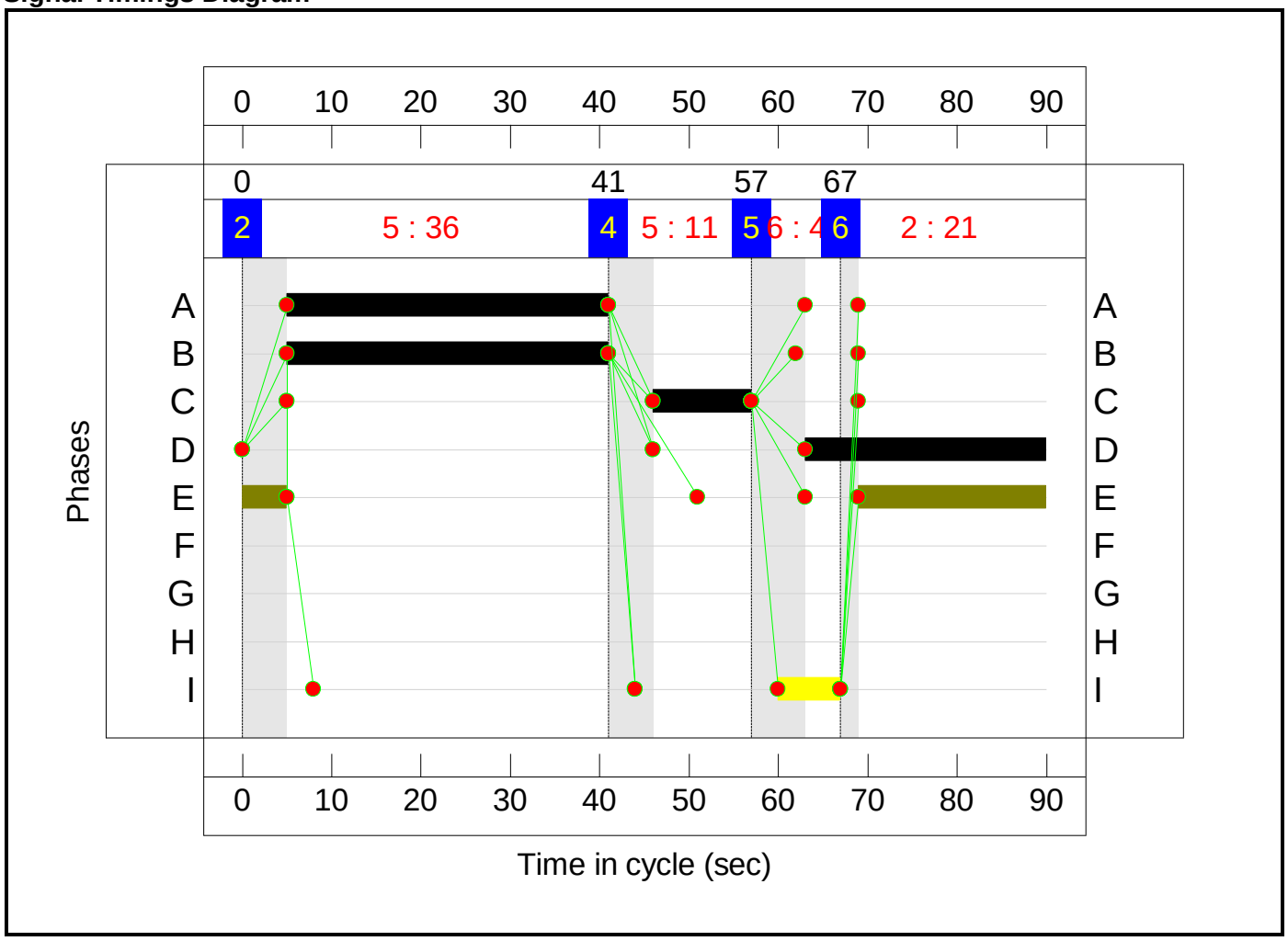
Origin	Destination					
		A	B	C	D	Tot.
	A	0	17	70	8	95
	B	11	0	205	161	377
	C	247	260	0	68	575
	D	5	303	47	0	355
	Tot.	263	580	322	237	1402

Lane Saturation Flows

Junction: Burringham Road/Messingham Road/Priory Road Signalised Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Priory Road)	2.58	0.00	Y	Arm 6 Left	Inf	17.9 %	1873	1873
				Arm 7 Ahead	Inf	73.7 %		
				Arm 8 Right	Inf	8.4 %		
2/1 (Burringham Road (E) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Burringham Road (E) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Messingham Road Lane 1)	This lane uses a directly entered Saturation Flow						1842	1842
4/1 (Burringham Road (W) Lane 1)	This lane uses a directly entered Saturation Flow						1801	1801
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2023 Base PM' (FG2: '2023 Base PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	17	152	8	177
	B	7	0	337	343	687
	C	135	202	0	68	405
	D	25	267	58	0	350
	Tot.	167	486	547	419	1619

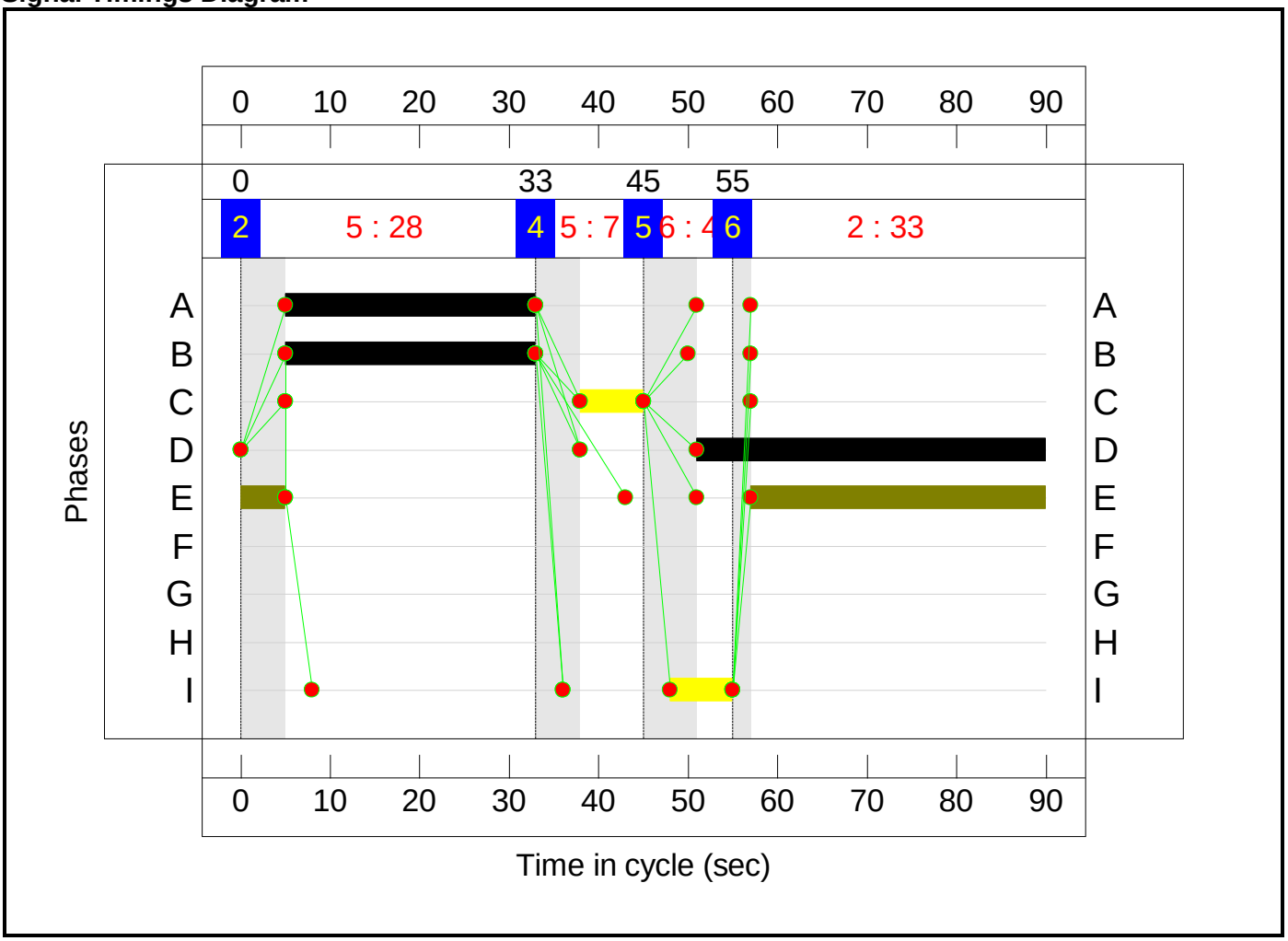
Lane Saturation Flows

Junction: Burringham Road/Messingham Road/Priory Road Signalised Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Priory Road)	2.58	0.00	Y	Arm 6 Left	Inf	9.6 %	1873	1873
				Arm 7 Ahead	Inf	85.9 %		
				Arm 8 Right	Inf	4.5 %		
2/1 (Burringham Road (E) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Burringham Road (E) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Messingham Road Lane 1)	This lane uses a directly entered Saturation Flow						1842	1842
4/1 (Burringham Road (W) Lane 1)	This lane uses a directly entered Saturation Flow						1801	1801
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2033 Do Nothing AM' (FG3: '2033 Do Nothing AM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

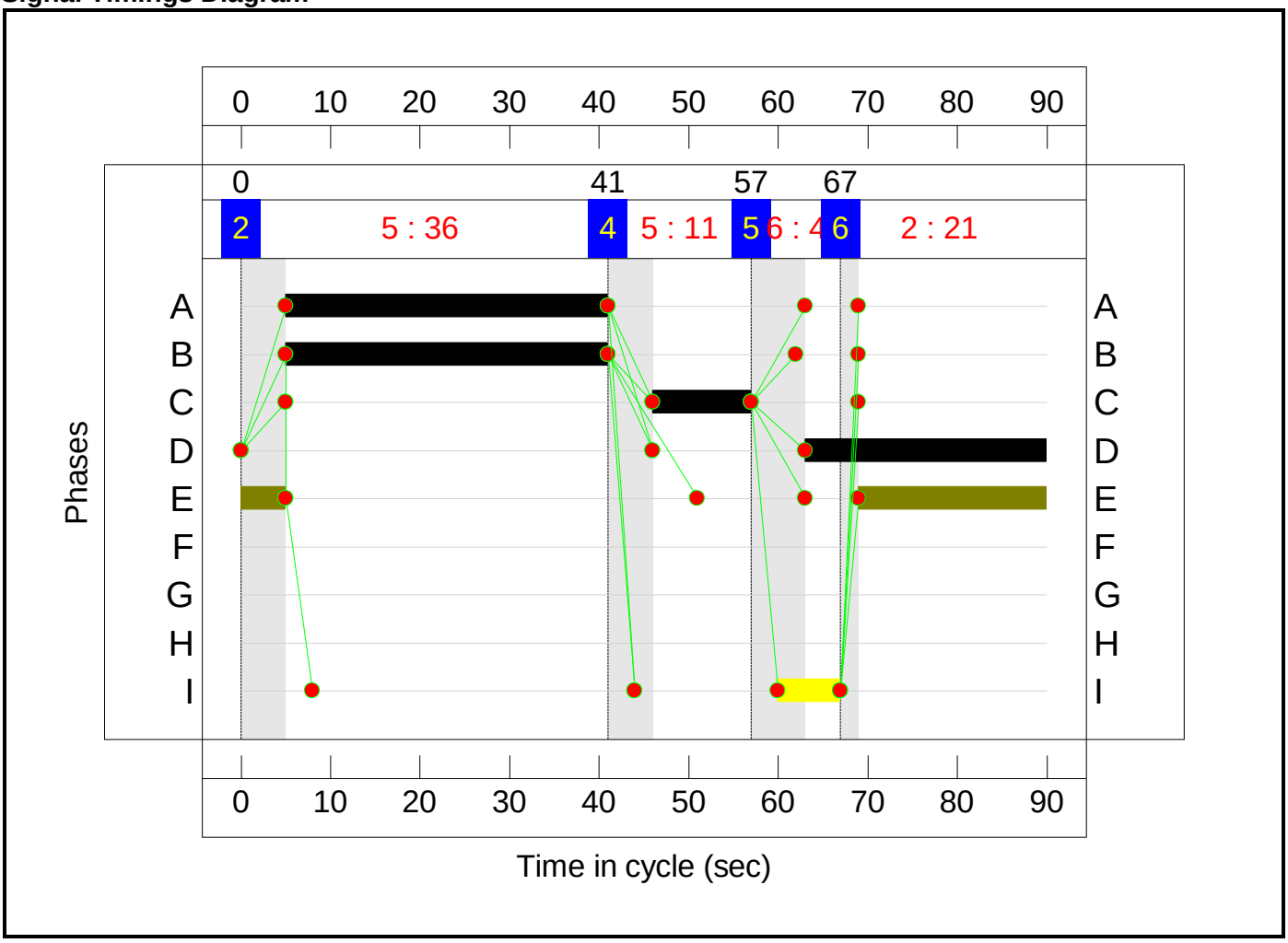
Origin \ Destination	A	B	C	D	Tot.
A	0	18	75	9	102
B	12	0	173	230	415
C	265	279	0	74	618
D	5	345	52	0	402
Tot.	282	642	300	313	1537

Lane Saturation Flows

Junction: Burringham Road/Messingham Road/Priory Road Signalised Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Priory Road)	2.58	0.00	Y	Arm 6 Left	Inf	17.6 %	1873	1873
				Arm 7 Ahead	Inf	73.5 %		
				Arm 8 Right	Inf	8.8 %		
2/1 (Burringham Road (E) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Burringham Road (E) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Messingham Road Lane 1)	This lane uses a directly entered Saturation Flow						1842	1842
4/1 (Burringham Road (W) Lane 1)	This lane uses a directly entered Saturation Flow						1801	1801
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2033 Do Nothing PM' (FG4: '2033 Do Nothing PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	18	163	9	190
	B	8	0	368	380	756
	C	145	217	0	75	437
	D	27	294	62	0	383
	Tot.	180	529	593	464	1766

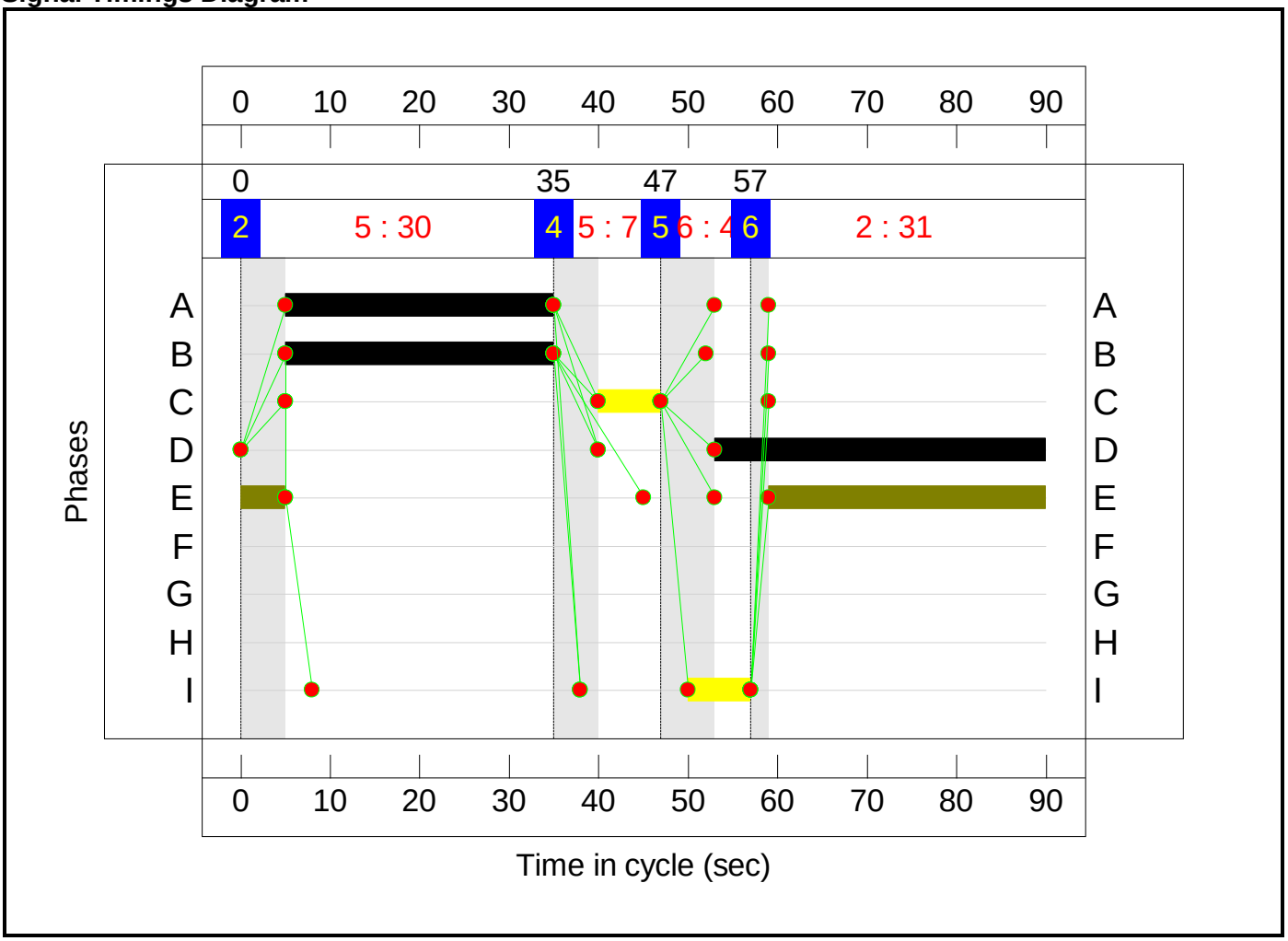
Lane Saturation Flows

Junction: Burringham Road/Messingham Road/Priory Road Signalised Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Priory Road)	2.58	0.00	Y	Arm 6 Left	Inf	9.5 %	1873	1873
				Arm 7 Ahead	Inf	85.8 %		
				Arm 8 Right	Inf	4.7 %		
2/1 (Burringham Road (E) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Burringham Road (E) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Messingham Road Lane 1)	This lane uses a directly entered Saturation Flow						1842	1842
4/1 (Burringham Road (W) Lane 1)	This lane uses a directly entered Saturation Flow						1801	1801
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2033 With Development AM' (FG5: '2033 With Development AM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

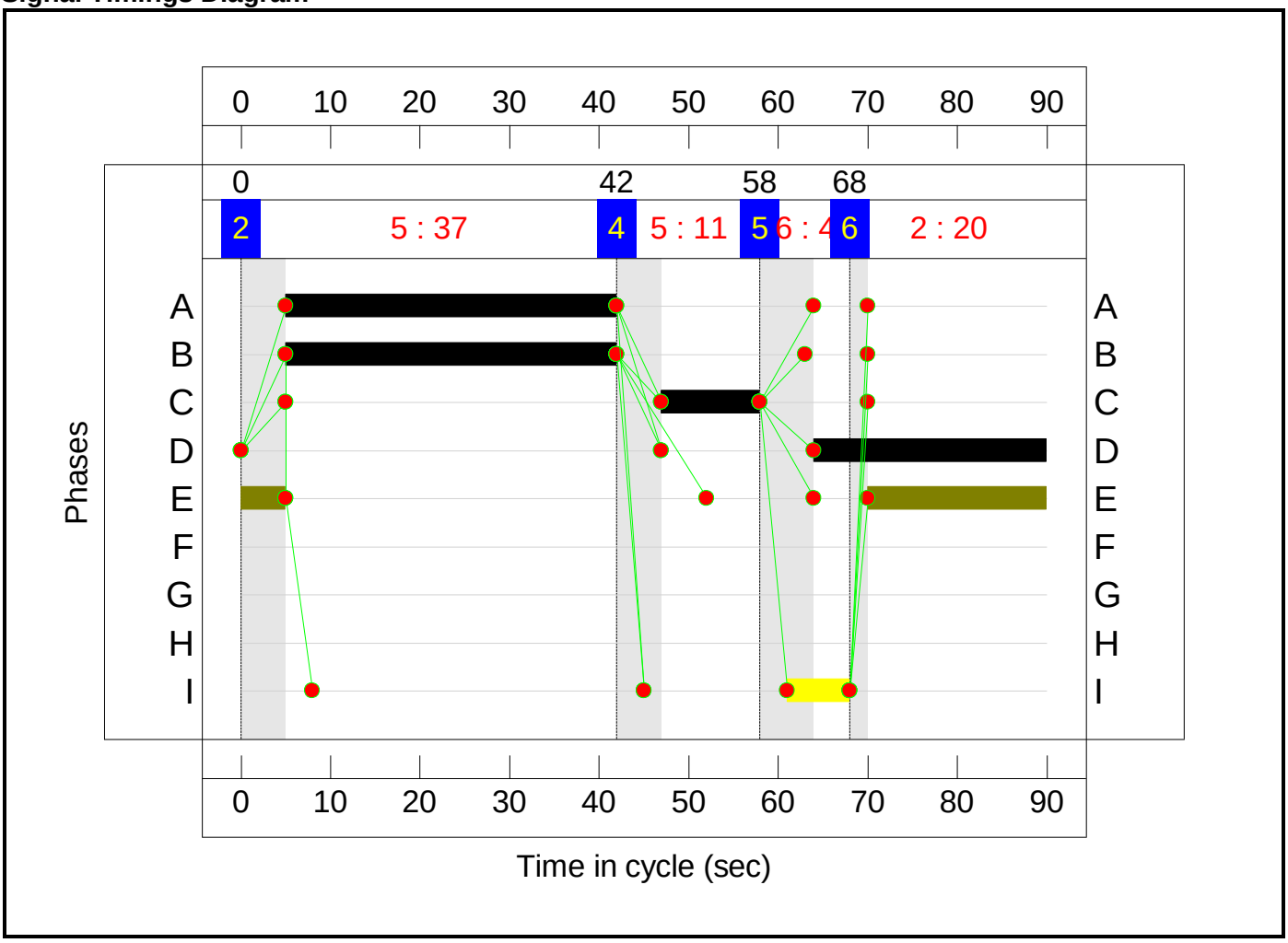
Origin \ Destination	A	B	C	D	Tot.
A	0	18	75	9	102
B	12	0	173	247	432
C	265	279	0	75	619
D	5	407	57	0	469
Tot.	282	704	305	331	1622

Lane Saturation Flows

Junction: Burringham Road/Messingham Road/Priory Road Signalised Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Priory Road)	2.58	0.00	Y	Arm 6 Left	Inf	17.6 %	1873	1873
				Arm 7 Ahead	Inf	73.5 %		
				Arm 8 Right	Inf	8.8 %		
2/1 (Burringham Road (E) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Burringham Road (E) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Messingham Road Lane 1)	This lane uses a directly entered Saturation Flow						1842	1842
4/1 (Burringham Road (W) Lane 1)	This lane uses a directly entered Saturation Flow						1801	1801
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2033 With Development PM' (FG6: '2033 With Development PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	18	163	9	190
	B	8	0	368	416	792
	C	145	217	0	78	440
	D	27	300	63	0	390
	Tot.	180	535	594	503	1812

Lane Saturation Flows

Junction: Burringham Road/Messingham Road/Priory Road Signalised Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Priory Road)	2.58	0.00	Y	Arm 6 Left	Inf	9.5 %	1873	1873
				Arm 7 Ahead	Inf	85.8 %		
				Arm 8 Right	Inf	4.7 %		
2/1 (Burringham Road (E) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Burringham Road (E) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Messingham Road Lane 1)	This lane uses a directly entered Saturation Flow						1842	1842
4/1 (Burringham Road (W) Lane 1)	This lane uses a directly entered Saturation Flow						1801	1801
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf
7/1	Infinite Saturation Flow						Inf	Inf
8/1	Infinite Saturation Flow						Inf	Inf

Network Results

Scenario 1: '2023 Base AM' (FG1: '2023 Base AM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.5%**	**-**	**-**	**56**	**254**	**16**	**11.1**	**-**	**-**
Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.5%**	**-**	**-**	**56**	**254**	**16**	**11.1**	**-**	**-**
1/1	Priory Road Left Ahead Right	O	C		1	7	-	95	1873	166	57.1%	95	95	0	5	3	1.7	64.1	2.9
2/2+2/1	Burringham Road (E) Right Left Ahead	O+U	A	E	1	27:66	39	377	1800:1800	408+486	42.2 : 42.2%	377	377	11	0	0	1.7	16.2	3.6
3/1	Messingham Road Ahead Right Left	O	D		1	40	-	575	1842	839	68.5%	575	575	0	248	12	4.2	26.5	12.4
4/1	Burringham Road (W) Left Ahead Right	O	B		1	27	-	355	1801	560	63.4%	355	355	45	0	2	3.5	35.5	8.5

C1 PRC for Signalled Lanes (%): 31.3 Total Delay for Signalled Lanes (pcuHr): 11.11 Cycle Time (s): 90

PRC Over All Lanes (%): 31.3 Total Delay Over All Lanes(pcuHr): 11.11

Scenario 2: '2023 Base PM' (FG2: '2023 Base PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.9%**	**-**	**-**	**63**	**199**	**13**	**13.1**	**-**	**-**
Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**70.9%**	**-**	**-**	**63**	**199**	**13**	**13.1**	**-**	**-**
1/1	Priory Road Left Ahead Right	O	C		1	11	-	177	1873	250	70.9%	177	177	0	6	2	3.0	61.3	5.4
2/2+2/1	Burringham Road (E) Right Left Ahead	O+U	A	E	1	36:62	26	687	1800:1800	514+495	68.0 : 68.0%	687	687	7	0	0	3.4	17.9	7.4
3/1	Messingham Road Ahead Right Left	O	D		1	27	-	405	1842	573	70.7%	405	405	0	193	9	4.3	38.2	10.1
4/1	Burringham Road (W) Left Ahead Right	O	B		1	36	-	350	1801	740	47.3%	350	350	56	0	2	2.4	24.8	6.8

C1 PRC for Signalled Lanes (%): 27.0 Total Delay for Signalled Lanes (pcuHr): 13.14 Cycle Time (s): 90
PRC Over All Lanes (%): 27.0 Total Delay Over All Lanes(pcuHr): 13.14

Scenario 3: '2033 Do Nothing AM' (FG3: '2033 Do Nothing AM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.5%**	**-**	**-**	**62**	**272**	**18**	**13.5**	**-**	**-**
Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.5%**	**-**	**-**	**62**	**272**	**18**	**13.5**	**-**	**-**
1/1	Priory Road Left Ahead Right	O	C		1	7	-	102	1873	166	61.3%	102	102	0	6	3	1.9	66.8	3.2
2/2+2/1	Burringham Road (E) Right Left Ahead	O+U	A	E	1	28:66	38	415	1800:1800	455+325	53.2 : 53.2%	415	415	12	0	0	2.3	20.4	5.3
3/1	Messingham Road Ahead Right Left	O	D		1	39	-	618	1842	819	75.5%	618	618	0	267	12	5.1	29.8	14.4
4/1	Burringham Road (W) Left Ahead Right	O	B		1	28	-	402	1801	580	69.3%	402	402	50	0	2	4.1	36.9	9.8

C1 PRC for Signalled Lanes (%): 19.2 Total Delay for Signalled Lanes (pcuHr): 13.47 Cycle Time (s): 90
PRC Over All Lanes (%): 19.2 Total Delay Over All Lanes(pcuHr): 13.47

Scenario 4: '2033 Do Nothing PM' (FG4: '2033 Do Nothing PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.3%**	**-**	**-**	**68**	**213**	**15**	**15.4**	**-**	**-**
Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.3%**	**-**	**-**	**68**	**213**	**15**	**15.4**	**-**	**-**
1/1	Priory Road Left Ahead Right	O	C		1	11	-	190	1873	250	76.1%	190	190	0	6	3	3.5	66.3	6.1
2/2+2/1	Burringham Road (E) Right Left Ahead	O+U	A	E	1	36:62	26	756	1800:1800	516+489	75.2 : 75.2%	756	756	8	0	0	4.2	19.9	9.3
3/1	Messingham Road Ahead Right Left	O	D		1	27	-	437	1842	573	76.3%	437	437	0	207	10	5.0	41.2	11.4
4/1	Burringham Road (W) Left Ahead Right	O	B		1	36	-	383	1801	740	51.7%	383	383	60	0	2	2.7	25.8	7.7

C1 PRC for Signalled Lanes (%): 18.0 Total Delay for Signalled Lanes (pcuHr): 15.42 Cycle Time (s): 90
PRC Over All Lanes (%): 18.0 Total Delay Over All Lanes(pcuHr): 15.42

Scenario 5: '2033 With Development AM' (FG5: '2033 With Development AM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.6%**	**-**	**-**	**67**	**272**	**18**	**15.0**	**-**	**-**
Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.6%**	**-**	**-**	**67**	**272**	**18**	**15.0**	**-**	**-**
1/1	Priory Road Left Ahead Right	O	C		1	7	-	102	1873	166	61.3%	102	102	0	6	3	1.9	66.8	3.2
2/2+2/1	Burringham Road (E) Right Left Ahead	O+U	A	E	1	30:66	36	432	1800:1800	484+323	53.5 : 53.5%	432	432	12	0	0	2.4	19.9	5.5
3/1	Messingham Road Ahead Right Left	O	D		1	37	-	619	1842	778	79.6%	619	619	0	267	12	5.8	33.7	15.3
4/1	Burringham Road (W) Left Ahead Right	O	B		1	30	-	469	1801	620	75.6%	469	469	55	0	2	5.0	38.1	11.8

C1 PRC for Signalled Lanes (%): 13.1 Total Delay for Signalled Lanes (pcuHr): 15.04 Cycle Time (s): 90
PRC Over All Lanes (%): 13.1 Total Delay Over All Lanes(pcuHr): 15.04

Scenario 6: '2033 With Development PM' (FG6: '2033 With Development PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.6%**	**-**	**-**	**69**	**213**	**15**	**16.4**	**-**	**-**
Burringham Road/Messingham Road/Priory Road Signalised Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.6%**	**-**	**-**	**69**	**213**	**15**	**16.4**	**-**	**-**
1/1	Priory Road Left Ahead Right	O	C		1	11	-	190	1873	250	76.1%	190	190	0	6	3	3.5	66.3	6.1
2/2+2/1	Burringham Road (E) Right Left Ahead	O+U	A	E	1	37:62	25	792	1800:1800	537+466	79.0 : 79.0%	792	792	8	0	0	4.7	21.6	11.5
3/1	Messingham Road Ahead Right Left	O	D		1	26	-	440	1842	553	79.6%	440	440	0	207	10	5.5	44.7	11.9
4/1	Burringham Road (W) Left Ahead Right	O	B		1	37	-	390	1801	760	51.3%	390	390	61	0	2	2.7	25.2	7.7

C1 PRC for Signalled Lanes (%): 13.0 Total Delay for Signalled Lanes (pcuHr): 16.44 Cycle Time (s): 90
PRC Over All Lanes (%): 13.0 Total Delay Over All Lanes(pcuHr): 16.44

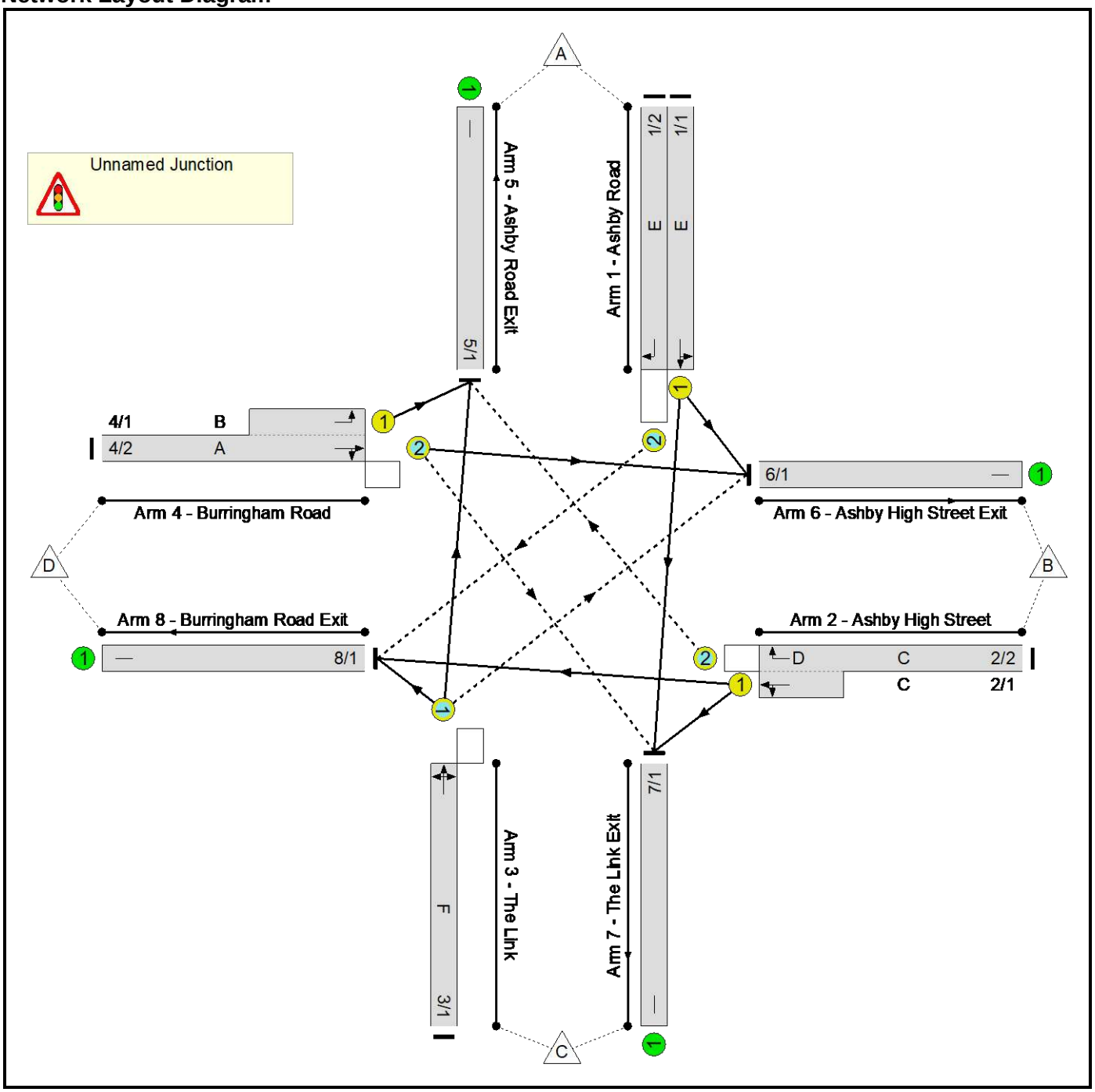
Appendix 14 – Burringham Road/Ashby Road Modelling

LTP LinSig Output

User and Project Details

Project:	**4772 Lincolnshire Lakes**
Title:	**Burringham Road/Ashby Road/The Link Signalised Junction**
Location:	Scunthorpe
Additional detail:	
File name:	Burringham Road-AshbyRoad-The Link Signal Junction.lsg3x
Author:	RC
Company:	Local Transport Projects
Address:	

Network Layout Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Ind. Arrow	C	7	7
E	Traffic		7	7
F	Traffic		5	5
G	Pedestrian		6	6
H	Pedestrian		7	7
I	Pedestrian		7	7
J	Pedestrian		7	7

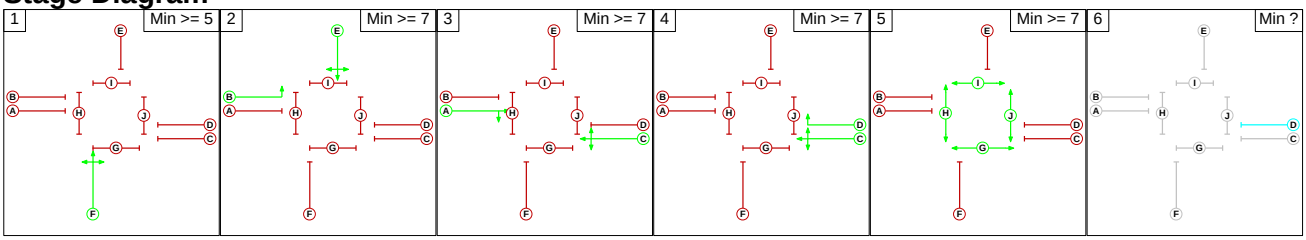
Phase Intergreens Matrix

		Starting Phase									
		A	B	C	D	E	F	G	H	I	J
Terminating Phase	A		5	-	5	7	6	8	8	8	8
	B	5		5	5	-	5	7	7	7	7
	C	-	5		-	7	6	8	8	8	5
	D	5	5	-		6	5	8	8	8	8
	E	6	-	6	6		5	7	7	7	7
	F	5	5	5	5	6		6	6	6	6
	G	3	3	3	3	3	3		-	-	-
	H	3	3	3	3	3	3	-		-	-
	I	3	3	3	3	3	3	-	-		-
	J	3	3	3	3	3	3	-	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	F
2	B E
3	A C
4	C D
5	G H I J
6	

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage					
		1	2	3	4	5	6
From Stage	1		6	5	5	6	X
	2	5		6	6	7	X
	3	6	7		5	8	X
	4	6	7	5		8	X
	5	3	3	3	3		X
	6	X	X	X	X	X	

Give-Way Lane Input Data

Junction: Unnamed Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/2 (Ashby Road)	8/1 (Right)	1439	0	3/1	1.09	To 5/1 (Ahead) To 8/1 (Left)	3.00	-	0.50	3	2.00
2/2 (Ashby High Street)	5/1 (Right)	1439	0	4/1	1.09	All	2.00	-	0.50	2	2.00
				4/2	1.09	To 6/1 (Ahead)					
3/1 (The Link)	6/1 (Right)	1439	0	1/2	1.09	All	2.00	2.00	0.50	2	2.00
4/2 (Burringham Road)	7/1 (Right)	1439	0	2/1	1.09	All	2.00	2.00	0.50	2	2.00

Lane Input Data

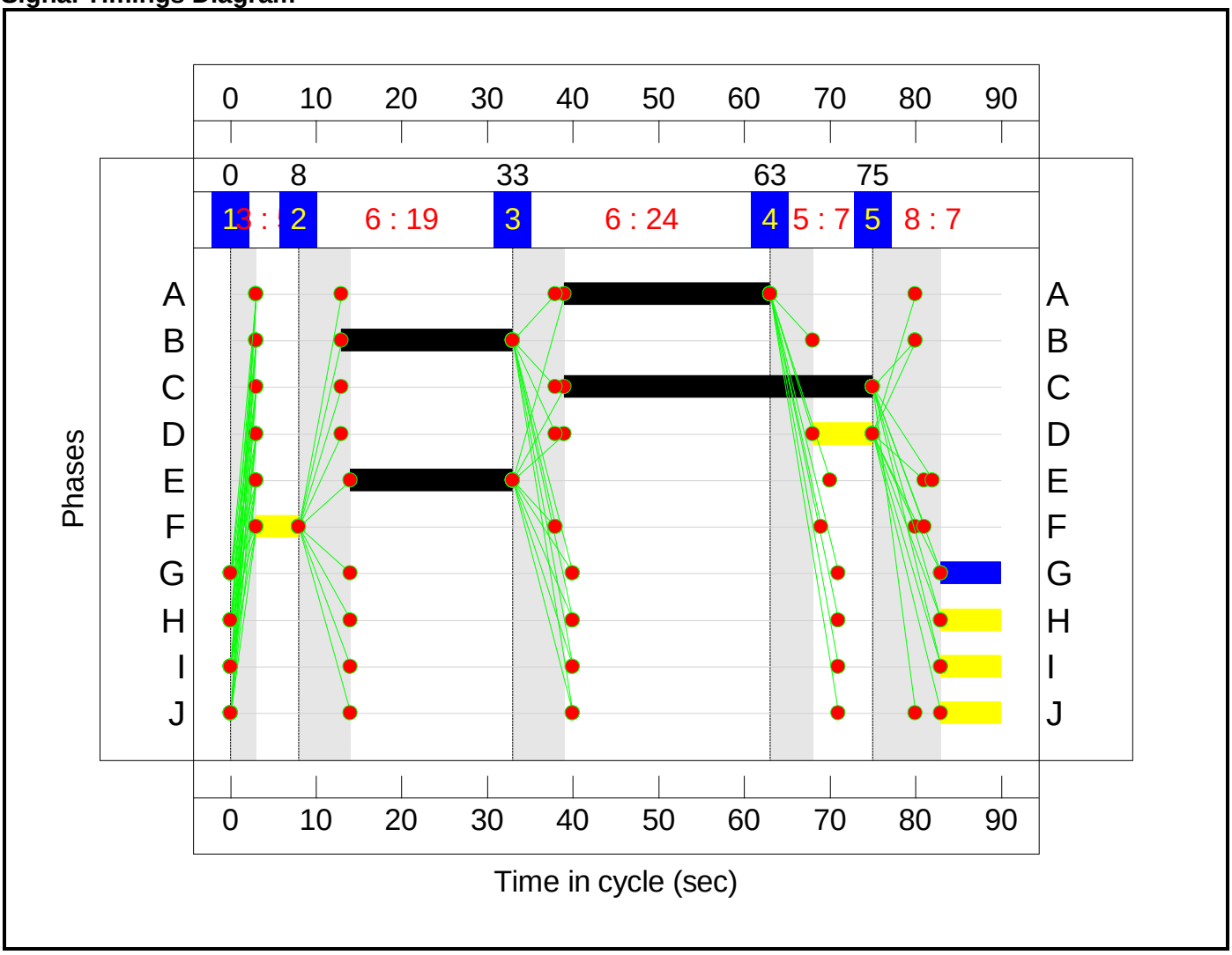
Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Ashby Road)	U	E	2	3	9.1	Geom	-	2.70	0.00	Y	Arm 6 Left	Inf
											Arm 7 Ahead	Inf
1/2 (Ashby Road)	O	E	2	3	60.0	Geom	-	2.60	0.00	N	Arm 8 Right	Inf
2/1 (Ashby High Street)	U	C	2	3	4.8	Geom	-	2.70	0.00	Y	Arm 7 Left	Inf
											Arm 8 Ahead	Inf
2/2 (Ashby High Street)	O	C D	2	3	60.0	Geom	-	3.00	0.00	N	Arm 5 Right	Inf
3/1 (The Link)	O	F	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	Inf
											Arm 8 Left	Inf
4/1 (Burringham Road)	U	B	2	3	6.6	Geom	-	2.90	0.00	Y	Arm 5 Left	Inf
4/2 (Burringham Road)	O	A	2	3	60.0	Geom	-	3.10	0.00	Y	Arm 6 Ahead	Inf
											Arm 7 Right	Inf
5/1 (Ashby Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Ashby High Street Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (The Link Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Burringham Road Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2023 Base AM'	08:15	09:15	01:00	
2: '2023 Base PM'	15:30	16:30	01:00	
3: '2033 Do Nothing AM'	08:15	09:15	01:00	
4: '2033 Do Nothing PM'	15:30	16:30	01:00	
5: '2033 With Development AM'	08:15	09:15	01:00	
6: '2033 With Development PM'	15:30	16:30	01:00	

Scenario 1: '2023 Base AM' (FG1: '2023 Base AM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	178	30	170	378
	B	198	0	55	186	439
	C	17	17	0	16	50
	D	272	259	42	0	573
	Tot.	487	454	127	372	1440

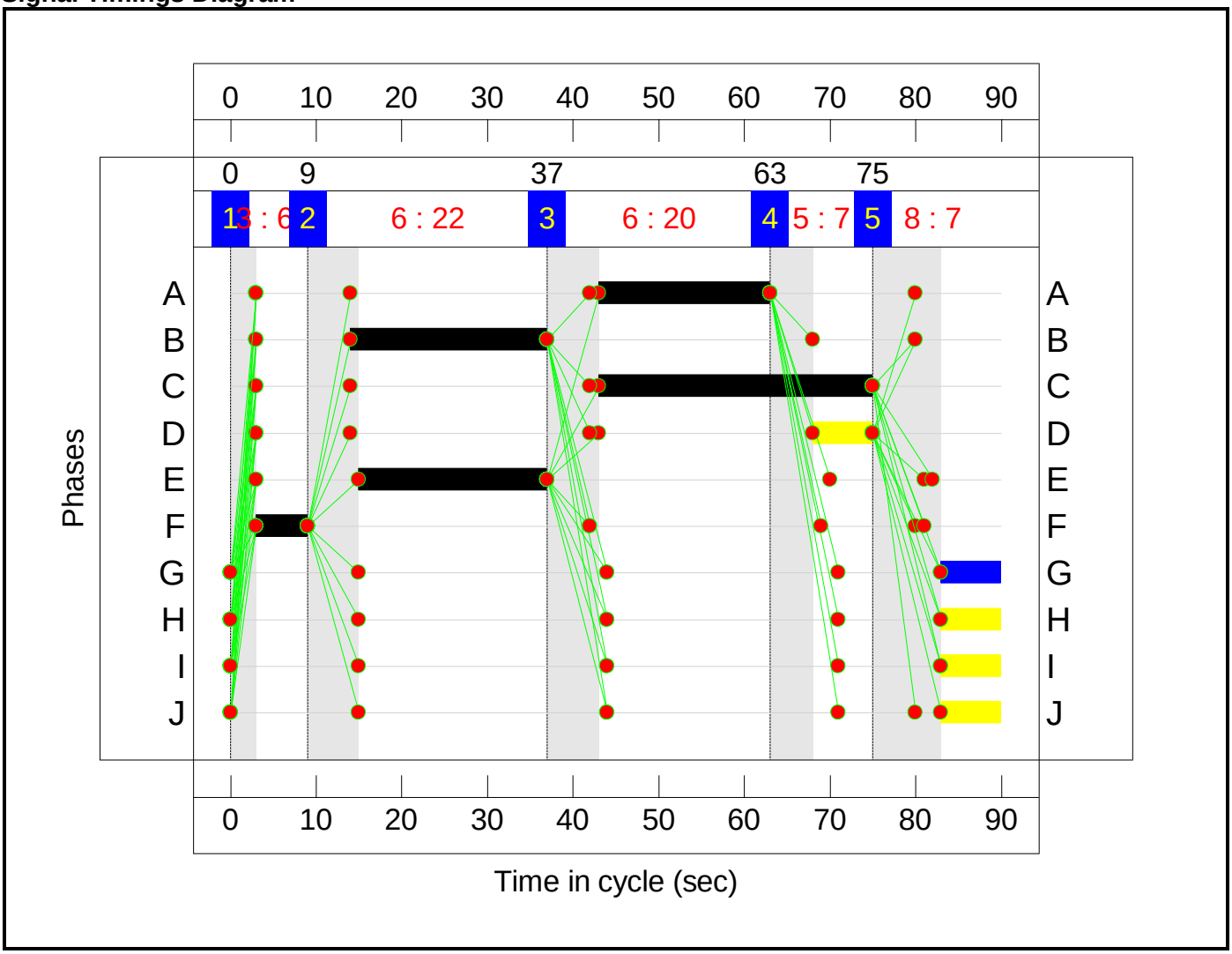
Lane Saturation Flows

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Ashby Road)	2.70	0.00	Y	Arm 6 Left	Inf	85.6 %	1885	1885
				Arm 7 Ahead	Inf	14.4 %		
1/2 (Ashby Road)	2.60	0.00	N	Arm 8 Right	Inf	100.0 %	2015	2015
2/1 (Ashby High Street)	2.70	0.00	Y	Arm 7 Left	Inf	22.8 %	1885	1885
				Arm 8 Ahead	Inf	77.2 %		
2/2 (Ashby High Street)	3.00	0.00	N	Arm 5 Right	Inf	100.0 %	2055	2055
3/1 (The Link)	3.00	0.00	Y	Arm 5 Ahead	Inf	34.0 %	1915	1915
				Arm 6 Right	Inf	34.0 %		
				Arm 8 Left	Inf	32.0 %		
4/1 (Burringham Road)	2.90	0.00	Y	Arm 5 Left	Inf	100.0 %	1905	1905
4/2 (Burringham Road)	3.10	0.00	Y	Arm 6 Ahead	Inf	86.0 %	1925	1925
				Arm 7 Right	Inf	14.0 %		
5/1 (Ashby Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Ashby High Street Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (The Link Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Burringham Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2023 Base PM' (FG2: '2023 Base PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	234	17	334	585
	B	236	0	28	311	575
	C	22	36	0	38	96
	D	221	238	22	0	481
	Tot.	479	508	67	683	1737

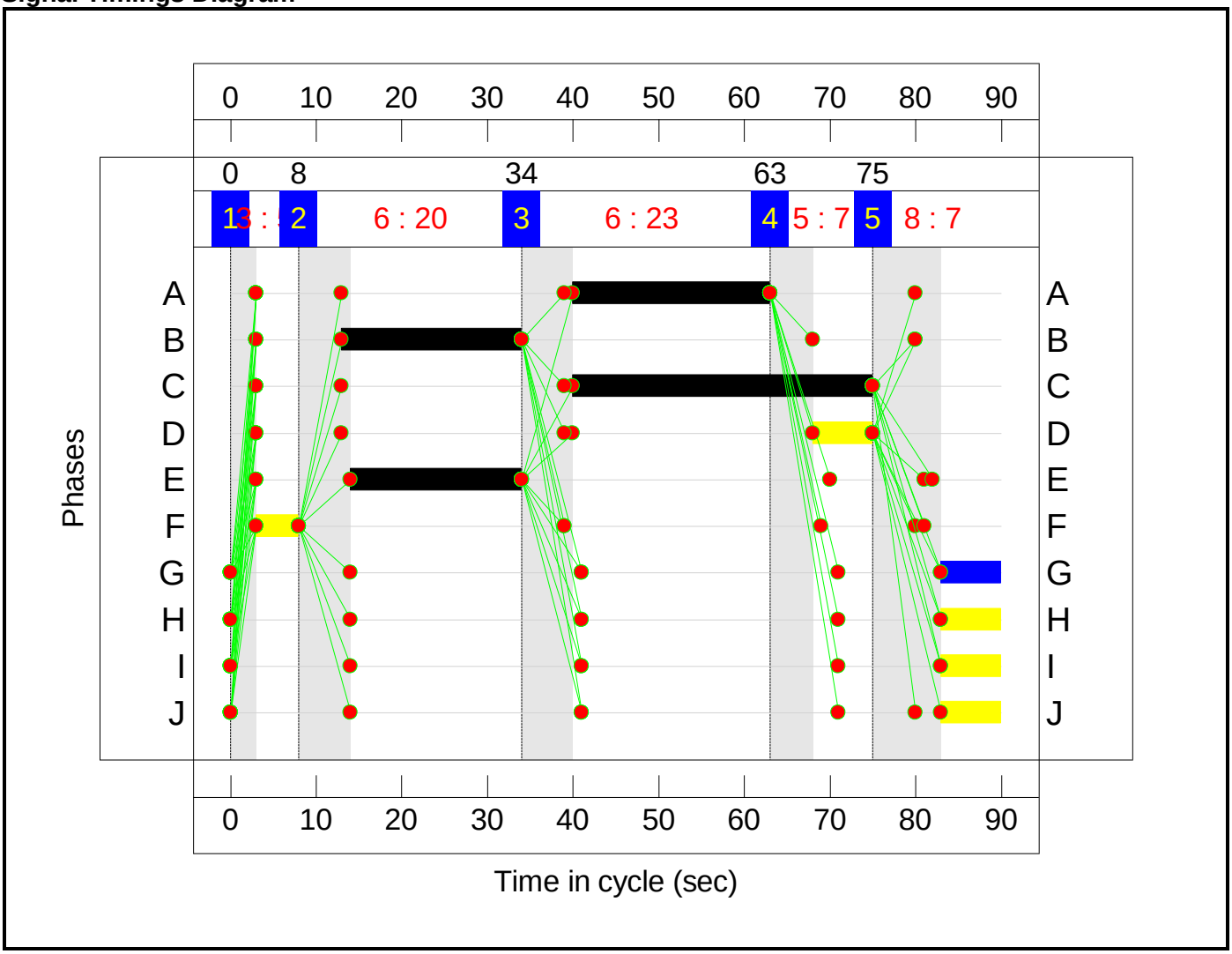
Lane Saturation Flows

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Ashby Road)	2.70	0.00	Y	Arm 6 Left	Inf	93.2 %	1885	1885
				Arm 7 Ahead	Inf	6.8 %		
1/2 (Ashby Road)	2.60	0.00	N	Arm 8 Right	Inf	100.0 %	2015	2015
2/1 (Ashby High Street)	2.70	0.00	Y	Arm 7 Left	Inf	8.3 %	1885	1885
				Arm 8 Ahead	Inf	91.7 %		
2/2 (Ashby High Street)	3.00	0.00	N	Arm 5 Right	Inf	100.0 %	2055	2055
3/1 (The Link)	3.00	0.00	Y	Arm 5 Ahead	Inf	22.9 %	1915	1915
				Arm 6 Right	Inf	37.5 %		
				Arm 8 Left	Inf	39.6 %		
4/1 (Burringham Road)	2.90	0.00	Y	Arm 5 Left	Inf	100.0 %	1905	1905
4/2 (Burringham Road)	3.10	0.00	Y	Arm 6 Ahead	Inf	91.5 %	1925	1925
				Arm 7 Right	Inf	8.5 %		
5/1 (Ashby Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Ashby High Street Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (The Link Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Burringham Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2033 Do Nothing AM' (FG3: '2033 Do Nothing AM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	191	32	191	414
	B	213	0	59	200	472
	C	18	18	0	17	53
	D	310	281	45	0	636
	Tot.	541	490	136	408	1575

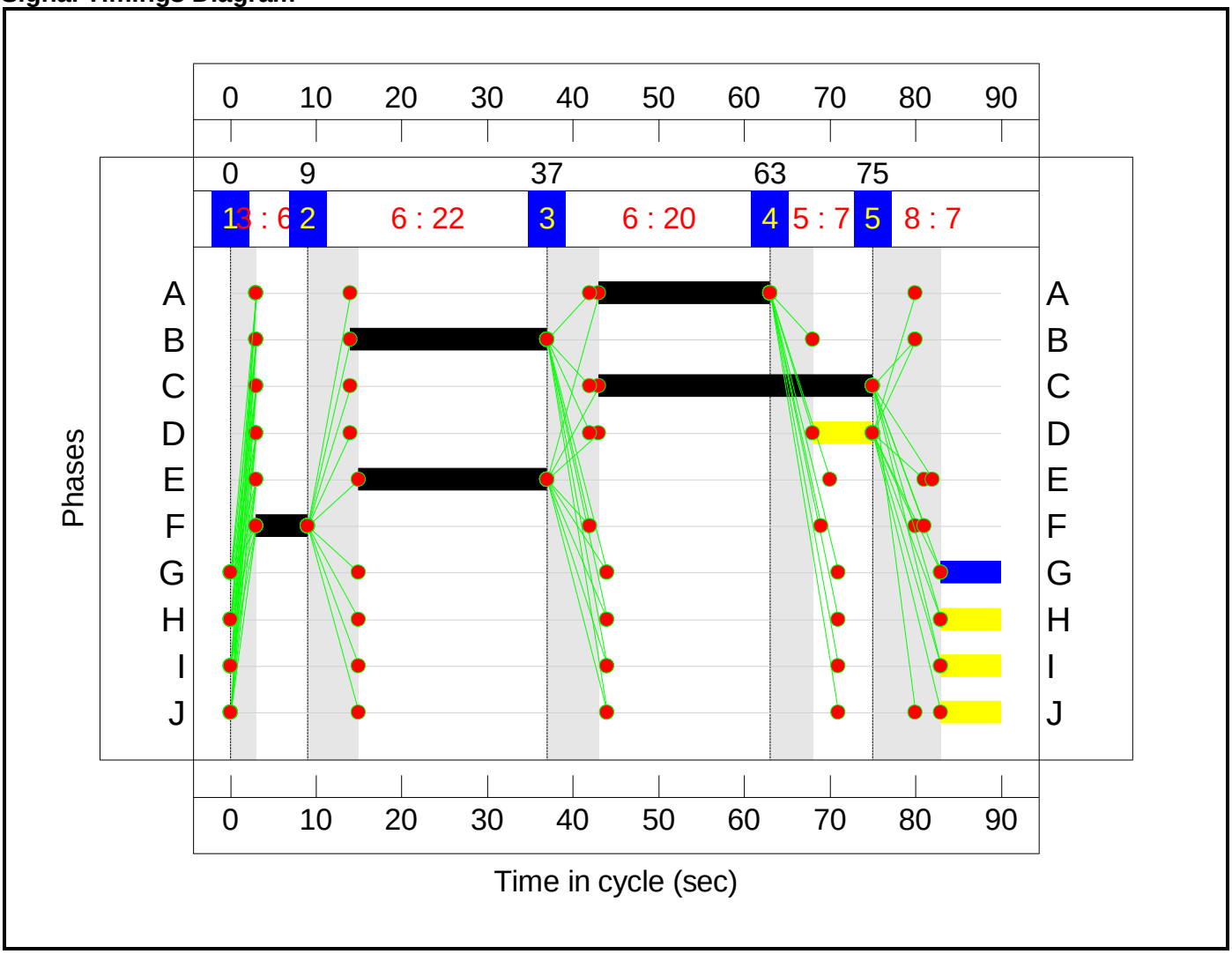
Lane Saturation Flows

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Ashby Road)	2.70	0.00	Y	Arm 6 Left	Inf	85.7 %	1885	1885
				Arm 7 Ahead	Inf	14.3 %		
1/2 (Ashby Road)	2.60	0.00	N	Arm 8 Right	Inf	100.0 %	2015	2015
2/1 (Ashby High Street)	2.70	0.00	Y	Arm 7 Left	Inf	22.8 %	1885	1885
				Arm 8 Ahead	Inf	77.2 %		
2/2 (Ashby High Street)	3.00	0.00	N	Arm 5 Right	Inf	100.0 %	2055	2055
3/1 (The Link)	3.00	0.00	Y	Arm 5 Ahead	Inf	34.0 %	1915	1915
				Arm 6 Right	Inf	34.0 %		
				Arm 8 Left	Inf	32.1 %		
4/1 (Burringham Road)	2.90	0.00	Y	Arm 5 Left	Inf	100.0 %	1905	1905
4/2 (Burringham Road)	3.10	0.00	Y	Arm 6 Ahead	Inf	86.2 %	1925	1925
				Arm 7 Right	Inf	13.8 %		
5/1 (Ashby Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Ashby High Street Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (The Link Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Burringham Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2033 Do Nothing PM' (FG4: '2033 Do Nothing PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	251	18	375	644
	B	254	0	30	336	620
	C	24	38	0	41	103
	D	246	255	24	0	525
	Tot.	524	544	72	752	1892

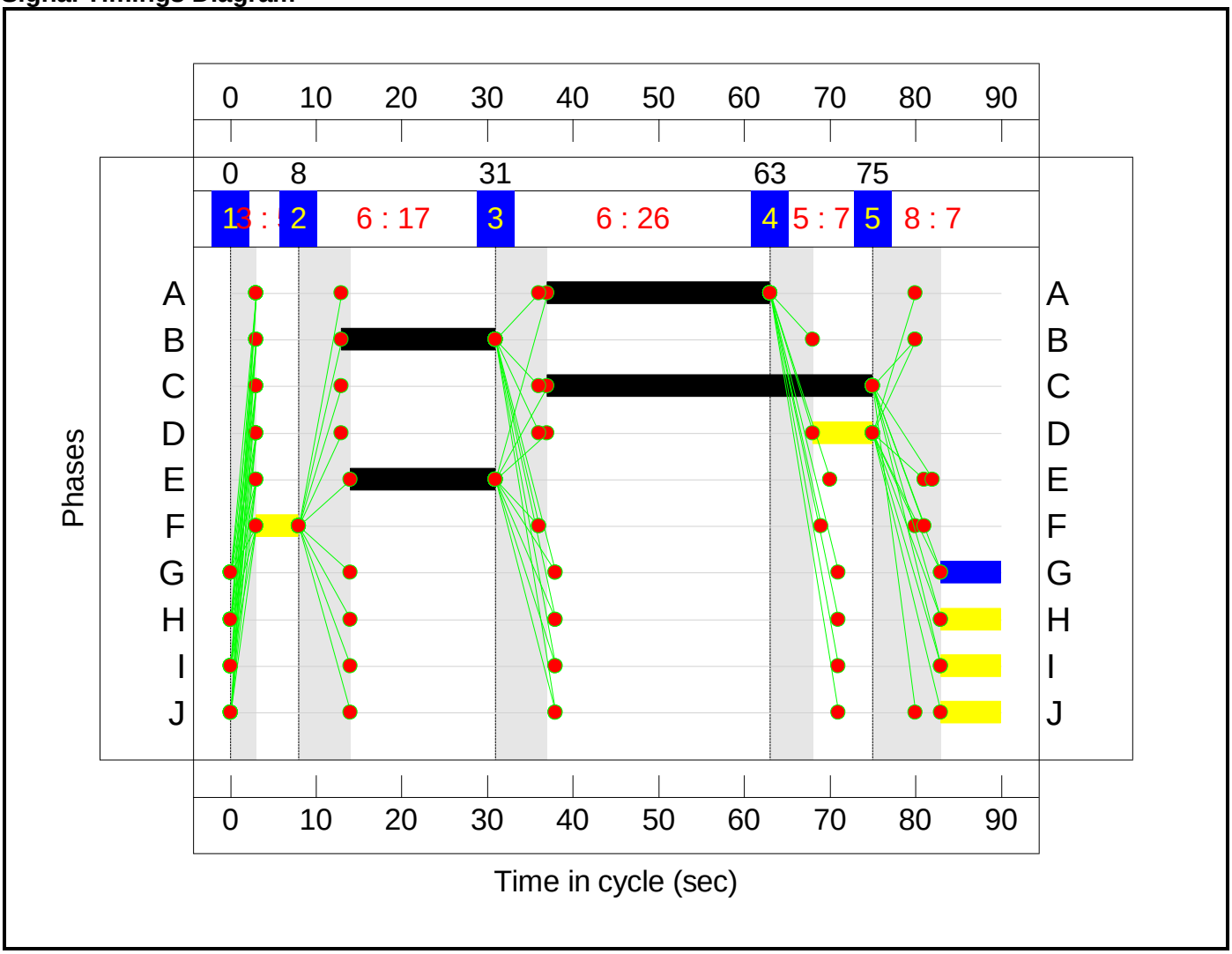
Lane Saturation Flows

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Ashby Road)	2.70	0.00	Y	Arm 6 Left	Inf	93.3 %	1885	1885
				Arm 7 Ahead	Inf	6.7 %		
1/2 (Ashby Road)	2.60	0.00	N	Arm 8 Right	Inf	100.0 %	2015	2015
2/1 (Ashby High Street)	2.70	0.00	Y	Arm 7 Left	Inf	8.2 %	1885	1885
				Arm 8 Ahead	Inf	91.8 %		
2/2 (Ashby High Street)	3.00	0.00	N	Arm 5 Right	Inf	100.0 %	2055	2055
3/1 (The Link)	3.00	0.00	Y	Arm 5 Ahead	Inf	23.3 %	1915	1915
				Arm 6 Right	Inf	36.9 %		
				Arm 8 Left	Inf	39.8 %		
4/1 (Burringham Road)	2.90	0.00	Y	Arm 5 Left	Inf	100.0 %	1905	1905
4/2 (Burringham Road)	3.10	0.00	Y	Arm 6 Ahead	Inf	91.4 %	1925	1925
				Arm 7 Right	Inf	8.6 %		
5/1 (Ashby Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Ashby High Street Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (The Link Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Burringham Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2033 With Development AM' (FG5: '2033 With Development AM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	191	32	193	416
	B	213	0	59	215	487
	C	18	18	0	17	53
	D	316	337	45	0	698
	Tot.	547	546	136	425	1654

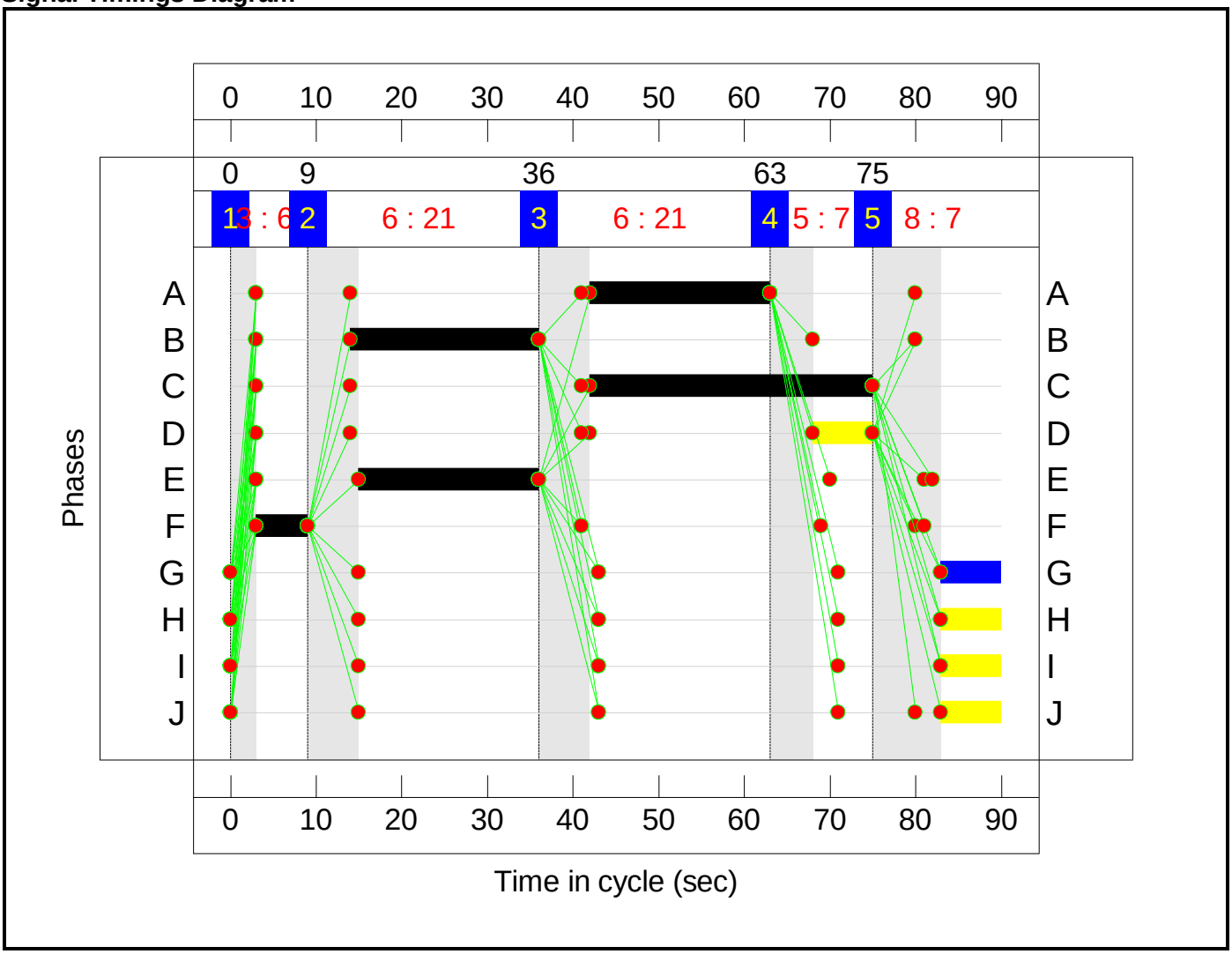
Lane Saturation Flows

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Ashby Road)	2.70	0.00	Y	Arm 6 Left	Inf	85.7 %	1885	1885
				Arm 7 Ahead	Inf	14.3 %		
1/2 (Ashby Road)	2.60	0.00	N	Arm 8 Right	Inf	100.0 %	2015	2015
2/1 (Ashby High Street)	2.70	0.00	Y	Arm 7 Left	Inf	21.5 %	1885	1885
				Arm 8 Ahead	Inf	78.5 %		
2/2 (Ashby High Street)	3.00	0.00	N	Arm 5 Right	Inf	100.0 %	2055	2055
3/1 (The Link)	3.00	0.00	Y	Arm 5 Ahead	Inf	34.0 %	1915	1915
				Arm 6 Right	Inf	34.0 %		
				Arm 8 Left	Inf	32.1 %		
4/1 (Burringham Road)	2.90	0.00	Y	Arm 5 Left	Inf	100.0 %	1905	1905
4/2 (Burringham Road)	3.10	0.00	Y	Arm 6 Ahead	Inf	88.2 %	1925	1925
				Arm 7 Right	Inf	11.8 %		
5/1 (Ashby Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Ashby High Street Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (The Link Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Burringham Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2033 With Development PM' (FG6: '2033 With Development PM', Plan 1: 'Network Control Plan 1')

Signal Timings Diagram



Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	251	18	378	647
	B	254	0	30	369	653
	C	24	38	0	41	103
	D	247	261	24	0	532
	Tot.	525	550	72	788	1935

Lane Saturation Flows

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Ashby Road)	2.70	0.00	Y	Arm 6 Left	Inf	93.3 %	1885	1885
				Arm 7 Ahead	Inf	6.7 %		
1/2 (Ashby Road)	2.60	0.00	N	Arm 8 Right	Inf	100.0 %	2015	2015
2/1 (Ashby High Street)	2.70	0.00	Y	Arm 7 Left	Inf	7.5 %	1885	1885
				Arm 8 Ahead	Inf	92.5 %		
2/2 (Ashby High Street)	3.00	0.00	N	Arm 5 Right	Inf	100.0 %	2055	2055
3/1 (The Link)	3.00	0.00	Y	Arm 5 Ahead	Inf	23.3 %	1915	1915
				Arm 6 Right	Inf	36.9 %		
				Arm 8 Left	Inf	39.8 %		
4/1 (Burringham Road)	2.90	0.00	Y	Arm 5 Left	Inf	100.0 %	1905	1905
4/2 (Burringham Road)	3.10	0.00	Y	Arm 6 Ahead	Inf	91.6 %	1925	1925
				Arm 7 Right	Inf	8.4 %		
5/1 (Ashby Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Ashby High Street Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (The Link Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Burringham Road Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Network Results

Scenario 1: '2023 Base AM' (FG1: '2023 Base AM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.4%**	**-**	**-**	**208**	**208**	**10**	**14.1**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.4%**	**-**	**-**	**208**	**208**	**10**	**14.1**	**-**	**-**
1/1	Ashby Road Left Ahead	U	E		1	19	-	208	1885	419	49.7%	208	208	-	-	-	2.3	39.1	5.0
1/2	Ashby Road Right	O	E		1	19	-	170	2015	448	38.0%	170	170	0	164	6	1.7	36.2	3.9
2/2+2/1	Ashby High Street Right Left Ahead	O+U	C	D	1	36	7	439	2055:1885	423+514	46.8 : 46.8%	439	439	166	27	4	3.2	26.3	4.5
3/1	The Link Ahead Right Left	O	F		1	5	-	50	1915	128	39.2%	50	50	0	17	0	0.9	63.3	1.5
4/2+4/1	Burringham Road Left Ahead Right	O+U	A B		1	24:20	-	573	1925:1905	416+361	72.4 : 75.4%	573	573	42	0	0	6.1	38.2	7.8

C1 PRC for Signalled Lanes (%): 19.4 Total Delay for Signalled Lanes (pcuHr): 14.13 Cycle Time (s): 90
PRC Over All Lanes (%): 19.4 Total Delay Over All Lanes(pcuHr): 14.13

Scenario 2: '2023 Base PM' (FG2: '2023 Base PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**69.5%**	**-**	**-**	**153**	**458**	**17**	**18.4**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**69.5%**	**-**	**-**	**153**	**458**	**17**	**18.4**	**-**	**-**
1/1	Ashby Road Left Ahead	U	E		1	22	-	251	1885	482	52.1%	251	251	-	-	-	2.5	36.5	5.9
1/2	Ashby Road Right	O	E		1	22	-	334	2015	515	64.9%	334	334	0	323	11	3.7	39.7	8.3
2/2+2/1	Ashby High Street Right Left Ahead	O+U	C	D	1	32	7	575	2055:1885	350+502	67.5 : 67.5%	575	575	131	100	5	5.2	32.6	9.0
3/1	The Link Ahead Right Left	O	F		1	6	-	96	1915	149	64.5%	96	96	0	35	1	2.0	73.2	3.2
4/2+4/1	Burringham Road Left Ahead Right	O+U	A B		1	20:23	-	481	1925:1905	374+318	69.5 : 69.5%	481	481	22	0	0	5.1	37.9	6.8

C1 PRC for Signalled Lanes (%): 29.4 Total Delay for Signalled Lanes (pcuHr): 18.45 Cycle Time (s): 90
PRC Over All Lanes (%): 29.4 Total Delay Over All Lanes(pcuHr): 18.45

Scenario 3: '2033 Do Nothing AM' (FG3: '2033 Do Nothing AM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.0%**	**-**	**-**	**176**	**280**	**12**	**16.5**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.0%**	**-**	**-**	**176**	**280**	**12**	**16.5**	**-**	**-**
1/1	Ashby Road Left Ahead	U	E		1	20	-	223	1885	440	50.7%	223	223	-	-	-	2.4	38.3	5.3
1/2	Ashby Road Right	O	E		1	20	-	191	2015	470	40.6%	191	191	0	185	6	1.9	35.7	4.4
2/2+2/1	Ashby High Street Right Left Ahead	O+U	C	D	1	35	7	472	2055:1885	403+490	52.8 : 52.8%	472	472	131	77	5	3.7	28.6	5.1
3/1	The Link Ahead Right Left	O	F		1	5	-	53	1915	128	41.5%	53	53	0	18	0	0.9	64.2	1.6
4/2+4/1	Burringham Road Left Ahead Right	O+U	A B		1	23:21	-	636	1925:1905	401+374	81.3 : 83.0%	636	636	45	0	0	7.5	42.7	10.1

C1 PRC for Signalled Lanes (%): 8.5 Total Delay for Signalled Lanes (pcuHr): 16.50 Cycle Time (s): 90
PRC Over All Lanes (%): 8.5 Total Delay Over All Lanes(pcuHr): 16.50

Scenario 4: '2033 Do Nothing PM' (FG4: '2033 Do Nothing PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.0%**	**-**	**-**	**140**	**532**	**19**	**21.3**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.0%**	**-**	**-**	**140**	**532**	**19**	**21.3**	**-**	**-**
1/1	Ashby Road Left Ahead	U	E		1	22	-	269	1885	482	55.8%	269	269	-	-	-	2.8	37.5	6.5
1/2	Ashby Road Right	O	E		1	22	-	375	2015	515	72.8%	375	375	0	363	13	4.5	43.3	9.9
2/2+2/1	Ashby High Street Right Left Ahead	O+U	C	D	1	32	7	620	2055:1885	349+503	72.8 : 72.8%	620	620	116	132	6	6.0	34.6	10.7
3/1	The Link Ahead Right Left	O	F		1	6	-	103	1915	149	69.2%	103	103	0	37	1	2.2	77.9	3.6
4/2+4/1	Burringham Road Left Ahead Right	O+U	A B		1	20:23	-	525	1925:1905	372+328	75.0 : 75.0%	525	525	24	0	0	5.8	39.9	7.7

C1 PRC for Signalled Lanes (%): 20.0 Total Delay for Signalled Lanes (pcuHr): 21.32 Cycle Time (s): 90
PRC Over All Lanes (%): 20.0 Total Delay Over All Lanes(pcuHr): 21.32

Scenario 5: '2033 With Development AM' (FG5: '2033 With Development AM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.7%**	**-**	**-**	**169**	**289**	**12**	**19.2**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.7%**	**-**	**-**	**169**	**289**	**12**	**19.2**	**-**	**-**
1/1	Ashby Road Left Ahead	U	E		1	17	-	223	1885	377	59.2%	223	223	-	-	-	2.7	44.3	5.7
1/2	Ashby Road Right	O	E		1	17	-	193	2015	403	47.9%	193	193	0	187	6	2.2	40.4	4.7
2/2+2/1	Ashby High Street Right Left Ahead	O+U	C	D	1	38	7	487	2055:1885	427+549	49.9 : 49.9%	487	487	124	84	5	3.6	26.8	5.1
3/1	The Link Ahead Right Left	O	F		1	5	-	53	1915	128	41.5%	53	53	0	18	0	0.9	64.2	1.6
4/2+4/1	Burringham Road Left Ahead Right	O+U	A B		1	26:18	-	698	1925:1905	445+337	85.8 : 93.7%	698	698	45	0	0	9.7	50.1	14.0

C1 PRC for Signalled Lanes (%): -4.1 Total Delay for Signalled Lanes (pcuHr): 19.19 Cycle Time (s): 90
PRC Over All Lanes (%): -4.1 Total Delay Over All Lanes(pcuHr): 19.19

Scenario 6: '2033 With Development PM' (FG6: '2033 With Development PM', Plan 1: 'Network Control Plan 1')

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.7%**	**-**	**-**	**152**	**523**	**19**	**22.2**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.7%**	**-**	**-**	**152**	**523**	**19**	**22.2**	**-**	**-**
1/1	Ashby Road Left Ahead	U	E		1	21	-	269	1885	461	58.4%	269	269	-	-	-	2.9	39.3	6.6
1/2	Ashby Road Right	O	E		1	21	-	378	2015	493	76.7%	378	378	0	365	13	4.9	46.9	10.3
2/2+2/1	Ashby High Street Right Left Ahead	O+U	C	D	1	33	7	653	2055:1885	335+526	75.8 : 75.8%	653	653	128	120	6	6.3	34.9	12.1
3/1	The Link Ahead Right Left	O	F		1	6	-	103	1915	149	69.2%	103	103	0	37	1	2.2	77.9	3.6
4/2+4/1	Burringham Road Left Ahead Right	O+U	A B		1	21:22	-	532	1925:1905	384+333	74.1 : 74.1%	532	532	24	0	0	5.8	39.3	7.7

C1 PRC for Signalled Lanes (%): 17.3 Total Delay for Signalled Lanes (pcuHr): 22.24 Cycle Time (s): 90
PRC Over All Lanes (%): 17.3 Total Delay Over All Lanes(pcuHr): 22.24