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Class E Food Store (Lidl) with Associated Access, Car Parking, Servicing and Landscaping

Land off Barnard Road, Bowthorpe, Norwich, NR5 9JB

Transport Assessment

Prepared on behalf of:

Honeyview Investments Ltd

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1.0 INTRODUCTION

1.1 This Transport Assessment (TA) report has been prepared by Focus Transport Planning Ltd (Focus TP) on behalf of Honeyview Investments Ltd to consider highways and transport issues related to proposals for re-development of land at Barnard Road, Norwich to deliver a new food store of 1949sqm GIA. The proposals envisage the demolition of existing leisure related buildings and the delivery of a new food store building, along with ancillary car parking (120 spaces) and landscaping features. The proposed store is primarily designed to serve a local catchment, including the nearby residential areas of Chapel Break, Bowthorpe, Clover Hill and New Costessey. It is proposed that the store would be operated by Lidl GB Ltd.

1.2 This TA report has been prepared to apprise the Local Planning Authority (Norwich City Council – Norwich CC) & Local Highway Authority (LHA) (Norfolk County Council – NCC Highways) as to the level of traffic demand anticipated to be generated by the application scheme and to set out the design and nature of the proposed site access arrangements, internal site road layout, car parking and related improvements to connecting walk / cycle infrastructure.

1.3 The report is to be submitted alongside a detailed planning application for the food store scheme (programmed to be submitted late Autumn / Winter 2023) and reflects guidance set out in National Planning Policy Guidance (NPPG) "Travel Plans, Transport Assessments and Statements in Decision Taking". This key reference guidance notes that Travel Plans, Transport Assessments and Statements are all ways of assessing and, where necessary mitigating, the transport impacts of a scheme in order to promote sustainable development. Preparation of transport appraisal reports are required for all developments which could be expected to generate significant amounts of trip movements.

1.4 Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal and may propose mitigation measures where these are necessary to avoid unacceptable or "severe" impacts. Transport Statements & Transport Assessments are used to establish whether the

residual transport impacts of a proposed development could be "severe", which is the critical threshold for determining whether a project should be refused on highways grounds, in accordance with guidance set out in Para 111 to the National Planning Policy Framework (NPPF).

1.5 Traditionally formal highways assessment reports (Transport Assessment (TA) & Travel Plan (TP)) have been required to be prepared for new food retail developments of greater than 800sqm. Given that the proposed development at Barnard Road is to be of a size above this 800sqm threshold and would result in the majority of development traffic accessing a nearby County A-road route (A1074 Dereham Road), it is considered that the preparation of a formal TA document to support the planning application is appropriate in this case.

1.6 The scope and nature of matters considered in this TA report reflects the extent of issues that are understood to be of material interest to the LHA, based on good practice methodology set out in NPPG and matters highlighted during a formal pre-application scoping exercise carried out in liaison with Norwich CC and NCC during Spring / Summer 2023, including the preparation and submission of a formal Highways Scoping Note by the applicant. This pre-application scoping process identified the following key highways related matters required for consideration as part of any formal planning submission:

- Provide details of proposed site access arrangements, demonstrating the potential for safe and efficient two-way vehicle operation, and access by pedestrian and cycle users.

- Provide details of the proposed internal highway layout, car parking arrangements and supporting measures to ensure that the site is delivered to a suitable standard to allow for customer / staff access & servicing and to ensure that the site is easily accessible by active travel modes and public transport.

- Consider the extent of vehicle trip demand expected to be generated by the proposals and the assignment of this traffic to the immediate highway network.

- Undertake appropriate network capacity assessment over an agreed local study area, including as appropriate, any cumulative effects associated with other local committed development projects that could result in additional traffic demand and / or amended highway arrangements. The study area to include the following local junctions:

    1. Site Access / Barnard Road (T-junction)
    2. A1074 Dereham Road / Wendene / Barnard Road / Breckland Road (Roundabout) – hereafter referred to as 'Wendene Roundabout'
    3. Wendene / Chapel Break Road / Clover Hill Road (Traffic signalised cross-roads)

1.7 The core structure of the remainder of this TA report is therefore as follows:

- A description of the location of the application site and a review of relevant planning history and existing site use. An audit of any other relevant planning consents / committed development that could impact on the future operation of the local highway network.

- A review of existing local highway network conditions – including a description of the highway network immediately adjacent to the application site, recorded local traffic volumes & queuing and a review of historical road safety records.

- An audit of sustainable transport opportunities available in the immediate vicinity of the application site, including a review of local walking, cycling and public transport connections.

- A description of the main development elements proposed – including a review of the proposed vehicle and pedestrian / cycle site access arrangements, car parking and provision to accommodate large vehicle servicing.

- An assessment of the anticipated travel demand associated with the application scheme, taking into account the propensity for pass-by / diverted trips and the predicted assignment of this traffic over the local highway network.

- Operational capacity considerations at the site access and at other key junction locations over the identified study network.

- Summary and conclusions.

1.8 This TA report should be read alongside the other technical documents submitted in support of the planning application.

2.0 SITE LOCATION, EXISTING SITE USE & RELEVANT PLANNING POLICY

2.1 Site Location

2.1.1 A plan illustrating the strategic location of the application site in relation to the wider built up area of western Norwich and the key district distributor road of A1074 Dereham Road is included as **Figure TA1** to this report, with an aerial photo plan of the existing site layout included as **Figure TA2**. The aerial image shows the site in the context of the immediate local road routes of A1074 Dereham Road, Barnard Road and the nearby A1074 Dereham Road / Wendene roundabout. To the immediate west of the site is the Bowthorpe Employment Area (typically characterised by office, storage / distribution employment uses with some traditional industrial facilities). Photographs of key existing local highway network features are included in **Appendix TA1** to this report.

2.2 Existing Site Layout and Land Use

Existing Site Land Use

2.2.1 The application site is currently occupied by the 'Namco Funscape' family leisure development (bowling and amusement arcade), associated landscaping areas and car parking. The existing building is understood to provide circa 3,441sqm of floor space, with the wider site being of 2.10 acres in size. The original planning approval for the bowling alley was secured under planning consent reference: 491070/F "Erection of single storey building to provide 30 lane ten pin bowling centre with associated parking".

2.2.2 Pedestrian, cycle and vehicle access to the site is currently taken via a private access road connection, shared with an adjacent hotel development (Brook Hotel - currently not open to the public), connecting to the local industrial access road of Barnard Road.

2.2.3 Recent traffic surveys of the extant leisure use, undertaken during May 2023 (see also section 3.2 to this report), have identified current traffic demand to / from site during relevant local highway network 'peak' periods, as being as follows:

- Friday Day-Time Peak (14:45 – 15:45): 11 in, 22 out;
- Friday PM Peak (16:15 – 17:15) 13 in, 17 out;
- Saturday Peak (12:15 – 13:15) 34 in, 30 out.

2.3 Relevant Planning Policy & Planning Status

2.3.1 The following paragraphs provide a summary of transport related planning policy matters that are considered relevant to the application scheme. This review includes consideration of transport policy guidance set out in both national and local planning and transport policy documentation.

National Planning Policy Framework (NPPF)

2.3.2 September 2023 National Planning Policy Framework (NPPF) seeks to encourage development which accords with the sustainable transport objectives of minimising the need for travel, particularly road journeys, and promoting the efficient delivery of goods and supplies. Key sustainable policy objectives stated in the NPPF are as follows:

> ***"Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:***
>
> ***a) the potential impacts of development on transport networks can be addressed;***
>
> ***b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;***
>
> ***c) opportunities to promote walking, cycling and public transport use are identified and pursued;***
>
> ***d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate***

opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and

e) patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places." (Para 104)

"The planning system should actively manage patterns of growth in support of these objectives (para 104). Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making." (para 105)

"Applications for development should:

a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;

c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;

d) allow for the efficient delivery of goods, and access by service and emergency vehicles…"(Para 112)

2.3.3 Paragraphs 110 and 113 to NPPF also provides guidance on the nature and detail of transport appraisal to be carried out to support development and those key matters to be considered when determining the suitability of development proposals:

"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- ***a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;***

- ***b) safe and suitable access to the site can be achieved for all users;***

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree." (Para 110)

"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed."(Para 113)

2.3.4 Ultimately NPPF concludes the following with respect to the technical consideration of highways and transport related effects:

"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." (Para 111)

2.3.5 Paragraph 111 to the NPPF is considered to be of key importance in the context of the assessment of the operation of the immediate local highway network. The NPPF clearly identifies that development should only be refused in those cases where highways impact would be 'severe' (our underlining) - which is typically understood to mean situations where development is likely to result in a material detrimental 'step change' in circumstances when compared to predicted Baseline / 'Do-Nothing' conditions. Should the operational effects as a consequence of development traffic be marginal in nature, then highway authorities are directed not to seek to prohibit development on highways and traffic grounds.

2.3.6 Whilst the NPPF does not seek to define the nature of what is considered to represent a 'severe' impact, thereby allowing for some flexibility to reflect site specific circumstances, it is clear that the guidance has the effect of setting a 'high-bar' for planning & highway authorities in terms of their ability to identify and successfully sustain objections to planning applications on highways grounds. The very nature of the wording of NPPF paragraph 111 inherently suggests that some measure of highways impact must be viewed as being 'acceptable' and that

it is only when a 'severe' detrimental highways position is identified that a refusal of planning permission on such grounds is appropriate.

Local Planning Policy: Joint Core Strategy for Broadland, Norwich & South Norfolk, 2011 (amended 2014)

2.3.7 The Joint Core Strategy (JCS) for Broadland, Norwich and South Norfolk is the key planning policy document for the Greater Norwich area. It forms part of the Local Plans for the districts of Broadland, Norwich and South Norfolk, setting out the broad vision for the growth of the area and containing strategic policies for the period 2008 – 2026. The JCS for Broadland, Norwich and South Norfolk was originally adopted on 22 March 2011, with amendments subsequently incorporated in January 2014.

2.3.8 Key transport related policy included in the JCS is set out in Policy 2 "Promoting Good Design" and Policy 6 "Access and Transportation". Relevant sections of these policies to the application scheme are as follows:

JCS Policy 2 "Promoting Good Design"

> ***"…the need to ensure cycling and walking friendly neighbourhoods by applying highway design principles that do not prioritise the movement function of streets at the expense of quality of place;***
>
> ***…the need to increase the use of public transport, including through 'public transport oriented design' for larger development."***

JCS Policy 6 "Access & Transportation"

> ***"…concentration of development close to essential services and facilities to encourage walking and cycling as the primary means of travel with public transport for wider access…"***

Local Planning Policy: Norwich Local Plan 2014 (Development Management Policies)

2.3.9 The adopted Norwich Local Plan represents the prevailing development plan for the city of Norwich administrative area. The document sets out the strategic priorities for the greater Norwich area, plus specific policies to guide Council

decisions when considering planning applications. A review of relevant development management policies (adopted December 2014) identifies the following key policies covering highways and transport matters:

NLP Policy DM28 "Encouraging Sustainable Travel"

"New development will be expected to be consistent with the criteria for sustainable development set out in policy DM1, particularly in relation to reducing the overall need to travel…

…new developments must be designed to ensure that:

a) cycle and pedestrian links and public transport corridors are incorporated to maximise the opportunity for sustainable transport, both from within the development and the wider area. Links must be an integral part of the design of the development;

b) developments maximise accessibility to and permeability within the site for pedestrians, ensuring that all new pedestrian routes proposed are coherent, convenient and legible…

c) cycle and pedestrian links to nearby services (including bus stops), are enhanced where necessary. This may include the provision of pedestrian crossing points. All parts of the development should have easy access to bus services and bus stops with appropriate levels of information, lighting, cycle parking (on high speed bus corridors) and other relevant services…

d) parking areas and vehicle movements do not dominate, but create convenient, safe and attractive environments…

e) travel planning is integral to the design and operation of the development, and travel plans or travel information plans are provided as part of development proposals…"

NLP Policy DM30 "Access & Highway Safety"

"The design of roads and spaces within new developments, and within sites which are being substantially redeveloped, must take account of the urban environment and overall setting of the scheme and include design measures to limit traffic speeds to 20mph."

"In other locations, accesses (including private driveways) will be acceptable where:

a) those onto local access routes can provide for access and egress in a forward gear;

b) they are not close to an existing junction, the inside bend of a road, within the limits of a pedestrian crossing or the brow of a hill;

c) they would not result in the loss of street trees, a significant area of verge, or other landscape features;
d) there is sufficient space available within the curtilage of the site to accommodate the size of vehicle likely to be used by an existing or future occupier…

f) the quality of the street scene is maintained; and

g) appropriate adjustments which are a direct consequence of the development proposed are made to existing on-street waiting arrangements, at the developer's expense."

NLP Policy DM31 "Car Parking & Servicing"

"To ensure appropriate levels of parking and service, developments should incorporate parking, servicing and other facilities in accordance with the advice and standards…

Development will be acceptable where the following criteria are addressed where relevant:

a) car parking is provided within the limits prescribed (at least the minimum, and not more than the maximum);

b) cycle parking is provided to at least the levels prescribed;

c) the required level of parking is provided for disabled drivers;

d) provision is made for electric car charging points;

e) it is demonstrated that adequate provision has been made for access to, and servicing of the proposed development, and in particular, that adequate and appropriately designed provision has been made for the storage and collection of refuse taking account of the current requirements for waste segregation for recycling;

f) provision of or alteration to on-street parking controls is made to ensure the safe and effective operation of the development…"

NLP Policy DM33 "Planning Obligations"

"…Planning obligations will be required to secure infrastructure which is necessary to ensure:

a) the delivery of sustainable development….

d) pedestrian and highway safety improvements necessary to secure satisfactory access to the development via a range of modes of transport."

Local Planning Policy: Norfolk Local Transport Plan 4 (2021-2036)

2.3.10 The Norfolk LTP4 sets out NCC Highway's plans, policies and programmes on transport and transport infrastructure and details how the Council will a) deliver the future management of the transport network in Norfolk and, b) how it will seek to influence key partners in government, communities, the commercial sector. The plan identifies seven key objectives:

- Embracing future technology;
- Delivering a sustainable Norfolk;
- Embracing connectivity;
- Enhancing quality of life;
- Increasing accessibility;
- Improving transport safety;
- A well-managed and maintained transport network.

2.3.11 The new food store scheme at Barnard Road will be developed cognisant to the above identified core policies and objectives, and is designed to deliver a highly accessible scheme, serving a local catchment, thereby helping to reduce trip length for food retail related journeys. The scheme will also be prepared to include for the delivery of supporting infrastructure to encourage greater access by active travel modes and public transport.

NCC "Parking Guidelines for New Development in Norfolk"

2.3.12 The Norwich Local Plan refers to the need for new development to reflect prevailing local parking policy. Parking standards were included within the original 2014 Local Plan document, however, these are understood to have been effectively superseded by more contemporary standards as set out in NCC Highways' document "Parking Guidelines for New Developments in Norfolk" (revised July 2022). These contemporary standards identify the following guideline requirements for new food

store schemes, with these requirements identified as representing the starting point for the assessment of the requirements of an individual development scheme: *'Food Retail' (1000sqm and above):*

- 1 vehicle parking space (2.5m by 5.0m) per 14sqm GFA;
- 1 cycle parking space per 100sqm GFA;
- 1 motorcycle parking space, plus 1 per 20 car spaces (for 1st 100 car spaces), then 1 per 30 car spaces (over 100 spaces);
- 3 accessible bays or 6% of total car parking capacity, whichever is greater for car parks of less than 200 spaces.

NB - Accessible parking spaces should be located close to an accessible entrance, preferably the main entrance and not more than 50m from the designated parking spaces and at an acceptable gradient. Suitable parking surface materials should also be used to strengthen consideration for disabled people.

2.3.13 Section 5.3 to this report provides details of the car parking strategy to be adopted at the proposed food store site and the location and nature of proposed cycle and powered two-wheeler parking to support the development.

2.4 Relevant Local Committed Development & Programmed Local Highway Improvements

2.4.1 Focus TP are aware of a number of on-going development projects / proposed local highway improvements that could generate additional movements / material changes to the immediate highway network to the Barnard Road application site. Details of these schemes are summarised below.

Brook Hotel, Barnard Road

2.4.2 The land adjacent to the application site accommodates an 82-bed hotel building (Brook Hotel), which shares the private side road access connection to Barnard Road. This hotel is currently closed to guests as a hotel and no traffic demand associated with the operation of hotel use at the site was included within the recent May 2023 traffic survey results. Ultimately, as the site has the potential to be re-opened as a commercial hotel under current planning approvals for the site,

it is considered prudent to include potential traffic demand associated with this extant hotel land-use within any assessment of future year traffic conditions. Further details of the anticipated traffic effects of the re-opening of this hotel development to customers are set out in section 7.2 to this report.

Threescore Residential Area

2.4.3 Land to the south of the Clover Hill residential area (known locally as Threescore) benefits from planning consent for up to 1000 dwellings, local shop, care home and public open space (Planning Application Refs: 12/000703/O & 15/01230/VC (variation of bus gate delivery time)).

2.4.4 At the time of the undertaking of the recent May 2023 traffic survey exercise it is understood that both Phase 1 (92 care-flat dwellings & 80 dementia care apartments) & Phase 2 (172 dwellings) of the Threescore masterplan had been completed and occupied, with Phase 3 (circa 80 dwellings) currently under construction (see **Appendix TA2**). It is not known whether any other development phases benefit from reserved matters consent.

2.4.5 Any traffic movements associated with the completed Phases 1 & 2 at Threescore can already be expected to be included within the May 2023 observed background traffic flows. Estimates of likely additional future Threescore development related traffic volumes across the study area network are set out in section 7.2 to this report.

A1074 Dereham Road Improvements (Longwater Lane to Gurney Road) & Travel Hub

2.4.6 NCC have secured DfT Transforming Cities Fund (TCF) funding for sustainable transport improvements along the immediate northern section of the A1074 Dereham Road corridor to the application scheme. Emerging plans illustrating the details of these proposed works are included as **Appendix TA3** to this report, with core elements summarised below:

- Speed limit reduction on A1074 Dereham Road from 40mph to 30mph.
- Two-way bus priority access (traffic signals) to / from A1074 Dereham Road on old Dereham Road alignment to avoid need for buses to use Wendene Roundabout and to give convenient access to new bus-hub facility.
- Segregated pavement with 2m footpath and 3m two-way cycle track to the north side of A1074 Dereham Road between Grays Fair and Three Mile Lane.
- Junction amendments to Three Mile Lane & Grays Fair side roads to deliver walk / cycle priority crossings on raised table feature.
- Segregated pavement with 1.5m footpath and 2.5m two-way cycle track to the north side of Three Mile Lane adjacent to Wendene Roundabout, continuing through to Breckland Road.
- Three Mile Lane / Breckland Road junction re-aligned to deliver priority to buses.
- New bus stops located on Breckland Road within the proposed travel hub.
- Travel hub at street level at the location of existing Dereham Road underpass, providing cycle parking, access to hire bikes / e-scooters, car club vehicle parking, electric car charging points, community seating and real time passenger information.
- Junction amendments to Breckland Road side road to deliver a walk / cycle priority crossing on raised table feature.
- Walk / cycle priority crossing of old Dereham Road to access travel hub.
- New at-grade share use walk / cycle route, linking to Bowthorpe Park and existing shared use connections.
- Removal of existing bus lay-by to A1074 Dereham Road (E) exit from Wendene roundabout.
- Bus priority signalled access to / from the travel hub from A1074 Dereham Road (E).
- Additional linking improvements to the east towards Gurney Road.

2.4.7 It is understood that the design of the proposed works is due to be finalised during Autumn 2023, with scheme delivery works programmed to commence in early 2024. A key feature of the works relevant to the consideration of the application site is the introduction of traffic signal controlled bus priority works on the section of A1074 Dereham Road to the west of the Wendene roundabout, immediate to the

northern frontage of the application site. Delivery of these bus gate works will result in some changes to the current approach lane markings of this section of A1074 Dereham Road (W) route to the Wendene roundabout.

2.4.8 In parallel to these travel hub TCF works, NCC highways are also progressing connecting improvement works to the west along A1074 Dereham Road between Longwater Lane and Grays Fair to deliver improved cycle and walking infrastructure and new bus lanes / improved bus stop facilities (see also **Appendix TA4**). These works are anticipated to be delivered during Autumn 2023.

2.4.9 In combination, the Travel Hub / Dereham Road corridor schemes aim to provide shorter and more consistent journey times for buses, improve connectivity between different modes of travel, as well as deliver a safer environment for those walking or cycling along A1074 Dereham Road. The proposals also seek to provide better connections between the two large communities on either side of A1074 Dereham Road and provide safer access to local schools, employment areas and other amenities.

Mayfly Way Improvements

2.4.10 NCC have also secured TCF funding to carry out improvements to the local Mayfly Way walk / cycle corridor to the west of the application site. These works commenced on site in late July 2023 (to coincide with the school holiday period) and were anticipated to completed by early Autumn 2023 and include for the following key elements (see also **Appendix TA5**):

- Existing footpath to be used as a two-way cycle track and existing verge converted to a raised kerb footpath for pedestrian use only.
- Parallel crossing (zebra with parallel priority cycle crossing) of Barnard Road, supported by slight build out of Barnard Road footways to both sides and implementation of support double yellow line waiting restrictions.
- Parallel crossing of Chapel Break Road including raised table and footway build out / re-alignment and removal of existing traffic island.
- Cycle priority crossing of Harpsfield to connect to the Green Peldalway.

2.4.11 These works will provide improved north-south foot / cycle connections and link to the improved works to the Dereham Road corridor (including improved signal controlled pedestrian crossing of this route as part of A1074 Dereham Road corridor TCF works) and the segregated pedalway connections through Bowthorpe and Clover Hill.

3.0 REVIEW OF EXISTING LOCAL HIGHWAY NETWORK CONDITIONS

3.1 Description of the Local Highway Network to the Application Site

3.1.1 As noted in section 2.2 to this report, current vehicle access to the application site is via a good standard private road connection to Barnard Road to the south, shared with the adjacent Brook Hotel. A plan of this existing connection is included as **Figure TA3** to this report and demonstrates the following key layout features:

- Minimum 7.3m wide private road connection:
- 12.5m left turn entry / exit radii;
- 1.8m - 2.0m footway links connecting to Barnard Road to both sides of the private road.
- Minimum available visibility of 2.4m by 43m in the leading direction (to the right) and 2.4m by 43m in the non-leading direction (to the left). Full illustrated visibility to the left would, in practice, require the trimming back of existing site frontage vegetation.

3.1.2 To the west of the application site access, Barnard Road provides local cul-de-sac access to a range of employment and industrial premises forming part of the Bowthorpe Employment Area. This section of route is characterised by a 7.5m width operating carriageway, with 1.8m – 2.0m kerbed footways to both sides. Further west, these footways are set back behind a circa 1.8m verge, but with no verge available to the site side between the site access junction and the connection to Morgan Way, including to the front of third party premises. Ultimately the footways to the west connect to the segregated walking / cycling route of Mayfly Way (this connection to be upgraded to zebra crossing feature during late 2023 – see section 2.4 to this report). Other walking connections to the south, and the residential areas of Bowthorpe off Chapel Break Road, are available via a footpath connection to Barnard Road located circa 110m to the west (see **Appendix TA1**). The location of existing walking connections are illustrated in **Figure TA4** to this report.

3.1.3 Barnard Road benefits from street lighting and operates under a standard 30mph urban speed limit. Circa 65m to either side of the application site access road connection, the route provides access to the local industrial estate road of Jarrold Way - via simple T-junction connections. A further pedestrian link to Chapel Break Road is provided via a narrow gravel surfaced track from the south eastern corner of Jarrold Way.

3.1.4 To the east of the site access connection junction, Barnard Road provides a direct link to the Wendene Roundabout (circa 175m between the site access and roundabout entry point). This section of route is characterised by a lack of continuous footway to the north (site) site, with the footway to this side terminating immediately adjacent to the application site connection. A 2m kerbed footway is provided to the southern (non-site) side of this eastern section of route, linking to tactile crossing points on Wendene, to the south of the Wendene Roundabout.

3.1.5 The Wendene roundabout is a circa 70m ICD 5-arm priority roundabout accessed by Barnard Road, A1074 Dereham Road (east & west approaches), Wendene and Breckland Road. The roundabout currently operates under a 40mph speed limit (proposed to be reduced to 30mph as part of the TCF Travel Hub works described in section 2.4) and is characterised by multi-lane approaches on all side road connections (3-lane approaches on the A1074 Dereham Road arms (including left turn flare) and two-lane approaches to Wendene, Barnard Road and Breckland Road. Sections of the main roundabout circulating carriageway are hatched out to limit practical roundabout operation to two lanes, with further road markings on the circulating carriageway to encourage appropriate lane discipline. The roundabout benefits from street lighting and includes for a small copse of mature trees to the central island, which limits forward visibility through the roundabout on key approaches.

3.1.6 To the west of the roundabout, A1074 Dereham Road provides connections to the Longwater residential and commercial areas and the settlement of Costessey (via Longwater Lane). The A1074 ultimately links to the A47 Norwich Southern Bypass at a grade separated dumbbell roundabout junction located circa 2.4km from

Wendene roundabout. This western section of the A1074 is currently characterised by a 40mph wide single carriageway route between Wendene roundabout and the Longwater Lane signals junction, with no pedestrian facilities to the southern (site) side of the route between the Wendene roundabout and the ghost island junction with Richmond Road. As noted in section 2.4 to this report, this western section of route is proposed to be the subject of a package of corridor improvements that will see the implementation of walk / cycle improvements to the northern side and the introduction of bus-lane features (in parts) in both directions. These works include for a new traffic signal controlled two-way bus gate immediately to the north-east of the application site frontage, which will replace the limited one-way (eastbound only) bus-only link from Dereham Road to Three Mile Lane.

3.1.7 To the east of the Wendene roundabout, A1074 Dereham Road serves the local residential areas of New Costessey and Earlham and onward links to Norwich city centre. The immediate part of this section of route to the Wendene roundabout is of dual carriageway layout, narrowing to a wide single carriageway layout (including city centre direction bus lane) to the east of Gurney Road. This immediate section of route is also proposed to be the subject of local highway improvements as part of the Travel Hub TCF works described in section 2.4, including a new at-grade traffic signal walk / cycle crossing point, close to the existing Butterfly Way pedestrian / cycle underpass and additional bus gate feature.

3.1.8 To the north of Wendene roundabout, Breckland Road provides local road access to parts of the residential area of New Costessey. Breckland Road is accessed by Three Mile Lane almost immediately adjacent to the Wendene roundabout, with no direct right turn access currently available from Breckland Road to Three Mile Lane (requiring a U-turn via Wendene roundabout). These existing restricted arrangements are to be replaced by a more traditional T-junction with revised priority as part of the TCF Travel Hub works.

3.1.9 Access to / from the south of the Wendene roundabout is vehicle provided by the local dual carriageway route of Wendene. This route represents the primary access link to the local residential areas of Bowthorpe, Chapel Break and Clover Hill and

forms a traffic signal cross-roads connection with Chapel Break Road and Clover Hill Road located circa 220m to the south of the Wendene roundabout. The cross-roads junction is characterised by 3-lane approaches to all junction arms (individual right turn, straight-on and left-turn lanes) and includes for marked pedestrian crossing routes to the Clover Hill Road and Wendene (S) approaches (no dedicated crossing stages). All of the approach arms to the junction, including the full length of the dual carriageway section of Wendene to the south of the Wendene roundabout operate under 30mph urban speed limit controls. No segregated footways are available to the west of Wendene (N) or to the north of Chapel Break Road & Clover Hill Road, with footways provided limited to the opposite sides of these links and generally set back behind verges.

3.1.10 The Clover Hill and Bowthorpe residential areas have historically been designed to discourage through traffic / rat-running and to concentrate traffic movements on the key local distributor road routes of Wendene, Chapel Break Road and Clover Hill Road. No through traffic links from these residential areas are available to adjacent areas to the east and west, with vehicle access to the south limited to Tollgate Way, linking to Earlham Road. This restricted wider network layout results in the majority of traffic to / from these residential areas being required to pass through the Wendene roundabout and therefore close to the Barnard Road application site. This is expected to help encourage some existing longer distance food retail trips to divert / transfer to the proposed new store at the application site.

3.1.11 A wide range of local foot / cycle and public transport connections are available within the immediate local catchment to the application site. Details of these links are set out in chapter 4 to this report.

3.2 Background Local Highway Network Operating Conditions

3.2.1 Background local highway network traffic demand conditions have been established via the undertaking of a traffic survey exercise in accordance with the scope agreed with NCC Highways as part of pre-application discussions. These surveys included the undertaking of turning movement surveys and queue length

surveys at the locations illustrated in **Figure TA5**, with the survey exercise carried out to cover the following dates and time periods:

- Friday 11th May 2023: 07:30 – 19:30
- Saturday 12th May 2023: 10:00 – 16:00

3.2.2 Review of total recorded traffic arriving into the study area identifies the 'rolling' hourly demand profiles as illustrated in **Figure TA6a** and **Figure TA6b -** for recorded Friday and Saturday survey conditions respectively. This suggests the following network 'peak' demand periods:

- Friday AM Peak: 08:00–09:00
- Friday Day-Time Peak: 14:45–15:45
- Friday PM Peak: 16:15-17:15
- Saturday Peak: 12:15-13:15

3.2.3 Weekday peak traffic demand periods were noted to be generally higher than Saturday demand conditions, with Saturday traffic levels being only of the order of circa 85% of recorded weekday peak demand. Maximum weekday hourly traffic levels were recorded during the day-time hour 14:45-15:45.

3.2.4 Given that food store related traffic demand is typically quite low during AM peak periods (see section 6.1 to this report), it was agreed with NCC Highways that detailed highway network capacity assessment would not be required for this time period. Network assessment has instead been concentrated on the periods of maximum combined background + food store development traffic levels, i.e. weekday day-time peak & weekday PM peak periods and the recorded Saturday maximum peak hour (lunchtime). Recorded background 2023 turning movements across the key study area junctions during these identified key maximum time periods are illustrated in **Figures TA7(a-c)** to this report.

3.2.5 As part of the May 2023 traffic survey exercise, queue length data (maximum queue recorded in five minute intervals) was collected for all approaches to the two main junctions within the survey area (Wendene Roundabout and the Wendene / Chapel

Break Road / Clover Hill Road traffic signals. This queue data is summarised in **Appendix TA6.** Review of this recorded queuing information notes that:

Wendene Roundabout:

- *Friday* – queuing on most roundabout approaches was noted to be low – max queuing being typically less than 10 vehicles per lane, except for the A1074 Dereham Road (W) arm, which showed queue levels of between 10-15 vehicles on some occasions. A short term significant 'spike' in queuing levels was noted on the Barnard Road approach to the roundabout for circa 10 minutes around 17:00 – it is anticipated that this is likely to relate to a shift-end 'surge' in demand associated with one of the employment units on the industrial estate. For all other weekday periods, queuing on the Barnard Road approach arm to the roundabout was noted to be low (typically less than 5 vehicles).

- *Saturday* – queuing on all approach arms was noted to be less than 10 vehicles throughout the full survey period – reflecting the lower overall traffic flows recorded over the immediate local highway network on the Saturday survey day.

Wendene / Chapel Break Road / Clover Hill Road Traffic Signals:

- *Friday* – Recorded queuing on the Wendene (S) and Clover Hill Road approaches to the junction was noted to be generally quite low (typically less than 6 vehicles per lane). Higher queuing levels were noted on the Wendene (N) and Chapel Break Road approaches, but typically queuing rarely exceeded 10 vehicles per lane.

- *Saturday* – queuing on all junction arms was noted to be lower than recorded Friday levels.

3.2.6 This queue survey information does not suggest that the key existing local junctions are showings signs of substantive congestion during key peak demand periods. In general queuing on key approaches is relatively low and there is little evidence of long sustained queuing at any time. The queue information recorded during these surveys has been used to validate the junction models utilised in this report to inform the assessment of future baseline and 'with development' condition (see section 8.1 to this report).

3.3 Road Safety: Review of Personal Injury Accident Records

3.3.1 An appraisal of the operational safety of the immediate local highway network to the application site has been carried out through a review of historical Personal Injury Accident (PIA) data obtained from the crashmap.co.uk database for the most recently available 5-year search period (2017 to 2021 inclusive). This database includes for all accident incidents as recorded by the police & emergency services and therefore represents 'industry standard' data utilised for the calculation of accident rates and the assessment of highway safety. The specification of a minimum five-year search period accords with criteria recommended in NPPG good practice guidance, with the selected study area including for all of the key junctions and approach links agreed with NCC highways, i.e. A1074 Dereham Road, Wendene, Barnard Road, Breckland Road, Chapel Break Road and Clover Hill Road.

3.3.2 Details of the extent of the search area and the number & location of recorded accident events are illustrated in **Figure TA8** to this report.

3.3.3 Review of the recorded accident data demonstrates that no accidents were recorded at the site access connection to Barnard Road or on the application site access road itself during the search period. Indeed, only one accident event (slight incident class) has been recorded over the immediate section of Barnard Road to the application site – taking place at the Barnard Stret / Jarrold Way access, to the east of the application site. Review of the accident details associated with this particular incident note that the accident took place in 2017, during early morning (pre 07:30) dark conditions, and involved a van pulling out of the side road junction and colliding with passing traffic.

3.3.4 Two accidents have been recorded on the A1074 Dereham Road (W) approach to the Wendene Roundabout over the five year study period. Review of the details of these recorded events identifies that both were of 'slight' injury accident classification and tool place outside of traditional network peak periods. Identified incident factors are summarised below and do not suggest any clear common accident trend:

- Acc Ref 2: Slight class. Car / Car collision close to junction with Grays Fair - Friday 18:27 17/12/20.
- Acc Ref 3: Slight class. Car / Car shunt collision on approach to the Wendene roundabout - Wednesday 11:10 06/06/18.

3.3.5 Only one accident has been recorded on the local dual carriageway section of Wendene (Acc Ref 13) to the south of the roundabout with the A1074 Dereham Road or at the traffic signal controlled junction cross-roads junction with Chapel Break Road & Clover Hill Road. This recorded incident took place in 2019, on a weekday early afternoon and involved a car / car collision.

3.3.6 Nine accident events have been recorded at the main A1074 / Wendene roundabout during the five-year study period, of which seven represented 'slight' class events and two 'serious' class incidents. Key accident details for all of the recorded accident events at the roundabout are summarised below.

- Acc Ref 4: Slight class. Car / Van collision at exit from roundabout to Dereham Road (W) - Sunday 12:45 25/08/23.
- Acc Ref 5: Serious class. Car / cycle collision near entry to roundabout from Barnard Road - Monday 16:50 22/03/21.
- Acc Ref 6: Slight class. Car / cycle collision near entry to roundabout from Barnard Road - Sunday 23:45 11/07/21.
- Acc Ref 7: Serious class. Car / pedestrian collision involving child pedestrian crossing the carriageway - Friday 21:50 09/03/18.
- Acc Ref 8: Slight class. Car / Car / Medium Van collision at Wendene entry to roundabout - Sunday 08:45 05/12/18.
- Acc Ref 9: Slight class. Car / Car rear shunt on roundabout circulating carriageway at Wendene exit - Thursday 19:45 09/12/21.
- Acc Ref 10: Slight class. Car / cycle collision on roundabout circulating carriageway near to Dereham Road (E) entry - Thursday 17:50 27/08/19.
- Acc Ref 11: Slight class. Car / cycle collision on roundabout circulating carriageway near to Dereham Road (E) entry - Wednesday 15:33 02/06/21.
- Acc Ref 12: Slight class. Car / car collision on roundabout circulating carriageway near to Breckland Road entry - Wednesday 07:10 13/03/20.

3.3.7 Review of this information notes that over half of the recorded incidents involved active travel users (4 pedal cycle & 1 pedestrian), with both of the serious class accident events involving these vulnerable users (both car / cycle conflict events at roundabout entry's). There are no strong common trends to these incidents with accidents taking place both at roundabout entry points and on the circulating carriageway. Few incidents were noted to take place during key peak network demand periods, with three incidents taking place on a Sunday and a further three weekday accidents either before 07:30 or post 19:00. Overall it is not considered that the recent accident record at the Wendene roundabout suggests a significant accident concern that would require targeted layout improvements directly associated with the application site development proposals to address specific road safety issues. Notwithstanding this, it is noted that the food store development proposals include additional safe crossing opportunities of A1074 Dereham Road (W) roundabout approach and therefore could divert active travel users away from the main roundabout, therefore offering some local safety enhancements.

3.3.8 Based on the above review of study area wide accident history, it is ultimately concluded that there are no clear & substantive prevailing local road safety issues that would call into question the development of the application site for food store land-use or require direct additional highway safety mitigation measures over and above the proposed crossing improvement scheme to Dereham Road.

4.0 SITE ACCESSIBILTY AUDIT

4.1 Introduction

4.1.1 Development of the application site at Barnard Road for food store land use would need to satisfy the key planning and transport related sustainability objectives of:

- Reducing the need to travel, especially by private car;
- Ensuring accessibility to a range of sustainable travel options.

4.1.2 The nature of local sustainable transport connections available within the immediate catchment of the application site are summarised in the paragraphs below.

4.2 Access to Public Transport

4.2.1 Closest bus stops to the application site are located on Breckland Road / A1074 Dereham Road to the north of the Wendene Roundabout. These stops are due to be significantly upgraded (new stops with shelters, live bus information and cycle hire facilities) as part of the programmed Dereham Road Travel Hub TCF works (see section 2.4 to this report and **Appendix TA3**), to be carried out in early 2024. New stops are to be developed on Breckland Road close to the A1074 Dereham Road (E) underpass, circa 330m from the application site (measured assuming delivery of the proposed new direct pedestrian connections to A1074 Dereham Road (W) to be delivered as part of the food store scheme – see section 5.2 to this report).

4.2.2 The new Dereham Road Travel Hub facility can be expected to be served by the local bus routes identified in **Table TA4.1** below. This table summarises existing service frequencies and provides details of routing. A plan of these relevant local bus routes is included as **Figure TA9** to this report.

Table TA4.1: Bus Services Available from Dereham Road Travel Hub Bus Stops

Service	Route	Mon-Sat / Sun Daytime Frequency
23 / 23B 'Red Line'	Longwater – Costessey – City Centre - Heartease	1 per hr day & 1 per hr eve / 1 per hr day & 1 per hr eve / 1 per hr day & 1 per hr eve
24 / 24A 'Red Line'	Queens Hill – Longwater – Costessey – City Centre – Heartease – Thorpe St Andrew	3 per hr day & no eve service / 2 per hr day & no eve service / No Sunday service
515	Easton - Longwater – Sweet Briar Retail Park – Hellesdon – Airport P&R	1 per day No Saturday service No Sunday service

4.2.3 In addition to the bus stops at the Dereham Road travel hub, **Figure TA9** identifies that connections to other local bus services are available at nearby bus stops at Chapel Break Road / Astley Road to the south (circa 400m walk from the application site, using the designated footpath link between Barnard Road & Chapel Break Road). These stops are characterised by a simple 'flagpost' stop with bus-boarder kerb at Chapel Break Road and a flagpost, passenger shelter and bus-boarder kerb stop at Astley Road. The stops are served by the services summarised in **Table TA4.2** to this report.

Table TA4.2: Bus Services Available from Chapel Break Road / Astley Road Bus Stops

Service	Route	Mon-Sat / Sun Daytime Frequency
21 'Orange Line'	N&Nu Hospital – Bowthorpe – West Earlham – City Centre – Fiddlewood – Old Catton	3 per hr day & 1 per hr eve / 3 per hr day & 1 per hr eve / 2 per hr day & 1 per hr eve
26A 'Blue Line'	Bowthorpe – University – Earlham Road – City Centre – Rail Station	2 per hr day & no eve service / 2 per hr day & no eve service / No Sunday service

4.2.4 Review of the above information identifies that bus stops within a local walking of the site are served by a range of frequent services that provide practical opportunities for bus trips connecting to local residential areas during key daytime retail periods. The stops at the Dereham Road Travel Hub will be served by 3 – 4 bus services an hour, providing links to Costessey, Longwater and North Earlham, with the stops at Chapel Break Road / Astley Road providing access to 4-5 buses per hour and links to Clover Hill, West Earlham, Bowthorpe and Colney. These service routes cover much of the core extent of the identified 10 minute drivetime local car trip catchment and therefore are considered to offer a practical

alternative option to private vehicle use when accessing the proposed new food store at the application site.

4.3 Accessibility by Walking and Cycling

Practical Pedestrian Catchment

4.3.1 National planning guidance notes that walking is the most important mode of travel at the local scale, offering the greatest potential to replace short distance car trips of under 2km. Guidance produced by CIHT also notes that 800m represents an 'acceptable' walking distance to community facilities and shops, with 1.2km representing a 'preferred maximum'. **Figure TA10** to this report illustrates the extent of a 1km walk catchment to / from the proposal site, assuming the delivery of the proposed walk / cycle crossing of A1074 Dereham Road to the site's northern frontage. This exercise demonstrates that a practical walk catchment includes significant parts of the local residential zones of Bowthorpe, Clover Hill and New Costessey, as well as all of the adjacent Bowthorpe Employment Area.

4.3.2 Pedestrian access to the application site is supported by good standard footways to immediate sections of Barnard Road and onward links to a range of connecting dedicated pedestrian / cycle links including the pedestrian only routes to Chapel Break Road to the south and the easy access to Mayfly Way and connecting onward links to Hawkmoth Way, Dragonfly Way & Grasshopper Way. These routes offer convenient 'off-road' walking routes linking to nearby residential estates within the Bowthorpe & Clover Hill areas. Walking links from the application site to the north would be significantly enhanced via the delivery of the proposed supporting new pedestrian / cycle crossing facility at the site frontage to A1074 Dereham Road.

Cycle Catchment

4.3.3 National Planning Guidance notes that cycling has the potential to substitute for short car trips – particularly those journeys of less than 5km or which could form part of a longer journey by public transport. The location of the application site

allows for practical cycling access to the majority of the western side of Norwich (**Figure TA11**), including Bowthorpe, Clover Hill, Earlham, Costessey, Longwater and Hellesden.

4.3.4 Key cycle infrastructure and connecting links available within the immediate local travel catchment of the application site is illustrated in **Figure TA12**. Review of this plan demonstrates that an excellent range local segregated 'pedalway' links, along with other connecting 'quiet road' neighbourhood routes are available, which would help encourage regular cycle access. Furthermore improved cycle facilities are programmed to be delivered by NCC to Mayfly Way and the A1074 Dereham Road corridor (see section 2.4 to this report), which can be expected to further enhance cycle accessibility, alongside the new walk / cycle connection at Dereham Road (W) proposed as part of the food store scheme.

4.4 Accessibility Summary

4.4.1 Overall it is concluded that the application site at Barnard Road represents a suitable location for new food store development, being located within a practical walking and cycling distance of local residential areas and within a short walk of bus stops served by good frequency local bus connections.

4.4.2 Such locational characteristics should assist in meeting the sustainable planning objectives of promoting opportunities for the use of alternative travel modes to the private car and thereby help manage the overall traffic impact associated with new development.

5.0 REVIEW OF THE DEVELOPMENT PROPOSALS

5.1 General Principles

5.1.1 The application scheme proposes the re-development of land at Barnard Road, Norwich to deliver a new food store of 1949sqm GIA. The proposals envisage the demolition of existing buildings and the delivery of a new food store building along with ancillary car parking and landscaping. The proposed store is primarily designed to serve a local catchment, including the nearby residential areas of Chapel Break, Bowthorpe, Clover Hill and New Costessey.

5.1.2 A plan of the proposed food store scheme is included as **Appendix TA7** to this note. The layout includes for 120 car parking spaces (7 disabled standard & 2 EV charging spaces) alongside integrated servicing / delivery arrangements to the south of the main car parking zone and a new pedestrian / cycle connection to the north, linking to A1074 Dereham Road.

5.2 Highway Access Arrangements

5.2.1 It is proposed that vehicle access to the development would be taken via the retention of the existing private road access to Barnard Road. This access route provides a minimum carriageway width of 7.3m and is therefore appropriate to accommodate both customer vehicle access and occasional service vehicle access, for both the proposed food store and adjacent hotel development, without the need for further improvement.

5.2.2 Pedestrian access to the south of the site would continue to be maintained by the existing footway connections, linking to the adopted segregated footway routes to Barnard Road. As part of the application scheme the site access driveway footway connection to Barnard Road is to be increased in width from the current 1.8m, to a 3m facility, making it suitable for shared foot / cycle use. The application scheme also includes for the removal of the existing side access connection from the site access road currently serving the leisure scheme car park and its replacement with a new junction bellmouth circa 40m to the north of the terminal connection point

with Barnard Road (roughly opposite the existing side road access connection serving the hotel scheme). This junction bellmouth is designed to allow for access to future development proposals on the adjacent land parcel (5.5m carriageway width and 4.5m radii). Only the delivery of the junction bellmouth forms part of the application scheme proposals, with redevelopment of the adjacent land to be pursued via a separate planning application at some point in the future.

5.2.3 To improve pedestrian accessibility to the north of the site, it is proposed that a new ramped footway / cycle access would be delivered to connect to a new traffic signal controlled crossing point of A1074 Dereham Road to be funded and implemented in support of the food store scheme. This footway / cycle access link would be provided at a minimum width of 3.0m and would be delivered at a gradient of less than 1:20 to allow for practical use. The link would connect to a 3m walk / cycle corridor running to the eastern boundary of the site, effectively allowing for good standard walk / cycle through access between A1074 Dereham Road and Barnard Road. A direct access route between the store entrance and this walk / cycle corridor would be provided as part of the site car park access layout, delivering a safe segregated route for cyclists and pedestrians to the store from key approach directions.

5.2.4 Details of the proposed supporting crossing arrangements at A1074 Dereham Road are illustrated in **Appendix TA8** to this report. The key elements of this crossing layout have been prepared to deliver a direct connection to the walk / cycle & bus gate scheme programmed to be delivered on the A1074 Dereham Road corridor during early 2024 as part of the TCF Dereham Road Travel Hub works (see section 2.4 to this report). The proposed crossing design utilises the new traffic splitter island to be formed as part of the proposed bus-hub arrangements and links directly into the new walk / cycle route to the northern side of the A1074 Dereham Road corridor. The key principles of this crossing layout have been discussed with both NCC development control officers and the design team responsible for the delivery of the Travel Hub scheme.

5.2.5 It is anticipated that the crossing works will ultimately be delivered as a 'bolt-on', following the completion of the initial TCF scheme elements and therefore have been designed to minimise new construction works.

5.3 Development Car Parking & Cycle Parking

5.3.1 As noted in section 2.3 to this report, July 2022 NCC document "Parking Guidelines for New Developments in Norfolk" sets out the following required parking levels to support 'Food Retail' development class schemes of 1000sqm and above:

- 1 vehicle parking space per 14sqm GFA;
- 1 cycle parking space per 100sqm GFA;
- 1 motorcycle parking space, plus 1 per 20 car spaces (for 1st 100 car spaces), then 1 per 30 car spaces (over 100 spaces);
- 3 accessible bays or 6% of total car parking capacity, whichever is greater for car parks of less than 200 spaces.

5.3.2 In the light of these contemporary NCC requirements, it is proposed that the new food store at Barnard Road (circa 1949sqm) would be served by a total of 120 car parking spaces (7 to accessible standard, 9 parent & child spaces and 2 spaces suitable for EV charging) – delivering an overall parking supply of 1 space per 16.2sqm of building floorspace or circa 86% of NCC guideline standards.

5.3.3 Covered and secure cycle parking facilities would be provided for up to 20 cycles at a location less than 25m from the main building customer access.

5.3.4 Additional marked parking for 6 powered two-wheel vehicles would be provided within the car park, close to the cycle parking area.

5.4 Site Servicing

5.4.1 Large vehicle servicing of the site would be achieved via a dedicated loading / servicing bay located to the rear of the food store building and accessed directly from the site access road linking to the internal customer car parking arrangements. This shared delivery / customer access approach represents standard nationwide practice for the servicing of food store developments by the anticipated store operator, Lidl GB Ltd.

5.4.2 Based on discussions with the proposed store operator it is anticipated that typically the loading bay would be accessed by circa 2 large articulated HGV delivery vehicles each day, in addition to a limited number of other smaller service vehicle events, such as milk / dairy deliveries (typically rigid HGV). Waste collection is carried out via backloading of the main delivery vehicles, in order to minimise store related carbon footprint. Delivery schedules would be carefully managed to ensure that only one service vehicle would need to be accommodated on site at any one time.

5.4.3 Illustrative vehicle swept path assessment for the above core identified service vehicle movements, along with other general movements within the main customer car park are set out **Appendix TA7** to this report. This exercise demonstrates that the proposed car park and servicing arrangements are appropriate.

5.5 Measures to Encourage Sustainable Trip Making

5.5.1 It is proposed that the day-to-day operation of the food store site would be supported by the implementation of a formal Travel Plan. This document would include a range of initiatives to encourage both staff and customer travel to / from the site by alternative more sustainable travel modes to the private car. A copy of an Interim Travel Plan for the Barnard Road site is included as **Appendix TA9** to this report, which includes measures such as:

Physical Travel Plan Measures

- Safe cycle / walk routes within the site and connections to the immediate local adopted highway network;
- Covered customer and staff cycle parking area.
- Staff changing area with lockers within the main building.
- Staff Travel Information Noticeboard at prominent location within the building.

Operational Travel Plan Measures

- New employees to be provided with access to a Sustainable Travel Information Pack (STIP) prior to starting work on site. The STIP to be checked and updated on a quarterly basis.
- Provision of maps and promotional information to encourage walk & cycle access to the site.
- Include copies of public transport timetables on site and on Staff Noticeboard.
- Investigate potential for staff public transport season ticket loans or involvement in DfT 'cycle to work' loans scheme.
- Encourage staff to car share and promote life-sharing schemes.
- Offer guaranteed ride home for any staff participating in the travel plan required to work late at short notice or in family emergency circumstances.
- Adoption of smart working practices and use of teleconferencing where appropriate to reduce travel demand.

5.5.2 Operation of the Travel Plan will be subject to regular monitoring using a schedule of survey events based on established guidance promoted by NCC highways.

6.0 PREDICTED TRAVEL DEMAND ASSOCIATED WITH THE APPLICATION SCHEME AND LOCAL TRIP ASSIGNMENT

6.1 Predicted Trip Demand Levels Associated with the Application Scheme

6.1.1 Future traffic demand associated with the application scheme has been estimated via reference to trip data for representative food store sites as extracted from the TRICS traffic generation database. Details of the chosen sites are set out in **Appendix TA10** to this report, with key search criteria summarised as below:

- Relevant branded food store sites;
- Site GFA size range 1200sqm – 2500sqm
- No Town Centre or Edge of Centre Sites;
- No sites in Eire or Gt London.

6.1.2 This trip rate exercise identifies the following average trip rates and predicted trip demand levels when these hourly rate values are applied to the proposed food store unit size at the Barnard Road proposal site (1949sqm GFA).

Table TA6.1: Calculated Food store Average Trip Rates & Predicted Trip Demand to / from Barnard Road site

Time Period	Average Trip Rates (per 100sqm GFA)			Trip Demand (1949 sqm GFA Unit)		
	Arrive	Depart	Total	Arrive	Depart	Total
Fri Day Time Pk (15:00-16:00)	4.920	5.002	**9.922**	96	97	**193**
Fri PM Peak (16:00-17:00)	4.642	4.808	**9.450**	90	94	**184**
Sat Lunch Peak (12:00-13:00)	6.457	7.292	**13.749**	126	142	**268**

6.1.3 The above exercise identifies that total trip demand to / from the proposed food store development could be expected to be of the order of 184-193 vehicles per hour (two-way, in + out)) during weekday (Friday) local highway network peak demand periods and circa 268 vehicles per hour (two-way) for the Saturday lunchtime peak. **Figure TA13(a+b)** to this report illustrates the predicted Friday / Saturday development demand profile associated with the TRICS estimates, this

exercise demonstrates a good correlation between maximum hourly development traffic demand and those identified periods of peak local background network traffic (see section 3.2 to this report). Only relatively limited food store development traffic levels are predicted to take place during traditional weekday AM peak 'rush hour' periods – typically less than a third of the development trip demand experienced during the daytime and PM peak periods.

6.1.4 It is well understood, via reference to industry research, that the total number of trips attracted to new retail development are not wholly comprised of trips that are 'new' to the immediate local highway network. Many trips to / from food store sites are 'non-primary' in nature and are already taking place on the surrounding network, albeit to / from other alternative store locations, or involve a visit to the store as part of an already existing network wide trip movement. Typical trip types associated with new food retail development include:

- *New Trips:* Trips to / from the store that are effectively wholly 'new' to the study network and did not appear anywhere else on this network prior to the opening of the retail development. This can include trips already on the wider highway network (but outside of the specific study area) that are currently travelling to alternative food store sites, but which would 'transfer' to the new retail site on opening.

- *Pass-by Trips*: Trips which are already present on the study road network, directly adjacent to the point of access to the site, and which would turn into, and visit the site, as part of another journey.

- *Diverted Trips*: Trips which are already present on the surrounding study area local road network, but not on the road from which the site access is directly taken. Such trips would therefore divert into the site as part of their existing trip movement. This could include trips already on the network travelling to alternative food store sites (also known as 'transferred trips'), if another store is local to the study area.

6.1.5 The influence of 'non-primary' trip making to food store sites is particularly relevant during network peak periods, when there are a higher number of general trips on the network and also when customers are less likely to embark on a 'single purpose' trip, to undertake food shopping. Best practice research presented in TRICS report 95/2 suggests the following proportions for the core identified retail trip types during network peak hour periods:

Table TA6.2: Food Store Trip Type Proportions during Key Network Periods

Trip Type	Weekday Peak Hour Proportions	Saturday Peak Hour Proportions
New / Transferred Trips	25% - 60%	50% - 90%
Pass-By Trips	5% - 30%	5% - 10%
Diverted Trips	20% - 45%	5% - 40%

6.1.6 For the purposes of the analysis of the Barnard Road application scheme, the trip type proportions set out in **Table TA6.3** below will be adopted for the weekday and Saturday assessment periods. The use of these proportions ensures a highly robust assessment of development trip demand, by including a high level of 'new' trip movements, whilst also reflecting that immediate 'pass-by' trip levels are likely to be low, due to the cul-de-sac nature of Barnard Road (albeit some pass-by trips could occur, particularly during weekday afternoon peak periods, associated with staff from the employment area calling in to the store as part of a commute trip home).

Table TA6.3: Trip Type Proportions Anticipated at Barnard Road Food Store During Key Network Periods

Trip Type	Weekday Peak Hour Proportions	Saturday Peak Hour Proportions
New / Transferred Trips	50%	70%
Pass-By Trips	10%	5%
Diverted Trips	40%	25%

6.1.7 The application of these robust trip proportions to the predicted development trip levels set out in **Table TA6.1** results in the following predicted breakdown of food store (1949sqm GFA) related trip movements across the study area highway network.

Table TA6.4: Predicted Trip Type Demand Associated with 1949sqm GFA Food Store at Barnard Road During Key Network Periods

	New Trips		Pass-by Trips		Diverted Trips	
	In	Out	In	Out	In	Out
Friday Daytime Pk	48	49	10	10	38	39
Friday PM	45	47	9	9	36	37
Saturday	88	99	6	7	31	36

6.2 Development Trip Assignment

6.2.1 The above identified development trip type demand has been assigned to the study area network on the basis of the following methodology:

- *New Trips:* Based on the estimated practical travel catchment of trips to the new food store. This catchment has been identified via reference to both the extent and location of local population lying within a 10 minute drive time catchment of the Barnard Road site and those key distributor road routes connecting these areas to the store. The calculated trip proportions by key approach / exit routes from the study area cordon are illustrated in **Figure TA14** to this report and summarised below:

  A1074 Dereham Road (West): 30%
  Breckland Road / Threemile Lane: 5%
  A1074 Dereham Road (East): 40%
  Chapel Break Road: 12%
  Wendene (South): 4%
  Clover Hill Road: 9%

  These 'new' food store trips have been assumed to arrive and depart the study area using the same access point. Application of these calculated assignment proportions to the estimated new development trip traffic levels is illustrated in **Figure TA15(a-c)**.

- *Pass-By Trips:* Modelled based on the observed tidal traffic movements on Barnard Road passing the site access point. The predicted changes to existing background traffic demand associated with these anticipated pass-by trips are illustrated in **Figure TA16(a-c)** to this report, for each of the identified key assessment periods. It must be recognised that pass-by trips involve a vehicle movement already on Barnard Road and therefore any trip movement that is modelled as calling into the site, should be removed from the background 'straight through' demand on Barnard Road, i.e. past the site.

- *Diverted Trips*: Based on the observed entry / exit proportions of background traffic to the study area for each of the key assessment periods. The local study area cordon methodology adopted, allows for an estimate as to the potential for traffic to divert to the store from each observed background approach route movement to the study area, with traffic modelled as diverting to the store from each individual approach route and then returning back to this route after visiting the development. The predicted changes in existing local background traffic routing associated with such diverted trips is illustrated in **Figure TA17(a-c)** to this report, with the negative trip values highlighted on these plans, reflecting the effects of the local diversion of trips from their original route choice, in order to visit the store.

6.2.2 The predicted combined food store (1949sqm) development trip effects (i.e. new trips + pass-by trips + diverted trips) over the immediate study area network to the application site is summarised in **Figure TA18(a-c).**

7.0 KEY NETWORK ASSESSMENT PARAMETERS & CALCULATION OF FUTURE NETWORK CONDITIONS

7.1 Assessment Time Periods & Assessment Years

7.1.1 In order to ensure a robust assessment of the practical local network effects of the application scheme, this TA report has sought to assess the time periods of likely maximum potential development traffic impact. This maximum impact can be expected to occur when existing baseline flows on the immediate local network and predicted development flows combine to give rise to the highest overall hourly traffic. During such time periods, local network links and junctions could be expected to be operating at maximum demand conditions.

7.1.2 For the purposes of this appraisal, development traffic network impact assessment has been carried out for the following time periods:

- Friday Day-Time Peak: 14:45 – 15:45
- Friday PM Peak: 16:15 - 17:15

- Saturday Peak: 12:15 - 13:15

7.1.3 It is anticipated that the earliest that full completion and opening of a new food store at the application site would take place, would be by end of 2024. An opening year date of 2024 has therefore been utilised for core assessment.

7.1.4 In addition to this opening year analysis, a further 'future year' scenario has been considered for the year 2028. This test assumes a five-year horizon from the anticipated date of planning submission for the proposal scheme (2023). The use of this five-year assessment horizon, post submission of the planning application, is in accordance with good practice guidance for the appraisal of development related traffic impact and therefore ensures a robust appraisal of anticipated network traffic effects.

7.2 Calculation of Future Highway Network Traffic Conditions

7.2.1 In order to provide an accurate forecast of future 'Do-Nothing' and 'Do-Something' baseline highway network demand conditions across the identified study area it is necessary to make the following core adjustments to the observed May 2023 background traffic flows:

- Remove existing traffic associated with the extant 'Namco Funscape' leisure facility – to identify true 'background' conditions without any operational land use at the application site.
- Application of local traffic growth to the residual 'background' traffic following removal of the extant leisure use network traffic volumes.
- Addition of traffic volumes associated with other relevant local 'committed' development.

The methodology associated with each of these forecasting steps is summarised in the paragraphs below.

Removal of Existing Site Related Traffic

7.2.2 Existing network traffic demand associated with the existing Namco Funscape family leisure land-use at the application site has been identified based on:

- Observed turning movements to / from the leisure site at the Barnard Road site access junction:
- Wider network distribution based on observed general turning movements at the A1074 Dereham Road roundabout and other connecting junctions.

7.2.3 Calculated estimates of existing development trip demand based on the above methodology are illustrated in **Figure TA19(a-c)** for the key assessment periods. The residual 2023 Background traffic estimates (i.e. 2023 surveyed flows minus existing site traffic), are illustrated in **Figure TA20(a-c)**.

Application of Local Traffic Growth to Residual 2023 Background Traffic

7.2.4 Baseline network traffic conditions for the future modelled years has been calculated via the application of locally adjusted National Transport Model (NTM) forecasts, extracted from the TEMPRO8.1 database. The 2024 and 2028 traffic growth factors associated with NTM figures, as adjusted for census super output area 'Norwich005', are set out in **Appendix TA11** and summarised below:

2023 – 2024 Growth Factors		*2023 – 2028 Growth Factors*	
Friday Day-Time Peak:	1.0063	Friday Day-Time Peak:	1.0485
Friday PM Peak:	1.0069	Friday PM Peak:	1.0512
Saturday Day-Time Peak:	1.0065	Saturday Day-Time Peak:	1.0498

7.2.5 The application of these local growth factors to the residual 2023 background traffic movements are set out in **Figure TA21(a-c)** and **Figure TA22(a-c)** for 2024 and 2028 future year scenarios respectively.

Estimation of Traffic Volumes Associated with Committed Development

7.2.6 To provide the most robust assessment of future year network conditions it is necessary to include predicted traffic volumes associated with relevant local extant / committed development schemes. Discussions with local higwhays officers have identified two schemes that are considered appropriate for inclusion within future study area network appraisal. These schemes are as follows:

A. Re-opening of the Brook Hotel on land adjacent to the proposal site.

7.2.7 At the time of preparation of this TA report, this 82-bed hotel building was closed to guests, but has the potential to be re-opened as a commercial hotel. It is therefore considered prudent to include potential traffic demand associated with this extant hotel land-use within any assessment of future year network conditions.

7.2.8 Traffic estimates associated with potential future use of the hotel site have been generated via reference to appropriate large non-budget hotel sites held within the TRICS database. These calculated hotel trip demand estimates have been

assigned to / from the network on the basis of trips routing to / 44rom A1074 Dereham Road only, based on observed tidal flow patterns, given that hotel related traffic is likely to be longer-distance in nature and unlikely to travel to / from immediate residential areas.

7.2.9 Predicted hotel related 'committed' traffic demand calculated based on the above methodology for the different key assessment time periods is illustrated in **Figure TA23(a-c).** It is anticipated that these predicted hotel related traffic levels could reasonably be experienced under both Opening Year and Future Year scenarios.

B. Threescore Residential Area.

7.2.10 Land to the south of the Clover Hill residential area (known locally as Threescore) benefits from planning consent for up to 1000 dwellings, local shop, care home and public open space (Planning Application Refs: 12/000703/O & 15/01230/VC (variation of bus gate delivery time)). The original 2012 planning application was supported by a formal Transport Assessment document prepared by NCC / Mott MacDonald, which itself represented an update to work originally carried out in 2005, and considered the potential future traffic effects of the full delivery of the Threescore residential proposals, based on results informed by strategic highway network modelling using the NATS (Norwich Area Transport Strategy) Model. This exercise (undertaken for a scenario of 1200 dwellings, rather than the 1000 dwellings consented) identified that it was anticipated that circa 27.8% of total Threescore related development traffic arrival movements and 17.4% of development departure movements, could be expected to travel north from the Threescore site, using local routes via Clover Hill Road, and therefore likely to link through to Wendene and wider connections via the A1074 Dereham Road (see **Appendix TA12**).

7.2.11 At the time of the undertaking of the recent May 2023 traffic survey exercise it is understood that both Phases 1 (92 care flat dwellings & 80 dementia care apartments) & Phase 2 (172 dwellings) of the Threescore masterplan (see **Appendix TA2**) had been completed and occupied, with Phase 3 (circa 80 dwellings) currently

under construction. It is not known whether any other development phases benefit from reserved matters consent.

7.2.12 Existing traffic movements associated with the completed Threescore Phases 1 & 2 can be expected to be effectively inherent within the May 2023 observed background traffic survey flow information, as they were completed and operational at that time. To provide an estimate of likely additional future Threescore development related traffic volumes across the study area network for the 2024 opening year and 2028 future year scenarios, Focus TP have assumed a robust residential completion rate of 40 dwellings per annum. This would suggest the delivery of an additional circa 60 dwellings at Threescore by end of opening year 2024 and 220 dwellings by end of future year 2028. Calculation of development traffic volumes over the food store study network associated these future Threescore completions has been based on:

- Residential development traffic estimates calculated via reference to typical average trip rates derived from the TRICS database (see **Appendix TA13**).
- Assumption that 27.8% of the predicted Threescore related arrival traffic and 17.4% of departure movements will pass through the food store study area network – as per the development traffc assignment identified as part of historical Threescore consent.
- Threescore development related traffic assignment within the study area to be based on all traffic accessing the study area via Clover Hill Road / Wendene to access A1074 Dereham Road and then the wider network, based on observed turning proportions to / from Wendene at the roundabout.

7.2.13 Predicted Threescore related traffic volumes at the study area based on the application of the above methodology are summarised in **Figure TA24(a-c)** for the 2024 Opening Year scenario and **Figure TA25(a-c)** for 2028 Future Year conditions.

Calculation of Future 'Do-Nothing' (Baseline) Traffic Volumes

7.2.14 Future Baseline 'Do-Nothing' traffic levels (i.e. scenario where the existing leisure use at the application site is retained and operating at similar levels to current day), have been calculated via the summation of the following calculated traffic elements:

- Residual Growthed Background Traffic Demand (not including extant leisure use), i.e. Figure TA21 and Figure TA22 for 2024 and 2028 respectively.
- Addition of committed hotel (Figure TA23) and Threescore residential traffic (Figure TA24 and Figure TA25 for 2024 and 2028).
- Addition of extant leisure use traffic at proposal site i.e. Figure TA19.

7.2.15 Calculated Opening Year 2024 & Future Year 2028 Baseline 'Do-Nothing' traffic volumes based on this approach are set out in **Figure TA26(a-c)** and **Figure TA27(a-c)** respectively.

Calculation of Future 'Do-Something' (Background + Food Store Development) Traffic Volumes

7.2.16 'Do-Something' Baseline (no leisure use) + Food Store Development traffic levels have been calculated via the summation of the following elements:

- Residual Growthed Background Traffic Demand (not including extant leisure use), i.e. Figure TA21 and Figure TA22 for 2024 and 2028 respectively.
- Addition of committed hotel (Figure TA23) and Threescore residential traffic (Figure TA24 and Figure TA25 for 2024 and 2028).
- Addition of predicted food store related traffic (Figure TA18).

7.2.17 Opening Year 2024 & Future Year 2028 'Do-Something' traffic volumes calculated based on the above approach are presented in **Figure TA28(a-c)** and **Figure TA29(a-c)** respectively.

8.0 NETWORK IMPACT ASSESSMENT

8.1 Impact Assessment Criteria

8.1.1 Network operational conditions and the anticipated development traffic impact associated with new food store development traffic have been assessed by reference to the following matters:

- Comparison of 'Do-Nothing' and 'Do-Something' network demand flows (link impact – percentage change); and,
- Detailed network capacity modelling using appropriate industry standard computer modelling software and agreed model parameters.

8.1.2 Details of each approach are set out below.

Link Impact Assessment (Percentage Change)

8.1.3 Traditionally, link flow assessment criteria have been based on those percentage impact thresholds identified in 1994 Institution of Highways and Transportation report 'Guidelines for Traffic Impact Assessment'. This document suggested that more detailed analysis of highway impact and / or capacity improvements was only likely to be required for situations when either:

- Traffic to / from the development exceeds 10% of existing two-way traffic on the adjoining highway; or,
- Where traffic to / from the development exceeds 5% of the existing two-way traffic flow on the adjoining highways at locations where traffic congestion exists within the assessment period or in other sensitive locations.

8.1.4 This position was reviewed and updated in March 2007 DfT document "Guidelines for Transport Assessment", subsequently withdrawn in 2014, which notes:

"If the TA confirms that a development will have material impact on the highway network, the level of impact at all critical locations on the

network should be established. A particular example of material impact would be a worsening of congestion. In congested areas, the percentage traffic impact that is considered significant or detrimental to the network may be relatively low (possibly below the average daily variation in flow), and should have been determined in discussions with the relevant highway authorities. For the avoidance of doubt, the 1994 guidance regarding the assessment thresholds of 10 per cent and 5 per cent levels of development traffic relative to background traffic is no longer deemed an acceptable mechanism, since it creates an incentive in favour of locating development where high levels of background traffic already exist."

8.1.5 Notwithstanding these observations, in the case of the immediate local highway network to the application site, it is considered that the traditional 5% & 10% thresholds still represent a reasonable 'contextual guide' as to the level / extent of proposed development traffic impact on immediate local routes. The use of these assessment thresholds should, of course, be viewed in the context of the predicted total development traffic levels, taking into account the 'net' change in demand associated with the closure of the existing leisure use.

Detailed Network Junction Capacity Modelling (using appropriate computer modelling software).

8.1.6 Network capacity assessment for key junctions across the study area has been undertaken using the following industry standard computer software programs:

- JUNCTIONS (PICADY /ARCADY module) (stand-alone give-way / roundabout junctions);
- LINSIG3 (traffic signal junctions).

Interpretation of Results: TRL JUNCTIONS Software (PICADY / ARCADY modules)

8.1.7 Detailed assessment of the operating capacity of key local 'give-way' and roundabout junctions has been carried out using industry standard TRL JUNCTIONS (PICADY / ARCADY module) analysis software.

8.1.8 PICADY / ARCADY consider junction performance with respect to the Ratio of Flow to Capacity (RFC) and associated traffic queuing. RFC values for junction

approaches of between 0.00 and 0.85 are generally considered to represent stable and acceptable operating conditions. Values between 0.85 and unity (1.0) represent variable operation (i.e. possible queues building up at the junction during the period under consideration and increases in vehicular delay moving through the junction). RFC values in excess of unity represent overloaded conditions (i.e. congested conditions).

8.1.9 Guidance as to the interpretation of PICADY / ARCADY module results identifies that it is possible for a junction to operate with individual RFC levels of above 0.85 without unacceptable congestion and delay taking place. The 0.85 threshold identifies the optimum position at which operational capacity is maximised when viewed against the likely frequency of queuing and delay events. RFC values of above 0.85 simply demonstrate a greater potential for congestion and delay to occur, which must be viewed in the context of the future year horizon under assessment and surrounding general network wide conditions. An RFC of in excess of 0.85 does not, by definition, suggest over-capacity / unacceptable operational junction performance.

8.1.10 To ensure a robust assessment of future operational performance, the Focus TP ARCADY / PICADY assessments have been carried out based on the robust 'surge' profile demand model setting. This model option uplifts the central half hour of the modelled period by 12.5%, to replicate potential variations in traffic patterns across the hour.

8.1.11 Given the large size of the A1074 Wendene roundabout and that individual junction approach arm lanes are marked for use by specific turning movements, the ARCADY analysis of this junction has been undertaken using both the standard ARCADY model, as well as the 'lane simulation' analysis option. The lane simulation tool is an additional function to the core ARCADY model, that can potentially better model approach lane usage at more complex locations, particularly where approach traffic is not well balanced between approach lanes, due to the effect of road markings which direct different traffic streams to utilise specific lanes. Ultimately lane simulation is acknowledged as offering an option to investigate lane configuration effects and does not offer the same level of accuracy when

forecasting future junction performance as the core ARCADY model and therefore engineering judgement should be applied when interpreting generated results (TRL User Guide Section 14.1.2).

8.1.12 To provide a guide as to the relative accuracy of the ARCADY modelling / lane simulation option, Focus TP have undertaken some initial model validation runs based on May 2023 observed background traffic flows, with the queuing output predicted by this modelling compared to the observed queuing trends recorded during the surveys (see **Appendix TA6**). Model output for both core ARCADY and lane simulation model runs under 2023 background traffic demand is included as **Appendix TA14**, along with summary tables for ease of reference.

8.1.13 Review of the information for these 2023 validation runs identifies that the core ARCADY modelling runs suggest generally good operational performance at the roundabout over all of the assessment periods, with limited approach lane queuing and RFC's typically below 0.5. The lane simulation model options, suggests slightly more intensive junction operation, with maximum approach lane RFC values of the order of 0.78 on the Dereham Road (W) approach and 0.49 on the Dereham Road (E) approach, with associated maximum queuing of 4 and 2 vehicles respectively.

8.1.14 In this case it is considered that the lane simulation option runs provide a better match to observed operating conditions. Generally, as noted in section 3.2 to this TA report, the Wendene roundabout has not been observed to currently experience significant queuing issues, but it is clear that maximum queue conditions do occur on the A1074 Dereham Road (W) – typically below 5 vehicles, but with some occasional higher levels observed. Notwithstanding this conclusion, results under both of the ARCADY model options will be presented within the remainder of this report.

Interpretation of Results: LINSIG3

8.1.15 LINSIG software presents network modelling results in terms of a percentage 'Degree of Saturation' (DoS) value and corresponding predicted traffic queues for each modelled link. For traffic signal-controlled junctions, it is generally accepted

that degrees of saturation of 90% or less on individual links represent satisfactory link operation, with values above this threshold representing 'variable operation' and therefore increasing the potential for regular congestion and delay. LINSIG also provides a further reference value, Practical Reserve Capacity (PRC), which provides an overall indicative measure of the general operation of a junction within the network. PRC values of 0% or above are generally considered to represent acceptable junction operating conditions, with values of less than 0% (negative PRC) indicating a propensity for more variable junction operation and the potential for some congestion and queue build up.

8.1.16 It should be noted that negative junction PRC values can be obtained when a number of individual junction arms are operating at less than 100% degree of saturation i.e. the point where theoretical operating capacity is reached on an approach arm, and therefore the PRC value provides only a general guide to overall junction performance.

8.1.17 For the purposes of the network modelling included in this TA report, full LINSIG summary output is presented for key assessment runs, setting out information on the operation of individual junction approach arms. The junction PRC value output for each key junction node has been utilised as a first point of reference / guide to overall junction performance for each future year demand scenario.

8.1.18 The LINSIG model prepared to inform this TA analysis has been based on traffic signal phasing & staging information supplied by NCC Urban Traffic Control, who also supplied information regarding minimum green times / inter-green arrangements. The junction operates with demand dependent right turn stages on Wendene, which are potentially only called when traffic is present to 'call' the stage. For the purposes of this assessment, the Focus TP prepared LINSIG model assumes that all stages are called every signal cycle, with the junction operating under a 60-second cycle time. To validate the general accuracy of the LINSIG model, Focus TP have undertaken initial junction testing, based on May 2023 observed background traffic flows, with the queuing output predicted by this modelling compared to the observed queuing trends recorded during the surveys

(see **Appendix TA6**). LINSIG model output for these 2023 runs is included as **Appendix TA15**.

8.1.19 Review of these 2023 validation LINSIG model results suggests that the junction operates with a maximum RFC of circa 77% (Wendene (N) ahead & right approach lane in afternoon peak), with an associated mean-max queue of 7 vehicles. The model also predicts mean-max queuing of 4-6 vehicles on other junction approaches such as Wendene (N) left turn lane, Clover Hill Road (ahead & right) and Chapel Break Road (left lane). These results are considered to provide a generally good correlation to observed May 2023 queuing at the junction (see **Appendix TA6**), which highlighted max queuing on all arms at generally less than 8 vehicles for the majority of the survey periods, and with maximum queuing noted on the Wendene (N) approach. It is therefore considered that the LINSIG model represents a suitable base reference tool for the assessment of development traffic effects.

8.2 Predicted Changes in Traffic Flow (Link Flow Assessment)

8.2.1 **Table TA8.1** to this report provides a comparison between the 'Do-Nothing' and 'Do-Something' predicted flows for each of the core assessment periods considered (Friday afternoon, Friday PM peak & Saturday peak). This comparison exercise covers all approach links to the key junctions of A1074 Wendene Roundabout and the Wendene / Clover Hill Road / Chapel Break Road traffic signals. (NB – traffic flows in the table are presented in vehicles and has been undertaken for the 2024 Opening Year - as this ensures the potential for maximum development traffic related percentage change, when compared to Baseline 'Do-Nothing' flows).

8.2.2 Review of the results of this link impact comparison exercise demonstrates that predicted changes in network traffic demand associated with the application scheme (i.e. difference between 'Do-Nothing' & 'Do-Something') can be expected to be relatively limited, with approach routes typically not expected to experience increases of in excess of 2.5% of 'Do-Nothing' Baseline traffic levels during weekday peak periods and 4.5% during Saturday peak periods (when baseline network flows are typically slightly lower). Such changes also typically represent net changes in

traffic of less than 60 vehicles per minute on most route corridors (or less than 1 additional vehicle trip per minute, two-way).

8.2.3 Maximum predicted change in link demand is anticipated to take place on the immediate section of Barnard Road to the north east of the application site (a circa 69% increase in baseline 'Do-Nothing' traffic for the Saturday PM peak and 25% – 32% increase on weekdays). This localised increase in traffic is not surprising and reflects the fact that Barnard Road represents the key connecting link serving the proposed food store and also that baseline traffic levels on this route are generally low, particularly during Saturday periods when trip demand to / from the surrounding industrial area (prevailing land use served by Barnard Road) is limited.

Table TA8.1 Comparison of Predicted 2024 'Do-Nothing' v 'Do-Something' Traffic Volumes on Key Network Study Links

Friday Afternoon Period

Traffic Flow (Vehs)	'Do-Nothing'	'Do-Something'	Difference	Difference (%'tage)
Roundabout Approaches				
Dereham Rd (E)	1924	1952	28	1.4%
Wendene	1227	1254	27	2.2%
Barnard Rd	442	583	141	31.9%
Dereham Rd (W)	2000	2013	13	0.7%
Breckland Rd	524	528	4	0.8%
Traffic Signal Approaches				
Wendene (N)	1232	1259	27	2.2%
Clover Hill Road	623	630	7	1.2%
Wendene (S)	289	292	3	1.1%
Chapel Break Road	893	902	9	1.0%

Friday PM Peak Period

Traffic Flow (Vehs)	'Do-Nothing'	'Do-Something'	Difference	Difference (%'tage)
Roundabout Approaches				
Dereham Rd (E)	2111	2137	26	1.2%
Wendene	1077	1101	24	2.2%
Barnard Rd	549	686	137	24.9%
Dereham Rd (W)	2118	2133	15	0.7%
Breckland Rd	320	324	5	1.4%
Traffic Signal Approaches				
Wendene (N)	1081	1105	24	2.2%
Clover Hill Road	501	508	7	1.4%
Wendene (S)	277	280	3	1.0%
Chapel Break Road	690	699	9	1.3%

Saturday Peak Period

Traffic Flow (Vehs)	'Do-Nothing'	'Do-Something'	Difference	Difference (%'tage)
Roundabout Approaches				
Dereham Rd (E)	1919	1973	54	2.8%
Wendene	969	1013	43	4.5%
Barnard Rd	277	467	191	68.9%
Dereham Rd (W)	1917	1945	28	1.5%
Breckland Rd	218	224	7	3.0%
Traffic Signal Approaches				
Wendene (N)	977	1020	43	4.4%
Clover Hill Road	486	500	14	2.8%
Wendene (S)	321	326	5	1.7%
Chapel Break Road	555	574	19	3.4%

8.2.4 Based on the above results it is not anticipated that the predicted net changes in flow demand on local highway links associated with the proposed food store scheme would be expected to result in a material / severe change in operating conditions.

8.3 Junction Operational Capacity Assessments

8.3.1 Notwithstanding the above conclusions of the link flow exercise, detailed junction operational capacity assessments have been undertaken for the following locations within the study area:

- Site Access Driveway / Barnard Road – T-junction (PICADY);
- A1074 Dereham Road / Wendene / Barnard Road / Breckland Road – Roundabout (ARCADY);
- Wendene / Clover Hill Road / Chapel Break Road Traffic Signals (LINSIG);
- Dereham Road Toucan Crossing / Bus Gate (LINSIG).

8.3.2 Core tests have been undertaken for both 'Do-Nothing' & 'Do-Something' traffic conditions at the 2028 future year, as this represents the 'worst case' traffic forecast year considered, i.e. including for maximum general traffic growth and committed development traffic. The results of these junction tests are set out in the summary tables included in **Appendix TA16** to this report, with full model

output provided in **Appendix TA17** for 'Do-Nothing' analysis and **Appendix TA18** 'Do-Something' tests.

8.3.3 The paragraphs below set out the key findings of this junction capacity testing exercise, when presented on a junction-by-junction basis:

Site Access Driveway / Barnard Road:

8.3.4 The existing T-junction site access layout with Barnard Road is predicted to operate with a level of spare capacity under 'Do-Something' conditions including for operation of the proposed food store scheme and potential reinstatement of hotel use on the adjacent site. Maximum Future Year RFC is predicted to occur on the Barnard Road (E) approach during the Saturday peak assessment period, with an RFC of 0.25 and a related queue of circa 1 vehicle. This RFC value is well below industry standard junction capacity thresholds.

A1074 Wendene Roundabout:

8.3.5 The existing roundabout layout is anticipated to continue to offer some level of spare capacity at the 2028 future year, including for the delivery of the food store scheme. Core ARCADY modelling under 'Do-Something' scenarios suggests that all approach arms would be operating at below the 0.85 RFC threshold, with no evidence of any significant queuing.

8.3.6 Review of the more onerous lane simulation tests show junction operation closer to capacity thresholds, with maximum RFC on the Dereham Road (W) approach at 0.85 during modelled 'surge' quarter hour periods. Maximum predicted RFC value (0.850) is identified during the Weekday PM peak period surge periods, with an associated queue of 6 vehicles. Whilst this arm is essentially at the standard 0.85 threshold at which a junction is considered to be beginning to be approaching optimum capacity conditions, it is considered to still represent satisfactory approach arm operation in this case, with predicted queuing well within acceptable levels. All other roundabout approaches are predicted to experience

future approach lane RFCs of well below 0.85, further indicating the potential for acceptable overall junction performance.

8.3.7 It should also be noted that the predicted 'Do-Something' operating conditions do not represent a substantive change in junction performance when compared to 2028 Future Year 'Do-Nothing' assessment runs (max RFC of 0.821 and queue of 5 vehicles). It is therefore concluded that there is no requirement for capacity related improvements at the Wendene Roundabout to accommodate anticipated additional food store related traffic.

Wendene / Clover Hill Road / Chapel Break Road Traffic Signals:

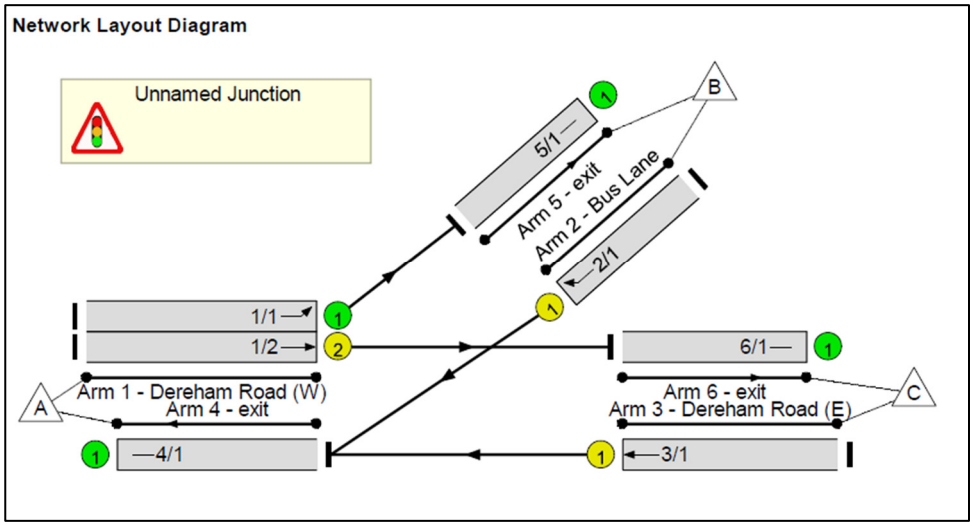
8.3.8 The existing traffic signal cross-roads layout is predicted as being capable of accommodating the forecast additional traffic levels associated with the application scheme. The junction is predicted to operate with a level of practical reserve capacity under all 'Do-Something' assessment periods, with maximum predicted degree of saturation being 83.8% on the Clover Hill (straight on and right) approach arm during the weekday daytime period, with associated mean-max queuing at the junction of 8 vehicles on the Wendene (N) approach (ahead and right lanes).

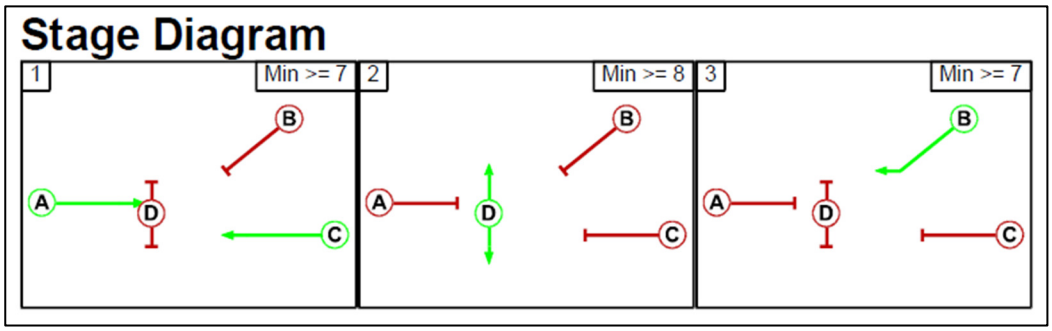
8.3.9 These LINSIG modelling results do not suggest any requirement for the up-grading of the existing junction layout in order accommodate application site traffic movements, with only a strictly marginal change in junction performance under future year 2028 'Do-Nothing' and 'D-Something' scenarios, as summarises below:

Friday Daytime Peak:	'Do-Nothing' =	10.2% PRC
	'Do-Something'=	7.5% PRC
Friday PM Peak:	'Do-Nothing' =	24.6% PRC
	'Do-Something'=	22.1% PRC
Saturday Peak:	'Do-Nothing' =	40.1% PRC
	'Do-Something'=	34.4% PRC

A1074 Dereham Road Toucan Crossing / Bus Gate:

8.3.10 LINSIG model runs have been undertaken for the proposed Toucan / bus gate improvement scheme illustrated in **Appendix TA8** to this report. These model runs have been carried out on the principle of the proposed bus gate / Toucan crossing traffic signal arrangements operating on a 3-stage approach (see below) with the pedestrian stage being called on a regular basis (of the order of once every 90 seconds).





8.3.11 To consider a full range of potential future operational scenarios, the following range of signal staging options have been considered (run for 3 * 90 second group of stages – i.e. a 270 second stage sequence):

- *Scenario 1*: Traffic & Ped / Cycle Staging Only (No bus exit calls): i.e. Staging as 1,2,1,2,1,2

- *Scenario 2*: Traffic & Ped / Cycle with Bus exit every third stage instead of ped / cycle stage: i.e. Staging as 1,2,1,2,1,3.
- *Scenario 3*: Traffic & Ped / Cycle with Bus exit every third stage alongside a ped / cycle stage: i.e. Staging as 1,2,1,2,1,2,3. (worst case option)

8.3.12 Review of this capacity assessment work identifies approach link degrees of saturation of below 90% for all approaches under Future Year 'Do-Something' conditions and the following predicted 'mean / max' queuing levels on the critical Dereham Road westbound approach to the signals:

2028 Do-Nothing

- *Scenario 1*: Mean max queue of between 15 - 22 pcus on Dereham Road (E) approach during modelled peak periods.
- *Scenario 2*: Mean max queue of between 15 - 22 pcus on Dereham Road (E) approach during modelled peak periods.
- *Scenario 3*: Mean max queue of between 22 - 34 pcus on Dereham Road (E) approach during modelled peak periods.

2028 Do-Something

- *Scenario 1*: Mean max queue of between 15 - 23 pcus on Dereham Road (E) approach during modelled peak periods.
- *Scenario 2*: Mean max queue of between 15 - 22 pcus on Dereham Road (E) approach during modelled peak periods.
- *Scenario 3*: Mean max queue of between 23 - 35 pcus on Dereham Road (E) approach during modelled peak periods.

8.3.13 Review of these results demonstrates that under operational scenarios 1 & 2 maximum predicted mean max queue on the Dereham Road (E) approach under 'Do-Something' conditions could be of the order of 22 - 23pcus during weekday PM peak periods, which would represent a queue / slow moving traffic of circa 130m (based on average pcu length of 5.75m). Such a queue length could be easily accommodated wholly within the Dereham Road eastern approach to the signals and would not queue back onto the Wendene Roundabout (circa 167m from traffic signal stopline to roundabout exit point).

8.3.14 Under 'worst case' Scenario 3 signal staging, assuming a back-to-back ped / cycle crossing stage, followed by a 7 second bus-gate stage and associated inter-greens, maximum queuing of up to 35 pcu's could potentially take place on the Dereham Road (E) approach during the Friday PM peak period, which would represent a queue / slow moving traffic of circa 200m, which would could potentially extend back onto the roundabout – note that this queue length assumes for a single lane of queuing traffic on A1074 Dereham Road and does not include for the fact that two exit lanes are available for the initial sections of Dereham Road away from the roundabout. In practice the potential for scenario 3 demand to occur on a regular basis is considered limited.

8.3.15 It should also be stressed that the above analysis considers a very much 'worst case' scenario of the traffic signals being called at least every 90 seconds during peak traffic demand periods. It is considered unlikely that crossing demand would actually reach such high frequency levels, but such a future situation had been included within this TA analysis to ensure for a highly robust assessment of impact. Lastly it is unlikely that the predicted 'queuing' would actually manifest as stationary traffic towards the rear of the queue in the vicinity of the roundabout. In practice 'queueing' in this location is more likely to be represented by slow moving traffic, which would dissipate quickly during the next green traffic stage.

8.4 Impact Statement

8.4.1 Based on the above review of network capacity conditions it is concluded that the delivery of the food store application scheme is unlikely to result in a material impact on local network operating performance. Development traffic would typically disperse quickly over the immediate local highway network and any effects would be off-set to some degree, via the removal of existing traffic movements associated with the current leisure use of the site. In practice predicted net increases in traffic over the wider highway network associated with the development, away from the immediate connecting link of Barnard Road, would be less than additional 1 vehicle per minute - representing a maximum increase in 'Do-Nothing' traffic levels of less than 4.5%. Traffic changes on Barnard

Road would be of a higher level, however this link is generally relatively lightly trafficked and shows no regular signs of over-capacity operation / congestion.

8.4.2 Detailed junction capacity testing identifies that all of the study area junctions are capable of accommodating development traffic demand without experiencing material changes in performance, with most operating below industry standard guideline capacity thresholds. The Wendene roundabout will be approaching optimum capacity performance on the Dereham Road (W) approach arm when modelled under worst case future year surge conditions, including for robust lane simulation, however, overall predicted junction performance is considered to be acceptable, with all other approach arms illustrating the potential for spare capacity. Introduction of Toucan crossing & bus gate arrangements to Dereham Road (W), to provide material improvements in pedestrian / cycle access to the application site, could be expected to typically operate with queuing levels that can be accommodated safely and with a level of spare operating capacity.

8.4.3 Based on this review it is ultimately concluded that the delivery of the food store application scheme would not result in severe changes in future highway network conditions and there would be no requirement for the delivery of additional local highway network improvements, over and above those measures proposed on A1074 Dereham Road (W) to provided improve pedestrian & cycle access.

9.0 SUMMARY AND CONCLUSIONS

9.1 This Transport Assessment (TA) report has been prepared by Focus Transport Planning Ltd (Focus TP) on behalf of Honeyview Investments Ltd to consider highways and transport issues related to proposals for re-development of land at Barnard Road, Norwich to deliver a new food store of 1949sqm GIA. The proposals envisage the demolition of existing leisure related buildings and the delivery of a new food store building, along with ancillary car parking, landscaping features and new pedestrian / cycle connections. The proposed store is primarily designed to serve a local catchment, including the nearby residential areas of Chapel Break, Bowthorpe, Clover Hill and New Costessey. It is proposed that the store would be operated by Lidl GB Ltd.

Current Site Use

9.2 The application site is currently occupied by the 'Namco Funscape' family leisure development (bowling and amusement arcade), associated landscaping areas and car parking. Pedestrian, cycle and vehicle access to the site is currently taken via a private access road connection, shared with an adjacent hotel development (Brook Hotel - closed), connecting to the local industrial access road of Barnard Road. Recent traffic surveys of the extant leisure use, undertaken during May 2023, suggest that the current scheme generates of the order of 30 – 65 vehicle trips during typical weekday & weekend local highway network peak demand periods.

Local Network Connections & Conditions

9.3 Current vehicle access to the application site is via a good standard private road connection to Barnard Road (T-junction). To the west of the application site access, Barnard Road provides local cul-de-sac access to a range of employment and industrial premises forming part of the Bowthorpe Employment Area. To the east of the site access connection junction, Barnard Road provides a direct link to the Wendene Roundabout (circa 175m between the site access and roundabout entry point). The Wendene roundabout is a circa 70m ICD 5-arm priority roundabout accessed by Barnard Road, A1074 Dereham Road (east & west

approaches), Wendene and Breckland Road. A wide range of good standard local foot / cycle and public transport connections are available within the immediate local catchment to the application site.

9.4 A number of sections of the local highway network to the application site are programmed to be upgraded over the next 12 months as part of NCC schemes that are supported by the Transforming Cities Fund (TCF), including:

- Travel hub works at the Wendene roundabout & A1074 Dereham Road, including public transport and walk / cycle infrastructure improvements and changes in speed limit;
- A1074 Dereham Road (W) improvements to deliver new walk / cycle infrastructure and bus lanes / improved stops.
- Improvements to the Mayfly Way walk / cycle corridor and connection points to local highway routes, including Dereham Road and Barnard Road.

These committed works will assist in improving wider access to the application site by a range of sustainable travel modes.

9.5 Existing background traffic conditions on the local highway network to the site have been established via the undertaking of a traffic survey exercise carried out in May 2023 and including the junctions of Wendene roundabout, Wendene / Chapel Break Road / Clover Hill Road signals and Barnard Road / application site access junction. These surveys were carried out for both weekday and weekend conditions and included for queuing surveys on all key junction approach arms. Key recorded trends are:

- Weekday peak traffic demand periods were noted to be generally higher than Saturday demand conditions, with Saturday traffic levels being only of the order of circa 85% of recorded weekday peak demand. Maximum weekday hourly traffic levels were recorded during the day-time hour 14:45-15:45.

- Queuing on most junction approaches was relatively limited, even during peak demand periods. Whilst occasional short term queues of 10-15 vehicles were

noted, any such queues typically cleared quickly, with queuing rarely regularly exceeding 10-vehicles.

9.6 A review of historical personal injury accident history demonstrates that no accident events have been recorded at the site access to Barnard Road over the most recent five year search period. Indeed only 1 slight accident has been recorded on the immediate section of Barnard Road to the site. Nine accident events were recorded at the Wendene roundabout, of which over half involved active travel users. It is anticipated that the programmed TCF Travel Hub works at the Wendene roundabout, alongside the new crossing proposals of A1074 Dereham Road proposed to support the application scheme, will help to address active travel user safety issues at this location. Ultimately it is concluded that there are no clear & substantive prevailing local road safety issues that would call into question the proposed development of the application site for food store land-use.

Site Accessibility

9.7 An audit of site accessibility demonstrates that the application site at Barnard Road represents a suitable location for new food store development, being located within a practical walking and cycling distance of local residential areas and within a short walk of bus stops served by good frequency local bus connections. Local walk / cycle connections are of a high quality and would be enhanced by the new crossing scheme of Dereham Road proposed in support of the food store scheme. The locational characteristics of the site and its high level of accessibility should assist in meeting the sustainable planning objectives of promoting opportunities for the use of alternative travel modes to the private car and thereby help manage the overall traffic impact associated with new development.

Review of Application Scheme Proposals

9.8 The application scheme proposes the re-development of land at Barnard Road, Norwich to deliver a new food store of 1949sqm GIA. The layout includes for 120 car parking spaces (7 disabled standard, 2 EV) alongside integrated servicing /

delivery arrangements to the south of the main car parking zone and a new pedestrian / cycle connection to the north, linking to A1074 Dereham Road.

9.9 It is proposed that vehicle access to the development would be taken via the retention of the existing private road access to Barnard Road. This access route provides a minimum carriageway width of 7.3m and is therefore appropriate to accommodate both customer vehicle access and occasional service vehicle access, for both the proposed food store and adjacent hotel development, without the need for further improvement. Pedestrian access to the south of the site would continue to be maintained and enhanced to provide a 3.0m shared footway / cycleway connection, linking to the adopted segregated footway routes to Barnard Road. It is also proposed that a replacement bellmouth junction be provided to this access driveway, replacing the previous access serving the former car park area and allowing for potential future vehicle access to this site area.

9.10 To improve pedestrian accessibility to the north of the site, it is proposed that a new ramped footway / cycle access would be delivered to link to a new traffic signal controlled crossing point of A1074 Dereham Road. This footway / cycle access would be provided at a minimum width of 3.0m and would be delivered at a gradient of less than 1:20 to allow for practical use. The new crossing would link directly to enhanced walk / cycle provision an improved public transport arrangements to be delivered as part of the NCC TCF funded Dereham Road Travel Hub scheme.

9.11 The food store would be served by a total of 120 car parking spaces (7 to accessible standard and 2 suitable for EV charging) – delivering an overall parking supply of 1 space per 16.2sqm of retail building floorspace or circa 86% of NCC guideline standards. Covered and secure cycle parking facilities would be provided for up to 20 cycles, along with an additional 6 spaces for powered two wheel vehicles.

9.12 Large vehicle servicing of the site would be achieved via a dedicated loading / servicing bay located to the rear of the food store building and accessed directly from the site access road linking to the internal customer car parking arrangements. This shared delivery / customer access approach represents

standard nationwide practice for the servicing of the nature of food store development proposed.

9.13 It is proposed that the day-to-day operation of the food store site would be supported by the implementation of a formal Travel Plan. This document would be developed by the store operator (Lidl GB Ltd) in liaison with NCC and include for a range of initiatives to encourage both staff and customer travel to / from the site by alternative more sustainable travel modes to the private car. The Travel Plan would include for the setting of travel targets and on-going monitoring of site performance.

Predicted Development Trip Demand & Assignment

9.14 Future traffic demand associated with the application scheme has been estimated via reference to trip data for representative food store sites as extracted from the TRICS traffic generation database. The above exercise identifies that total trip demand to / from the proposed food store development could be expected to be of the order of 184 - 193 vehicles per hour (two-way, in + out)) during weekday (Friday) local highway network peak demand periods and circa 268 vehicles per hour (two-way) for the Saturday lunchtime peak. Only relatively limited food store development traffic levels are predicted to take place during traditional weekday AM peak 'rush hour' periods – typically less than a third of the development trip demand experienced during the daytime and PM peak periods.

9.15 In practice, however, not all of this development related trip demand can be considered to be 'new' trip movements, with some trips being existing movements already on the network, that are either 'passing-by' the site or 'diverted' from to / from the site as part of other journeys. For the purpose of the network assessment set out in this TA, a robust 'new' trip proportion of 50% of all predicted store trips during weekday peak periods has been assumed, and a new trip proportion of 70% for weekend peak period analysis.

9.16 Development trip demand has been assigned to the network based on an estimate practical travel catchment, based on: a) the extent and location of local population

lying within a 10 minute drive time catchment to the application site for 'new' trips and, b) observed local network traffic demand for the modelling of 'pass-by' and 'diverted trips'. This approach has been discussed and agreed with NCC highways during pre-application scoping discussions.

Future Network Demand Forecasting

9.17 Forecast future highway network conditions have been prepared based on the following approach as agreed with NCC highways during scoping discussions:

- Assessments to be carried out for both weekday & weekend peak demand periods.
- Assessments to be carried out for an opening year of 2024 and an additional future year analysis at end of 2028.
- Background traffic growth based on locally adjusted growth factors for census super-output area Norwich005, which includes adjacent Bowthorpe employment and residential areas;
- Inclusion of predicted future traffic levels associated with a) the re-opening of the Brook Hotel on the adjacent land to the application site, and, b) on-going planned delivery of the nearby Threescore residential area.

9.18 Local network traffic forecasts have been prepared for Baseline 'Do-Nothing' (no re-development of the application site, i.e. continue as a leisure use) and 'Do-Something' Background + Food Store redevelopment scenarios.

Network Impact Assessment

9.19 Network operational conditions and the anticipated development traffic impact associated with new food store development traffic have been assessed by reference to the following matters:

- Comparison of 'Do-Nothing' and 'Do-Something' network demand flows (link impact – percentage change); and,

- Detailed network capacity modelling using appropriate industry standard computer modelling software and agreed model parameters.

Network Impact Assessment: Link Flow Change Assessment

9.20 Predicted changes in network traffic demand associated with the application scheme (i.e. difference between 'Do-Nothing' & 'Do-Something') can be expected to be relatively limited, with approach routes typically not expected to experience increases of in excess of 2.5% of 'Do-Nothing' Baseline traffic levels during weekday peak periods and 4.5% during Saturday peak periods (when baseline network flows are typically slightly lower). Such changes also typically represent net changes in traffic of less than 60 vehicles per minute on most route corridors (or less than 1 additional vehicle trip per minute, two-way).

9.21 Maximum predicted change in link demand is anticipated to take place on the immediate section of Barnard Road to the north east of the application site (a circa 69% increase in baseline 'Do-Nothing' traffic for the Saturday PM peak and 25% – 32% increase on weekdays). This localised increase in traffic reflects the fact that Barnard Road represents the key connecting link serving the proposed food store and also that background traffic levels on this route are relatively low, particularly during Saturday periods when trip demand to / from the surrounding industrial area (prevailing land use served by Barnard Road) is limited.

9.22 Based on the above results it is not anticipated that the predicted net changes in flow demand on local highway links associated with the proposed food store site would be expected to result in a material / severe change in operating conditions.

Network Impact Assessment: Junction Operational Capacity Assessment

9.23 Detailed junction operational capacity assessments have been undertaken for the following locations within the study area for forecast 2028 future year traffic conditions:

- Site Access Driveway / Barnard Road – T-junction (PICADY);
- A1074 Dereham Road / Wendene / Barnard Road / Breckland Road – Roundabout (ARCADY);
- Wendene / Clover Hill Road / Chapel Break Road Traffic Signals (LINSIG);
- Dereham Road Toucan Crossing / Bus Gate (LINSIG).

9.24 This junction capacity assessment work identified the key findings summarised below:

- *Site Access Driveway / Barnard Road:* The existing T-junction site access layout with Barnard Road is predicted to operate with a level of spare capacity under 'Do-Something' conditions including for operation of the proposed food store scheme and potential reinstatement of hotel use on the adjacent site

- *A1074 Wendene Roundabout:* The existing roundabout layout is anticipated to continue to offer some level of spare capacity at the 2028 future year, including for the delivery of the food store scheme. Core ARCADY modelling under 'Do-Something' scenarios suggest that all approach arms would be operating at below the 0.85 RFC threshold, with no evidence of any significant queuing. Review of more onerous lane simulation tests show junction operation closer to capacity thresholds, with maximum RFC on the Dereham Road (W) approach at 0.85 during modelled 'surge' quarter hour periods. Such predicted 'Do-Something' operating conditions do not represent a substantive change in junction performance when compared to 2028 Future Year 'Do-Nothing' assessment runs. It is therefore concluded that there is no requirement for capacity related improvements at the Wendene roundabout to accommodate additional food store related traffic.

- *Wendene / Clover Hill Road / Chapel Break Road Traffic Signals:* The existing traffic signal cross-roads layout is predicted as being capable of accommodating the forecast additional traffic levels associated with the application scheme. The junction is predicted to operate with a level of practical reserve capacity under all 'Do-Something' assessment periods. The results do not suggest any requirement for the up-grading of the existing

junction layout in order accommodate application site traffic movements, with only a strictly marginal change in junction performance under future year 'Do-Nothing' and 'D-Something' scenarios

- *A1074 Dereham Road Toucan Crossing / Bus Gate:* Predicted mean max queuing on the Dereham Road (E) approach to the proposed crossing point traffic signals under 2028 'Do-Something' typical crossing operation, could be expected to be of the order of 22-23 pcus during weekday PM peak periods, which could be accommodated on the Dereham Road approach to the signals and would not queue back onto the Wendene Roundabout. Under 'worst case' signal staging, assuming a back-to-back ped / cycle crossing stage & bus gate phase, traffic could potentially extend back to the roundabout, however, in practice the potential for such a situation to occur on a regular basis is considered to be very limited.

9.25 Based on this review it is ultimately concluded that the delivery of the application scheme would not result in severe changes in future highway network conditions and there would be no requirement for the delivery of additional local highway network improvements, over and above those measures proposed on A1074 Dereham Road (W) to provide improved pedestrian & cycle access.

Summary

9.26 Overall, based on the above review of issues, it is concluded that the comprehensive redevelopment of land off Barnard Road for new food store development would not result in severe future predicted highway network operational & safety conditions. The scheme would cater for predominantly local food shopping trips, helping to manage overall journey lengths, whilst delivering opportunities to improve pedestrian and cycle accessibility to the site. The application scheme thereby meets the core planning sustainability objectives of promoting the use of alternative travel modes to the private car and managing the overall traffic impact associated with new development.

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FIGURES



Figure TA1 **Site Location: Strategic Context**

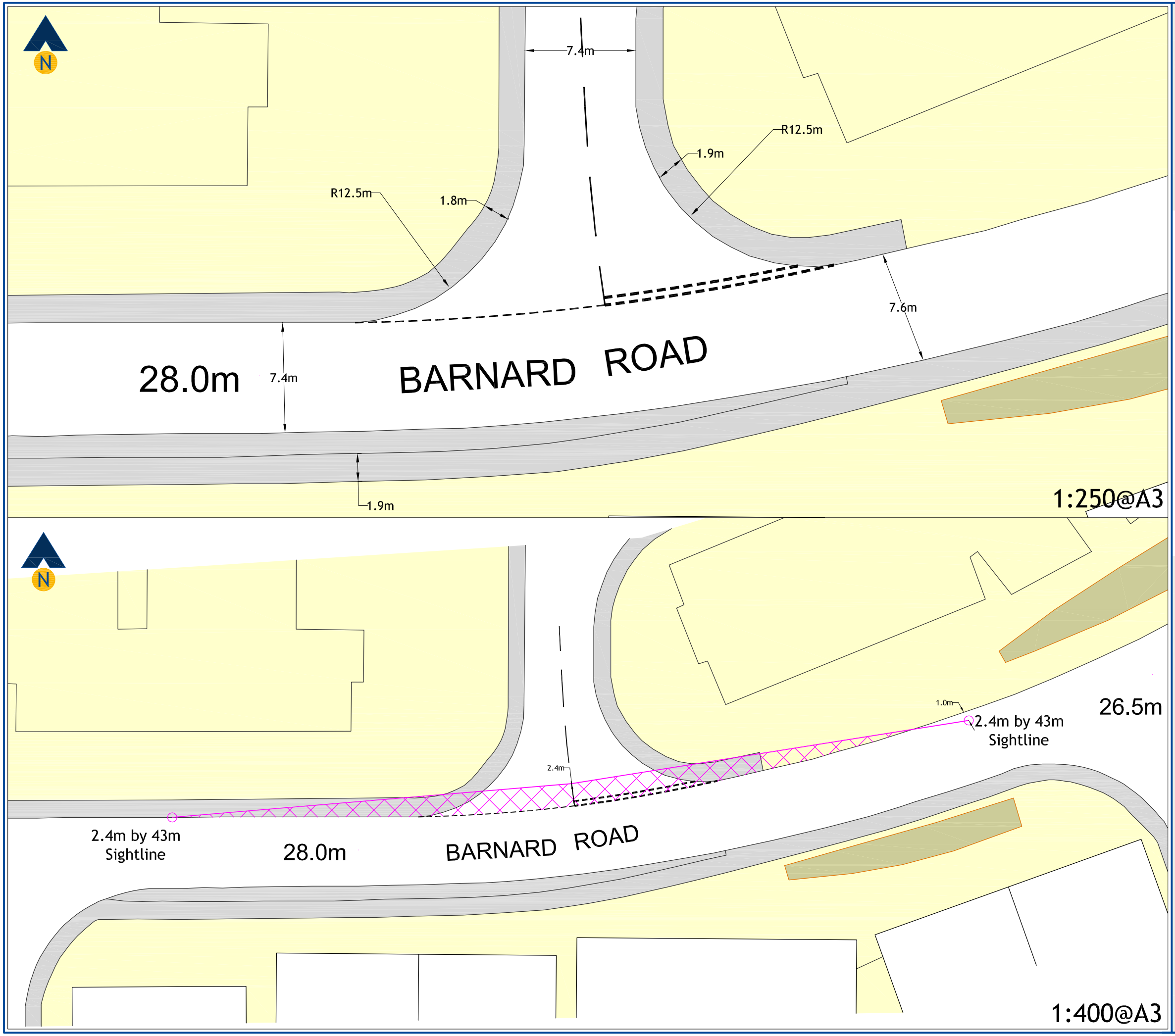
J000420 Land off Barnard Road, Norwich October 2023



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Figure TA2 **Site Location: Immediate Context**

J000420 Land off Barnard Road, Norwich October 2023



Revision:

A	Adjusted Visi Splay	07/12/23

Client: Honeydew Investments

Project: Land at Barnard Road, Norwich

Drawing Title: Existing Layout of Site Access Connection to Barnard Road

Drawing Number: Figure TA3

Revision: A

Date: 25/07/23

Scale: As Stated

Drawn By: APB

Checked By: -

Status: Information

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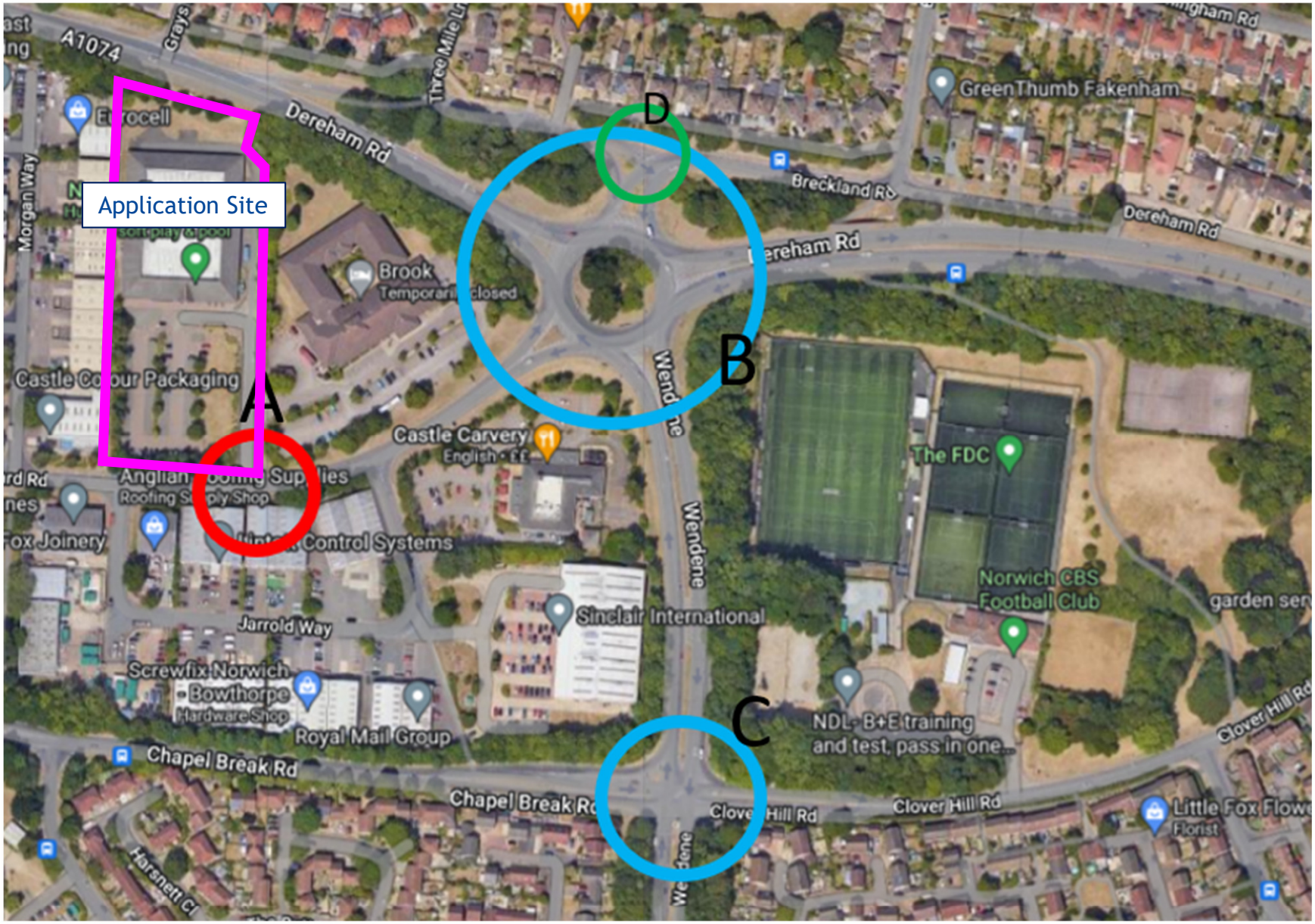
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Figure TA4 **Existing Local Pedestrian Connections to Application Site**

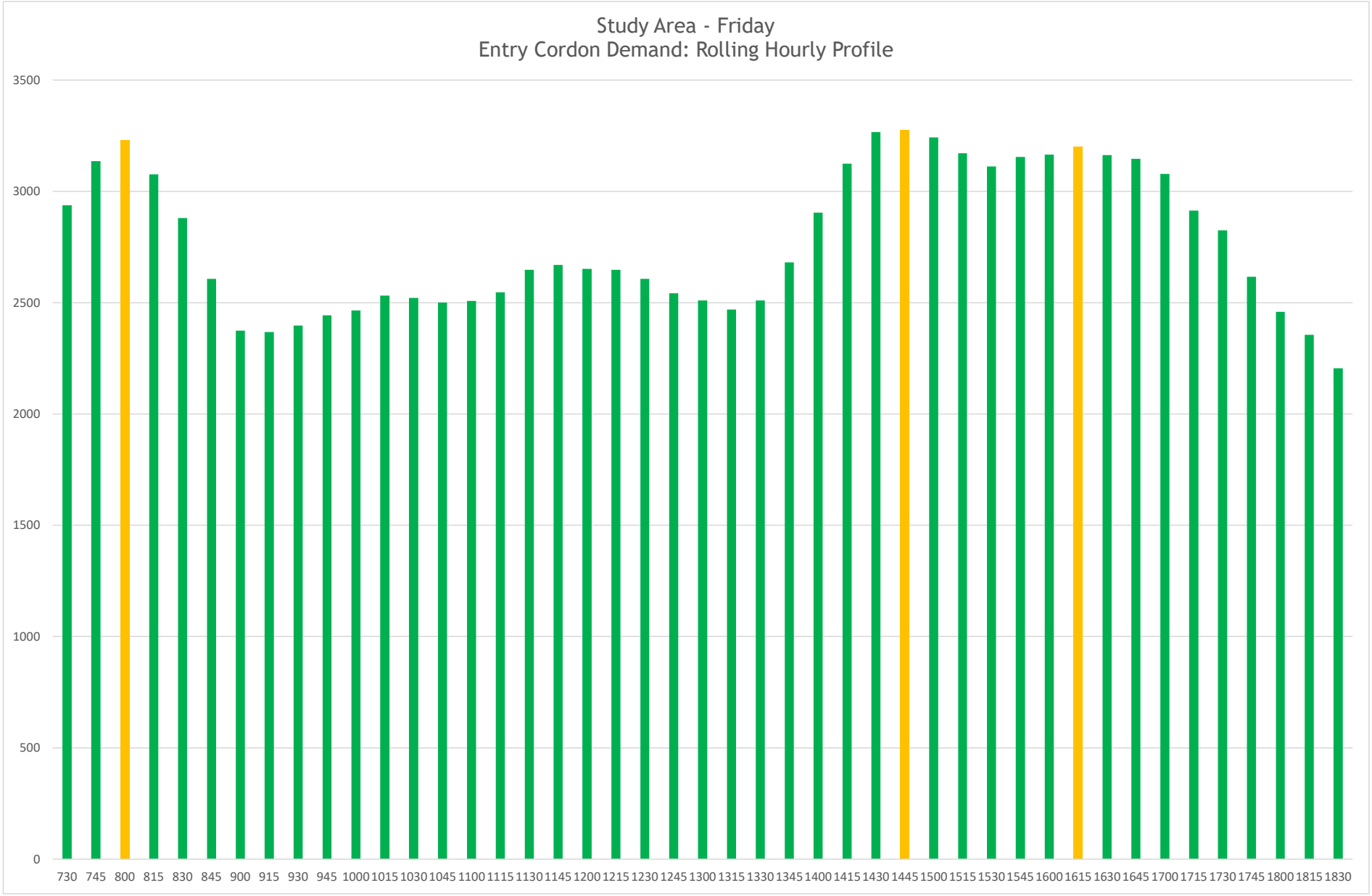
J000420 Land off Barnard Road, Norwich October 2023



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Figure TA5 **May 2023 Traffic Survey: Agreed Junction Locations**

J000420 Land off Barnard Road, Norwich October 2023



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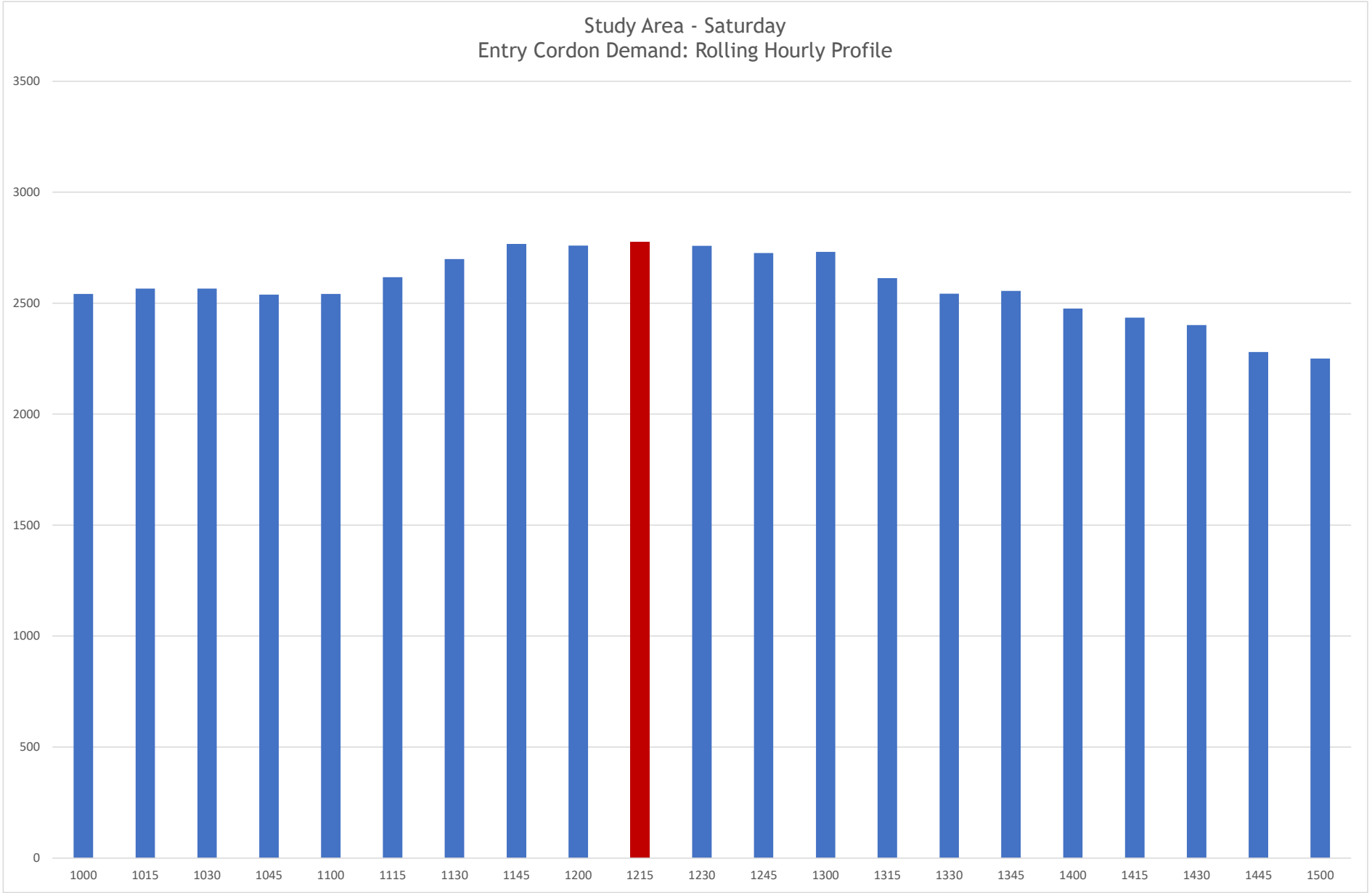
Figure TA6a

May 2023 Traffic Survey: Study Area Cordon Friday Rolling Hourly Traffic Demand

J000420

Land off Barnard Road, Norwich

October 2023



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Figure TA6b

May 2023 Traffic Survey: Study Area Cordon Saturday Rolling Hourly Traffic Demand

J000420

Land off Barnard Road, Norwich

October 2023

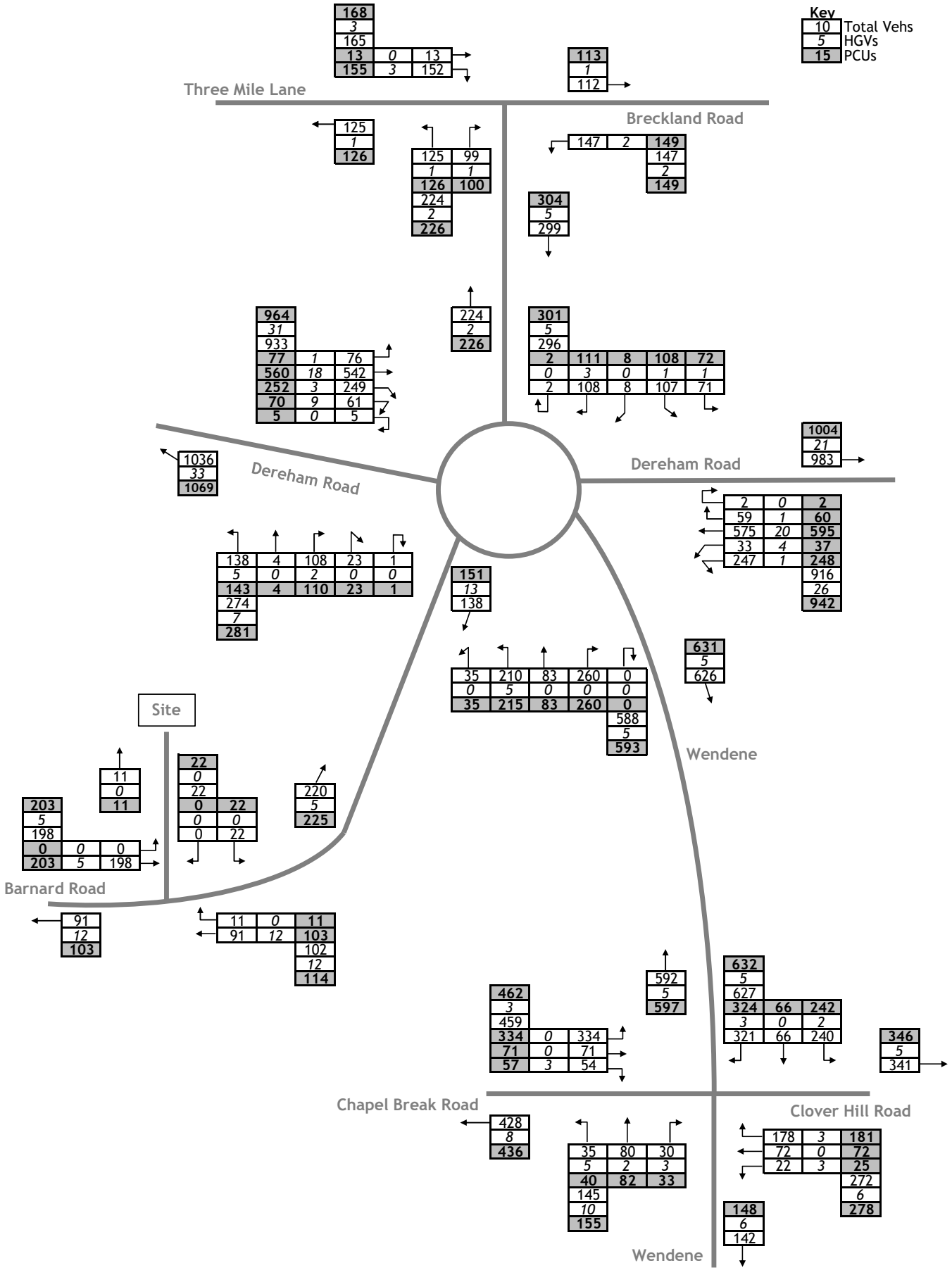


FIGURE TA7a

2023 Background Traffic Survey
Friday Day-Time Peak (14:45- 15:45)

J000420 Land at Barnard Road, Norwich October 2023

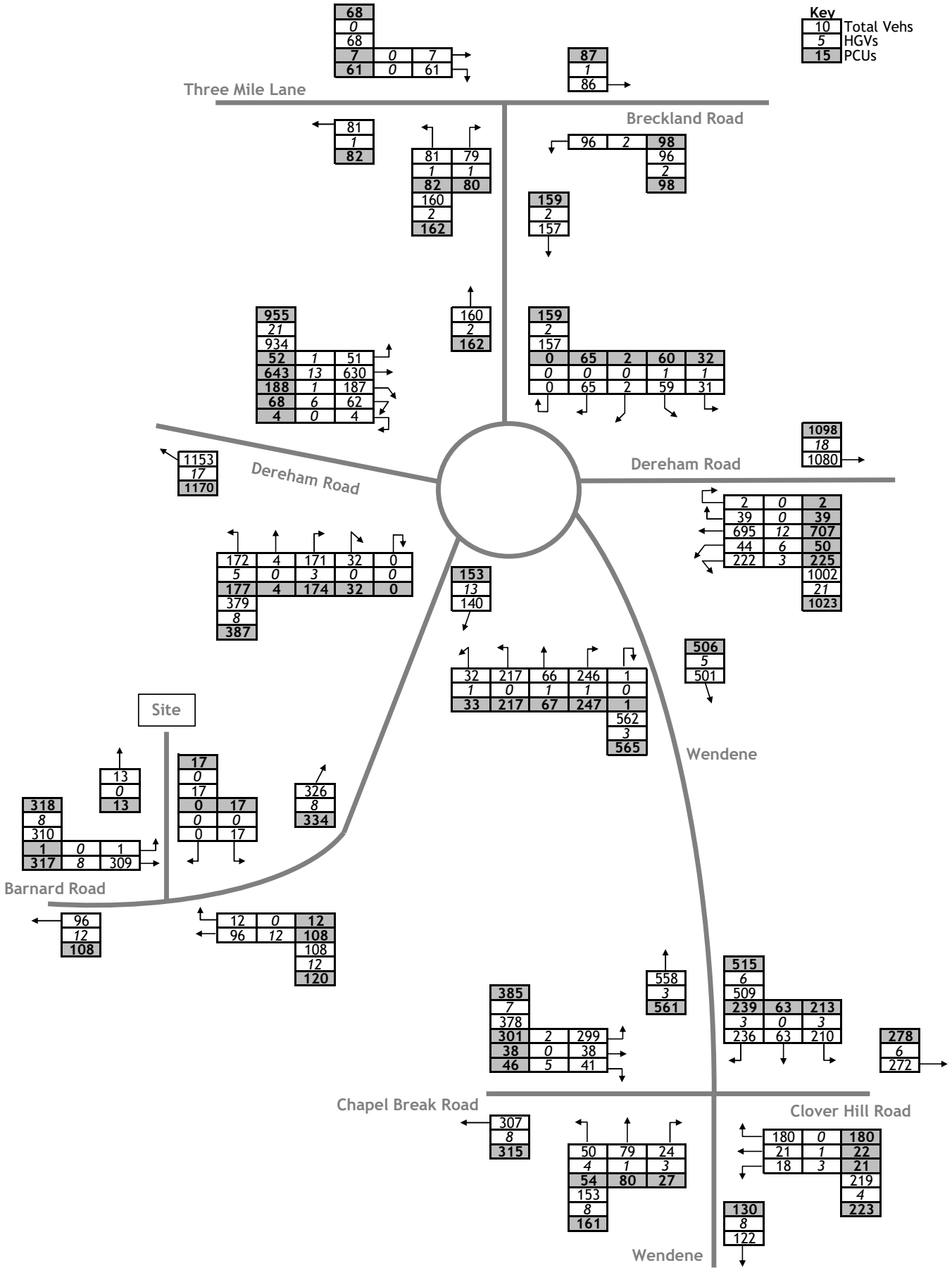


FIGURE TA7b

2023 Background Traffic Survey
Friday PM Peak (16:15-17:15)

J000420 Land at Barnard Road, Norwich October 2023

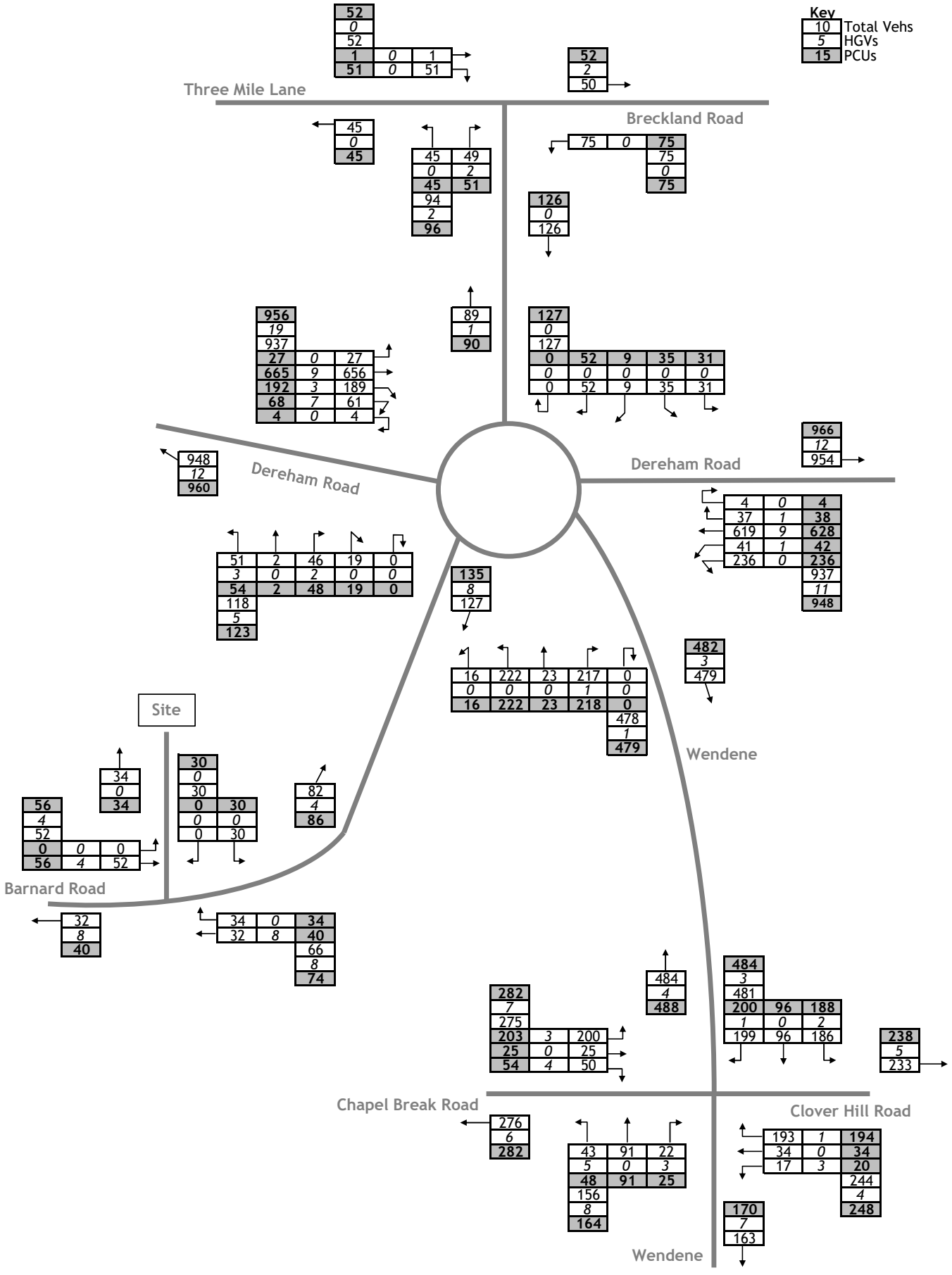
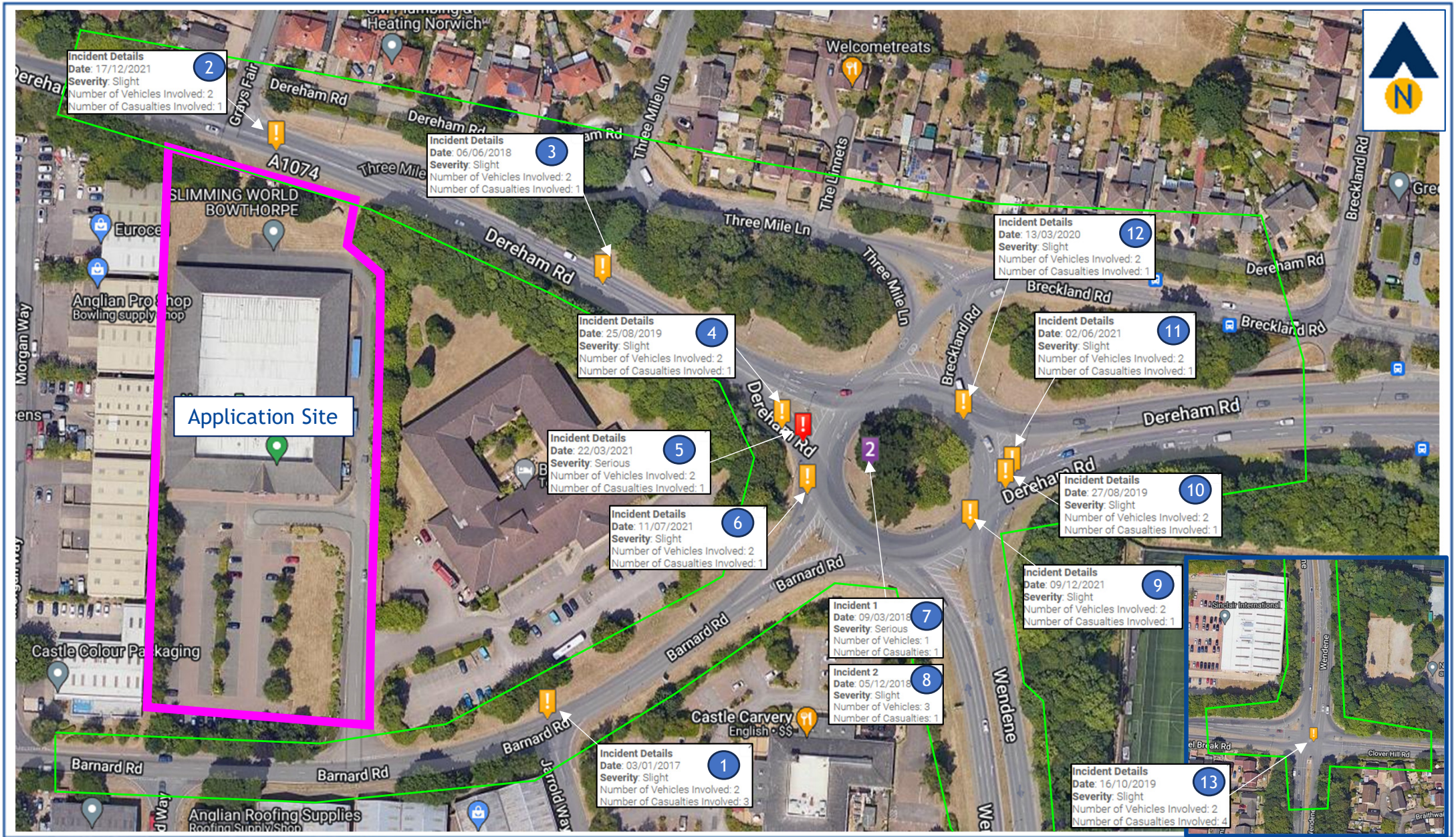


FIGURE TA7c

2023 Background Traffic Survey
Saturday Day-Time Peak (12:15-13:15)

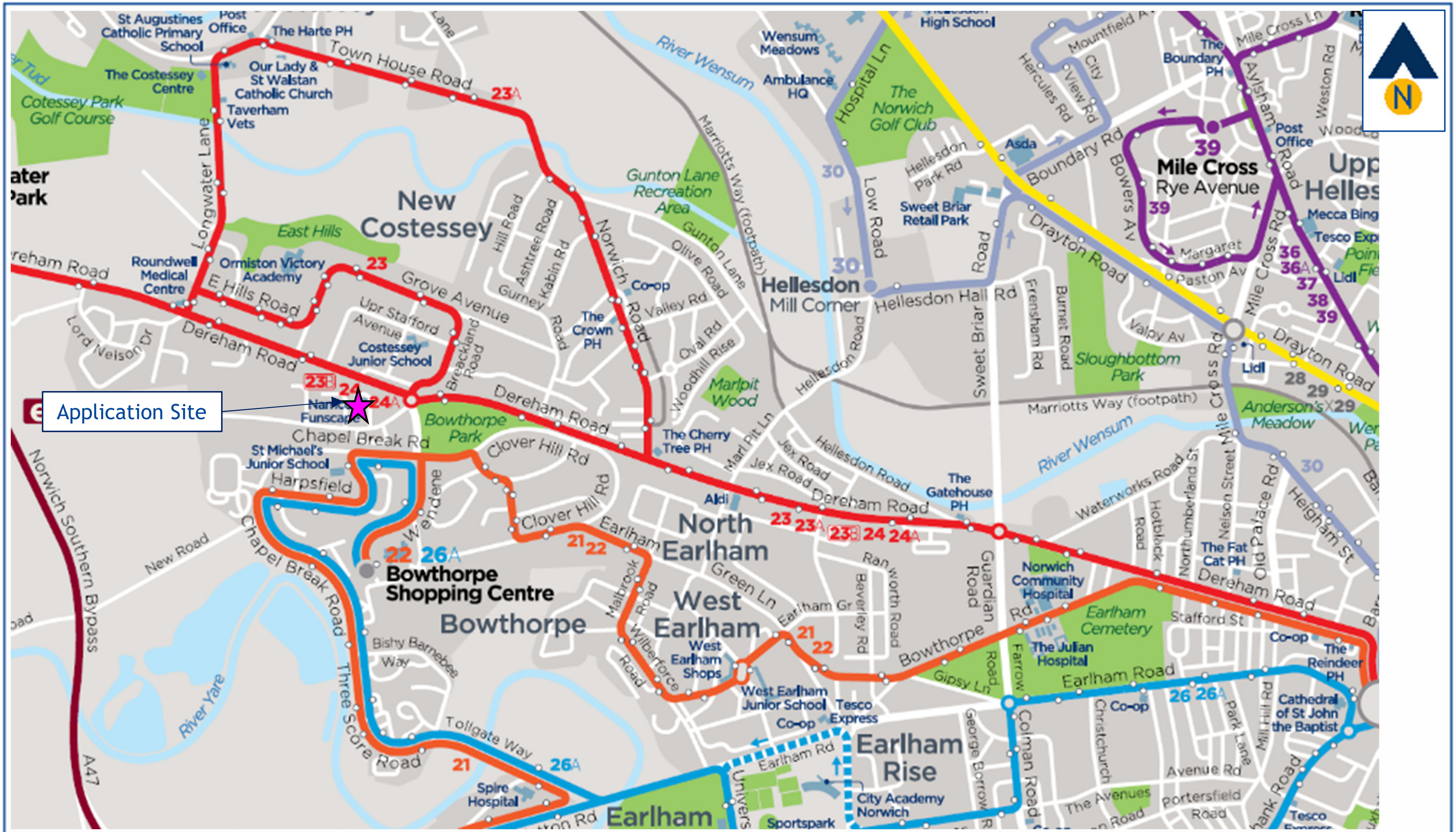
J000420 Land at Barnard Road, Norwich October 2023



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Figure TA8 **Recorded Personal Injury Accident Events (January 2017 - December 2021)**

J000420 Land off Barnard Road, Norwich October 2023



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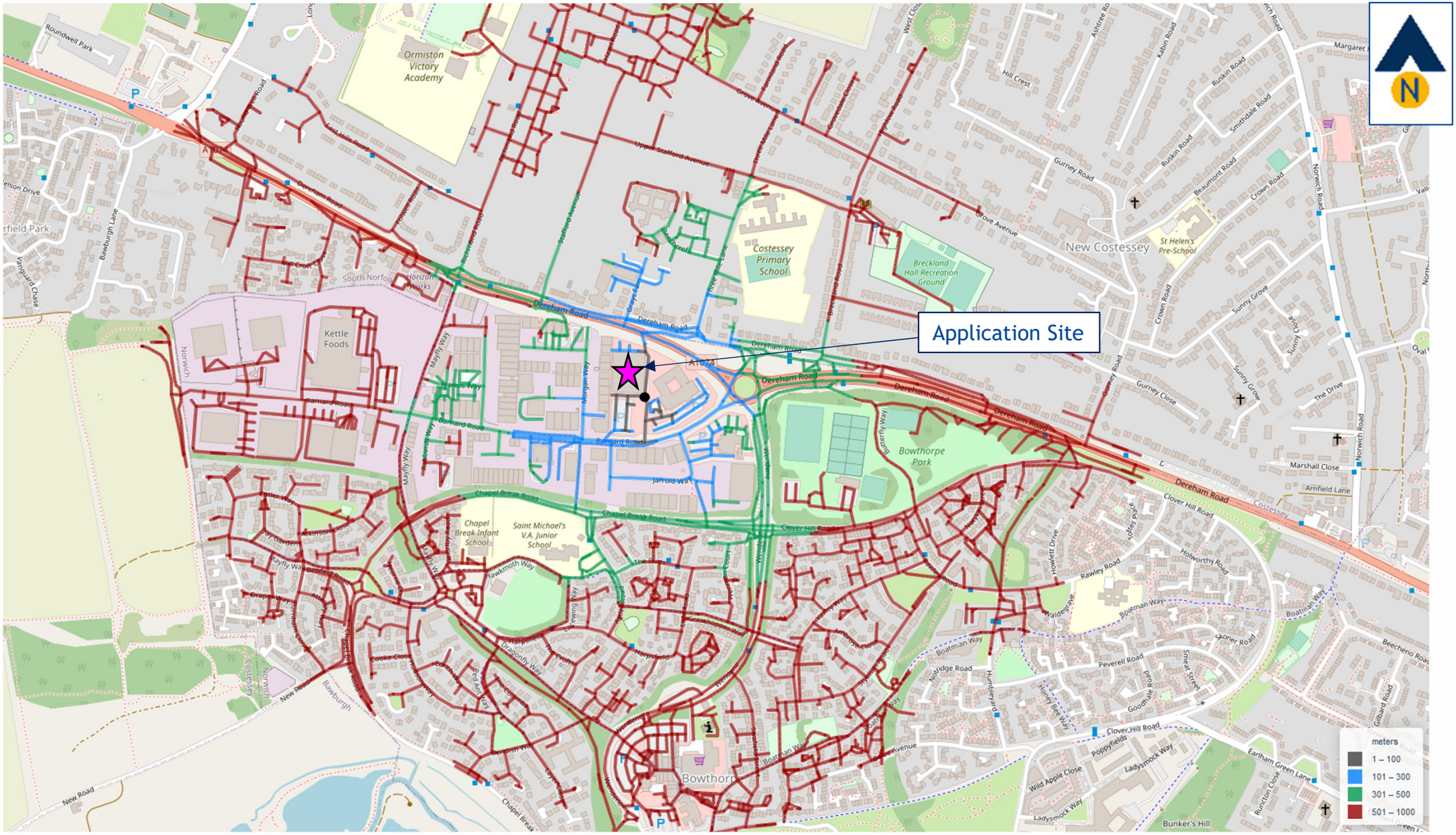
Figure TA9

Available Local Bus Services Within a Short Walk From the Application Site

J000420

Land off Barnard Road, Norwich

October 2023



FOCUS TRANSPORT PLANNING

Figure TA10 **1km Practical Walk Catchment from the Application Site**

J000420 Land off Barnard Road, Norwich October 2023

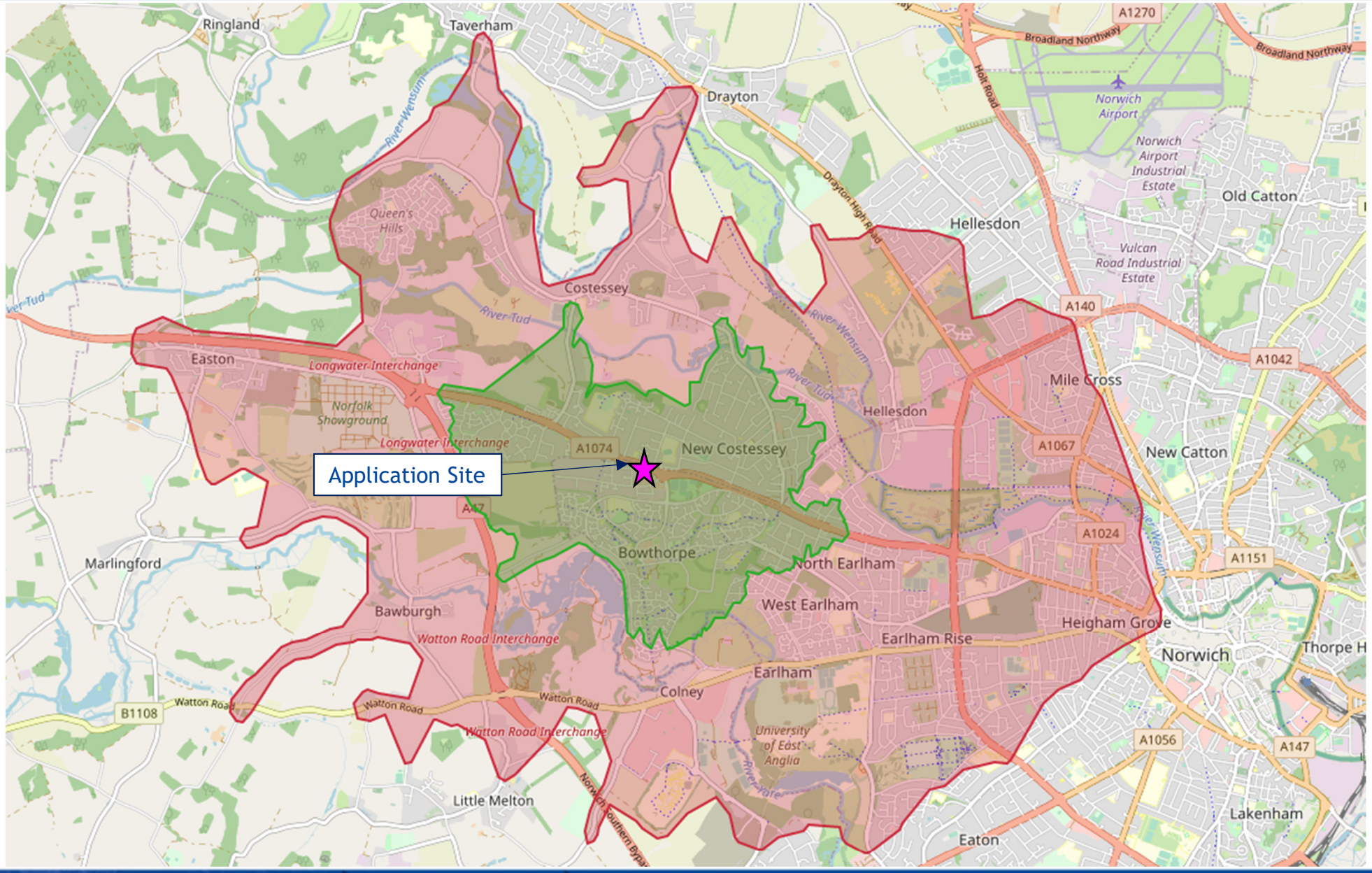


Figure TA11 **2km & 5km Cycle Catchment from the Application Site**

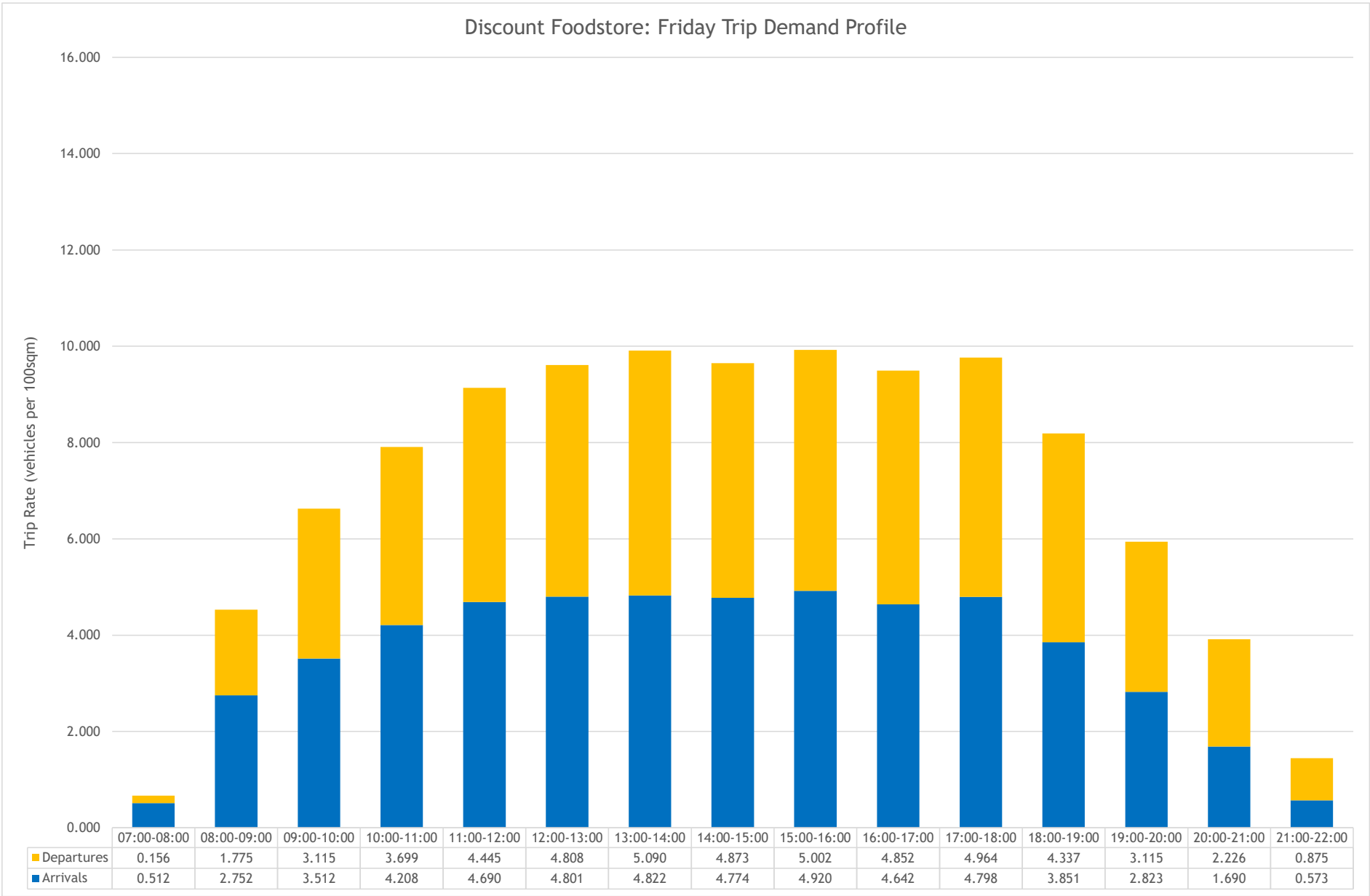
J000420 Land off Barnard Road, Norwich October 2023



FOCUS TRANSPORT PLANNING

Figure TA12 **Available Cycle Infrastructure Within a Local Cycle Catchment of the Application Site**

J000420 Land off Barnard Road, Norwich October 2023



	07:00-08:00	08:00-09:00	09:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	18:00-19:00	19:00-20:00	20:00-21:00	21:00-22:00
Departures	0.156	1.775	3.115	3.699	4.445	4.808	5.090	4.873	5.002	4.852	4.964	4.337	3.115	2.226	0.875
Arrivals	0.512	2.752	3.512	4.208	4.690	4.801	4.822	4.774	4.920	4.642	4.798	3.851	2.823	1.690	0.573

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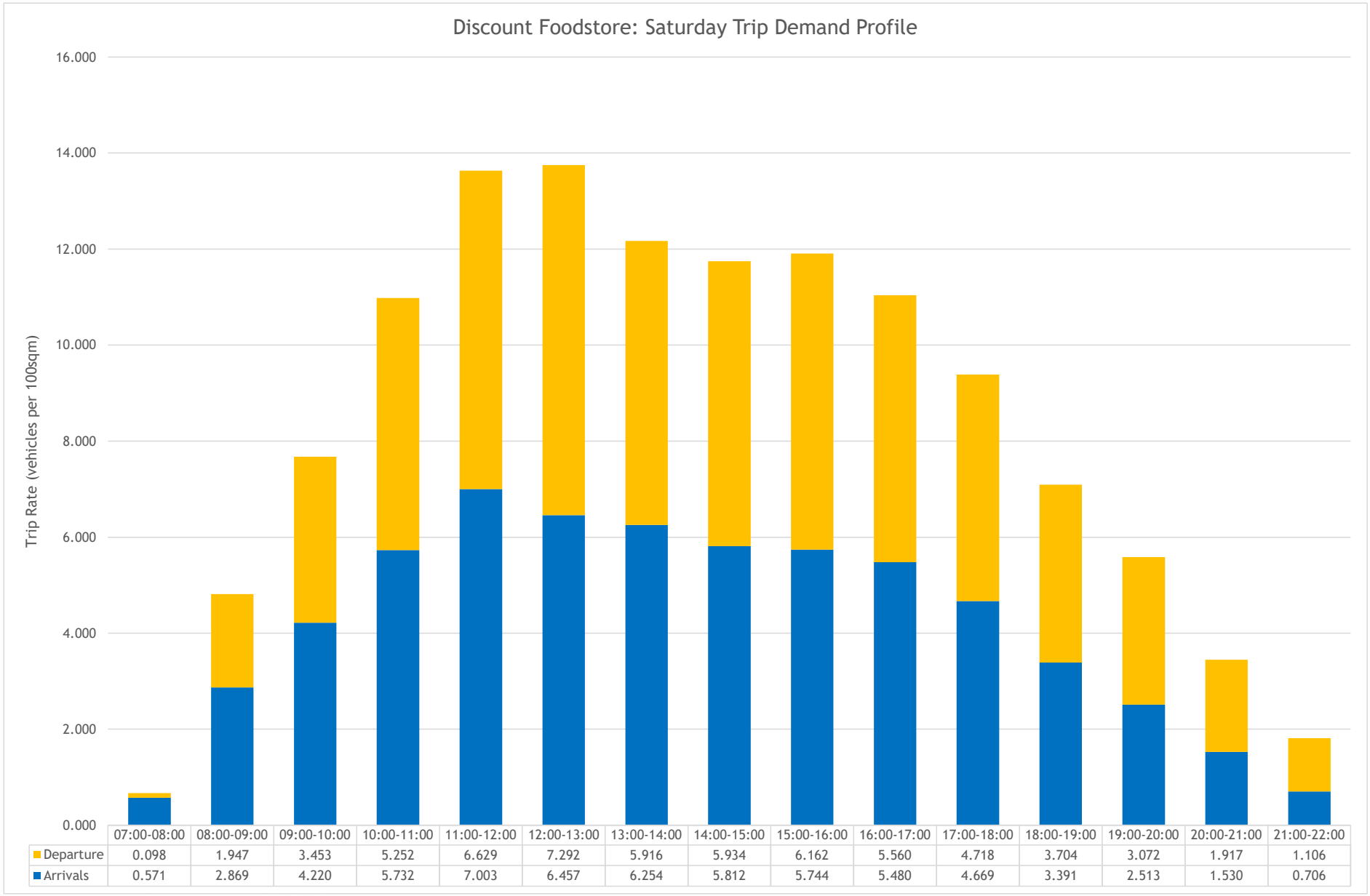
Figure TA13a

Representative Food Store Trip Generation Rates: Weekday Demand

J000420

Land off Barnard Road, Norwich

October 2023



	07:00-08:00	08:00-09:00	09:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	18:00-19:00	19:00-20:00	20:00-21:00	21:00-22:00
Departure	0.098	1.947	3.453	5.252	6.629	7.292	5.916	5.934	6.162	5.560	4.718	3.704	3.072	1.917	1.106
Arrivals	0.571	2.869	4.220	5.732	7.003	6.457	6.254	5.812	5.744	5.480	4.669	3.391	2.513	1.530	0.706

FOCUS TRANSPORT PLANNING

Figure TA13b

Representative Discount Food Store Trip Generation Rates: Saturday Demand

J000420

Land off Barnard Road, Norwich

October 2023

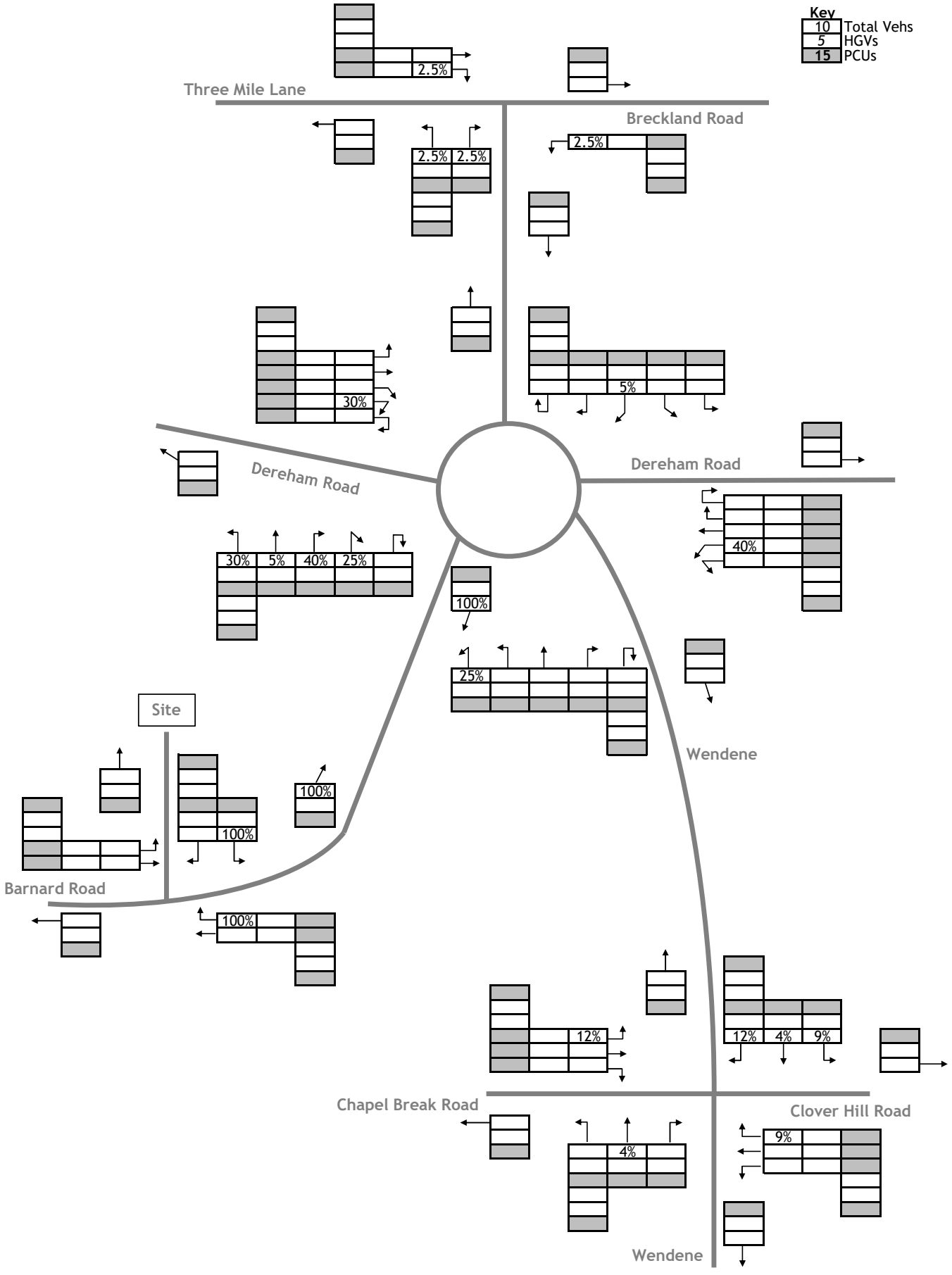


FIGURE TA14 **Trip Assignment Proportions for 'New' Foodstore Trips**

J000420 Land at Barnard Road, Norwich October 2023

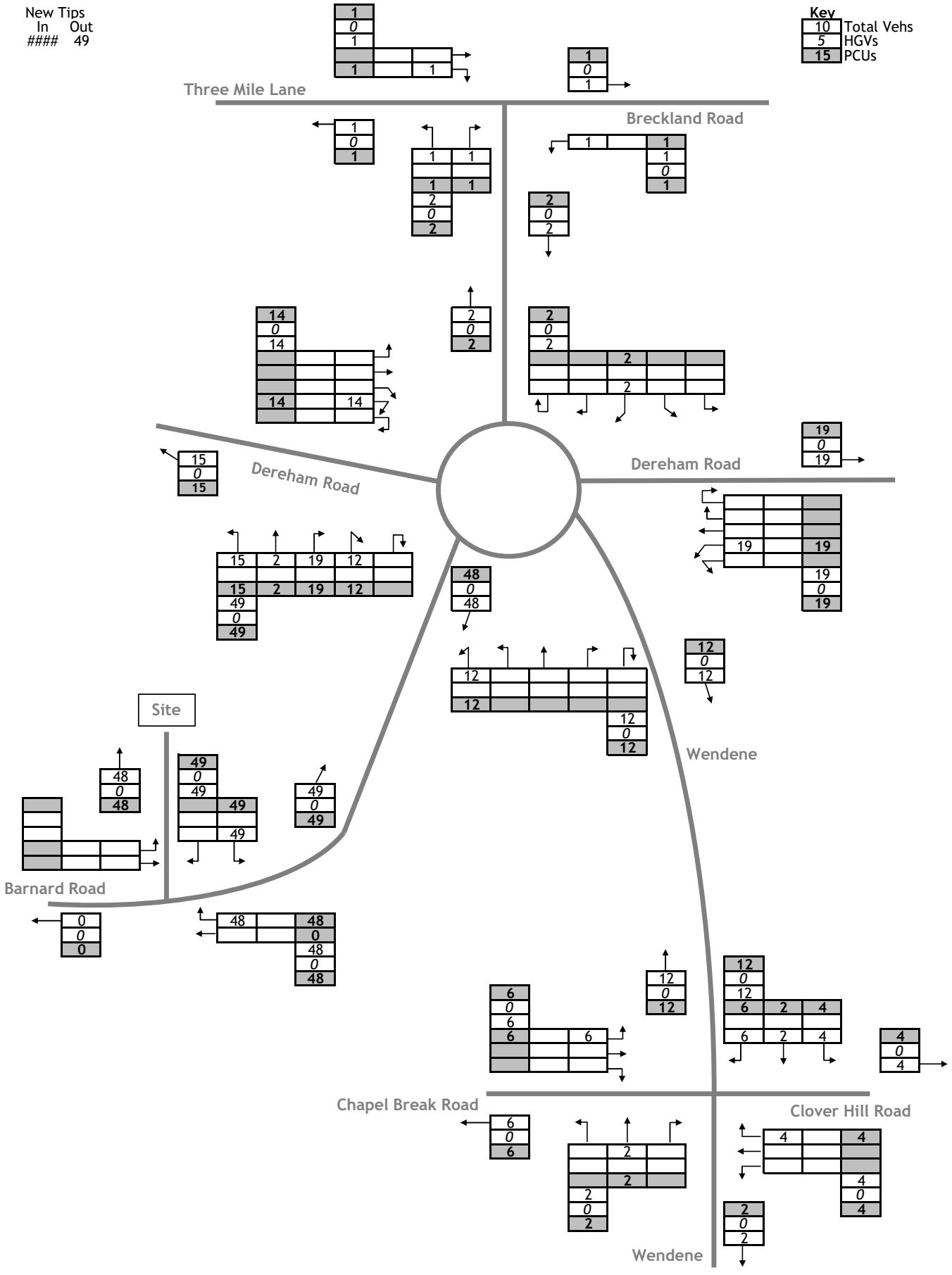


FIGURE TA15a **Friday Daytime Peak - New Foodstore Trip Demand**

J000420 Land at Barnard Road, Norwich October 2023

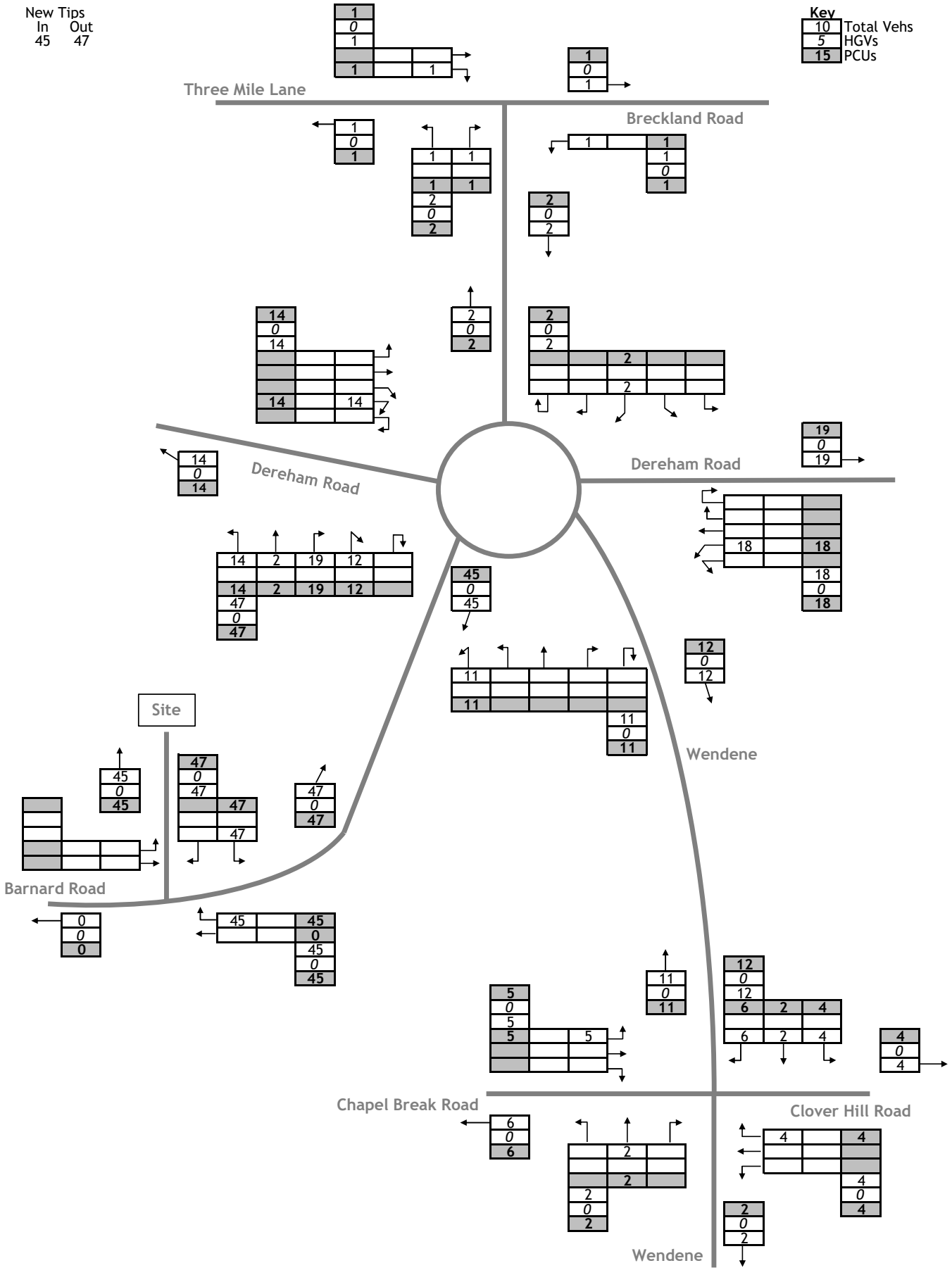


FIGURE TA15b **Friday PM Peak - New Foodstore Trip Demand**

J000420 Land at Barnard Road, Norwich October 2023

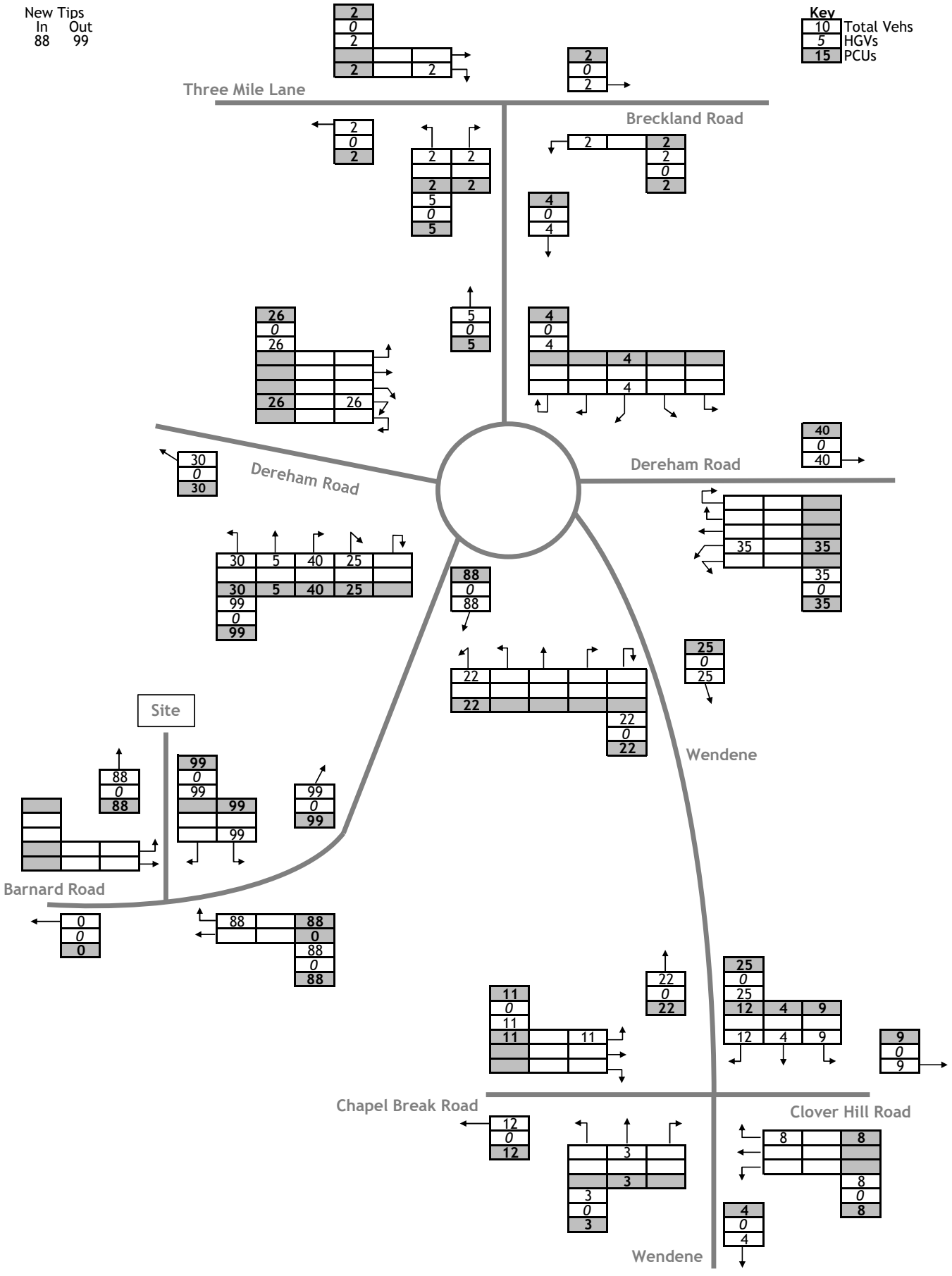


FIGURE TA15c **Saturday Peak - New Foodstore Demand**

J000420 Land at Barnard Road, Norwich October 2023

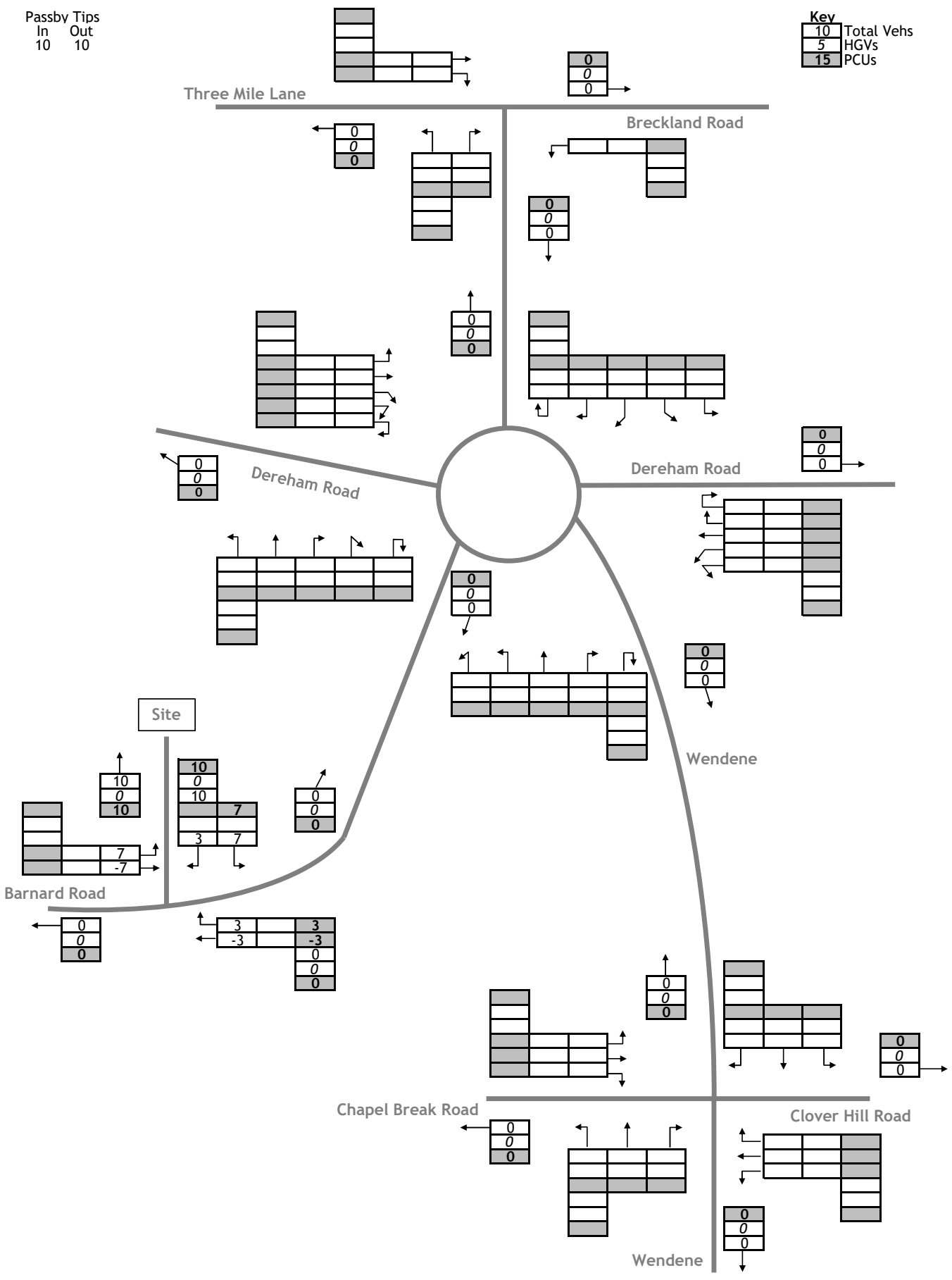


FIGURE TA16a **Friday Daytime Peak - Pass-By Foodstore Related Trip Movements**

J000420 Land at Barnard Road, Norwich October 2023

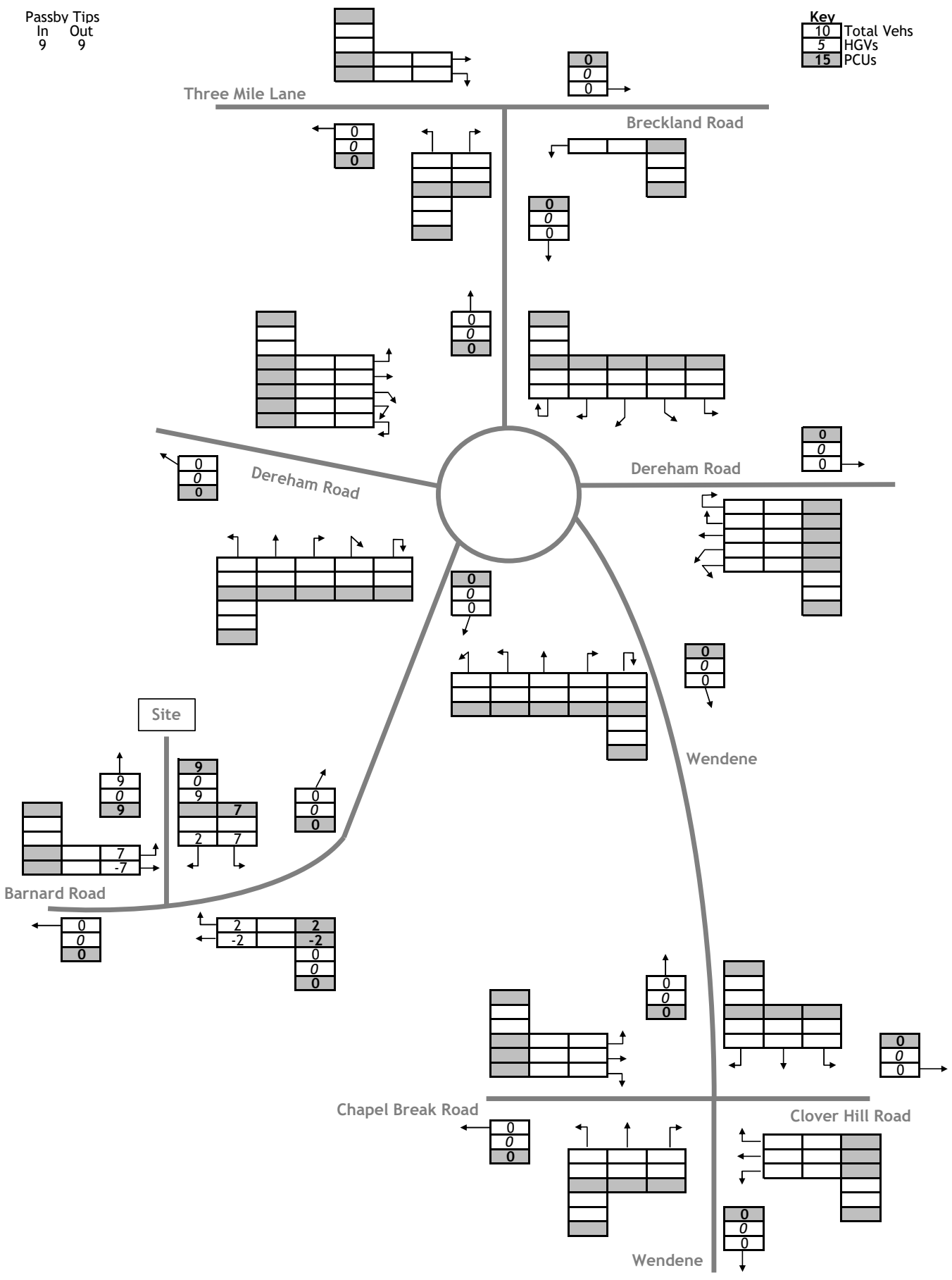


FIGURE TA16b **Friday PM Peak - Pass-By Foodstore Related Trip Movements**

J000420 Land at Barnard Road, Norwich October 2023

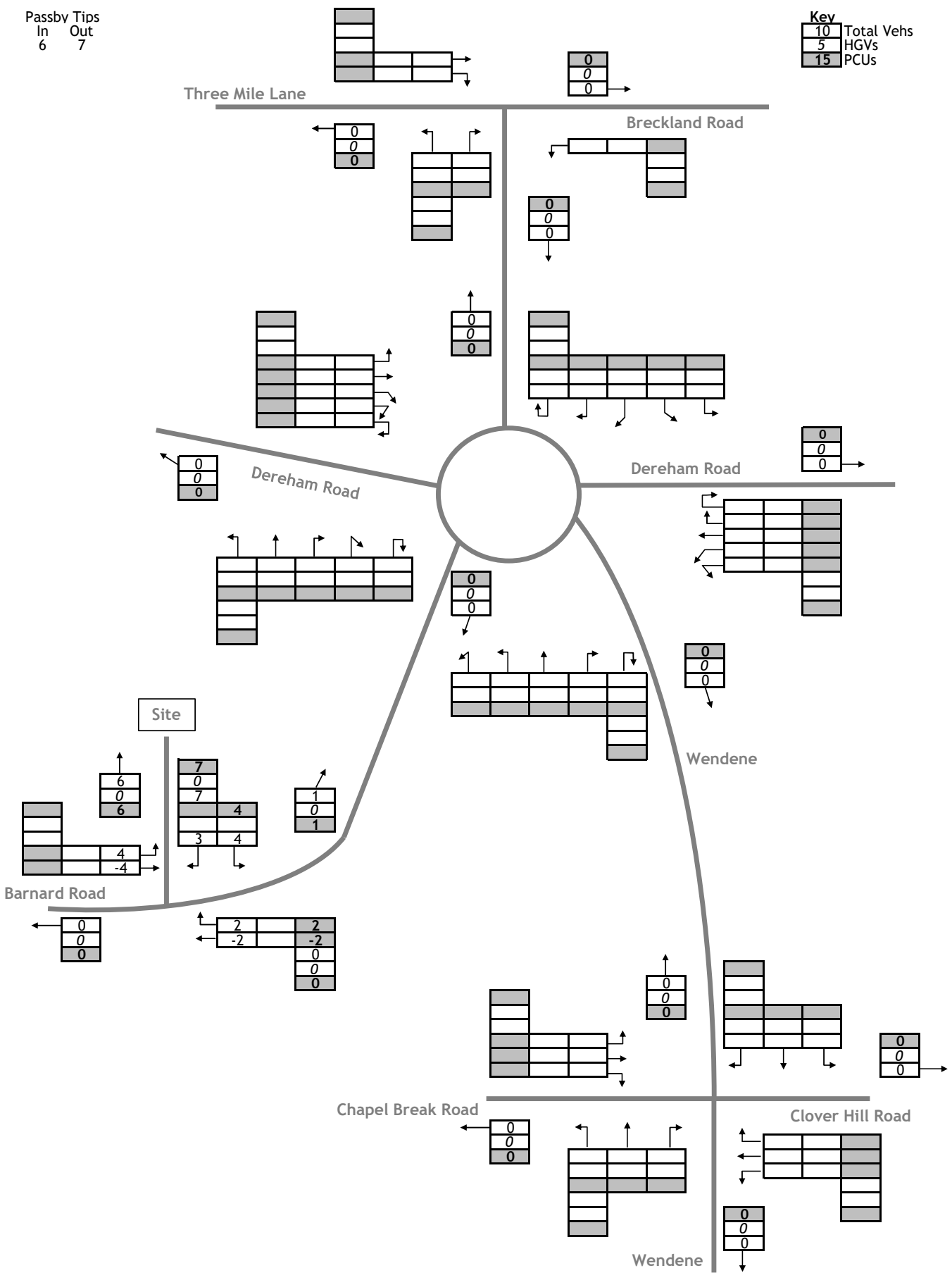


FIGURE TA16c **Saturday Peak - Pass-By Foodstore Related Trip Movements**

J000420 Land at Barnard Road, Norwich October 2023

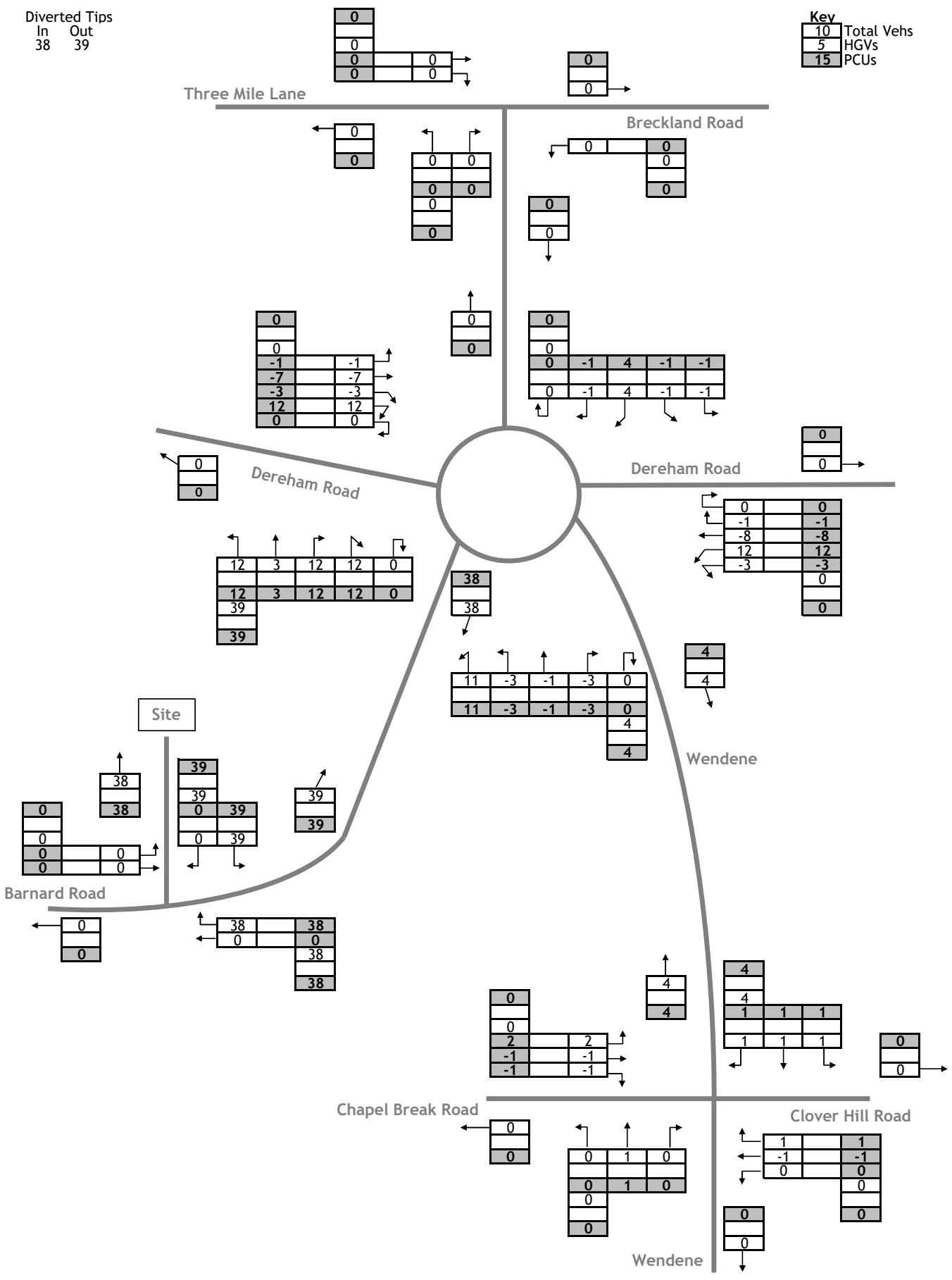


FIGURE TA17a **Friday Daytime Peak - Diverted Foodstore Related Trip Movements**

J000420 Land at Barnard Road, Norwich October 2023

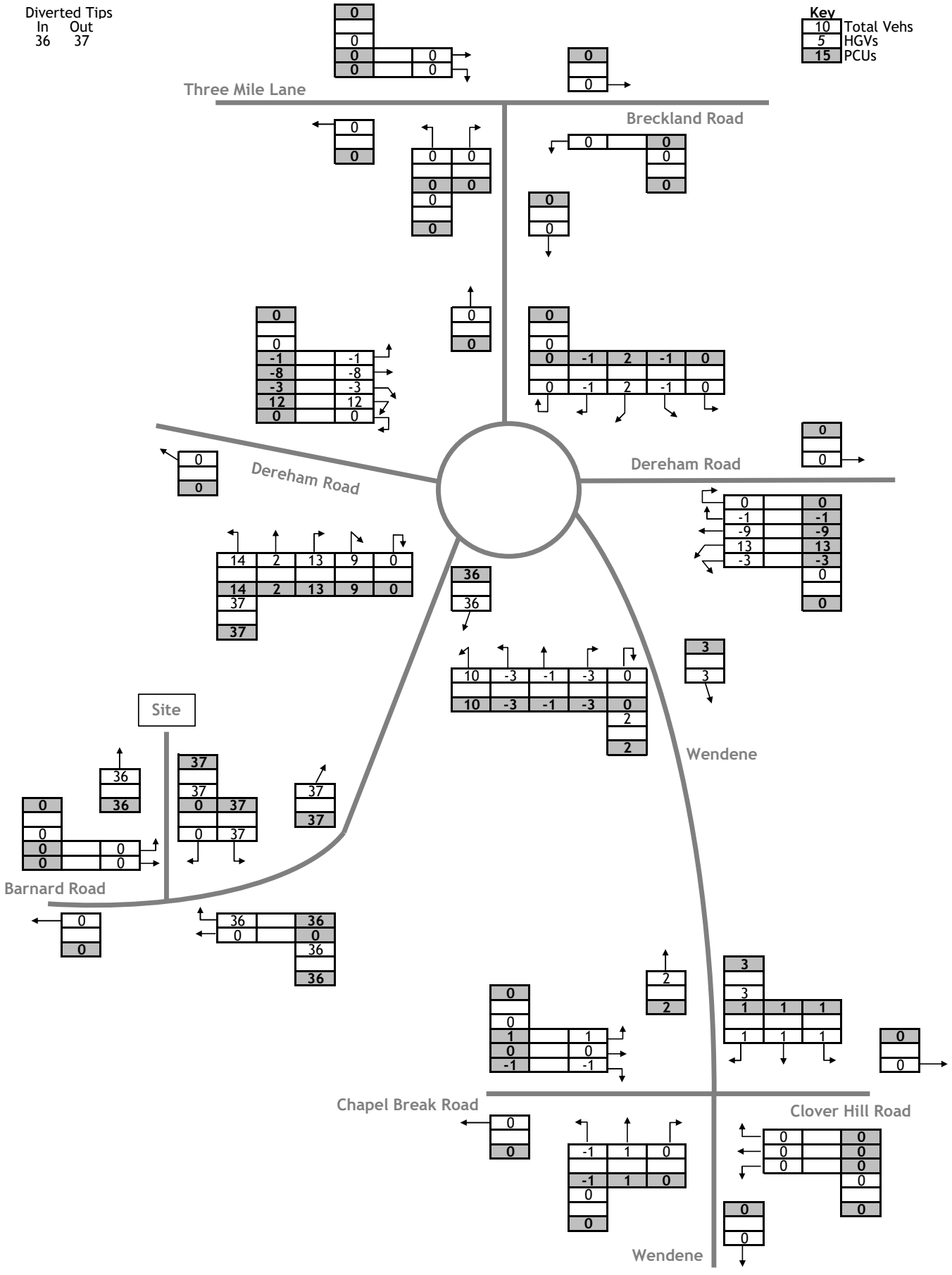


FIGURE TA17b **Friday PM Peak - Diverted Foodstore Related Trip Movements**

J000420 Land at Barnard Road, Norwich October 2023

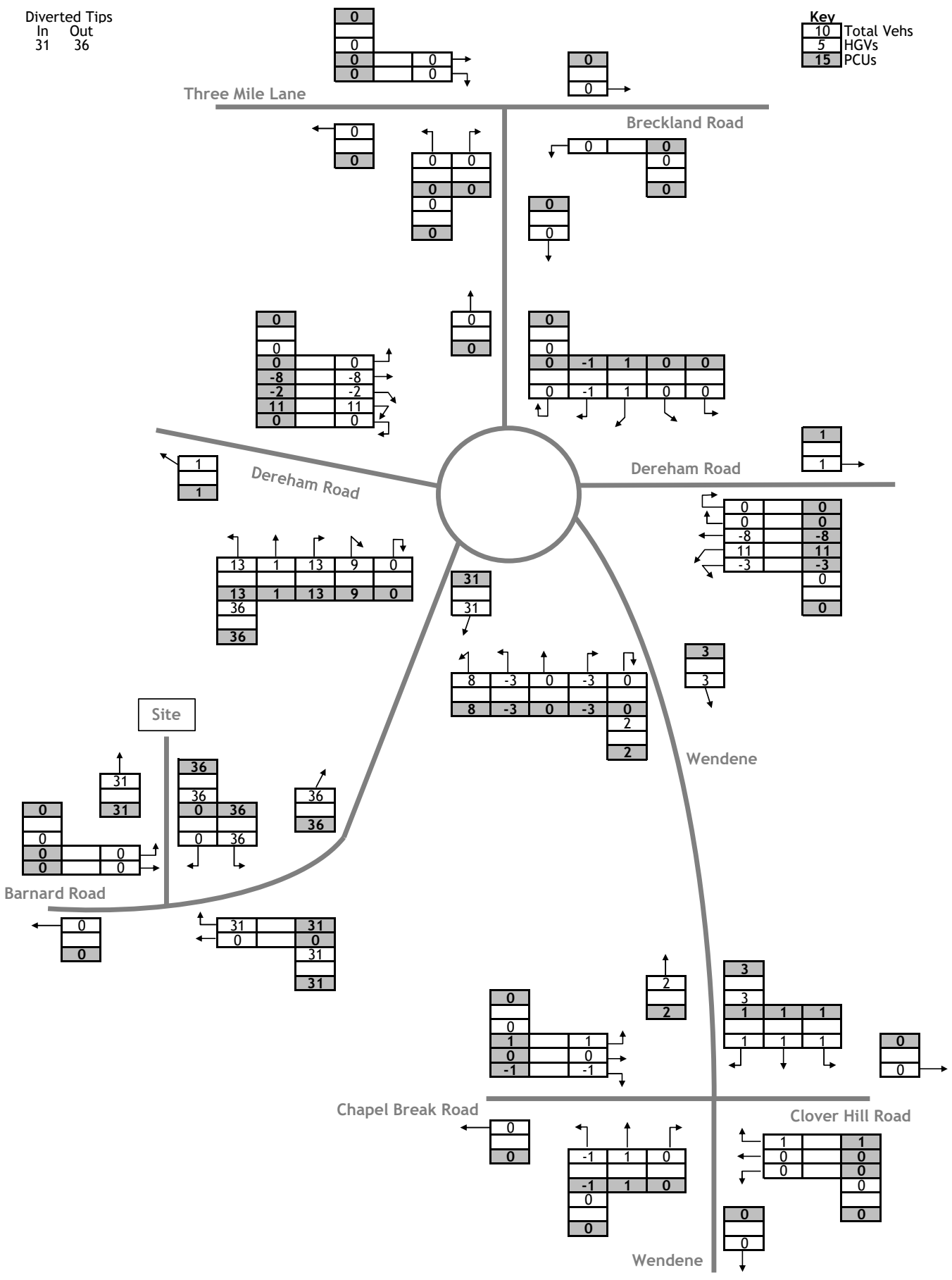


FIGURE TA17c

Saturday Peak - Total Diverted Foodstore Related Trip Movements

J000420 Land at Barnard Road, Norwich October 2023

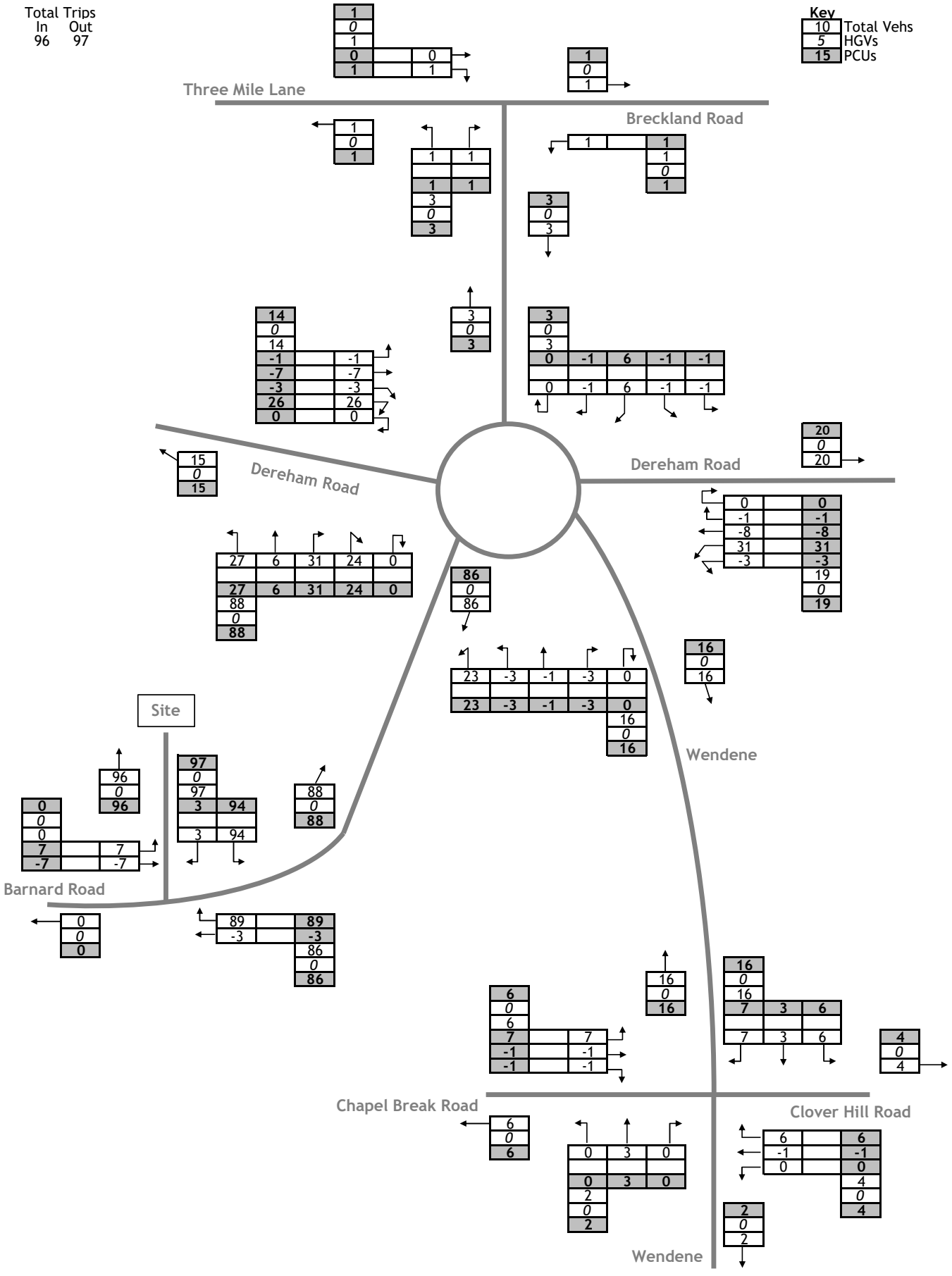


FIGURE TA18a **Friday Daytime Peak - Total Foodstore Related Trip Movements**

J000420 Land at Barnard Road, Norwich October 2023

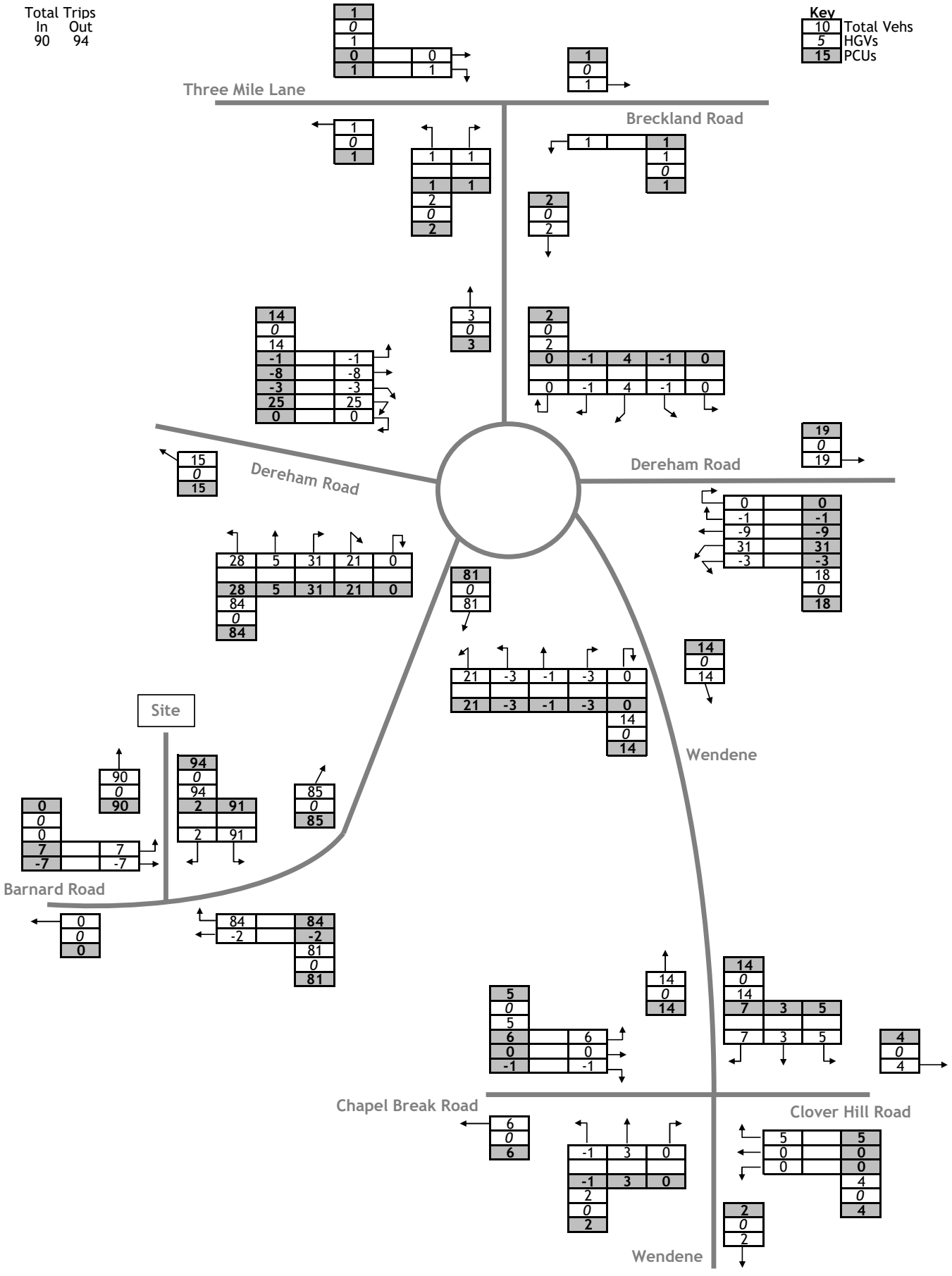


FIGURE TA18b **Friday PM Peak - Total Foodstore Related Trip Movements**

J000420 Land at Barnard Road, Norwich October 2023

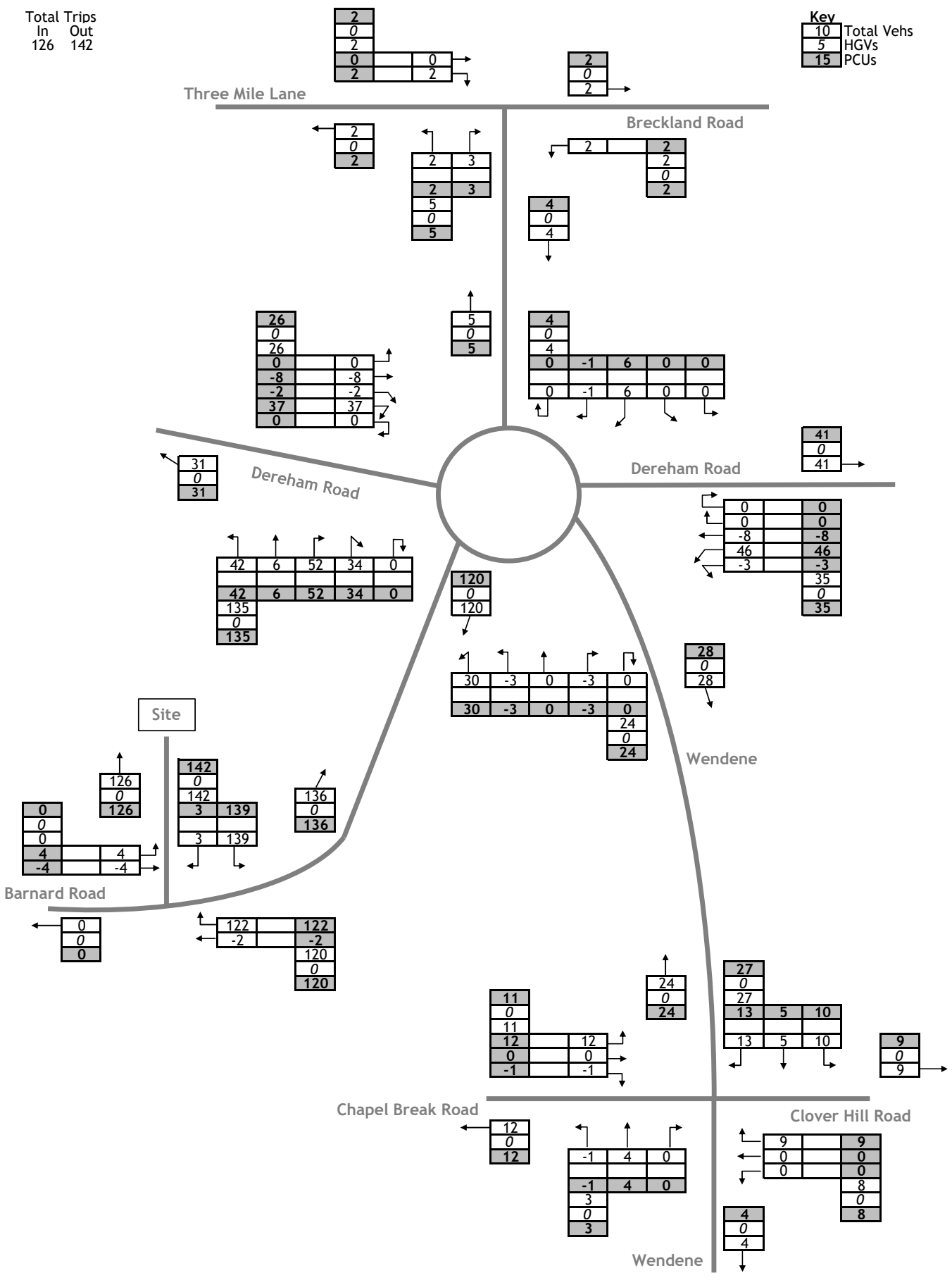


FIGURE TA18c **Saturday Peak - Total Foodstore Related Trip Movements**

J000420 Land at Barnard Road, Norwich October 2023

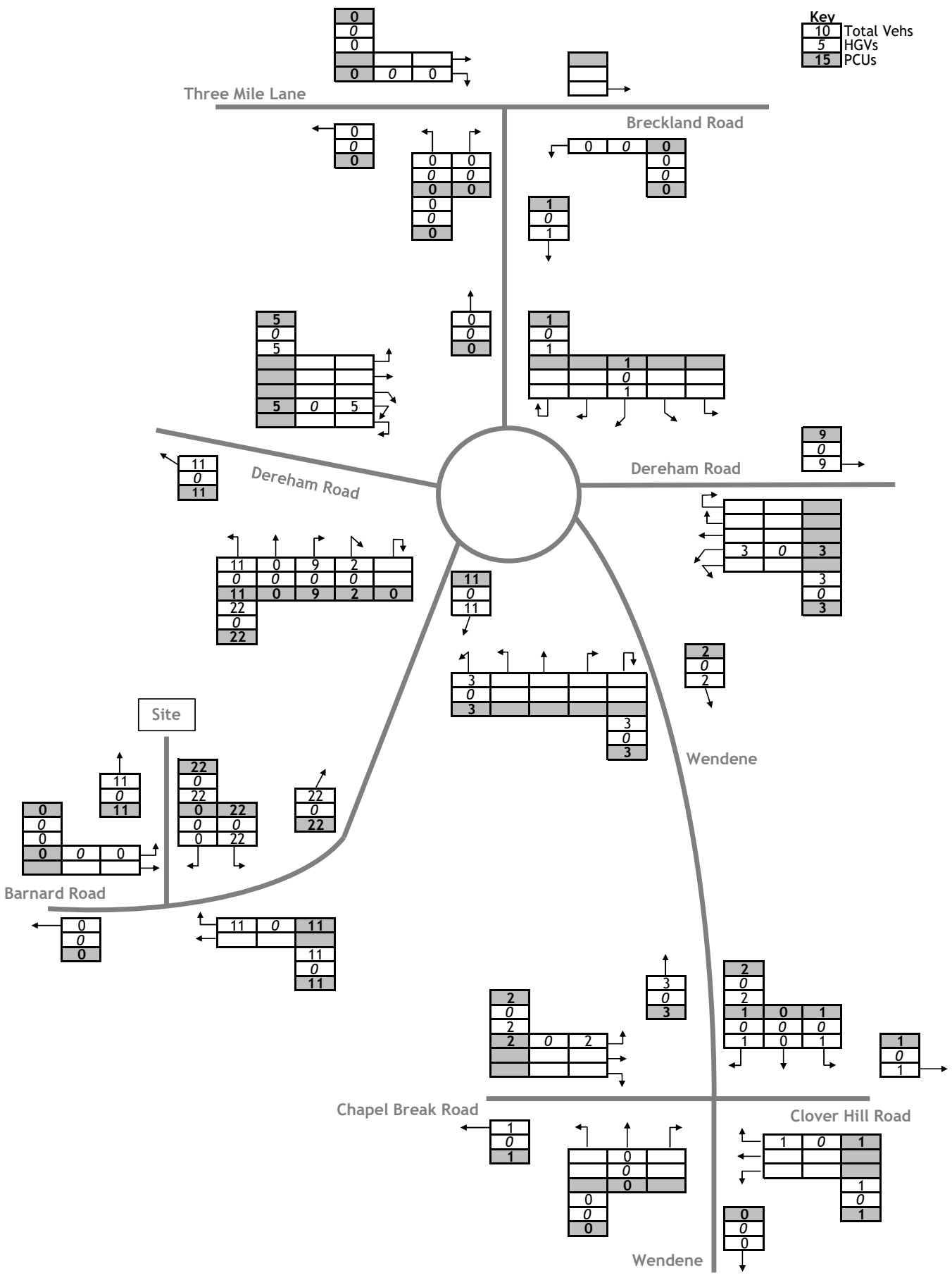


FIGURE TA19a

Friday Daytime Peak - Existing Leisure Use Related Trips

J000420

Land at Barnard Road, Norwich

October 2023

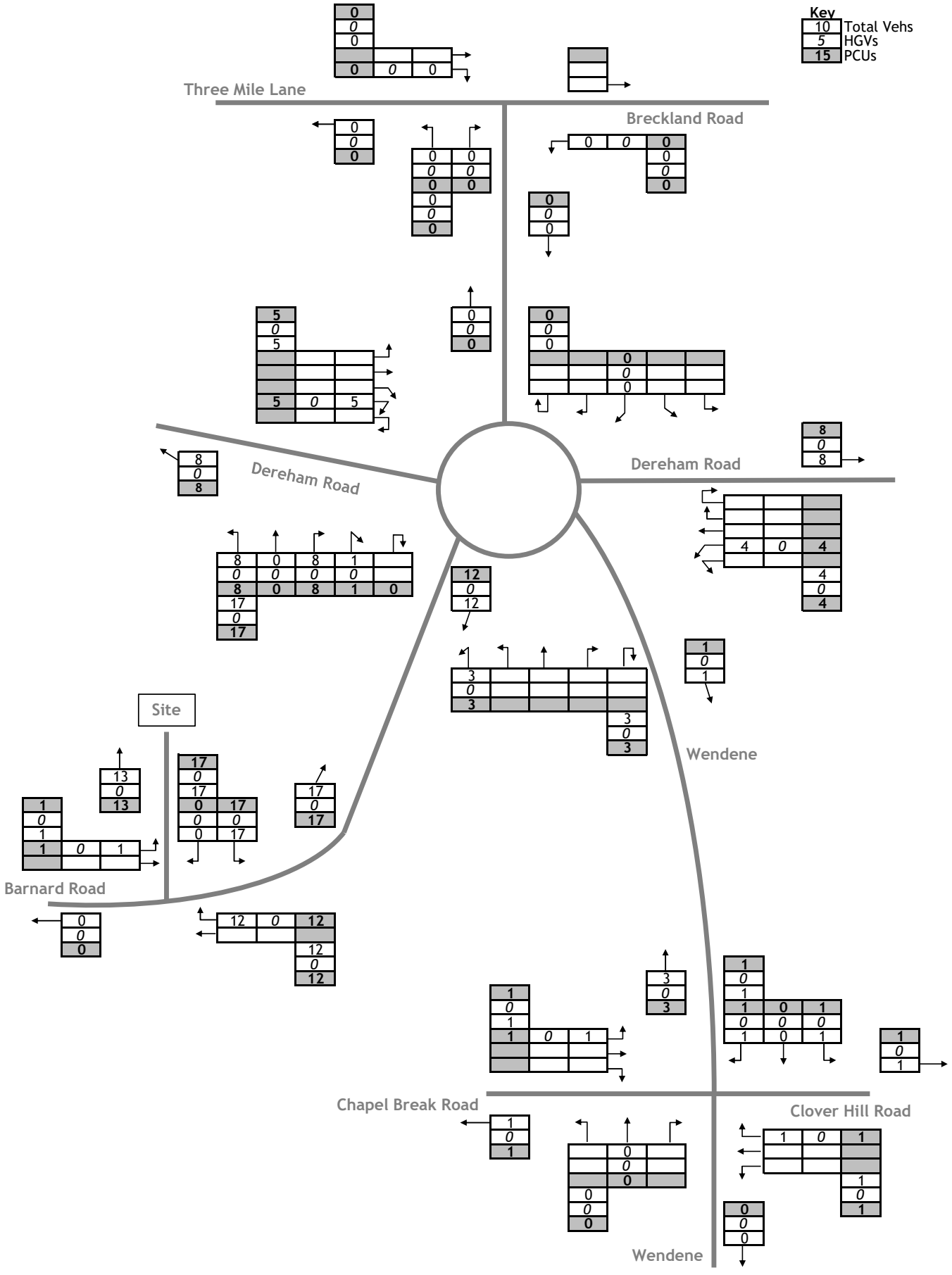


FIGURE TA19b **Friday PM Peak - Existing Leisure Use Related Trips**

J000420 Land at Barnard Road, Norwich October 2023

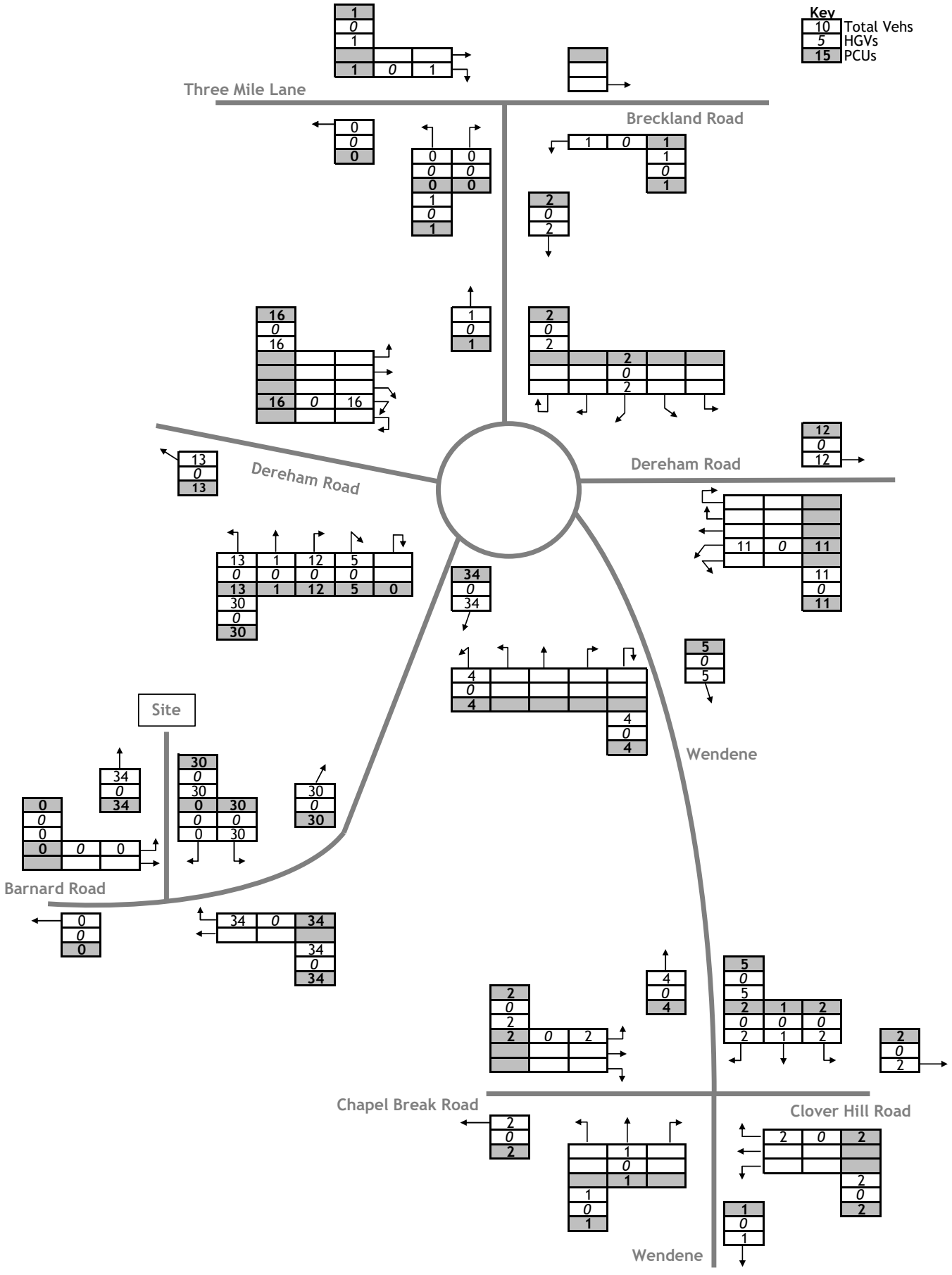


FIGURE TA19c

Saturday Peak - Existing Lesiure Use Related Trips

J000420

Land at Barnard Road, Norwich

October 2023

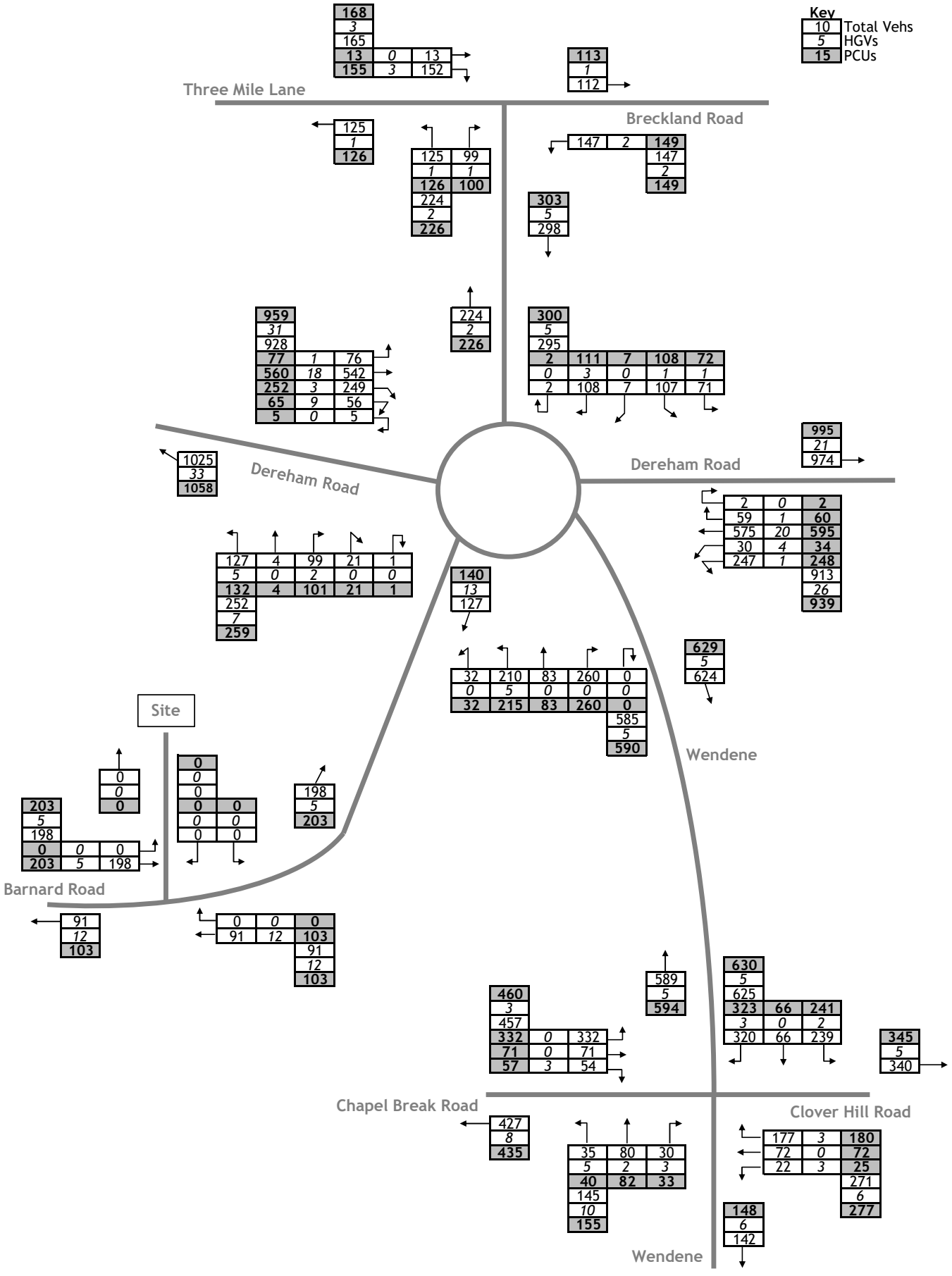


FIGURE TA20a **Friday Daytime Peak: 2023 Residual Background Traffic (Survey - existing trips)**

J000420 Land at Barnard Road, Norwich October 2023

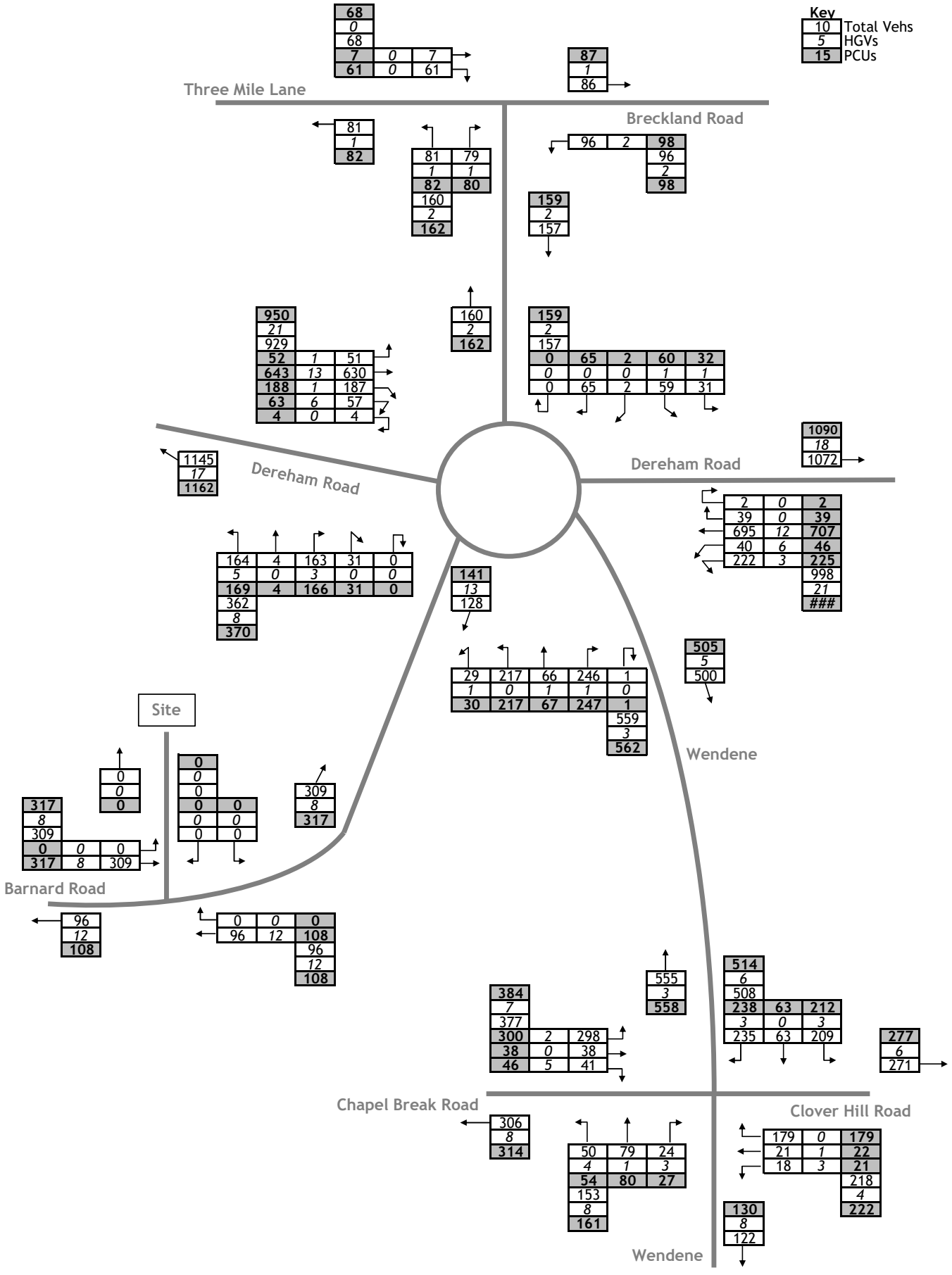


FIGURE TA20b **Friday PM Peak - 2023 Residual Background Traffic (Survey - existing site trips)**

J000420 Land at Barnard Road, Norwich October 2023

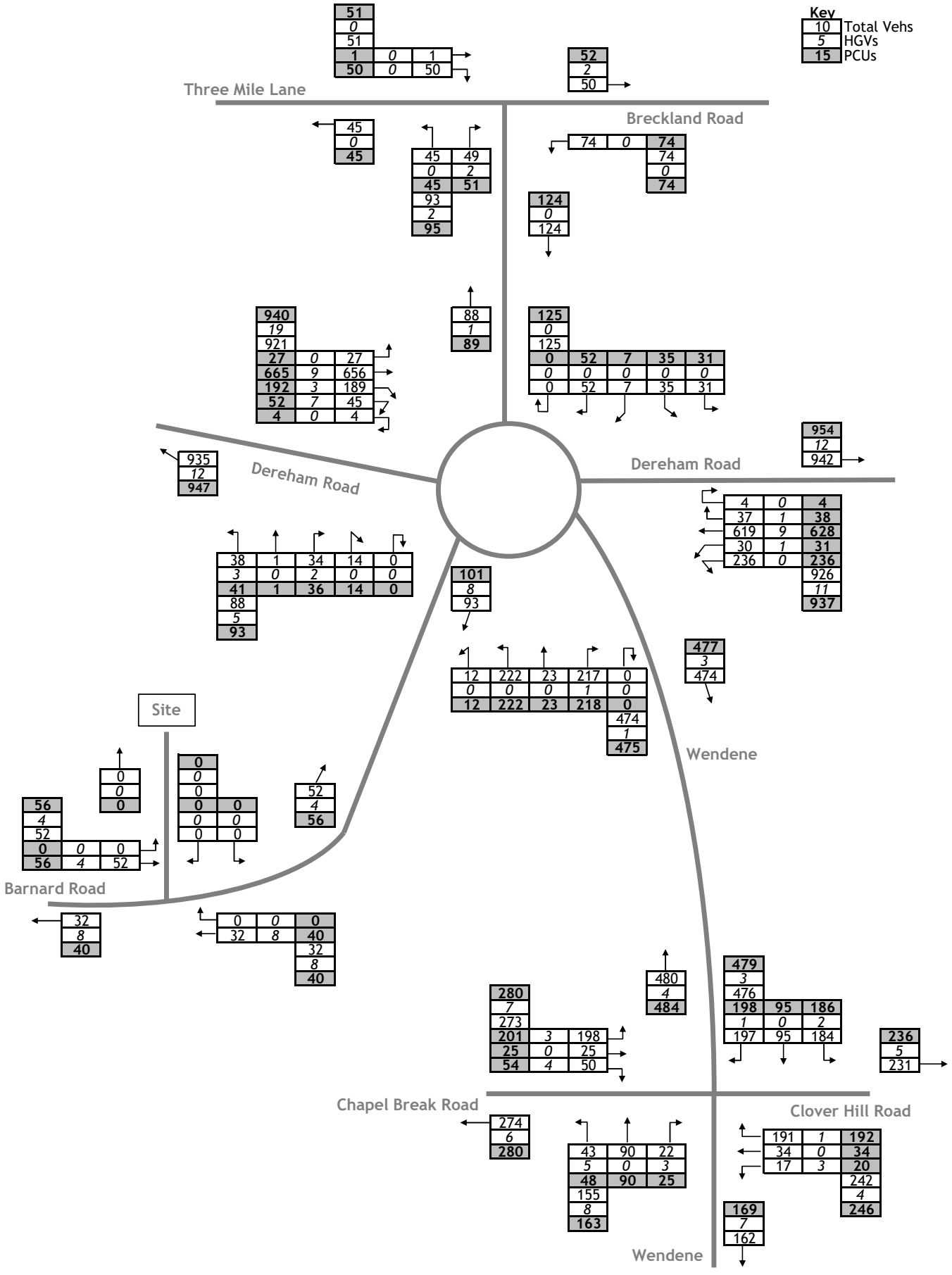


FIGURE TA20c **Saturday Peak - Residual Background Traffic (Survey - existing site trips)**

J000420 Land at Barnard Road, Norwich October 2023

2023 - 2024 Growth Factor
1.0063

Key
10 Total Vehs
5 HGVs
15 PCUs

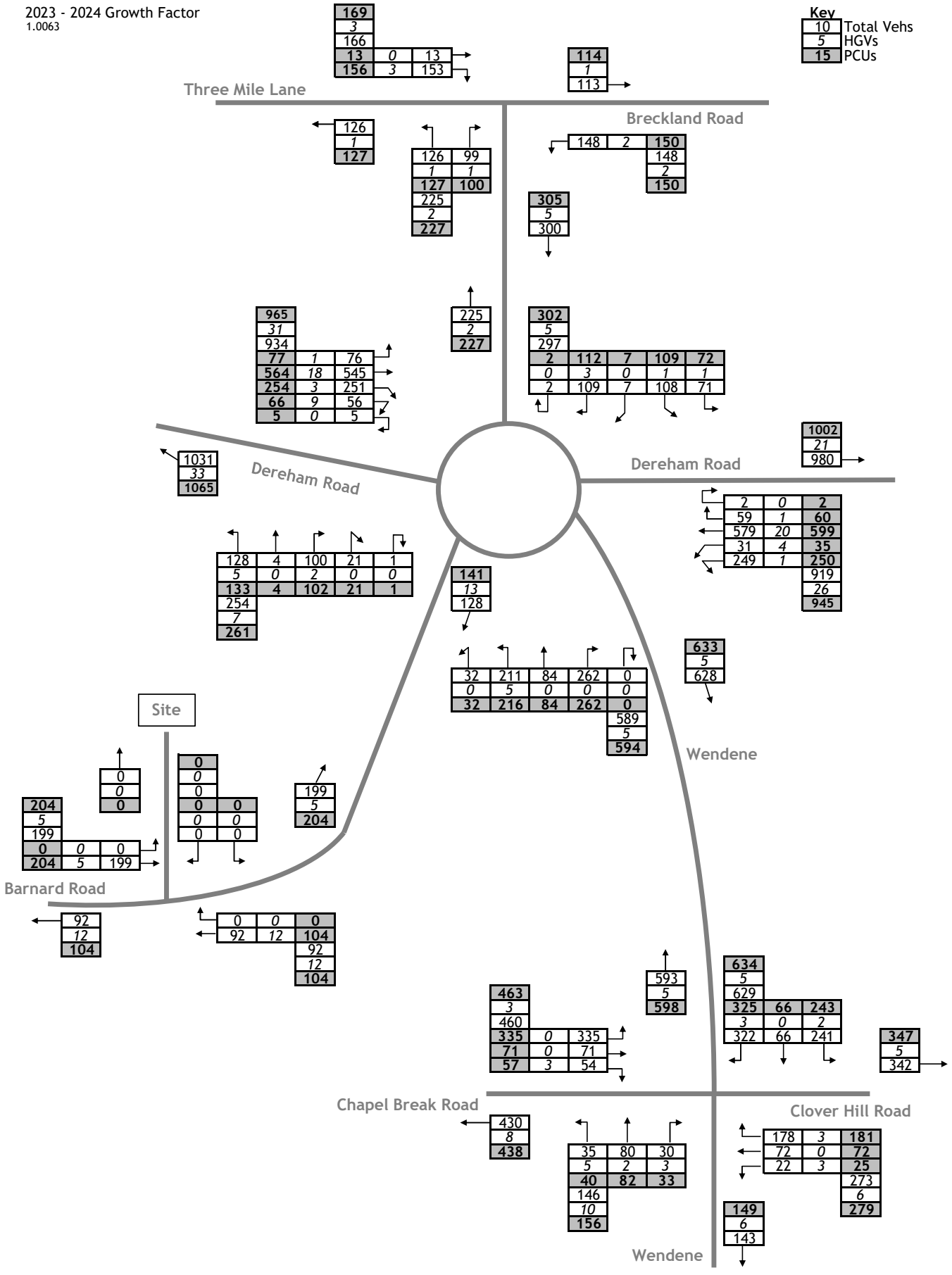


FIGURE TA21a

Friday Daytime Peak - 2024 Opening Year Residual Background Traffic

J000420 Land at Barnard Road, Norwich October 2023

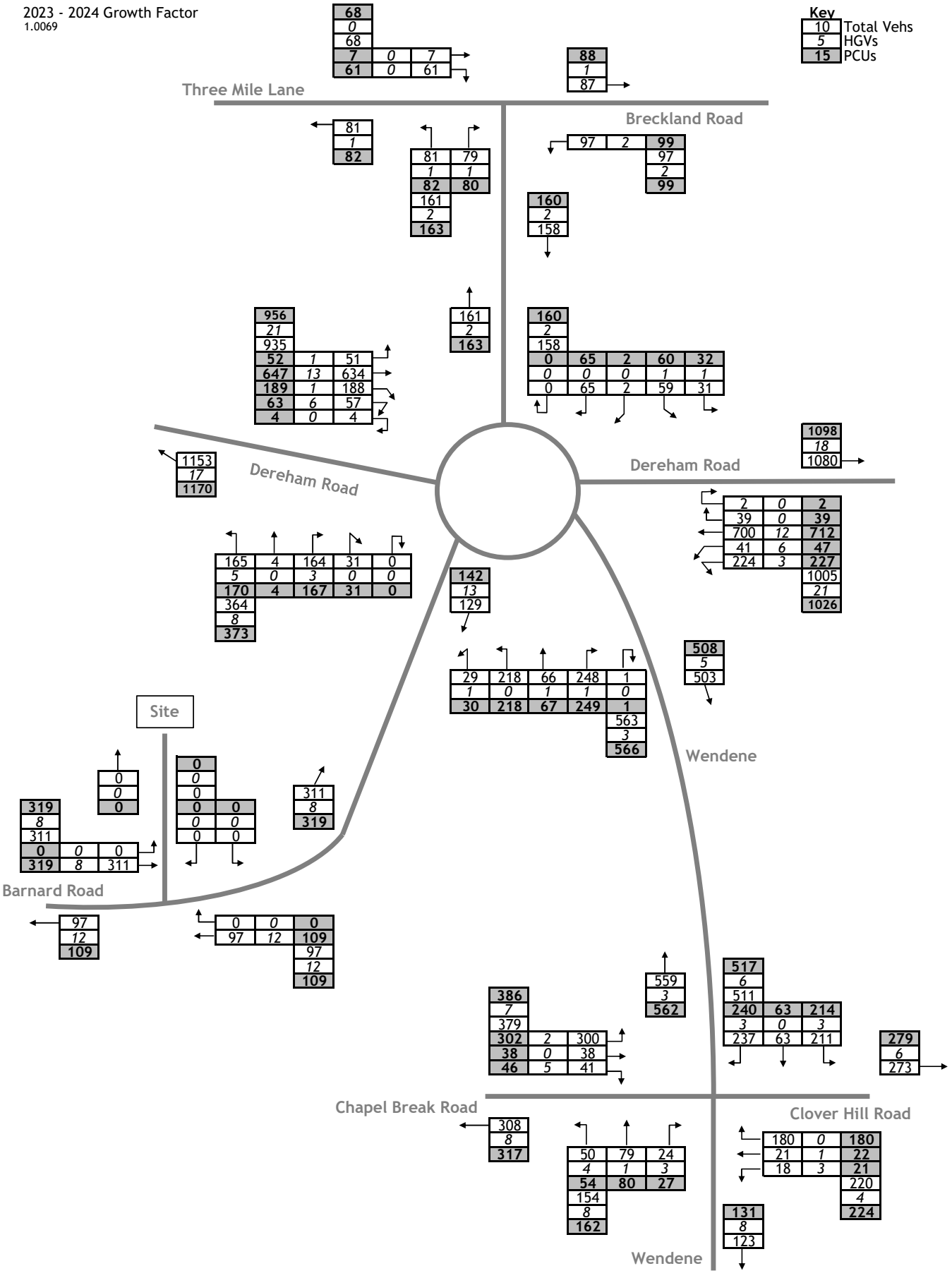


FIGURE TA21b

Friday PM Peak - 2024 Opening Year Residual Background Traffic

J000420

Land at Barnard Road, Norwich

October 2023

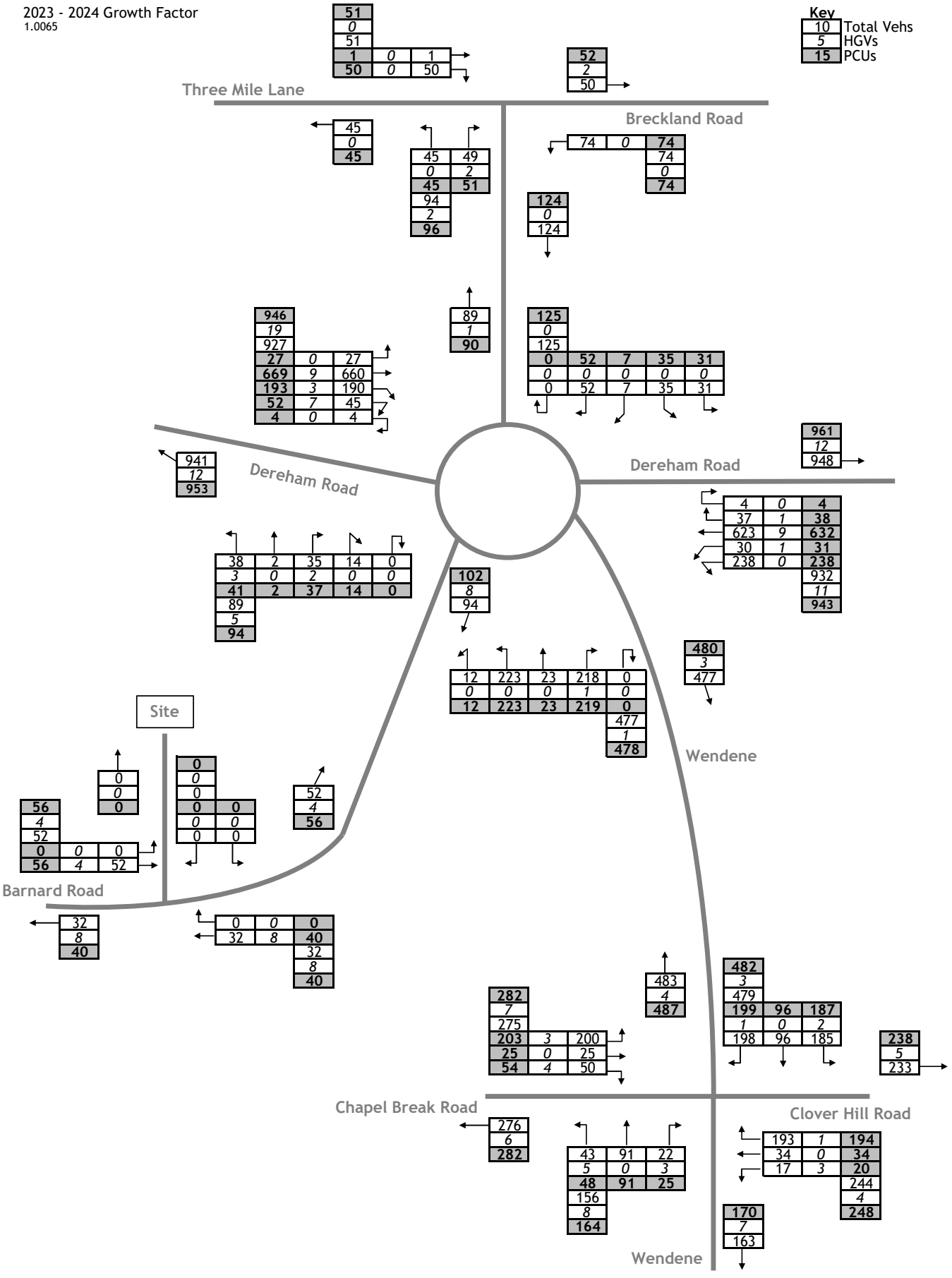


FIGURE TA21c

Saturday Peak - 2024 Opening Year Residual Background Traffic

J000420

Land at Barnard Road, Norwich

October 2023

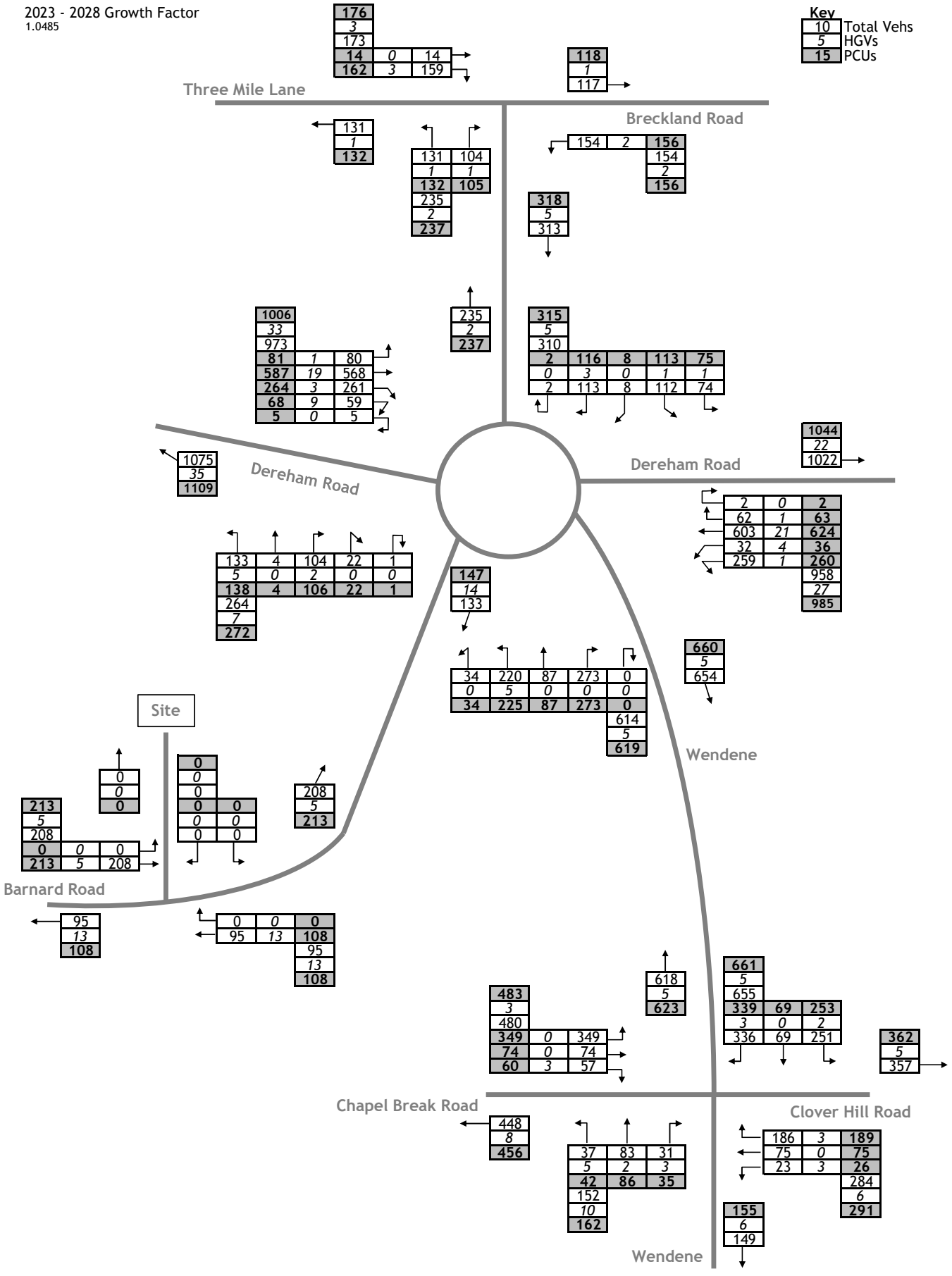


FIGURE TA22a **Friday Daytime Peak - 2028 Future Year Residual Background Traffic**

J000420 Land at Barnard Road, Norwich October 2023

2023 - 2028 Growth Factor
1.0512

Key
10 Total Vehs
5 HGVs
15 PCUs

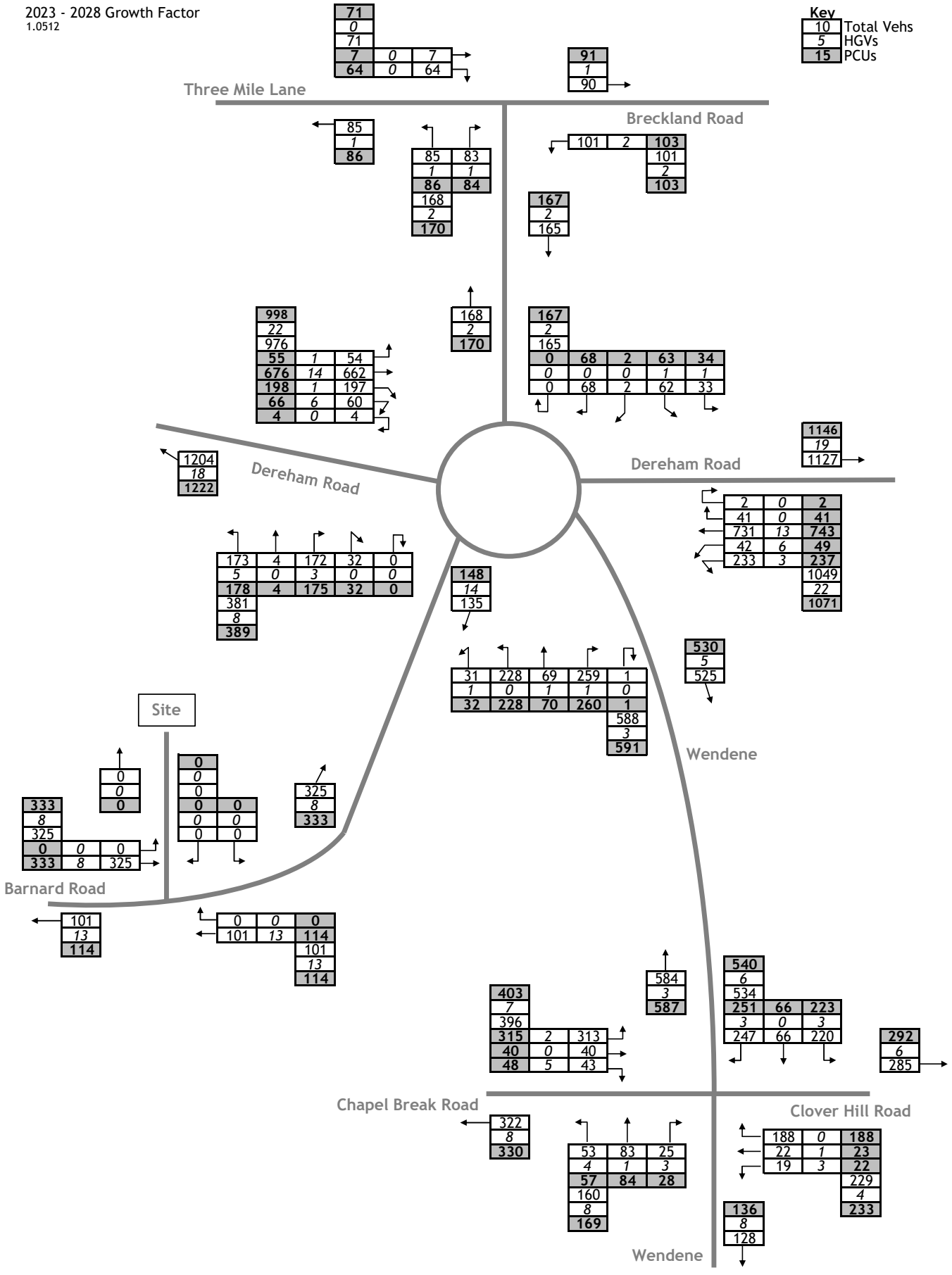


FIGURE TA22b **Friday PM Peak - 2028 Future Year Residual Background Traffic**

J000420 Land at Barnard Road, Norwich October 2023

2023 - 2028 Growth Factor
1.0498

Key
10 Total Vehs
5 HGVs
15 PCUs

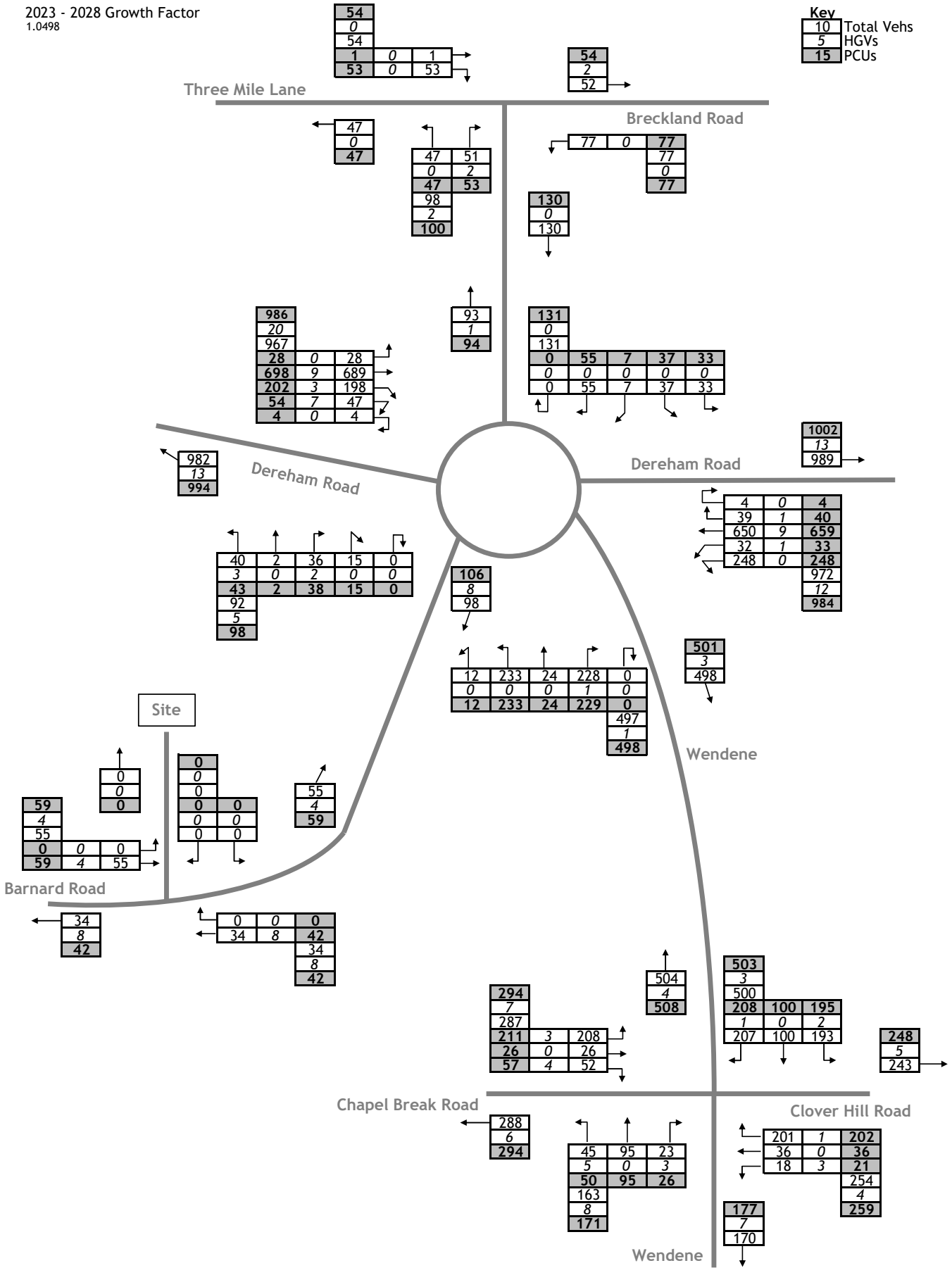


FIGURE TA22c **Saturday Peak - 2028 Future Year Residual Background Traffic**

J000420 Land at Barnard Road, Norwich October 2023

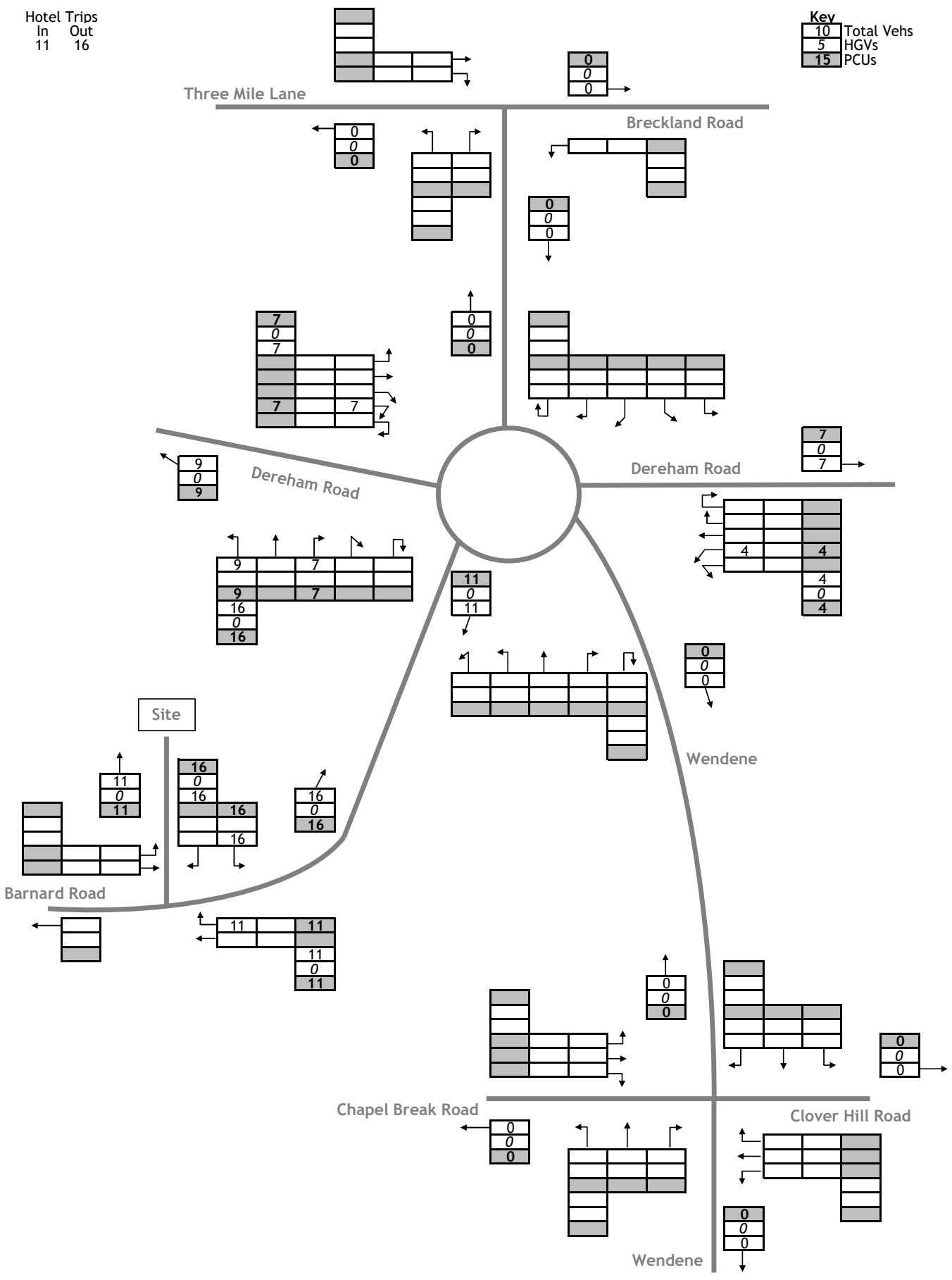


FIGURE TA23a **Friday Daytime Peak - Committed Hotel Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

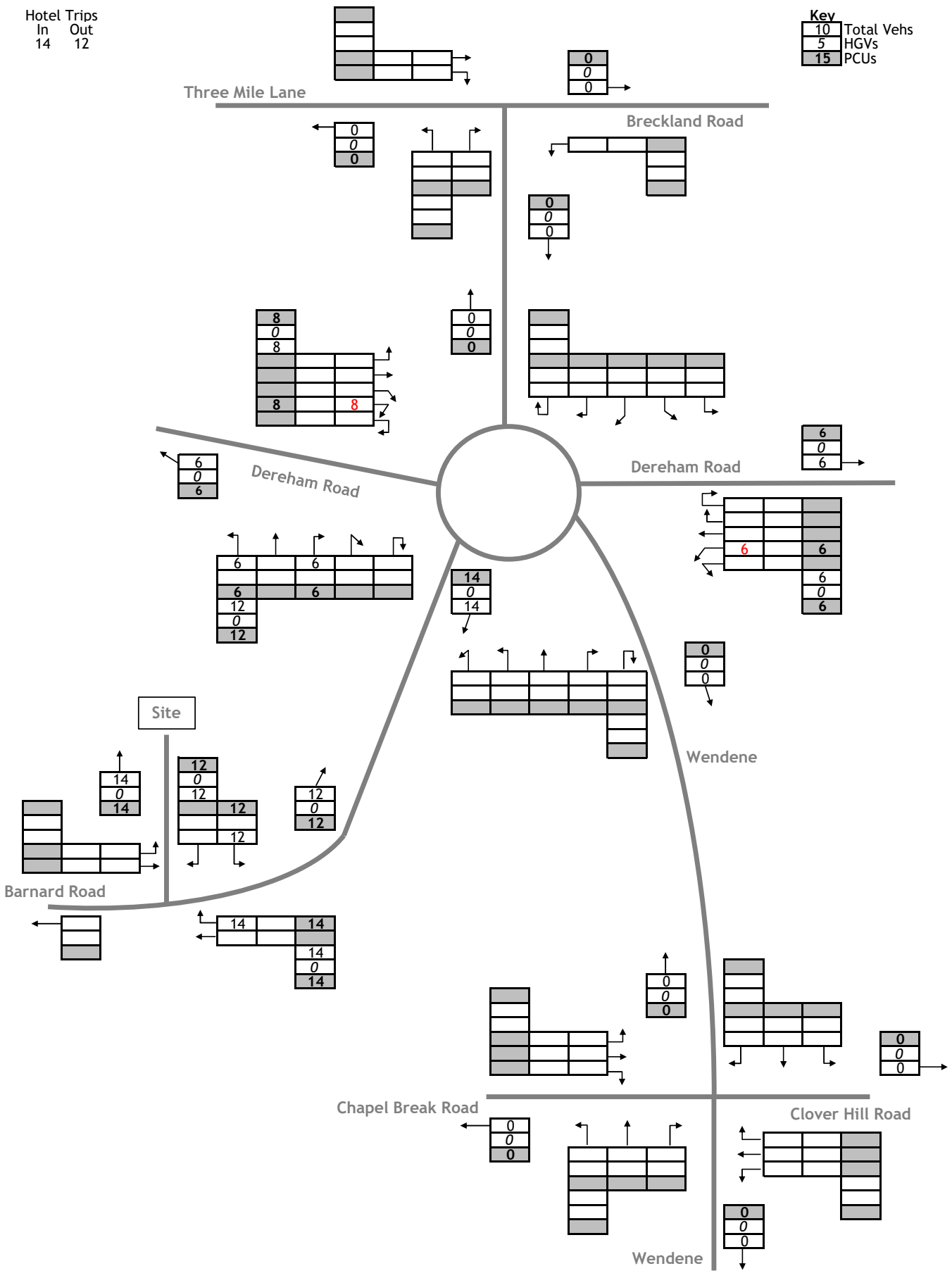


FIGURE TA23b **Friday PM Peak - Committed Hotel Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

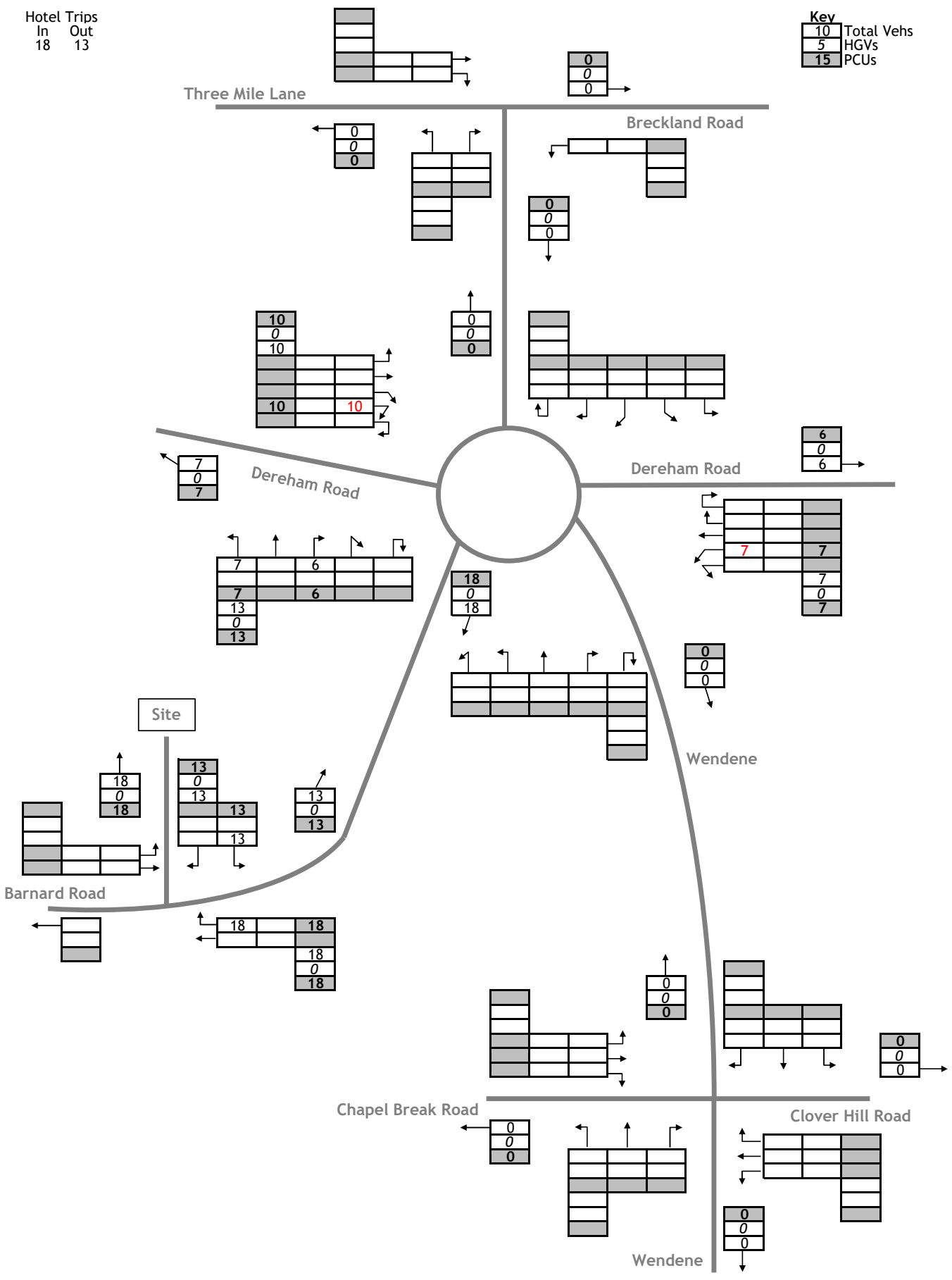


FIGURE TA23c **Saturday Peak - Committed Hotel Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

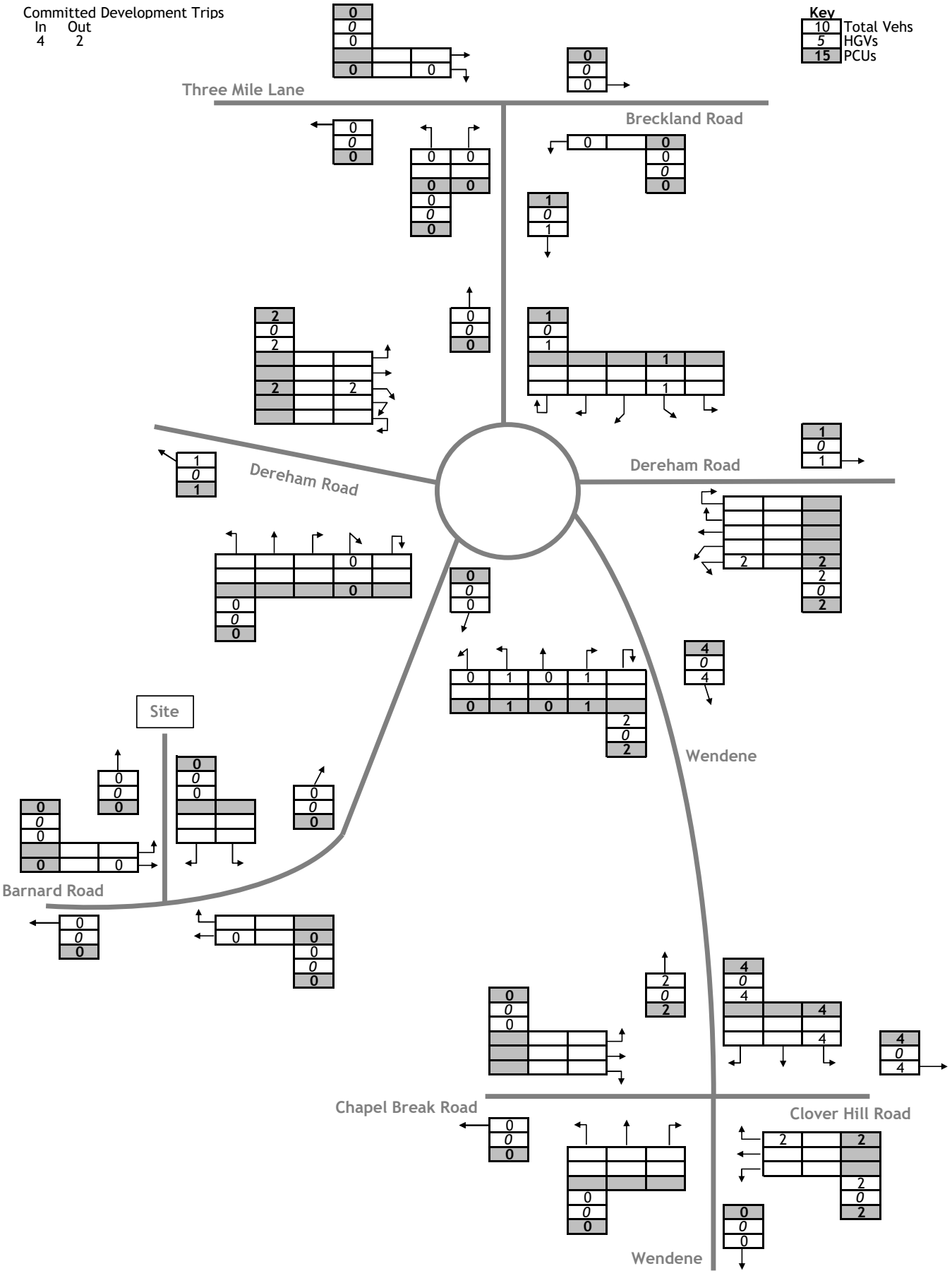


FIGURE TA24a

Friday Daytime Peak - 2024 Threescore Residential Committed Traffic

J000420 Land at Barnard Road, Norwich October 2023

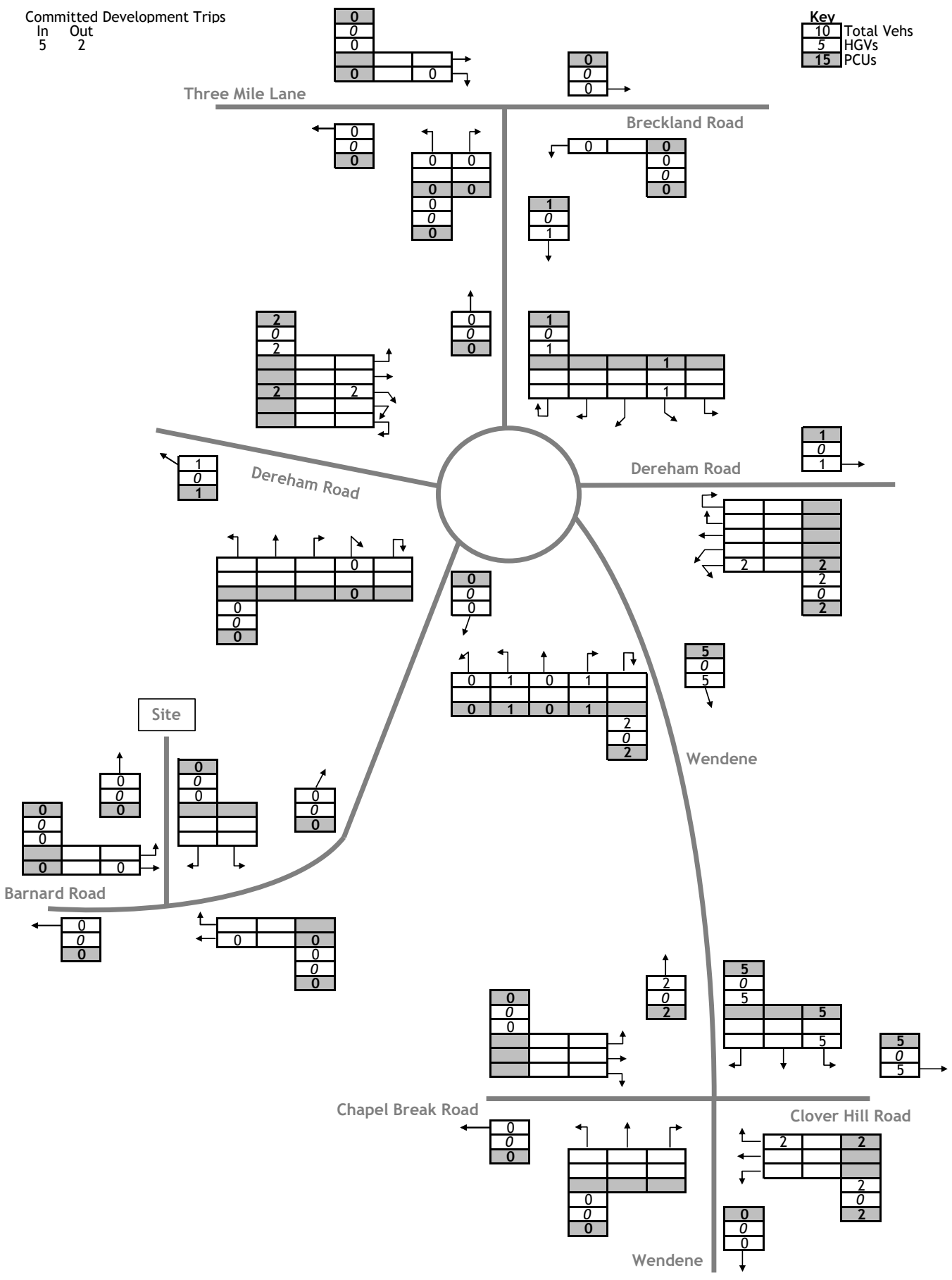


FIGURE TA24b

Fiday PM Peak - 2024 Threescore Residnetial Committed Traffic

J000420 Land at Barnard Road, Norwich October 2023

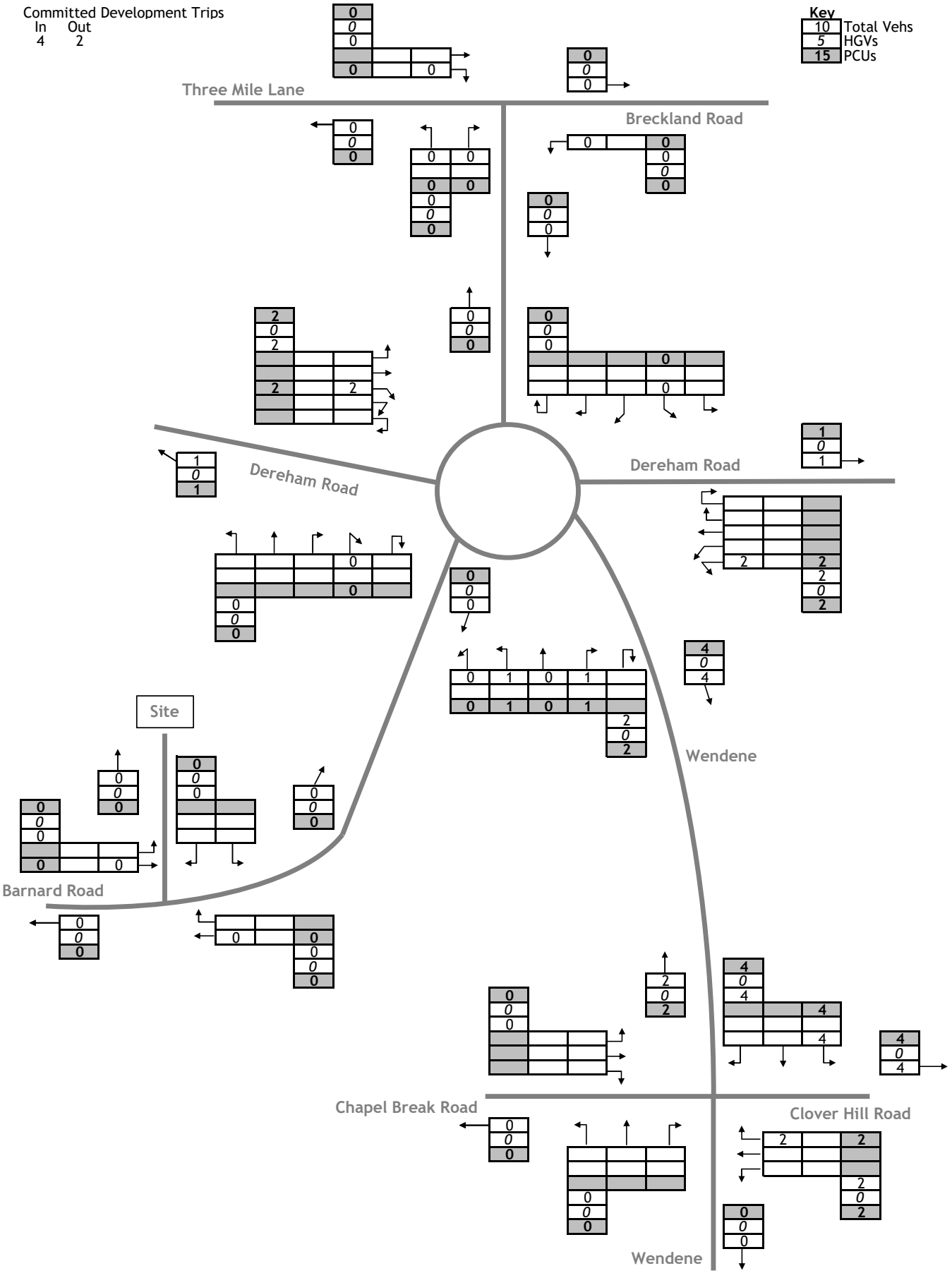


FIGURE TA24c

Saturday Peak - 2024 Threeccore Residential Commited Traffic

J000420 Land at Barnard Road, Norwich October 2023

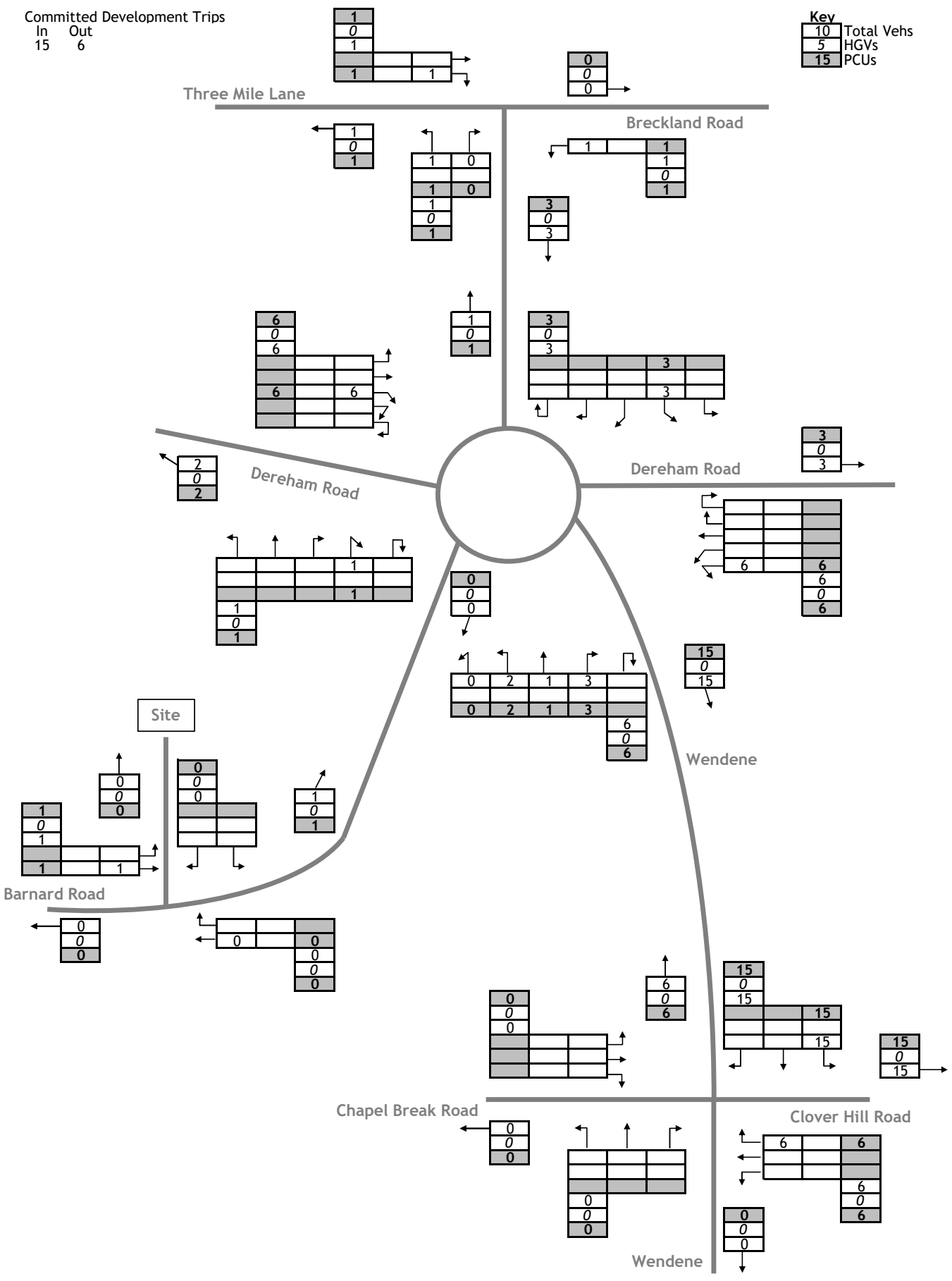


FIGURE TA25a **Friday Daytime Peak: 2028 Threescore Residental Committed Traffic**

J000420 Land at Barnard Road, Norwich October 2023

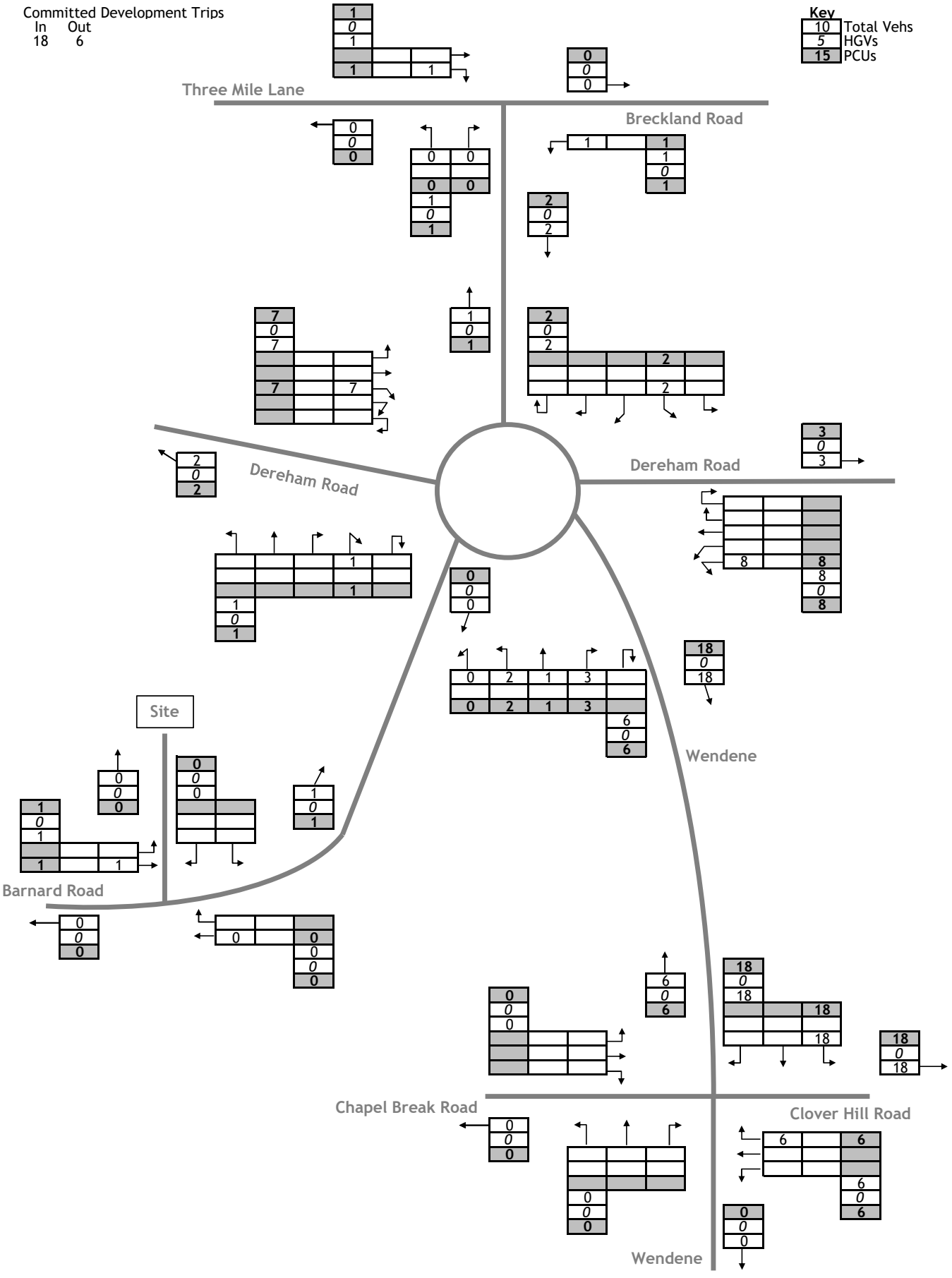


FIGURE TA25b **Friday PM Peak - 2028 Threescore Residential Committed Traffic**

J000420 Land at Barnard Road, Norwich October 2023

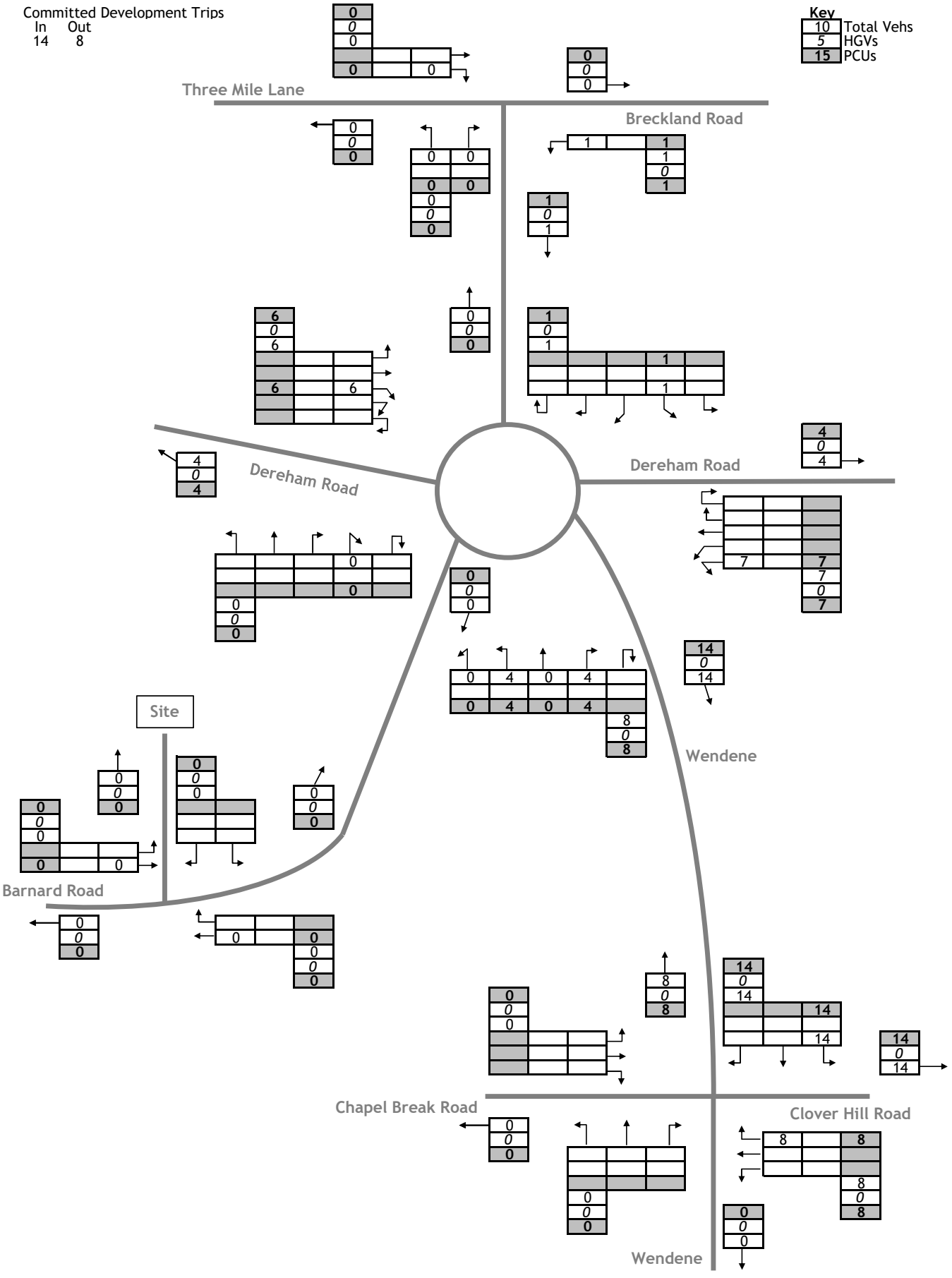


FIGURE TA25c **Saturday Peak - 2028 Threescore Residential Committed Peak**

J000420 Land at Barnard Road, Norwich October 2023

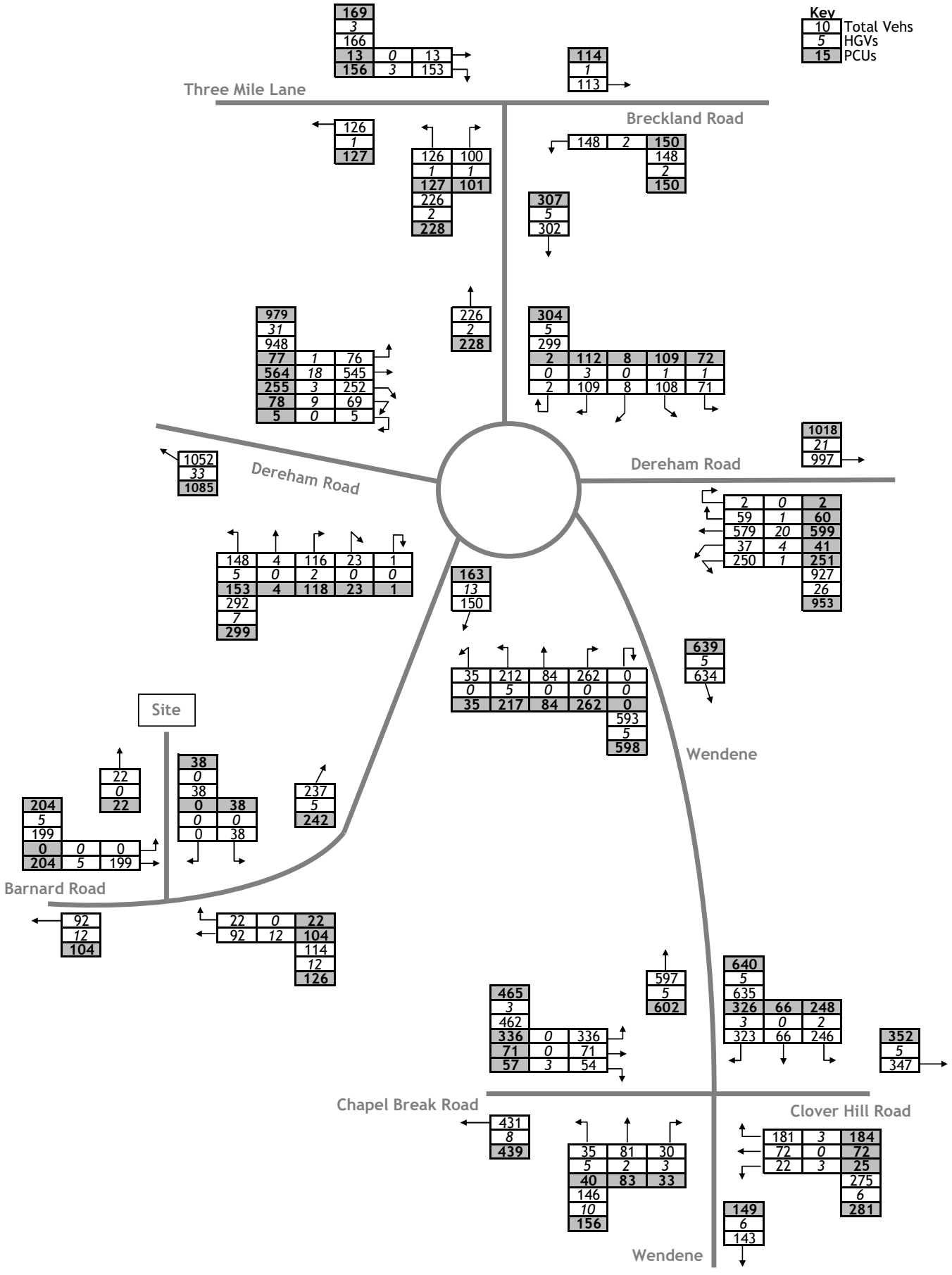


FIGURE TA26a **Friday Daytime Peak - 2024 'Do-Nothing' Baseline Traffic**

J000420 Land at Barnard Road, Norwich October 2023

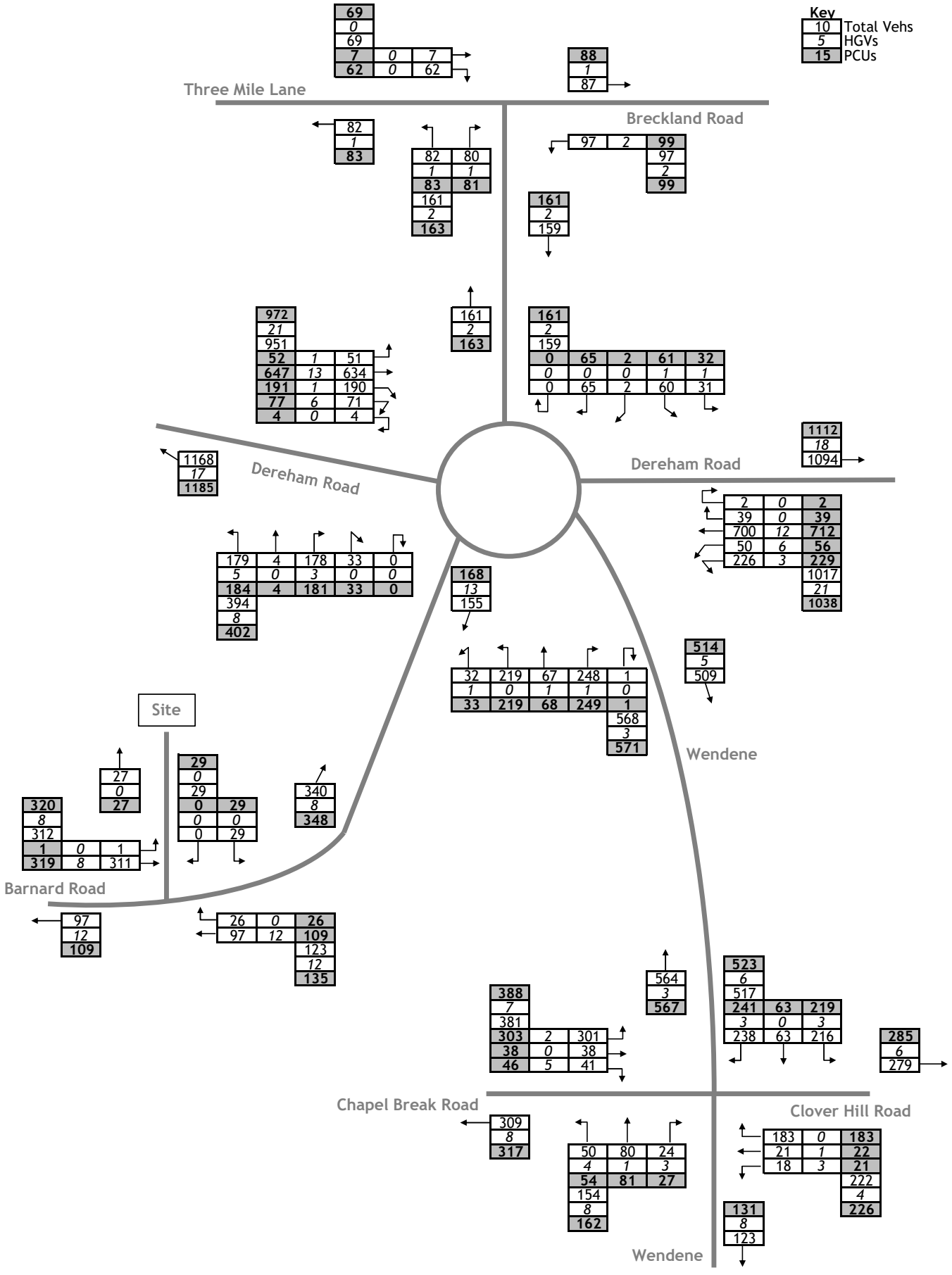


FIGURE TA26b **Friday PM Peak - 2024 'Do-Nothing' Baseline Traffic**

J000420 Land at Barnard Road, Norwich October 2023

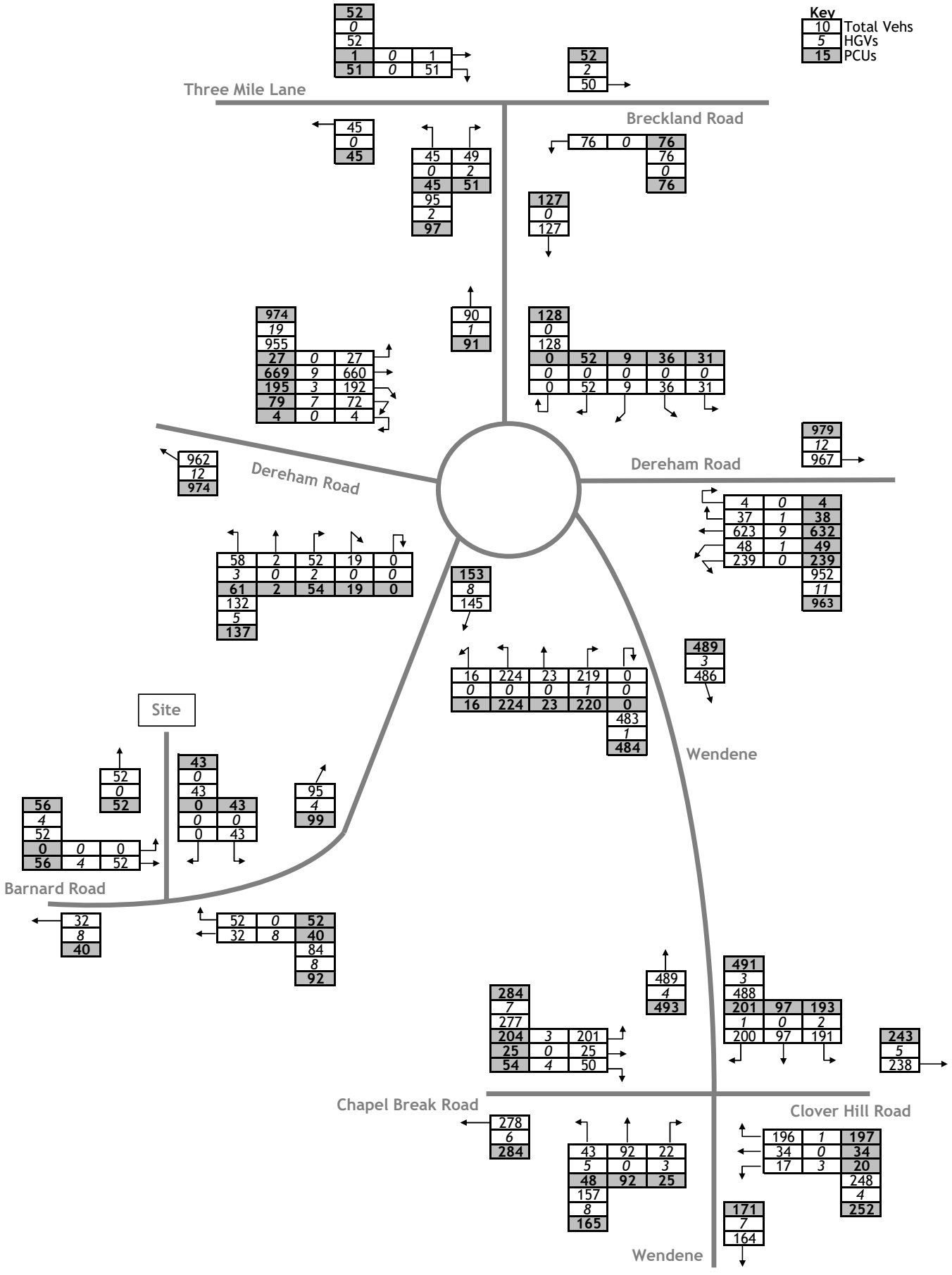


FIGURE TA26c **Saturday Peak - 2024 Baseline 'Do-Nothing' Traffic**

J000420 Land at Barnard Road, Norwich October 2023

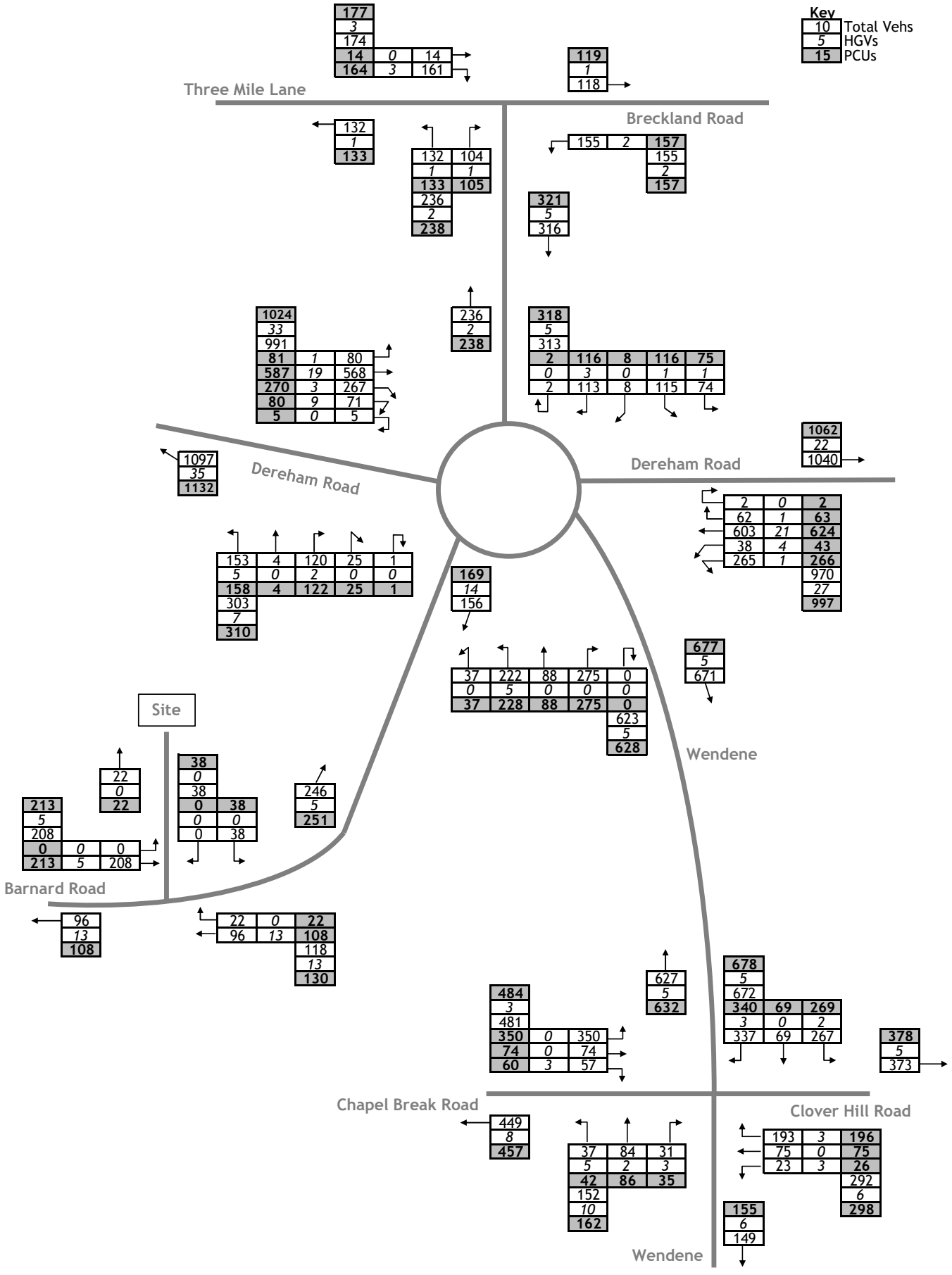


FIGURE TA27a **Friday Daytime Peak - 2028 'Do-Nothing' Baseline Traffic**

J000420 Land at Barnard Road, Norwich October 2023

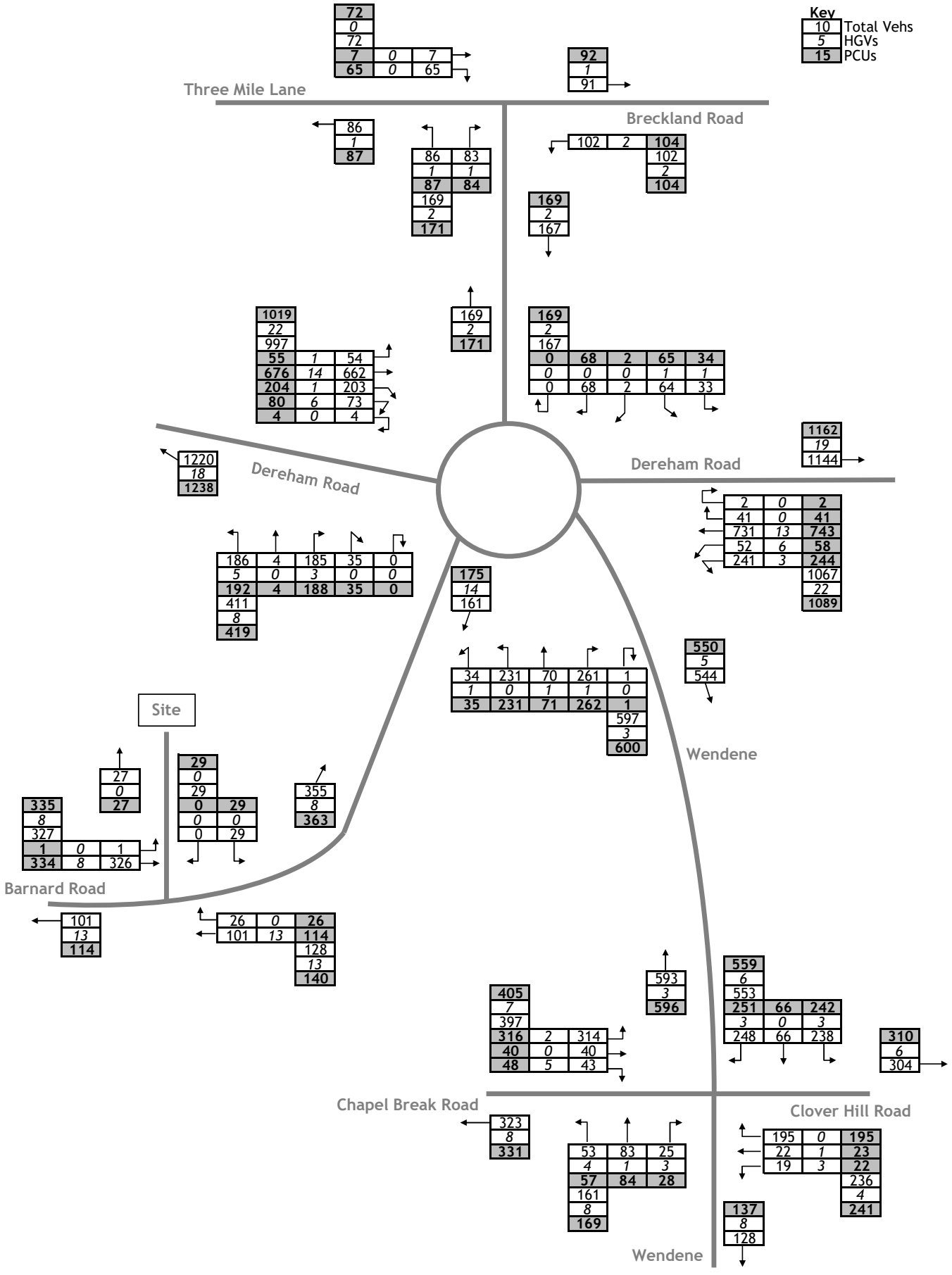


FIGURE TA27b **Friday PM Peak - 2028 'Do-Nothing' Baseline Traffic**

J000420 Land at Barnard Road, Norwich October 2023

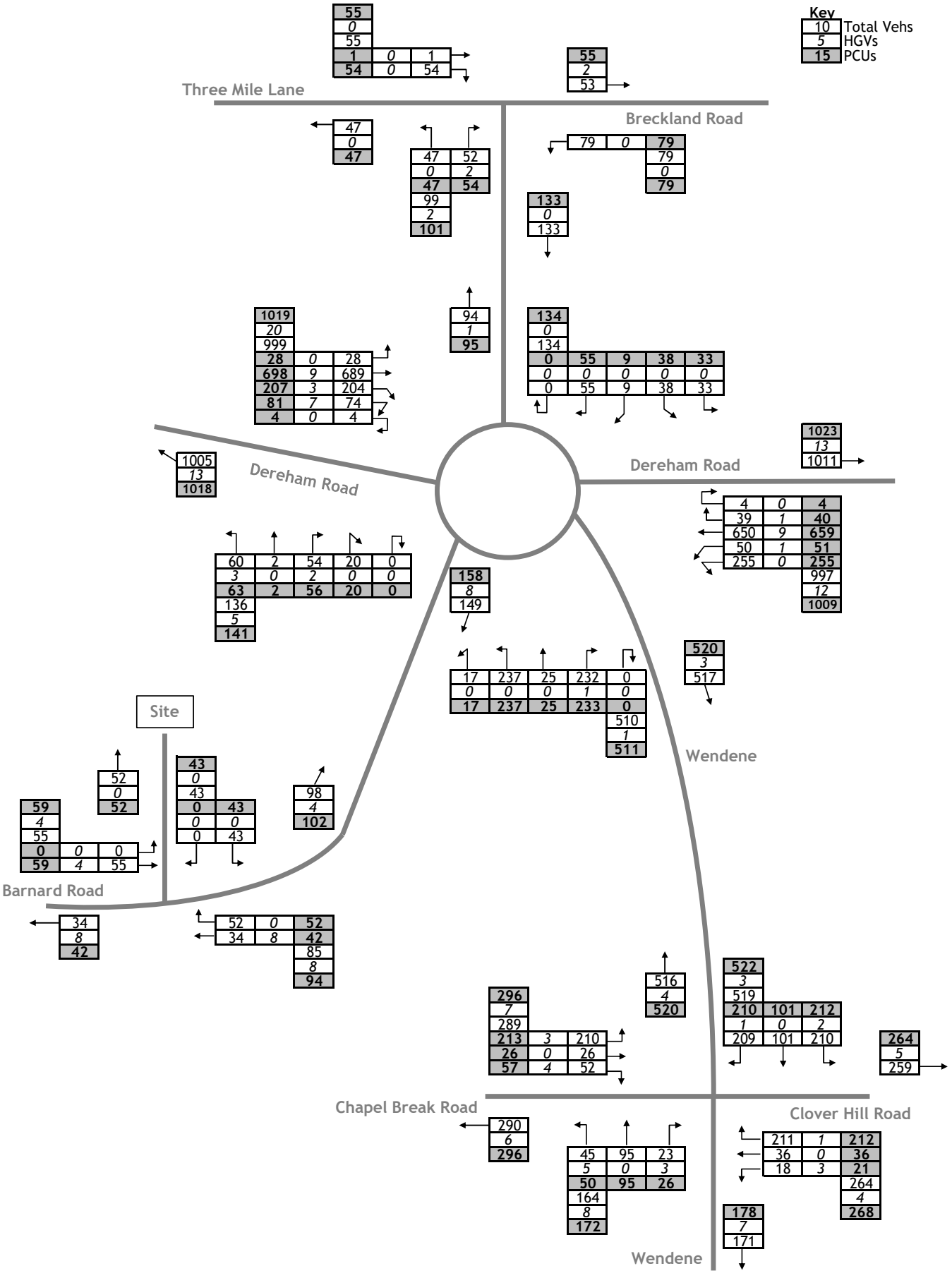


FIGURE TA27c **Saturday Peak - 2028 'Do-Nothing' Baseline Traffic**

J000420 Land at Barnard Road, Norwich October 2023

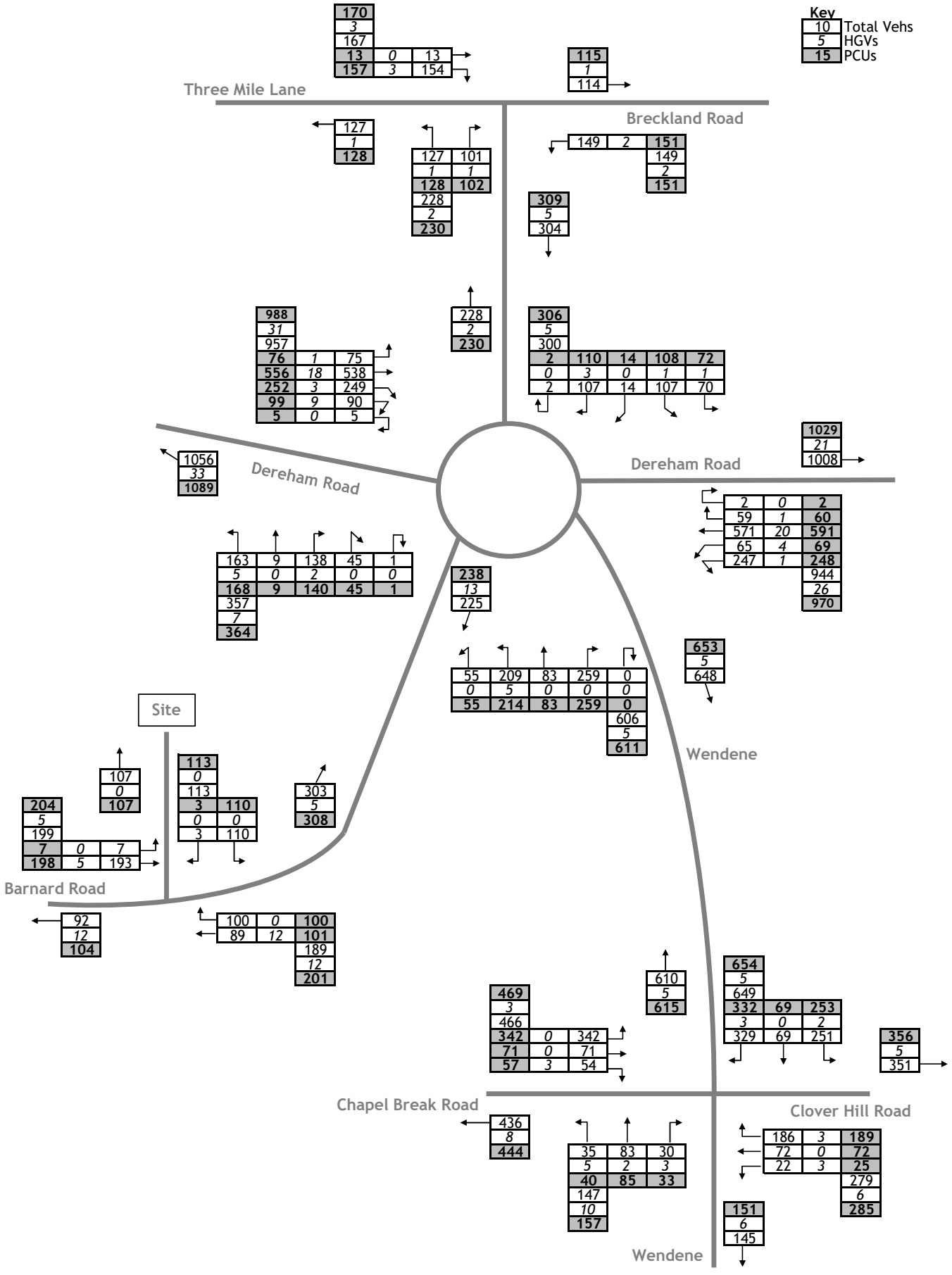


FIGURE TA28a **Friday Daytime Peak - 2024 'Do-Something' Baseline + Foodstore Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

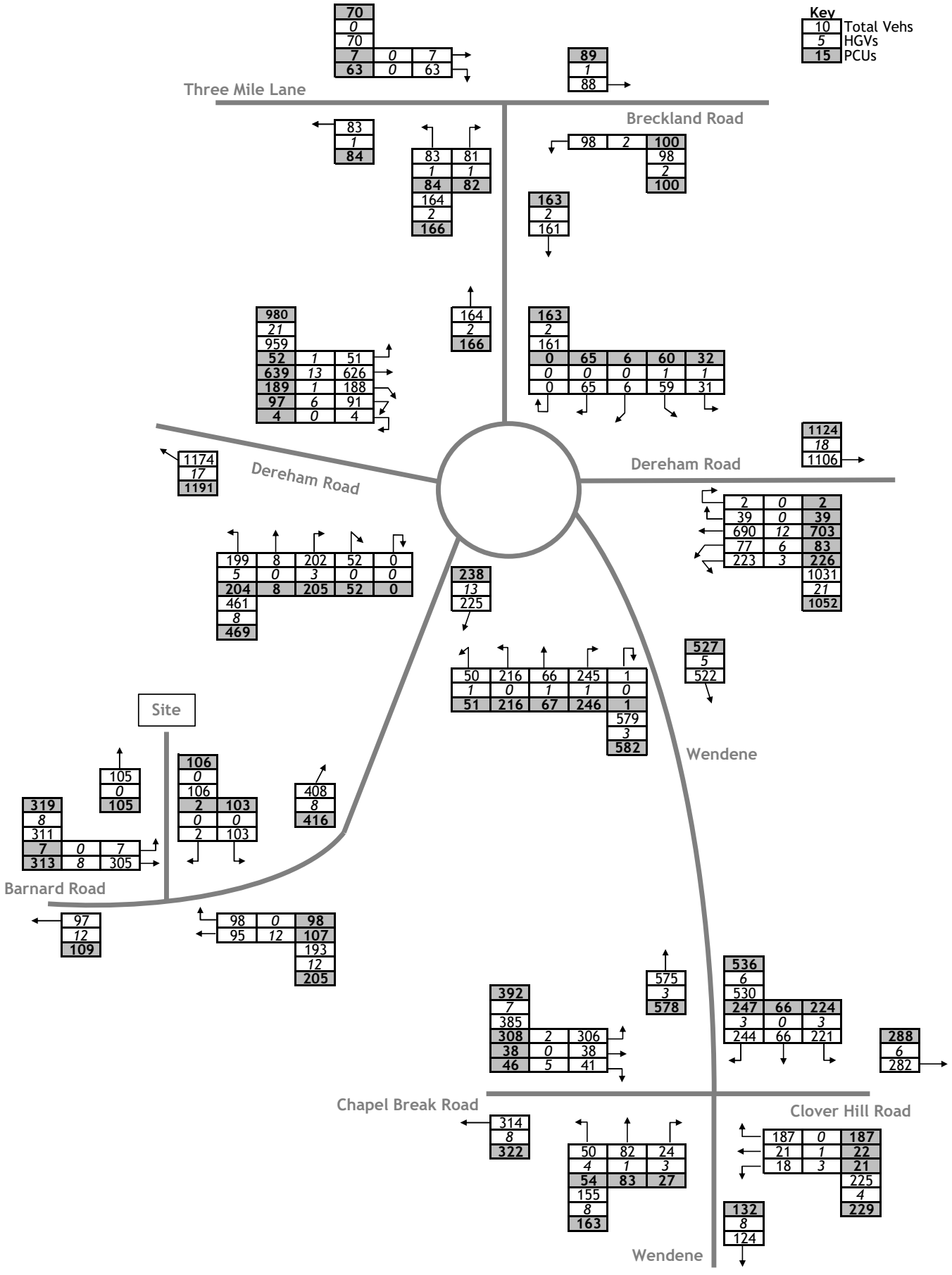


FIGURE TA28b **Friday PM Peak - 2024 'Do-Something' Baseline + Foodstore Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

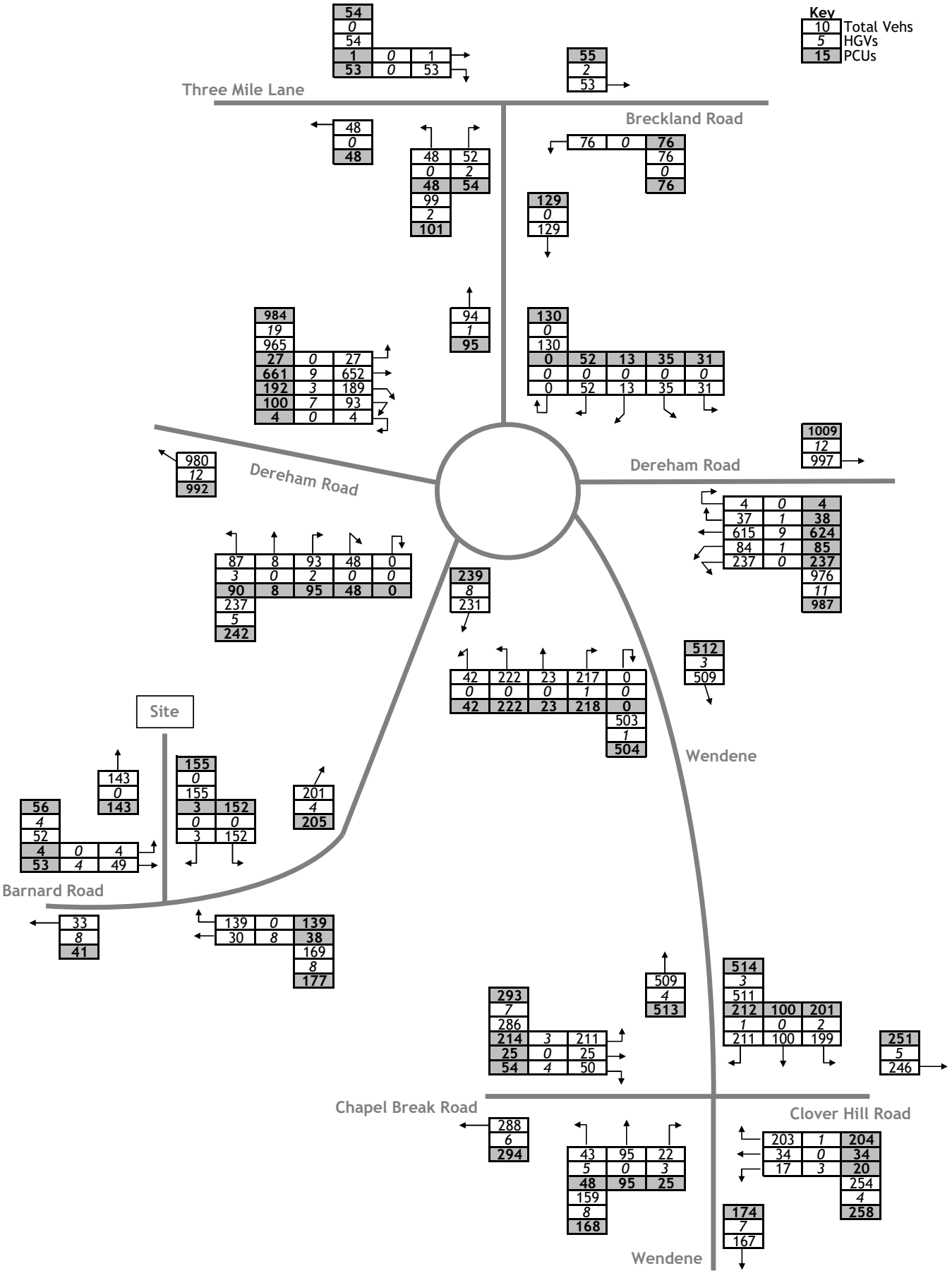


FIGURE TA28c **Saturday Peak - 2024 'Do-Something' Baseline + Foodstore Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

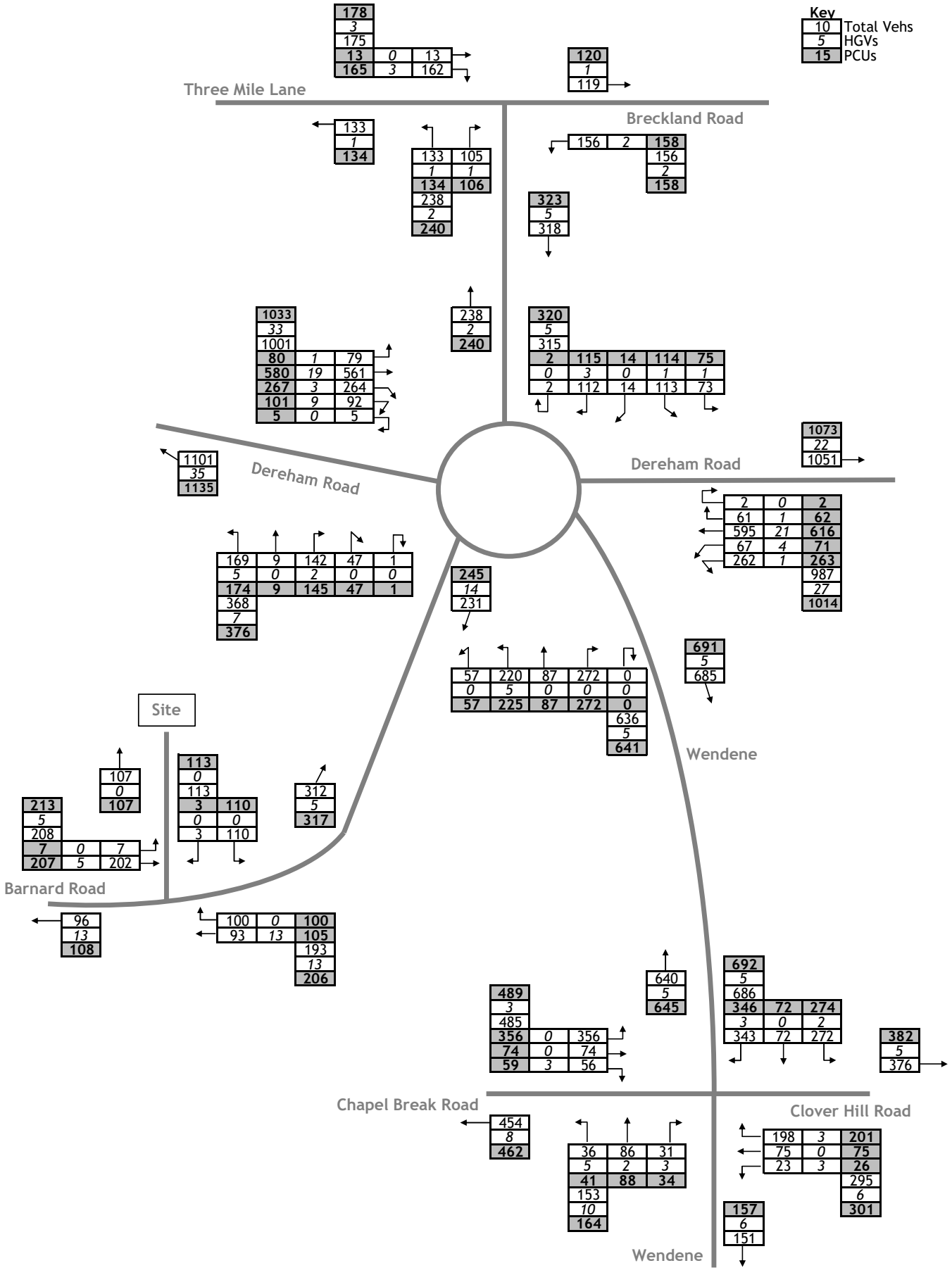


FIGURE TA29a **Friday Daytime Peak - 2028 'Do-Something' Baseline + Foodstore Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

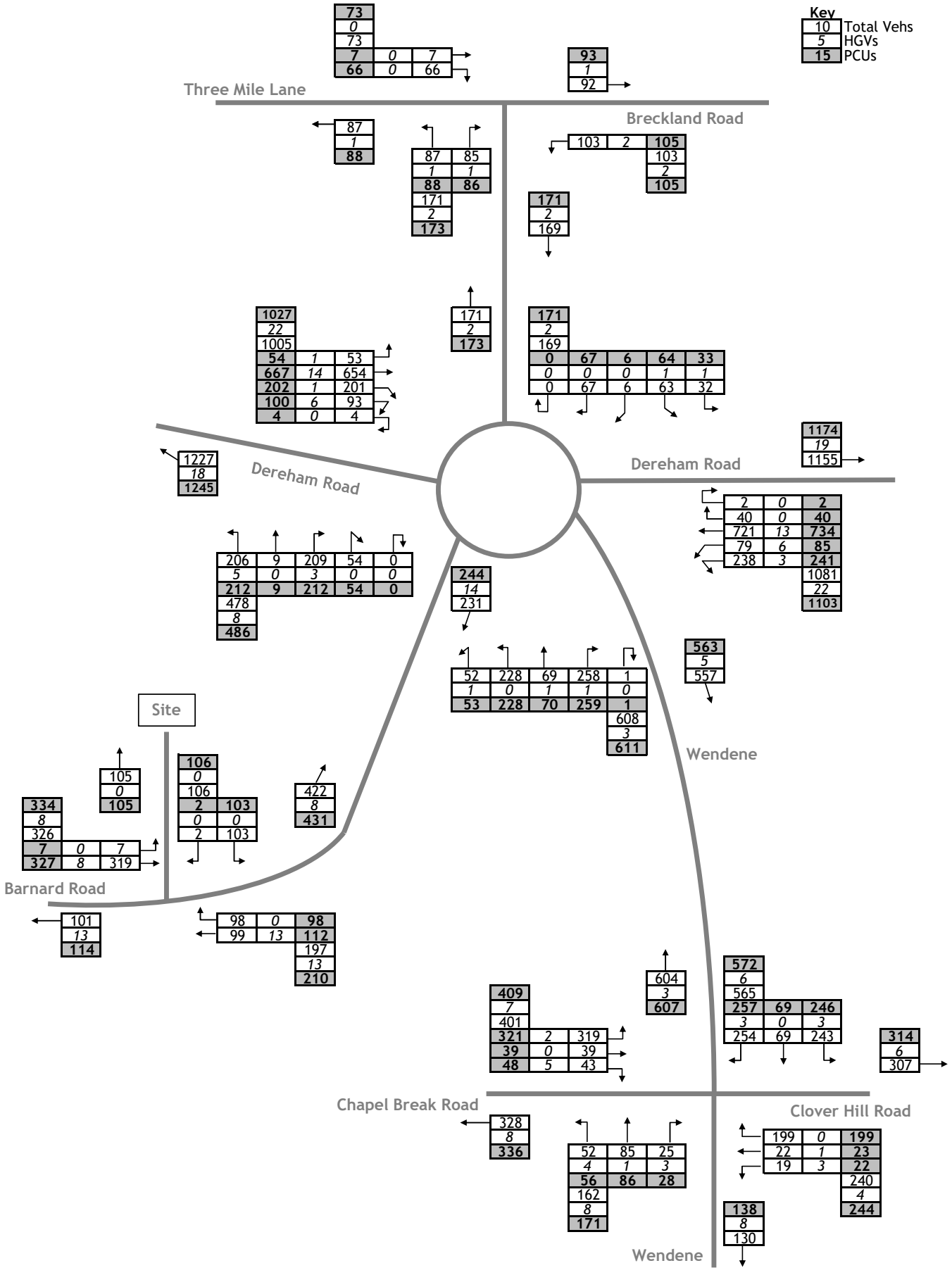


FIGURE TA29b **Friday PM Peak - 2028 'Do-Something' Baseline + Foodstore Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

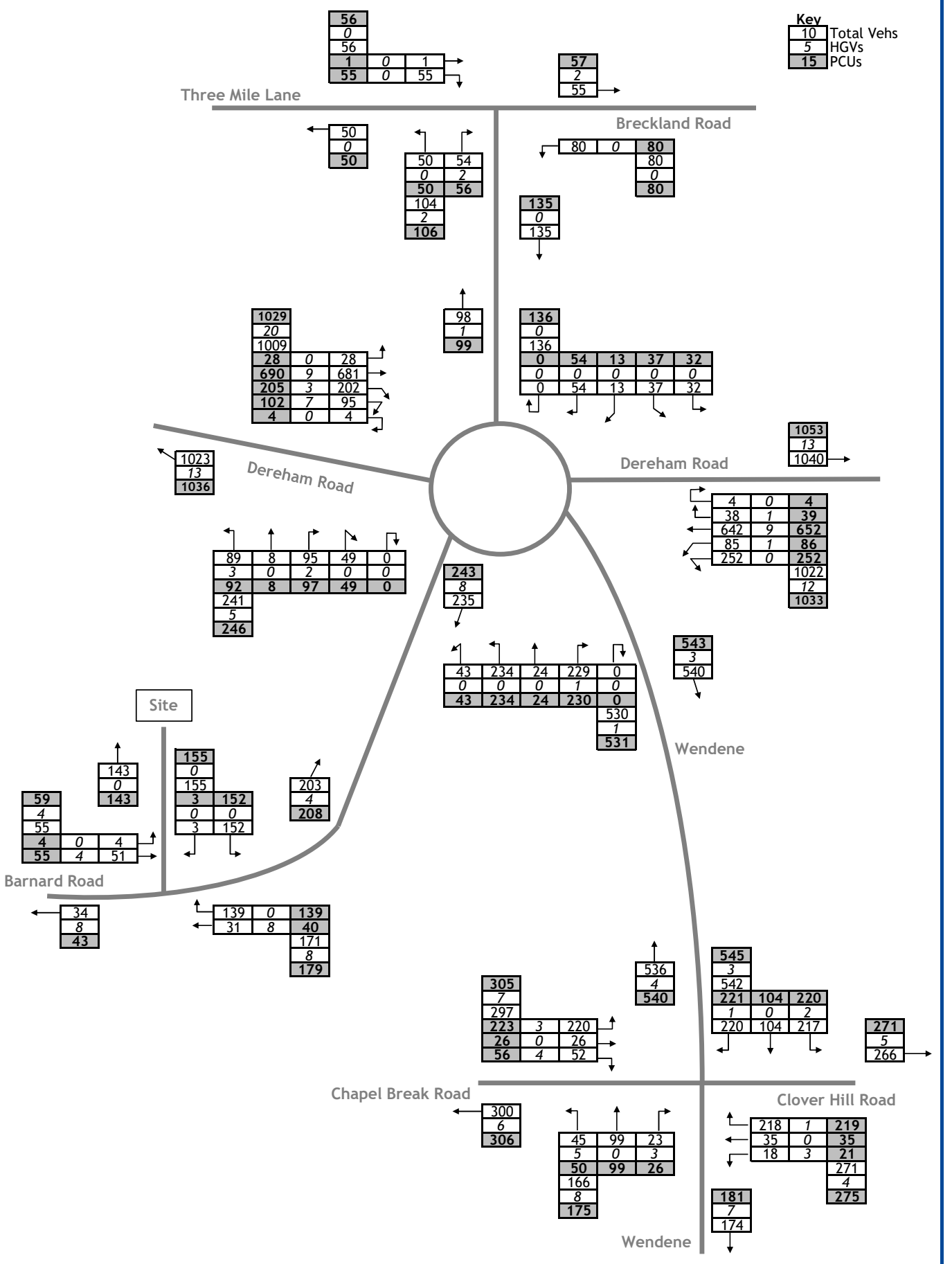


FIGURE TA29c **Saturday Peak - 2028 'Do-Something' Baseline + Foodstore Development Traffic**

J000420 Land at Barnard Road, Norwich October 2023

FOCUS
TRANSPORT PLANNING

APPENDICES



APPENDIX TA1

APPENDIX TA1

PHOTOGRAPHS OF KEY EXISTING LOCAL HIGHWAY NETWORK FEATURES



Plate TA1 – Barnard Road / Application Site Access Road Junction (looking west)



Plate TA2 – Application Site Access Road



Plate TA3 – Barnard Road Approach to A1074 Dereham Road roundabout



Plate TA4 – Section of Dereham Road to Application Site Northern Frontage (looking east towards roundabout)



Plate TA5 – Dereham Road Approach to Roundabout (note bus only link to north)



Plate TA6 – A1074 Dereham Road / Wendene / Barnard Road / Breckland Road roundabout (looking east from Dereham Road(W))



Plate TA7 – Dereham Road (E) Approach to Roundabout



Plate TA8 – Wendene Approach to Roundabout



Plate TA9 – Wendene Approach to Traffic Signal Junction with Chapel Break Road & Clover Hill Road (looking south)



Plate TA10 – Chapel Break Road Approach to Wendene Traffic Signals



Plate TA11 – Existing Bus Stops on Breckland Road



Plate TA12 – Bus Stops on A1074 Dereham Road (E)



Plate TA13 – Current Mayfly Way Crossing Point of Barnard Way



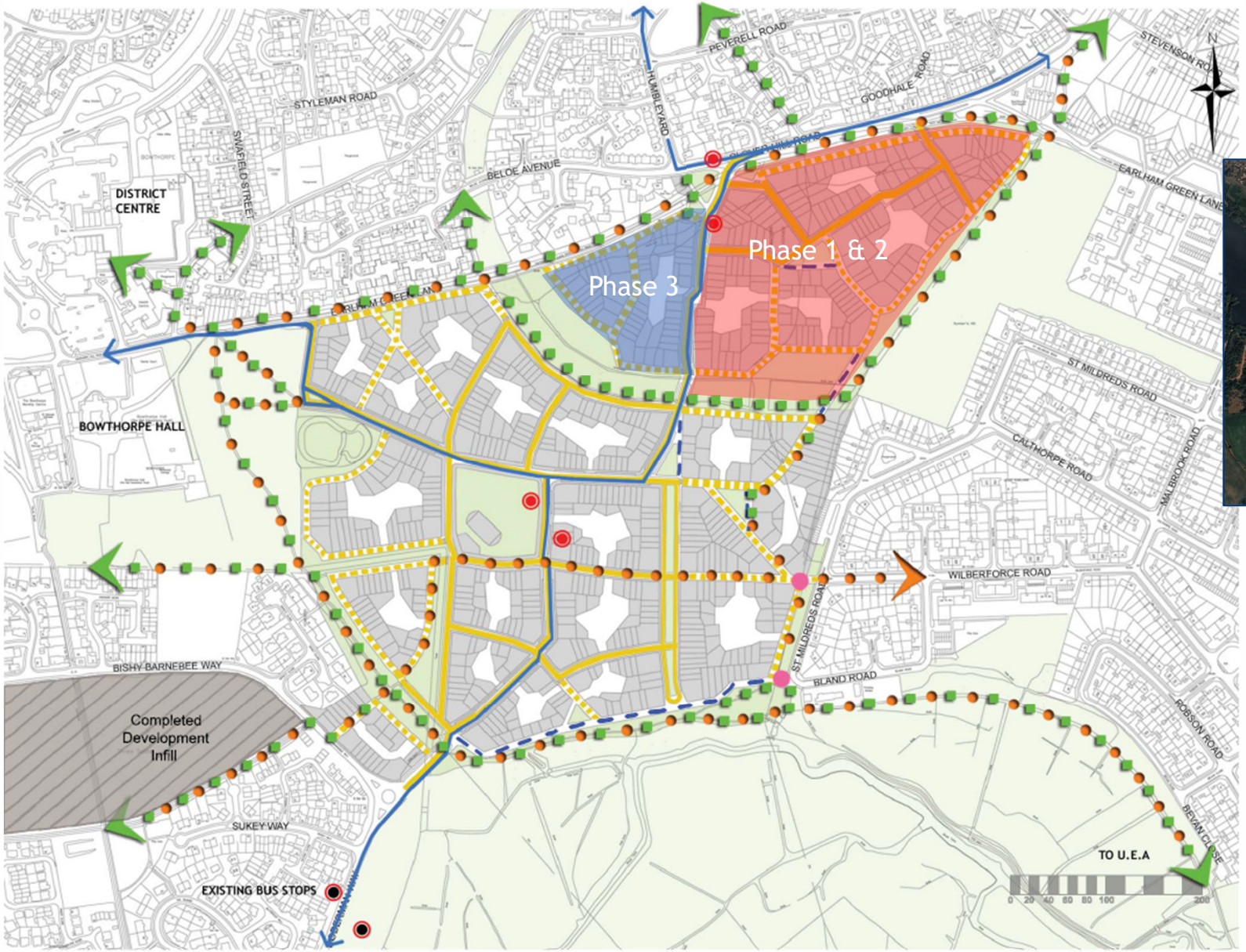
Plate TA14 – Current Mayfly Way Crossing Point of Chapel Break Road



Plate TA15 – Additional Pedestrian Link to Chapel Break Road from Barnard Road



APPENDIX TA2





Key

- Routes for Buses
- All Vehicle Roads
- Home Zone
- No through traffic
- Local Cycle Route
- Segregated Pedestrian Footpaths/ cycleways
- Pedestrian footpaths
- Bus stops (Location to be Agreed With NCC and Bus Operating Company)
- Pedestrian/Cycle only

FOCUS TRANSPORT PLANNING

Appendix TA2 **Threescore Masterplan & Movement Strategy**

J000420 Land off Barnard Road, Norwich October 2023



APPENDIX TA3

Dereham Road Travel Hub Scheme - Plan 1



Key

- Old kerb line
- Kerb line
- 30 Speed limit reduced to 30mph
- Trees at risk

www.norfolk.gov.uk/derehamroad

INDUSTRIAL STRATEGY TRANSFORMING CITIES FUND

Transport for Norwich

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1. Speed limit reduced to 30mph along length of Dereham Road
2. Two-way bus priority access to and from Dereham Road under signals
3. Segregated pavement with 2m wide footway and 3m wide two-way cycleway
4. Change in junction priority at Three Mile Lane, with raised table to prioritise walking/cycling
5. Segregated pavement with 1.5m wide footway and 2.5m wide two-way cycleway
6. Junction realigned with changed priority

Dereham Road Travel Hub Scheme – Plan 2



⑦ Main bus stops at the travel hub
⑧ Main travel hub area
⑨ Change in junction priority at Breckland Road, with raised table to prioritise walking/cycling
⑩ Priority crossing for walking/cycling
⑪ Existing sub-way crossing filled in.
⑫ New walking/cycling link to existing park route
⑬ Carriageway to be narrowed with traffic merging into one lane
⑭ Existing bus stop layby removed and relocated to travel hub
⑮ Signalised surface walking/cycling crossing
⑯ Bus priority access from Dereham Road under signals for outbound services
⑰ Cyclists on carriageway for a short distance
⑱ Bus priority gate to Dereham Road for inbound services
⑲ Priority cycle crossing on raised table
⑳ Dedicated outbound bus lane (24hr operation)
㉑ Dedicated inbound bus and cycle lane (24hr operation)
㉒ Two-way cycle track with pinch points due to presence of trees
㉓ Existing footpath to be widened to 1.5m to 2m

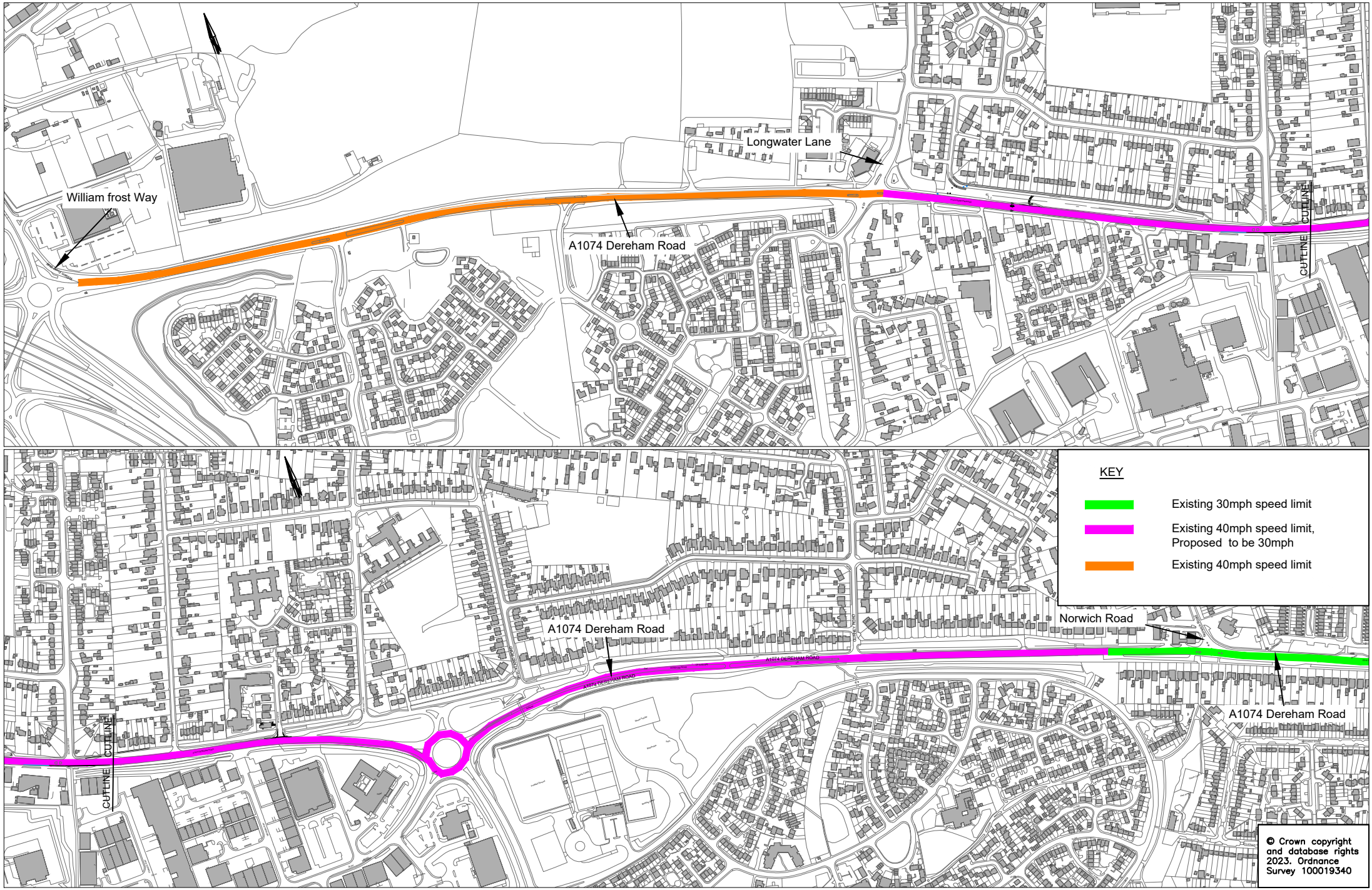
Key

N

Old kerb line
Kerb line
30 Speed limit reduced to 30mph
Trees at risk

www.norfolk.gov.uk/derehamroad

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Norfolk County Council

Tom McCabe
Executive Director of
Community and Environmental Services
Norfolk County Council
County Hall, Martineau Lane
Norwich NR1 2SG

DRAWING TITLE

Dereham Road /Longwater Lane
TRO Location Plan

REV.	DESCRIPTION	DRAWN BY	CHECKED	DATE

	INITIALS	DATE
SURVEYED BY	OS	10/21
DESIGNED BY	BR	12/21
DRAWN BY	BR	12/21
CHECKED BY	JR	2/23

DRAWING No. PAA009-TCF-TRO-001

PROJECT TITLE
Transferming Cities
Dereham Road/Longwater Lane

SCALE 1:2500 @ A1

FILE No. PAA009

ORIGINAL SIZE: A1



APPENDIX TA4



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Norfolk County Council

Tom McCabe
Executive Director of
Community and Environmental Services
Norfolk County Council
County Hall, Martineau Lane
Norwich NR1 2SG

DRAWING TITLE
Dereham Road - Longwater Lane
TRO and Notices Location plan 2

REV.	DESCRIPTION	DRAWN BY	CHECKED	DATE
A	Footway conversion area adjusted	BR		
B	Priority footway and pedestrian crossing added	BR		
C	footway conversion 4 added	BR		
D	Footway conversion 1 extended	BR		

	INITIALS	DATE
SURVEYED BY	OS	04/23
DESIGNED BY	BR	04/23
DRAWN BY	BR	04/23
CHECKED BY	JR	05/23

DRAWING No. PAA009-TCF-TRO-002
PROJECT TITLE: Transfering Cities, Dereham Road - Longwater Lane
SCALE: NTS @ A1
FILE No. PAA009

ORIGINAL SIZE: A1
IG 13/10/16



APPENDIX TA5

Richmond Road Junction

Raised crossing point

5.7m

5.0

6.5m

7.2

2.5m

3.5m

7.2m

3.5m

9.5

Existing signalised pedestrian crossing to be replaced by signalised toucan crossing

Richmond Road Junction

Mayfly Way

Barnard Road Junction

Existing Prohibition of waiting

1.8m

55.0

40.0

6.0

6.0m

38.0

45104 Barnard Road

Parallel crossing

Proposed prohibition of waiting

4.1

5388 Robberds Way

Barnard Road Junction

Chapel Break Road Junction

Parallel crossing with raised table

2.0m

5.6m

11.0m

1.2m

Harpsfield Junction

16.5

6.7m

8.6

1.2m

Priority crossing on a raised table

KEY:

- Proposed Two-way Cycletrack
- Proposed new footway
- Extended new shared use surface
- Proposed raised table crossing

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Transport for Norwich | HM Government | Industrial Strategy Transforming Cities Fund

Tom McCabe
Executive Director of
Community and Environmental Services
Norfolk County Council
County Hall, Martineau Lane
Norwich NR1 2SG

DRAWING TITLE

Dereham Road - Richmond Road Crossing
Mayfly Way
TRO consultation plan

REV.	DESCRIPTION	DRAWN BY	CHECKED	DATE
A	First 200m of footway along Mayfly has been removed.	JR	JR	04/23

	INITIALS	DATE
SURVEYED BY	PC	01/21
DESIGNED BY	CQ	10/21
DRAWN BY	BR	11/22
CHECKED BY	JR	

DRAWING No. PEA045-TCF-TRO-001

PROJECT TITLE: Transforming Cities, Mayfly Way - Richmond Road junction

SCALE: 1: 1000 @ A1

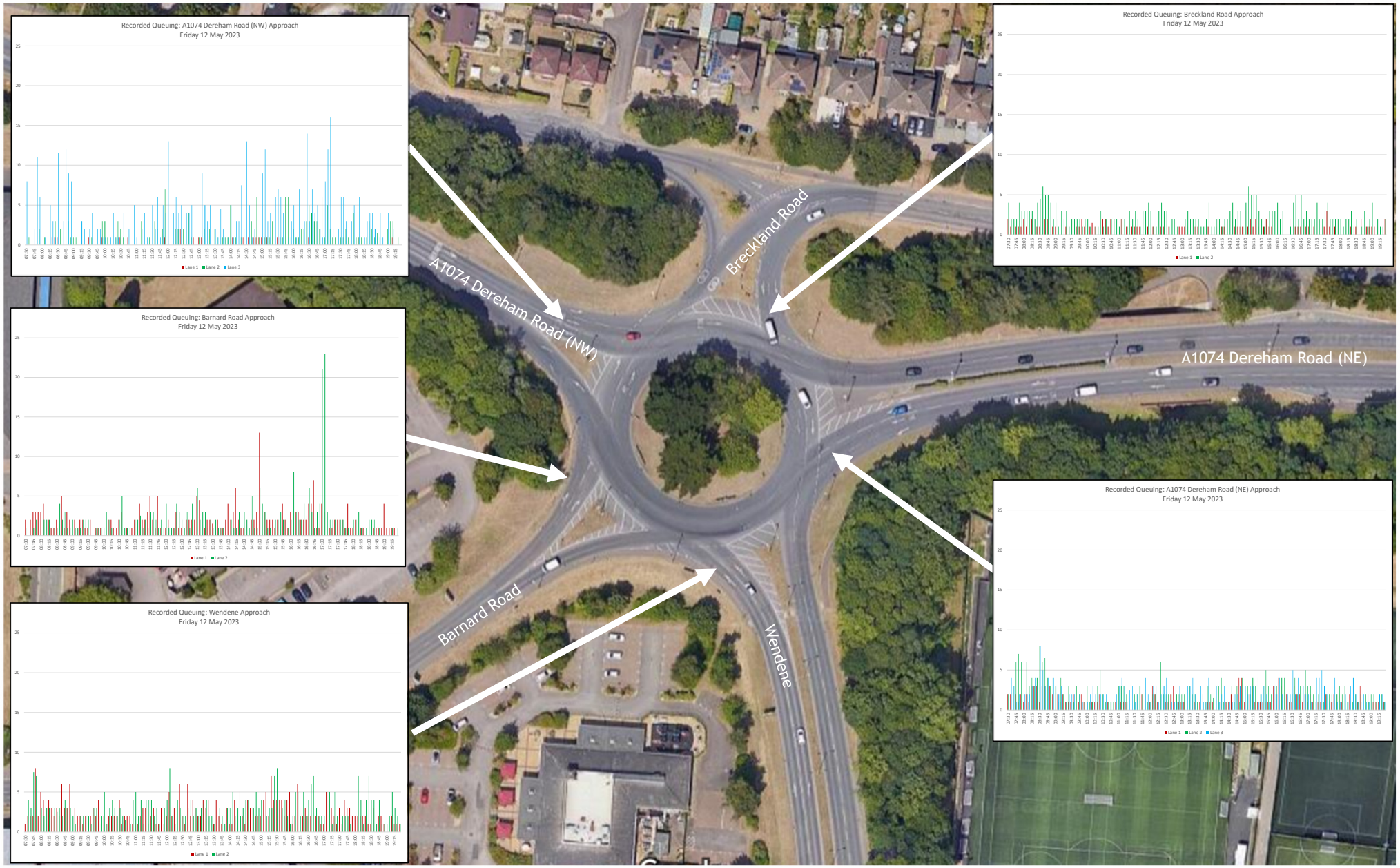
FILE No. PEA045

ORIGINAL SIZE: A1

IG 12/10/16



APPENDIX TA6



FOCUS TRANSPORT PLANNING

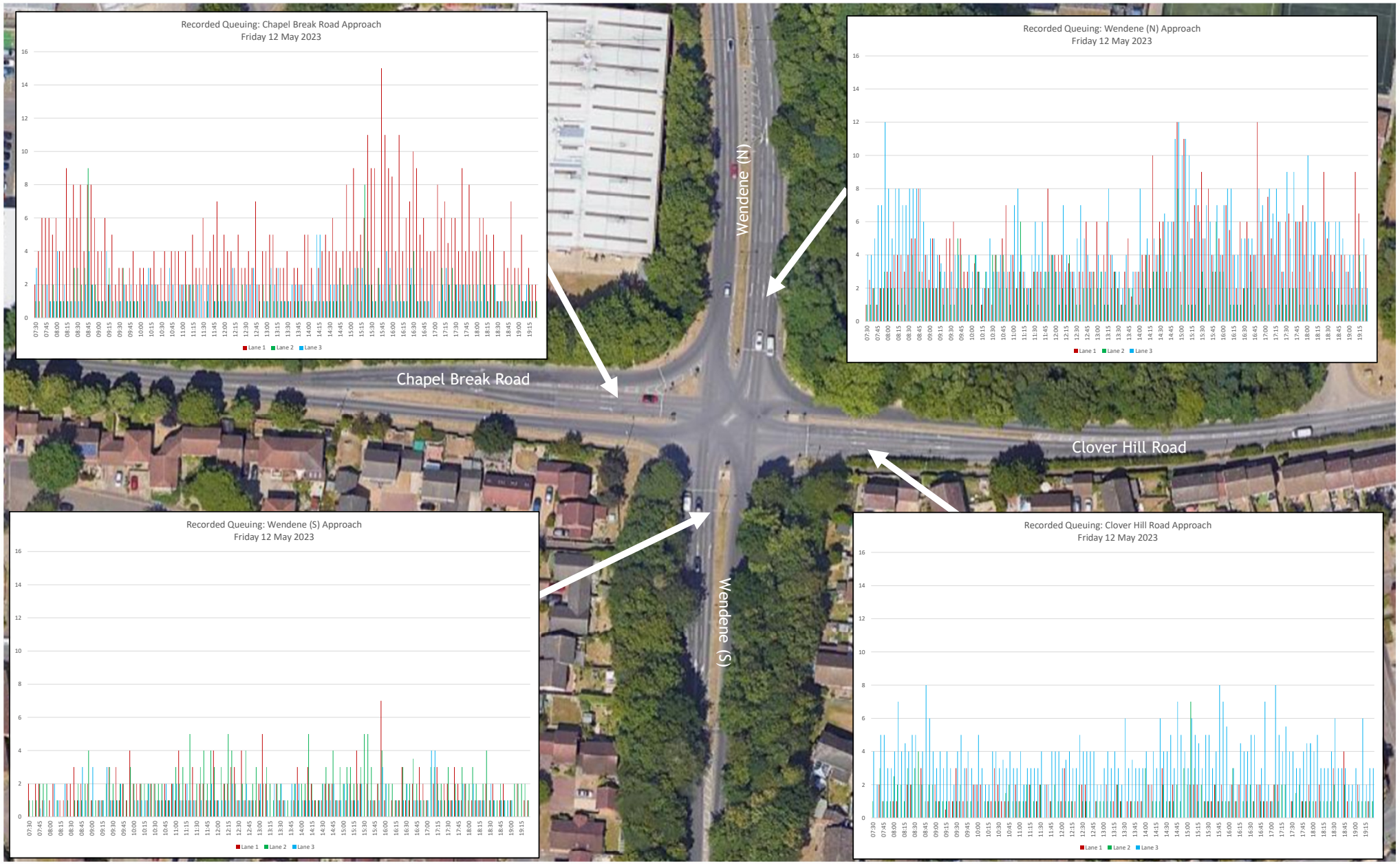
Appendix TA6a

Observed Max Queues at A1074 Dereham Road / Breckland Road / Wendene / Barnard Road Traffic Signals Friday 12 May 2023

J000420

Land off Barnard Road, Norwich

October 2023



FOCUS TRANSPORT PLANNING

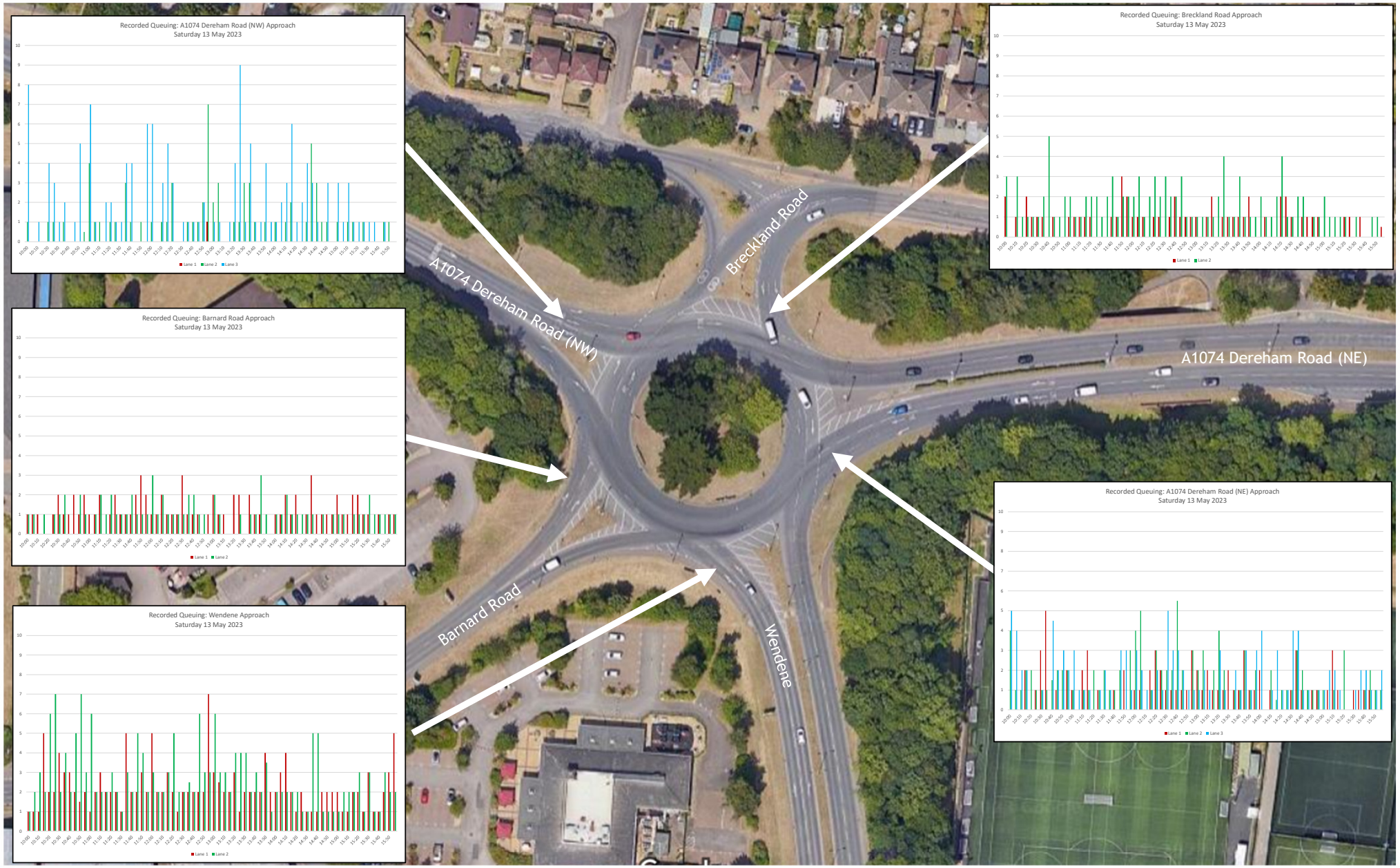
Appendix TA6b

Observed Max Queues at Wendene / Clover Hill Road / Chapel Break Road Traffic Signals Friday 12 May 2023

J000420

Land off Barnard Road, Norwich

October 2023

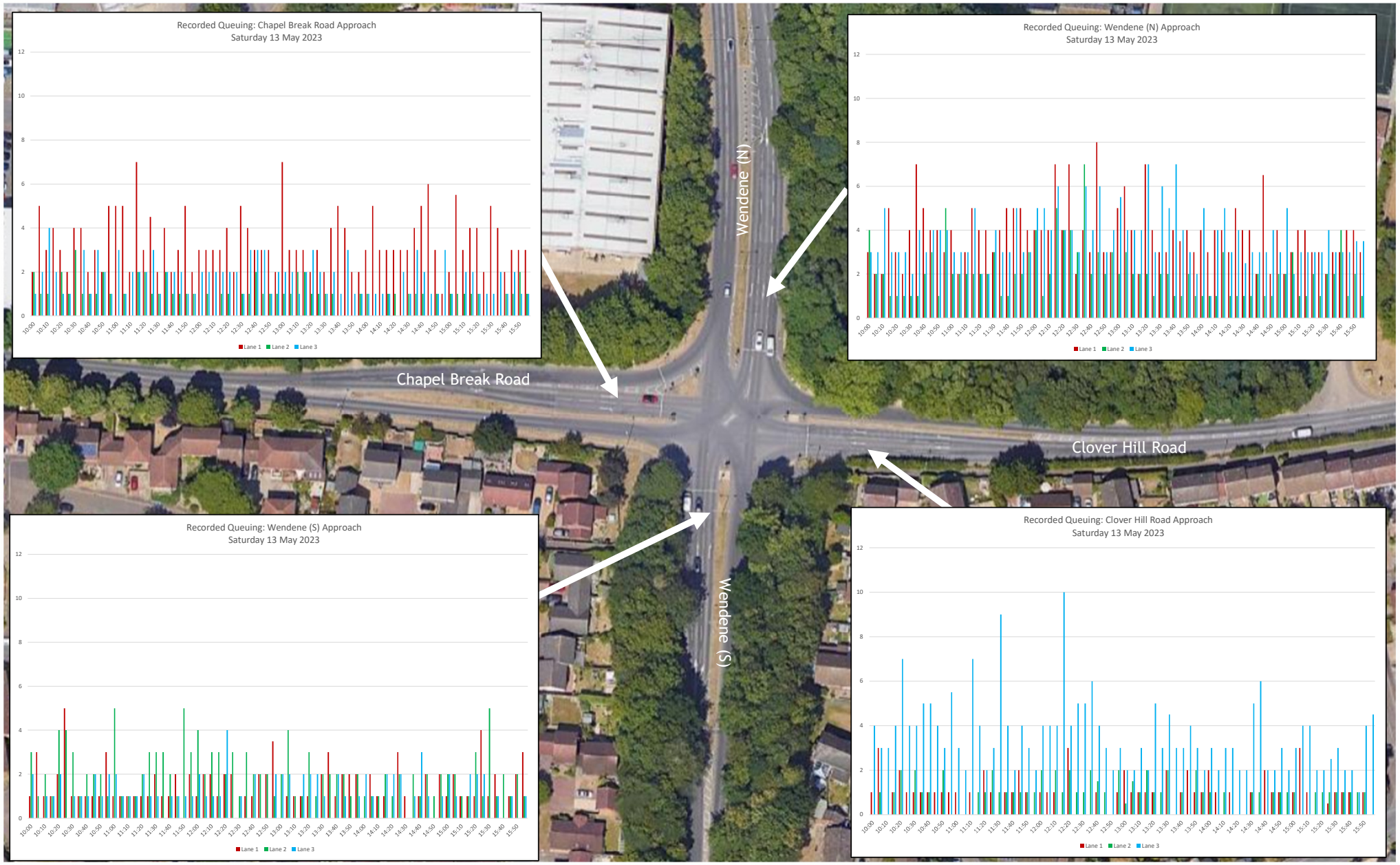


FOCUS TRANSPORT PLANNING

Appendix TA6c

Observed Max Queues at A1074 Dereham Road / Breckland Road / Wendene / Barnard Road Traffic Signals Saturday 13 May 2023

J000420 Land off Barnard Road, Norwich October 2023



FOCUS TRANSPORT PLANNING

Appendix TA6d

Observed Max Queues at Wendene / Clover Hill Road / Chapel Break Road Traffic Signals Saturday 13 May 2023

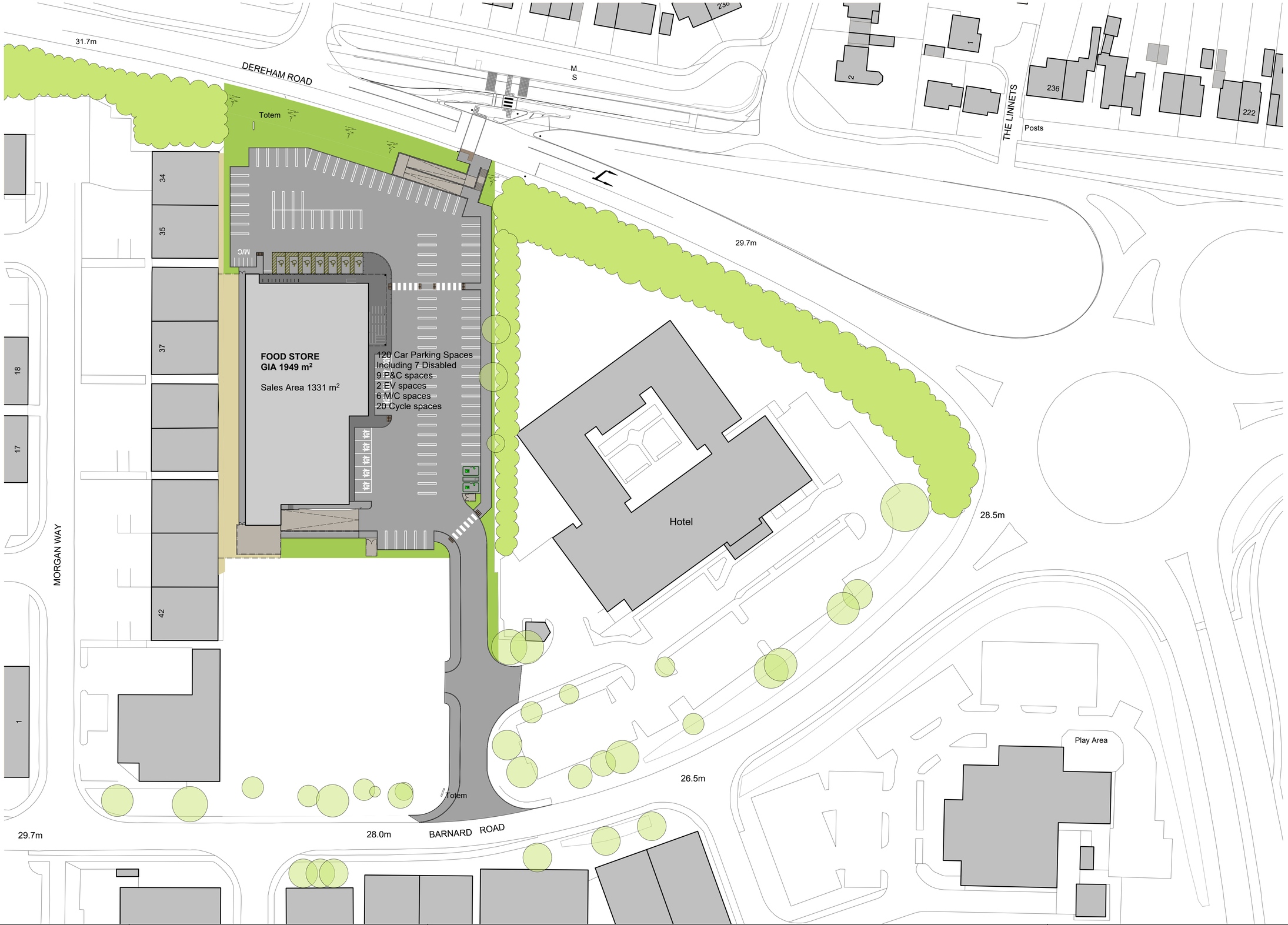
J000420

Land off Barnard Road, Norwich

October 2023



APPENDIX TA7



NORTH

0 5.0 10.0 15.0 20.0 25.0 50.0m

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Rev.	Description	Date	Drawn	Chk.
P-00	ISSUED FOR PLANNING	18.10.23	DC	CW

Client
Williams Group

Project
Barnard Road
Norwich

Drawing Title
Proposed Site Plan

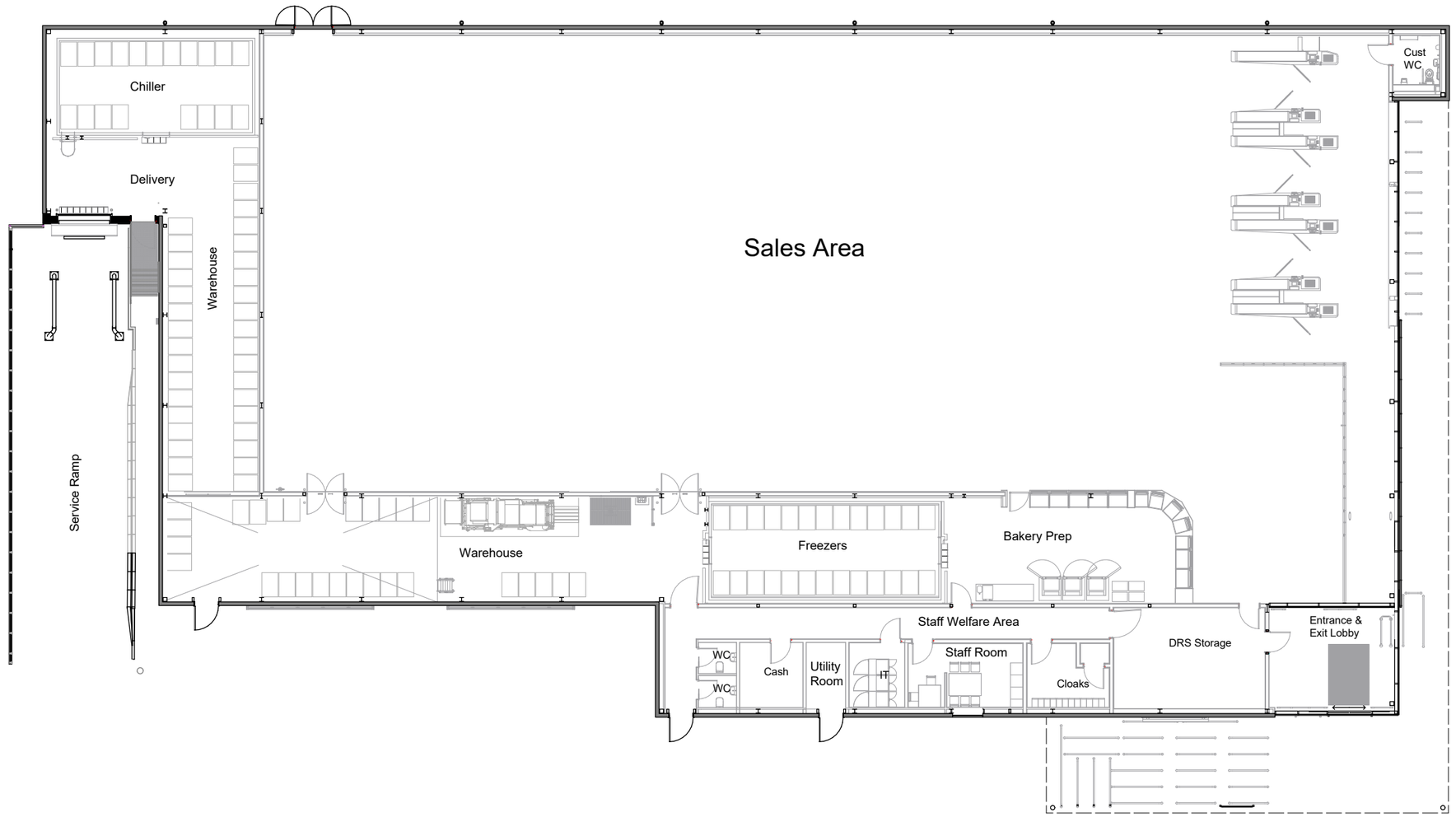
Drawing Status
PLANNING

Corstorphine & Wright

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01926 658 444
corstorphine-wright.com

Drawing No.	Revision
19408-300	P-00

Drawn	Checked	Paper Size	Scale	Date
DC	CW	A1	1:500	OCT 23



0 2.5 5.0 7.5 10.0 12.5 17.5m

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Rev.	Description	Date	Drawn	Chk.
P-00	ISSUED FOR PLANNING	18.10.23	DC	CW

Client
Willaims Group

Project
Barnard Road,
Norwich

Drawing Title
Proposed Ground Floor Plan

Drawing Status
PLANNING

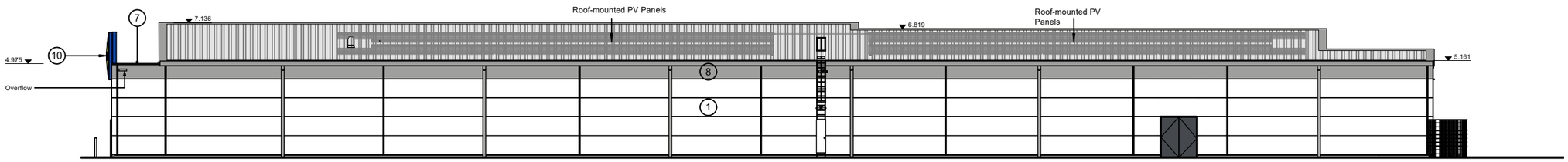
Corstorphine & Wright

Warwick Studio
Brook Hall, Brook Street, Warwick, CV34 4BL
01926 658 444
corstorphine-wright.com

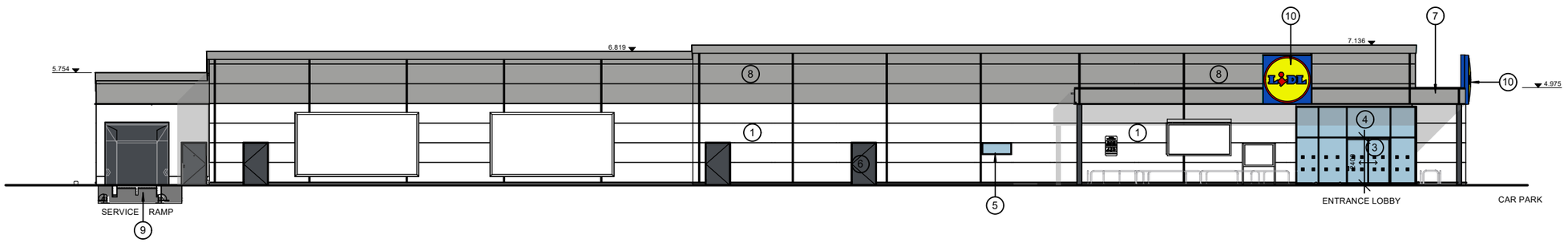
Drawing No.	Revision
19408-302	P-00

Drawn	Checked	Paper Size	Scale	Date
DC	CW	A3	1:250	OCT 2023

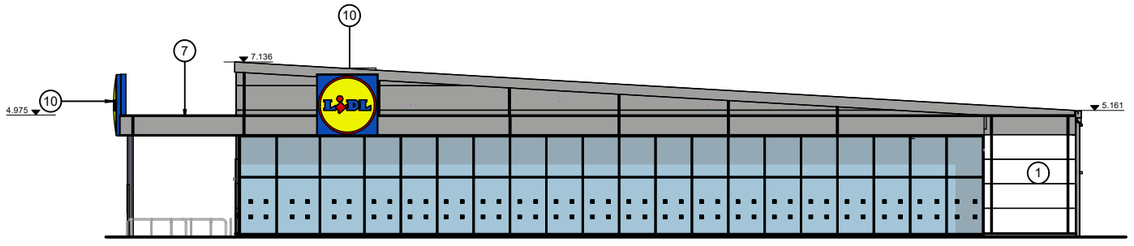
All signage indicative subject to a separate application for advertising consent



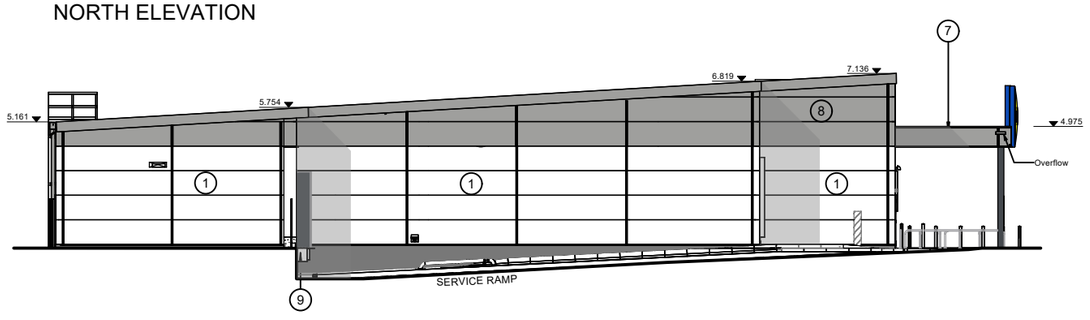
WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION

1. WALL CLADDING PANELS - METAL INSULATED COMPOSITE PANELS COLOUR WHITE RAL9010
2. 3° PITCH ROOF. PROFILED COMPOSITE METAL COLOUR ALUMINIUM RAL 9006
3. POWDER COATED ALUMINIUM FRAMED GLAZED ENTRANCE LOBBY WITH AUTOMATIC DOORS COLOUR: GREY RAL7024
4. POWDER COATED ALUMINIUM FRAMED GLAZED SHOPFRONT COLOUR: GREY RAL7024
5. POWDER COATED ALUMINIUM FRAMED WINDOWS COLOUR: GREY RAL7024
6. POWDER COATED STEEL DOOR COLOUR: GREY RAL7024
7. EAVES, SOFFITS AND FASCIA PANELS COLOUR ALUMINIUM RAL9006
8. WALL CLADDING PANELS - METAL INSULATED COMPOSITE PANELS COLOUR ALUMINIUM RAL9006
9. MINI DOCK LEVELLER
10. INTERNALLY ILLUMINATED LIDL SIGNAGE

0 2.5 5.0 7.5 10.0 12.5 17.5m

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Rev.	Description	Date	Drawn	Chk.
P-00	ISSUED FOR PLANNING	18.10.23	DC	CW

Client
Willaims Group

Project
Barnard Road,
Norwich

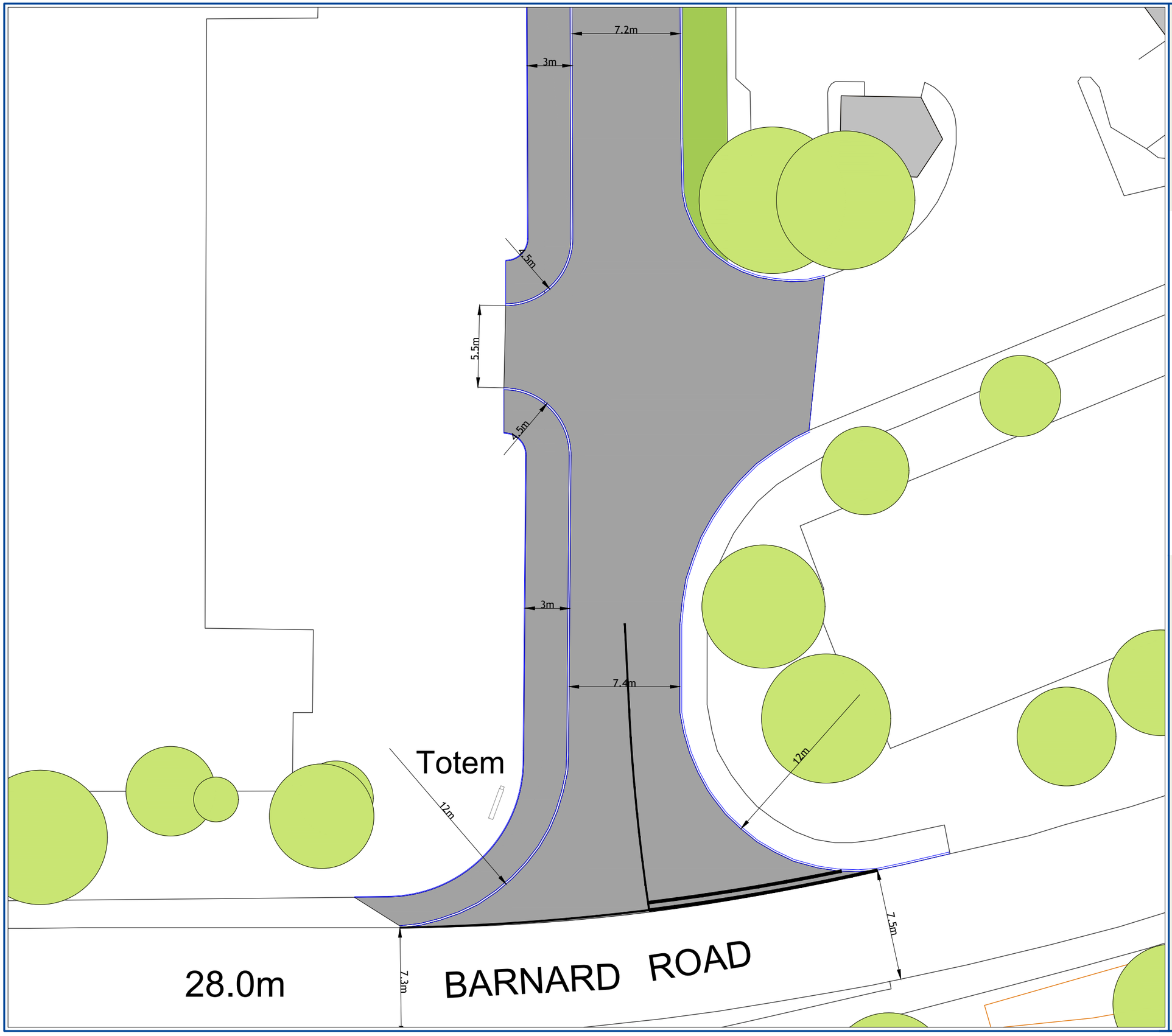
Drawing Title
Proposed Elevations

Drawing Status
PLANNING

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Drawing No.	Revision
19408-304	P-00

Drawn	Checked	Paper Size	Scale	Date
DC	CW	A3	1:250	OCT 2023



Revision:
A -

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Proposed Site Layout
Access Road Dimensions

Drawing Number: Appendix TA7
Revision: -

Date: 13/11/23
Scale: 1:250@A3

Drawn By: APB
Checked By: -

Status:
Information

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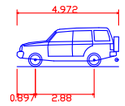
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SK9 2GH

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FOCUS TRANSPORT PLANNING



Revision:
A -



Luxury 4x4 (2006)	
Overall Length	4.972m
Overall Width	2.034m
Overall Body Height	1.905m
Min Body Ground Clearance	0.279m
Max Track Width	1.884m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.800m

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Proposed Site Layout
Key Internal Car Park Dimensions

Drawing Number: Appendix TA7
Revision: -

Date: 13/11/23
Scale: 1:250@A3

Drawn By: APB
Checked By: -

Status:
Information

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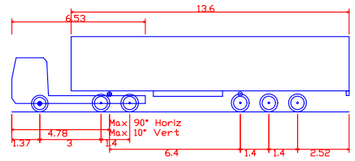
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SK9 2GH
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FOCUS
TRANSPORT PLANNING

Totem

28.0m

BARNARD ROAD

26.5m



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

Revision:
A -

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Vehicle Swept Path Assessment
Site Access Arrangements to Barnard Road
Max UK Articulated HGV

Drawing Number: Appendix TA7a
Revision: -

Date: 13/11/23
Scale: 1:400@A3

Drawn By: APB
Checked By: -

Status:
Information

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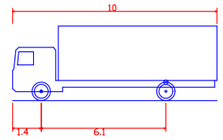
FOCUS
TRANSPORT PLANNING

Totem

28.0m

BARNARD ROAD

26.5m



FTA Design HG Rigid Vehicle (1998)

Overall Length	10.000m
Overall Width	2.500m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	11.000m

Revision:
A -

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Vehicle Swept Path Assessment
Site Access Arrangements to Barnard Road
FTA Design Rigid HGV

Drawing Number: Appendix TA7b
Revision: -

Date: 13/11/23
Scale: 1:400@A3

Drawn By: APB
Checked By: -

Status:
Information

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FOCUS
TRANSPORT PLANNING

Totem

28.0m

BARNARD ROAD

26.5m

Totem

28.0m

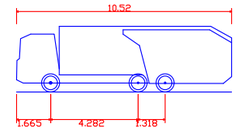
BARNARD ROAD

26.5m

Revision:

A -

-



Phoenix 2-23W (with Elite 2 6x2ML chassis)

Overall Length	10.520m
Overall Width	2.530m
Overall Body Height	3.211m
Min Body Ground Clearance	0.416m
Track Width	2.530m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	10.250m

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Vehicle Swept Path Assessment
Site Access Arrangements to Barnard Road
Large Refuse Collection Vehicle

Drawing Number: Appendix TA7c

Revision: -

Date: 13/11/23

Scale: 1:400@A3

Drawn By: APB

Checked By: -

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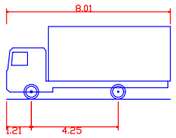
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Revision:
A -



7.5t Box Van	
Overall Length	8.010m
Overall Width	2.100m
Overall Body Height	3.556m
Min Body Ground Clearance	0.351m
Track Width	2.064m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	7.400m

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Vehicle Swept Path Assessment
Site Access Arrangements to Barnard Road
7.5t Box Van Delivery Vehicle

Drawing Number: Appendix TA7d
Revision: -

Date: 13/11/23
Scale: 1:400@A3

Drawn By: APB
Checked By: -

Status:
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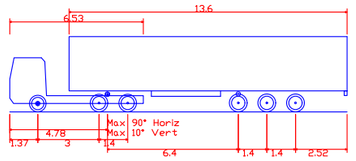
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120 Car Parking Spaces
Including 7 Disabled
9 P&C spaces
2 EV spaces
6 M/C spaces
20 Cycle spaces

120 Car Parking Spaces
Including 7 Disabled
9 P&C spaces
2 EV spaces
6 M/C spaces
20 Cycle spaces

Revision:
A -



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Vehicle Swept Path Assessment
Access to Store Delivery Bay
Max UK Articulated HGV

Drawing Number: Appendix TA7e
Revision: -

Date: 13/11/23
Scale: 1:400@A3

Drawn By: APB
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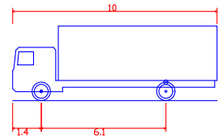
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120 Car Parking Spaces
Including 7 Disabled
9 P&C spaces
2 EV spaces
6 M/C spaces
20 Cycle spaces

120 Car Parking Spaces
Including 7 Disabled
9 P&C spaces
2 EV spaces
6 M/C spaces
20 Cycle spaces

Revision:
A -



FTA Design HG Rigid Vehicle (1998)

Overall Length	10.000m
Overall Width	2.500m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to lock time	3.00s
Kerb to Kerb Turning Radius	11.000m

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Vehicle Swept Path Assessment
Access to Store Delivery Bay
FTA Design Rigid HGV

Drawing Number: Appendix TA7f
Revision: -

Date: 13/11/23
Scale: 1:400@A3

Drawn By: APB
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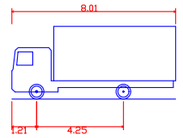
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120 Car Parking Spaces
Including 7 Disabled
9 P&C spaces
2 EV spaces
6 M/C spaces
20 Cycle spaces

120 Car Parking Spaces
Including 7 Disabled
9 P&C spaces
2 EV spaces
6 M/C spaces
20 Cycle spaces

Revision:
A -



7.5t Box Van	
Overall Length	8.010m
Overall Width	2.100m
Overall Body Height	3.556m
Min Body Ground Clearance	0.351m
Track Width	2.064m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	7.400m

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Vehicle Swept Path Assessment
Access to Store Delivery Bay
Large Refuse Collection Vehicle

Drawing Number: Appendix TA7g
Revision: -

Date: 13/11/23
Scale: 1:400@A3

Drawn By: APB
Checked By: -

Status:
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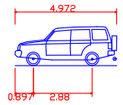
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Revision:
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Luxury 4x4 (2006)	
Overall Length	4.972m
Overall Width	2.034m
Overall Body Height	1.905m
Min Body Ground Clearance	0.279m
Max Track Width	1.884m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.800m

Client:
Honeyview Investments

Project:
Land at Barnard Road, Norwich

Drawing Title:
Vehicle Swept Path Assessment
Main Customer Car Park
Large 4x4 Design Vehicle

Drawing Number: Appendix TA7h
Revision: -

Date: 13/11/23
Scale: 1:400@A3

Drawn By: APB
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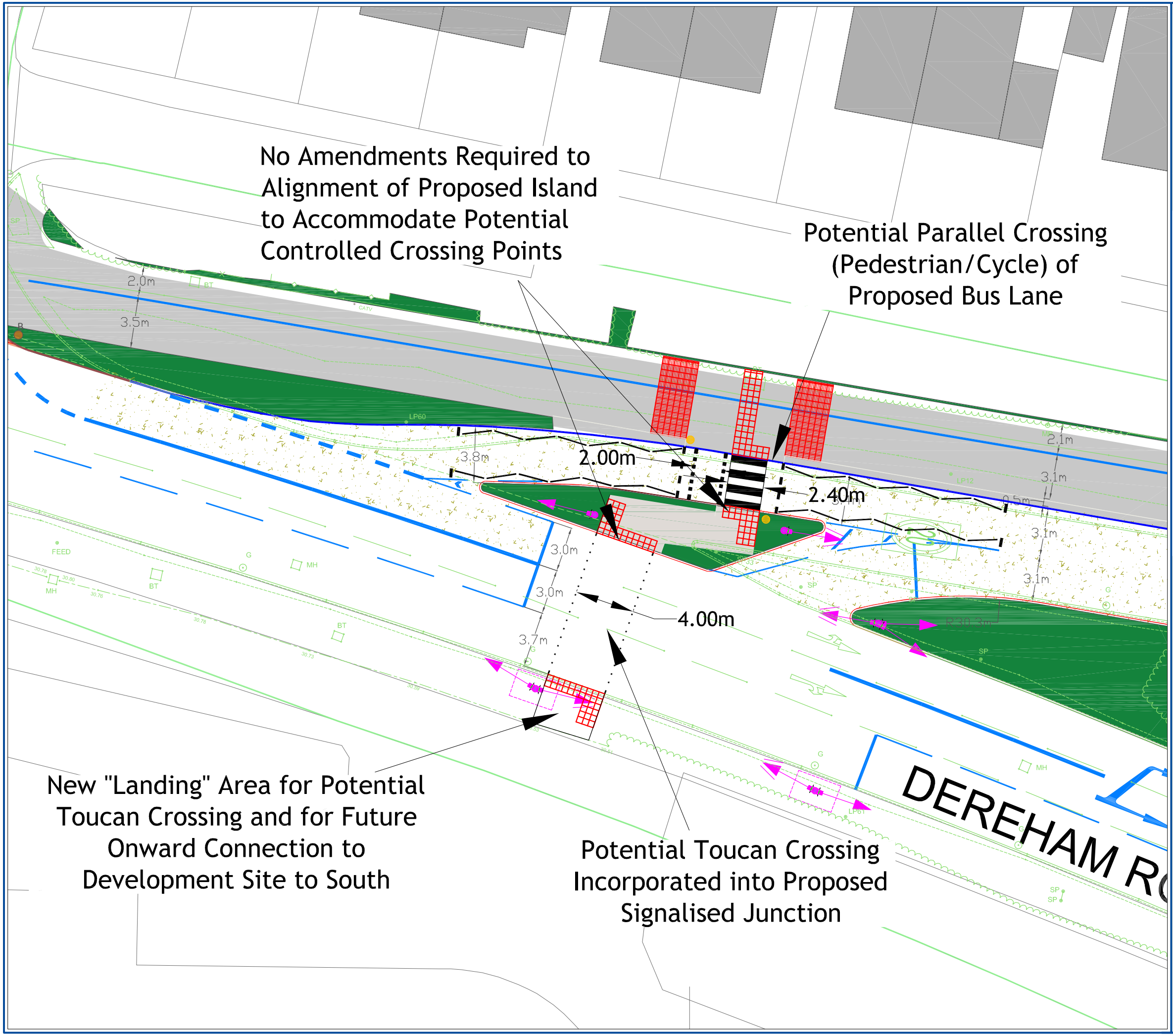
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APPENDIX TA8



Revision:
A -
-

Client:
Honeydew Investments

Project:
Land at Barnard Road, Norwich
Proposed New Discount Food Store

Drawing Title:
Pedestrian / Cycle Crossing
Integration into NCC Travel Hub
Western Bus Gate Scheme - OPTION 1

Drawing Number: J000420-SK001
Revision: -

Date: 04.08.23
Scale: 1:250 (A3)

Drawn By: MH
Checked By: APB

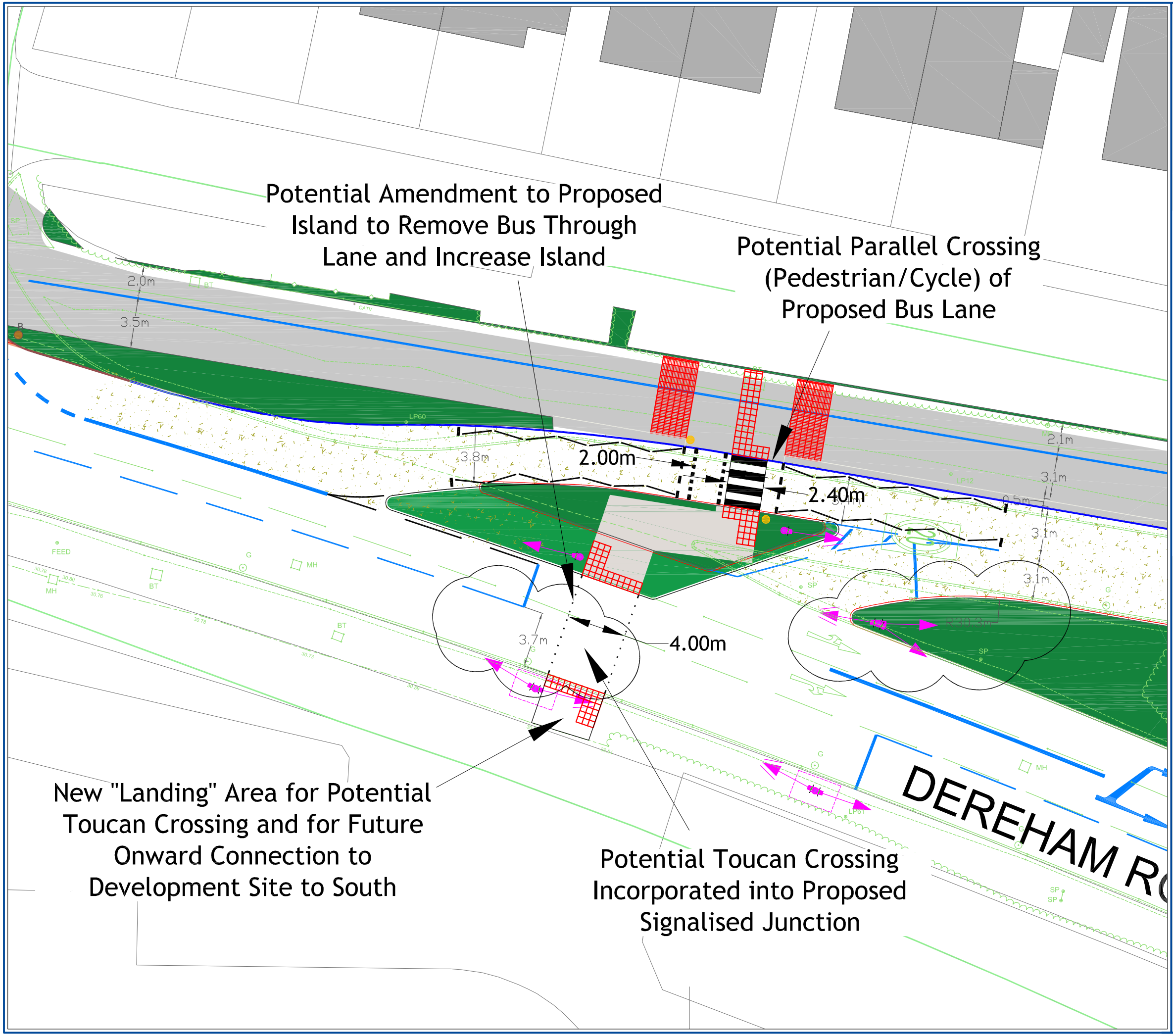
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Revision:
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-

Client:
Honeydew Investments

Project:
Land at Barnard Road, Norwich
Proposed New Discount Food Store

Drawing Title:
Pedestrian / Cycle Crossing
Integration into NCC Travel Hub
Western Bus Gate Scheme - OPTION 2

Drawing Number: J000420-SK002
Revision: -

Date: 04.08.23
Scale: 1:250 (A3)

Drawn By: MH
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APPENDIX TA9

J000420-TP01a
November 2023

Lidl GB Ltd
Food Store of 1949sqm GIA

Land off Barnard Road, Bowthorpe,
Norwich, NR5 9JB

Interim Travel Plan

Prepared on behalf of:

Lidl GB Ltd

FOCUS TRANSPORT PLANNING

Pentland House,
Village Way
Wilmslow, SK9 2GH
Company no: 11465973

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1.1 Overview and Planning Context
1.2 General Travel Plan Objectives & Benefits
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1.4 Travel Plan Structure

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1.0 INTRODUCTION

1.1 Overview and Planning Context

1.1.1 This Interim Travel Plan has been prepared by Focus Transport Planning (FTP) on behalf of Lidl GB Ltd in support of a planning application for the comprehensive re-development of land off Barnard Road, Norwich to deliver a new food store of 1949sqm GIA. The proposals envisage the demolition of existing buildings on the site and the delivery of a new food store building, along with ancillary car parking (120 spaces) and landscaping features. The proposed store is primarily designed to serve a local catchment made up of the nearby residential areas of Chapel Break, Bowthorpe, Clover Hill and New Costessey.

1.1.2 The planning application for the food store proposals at Barnard Road is supported by a detailed Transport Assessment (TA) report prepared by Focus Transport Planning, which sets out a detailed appraisal of the immediate highways and transport implications of proposal scheme, including a review of the site access strategy and design features to encourage more sustainable travel making. The Transport Assessment ultimately concludes the following:

> ***"Overall, based on the above review of issues, it is concluded that the comprehensive redevelopment of land off Barnard Road for new food store development would not result in a severe impact on future highway network operational & safety conditions. The scheme would cater for predominantly local food shopping trips, helping to manage overall journey lengths, whilst delivering opportunities to improve pedestrian and cycle accessibility to the site. The application scheme thereby meets the core planning sustainability objectives of promoting the use of alternative travel modes to the private car and managing the overall traffic impact associated with new development."***

1.1.3 The National Planning Policy Framework (NPPF) advises that Travel Plans should be submitted in support of all planning applications for significant development. The production and implementation of this Travel Plan to support the Barnard Road food store scheme therefore reflects core national policy and reinforces the developer's commitment to maximising accessibility to the site. This document effectively seeks to provide a framework for the future development, implementation and operation of key Travel Plan principles at the site and

represents an 'interim' document, that will form the basis of a final 'Full' Travel Plan to be agreed and delivered to support the opening and initial operation of the store.

1.2 General Travel Plan Objectives & Benefits

1.2.1 A Travel Plan is a general term for a package of measures and initiatives tailored to the requirements of individual sites and aimed at promoting more sustainable travel choices and reducing reliance on the private car. It involves the development of a set of mechanisms, initiatives and targets that together enable organisations and individuals to reduce the impact of their travel and transport on the local environment.

1.2.2 Travel Plans can be developed either specifically to address issues associated with individual buildings or sites, or to form part of a wider strategy involving Local Authority initiatives and other surrounding developments. This Travel Plan concentrates on those measures that can be developed specifically to support the proposed food store development at Barnard Road and had has been prepared in recognition that retail development represents both a) a workplace for staff, as well as; b) a destination for customers - with potentially different travel requirements associated with these user groups. Typically the core focus of a retail travel plan is to seek to target journey patterns associated with staff related trips, as these can be more directly targeted by store operator initiatives. It is traditionally more difficult to significantly influence the nature of journeys made by customers, other than by providing the opportunity to utilise a range of travel modes - as these trips often involve the need for the carriage of heavy / bulky goods and can from part of longer 'linked' trips to other sites and for other purposes.

1.2.3 Notwithstanding these broad trends, selected customer initiatives are included in this travel plan, where practical, to ensure that opportunities for customer take-up of sustainable travel choices are available and promoted at the site. Furthermore, it should be recognised that the development of the store is specifically designed to address and respond to local need and is likely to reduce

the overall journey length for some convenience shopping journeys - in so doing, also potentially providing greater overall opportunities for the switch to alternative modes of travel to the private car.

1.2.4 It is anticipated that the implementation of effective Travel Plan initiatives to support the day-to-day operation of the new food store development will deliver the following benefits:

Organisation

- Support employee travel needs;
- Aid staff recruitment and retention;
- Promote a healthy and motivated workforce ;
- Enhance company image;
- Reduce the extent of car parking required to support development;
- Improve the wider site environment;
- Increase productivity from a healthy workforce;
- Improve access for employees, visitors and deliveries;

Staff / Visitors

- Money and time savings by removing the need for car travel for some journey;
- Improved health, motivation and well-being;
- Lower levels of stress;
- A better quality of life.

Local Community

- Reduction in local level traffic congestion & pollution by offering realistic alternatives and reducing journey length;
- Reduction in CO_2 emissions;
- Additional facilities within a local catchment area;
- Access to employment.

1.2.5 Lidl GB Ltd, as proposed operator of the Barnard Road food store scheme, are committed to promoting sustainable transport solutions where appropriate and practical under the terms set out in this Interim Travel Plan. Ultimately, the operation of these Travel Plan initiatives will be required to be implemented and enforced via appropriate planning condition / legal agreement associated with any formal planning consent (in line with good practice set out in Norfolk County Council (NCC) Travel Plan guidance).

1.3 Travel Plan Policy / Guidance

1.3.1 Travel Plans are secured through a planning and transport policy framework that extends from national guidance through to the local level when dealing with new development proposals. Key Travel Plan policy and guidance relevant to the Barnard Street food store scheme is set out in the following paragraphs.

National Policy / Guidance

1.3.2 Guidance set out in National Planning Policy Guidance (NPPG), 'Travel Plans, Transport Assessments and Statements', states that a Travel Plan should "identify the specific required outcomes, targets and measures, and set out clear future monitoring and management arrangements all of which should be proportionate". NPPG also notes that "Travel Plans should, where possible, be considered in parallel to development proposals and readily integrated into the design and occupation of the new site rather than retrofitted after occupation". This guidance should be viewed in combination with the core objectives and design principles for new development, as set out in September 2023 NPPF paragraph 112 which states:

> ***"Applications for development should:***
>
> ***a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;***
>
> ***b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;***
>
> ***c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;***
>
> ***d) allow for the efficient delivery of goods, and access by service and emergency vehicles…"***

1.3.3 Paragraph 113 to NPPF is also clear that all developments that can be expected to generate a significant level of travel demand should be required to prepare a Travel Plan to support their future operation.

1.3.4 For best results when preparing Travel Plans, NPPG suggests that the initial focus should be on establishing the 'outcomes' required from a Travel Plan and working from this, to develop a range of measures that can then be identified and agreed as the best way of achieving such objectives at the site. Measures are likely to include both incentives and controls, in order to encourage site users to make changes in their travel behaviour.

Local Guidance

1.3.5 The adopted Norwich Local Plan (NLP) represents the prevailing development plan for the city of Norwich administrative area. The document sets out the strategic priorities for the Greater Norwich area, plus specific policies to guide Council decisions when considering planning applications. Policy DM28 to the NLP "Encouraging Sustainable Travel" states that travel planning should be integral to the design and operation of development and that Travel Plans or Travel Information Plans should be provided as part of development proposals.

1.3.6 Specific guidance on the design and delivery of Travel Plans to support new development has been prepared by Norfolk County Council (NCC), in the role of highways and transport authority for the County (including the city of Norwich). This guidance, which was published in July 2023, identifies that:

- Travel Plans are an essential tool for delivering sustainable access to new developments, whatever the use. They are defined as a long-term management strategy for an occupier or site that seeks to deliver sustainable transport objectives through positive action and should be set out in a document that is regularly reviewed."

- NCC requires that a Travel Plan be submitted alongside a Transport Assessment for any planning application which is likely to have significant impact on the

highway network (i.e. new retail development that could generate a significant amount of travel).

- Travel Plans are not purely a 'planning tool' and therefore should remain live working documents, while the development remains in operation, in order to guide how travel to / from the site will be managed and responds to changing circumstances.

- Travel Plans should be prepared in line with the NCC Travel Plan checklist and include the key elements set out in the guidance, including the preparation of Sustainable Travel Information Packs for circulation to staff and site users. A copy of this NCC checklist and how this Travel Plan responds to these requirements is included as **Appendix TP1**.

1.4 Travel Plan Structure

1.4.1 In light of the national and local Travel Plan policy / guidance outlined above, the Travel Plan for the Barnard Street food store site is to be developed via a pyramid framework of measures and actions. The principles of this Travel Plan pyramid approach are illustrated in **Figure TP1**, with good practice guidance noting that the process should be built 'from the ground up', with each new layer building on the last.

1.4.2 In order to satisfy the general objectives / benefits identified within key guidance documents, three distinct areas for action have been identified to be pursued within this Travel Plan:

- 'Physical' travel measures to be provided on-site by the developer;
- Tailored day-to-day 'operational' measures to encourage the take-up of sustainable travel options;
- Future management and monitoring of the implementation and take-up of Travel Plan initiatives.

1.4.3 The remaining sections of this report therefore consider the following matters, which are designed to build towards the identification of an effective Full Travel Plan for the Barnard Road food store site:

- Review of site location & accessibility audit;
- Description of the proposed development;
- Key action framework for the delivery of the Travel Plan;
- Details of plan administration;
- Travel Plan initiatives to be implemented;
- Identifying targets, monitoring progress and enforcement measures.

2.0 SITE LOCATION AND ACCESSIBILITY AUDIT

2.1 Overview

2.1.1 The location of a development site underpins all aspects of accessibility, in particular its relationship with complementary land uses and the range of practical travel mode options available to site users.

2.1.2 This section of the Travel Plan report effectively examines Tier 1 of the Travel Plan Pyramid – 'Site location and proximity to existing facilities and services' and identifies the extent to which the site can be considered to enjoy a good baseline level of accessibility by sustainable modes of transport.

2.2 Location and Existing Site & Highway Conditions

2.2.1 The strategic location of the Barnard Road site is illustrated in **Figure TP2** to this report, with an aerial image of the site and the immediate surrounding locality included as **Figure TP3**. These plans show the site in the context of the immediate local road routes of A1074 Dereham Road, Barnard Road and the nearby A1074 Dereham Road / Wendene roundabout. To the immediate west of the site is the Bowthorpe Employment Area (typically utilised for office, storage / distribution employment uses, with some traditional industrial facilities), to the north the residential area of New Costessey and to the South the Clover Hill & Chapel Break residential estates.

2.2.2 At the time of preparation of this Interim Travel Plan, the site is occupied by the 'Namco Funscape' family leisure development (bowling and amusement arcade), associated landscaping areas and car parking. The existing building is understood to provide circa 3,258sqm of floor space, with the wider site being of 2.10 acres in size. Pedestrian, cycle and vehicle access to the site is taken solely via a private access road connection, shared with an adjacent hotel development (Brook Hotel - currently closed), connecting to the local industrial access road of Barnard Road.

2.2.3 To the west of the application site access, Barnard Road provides local cul-de-sac access to a range of employment and industrial premises forming part of the Bowthorpe Employment Area. To the east of the site access connection, Barnard Road provides a direct link to the Wendene Roundabout (circa 175m between the site access and roundabout entry point). To the west of the roundabout, A1074 Dereham Road provides connections to the Longwater residential and commercial areas and the settlement of Costessey (via Longwater Lane). The A1074 (W) ultimately links to the A47 Norwich Southern Bypass. To the east of the Wendene roundabout, A1074 Dereham Road serves the local residential areas of New Costessey and Earlham and onward links towards Norwich city centre.

2.2.4 The immediate vicinity to the Wendene roundabout is proposed to be the subject of programmed local highway improvements as part of the Dereham Road Travel Hub TCF project. These proposed works are to include new at-grade traffic signal walk / cycle crossing points close to the existing Butterfly Way pedestrian / cycle underpass and additional bus gate / bus stop improvements. The works are programmed for delivery in late 2023 / early 2024.

2.2.5 A wide range of local walk / cycle and public transport connections are available within the immediate local catchment to the application site, including dedicated segregated 'pedalway' routes. Details of these walk /cycle links and the location of public transport stops are set out in section 2.3 to this report below.

2.3 Available Sustainable Transport Connections

2.3.1 The Barnard Road site is considered to represent an excellent location for new food retail development, which directly respond to the key sustainable development objectives outlined within national planning policy guidance. This guidance identifies the following two primary objectives when considering the location of new development:

- The need to reduce the need to travel, especially by the private car; and,
- The need to promote accessibility to a range of sustainable travel options.

2.3.2 The nature of local sustainable transport connections available within the immediate catchment of the proposed Barnard Road food store and a review of general site accessibility are considered in the paragraphs below.

Public Transport Links

2.3.3 Closest bus stops to the application site are located on Breckland Road / A1074 Dereham Road to the north of the Wendene Roundabout. These stops are to be significantly upgraded (new stops with shelters, live bus information and cycle hire facilities) as part of the programmed Dereham Road Travel Hub TCF project. New stops are to be developed on Breckland Road close to the A1074 Dereham Road (E) underpass, circa 330m from the application site (measured assuming delivery of the new direct pedestrian connections to A174 Dereham Road (W) proposed to be delivered as part of the food store scheme – see section 3.4 to this report).

2.3.4 The new Dereham Road Travel Hub facility can be expected to be served by the local bus routes identified in **Table TP2.1** below. This table summarises existing service frequencies and provides details of routing. A plan of these relevant local bus routes is included as **Figure TP4** to this report.

Table TP2.1: Bus Services Available from Dereham Road Travel Hub Bus Stops

Service	Route	Mon-Sat / Sun Daytime Frequency
23 / 23B 'Red Line'	Longwater – Costessey – City Centre - Heartease	1 per hr day & 1 per hr eve / 1 per hr day & 1 per hr eve / 1 per hr day & 1 per hr eve
24 / 24A 'Red Line'	Queens Hill – Longwater – Costessey – City Centre – Heartease – Thorpe St Andrew	3 per hr day & no eve service / 2 per hr day & no eve service / No Sunday service
515	Easton - Longwater – Sweet Briar Retail Park – Hellesdon – Airport P&R	1 per day No Saturday service No Sunday service

2.3.5 In addition to the bus stops at the Dereham Road travel hub, **Figure TP4** identifies that connections to other local bus services are available at nearby bus stops at Chapel Break Road / Astley Road to the south of the site (circa 400m walk, using the designated footpath link between Barnard Road & Chapel Break Road). These stops are characterised by a simple 'flagpost' stop with bus-boarder kerb at Chapel Break Road and a flagpost, passenger shelter and bus-boarder kerb stop at Astley

Road. These Chapel Break Road / Astley Road stops are served by the bus routes summarised in **Table TP2.2** to this report below.

Table TP2.2: Bus Services Available from Chapel Break Road / Astley Road Bus Stops

Service	Route	Mon-Sat / Sun Daytime Frequency
21 'Orange Line'	N&Nu Hospital – Bowthorpe – West Earlham – City Centre – Fiddlewood – Old Catton	3 per hr day & 1 per hr eve / 3 per hr day & 1 per hr eve / 2 per hr day & 1 per hr eve
26A 'Blue Line'	Bowthorpe – University – Earlham Road – City Centre – Rail Station	2 per hr day & no eve service / 2 per hr day & no eve service / No Sunday service

2.3.6 Review of the above information identifies that bus stops within a practical walking catchment of the site are served by a range of frequent services that provide opportunities for bus trips connecting to local residential areas during key daytime retail periods. The stops at the Dereham Road Travel Hub will be served by 3 – 4 bus services an hour, providing links to Costessey, Longwater and North Earlham, with the stops at Chapel Break Road / Astley Road providing access to 4-5 buses per hour and links to Clover Hill, West Earlham, Bowthorpe and Colney. These service routes cover much of the core extent of the identified 10 minute drivetime local car trip catchment and therefore are considered to offer an alternative option to private vehicle use, when accessing the proposed new food store.

Accessibility by Walking and Cycling

Walking Links & Catchment

2.3.7 National planning guidance notes that walking is the most important mode of travel at the local scale, offering the greatest potential to replace short distance car trips of under 2km. Guidance produced by CIHT also notes that 800m represents an 'acceptable' walking distance to community facilities and shops, with 1.2km representing a 'preferred maximum'. **Figure TP5** to this report illustrates the extent of a 1km walk catchment to / from the proposal site, assuming the delivery of the walk / cycle crossing of A1074 Dereham Road to the site's northern frontage (see section 3.4). This exercise demonstrates that a practical walk catchment

includes significant parts of the local residential zones of Bowthorpe, Clover Hill and New Costessey, as well as all of the adjacent Bowthorpe Employment Area.

2.3.8 Pedestrian access to the application site is supported by good standard footways to immediate sections of Barnard Road and onward links to a range of connecting dedicated pedestrian / cycle links, including the pedestrian only routes to Chapel Break Road to the south and easy access to Mayfly Way and connecting onward links to Hawkmoth Way, Dragonfly Way & Grasshopper Way. These routes offer convenient 'off-road' walking routes linking to nearby residential estates within the Bowthorpe & Clover Hill areas. Walking links from the application site to the north would be significantly enhanced via the delivery of the proposed supporting new pedestrian / cycle crossing facility at the site frontage to A1074 Dereham Road.

Cycle Links & Catchment

2.3.9 National Planning Guidance notes that cycling has the potential to substitute for short car trips – particularly those journeys of less than 5km or which could form part of a longer journey by public transport. The location of the application site allows for practical cycling access to the majority of the western side of Norwich (**Figure TP6**), including Bowthorpe, Clover Hill, Earlham, Costessey, Longwater and Hellesden.

2.3.10 Key cycle infrastructure and connecting links available within the immediate local travel catchment of the application site is illustrated in **Figure TP7**. Review of this plan demonstrates that an excellent range local segregated 'pedalway' links, along with other connecting 'quiet road' neighbourhood routes are available, which will help encourage regular cycle access. Furthermore improved cycle facilities are programmed to be delivered by NCC to Mayfly Way and the A1074 Dereham Road corridor, which can be expected to further enhance cycle accessibility, alongside the new walk / cycle connection at Dereham Road (W) proposed as part of the food store scheme.

Accessibility Summary

2.3.11 Overall it is concluded that the application site at Barnard Road represents a suitable location for new food store development, being located within a practical walking and cycling distance of local residential areas and within a short walk of bus stops served by good frequency local bus connections.

2.3.12 Such locational characteristics should assist in meeting the sustainable planning objectives of promoting opportunities for the use of alternative travel modes to the private car and thereby help manage the overall traffic impact associated with new development.

3.0 REVIEW OF THE DEVELOPMENT PROPOSALS

3.1 Introduction

3.1.1 This section of the report has been prepared in reference to Tier 2 of the Travel Plan Pyramid 'Sustainable site design – parking restraint, suitable density and amenity' and sets out those key site elements that will be delivered as part of the Barnard Road food store scheme.

3.2 Development Scheme

3.2.1 The scheme proposes the re-development of land at Barnard Road, Norwich to deliver a new food store of circa 1949sqm GIA. The proposals envisage the demolition of existing site buildings and the replacement with a new food store building along with ancillary car parking and landscaping. The store is primarily designed to serve a local catchment, including the nearby residential areas of Chapel Break, Bowthorpe, Clover Hill and New Costessey. A copy of a plan illustrating key scheme principles is included as **Appendix TP2** to this report.

3.3 Vehicle Access Arrangements & Car Parking

3.3.1 It is proposed that vehicle access to the site would be taken via the retention of the existing private road access to Barnard Road. This access route provides a minimum carriageway width of 7.3m and is therefore appropriate to accommodate both customer vehicles access and occasional service / delivery vehicle access, for both the proposed food store and adjacent hotel development without the need for further improvement.

3.3.2 It is proposed that the new food store would be served by a total of 120 car parking spaces (7 to accessible user standard and 2 suitable for EV charging) – delivering an overall parking supply of 1 space per 16.2sqm of retail building floorspace or 86% of NCC guideline maximum parking standards for new food retail development.

3.3.3 Additional marked parking for 6 powered two-wheel vehicles would be provided within the main car park, adjacent to the retail building.

3.4 Pedestrian & Cycle Access

3.4.1 Pedestrian access to the south of the site would continue to be maintained by the footway connection alongside the development access road, linking to the adopted segregated footway routes to Barnard Road. This footway would be increased from 1.8m to 3m to allow shared use with pedal cycle users. A marked pedestrian / cycle route would be provided through the site to link this southern access to the main customer entrance to the store building.

3.4.2 To improve pedestrian accessibility to the north of the site, it is proposed that a new ramped footway / cycle access would be delivered within the site, to link to a new traffic signal controlled crossing point of A1074 Dereham Road. This footway / cycle access would be provided at a minimum width of 3m and would be delivered at a gradient of less than 1:20 to allow for ease of use.

3.4.3 Details of the principles of the proposed supporting crossing arrangements at A1074 Dereham Road are illustrated in **Appendix TP3** to this report. This crossing would link directly into the Dereham Road Travel Hub initiatives and therefore provide excellent connections from the site to local public transport services & infrastructure. The crossing would also deliver a direct new link to the site from the New Costessey residential area.

3.4.4 Covered and secure cycle parking facilities would be provided for up to 20 cycles at a location less than 25m from the main customer access.

4.0 IMPLEMENTATION OF THE TRAVEL PLAN – KEY ACTION FRAMEWORK

4.1 Introduction

4.1.1 This section of the report outlines the method through which the Travel Plan for the Barnard Road food store scheme will be developed & implemented, including details of key responsibilities for both site applicant / developer and Lidl GB Ltd as store operator.

4.2 Travel Plan Development

4.2.1 The development and implementation of the Travel Plan for the site is to be undertaken over a number of key stages, based on the approach set out in this Interim Travel Plan. These stages are described in the remaining sections of this document and cover the identification and implementation of Travel Plan measures / initiatives, establishing travel trends to the site (from the analysis of staff & customer questionnaire data following opening of the site) and the monitoring of the effects of the Plan.

4.2.2 The identified key stages for the development of the Travel Plan are as follows:

A. Plan Administration through the selection and appointment of a suitable Travel Plan Co-ordinator, i.e. Tier 3 of the DfT Travel Plan Pyramid 'Implementation and development of the Travel Plan".

B. Identification of a range of measures and initiatives to encourage sustainable travel, i.e. Tier 4 of the DfT Travel Plan Pyramid 'Services and facilities'.

C. Preliminary assessment of travel behaviour of site users (to be undertaken following opening of the development scheme).

D. Monitoring of the effectiveness of the Travel Plan and revision of the plan strategy where appropriate on a regular basis, i.e. Tier 5 of the DfT Travel

Plan Pyramid 'Marketing & promotion, awareness raising, monitoring and review'.

4.2.3 **Figure TP8** to this report identifies the key intermediate stages of this implementation programme.

4.2.4 Detailed commitments necessary to promote the successful delivery of the Travel Plan are identified and highlighted via **bold & underlined** text through the remainder of this document.

5.0 PLAN ADMINISTRATION & RESPONSIBILITIES

5.1 Introduction

5.1.1 **Management of the Travel Plan process will be achieved through the early identification of a suitable person as the Travel Plan Co-ordinator (TPC).** The TPC role will be key to the delivery of a successful Travel Plan at the site. In the first instance and prior to construction of the site and transfer to Lidl GB Ltd, the initial site TPC role will be the responsibility of the site developer, Honeyview Investments Ltd.

5.1.2 Responsibility for the delivery of the Full Travel Plan for the site will ultimately be transferred from Honeyview Investments Ltd to Lidl GB Ltd, with the details of this formal change in responsibility and contact information for the Lidl GB Ltd representative taking on the TPC role, to be provided to NCC's Travel Plan Team (developer.services@norfolk.gov.uk) **at least one months prior to the proposed opening date of the store**.

5.1.3 Once appointed, the appointed store operator TPC will prepare the formal Full Travel Plan document for the site and agree this with the NCC Travel Plan Team. The site TPC will then act as the main contact for the Travel Plan and will be responsible for organising the implementation of agreed Travel Plan initiatives on site, involving new staff in the plan, promoting sustainable transport options to customers and organising the monitoring of the effects of plan, post implementation. A review of the duties and responsibilities of the TPC are set out in sections 5.2 & 5.3 to this report.

5.2 Duties and Responsibilities of the Travel Plan Co-ordinator

5.2.1 The TPC will act as the main liaison point for discussions with the NCC Travel Plan Team. The TPC will also act as the first point of contact for staff / customers in all matters regarding site related travel, as well as the management of all physical travel infrastructure within the development curtilage.

5.2.2 The key roles and responsibilities of the TPC will be as follows:

- Manage the implementation of the Travel Plan and maintain / refresh initiatives going forward.
- Review physical infrastructure provision on site and ensure that it is of an appropriate standard and remains fit for purpose.
- Liaise with public transport operators and NCC Travel Plan Team officers to ensure up-to-date transport & ticketing information is available.
- Monitor travel patterns at the site, post the opening of the store.

5.2.3 The TPC will be able to delegate some duties to other suitable nominated persons, as required, but would retain overall responsibility for all matters relating to the operation of the Travel Plan. A schedule of duties is provided in **Appendix TP4** to this document. This schedule effectively represents an 'Action Plan' to guide the delivery of the final Full Travel Plan to support the day-to-day operation of the Barnard Road food store site.

5.3 Key Travel Plan Administration Tasks

5.3.1 As part of the on-going operation of the Travel Plan, the following key administrative tasks will be undertaken by the TPC:

- Informing the NCC Travel Plan Team of the contact details of the TPC and the updating of this information on transfer of the TPC role to Lidl GB Ltd or should the TPC role be transferred to an alternative staff member within the lifetime of the Plan.
- Manage a key contacts file of appropriate personnel at other relevant organisations such as NCC, public transport operators, etc.

- Develop a suitable 'Sustainable Travel Information Pack' (STIP) in line with the specification set out in Appendix 3 to the July 2023 NCC Travel Plan Guidance, for circulation to all new staff members. **A draft STIP should be provided to NCC for review one month before the date of first opening of the store, to ensure best practice and consistent content**.

- Maintain a travel noticeboard at the site to include up-to-date travel information, public transport timetables, maps and details of travel initiatives such as National Cycling Week, healthy living information, etc.

- Be responsible for accounting for and expenditure of the Travel Plan budget (see also section 6.4) and prepare regular Travel Plan Performance reports in line with the monitoring / reporting schedule set out in section 7 to this document.

6.0 TRAVEL PLAN INITIATIVES

6.1 Introduction

6.1.1 The aims of Tiers 4 and 5 of the Travel Plan Pyramid seek to establish those measures to be implemented on site to manage car trip demand and to set out how the operation & effectiveness of these measures should be promoted and monitored. This section presents the range of sustainable travel measures that should be considered for adoption at the Barnard Road food store site as part of the final agreed Full Travel Plan.

6.1.2 Travel measures at the site may change over the course of the Travel Plan delivery period, in agreement with the NCC Travel Plan Team, to ensure that only effective measures, that remain relevant to the operation of the site, are continued to be pursued.

6.1.3 The Travel Plan initiatives can effectively be categorised into 'physical' and 'operational' measures, as defined below:

- 'Physical' site works - to be provided on site as part of the delivery of the core food store building and supporting infrastructure - such measures are typically available to both staff and customer site users.

- 'Operational' measures - which would be introduced by Lidl GB Ltd in parallel with the date of first opening of the store, to improve accessibility / encourage sustainable travel patterns. These measures can be tailored, as appropriate, to specifically target staff or customer trip making, albeit that, as noted in section 1.2 to this report, the majority of these operational initiatives are likely to be more relevant to staff trip making.

6.2 'Physical' Travel Plan Measures

6.2.1 Core 'physical' elements to be promoted & delivered at the food store site as part of the Full Travel Plan are as follows:

- **The provision of suitable safe walk / cycle routes within the development curtilage and connections to the immediate adopted local highway network, as illustrated in consented site plans**. This will include segregated and lit footpath facilities to link to the new traffic signalised crossing point of Dereham Road to the north and a signed pedestrian route to the site access road to the south, connecting to Barnard Road.

- **The provision of 20 covered and secure cycle parking spaces** on site - at a location immediately to the north west of the main store customer entrance point.

- **Staff changing area with lockers within staff areas,** to assist in the storage of personal belongings and travel equipment such as bike helmets, lights, clothing, etc.

- **The provision of a staff Travel Information Noticeboard at a prominent location within the building**. This notice board will include (but not be limited to) the following key information:

  - Information about the TP and its objectives;
  - Contact details of the TPC;
  - Information on the benefits of using sustainable modes of transport (health and wellbeing benefits, carbon footprint reduction, etc).
  - Maps and information of local walking and cycling routes within the local area;
  - Details of nearest bus and rail stops to the site, and most recent timetable information;
  - Information on local taxi companies;

- Links to relevant websites providing further information on sustainable travel opportunities in the local area.

6.3 'Operational' Travel Plan Measures

6.3.1 Operational measures to be explored and implemented to support the Full Travel Plan for the Barnard Road food store scheme have been grouped under the following key sub-headings, for ease of reference:

- Promoting travel awareness & good practice;
- Encouraging increased use of walking;
- Encouraging increased use of cycling;
- Encouraging increased use of public transport;
- Promoting more efficient car usage;
- Providing support & marketing to encourage greater travel choice.

Promoting Travel Awareness & Good Practice;

6.3.2 Good accurate information on the range of services and travel initiatives available at the site will be a critical element of a successful final Travel Plan**. The TPC will make new employees aware of the existence of the Travel Plan by providing them access to the site STIP**. The pack would be issued on appointment of each staff member's position, prior to occupation, to ensure that sustainable travel patterns are created from the outset. It is anticipated that this pack will be a useful tool in promoting the goals of the Travel Plan and encouraging sustainable travel options and its development is in line with the approach set out in NCC Travel Plan Guidance. The STIP should include (but not be limited to) the following information:

- Short introductory note to explain why the Travel Plan has been produced, core objectives and details of key contacts, including the details of the TPC role.
- Demonstration of site accessibility and available local connections on foot and cycle via catchment mapping.

- Details of local bus service timetables (both stops at Dereham Road Travel Hub and nearby stops in Bowthorpe housing areas) and plans illustrating the location of these bus stops and key walking routes.
- Details of relevant public transport apps and any information sources providing real time service times from nearby stops to the food store site.
- Links to a 'car cost calculator', providing information on the full cost of car use.
- Details of links to other information sources to allow efficient journey planning and ticketing information & social media links to core public transport operators.
- Details of car sharing opportunities both in terms of staff initiatives at the site or wider organised car share schemes.
- Details of local taxi firms.

6.3.3 **The TPC will ensure that information within the STIP is checked on a quarterly basis** and that any seasonal timetable changes are highlighted to members of staff via the Travel Information Noticeboard or updated web-links.

6.3.4 **The TPC will promote and encourage staff to participate in national and local events**, organised by other organisations, aimed at promoting awareness of sustainable transport. The range of events to be promoted will be agreed with the NCC Travel Plan Team and coordinated by the site TPC.

6.3.5 Personalised journey planning can be a very effective way of reducing car travel and encouraging the use of sustainable modes and is best targeted at those who currently travel by car and have no constraints with respect to their ability to travel by alternative modes. **The TPC will assist staff, as necessary, in the development of their own personalised journey plan for regular commuting journeys to / from the site by sustainable travel modes.** Traveline can also provide support with personal journey planning to and from the site (https://www.traveline.info/).

Encouraging Increased Use of Walking

6.3.6 Walking is suitable for journeys under one mile and therefore is likely to be a realistic option for many locally based customers when travelling to the Barnard Road site, as well as for those persons working in the adjacent Bowthorpe employment area. Walking can be combined with other travel modes, such as public transport, to cover longer distances.

6.3.7 The site TPC will encourage walking as a mode of travel to work by implementing the following initiatives:

- **Raise awareness of the health benefits of walking through promotional material** in the STIP and on noticeboards.
- **Prepare a map showing walking routes to / from the site**, indicating distances and times and circulate to staff as part of the STIP.
- **Promote campaigns on public health or active travel to staff and customers** such as Walk to Work Week and National Walking Month.

Encouraging Increased Use of Cycling

6.3.8 The TPC will encourage cycling as an alternative mode of travel for accessing the site by promoting the following measures

- **Provide cycle information, including route maps** promoting local Norwich segregated 'pedalways', a number of which pass close to the Barnard Road site.
- **Promote take-up of 'Cycle to Work' scheme initiatives for staff cycle and cycle equipment purchase**.
- **Promote campaigns**, such as National Bike Week, Cycle to Work Day and Family Bike Rides;
- **Investigate staff interest in setting up a Bicycle User Group (BUG)** to encourage employees to cycle to work.

Encouraging Increased Use of Public Transport

6.3.9 The TPC will encourage use of public transport by implementing the following initiatives:

- **Provide contemporary public transport information of existing services, including route maps and timetables**, within the STIP & on staff noticeboards and in customer areas where practical.
- **Provide details of the websites and telephone advice services**, including the Traveline journey planner (www.traveline.info) and the 'Network Norwich' bus portal (www.firstbus.co.uk/norfolk-suffolk/routes-and-maps/network-norwich). Provide further information to staff regarding the Traveline phone service (0871 200 22 33) for up to date 'real time' travel information and advice.

Encouraging Efficient Car Use

6.3.10 Car sharing can play an essential role in reducing the use of cars, and consequently congestion levels and CO2 emissions. As more people travel together, less car trips take place. **The TPC should therefore provide information to encourage staff to explore free car sharing / lift sharing schemes** such as the NCC lift-share initiative (www.norfolk.gov.uk/roads-and-transport/car-sharing).

6.3.11 Depending on the results of future site travel surveys, as part of which the potential demand for car sharing will be further evaluated, it may be appropriate for the site TPC to consider the setting up of a specific car share scheme for staff based at the Barnard Road site. This could be achieved through postcode mapping of staff origins, to identify whether those staff who are interested in taking part in journey-sharing, live along potential common travel routes and then matching these staff.

Providing Support & Marketing to Encourage Greater Travel Choice

6.3.12 To provide support to those staff that choose to explore options for utilising an alternative travel mode to the private car for their journey to / from the site, **the TPC will organise a scheme to ensure that any staff involved with the Travel**

Plan are offered a 'guaranteed ride home' in the case of a family emergency during the daytime or if required to work at night at short notice. In these circumstances the costs of any reasonable taxi fare would be reimbursed from the Travel Plan budget (assuming appropriate receipts are provided by staff).

6.3.13 **It is the responsibility of the site TPC to manage the guaranteed ride home scheme** and to ensure that any trips made under the scheme are appropriate. The TPC will record all occasions of operation of the scheme.

6.4 Plan Implementation

6.4.1 The development, implementation and long term operation of the final Full Travel Plan will be funded by Lidl GB Ltd.

6.4.2 **Final Travel Plan measures based on those identified within sections 6.2 & 6.3 to this report will be demonstrated to be available at the date of first opening of the food store development.**

6.4.3 A suitable Travel Plan operating budget will be set aside by Lidl GB Ltd to assist the delivery of the Travel Plan over the initial five-year period post opening of the scheme. This budget will be utilised to fund the final package of travel initiatives, and could include typical travel plan administration tasks such as the design and production of publicity material, maintenance of on-site sustainable travel infrastructure (Travel Information Noticeboard, cycle storage facilities), personalised travel planning and the production of site-specific travel information / welcome packs.

6.4.4 NCC Travel Plan Guidance requires that details of the proposed Travel Plan budget and anticipated costings are included in the full Travel Plan prepared to support final site occupation / opening. NCC Travel Plan Guidance recommends a minimum budget spend of £75 per employee per annum to support the cost of the delivery of a workplace orientated Full Travel Plan.

6.4.5 The Travel Plan budget should also include for NCC annual charges to undertake a Travel Planning Assessment & Review over the Travel Plan Delivery Period (minimum of 5 years).

6.4.6 Monitoring of the use of the Travel Plan operational budget will be carried out by the TPC, with details of annual spending on travel initiatives and current budget position recorded and set out within the Travel Plan Progress Report provided to NCC Travel Plan Team as part of the Travel Plan review process (see section 7.4 to this report).

7.0 SETTING TARGETS AND MONITORING PROGRESS

7.1 Introduction

7.1.1 In order to gain an understanding of the influence of the Travel Plan and to measure the plan's progress in encouraging sustainable travel patterns, monitoring of both staff & customer travel trends at the Barnard Road food store site will be undertaken at regular intervals, with a view to site operation meeting appropriate voluntary Travel Plan targets. Section 1 to this report identifies that the key objectives of a Travel Plan are to reduce single occupancy staff car journeys to / from development and to encourage the increased use of a wider range of more sustainable travel modes by both staff and customer where practical. Targets for the Travel Plan will therefore focus on these key objectives, and reflect the principles of 'SMART' objectives, i.e.

- **S**pecific;
- **M**easurable;
- **A**chievable;
- **R**elevant; and
- **T**ime-bound.

7.2 Travel Plan Targets

7.2.1 As baseline travel trends for the development are not currently available, a temporary target to seek to reduce staff car use to / from the site at a level 5% below existing background travel trends for the local area (based on available 2011 census travel trends) has been identified. 2011 census travel trends for 'journey to work' movements with a work origin within the immediate vicinity of the Barnard Road site (Norwich Census Super Output Area 0005), which includes for the adjacent Bowthorpe employment zone, identifies the following baseline mode share:

Table TP7.1: Recorded Journey to Work Modal Split Proportions from the 2011 Census (Not including work from home)

Travel Mode	Mode Share
Train	0.3%
Bus, minibus or coach	3.9%
Taxi	0.1%
Motorcycle, scooter or moped	1.3%
Driving a car or van	72.0%
Passenger in a car or van	4.6%
Bicycle	6.3%
On foot	11.4%
Other method of travel to work	0.2%

7.2.2 Review of the 2011 Census data suggests that an initial staff travel target for the Travel Plan could be to reduce car driver levels to circa 62% of all staff car-related trip, with a corresponding increase in walking, cycling and public transport use (see **Table TP7.2** below).

Table TP7.2: Suggested Preliminary Staff Travel Mode Split Targets (At end of Travel Plan Delivery Period)

Travel Mode	Mode Share
Train	*0.4%*
Bus, minibus or coach	*5.2%*
Taxi	*0.2%*
Motorcycle, scooter or moped	*1.7%*
Driving a car or van	**62.0%**
Passenger in a car or van	*6.2%*
Bicycle	*8.5%*
On foot	*15.4%*
Other method of travel to work	*0.3%*

7.2.3 Following the completion of the first Travel Survey exercise (see section 7.3 below), it is proposed that this preliminary target is reviewed, and appropriate SMART targets set in liaison with the NCC Travel Plan Team, based upon the recorded site-specific baseline data. Any revised targets will be referenced in subsequent Travel Plan Performance Reports.

7.2.4 Site specific customer travel targets will also be identified following this initial survey exercise.

7.2.5 Progress towards targets will be monitored via regular update surveys (see section 7.3), with short term targets acting as a guide to the general progress of the Travel Plan.

7.2.6 Should it become clear that targets will not be achievable, or indeed have already been met, then they should be reviewed in conjunction with the NCC Travel Plan Team, and new objectives set.

7.3 Schedule of Monitoring

7.3.1 Information on mode choice, car occupancy, etc. will be regularly surveyed by the TPC as part of a programme of data collection / survey exercises. It is proposed that regular surveys are undertaken over the final agreed Travel Plan delivery period (minimum of 5 years) to identify any changes in travel trends as a result of the implementation and continued operation of the Travel Plan when compared to the baseline position following initial store opening.

7.3.2 NCC Travel Plan Guidance sets out advice as to the nature of monitoring appropriate to support workplace Travel Plans, including a suggested monitoring schedule. This identifies that Travel Plan monitoring should be undertaken immediately after first opening of the development and repeated annually (typically in September) for the duration of the Travel Plan delivery period. The first monitoring survey should be a multi-modal survey, with this survey specification implemented every other year, viz:

- Opening Year: Multi-modal survey
- Year 2: Travel survey
- Year 3: Multi-modal survey
- Year 4: Travel survey
- Year 5: Multi-modal survey

7.3.3 NCC Travel Plan Guidance sets out the format of the survey information required to be collected, as part of standard annual travel survey exercises and for multi-modal survey years. Final survey specification at the Barnard Road site would be

agreed with the NCC Travel Plan Team as part of the development of the final Full Travel Plan to support store opening and operation. Separate survey exercises should be carried out to allow for the identification of both staff and customer travel trends and requirements.

7.4 Review Procedure

7.4.1 Review of the operation of the Travel Plan will be undertaken by the TPC every year in discussion with the NCC Travel Plan Team, based on the results of the identified monitoring (travel survey) programme. This review shall assess the progress of the Travel Plan with respect to targets and consider the take up / effectiveness of individual measures. This annual review may identify areas within the Travel Plan which require changes or modification.

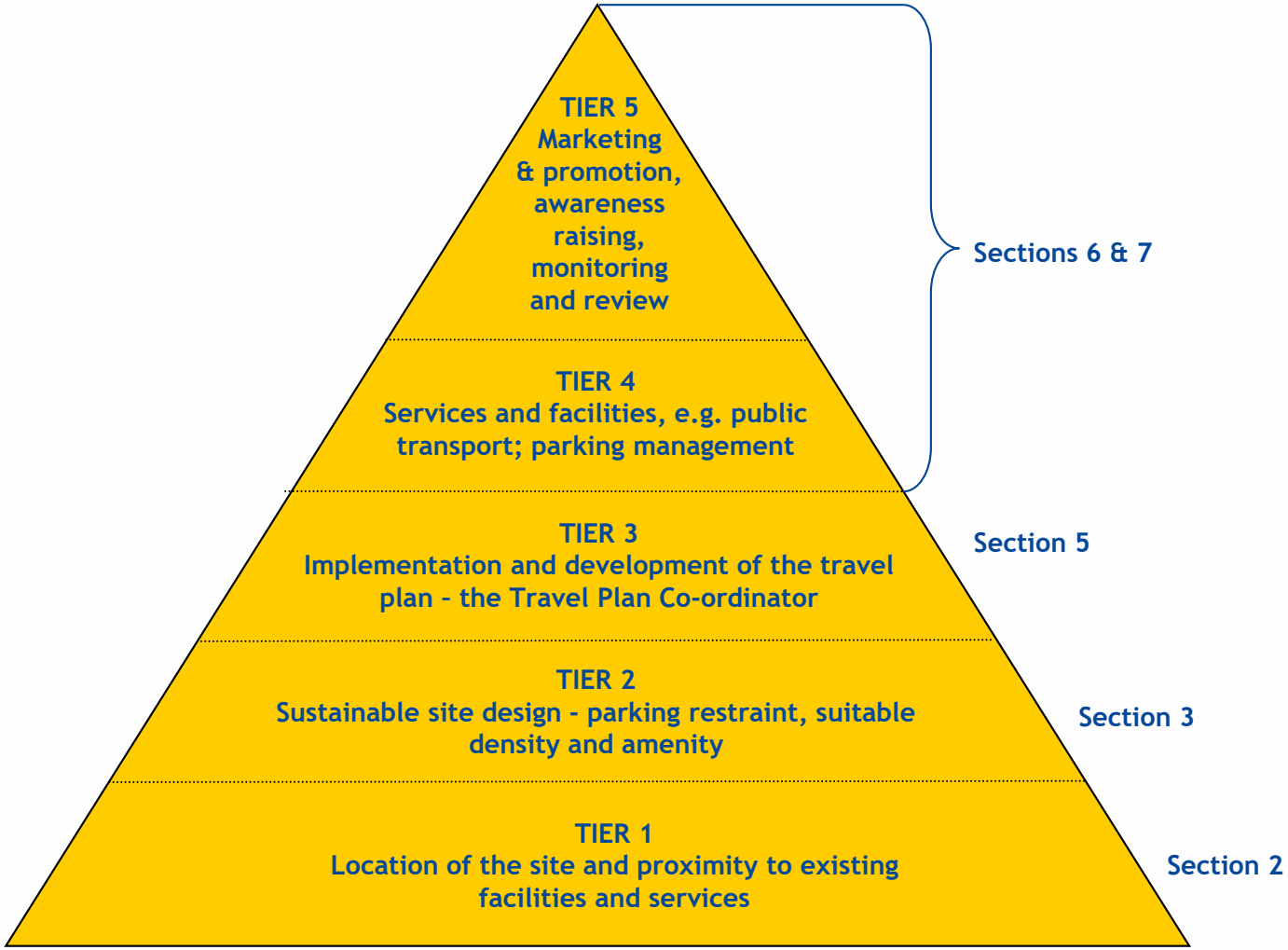
7.4.2 To assist the review process, the site TPC will prepare a short Travel Plan Performance Report for submission to the NCC Travel Plan Team. It is envisaged that this report would be prepared annually for core Travel Plan delivery period and would include the following information:

- The results of the most recent travel surveys with respect to targets.
- The general effectiveness of current initiatives within the Travel Plan.
- Those measures within the Travel Plan which are proposed to be continued into the next year / those measures to be dropped.
- Details of any new travel initiatives to be pursued at the site.
- The Travel Plan budget position.

7.4.3 Lidl GB Ltd will pay an annual NCC Travel Plan assessment and review fee over the Travel Plan delivery period.

FOCUS
TRANSPORT PLANNING

FIGURES



FOCUS TRANSPORT PLANNING

Figure TP1 **DfT Travel Plan Pyramid**



FOCUS TRANSPORT PLANNING

Figure TP2 **Site Location: Strategic Context**

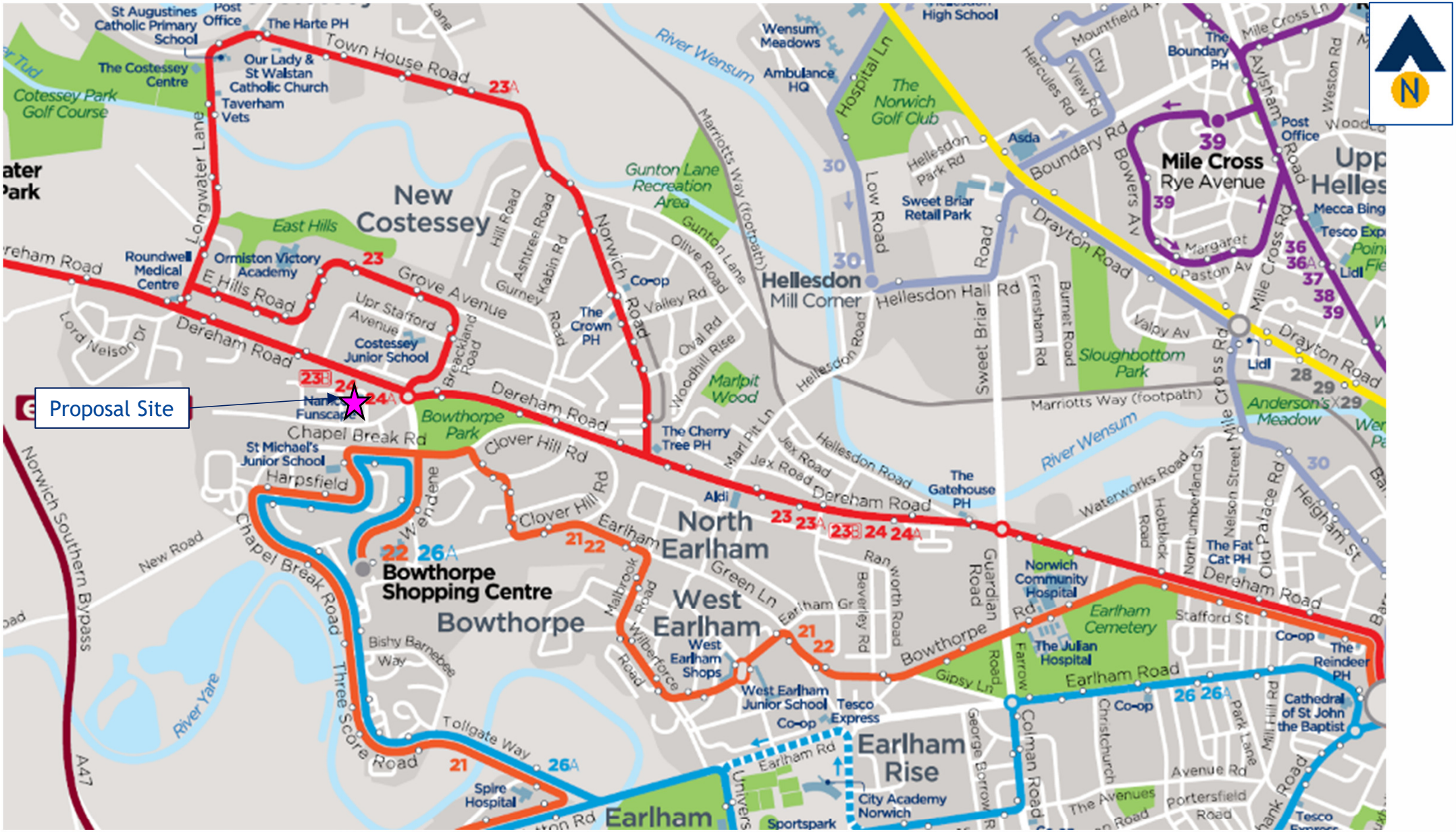
J000420 Land off Barnard Road, Norwich October 2023

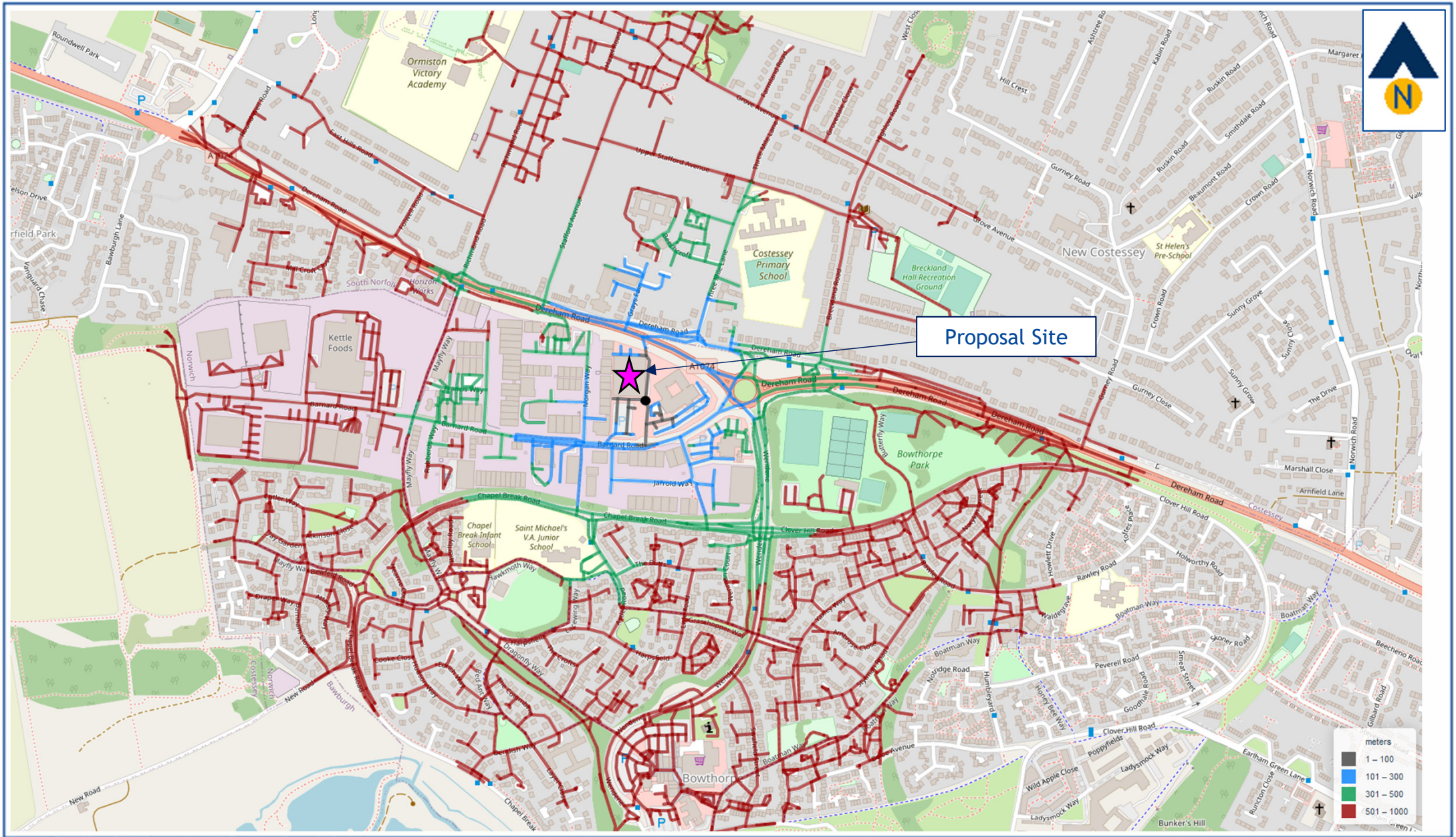


FOCUS TRANSPORT PLANNING

Figure TP3 **Site Location: Immediate Context**

J000420 Land off Barnard Road, Norwich October 2023


Proposal Site
New Costessey
Hellesdon
Mill Corner
Bowthorpe
Bowthorpe Shopping Centre
North Earlham
West Earlham
Earlham Rise
Earlham
Mile Cross
Rye Avenue
Upp
Helles
Gunton Lane Recreation Area
East Hills
Bowthorpe Park
Marlpit Wood
Sloughbottom Park
Anderson's Meadow
Earlham Cemetery
The Norwich Golf Club
Cotessey Park Golf Course
Wensum Meadows
River Wensum
River Yare
Marriotts Way (footpath)
Longwater Lane
Dereham Road
Chapel Break Rd
Town House Road
Norwich Road
Hellesdon Hall Rd
Drayton Road
Boundary Rd
Bowers Av
Mile Cross Rd
Hospital Ln
Low Road
Sweet Briar Road
Earlham Road
Bowthorpe Rd
Clover Hill Rd
Earlham Green Ln
Tollgate Way
Three Score Road
Norwich Southern Bypass
A47
Hellesdon High School
Ambulance HQ
Asda
Sweet Briar Retail Park
Roundwell Medical Centre
Ormiston Victory Academy
Costessey Junior School
St Augustines Catholic Primary School
Post Office
The Harte PH
Our Lady & St Walstan Catholic Church
Taverham Vets
The Costessey Centre
St Michael's Junior School
Harpsfield
Co-op
The Crown PH
The Cherry Tree PH
Aldi
The Gatehouse PH
The Boundary PH
Lidl
The Fat Cat PH
Norwich Community Hospital
The Julian Hospital
West Earlham Shops
West Earlham Junior School
Tesco Express
Spire Hospital
City Academy Norwich
Sportspark
Cathedral of St John the Baptist
The Reindeer PH
Mecca Bingo
Tesco Express
Lidl
23
23A
24
24A
21
22
26
26A
30
39
36
36A
37
38
28
29
Figure TP4
Available Local Bus Services from a Short Walk From the Proposal Site
J000420
Land off Barnard Road, Norwich
October 2023



FOCUS TRANSPORT PLANNING

Figure TP5 **1km Practical Walk Catchment to / from the Proposal Site**

J000420 Land off Barnard Road, Norwich October 2023

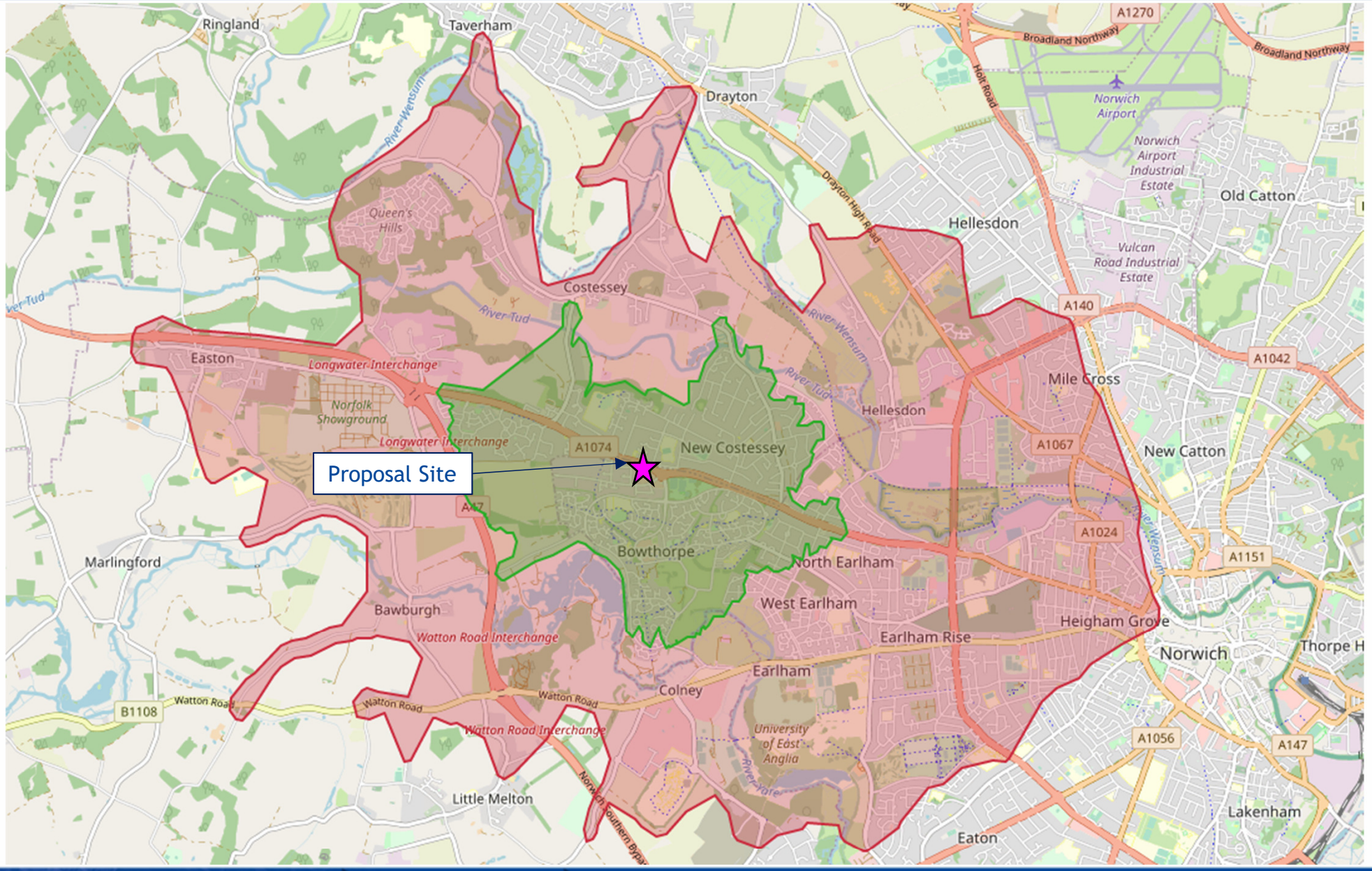


Figure TP6 **2km & 5km Cycle Catchment to / from the Proposal Site**

J000420 Land off Barnard Road, Norwich October 2023



FOCUS TRANSPORT PLANNING

Figure TP7 **Available Cycle Infrastructure Within a Local Cycle Catchment of the Proposal Site**

J000420 Land off Barnard Road, Norwich October 2023

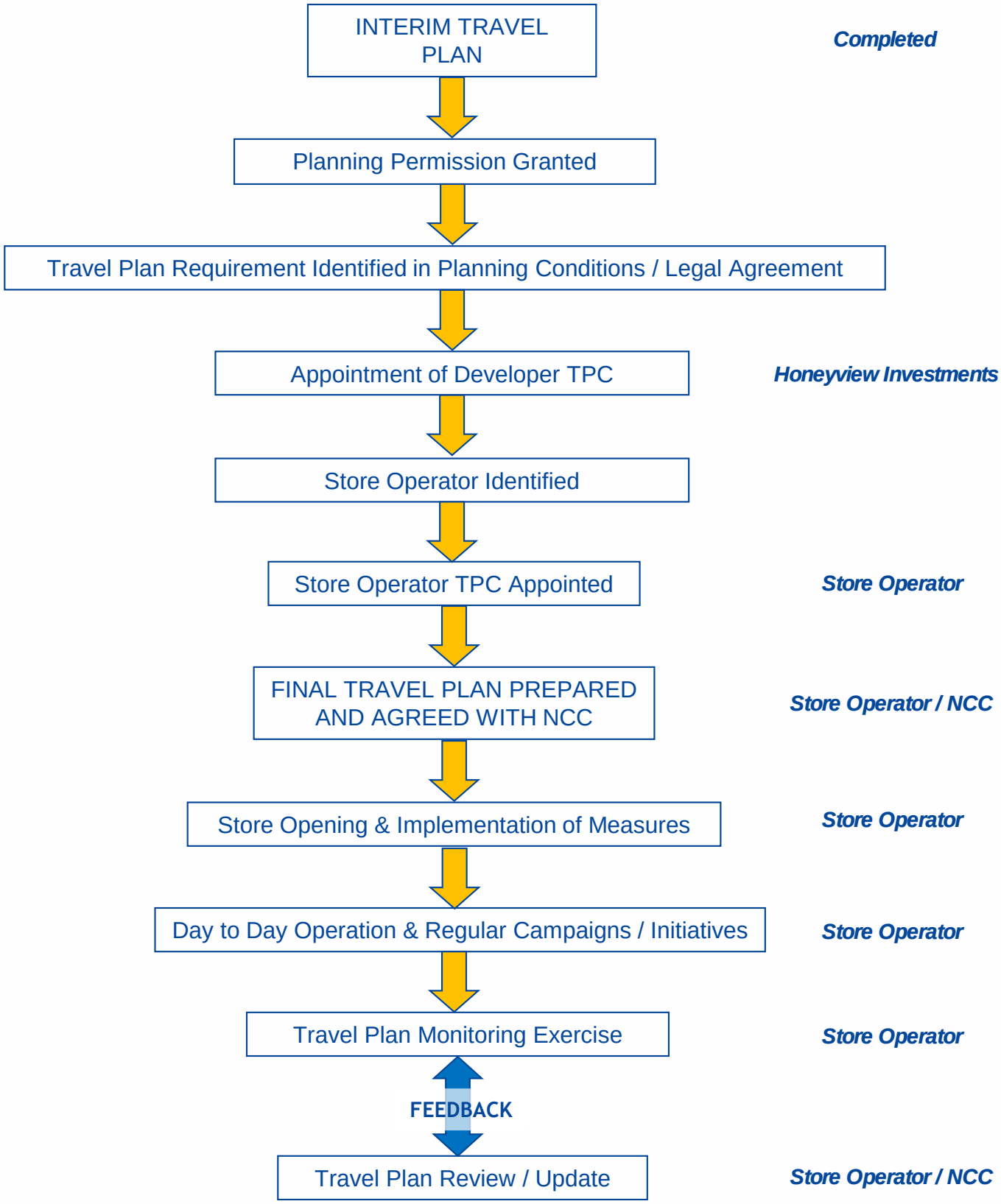


FIGURE TP8 **Travel Plan Implementation Programme**

J000420 Land off Barnard Road, Norwich June 2023

FOCUS
TRANSPORT PLANNING

APPENDICES



APPENDIX TP1

Appendix 2: Workplace Travel Plan Checklist

Norfolk County Council
Workplace Travel Plan Checklist

Development name and location:	Barnard Road - Foodstore
Planning application number	
Date:	04/10/23

Compliant ☑ requires further information ☐

* To be reviewed as part of drafting of FULL TRAVEL PLAN

1. Description of location, size and type of establishment

a. Number of employees the travel plan represents or will represent: ☑*
b. A written description of the locality of the establishment: ☑
c. Type and category of the Business: Warehouse, Factory, retail etc. ☑
d. Site audit – list of facilities and site map, nearest bus stops etc. ☑*
e. List of travel issues or barriers to sustainable travel and how the Travel Plan will mitigate these ☑
f. Reason for submission of travel plan Required for planning permission, expansion, or to resolve issues: ☑

2. Survey results and modal spilt data *

a. The supplied data should not be more than two years old ☐
b. Date survey undertaken or of modal spilt data: ☐
c. Survey of how people usually travel to the establishment: ☐
d. Type of survey – online, paper, hands up or information on how modal split data has been calculated: ☐
e. Report numbers surveyed as well as numbers responded ☐
f. Data should be as up to date as possible ☐

3. Clearly defined objectives and targets

a. Clear objectives (i.e. statements of intent – what we want to achieve) ☑
b. stated within the text and linked back to the issues and barriers identified: ☑
c. Clear targets (i.e. a specific point which we want to reach by a stated time) that reflects the survey data and issues identified, linked to the objectives ☑*
d. Specific trip rate reduction targets aligned to NCC targets ☐*
e. They are 'SMART' Specific, Measurable, Achievable, Realistic, Timed: ☑

4. Details of proposed measures, budget and campaigns

a. A clear outline of specific measures to be introduced to meet the travel plan objectives and targets: ☑
b. For commercial developments exceeding 200 **employees**' provision of a car club vehicle is included (only applies to Norwich City area) ☐ N/A
c. The cost of each measure and how this will be funded contained within an Action Pan of initiatives to promote sustainable travel (this should also include the cost of the Travel Plan Coordinator) ☐ *

5. Detailed timetable for implementation

a. Clearly state when the action or activity will be completed or undertaken: ☑
b. State a month and year or a specific date: ☑
c. Specify within the Travel Plan that reports to NCC will be submitted each year

6. Clearly defined responsibilities

a. Agree date of not less than one month prior to occupation for meeting with the Travel Plan Coordinator ☑
b. **Developer's responsibility** defined ☑
c. **Occupiers' responsibility** defined ☑
d. Travel Plan Coordinator to be appointed ☑
e. Schedule for travel plan meetings ☐ *

7. Evidence that all key groups and individuals have been consulted

Who was consulted and how? ☐

8. Travel Plan Review and Monitoring proposals

a. Date of annual survey - will be in September ☑
b. State who (i.e., a specific role) is responsible for ensuring both surveys and reviews will be completed ☑
c. The travel plan must include a commitment that any review will consider travel needs arising from new developments and transport provision and that the Travel Plan will be revised to take account of these: ☑
d. Applicant agrees to meet the County Councils fees of £620 pa in respect of review, updates and assistance with the Travel Plans. ☑

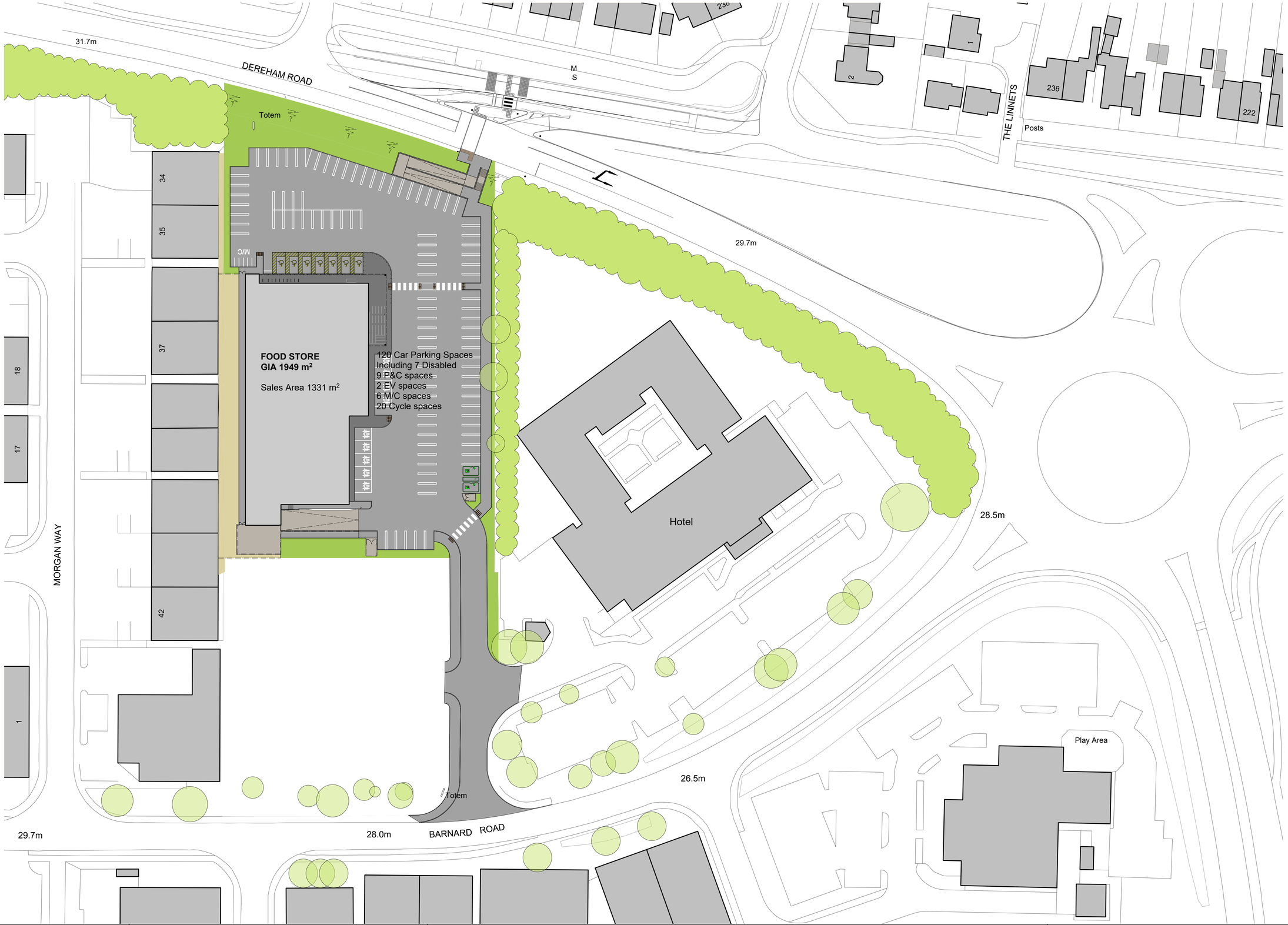
9. Signatures of the owners and management from the establishment

a. Developer or Client name and contact details ☑
b. Travel Plan Coordinator – name and contact details ☐*
c. NCC name and contact ☐*

Comments - dated
Please note that NCC is here to help you in compiling this travel plan, assisting with additional ideas and initiatives to encourage a greater use of sustainable and shared transport for the proposed site. developer.services@norfolk.gov.uk



APPENDIX TP2



NORTH

0 5.0 10.0 15.0 20.0 25.0 50.0m

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Rev.	Description	Date	Drawn	Chk.
P-00	ISSUED FOR PLANNING	18.10.23	DC	CW

Client
Williams Group

Project
Barnard Road
Norwich

Drawing Title
Proposed Site Plan

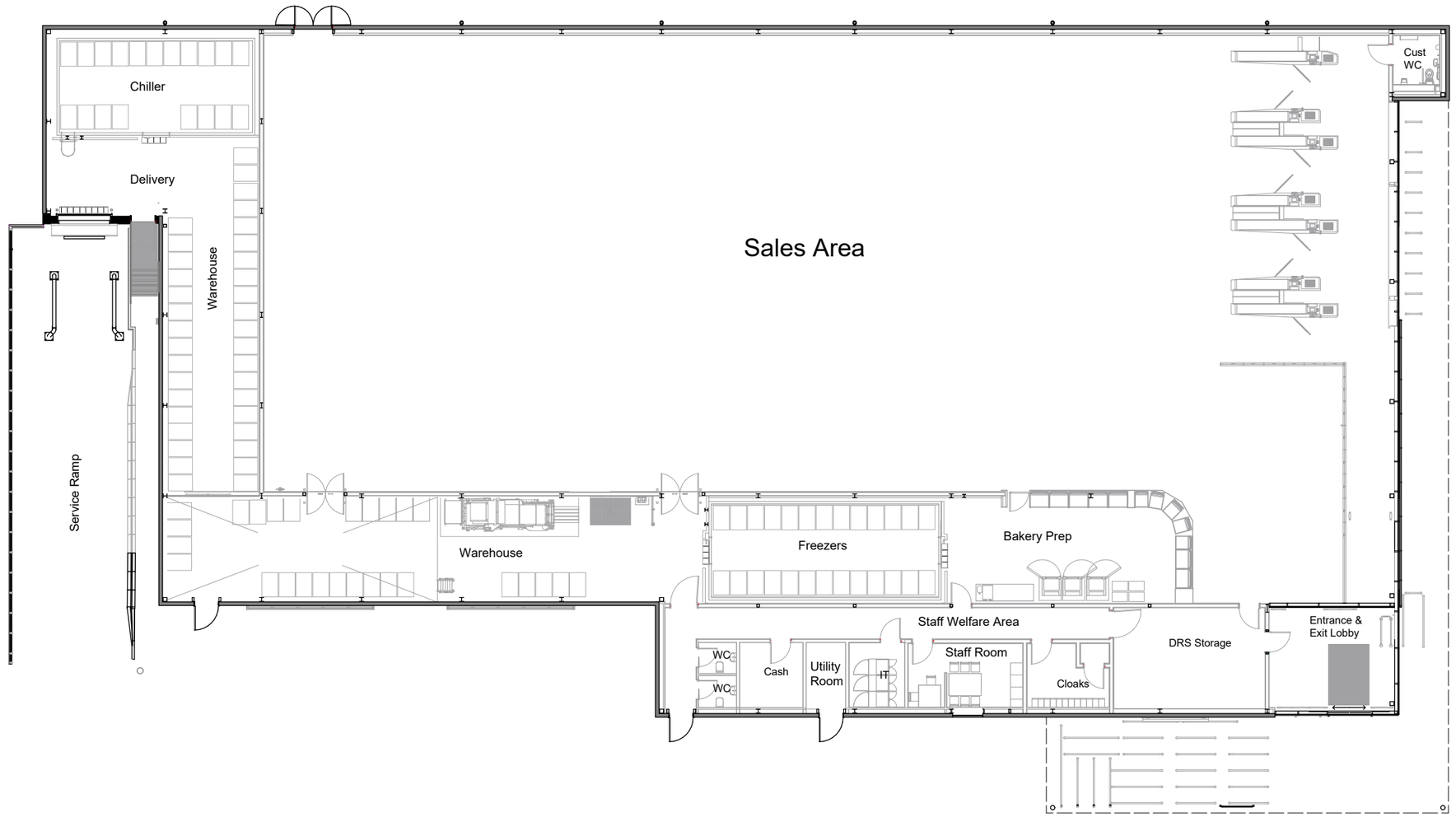
Drawing Status
PLANNING

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Drawing No.	Revision
19408-300	P-00

Drawn	Checked	Paper Size	Scale	Date
DC	CW	A1	1:500	OCT 23



0 2.5 5.0 7.5 10.0 12.5 17.5m

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Rev.	Description	Date	Drawn	Chk.
P-00	ISSUED FOR PLANNING	18.10.23	DC	CW

Client
Willaims Group

Project
Barnard Road,
Norwich

Drawing Title
Proposed Ground Floor Plan

Drawing Status
PLANNING

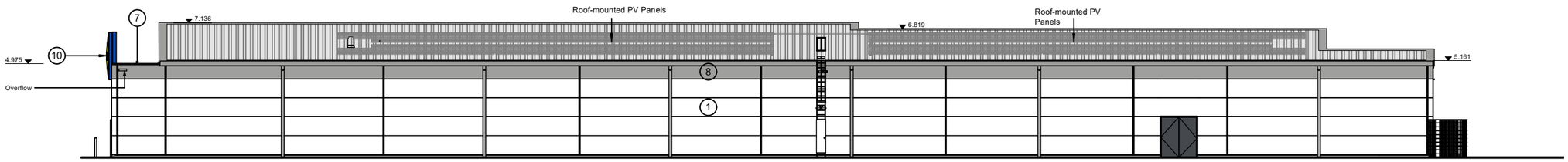
Corstorphine & Wright

Warwick Studio
Brook Hall, Brook Street, Warwick, CV34 4BL
01926 658 444
corstorphine-wright.com

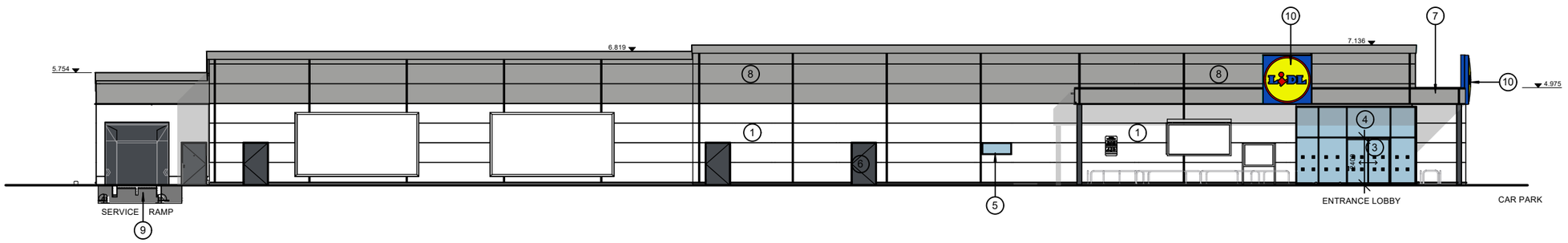
Drawing No.	Revision
19408-302	P-00

Drawn	Checked	Paper Size	Scale	Date
DC	CW	A3	1:250	OCT 2023

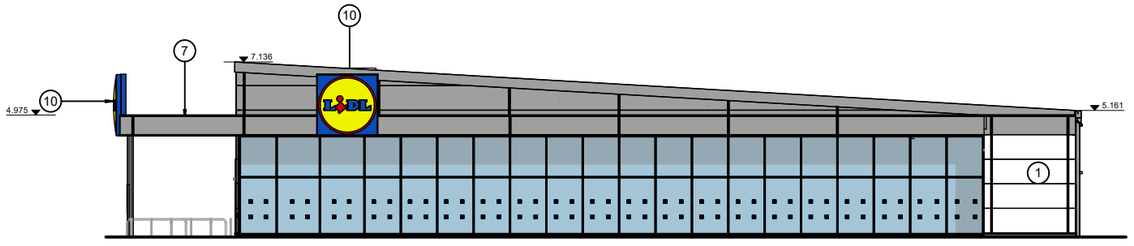
All signage indicative subject to a separate application for advertising consent



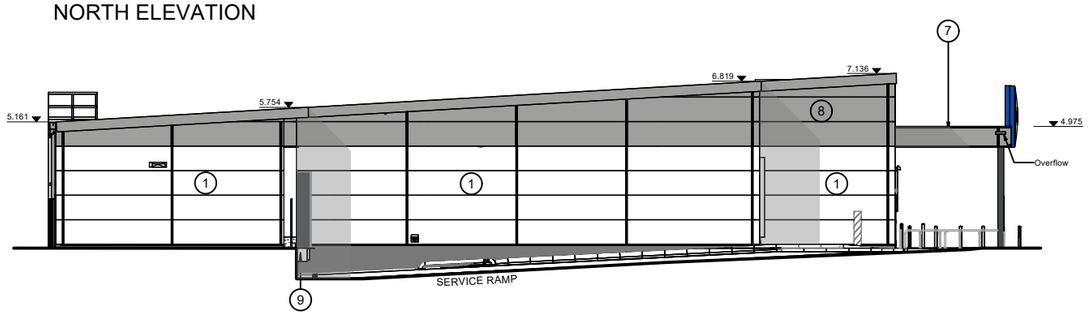
WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION

1. WALL CLADDING PANELS - METAL INSULATED COMPOSITE PANELS COLOUR WHITE RAL9010
2. 3° PITCH ROOF. PROFILED COMPOSITE METAL COLOUR ALUMINIUM RAL 9006
3. POWDER COATED ALUMINIUM FRAMED GLAZED ENTRANCE LOBBY WITH AUTOMATIC DOORS COLOUR: GREY RAL7024
4. POWDER COATED ALUMINIUM FRAMED GLAZED SHOPFRONT COLOUR: GREY RAL7024
5. POWDER COATED ALUMINIUM FRAMED WINDOWS COLOUR: GREY RAL7024
6. POWDER COATED STEEL DOOR COLOUR: GREY RAL7024
7. EAVES, SOFFITS AND FASCIA PANELS COLOUR ALUMINIUM RAL9006
8. WALL CLADDING PANELS - METAL INSULATED COMPOSITE PANELS COLOUR ALUMINIUM RAL9006
9. MINI DOCK LEVELLER
10. INTERNALLY ILLUMINATED LIDL SIGNAGE

0 2.5 5.0 7.5 10.0 12.5 17.5m

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Rev.	Description	Date	Drawn	Chk.
P-00	ISSUED FOR PLANNING	18.10.23	DC	CW

Client
Willaims Group

Project
Barnard Road,
Norwich

Drawing Title
Proposed Elevations

Drawing Status
PLANNING

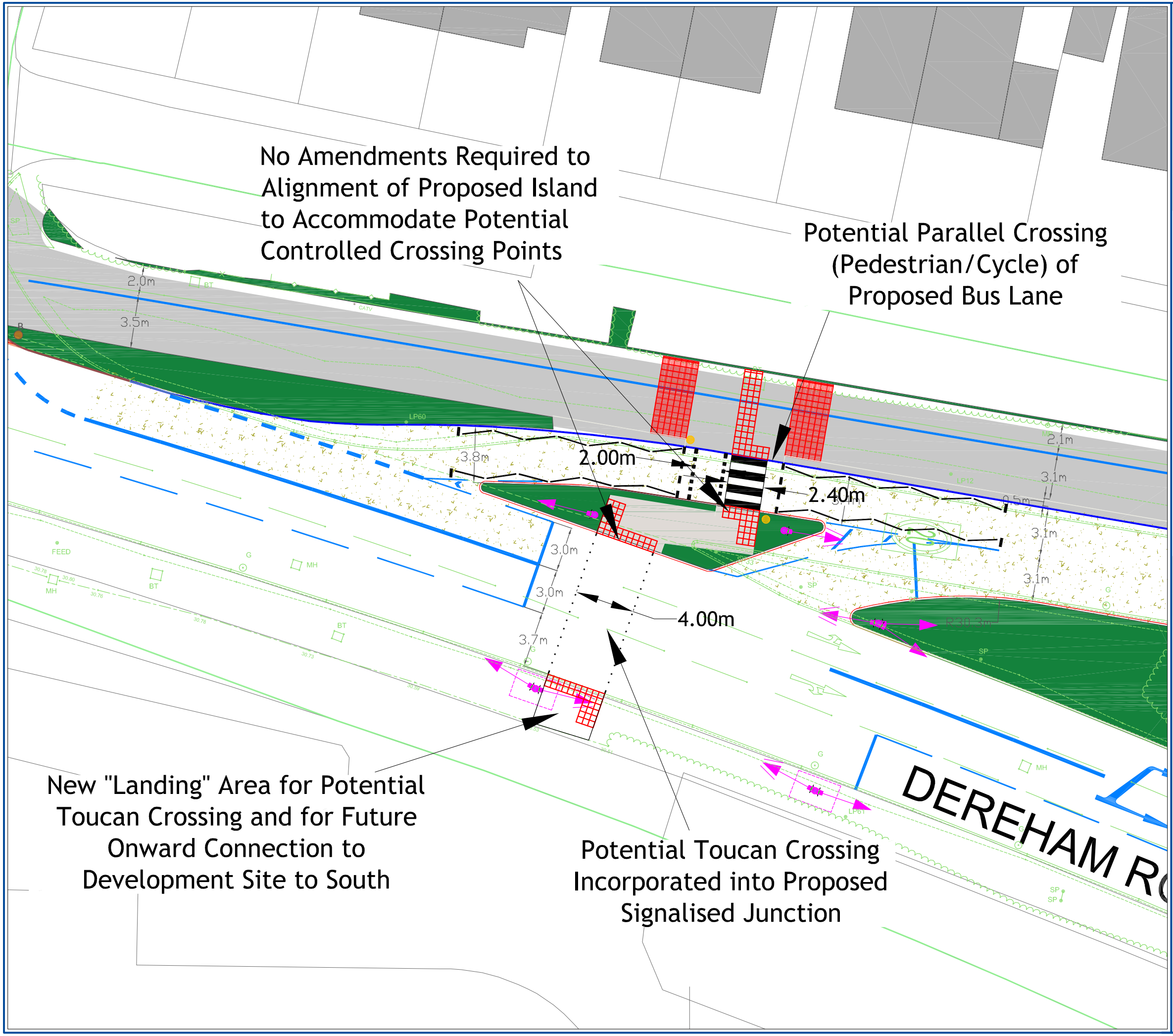
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19408-304	P-00

Drawn	Checked	Paper Size	Scale	Date
DC	CW	A3	1:250	OCT 2023



APPENDIX TP3



Revision:
A -
-

Client:
Honeydew Investments

Project:
Land at Barnard Road, Norwich
Proposed New Discount Food Store

Drawing Title:
Pedestrian / Cycle Crossing
Integration into NCC Travel Hub
Western Bus Gate Scheme - OPTION 1

Drawing Number: J000420-SK001
Revision: -

Date: 04.08.23
Scale: 1:250 (A3)

Drawn By: MH
Checked By: APB

Status: Information

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Village Way, Wilmslow
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0161 826 4631
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FOCUS TRANSPORT PLANNING



APPENDIX TP4

BARNARD ROAD FOOD STORE - TRAVEL PLAN

SCHEDULE OF SITE TPM DUTIES / ACTION PLAN

Setting Up

Task	Implementation Date	Completed?
Appoint Store Operator TPC	At least 4 months prior to store opening	
Set up Travel Plan Working File	At least 4 months prior to store opening	
Deliver on-site cycle parking and walking routes	During construction of development	

Initial Travel Plan Launch

Task	Implementation Date	Completed?
Contact NCC Travel Plan team / public transport operators and obtain up-to-date timetables and literature & investigate opportunities for staff season ticket promotions	3 months prior to store opening	
Prepare cycle & walking Maps	3 months prior to store opening	
Contact store operator management to investigate procedures for cycle to work loan scheme, public transport season ticket loan scheme and emergency ride home scheme.	3 months prior to store opening	
Collate all information for inclusion in STIP. Submit to NCC for review and agreement.	2 months prior to store opening	
Update STIP and circulate information to staff members on appointment	4 weeks prior to store opening	
Provide personal journey planning input for individual staff that request assistance.	As required. From 4 weeks prior to store opening.	
Install Transport Information Noticeboard and install on site in staff area	At least 2 weeks prior to store opening	
Review cycle provision on-site to ensure completion and fit for purpose	2 weeks prior to store opening	

On-going TPM Duties (Over Life Time of Plan)

Task	Implementation Date	Completed?
Provide promotional travel data and health campaign information in STIP and on noticeboards, Update as necessary.	Formal review every 3 months	
Check public transport timetable / ticket information and update STIP & noticeboards. Update as necessary.	Formal review every 3 months	
Ensure on-site cycle facilities are maintained and fit for purpose	Formal review every 3 months	
Promote and support national campaigns as appropriate	Review annually	
Provide access to STIP for all new members of staff taken on by the business	As required	

BARNARD ROAD FOOD STORE - TRAVEL PLAN

SCHEDULE OF SITE TPM DUTIES / ACTION PLAN

Monitoring Schedule

Initial Travel Survey

Task	Implementation Date	Completed?
Submit baseline travel survey staff & customer questionnaires to NCC Travel Plan Team. Agree and schedule survey period.	3 months post store opening	
Undertake multi-modal store travel survey to capture all trips to / from site	3 months post store opening	
Prepare survey review / performance report & issue to NCC Travel Plan Team.	2 months post completion of initial traffic survey exercise	
Undertake Travel Plan Audit and modify where appropriate	Following survey	
Report conclusions of survey and any relevant updates of Travel Plan to staff	Following issue of Travel Plan Progress Report.	

Further Monitoring: Development Operation (Minimum 5-Years Post Opening)

Task	Implementation Date	Completed?
Undertake survey of staff / customers	Every year for first five years. Every second year include for multi-modal survey of site operation.	
Prepare survey review / performance report & issue to NCC Travel Plan Team.	2 months post completion of initial traffic survey exercise	
Undertake Travel Plan Audit and modify where appropriate	Following survey	
Report conclusions of survey and any relevant updates of Travel Plan to staff	Following issue of Travel Plan Progress Report.	



APPENDIX TA10

Discount Food Store

Weekday

Proposed Development: 1949 sqm GFA

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES

Calculation Factor: 100 sqm

Count Type: TOTAL VEHICLES

			Rates per dwelling			Trip Demand - Average Trip Rates		
	Survey	Ave.	Arrivals	Departures	Total	Arrivals	Departures	Total
Time Range	Days	GFA	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate
00:00-01:00	0	0	0	0	0	0	0	0
01:00-02:00	0	0	0	0	0	0	0	0
02:00-03:00	0	0	0	0	0	0	0	0
03:00-04:00	0	0	0	0	0	0	0	0
04:00-05:00	0	0	0	0	0	0	0	0
05:00-06:00	0	0	0	0	0	0	0	0
06:00-07:00	2	1871	0.454	0	0.454	9	0	9
07:00-08:00	15	1965	0.512	0.156	0.668	10	3	13
08:00-09:00	15	1965	2.752	1.775	4.527	54	35	88
09:00-10:00	15	1965	3.512	3.115	6.627	68	61	129
10:00-11:00	15	1965	4.208	3.699	7.907	82	72	154
11:00-12:00	15	1965	4.690	4.445	9.135	91	87	178
12:00-13:00	15	1965	4.801	4.808	9.609	94	94	187
13:00-14:00	15	1965	4.822	5.090	9.912	94	99	193
14:00-15:00	15	1965	4.774	4.873	9.647	93	95	188
15:00-16:00	15	1965	4.920	5.002	9.922	96	97	193
16:00-17:00	15	1965	4.642	4.852	9.494	90	95	185
17:00-18:00	15	1965	4.798	4.964	9.762	94	97	190
18:00-19:00	15	1965	3.851	4.337	8.188	75	85	160
19:00-20:00	15	1965	2.823	3.115	5.938	55	61	116
20:00-21:00	15	1965	1.690	2.226	3.916	33	43	76
21:00-22:00	15	1965	0.573	0.875	1.448	11	17	28
22:00-23:00	14	2010	0.014	0.185	0.199	0	4	4
23:00-24:00	0	0	0	0	0	0	0	0
12hour (07-19)			48.282	47.116	95.398	**941**	**918**	**1859**
24hour (00-24)			53.836	53.517	107.353			

Average Trip Rates

	In	Out	Total
Weekday Mid	4.920	5.002	9.922
Weekday PM	4.642	4.808	9.450
12hr (07-19)	48.282	47.116	95.398

	In	Out	Total
Weekday Mid	96	97	193
Weekday PM	90	94	184
12hr (07-19)	941	918	1859

Site Search Criteria: UK only (excluding Greater London & Eire)
1200 - 2500 sqm GFA
No Town Centre / Edge of Town Centre sites
No Covid Period Surveys
No Covid Period Surveys

Focus Transport Planning Village Way Wilmslow Licence No: 506501

Filtering Summary

Land Use	01/C	RETAIL/DISCOUNT FOOD STORES
Selected Trip Rate Calculation Parameter Range	1200-2500 sqm GFA	
Actual Trip Rate Calculation Parameter Range	1325-2440 sqm GFA	
Date Range	Minimum: 01/01/15	Maximum: 19/11/22
Parking Spaces Range	All Surveys Included	
Days of the week selected	Tuesday	5
	Wednesday	3
	Thursday	4
	Friday	3
Main Location Types selected	Suburban Area (PPS6 Out of Centre)	3
	Edge of Town	8
	Neighbourhood Centre (PPS6 Local Centre)	4
Inclusion of Servicing Vehicles Counts	Servicing vehicles Included	12 - Selected
	Servicing vehicles Excluded	8 - Selected
Population within 500m	All Surveys Included	
Population <1 Mile ranges selected	1,001 to 5,000	1
	5,001 to 10,000	4
	10,001 to 15,000	2
	15,001 to 20,000	1
	20,001 to 25,000	1
	25,001 to 50,000	5
	50,001 to 100,000	1
Population <5 Mile ranges selected	5,001 to 25,000	1
	25,001 to 50,000	2
	50,001 to 75,000	1
	75,001 to 100,000	2
	100,001 to 125,000	1
	125,001 to 250,000	3
	250,001 to 500,000	3
	500,001 or More	2
Car Ownership <5 Mile ranges selected	0.6 to 1.0	7
	1.1 to 1.5	6
	1.6 to 2.0	1
	2.1 to 2.5	1
PTAL Rating	No PTAL Present	15

Calculation Reference: AUDIT-506501-230629-0659

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL
Category : C - DISCOUNT FOOD STORES
TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	SO	SLOUGH	1 days
	WS	WEST SUSSEX	3 days
03	SOUTH WEST		
	SM	SOMERSET	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	1 days
05	EAST MIDLANDS		
	NN	NORTH NORTHAMPTONSHIRE	1 days
	NT	NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	2 days
	WO	WORCESTERSHIRE	1 days
09	NORTH		
	TW	TYNE & WEAR	2 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	1 days

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

Primary Filtering selection:

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

Parameter: Gross floor area
Actual Range: 1325 to 2440 (units: sqm)
Range Selected by User: 1200 to 2500 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/15 to 19/11/22

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	5 days
Wednesday	3 days
Thursday	4 days
Friday	3 days

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

Selected survey types:

Manual count	15 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:

Suburban Area (PPS6 Out of Centre)	3
Edge of Town	8
Neighbourhood Centre (PPS6 Local Centre)	4

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

Selected Location Sub Categories:

Industrial Zone	3
Development Zone	2

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

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	12 days - Selected
Servicing vehicles Excluded	8 days - Selected

Secondary Filtering selection:

Use Class:

E(a)	15 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

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	4 days
10,001 to 15,000	2 days
15,001 to 20,000	1 days
20,001 to 25,000	1 days
25,001 to 50,000	5 days
50,001 to 100,000	1 days

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

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	2 days
50,001 to 75,000	1 days
75,001 to 100,000	2 days
100,001 to 125,000	1 days
125,001 to 250,000	3 days
250,001 to 500,000	3 days
500,001 or More	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	7 days
1.1 to 1.5	6 days
1.6 to 2.0	1 days
2.1 to 2.5	1 days

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

Petrol filling station:

Included in the survey count	0 days
Excluded from count or no filling station	15 days

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

Travel Plan:

Not Known	1 days
Yes	5 days
No	9 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	15 days

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

LIST OF SITES relevant to selection parameters

1 AN-01-C-02 LIDL ANTRIM
BELFAST ROAD
CARRICKFERGUS

Edge of Town
Development Zone
Total Gross floor area: 1325 sqm
Survey date: WEDNESDAY *12/10/16* *Survey Type: MANUAL*

2 CA-01-C-01 LIDL CAMBRIDGESHIRE
CROMWELL ROAD
WISBECH

Edge of Town
Retail Zone
Total Gross floor area: 1466 sqm
Survey date: FRIDAY *21/10/16* *Survey Type: MANUAL*

3 NF-01-C-01 LIDL NORFOLK
AYLSHAM ROAD
NORWICH

Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Gross floor area: 2555 sqm
Survey date: FRIDAY *29/11/19* *Survey Type: MANUAL*

4 NN-01-C-01 ALDI NORTH NORTHAMPTONSHIRE
SAXON WAY WEST
CORBY
GREAT OAKLEY
Edge of Town
Development Zone
Total Gross floor area: 1924 sqm
Survey date: TUESDAY *14/06/22* *Survey Type: MANUAL*

5 NT-01-C-01 LIDL NOTTINGHAMSHIRE
CHAPEL LANE
BINGHAM

Edge of Town
Industrial Zone
Total Gross floor area: 2440 sqm
Survey date: FRIDAY *15/07/16* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

6 SM-01-C-01 LIDL SOMERSET
SEAWARD WAY
MINEHEAD

Edge of Town
No Sub Category
Total Gross floor area: 2247 sqm
Survey date: THURSDAY *22/06/17* *Survey Type: MANUAL*

7 SO-01-C-01 LIDL SLOUGH
BATH ROAD
SLOUGH
SLOUGH RETAIL PARK
Suburban Area (PPS6 Out of Centre)
Retail Zone
Total Gross floor area: 1880 sqm
Survey date: THURSDAY *22/09/22* *Survey Type: MANUAL*

8 TW-01-C-01 ALDI TYNE & WEAR
EDGEFIELD AVENUE
NEWCASTLE
FAWDON
Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Gross floor area: 1798 sqm
Survey date: TUESDAY *30/04/19* *Survey Type: MANUAL*

9 TW-01-C-02 ALDI TYNE & WEAR
FOXHUNTERS ROAD
WHITLEY BAY

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 1600 sqm
Survey date: TUESDAY *17/05/22* *Survey Type: MANUAL*

10 WM-01-C-01 LIDL WEST MIDLANDS
MACKADOWN LANE
BIRMINGHAM
KITT'S GREEN
Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Gross floor area: 2085 sqm
Survey date: TUESDAY *12/07/16* *Survey Type: MANUAL*

11 WM-01-C-02 LIDL WEST MIDLANDS
HIGH STREET
WEST BROMWICH
GUNS VILLAGE
Neighbourhood Centre (PPS6 Local Centre)
High Street
Total Gross floor area: 2085 sqm
Survey date: TUESDAY *12/07/16* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

12 WO-01-C-01 LIDL WORCESTERSHIRE
BLACKPOLE ROAD
WORCESTER
BRICKFIELDS
Edge of Town
Retail Zone
Total Gross floor area: 2417 sqm
Survey date: WEDNESDAY *13/07/16* *Survey Type: MANUAL*

13 WS-01-C-03 LIDL WEST SUSSEX
SHRIPNEY ROAD
BOGNOR REGIS

Edge of Town
Industrial Zone
Total Gross floor area: 2125 sqm
Survey date: THURSDAY *23/09/21* *Survey Type: MANUAL*

14 WS-01-C-05 LIDL WEST SUSSEX
WESTHAMPNETT ROAD
CHICHESTER

Edge of Town
Retail Zone
Total Gross floor area: 2125 sqm
Survey date: THURSDAY *08/09/22* *Survey Type: MANUAL*

15 WS-01-C-06 LIDL WEST SUSSEX
FOUNDRY LANE
HORSHAM

Suburban Area (PPS6 Out of Centre)
Industrial Zone
Total Gross floor area: 1616 sqm
Survey date: WEDNESDAY *07/09/22* *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
AD-01-C-02	covid
DE-01-C-01	covid
SR-01-C-02	covid

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	2	1871	0.454	2	1871	0.000	2	1871	0.454
07:00 - 08:00	15	1965	0.512	15	1965	0.156	15	1965	0.668
08:00 - 09:00	15	1965	2.752	15	1965	1.775	15	1965	4.527
09:00 - 10:00	15	1965	3.512	15	1965	3.115	15	1965	6.627
10:00 - 11:00	15	1965	4.208	15	1965	3.699	15	1965	7.907
11:00 - 12:00	15	1965	4.690	15	1965	4.445	15	1965	9.135
12:00 - 13:00	15	1965	4.801	15	1965	4.808	15	1965	9.609
13:00 - 14:00	15	1965	4.822	15	1965	5.090	15	1965	9.912
14:00 - 15:00	15	1965	4.774	15	1965	4.873	15	1965	9.647
15:00 - 16:00	15	1965	4.920	15	1965	5.002	15	1965	9.922
16:00 - 17:00	15	1965	4.642	15	1965	4.852	15	1965	9.494
17:00 - 18:00	15	1965	4.798	15	1965	4.964	15	1965	9.762
18:00 - 19:00	15	1965	3.851	15	1965	4.337	15	1965	8.188
19:00 - 20:00	15	1965	2.823	15	1965	3.115	15	1965	5.938
20:00 - 21:00	15	1965	1.690	15	1965	2.226	15	1965	3.916
21:00 - 22:00	15	1965	0.573	15	1965	0.875	15	1965	1.448
22:00 - 23:00	14	2010	0.014	14	2010	0.185	14	2010	0.199
23:00 - 24:00									
Total Rates:			53.836			53.517			107.353

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

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

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Parameter summary

Trip rate parameter range selected:	1325 - 2440 (units: sqm)
Survey date date range:	01/01/15 - 19/11/22
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	2
Surveys manually removed from selection:	3

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
TAXIS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	1871	0.000	2	1871	0.000	2	1871	0.000
07:00 - 08:00	15	1965	0.003	15	1965	0.003	15	1965	0.006
08:00 - 09:00	15	1965	0.017	15	1965	0.014	15	1965	0.031
09:00 - 10:00	15	1965	0.044	15	1965	0.044	15	1965	0.088
10:00 - 11:00	15	1965	0.054	15	1965	0.051	15	1965	0.105
11:00 - 12:00	15	1965	0.051	15	1965	0.051	15	1965	0.102
12:00 - 13:00	15	1965	0.064	15	1965	0.068	15	1965	0.132
13:00 - 14:00	15	1965	0.061	15	1965	0.061	15	1965	0.122
14:00 - 15:00	15	1965	0.068	15	1965	0.071	15	1965	0.139
15:00 - 16:00	15	1965	0.044	15	1965	0.037	15	1965	0.081
16:00 - 17:00	15	1965	0.044	15	1965	0.044	15	1965	0.088
17:00 - 18:00	15	1965	0.037	15	1965	0.037	15	1965	0.074
18:00 - 19:00	15	1965	0.051	15	1965	0.058	15	1965	0.109
19:00 - 20:00	15	1965	0.017	15	1965	0.017	15	1965	0.034
20:00 - 21:00	15	1965	0.014	15	1965	0.010	15	1965	0.024
21:00 - 22:00	15	1965	0.010	15	1965	0.010	15	1965	0.020
22:00 - 23:00	14	2010	0.000	14	2010	0.004	14	2010	0.004
23:00 - 24:00									
Total Rates:			0.579			0.580			1.159

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	1871	0.000	2	1871	0.000	2	1871	0.000
07:00 - 08:00	15	1965	0.007	15	1965	0.007	15	1965	0.014
08:00 - 09:00	15	1965	0.014	15	1965	0.017	15	1965	0.031
09:00 - 10:00	15	1965	0.007	15	1965	0.014	15	1965	0.021
10:00 - 11:00	15	1965	0.020	15	1965	0.007	15	1965	0.027
11:00 - 12:00	15	1965	0.014	15	1965	0.017	15	1965	0.031
12:00 - 13:00	15	1965	0.010	15	1965	0.007	15	1965	0.017
13:00 - 14:00	15	1965	0.020	15	1965	0.024	15	1965	0.044
14:00 - 15:00	15	1965	0.003	15	1965	0.010	15	1965	0.013
15:00 - 16:00	15	1965	0.003	15	1965	0.007	15	1965	0.010
16:00 - 17:00	15	1965	0.003	15	1965	0.003	15	1965	0.006
17:00 - 18:00	15	1965	0.003	15	1965	0.000	15	1965	0.003
18:00 - 19:00	15	1965	0.017	15	1965	0.017	15	1965	0.034
19:00 - 20:00	15	1965	0.014	15	1965	0.017	15	1965	0.031
20:00 - 21:00	15	1965	0.003	15	1965	0.003	15	1965	0.006
21:00 - 22:00	15	1965	0.007	15	1965	0.003	15	1965	0.010
22:00 - 23:00	14	2010	0.000	14	2010	0.000	14	2010	0.000
23:00 - 24:00									
Total Rates:			0.145			0.153			0.298

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
PSVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	1871	0.000	2	1871	0.000	2	1871	0.000
07:00 - 08:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
08:00 - 09:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
09:00 - 10:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
10:00 - 11:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
11:00 - 12:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
12:00 - 13:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
13:00 - 14:00	15	1965	0.003	15	1965	0.003	15	1965	0.006
14:00 - 15:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
15:00 - 16:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
16:00 - 17:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
17:00 - 18:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
18:00 - 19:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
19:00 - 20:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
20:00 - 21:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
21:00 - 22:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
22:00 - 23:00	14	2010	0.000	14	2010	0.000	14	2010	0.000
23:00 - 24:00									
Total Rates:			0.003			0.003			0.006

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	1871	0.000	2	1871	0.000	2	1871	0.000
07:00 - 08:00	15	1965	0.010	15	1965	0.000	15	1965	0.010
08:00 - 09:00	15	1965	0.075	15	1965	0.051	15	1965	0.126
09:00 - 10:00	15	1965	0.071	15	1965	0.048	15	1965	0.119
10:00 - 11:00	15	1965	0.102	15	1965	0.085	15	1965	0.187
11:00 - 12:00	15	1965	0.071	15	1965	0.088	15	1965	0.159
12:00 - 13:00	15	1965	0.085	15	1965	0.092	15	1965	0.177
13:00 - 14:00	15	1965	0.068	15	1965	0.071	15	1965	0.139
14:00 - 15:00	15	1965	0.068	15	1965	0.068	15	1965	0.136
15:00 - 16:00	15	1965	0.078	15	1965	0.095	15	1965	0.173
16:00 - 17:00	15	1965	0.071	15	1965	0.064	15	1965	0.135
17:00 - 18:00	15	1965	0.095	15	1965	0.092	15	1965	0.187
18:00 - 19:00	15	1965	0.075	15	1965	0.068	15	1965	0.143
19:00 - 20:00	15	1965	0.044	15	1965	0.044	15	1965	0.088
20:00 - 21:00	15	1965	0.041	15	1965	0.051	15	1965	0.092
21:00 - 22:00	15	1965	0.003	15	1965	0.027	15	1965	0.030
22:00 - 23:00	14	2010	0.004	14	2010	0.018	14	2010	0.022
23:00 - 24:00									
Total Rates:			0.961			0.962			1.923

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
CARS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	2	1871	0.454	2	1871	0.000	2	1871	0.454
07:00 - 08:00	15	1965	0.472	15	1965	0.136	15	1965	0.608
08:00 - 09:00	15	1965	2.545	15	1965	1.639	15	1965	4.184
09:00 - 10:00	15	1965	3.298	15	1965	2.925	15	1965	6.223
10:00 - 11:00	15	1965	3.984	15	1965	3.509	15	1965	7.493
11:00 - 12:00	15	1965	4.418	15	1965	4.194	15	1965	8.612
12:00 - 13:00	15	1965	4.520	15	1965	4.537	15	1965	9.057
13:00 - 14:00	15	1965	4.533	15	1965	4.791	15	1965	9.324
14:00 - 15:00	15	1965	4.544	15	1965	4.622	15	1965	9.166
15:00 - 16:00	15	1965	4.669	15	1965	4.717	15	1965	9.386
16:00 - 17:00	15	1965	4.313	15	1965	4.530	15	1965	8.843
17:00 - 18:00	15	1965	4.540	15	1965	4.717	15	1965	9.257
18:00 - 19:00	15	1965	3.580	15	1965	4.014	15	1965	7.594
19:00 - 20:00	15	1965	2.643	15	1965	2.915	15	1965	5.558
20:00 - 21:00	15	1965	1.625	15	1965	2.111	15	1965	3.736
21:00 - 22:00	15	1965	0.540	15	1965	0.838	15	1965	1.378
22:00 - 23:00	14	2010	0.014	14	2010	0.178	14	2010	0.192
23:00 - 24:00									
Total Rates:			50.692			50.373			101.065

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
LGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	2	1871	0.000	2	1871	0.000	2	1871	0.000
07:00 - 08:00	15	1965	0.031	15	1965	0.010	15	1965	0.041
08:00 - 09:00	15	1965	0.159	15	1965	0.102	15	1965	0.261
09:00 - 10:00	15	1965	0.156	15	1965	0.126	15	1965	0.282
10:00 - 11:00	15	1965	0.129	15	1965	0.115	15	1965	0.244
11:00 - 12:00	15	1965	0.180	15	1965	0.163	15	1965	0.343
12:00 - 13:00	15	1965	0.197	15	1965	0.183	15	1965	0.380
13:00 - 14:00	15	1965	0.187	15	1965	0.193	15	1965	0.380
14:00 - 15:00	15	1965	0.143	15	1965	0.153	15	1965	0.296
15:00 - 16:00	15	1965	0.193	15	1965	0.224	15	1965	0.417
16:00 - 17:00	15	1965	0.261	15	1965	0.251	15	1965	0.512
17:00 - 18:00	15	1965	0.193	15	1965	0.187	15	1965	0.380
18:00 - 19:00	15	1965	0.187	15	1965	0.231	15	1965	0.418
19:00 - 20:00	15	1965	0.146	15	1965	0.159	15	1965	0.305
20:00 - 21:00	15	1965	0.044	15	1965	0.092	15	1965	0.136
21:00 - 22:00	15	1965	0.017	15	1965	0.024	15	1965	0.041
22:00 - 23:00	14	2010	0.000	14	2010	0.004	14	2010	0.004
23:00 - 24:00									
Total Rates:			2.223			2.217			4.440

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
MOTOR CYCLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	2	1871	0.000	2	1871	0.000	2	1871	0.000
07:00 - 08:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
08:00 - 09:00	15	1965	0.014	15	1965	0.003	15	1965	0.017
09:00 - 10:00	15	1965	0.007	15	1965	0.007	15	1965	0.014
10:00 - 11:00	15	1965	0.020	15	1965	0.017	15	1965	0.037
11:00 - 12:00	15	1965	0.027	15	1965	0.020	15	1965	0.047
12:00 - 13:00	15	1965	0.010	15	1965	0.014	15	1965	0.024
13:00 - 14:00	15	1965	0.017	15	1965	0.017	15	1965	0.034
14:00 - 15:00	15	1965	0.020	15	1965	0.017	15	1965	0.037
15:00 - 16:00	15	1965	0.010	15	1965	0.017	15	1965	0.027
16:00 - 17:00	15	1965	0.020	15	1965	0.024	15	1965	0.044
17:00 - 18:00	15	1965	0.024	15	1965	0.024	15	1965	0.048
18:00 - 19:00	15	1965	0.017	15	1965	0.017	15	1965	0.034
19:00 - 20:00	15	1965	0.003	15	1965	0.007	15	1965	0.010
20:00 - 21:00	15	1965	0.003	15	1965	0.010	15	1965	0.013
21:00 - 22:00	15	1965	0.000	15	1965	0.000	15	1965	0.000
22:00 - 23:00	14	2010	0.000	14	2010	0.000	14	2010	0.000
23:00 - 24:00									
Total Rates:			0.192			0.194			0.386

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.*

Discount Food Store

Saturday

Proposed Development 1949 sqm GFA

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES

Calculation Factor: 100 sqm

Count Type: TOTAL VEHICLES

			Rates per dwelling			Trip Demand - Average Trip Rates		
	Survey	Ave.	Arrivals	Departures	Total	Arrivals	Departures	Total
Time Range	Days	GFA	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate
00:00-01:00	0	0	0	0	0	0	0	0
01:00-02:00	0	0	0	0	0	0	0	0
02:00-03:00	0	0	0	0	0	0	0	0
03:00-04:00	0	0	0	0	0	0	0	0
04:00-05:00	0	0	0	0	0	0	0	0
05:00-06:00	0	0	0	0	0	0	0	0
06:00-07:00	0	0	0	0	0	0	0	0
07:00-08:00	8	2035	0.571	0.098	0.669	11	2	13
08:00-09:00	8	2035	2.869	1.947	4.816	56	38	94
09:00-10:00	8	2035	4.220	3.453	7.673	82	67	150
10:00-11:00	8	2035	5.732	5.252	10.984	112	102	214
11:00-12:00	8	2035	7.003	6.629	13.632	136	129	266
12:00-13:00	8	2035	6.457	7.292	13.749	126	142	268
13:00-14:00	8	2035	6.254	5.916	12.170	122	115	237
14:00-15:00	8	2035	5.812	5.934	11.746	113	116	229
15:00-16:00	8	2035	5.744	6.162	11.906	112	120	232
16:00-17:00	8	2035	5.480	5.560	11.040	107	108	215
17:00-18:00	8	2035	4.669	4.718	9.387	91	92	183
18:00-19:00	8	2035	3.391	3.704	7.095	66	72	138
19:00-20:00	8	2035	2.513	3.072	5.585	49	60	109
20:00-21:00	8	2035	1.530	1.917	3.447	30	37	67
21:00-22:00	8	2035	0.706	1.106	1.812	14	22	35
22:00-23:00	8	2035	0.043	0.190	0.233	1	4	5
23:00-24:00	0	0	0	0	0	0	0	0
12hour (07-19)			58.202	56.665	114.867	**1134**	**1104**	**2239**
24hour (00-24)			62.994	62.95	125.944			

Average Trip Rates

	In	Out	Total
Saturday Peak	6.457	7.292	13.749
12hr (07-19)	58.202	56.665	114.867

	In	Out	Total
Saturday Peak	126	142	268
12hr (07-19)	1134	1104	2239

Site Search Criteria: UK only (excluding Greater London & Eire)
1200 - 2500 sqm GFA
No Town Centre / Edge of Town Centre sites
No Covid Period Surveys
No Covid Period Surveys

Focus Transport Planning Village Way Wilmslow Licence No: 506501

Filtering Summary

Land Use	01/C	RETAIL/DISCOUNT FOOD STORES
Selected Trip Rate Calculation Parameter Range	1200-2500 sqm GFA	
Actual Trip Rate Calculation Parameter Range	1286-2440 sqm GFA	
Date Range	Minimum: 01/01/15	Maximum: 19/11/22
Parking Spaces Range	All Surveys Included	
Days of the week selected	Saturday	8
Main Location Types selected	Suburban Area (PPS6 Out of Centre)	2
	Edge of Town	3
	Neighbourhood Centre (PPS6 Local Centre)	3
Inclusion of Servicing Vehicles Counts	Servicing vehicles Included	7 - Selected
	Servicing vehicles Excluded	7 - Selected
Population within 500m	All Surveys Included	
Population <1 Mile ranges selected	5,001 to 10,000	2
	10,001 to 15,000	1
	15,001 to 20,000	2
	25,001 to 50,000	2
	50,001 to 100,000	1
Population <5 Mile ranges selected	5,001 to 25,000	1
	50,001 to 75,000	1
	125,001 to 250,000	2
	250,001 to 500,000	2
	500,001 or More	2
Car Ownership <5 Mile ranges selected	0.5 or Less	2
	0.6 to 1.0	3
	1.1 to 1.5	3
PTAL Rating	No PTAL Present	8

Calculation Reference: AUDIT-506501-230629-0626

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL
Category : C - DISCOUNT FOOD STORES
TOTAL VEHICLES

Selected regions and areas:

03	SOUTH WEST		
	SM	SOMERSET	1 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	2 days
	NT	NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	3 days
	WO	WORCESTERSHIRE	1 days

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

Primary Filtering selection:

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

Parameter: Gross floor area
Actual Range: 1286 to 2440 (units: sqm)
Range Selected by User: 1200 to 2500 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/15 to 19/11/22

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:

Saturday	8 days

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

Selected survey types:

Manual count	8 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:

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

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

Selected Location Sub Categories:

Industrial Zone	1
Residential Zone	1
Retail Zone	1
High Street	2
No Sub Category	3

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	7 days - Selected
Servicing vehicles Excluded	7 days - Selected

Secondary Filtering selection:

Use Class:

E(a)	8 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

Population within 1 mile:

5,001 to 10,000	2 days
10,001 to 15,000	1 days
15,001 to 20,000	2 days
25,001 to 50,000	2 days
50,001 to 100,000	1 days

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

Population within 5 miles:

5,001 to 25,000	1 days
50,001 to 75,000	1 days
125,001 to 250,000	2 days
250,001 to 500,000	2 days
500,001 or More	2 days

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

Car ownership within 5 miles:

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

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

Petrol filling station:

Included in the survey count	0 days
Excluded from count or no filling station	8 days

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

Travel Plan:

Not Known	1 days
Yes	1 days
No	6 days

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

PTAL Rating:

No PTAL Present	8 days

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

LIST OF SITES relevant to selection parameters

1 LN-01-C-02 LIDL LINCOLNSHIRE
DIXON STREET
LINCOLN
NEW BOULTHAM
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Gross floor area: 2233 sqm
Survey date: SATURDAY *28/10/17* *Survey Type: MANUAL*

2 LN-01-C-03 ALDI LINCOLNSHIRE
NEWARK ROAD
LINCOLN
BRACEBRIDGE
Suburban Area (PPS6 Out of Centre)
High Street
Total Gross floor area: 1485 sqm
Survey date: SATURDAY *28/10/17* *Survey Type: MANUAL*

3 NT-01-C-01 LIDL NOTTINGHAMSHIRE
CHAPEL LANE
BINGHAM

Edge of Town
Industrial Zone
Total Gross floor area: 2440 sqm
Survey date: SATURDAY *16/07/16* *Survey Type: MANUAL*

4 SM-01-C-01 LIDL SOMERSET
SEAWARD WAY
MINEHEAD

Edge of Town
No Sub Category
Total Gross floor area: 2247 sqm
Survey date: SATURDAY *24/06/17* *Survey Type: MANUAL*

5 WM-01-C-01 LIDL WEST MIDLANDS
MACKADOWN LANE
BIRMINGHAM
KITT'S GREEN
Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Gross floor area: 2085 sqm
Survey date: SATURDAY *09/07/16* *Survey Type: MANUAL*

6 WM-01-C-02 LIDL WEST MIDLANDS
HIGH STREET
WEST BROMWICH
GUNS VILLAGE
Neighbourhood Centre (PPS6 Local Centre)
High Street
Total Gross floor area: 2085 sqm
Survey date: SATURDAY *09/07/16* *Survey Type: MANUAL*

7 WM-01-C-03 ALDI WEST MIDLANDS
RADFORD ROAD
COVENTRY
RADFORD
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Gross floor area: 1286 sqm
Survey date: SATURDAY *19/11/22* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

8 WO-01-C-01 LIDL WORCESTERSHIRE
BLACKPOLE ROAD
WORCESTER
BRICKFIELDS
Edge of Town
Retail Zone
Total Gross floor area: 2417 sqm
Survey date: SATURDAY *16/07/16* *Survey Type: MANUAL*

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

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
MM-01-C-01	covid
MS-01-C-04	covid
MS-01-C-05	covid
SF-01-C-01	covid
SF-01-C-02	covid
TV-01-C-01	covid

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	8	2035	0.571	8	2035	0.098	8	2035	0.669
08:00 - 09:00	8	2035	2.869	8	2035	1.947	8	2035	4.816
09:00 - 10:00	8	2035	4.220	8	2035	3.453	8	2035	7.673
10:00 - 11:00	8	2035	5.732	8	2035	5.252	8	2035	10.984
11:00 - 12:00	8	2035	7.003	8	2035	6.629	8	2035	13.632
12:00 - 13:00	8	2035	6.457	8	2035	7.292	8	2035	13.749
13:00 - 14:00	8	2035	6.254	8	2035	5.916	8	2035	12.170
14:00 - 15:00	8	2035	5.812	8	2035	5.934	8	2035	11.746
15:00 - 16:00	8	2035	5.744	8	2035	6.162	8	2035	11.906
16:00 - 17:00	8	2035	5.480	8	2035	5.560	8	2035	11.040
17:00 - 18:00	8	2035	4.669	8	2035	4.718	8	2035	9.387
18:00 - 19:00	8	2035	3.391	8	2035	3.704	8	2035	7.095
19:00 - 20:00	8	2035	2.513	8	2035	3.072	8	2035	5.585
20:00 - 21:00	8	2035	1.530	8	2035	1.917	8	2035	3.447
21:00 - 22:00	8	2035	0.706	8	2035	1.106	8	2035	1.812
22:00 - 23:00	8	2035	0.043	8	2035	0.190	8	2035	0.233
23:00 - 24:00									
Total Rates:			62.994			62.950			125.944

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

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

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Parameter summary

Trip rate parameter range selected:	1286 - 2440 (units: sqm)
Survey date date range:	01/01/15 - 19/11/22
Number of weekdays (Monday-Friday):	0
Number of Saturdays:	8
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	6

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
TAXIS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	2035	0.006	8	2035	0.006	8	2035	0.012
08:00 - 09:00	8	2035	0.012	8	2035	0.012	8	2035	0.024
09:00 - 10:00	8	2035	0.031	8	2035	0.025	8	2035	0.056
10:00 - 11:00	8	2035	0.061	8	2035	0.049	8	2035	0.110
11:00 - 12:00	8	2035	0.104	8	2035	0.086	8	2035	0.190
12:00 - 13:00	8	2035	0.098	8	2035	0.111	8	2035	0.209
13:00 - 14:00	8	2035	0.092	8	2035	0.074	8	2035	0.166
14:00 - 15:00	8	2035	0.092	8	2035	0.086	8	2035	0.178
15:00 - 16:00	8	2035	0.068	8	2035	0.092	8	2035	0.160
16:00 - 17:00	8	2035	0.080	8	2035	0.074	8	2035	0.154
17:00 - 18:00	8	2035	0.074	8	2035	0.086	8	2035	0.160
18:00 - 19:00	8	2035	0.049	8	2035	0.055	8	2035	0.104
19:00 - 20:00	8	2035	0.031	8	2035	0.037	8	2035	0.068
20:00 - 21:00	8	2035	0.012	8	2035	0.012	8	2035	0.024
21:00 - 22:00	8	2035	0.006	8	2035	0.012	8	2035	0.018
22:00 - 23:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
23:00 - 24:00									
Total Rates:			0.816			0.817			1.633

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

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TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	2035	0.018	8	2035	0.006	8	2035	0.024
08:00 - 09:00	8	2035	0.012	8	2035	0.025	8	2035	0.037
09:00 - 10:00	8	2035	0.012	8	2035	0.012	8	2035	0.024
10:00 - 11:00	8	2035	0.006	8	2035	0.006	8	2035	0.012
11:00 - 12:00	8	2035	0.000	8	2035	0.006	8	2035	0.006
12:00 - 13:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
13:00 - 14:00	8	2035	0.006	8	2035	0.000	8	2035	0.006
14:00 - 15:00	8	2035	0.006	8	2035	0.006	8	2035	0.012
15:00 - 16:00	8	2035	0.018	8	2035	0.018	8	2035	0.036
16:00 - 17:00	8	2035	0.006	8	2035	0.006	8	2035	0.012
17:00 - 18:00	8	2035	0.000	8	2035	0.006	8	2035	0.006
18:00 - 19:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
19:00 - 20:00	8	2035	0.018	8	2035	0.012	8	2035	0.030
20:00 - 21:00	8	2035	0.006	8	2035	0.006	8	2035	0.012
21:00 - 22:00	8	2035	0.000	8	2035	0.006	8	2035	0.006
22:00 - 23:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
23:00 - 24:00									
Total Rates:			0.108			0.115			0.223

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
PSVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
08:00 - 09:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
09:00 - 10:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
10:00 - 11:00	8	2035	0.006	8	2035	0.000	8	2035	0.006
11:00 - 12:00	8	2035	0.000	8	2035	0.006	8	2035	0.006
12:00 - 13:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
13:00 - 14:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
14:00 - 15:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
15:00 - 16:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
16:00 - 17:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
17:00 - 18:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
18:00 - 19:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
19:00 - 20:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
20:00 - 21:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
21:00 - 22:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
22:00 - 23:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
23:00 - 24:00									
Total Rates:			0.006			0.006			0.012

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	2035	0.025	8	2035	0.000	8	2035	0.025
08:00 - 09:00	8	2035	0.055	8	2035	0.055	8	2035	0.110
09:00 - 10:00	8	2035	0.031	8	2035	0.037	8	2035	0.068
10:00 - 11:00	8	2035	0.111	8	2035	0.080	8	2035	0.191
11:00 - 12:00	8	2035	0.123	8	2035	0.098	8	2035	0.221
12:00 - 13:00	8	2035	0.080	8	2035	0.061	8	2035	0.141
13:00 - 14:00	8	2035	0.154	8	2035	0.123	8	2035	0.277
14:00 - 15:00	8	2035	0.086	8	2035	0.123	8	2035	0.209
15:00 - 16:00	8	2035	0.086	8	2035	0.068	8	2035	0.154
16:00 - 17:00	8	2035	0.055	8	2035	0.068	8	2035	0.123
17:00 - 18:00	8	2035	0.043	8	2035	0.092	8	2035	0.135
18:00 - 19:00	8	2035	0.092	8	2035	0.080	8	2035	0.172
19:00 - 20:00	8	2035	0.055	8	2035	0.055	8	2035	0.110
20:00 - 21:00	8	2035	0.049	8	2035	0.068	8	2035	0.117
21:00 - 22:00	8	2035	0.031	8	2035	0.037	8	2035	0.068
22:00 - 23:00	8	2035	0.000	8	2035	0.012	8	2035	0.012
23:00 - 24:00									
Total Rates:			1.076			1.057			2.133

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
CARS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	8	2035	0.473	8	2035	0.068	8	2035	0.541
08:00 - 09:00	8	2035	2.685	8	2035	1.782	8	2035	4.467
09:00 - 10:00	8	2035	3.987	8	2035	3.281	8	2035	7.268
10:00 - 11:00	8	2035	5.437	8	2035	5.025	8	2035	10.462
11:00 - 12:00	8	2035	6.672	8	2035	6.254	8	2035	12.926
12:00 - 13:00	8	2035	6.149	8	2035	6.954	8	2035	13.103
13:00 - 14:00	8	2035	5.891	8	2035	5.646	8	2035	11.537
14:00 - 15:00	8	2035	5.486	8	2035	5.609	8	2035	11.095
15:00 - 16:00	8	2035	5.468	8	2035	5.836	8	2035	11.304
16:00 - 17:00	8	2035	5.259	8	2035	5.326	8	2035	10.585
17:00 - 18:00	8	2035	4.417	8	2035	4.442	8	2035	8.859
18:00 - 19:00	8	2035	3.225	8	2035	3.526	8	2035	6.751
19:00 - 20:00	8	2035	2.408	8	2035	2.906	8	2035	5.314
20:00 - 21:00	8	2035	1.456	8	2035	1.825	8	2035	3.281
21:00 - 22:00	8	2035	0.663	8	2035	1.044	8	2035	1.707
22:00 - 23:00	8	2035	0.043	8	2035	0.184	8	2035	0.227
23:00 - 24:00									
Total Rates:			59.719			59.708			119.427

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
LGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 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	8	2035	0.068	8	2035	0.018	8	2035	0.086
08:00 - 09:00	8	2035	0.154	8	2035	0.123	8	2035	0.277
09:00 - 10:00	8	2035	0.184	8	2035	0.135	8	2035	0.319
10:00 - 11:00	8	2035	0.221	8	2035	0.160	8	2035	0.381
11:00 - 12:00	8	2035	0.203	8	2035	0.258	8	2035	0.461
12:00 - 13:00	8	2035	0.184	8	2035	0.209	8	2035	0.393
13:00 - 14:00	8	2035	0.246	8	2035	0.178	8	2035	0.424
14:00 - 15:00	8	2035	0.203	8	2035	0.221	8	2035	0.424
15:00 - 16:00	8	2035	0.172	8	2035	0.178	8	2035	0.350
16:00 - 17:00	8	2035	0.129	8	2035	0.154	8	2035	0.283
17:00 - 18:00	8	2035	0.166	8	2035	0.160	8	2035	0.326
18:00 - 19:00	8	2035	0.111	8	2035	0.117	8	2035	0.228
19:00 - 20:00	8	2035	0.055	8	2035	0.117	8	2035	0.172
20:00 - 21:00	8	2035	0.043	8	2035	0.068	8	2035	0.111
21:00 - 22:00	8	2035	0.037	8	2035	0.037	8	2035	0.074
22:00 - 23:00	8	2035	0.000	8	2035	0.006	8	2035	0.006
23:00 - 24:00									
Total Rates:			2.176			2.139			4.315

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

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

TRIP RATE for Land Use 01 - RETAIL/C - DISCOUNT FOOD STORES
MOTOR CYCLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

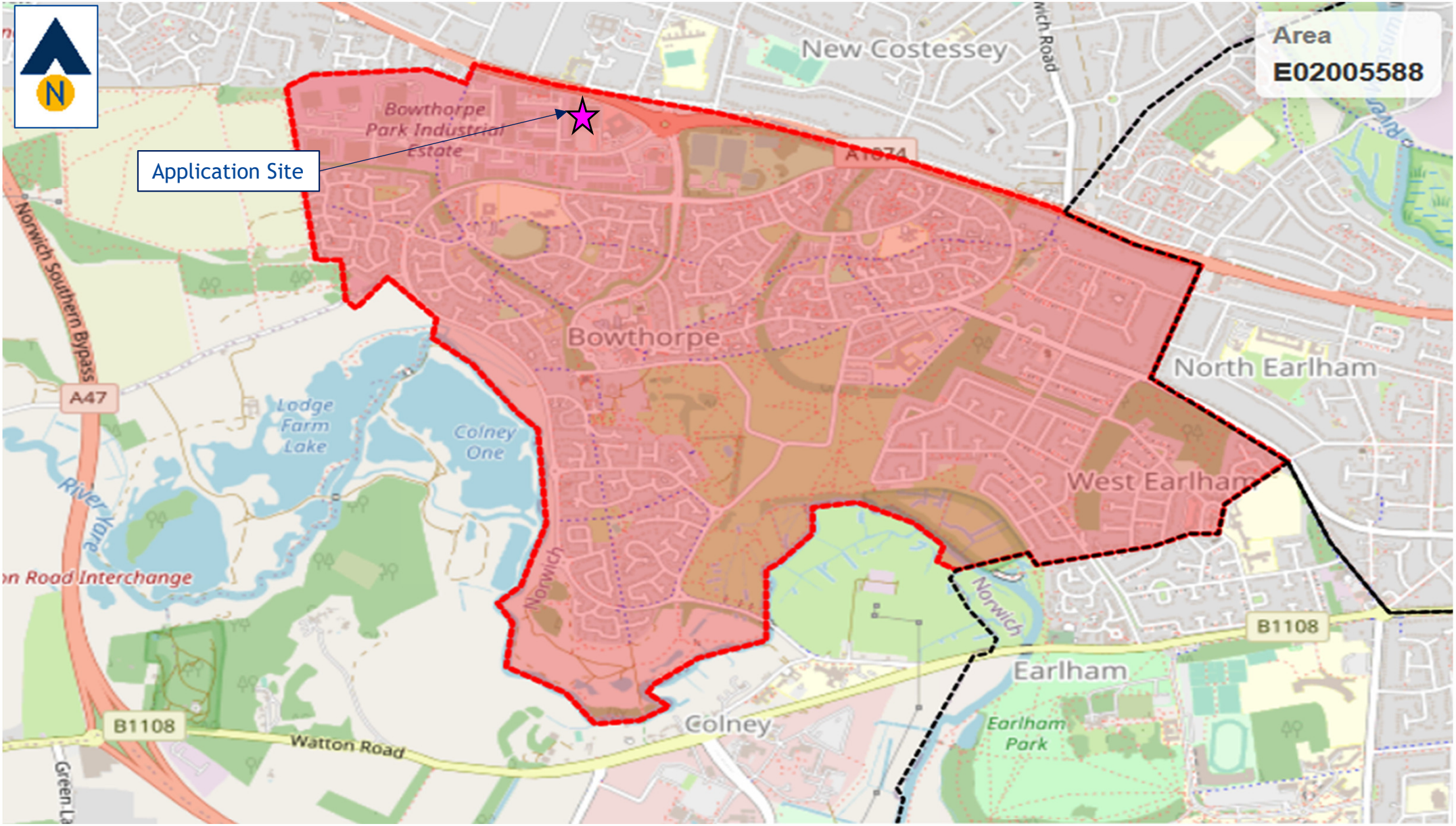
	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	2035	0.006	8	2035	0.000	8	2035	0.006
08:00 - 09:00	8	2035	0.006	8	2035	0.006	8	2035	0.012
09:00 - 10:00	8	2035	0.006	8	2035	0.000	8	2035	0.006
10:00 - 11:00	8	2035	0.000	8	2035	0.012	8	2035	0.012
11:00 - 12:00	8	2035	0.025	8	2035	0.018	8	2035	0.043
12:00 - 13:00	8	2035	0.025	8	2035	0.018	8	2035	0.043
13:00 - 14:00	8	2035	0.018	8	2035	0.018	8	2035	0.036
14:00 - 15:00	8	2035	0.025	8	2035	0.012	8	2035	0.037
15:00 - 16:00	8	2035	0.018	8	2035	0.037	8	2035	0.055
16:00 - 17:00	8	2035	0.006	8	2035	0.000	8	2035	0.006
17:00 - 18:00	8	2035	0.012	8	2035	0.025	8	2035	0.037
18:00 - 19:00	8	2035	0.006	8	2035	0.006	8	2035	0.012
19:00 - 20:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
20:00 - 21:00	8	2035	0.012	8	2035	0.006	8	2035	0.018
21:00 - 22:00	8	2035	0.000	8	2035	0.006	8	2035	0.006
22:00 - 23:00	8	2035	0.000	8	2035	0.000	8	2035	0.000
23:00 - 24:00									
Total Rates:			0.165			0.164			0.329

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

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



APPENDIX TA11



FOCUS TRANSPORT PLANNING

Appendix TA11a

Norwich005 Census Super Output Area

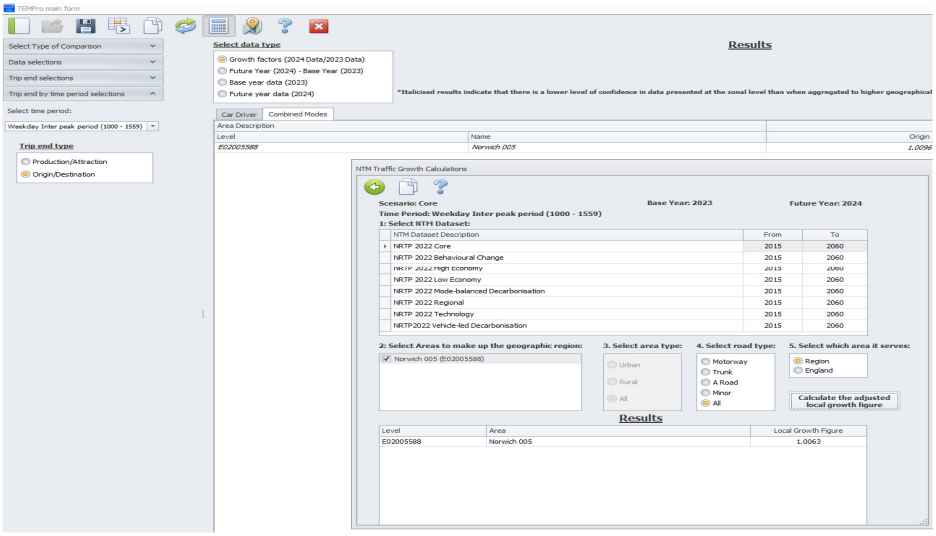
J000420 | Land off Barnard Road, Norwich | July 2023

Calculation of Local Growth Factors (2023 - 2024)

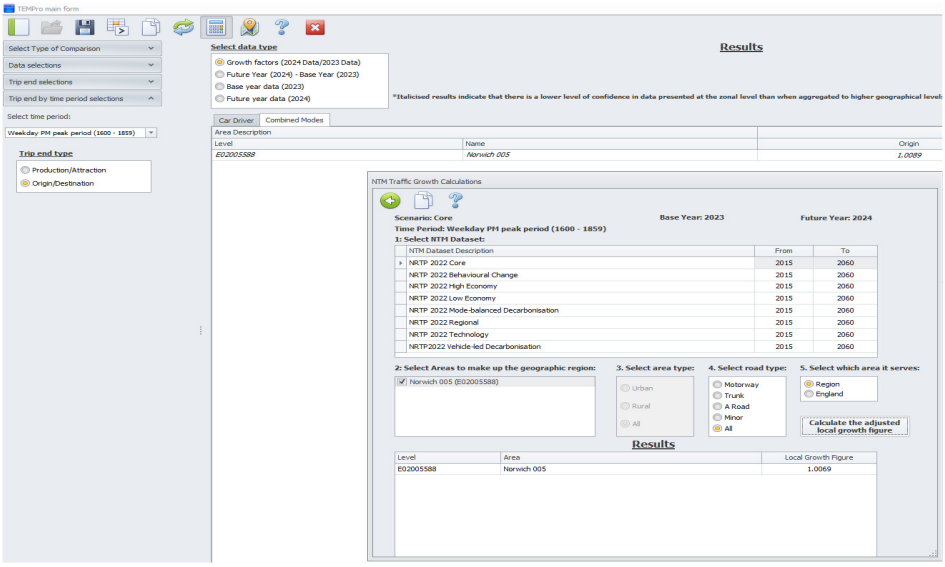
All areas and all road types Norwich 005 (E02005588)

		Weekday Interpeak	Weekday PM	Saturday
2023	2024	1.0063	1.0069	1.0065
2023	2028	1.0485	1.0512	1.0498

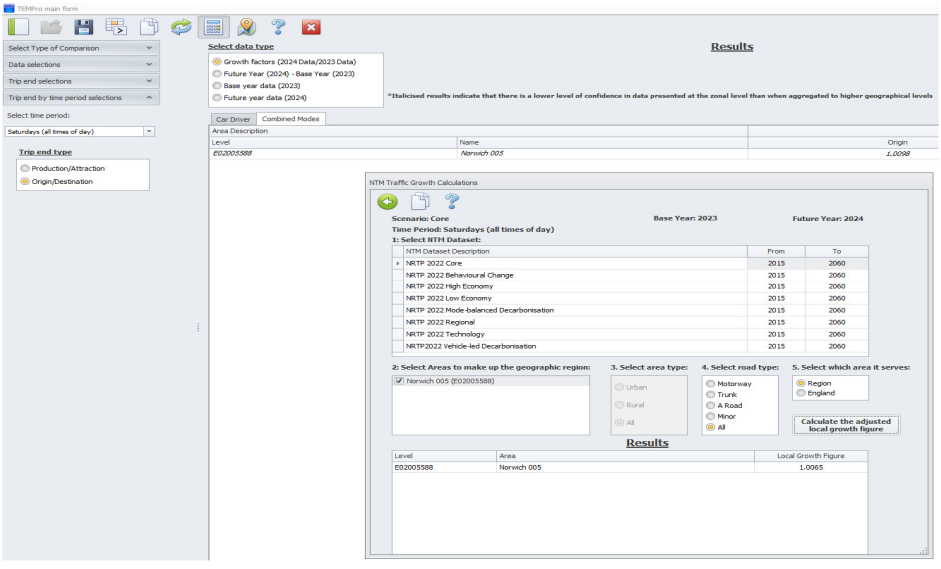
Friday Inter-Peak: 2023-2024



Friday PM Peak: 2023-2024



Saturday: 2023 - 2024

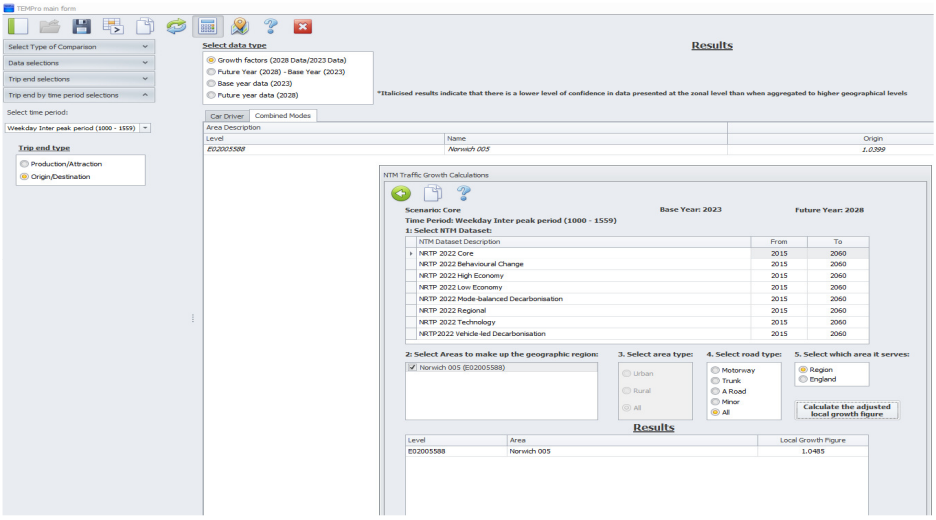


Calculation of Local Growth Factors (2023 - 2028)

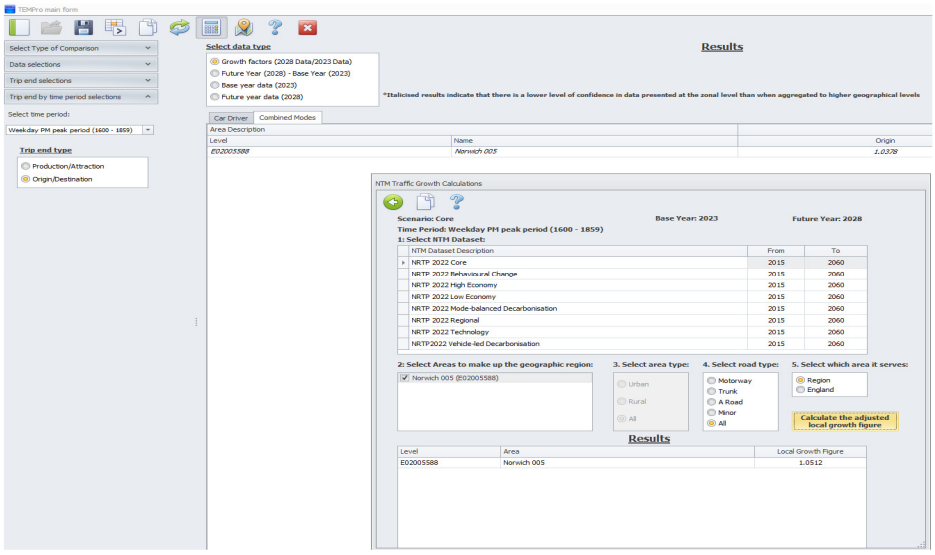
All areas and all road types Norwich 005 (E02005588)

		Weekday Interpeak	Weekday PM	Saturday
2023	2024	1.0063	1.0069	1.0065
2023	2028	1.0485	1.0512	1.0498

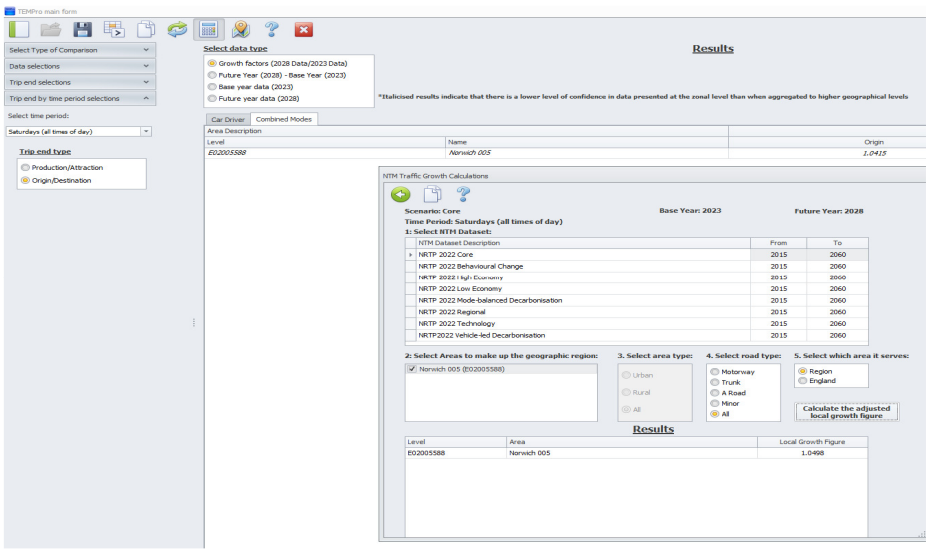
Friday Inter-Peak: 2023-2028



Friday PM Peak: 2023-2028



Saturday: 2023 - 2028

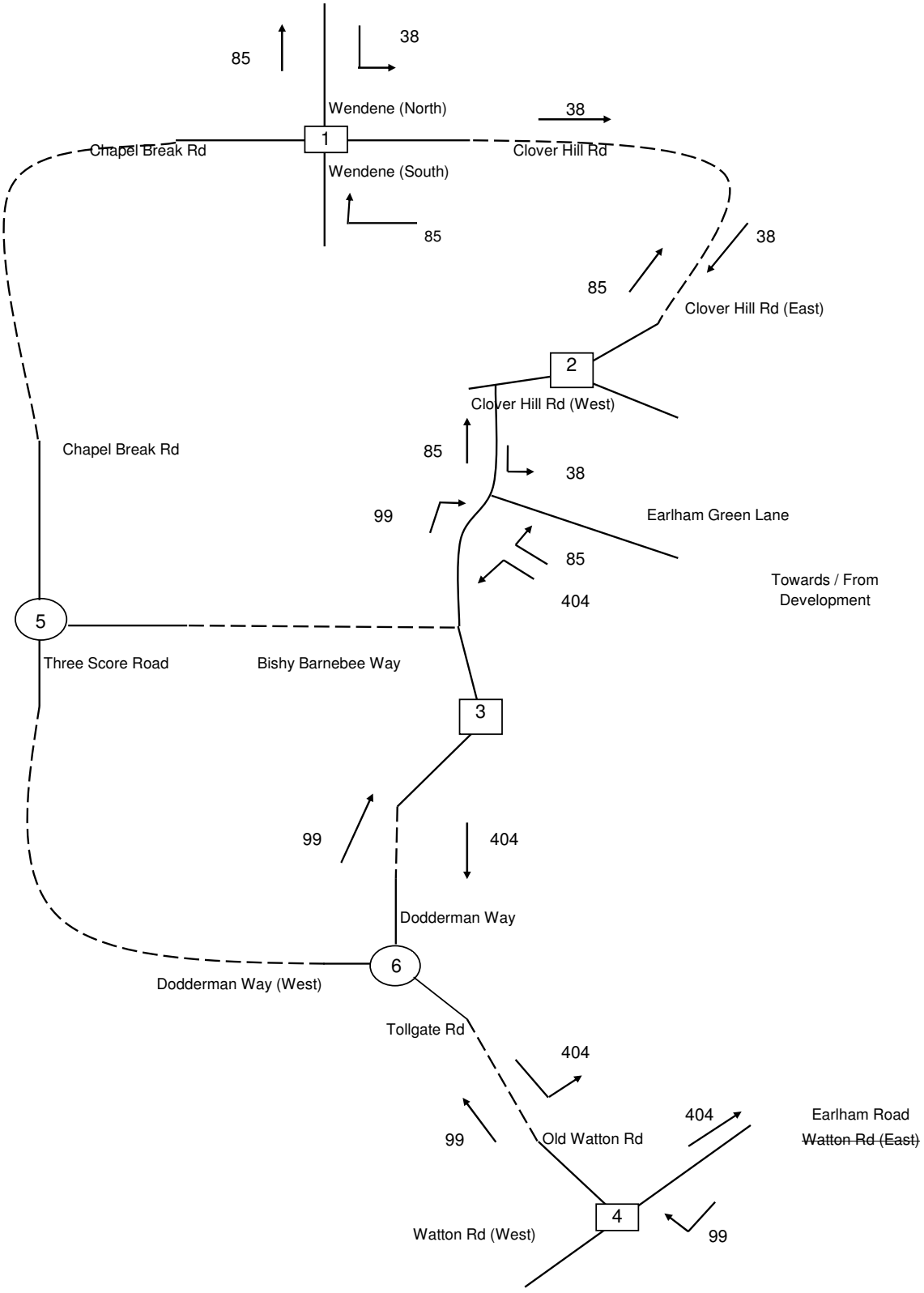




APPENDIX TA12

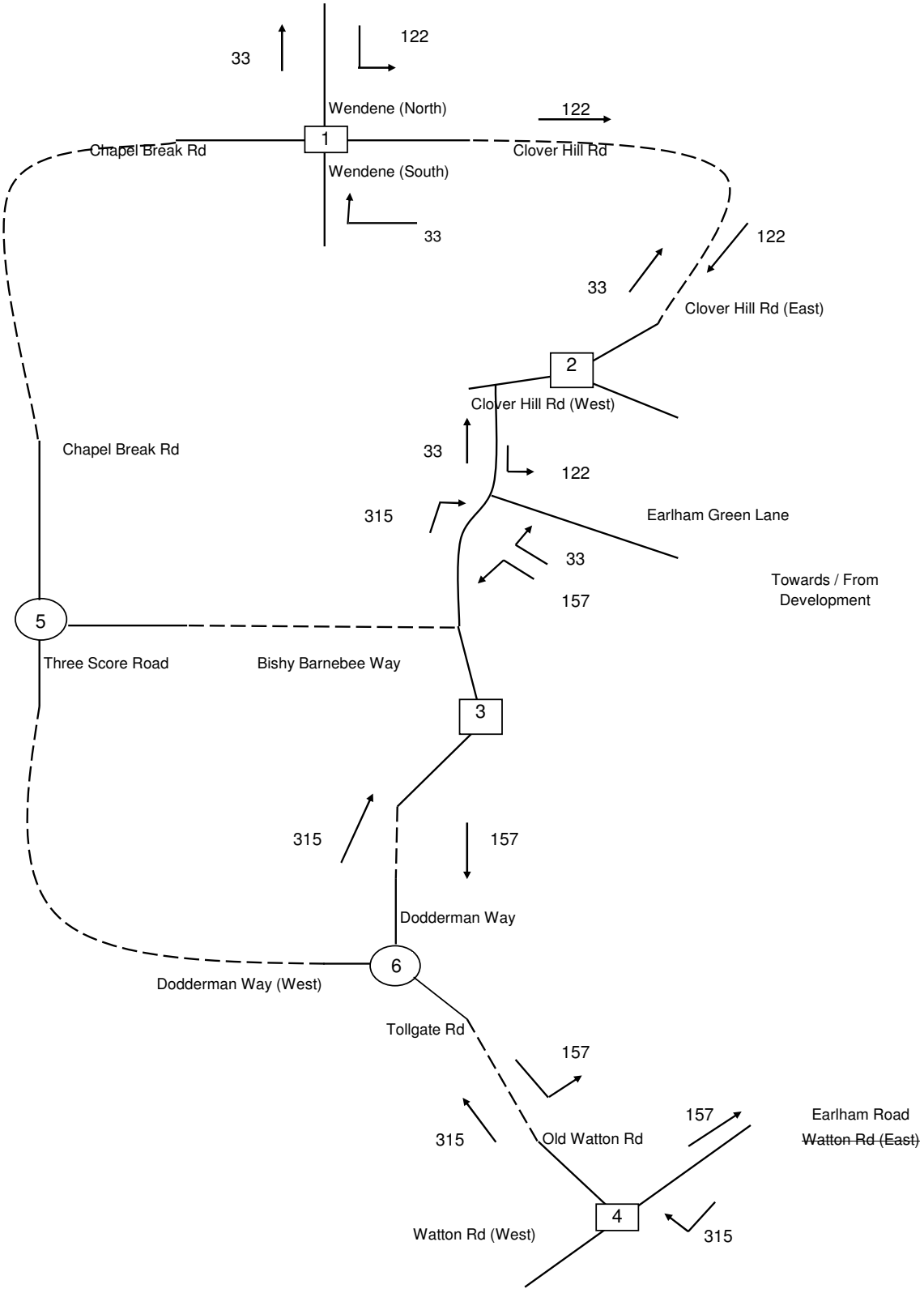
Norwich Three Score

ENTRY / EXIT TURNING COUNTS: **AM (08:00 - 09:00)**
DEVELOPMENT TRAFFFIC

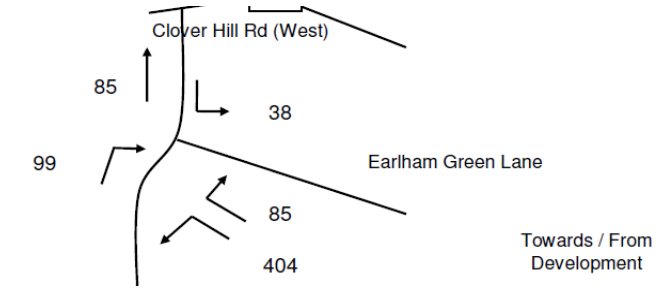


Norwich Three Score

ENTRY / EXIT TURNING COUNTS: **PM (17:00 - 18:00)**
DEVELOPMENT TRAFFFIC

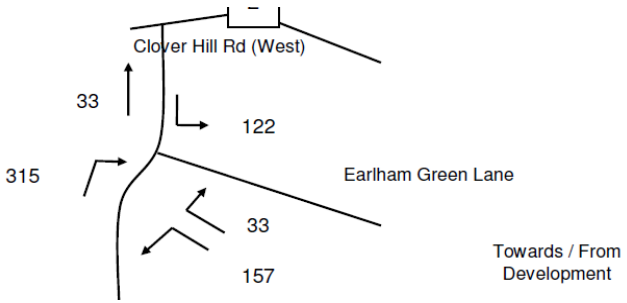


AM Peak



AM PEAK	IN	OUT	IN	OUT
To/from north	38	85	27.7%	17.4%
To/from south	99	404	72.3%	82.6%
	137	489	100%	100%

PM Peak



PM PEAK	IN	OUT	IN	OUT
To/from north	122	33	27.9%	17.4%
To/from south	315	157	72.1%	82.6%
	437	190	100%	100%



APPENDIX TA13

Threescore Residential - Total Trip Generation

60	2024 Total Trips	
	In	Out
Friday Day	15	10
Friday PM	17	10
Saturday	14	13

220	2028 Total Trips	
	In	Out
Friday Day	54	37
Friday PM	63	36
Saturday	51	47

Threeccore Residential - Via Proposed Foodstore Study Area (Clover Hill Road / Wendene)

60	2024 Total Trips	
	In	Out
Friday Day	4	2
Friday PM	5	2
Saturday	4	2

220	2028 Total Trips	
	In	Out
Friday Day	15	6
Friday PM	18	6
Saturday	14	8

Total Threescore Residential Demand - Total Vehicles (2024)

Weekday

Proposed Devel 60 dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Calculation Factor: 1 DWELLS

Count Type: TOTAL VEHICLES

			Rates per dwelling			Trip Demand - Average Trip Rates		
	Survey	Ave.	Arrivals	Departures	Total	Arrivals	Departures	Total
Time Range	Days	Dwellings	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate
00:00-01:00	1	1040	0.024	0.016	0.040	1	1	2
01:00-02:00	1	1040	0.010	0.005	0.015	1	0	1
02:00-03:00	1	1040	0.010	0.008	0.018	1	0	1
03:00-04:00	1	1040	0.001	0.001	0.002	0	0	0
04:00-05:00	1	1040	0.001	0.004	0.005	0	0	0
05:00-06:00	1	1040	0.004	0.023	0.027	0	1	2
06:00-07:00	1	1040	0.016	0.103	0.119	1	6	7
07:00-08:00	3	1035	0.071	0.307	0.378	4	18	23
08:00-09:00	3	1035	0.137	0.407	0.544	8	24	33
09:00-10:00	3	1035	0.123	0.154	0.277	7	9	17
10:00-11:00	3	1035	0.104	0.131	0.235	6	8	14
11:00-12:00	3	1035	0.104	0.114	0.218	6	7	13
12:00-13:00	3	1035	0.143	0.131	0.274	9	8	16
13:00-14:00	3	1035	0.146	0.139	0.285	9	8	17
14:00-15:00	3	1035	0.147	0.157	0.304	9	9	18
15:00-16:00	3	1035	0.245	0.167	0.412	15	10	25
16:00-17:00	3	1035	0.288	0.162	0.450	17	10	27
17:00-18:00	3	1035	0.370	0.168	0.538	22	10	32
18:00-19:00	3	1035	0.325	0.175	0.500	20	11	30
19:00-20:00	1	1040	0.246	0.210	0.456	15	13	27
20:00-21:00	1	1040	0.145	0.098	0.243	9	6	15
21:00-22:00	1	1040	0.098	0.052	0.150	6	3	9
22:00-23:00	1	1040	0.092	0.051	0.143	6	3	9
23:00-24:00	1	1040	0.090	0.069	0.159	5	4	10
12hour (07-19)			2.203	2.212	4.415	**132**	**133**	**265**
24hour (00-24)			2.940	2.852	5.792			

Average Trip Rates

	In	Out	Total
Weekday Mid	0.245	0.167	0.412
Weekday PM	0.288	0.162	0.450
12hr (07-19)	2.203	2.212	4.415

	In	Out	Total
Weekday Mid	15	10	25
Weekday PM	17	10	27
12hr (07-19)	132	133	265

Site Search Criteria: UK only (excluding Greater London & Eire)
UK only (excluding Greater London & Eire)
900 - 1500 dwellings
No Covid Period Surveys

Total Threescore Residential Demand - Total Vehicles (2024)

Saturday

Proposed Devel 60 dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Calculation Factor: 1 DWELLS

Count Type: TOTAL VEHICLES

			Rates per dwelling			Trip Demand - Average Trip Rates		
	Survey	Ave.	Arrivals	Departures	Total	Arrivals	Departures	Total
Time Range	Days	Dwellings	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate
00:00-01:00	1	1040	0.059	0.035	0.094	4	2	6
01:00-02:00	1	1040	0.032	0.018	0.05	2	1	3
02:00-03:00	1	1040	0.014	0.012	0.026	1	1	2
03:00-04:00	1	1040	0.002	0.001	0.003	0	0	0
04:00-05:00	1	1040	0.004	0.004	0.008	0	0	0
05:00-06:00	1	1040	0.003	0.01	0.013	0	1	1
06:00-07:00	1	1040	0.002	0.035	0.037	0	2	2
07:00-08:00	2	916	0.03	0.085	0.115	2	5	7
08:00-09:00	2	916	0.072	0.185	0.257	4	11	15
09:00-10:00	2	916	0.132	0.224	0.356	8	13	21
10:00-11:00	2	916	0.17	0.231	0.401	10	14	24
11:00-12:00	2	916	0.224	0.235	0.459	13	14	28
12:00-13:00	2	916	0.234	0.213	0.447	14	13	27
13:00-14:00	2	916	0.219	0.217	0.436	13	13	26
14:00-15:00	2	916	0.212	0.206	0.418	13	12	25
15:00-16:00	2	916	0.193	0.193	0.386	12	12	23
16:00-17:00	2	916	0.24	0.149	0.389	14	9	23
17:00-18:00	2	916	0.255	0.186	0.441	15	11	26
18:00-19:00	2	916	0.228	0.19	0.418	14	11	25
19:00-20:00	1	1040	0.196	0.169	0.365	12	10	22
20:00-21:00	1	1040	0.093	0.091	0.184	6	5	11
21:00-22:00	1	1040	0.066	0.036	0.102	4	2	6
22:00-23:00	1	1040	0.066	0.039	0.105	4	2	6
23:00-24:00	1	1040	0.09	0.06	0.15	5	4	9
12hour (07-19)			2.209	2.314	4.523	**133**	**139**	**271**
24hour (00-24)			2.836	2.824	5.660			

Average Trip Rates

	In	Out	Total
Saturday Peak	0.234	0.213	0.447
12hr (07-19)	2.209	2.314	4.523

	In	Out	Total
Saturday Peak	14	13	27
12hr (07-19)	133	139	271

Site Search Criteria: UK only (excluding Greater London & Eire)
750 - 1500 dwellings
No Covid Period Surveys

Total Threescore Residential Demand - Total Vehicles (2028)

Weekday

Proposed Devel: 220 dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Calculation Factor: 1 DWELLS

Count Type: TOTAL VEHICLES

			Rates per dwelling			Trip Demand - Average Trip Rates		
	Survey	Ave.	Arrivals	Departures	Total	Arrivals	Departures	Total
Time Range	Days	Dwellings	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate
00:00-01:00	1	1040	0.024	0.016	0.040	5	4	9
01:00-02:00	1	1040	0.010	0.005	0.015	2	1	3
02:00-03:00	1	1040	0.010	0.008	0.018	2	2	4
03:00-04:00	1	1040	0.001	0.001	0.002	0	0	0
04:00-05:00	1	1040	0.001	0.004	0.005	0	1	1
05:00-06:00	1	1040	0.004	0.023	0.027	1	5	6
06:00-07:00	1	1040	0.016	0.103	0.119	4	23	26
07:00-08:00	3	1035	0.071	0.307	0.378	16	68	83
08:00-09:00	3	1035	0.137	0.407	0.544	30	90	120
09:00-10:00	3	1035	0.123	0.154	0.277	27	34	61
10:00-11:00	3	1035	0.104	0.131	0.235	23	29	52
11:00-12:00	3	1035	0.104	0.114	0.218	23	25	48
12:00-13:00	3	1035	0.143	0.131	0.274	31	29	60
13:00-14:00	3	1035	0.146	0.139	0.285	32	31	63
14:00-15:00	3	1035	0.147	0.157	0.304	32	35	67
15:00-16:00	3	1035	0.245	0.167	0.412	54	37	91
16:00-17:00	3	1035	0.288	0.162	0.450	63	36	99
17:00-18:00	3	1035	0.370	0.168	0.538	81	37	118
18:00-19:00	3	1035	0.325	0.175	0.500	72	39	110
19:00-20:00	1	1040	0.246	0.210	0.456	54	46	100
20:00-21:00	1	1040	0.145	0.098	0.243	32	22	53
21:00-22:00	1	1040	0.098	0.052	0.150	22	11	33
22:00-23:00	1	1040	0.092	0.051	0.143	20	11	31
23:00-24:00	1	1040	0.090	0.069	0.159	20	15	35
12hour (07-19)			2.203	2.212	4.415	**485**	**487**	**971**
24hour (00-24)			2.940	2.852	5.792			

Average Trip Rates

	In	Out	Total
Weekday Mid	0.245	0.167	0.412
Weekday PM	0.288	0.162	0.450
12hr (07-19)	2.203	2.212	4.415

	In	Out	Total
Weekday Mid	54	37	91
Weekday PM	63	36	99
12hr (07-19)	485	487	971

Site Search Criteria: UK only (excluding Greater London & Eire)
UK only (excluding Greater London & Eire)
900 - 1500 dwellings
No Covid Period Surveys

Threescore Residential Trip Rates - Total Vehicles (2028)

Saturday

Proposed Devel 220 dwellings

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

Calculation Factor: 1 DWELLS

Count Type: TOTAL VEHICLES

			Rates per dwelling			Trip Demand - Average Trip Rates		
	Survey	Ave.	Arrivals	Departures	Total	Arrivals	Departures	Total
Time Range	Days	Dwellings	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate	Trip Rate
00:00-01:00	1	1040	0.059	0.035	0.094	13	8	21
01:00-02:00	1	1040	0.032	0.018	0.05	7	4	11
02:00-03:00	1	1040	0.014	0.012	0.026	3	3	6
03:00-04:00	1	1040	0.002	0.001	0.003	0	0	1
04:00-05:00	1	1040	0.004	0.004	0.008	1	1	2
05:00-06:00	1	1040	0.003	0.01	0.013	1	2	3
06:00-07:00	1	1040	0.002	0.035	0.037	0	8	8
07:00-08:00	2	916	0.03	0.085	0.115	7	19	25
08:00-09:00	2	916	0.072	0.185	0.257	16	41	57
09:00-10:00	2	916	0.132	0.224	0.356	29	49	78
10:00-11:00	2	916	0.17	0.231	0.401	37	51	88
11:00-12:00	2	916	0.224	0.235	0.459	49	52	101
12:00-13:00	2	916	0.234	0.213	0.447	51	47	98
13:00-14:00	2	916	0.219	0.217	0.436	48	48	96
14:00-15:00	2	916	0.212	0.206	0.418	47	45	92
15:00-16:00	2	916	0.193	0.193	0.386	42	42	85
16:00-17:00	2	916	0.24	0.149	0.389	53	33	86
17:00-18:00	2	916	0.255	0.186	0.441	56	41	97
18:00-19:00	2	916	0.228	0.19	0.418	50	42	92
19:00-20:00	1	1040	0.196	0.169	0.365	43	37	80
20:00-21:00	1	1040	0.093	0.091	0.184	20	20	40
21:00-22:00	1	1040	0.066	0.036	0.102	15	8	22
22:00-23:00	1	1040	0.066	0.039	0.105	15	9	23
23:00-24:00	1	1040	0.09	0.06	0.15	20	13	33
12hour (07-19)			2.209	2.314	4.523	**486**	**509**	**995**
24hour (00-24)			2.836	2.824	5.660			

Average Trip Rates

	In	Out	Total
Saturday Peak	0.234	0.213	0.447
12hr (07-19)	2.209	2.314	4.523

	In	Out	Total
Saturday Peak	51	47	98
12hr (07-19)	486	509	995

Site Search Criteria: UK only (excluding Greater London & Eire)
750 - 1500 dwellings
No Covid Period Surveys



APPENDIX TA14

Appendix TA14 - Dereham Road / Wendene / Barnard Road / Breckland Road - Summary of ARCADY Assessment Runs

Key

0-0.85 RFC (within capacity conditions)

0.86-0.99 RFC (variable operating conditions)

1.0+ RFC (over capacity conditions)

Arm	Junction Approach	2023 Survey Flows								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	RFC	Q	Flow	RFC	Q	Flow	RFC	Q
1	Dereham Road (E)	942	0.40	0.7	1023	0.41	0.7	948	0.38	0.6
2	Wendene	593	0.34	0.5	565	0.33	0.5	479	0.27	0.4
3	Barnard Road	281	0.32	0.5	387	0.45	0.8	123	0.13	0.2
4	Dereham Road (W)	964	0.49	1.0	955	0.49	1.0	956	0.46	0.9
5	Breckland Road	301	0.31	0.4	159	0.17	0.2	127	0.12	0.1

Arm	Junction Approach	2023 Survey Flows - Lane Designation								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	RFC	Q	Flow	RFC	Q	Flow	RFC	Q
1	Dereham Road (E)	942	0.458	1.6	1023	0.490	1.9	948	0.435	1.7
2	Wendene	593	0.364	1.0	565	0.348	1.2	479	0.276	0.6
3	Barnard Road	281	0.356	1.1	387	0.460	2.1	123	0.152	0.4
4	Dereham Road (W)	964	0.779	4.1	955	0.771	3.5	956	0.741	3.0
5	Breckland Road	301	0.470	1.1	159	0.282	0.5	127	0.188	0.3

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: Dereham Road Roundabout.j9
Path: C:\Data\Projects\J000401-J000450\J000420 New Foodstore Norwich\Background Information\Junction Assessments
Report generation date: 01/08/2023 11:25:09

»2023 Survey, Friday Daytime
»2023 Survey, Friday PM
»2023 Survey, Saturday

Summary of junction performance

	Friday Daytime								Friday PM								Saturday							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	2023 Survey																							
Arm 1	D1	0.7	2.38	0.40	A	3.35	A	49 % [Arm 3]	D2	0.7	2.29	0.41	A	3.45	A	34 % [Arm 3]	D3	0.6	2.12	0.38	A	2.67	A	89 % [Arm 4]
Arm 2		0.5	2.90	0.34	A					0.5	2.90	0.33	A					0.4	2.55	0.27	A			
Arm 3		0.5	5.74	0.32	A					0.8	7.11	0.45	A					0.2	4.16	0.13	A			
Arm 4		1.0	3.42	0.49	A					1.0	3.40	0.49	A					0.9	2.97	0.46	A			
Arm 5		0.4	4.86	0.31	A					0.2	4.23	0.17	A					0.1	3.65	0.12	A			

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. 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	
Location	
Site number	
Date	18/07/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	FTPDT-01\Office
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	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)	Run automatically
D1	2023 Survey	Friday Daytime	ONE HOUR	14:30	16:00	15	✓
D2	2023 Survey	Friday PM	ONE HOUR	16:00	17:30	15	✓
D3	2023 Survey	Saturday	ONE HOUR	12:00	13:30	15	✓

Analysis Set Details

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

2023 Survey, Friday Daytime

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	3.35	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	49	Arm 3

Arms

Arms

Arm	Name	Description
1	Derehame Road (E)	
2	Wendene	
3	Barnard Road	
4	Dereham Road (W)	
5	Breckland Road	

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	7.55	10.42	23.5	29.6	64.0	17.0	
2	7.20	8.76	6.0	25.9	65.2	16.5	
3	3.95	7.93	8.5	37.1	66.9	26.5	
4	6.00	10.58	10.9	27.9	67.7	17.5	
5	3.23	7.60	28.3	18.7	63.9	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.782	3091
2	0.688	2581
3	0.535	1737
4	0.666	2548
5	0.571	1892

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 Survey	Friday Daytime	ONE HOUR	14:30	16:00	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		ONE HOUR	✓	942	100.000
2		ONE HOUR	✓	593	100.000
3		ONE HOUR	✓	281	100.000
4		ONE HOUR	✓	964	100.000
5		ONE HOUR	✓	301	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	248	37	595	60
	2	260	0	35	215	83
	3	110	23	1	143	4
	4	560	252	70	5	77
	5	72	108	8	111	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	12	4	2
	2	0	0	0	2	0
	3	2	0	0	4	0

	4	3	1	15	0	1
	5	1	1	0	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.40	2.38	0.7	A	864	1297
2	0.34	2.90	0.5	A	544	816
3	0.32	5.74	0.5	A	258	387
4	0.49	3.42	1.0	A	885	1327
5	0.31	4.86	0.4	A	276	414

Main Results for each time segment

14:30 - 14:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	709	177	435	2750	0.258	708	754	0.0	0.4	1.813	A
2	446	112	669	2120	0.211	445	474	0.0	0.3	2.166	A
3	212	53	1001	1202	0.176	211	113	0.0	0.2	3.721	A
4	726	181	409	2275	0.319	724	803	0.0	0.5	2.394	A
5	227	57	963	1342	0.169	226	170	0.0	0.2	3.279	A

14:45 - 15:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	847	212	521	2683	0.316	846	902	0.4	0.5	2.015	A
2	533	133	800	2030	0.263	533	567	0.3	0.4	2.424	A
3	253	63	1198	1097	0.230	252	136	0.2	0.3	4.369	A
4	867	217	490	2222	0.390	866	960	0.5	0.7	2.741	A
5	271	68	1152	1234	0.219	270	203	0.2	0.3	3.799	A

15:00 - 15:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1037	259	638	2592	0.400	1036	1104	0.5	0.7	2.378	A
2	653	163	980	1907	0.342	652	694	0.4	0.5	2.893	A
3	309	77	1466	953	0.325	309	166	0.3	0.5	5.722	A
4	1061	265	599	2149	0.494	1060	1176	0.7	1.0	3.412	A
5	331	83	1411	1086	0.305	331	249	0.3	0.4	4.841	A

15:15 - 15:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1037	259	639	2591	0.400	1037	1105	0.7	0.7	2.382	A
2	653	163	981	1906	0.343	653	695	0.5	0.5	2.897	A
3	309	77	1468	952	0.325	309	166	0.5	0.5	5.740	A
4	1061	265	600	2148	0.494	1061	1177	1.0	1.0	3.421	A
5	331	83	1413	1085	0.305	331	249	0.4	0.4	4.856	A

15:30 - 15:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	847	212	522	2682	0.316	848	904	0.7	0.5	2.020	A
2	533	133	802	2029	0.263	534	568	0.5	0.4	2.428	A
3	253	63	1200	1096	0.231	253	136	0.5	0.3	4.386	A
4	867	217	491	2221	0.390	868	962	1.0	0.7	2.751	A
5	271	68	1155	1232	0.220	271	203	0.4	0.3	3.811	A

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	709	177	437	2749	0.258	710	757	0.5	0.4	1.815	A
2	446	112	671	2119	0.211	447	476	0.4	0.3	2.171	A
3	212	53	1004	1200	0.176	212	114	0.3	0.2	3.739	A
4	726	181	411	2274	0.319	726	806	0.7	0.5	2.405	A
5	227	57	967	1340	0.169	227	170	0.3	0.2	3.289	A

2023 Survey, Friday 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	untitled	Standard Roundabout		1, 2, 3, 4, 5	3.45	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	34	Arm 3

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 Survey	Friday PM	ONE HOUR	16:00	17:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1023	100.000
2		ONE HOUR	✓	565	100.000
3		ONE HOUR	✓	387	100.000
4		ONE HOUR	✓	955	100.000
5		ONE HOUR	✓	159	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	225	50	707	39
	2	247	1	33	217	67
	3	174	32	0	177	4
	4	643	188	68	4	52
	5	32	60	2	65	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	1	14	2	0
	2	0	0	3	0	2
	3	2	0	0	3	0
	4	2	1	10	0	2
	5	3	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.41	2.29	0.7	A	939	1408
2	0.33	2.90	0.5	A	518	778
3	0.45	7.11	0.8	A	355	533
4	0.49	3.40	1.0	A	876	1314
5	0.17	4.23	0.2	A	146	219

Main Results for each time segment

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	770	193	315	2844	0.271	769	824	0.0	0.4	1.771	A
2	425	106	704	2097	0.203	424	380	0.0	0.3	2.163	A
3	291	73	1013	1195	0.244	290	115	0.0	0.3	4.055	A
4	719	180	425	2265	0.317	717	879	0.0	0.5	2.375	A
5	120	30	1020	1309	0.091	119	122	0.0	0.1	3.064	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	920	230	377	2796	0.329	919	986	0.4	0.5	1.958	A
2	508	127	842	2002	0.254	508	455	0.3	0.3	2.422	A
3	348	87	1212	1089	0.319	347	137	0.3	0.5	4.951	A
4	859	215	508	2209	0.389	858	1051	0.5	0.6	2.723	A
5	143	36	1221	1195	0.120	143	146	0.1	0.1	3.465	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1126	282	462	2730	0.413	1125	1207	0.5	0.7	2.290	A
2	622	156	1031	1872	0.332	621	556	0.3	0.5	2.893	A
3	426	107	1484	944	0.451	425	168	0.5	0.8	7.065	A
4	1051	263	622	2133	0.493	1050	1287	0.6	1.0	3.394	A
5	175	44	1494	1039	0.169	175	178	0.1	0.2	4.219	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1126	282	462	2729	0.413	1126	1209	0.7	0.7	2.292	A
2	622	156	1032	1871	0.332	622	557	0.5	0.5	2.896	A
3	426	107	1485	943	0.452	426	168	0.8	0.8	7.111	A
4	1051	263	623	2133	0.493	1051	1288	1.0	1.0	3.404	A
5	175	44	1496	1037	0.169	175	178	0.2	0.2	4.227	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	920	230	378	2795	0.329	921	989	0.7	0.5	1.961	A
2	508	127	843	2001	0.254	509	456	0.5	0.3	2.427	A
3	348	87	1214	1088	0.320	349	138	0.8	0.5	4.987	A
4	859	215	510	2208	0.389	860	1053	1.0	0.7	2.733	A
5	143	36	1224	1193	0.120	143	146	0.2	0.1	3.473	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	770	193	317	2843	0.271	771	828	0.5	0.4	1.772	A
2	425	106	706	2095	0.203	426	381	0.3	0.3	2.169	A
3	291	73	1016	1194	0.244	292	115	0.5	0.3	4.079	A
4	719	180	427	2264	0.318	720	882	0.7	0.5	2.385	A
5	120	30	1024	1307	0.092	120	122	0.1	0.1	3.070	A

2023 Survey, Saturday

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	2.67	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	89	Arm 4

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	2023 Survey	Saturday	ONE HOUR	12:00	13:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	948	100.000
2		ONE HOUR	✓	479	100.000
3		ONE HOUR	✓	123	100.000
4		ONE HOUR	✓	956	100.000
5		ONE HOUR	✓	127	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	4	236	42	628	38
	2	218	0	16	222	23
	3	48	19	0	54	2
	4	665	192	68	4	27
	5	31	35	9	52	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	2	2	3
	2	1	0	0	0	0
	3	4	0	0	6	0
	4	1	2	12	0	0
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.38	2.12	0.6	A	870	1305
2	0.27	2.55	0.4	A	440	659
3	0.13	4.16	0.2	A	113	169
4	0.46	2.97	0.9	A	877	1316
5	0.12	3.65	0.1	A	117	175

Main Results for each time segment

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	714	178	285	2868	0.249	712	725	0.0	0.3	1.690	A
2	361	90	635	2144	0.168	360	362	0.0	0.2	2.021	A
3	93	23	893	1260	0.074	92	101	0.0	0.1	3.214	A
4	720	180	264	2372	0.303	718	721	0.0	0.4	2.220	A
5	96	24	915	1369	0.070	95	68	0.0	0.1	2.825	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	852	213	340	2824	0.302	852	868	0.3	0.4	1.846	A
2	431	108	759	2058	0.209	430	433	0.2	0.3	2.216	A
3	111	28	1068	1166	0.095	110	121	0.1	0.1	3.554	A
4	859	215	316	2337	0.368	859	863	0.4	0.6	2.483	A
5	114	29	1094	1267	0.090	114	81	0.1	0.1	3.122	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1044	261	417	2765	0.378	1043	1063	0.4	0.6	2.115	A
2	527	132	930	1941	0.272	527	530	0.3	0.4	2.551	A
3	135	34	1308	1038	0.131	135	149	0.1	0.2	4.156	A
4	1053	263	387	2290	0.460	1051	1056	0.6	0.9	2.964	A
5	140	35	1340	1127	0.124	140	99	0.1	0.1	3.646	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1044	261	417	2764	0.378	1044	1064	0.6	0.6	2.117	A
2	527	132	930	1941	0.272	527	531	0.4	0.4	2.552	A
3	135	34	1309	1037	0.131	135	149	0.2	0.2	4.160	A
4	1053	263	388	2290	0.460	1053	1057	0.9	0.9	2.969	A
5	140	35	1341	1126	0.124	140	99	0.1	0.1	3.649	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	852	213	341	2824	0.302	853	869	0.6	0.4	1.848	A
2	431	108	760	2058	0.209	431	434	0.4	0.3	2.218	A
3	111	28	1070	1165	0.095	111	121	0.2	0.1	3.561	A
4	859	215	317	2337	0.368	861	864	0.9	0.6	2.491	A
5	114	29	1096	1266	0.090	114	81	0.1	0.1	3.126	A

13:15 - 13:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	714	178	286	2867	0.249	714	728	0.4	0.3	1.691	A
2	361	90	637	2143	0.168	361	363	0.3	0.2	2.026	A
3	93	23	896	1258	0.074	93	102	0.1	0.1	3.221	A
4	720	180	265	2371	0.304	720	723	0.6	0.4	2.226	A
5	96	24	918	1368	0.070	96	68	0.1	0.1	2.832	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: Dereham Road Rbt LANES.j9
Path: C:\Data\Projects\J000401-J000450\J000420 New Foodstore Norwich\Background Information\Junction Assessments
Report generation date: 01/08/2023 11:13:53

»2023 Survey, Friday Daytime
»2023 Survey, Friday PM
»2023 Survey, Saturday

Summary of junction performance

	Friday Daytime								Friday PM								Saturday							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	[Lane Simulation] - 2023 Survey																							
Arm 1		1.6	5.95		A					1.9	5.87		A					1.7	5.40		A			
Arm 2		1.0	4.81		A			%		1.2	4.71		A			%		0.6	4.40		A			%
Arm 3	D1	1.1	11.59		B	8.77	A		D2	2.1	14.89		B	8.90	A		D3	0.4	8.23		A	7.36	A	
Arm 4		4.1	12.26		B			[ ]		3.5	11.98		B			[ ]		3.0	10.59		B			[ ]
Arm 5		1.1	11.61		B					0.5	10.12		B					0.3	8.05		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. Arm and junction delays are averages for all movements, including movements with zero delay. 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	
Location	
Site number	
Date	18/07/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	FTPDT-01\Office
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			349059019	97	25.13

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 Survey	Friday Daytime	ONE HOUR	14:30	16:00	15	✓
D2	2023 Survey	Friday PM	ONE HOUR	16:00	17:30	15	✓
D3	2023 Survey	Saturday	ONE HOUR	12:00	13:30	15	✓

Analysis Set Details

ID	Use Lane Simulation	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	✓	100.000	100.000

2023 Survey, Friday Daytime

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	8.77	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Derehame Road (E)	
2	Wendene	
3	Barnard Road	
4	Dereham Road (W)	
5	Breckland Road	

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	7.55	10.42	23.5	29.6	64.0	17.0	
2	7.20	8.76	6.0	25.9	65.2	16.5	
3	3.95	7.93	8.5	37.1	66.9	26.5	
4	6.00	10.58	10.9	27.9	67.7	17.5	
5	3.23	7.60	28.3	18.7	63.9	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.782	3091
2	0.688	2581
3	0.535	1737
4	0.666	2548
5	0.571	1892

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

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00
5	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	2	✓	5.00		0	99999	
			2	3, 4	✓	5.00		0	99999	
			3	1, 4, 5	✓	5.00		0	99999	
		2	1	(2, 3, 4)		Infinity				
			2	(1, 4, 5)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	1, 3, 4		Infinity		0	99999	
			2	1, 2, 4, 5		Infinity		0	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	2, 4, 5	✓	5.00		0	99999	
			2	1, 2, 3	✓	5.00		0	99999	
		2	1	(1, 2, 3, 4, 5)		Infinity				
	Exit	1	1			Infinity				
4	Entry	1	1	5	✓	3.00		0	99999	
			2	1	✓	3.00		0	99999	
			3	1, 2, 3, 4	✓	3.00		0	99999	
		2	1	(1, 5)		Infinity				
			2	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
5	Entry	1	1	1	✓	5.00		0	99999	
			2	2, 3, 4, 5	✓	5.00		0	99999	
		2	1	(1, 2, 3, 4, 5)		Infinity				
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.261	1030

			2	0.261	1030
			3	0.261	1030
2	Entry	1	1	0.344	1290
			2	0.344	1290
3	Entry	1	1	0.267	869
			2	0.267	869
4	Entry	1	1	0.222	849
			2	0.222	849
			3	0.222	849
5	Entry	1	1	0.285	946
			2	0.285	946

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm				
			1	2	3	4	5
1	1	1		✓			
		2			✓	✓	
		3	✓			✓	✓
	2	1		✓	✓	✓	
		2	✓			✓	✓
2	1	1	✓		✓	✓	
		2	✓	✓		✓	✓
3	1	1		✓		✓	✓
		2	✓	✓	✓		
	2	1	✓	✓	✓	✓	✓
4	1	1					✓
		2	✓				
		3	✓	✓	✓	✓	
	2	1	✓				✓
		2	✓	✓	✓	✓	
5	1	1	✓				
		2		✓	✓	✓	✓
	2	1	✓	✓	✓	✓	✓

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 Survey	Friday Daytime	ONE HOUR	14:30	16:00	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		ONE HOUR	✓	942	100.000
2		ONE HOUR	✓	593	100.000
3		ONE HOUR	✓	281	100.000
4		ONE HOUR	✓	964	100.000
5		ONE HOUR	✓	301	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	248	37	595	60
	2	260	0	35	215	83
	3	110	23	1	143	4
	4	560	252	70	5	77
	5	72	108	8	111	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	12	4	2
	2	0	0	0	2	0
	3	2	0	0	4	0
	4	3	1	15	0	1
	5	1	1	0	3	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.95	1.6	A	866	1299
2	4.81	1.0	A	545	818
3	11.59	1.1	B	253	380
4	12.26	4.1	B	887	1331
5	11.61	1.1	B	276	415

Main Results for each time segment

14:30 - 14:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	695	174	444	693	703	749	0.0	1.1	4.729	A
2	445	111	660	444	448	477	0.0	0.5	3.710	A
3	211	53	986	211	217	117	0.0	0.5	7.768	A
4	718	180	410	723	716	788	0.0	1.3	7.458	A
5	222	56	967	226	227	166	0.0	0.2	6.999	A

14:45 - 15:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	853	213	522	854	853	906	1.1	1.3	5.283	A
2	528	132	801	529	529	575	0.5	0.5	4.014	A
3	247	62	1191	247	248	139	0.5	0.6	8.713	A
4	857	214	486	862	853	952	1.3	1.7	8.480	A
5	275	69	1150	278	272	199	0.2	0.5	8.248	A

15:00 - 15:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1042	261	641	1041	1041	1102	1.3	1.6	5.947	A
2	659	165	981	660	655	701	0.5	0.7	4.547	A
3	296	74	1478	297	306	163	0.6	0.9	11.013	B
4	1074	268	597	1065	1059	1178	1.7	4.1	12.258	B
5	331	83	1410	333	333	252	0.5	0.9	11.165	B

15:15 - 15:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1039	260	646	1042	1038	1094	1.6	1.6	5.832	A
2	649	162	984	649	651	704	0.7	1.0	4.812	A
3	307	77	1463	305	305	171	0.9	1.1	11.592	B
4	1059	265	596	1061	1058	1172	4.1	3.6	11.994	B
5	330	82	1409	330	332	248	0.9	1.1	11.608	B

15:30 - 15:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	845	211	515	842	847	913	1.6	1.3	5.361	A
2	539	135	802	539	540	555	1.0	0.5	4.208	A
3	250	62	1209	245	252	132	1.1	0.9	9.175	A
4	881	220	482	879	884	972	3.6	2.2	8.940	A
5	270	67	1156	272	272	204	1.1	0.6	8.753	A

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	720	180	453	721	722	758	1.3	0.9	4.853	A
2	451	113	684	451	448	491	0.5	0.5	3.859	A
3	210	52	1024	211	216	111	0.9	0.3	7.582	A
4	734	184	414	732	736	821	2.2	1.7	7.370	A
5	231	58	980	232	232	166	0.6	0.4	7.173	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

14:30 - 14:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	185	915	0.202	184	185	0.0	0.4	4.838	A
			2	3, 4	255	915	0.279	254	257	0.0	0.3	4.588	A
			3	1, 4, 5	256	915	0.279	254	261	0.0	0.4	4.786	A
		2	1	(2, 3, 4)	434			434	436	0.0	0.0	0.000	A
			2	(1, 4, 5)	262			262	271	0.0	0.0	0.000	A
	Exit	1	1		749			749	758	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	205	1064	0.193	204	209	0.0	0.3	3.703	A
			2	1, 2, 4, 5	240	1064	0.226	240	239	0.0	0.3	3.715	A
	Exit	1	1		477			477	474	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	123	605	0.203	122	121	0.0	0.3	7.846	A
			2	1, 2, 3	88	605	0.146	89	96	0.0	0.2	7.672	A
		2	1	(1, 2, 3, 4, 5)	211			211	219	0.0	0.0	0.000	A
	Exit	1	1		117			117	115	0.0	0.0	0.000	A
4	Entry	1	1	5	56	758	0.074	56	55	0.0	0.1	5.250	A
			2	1	264	758	0.348	264	261	0.0	0.5	6.323	A
			3	1, 2, 3, 4	400	758	0.527	403	400	0.0	0.7	7.876	A
		2	1	(1, 5)	269			270	276	0.0	0.0	0.081	A
			2	(1, 2, 3, 4)	449			450	445	0.0	0.0	0.522	A
	Exit	1	1		788			788	799	0.0	0.0	0.000	A
5	Entry	1	1	1	51	670	0.076	51	55	0.0	0.0	5.603	A
			2	2, 3, 4, 5	171	670	0.256	174	172	0.0	0.2	7.438	A
		2	1	(1, 2, 3, 4, 5)	222			222	228	0.0	0.0	0.002	A
	Exit	1	1		166			166	165	0.0	0.0	0.000	A

14:45 - 15:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	231	894	0.258	231	228	0.4	0.4	5.439	A
			2	3, 4	308	894	0.345	308	307	0.3	0.5	5.142	A
			3	1, 4, 5	314	894	0.351	315	319	0.4	0.5	5.300	A
		2	1	(2, 3, 4)	521			521	524	0.0	0.0	0.002	A
			2	(1, 4, 5)	332			332	330	0.0	0.0	0.001	A
	Exit	1	1		906			906	896	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	253	1015	0.250	254	249	0.3	0.2	3.975	A
			2	1, 2, 4, 5	275	1015	0.271	275	281	0.3	0.2	4.048	A
	Exit	1	1		575			575	564	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	139	550	0.253	140	141	0.3	0.3	8.809	A
			2	1, 2, 3	107	550	0.195	108	107	0.2	0.3	8.530	A
		2	1	(1, 2, 3, 4, 5)	247			247	249	0.0	0.0	0.026	A
	Exit	1	1		139			139	132	0.0	0.0	0.000	A
4	Entry	1	1	5	69	741	0.093	70	70	0.1	0.0	5.625	A
			2	1	326	741	0.439	326	319	0.5	0.6	6.904	A
			3	1, 2, 3, 4	461	741	0.622	466	463	0.7	0.8	8.675	A
		2	1	(1, 5)	328			328	330	0.0	0.0	0.231	A
			2	(1, 2, 3, 4)	528			527	523	0.0	0.2	1.026	A
	Exit	1	1		952			952	961	0.0	0.0	0.000	A
5	Entry	1	1	1	67	618	0.108	67	65	0.0	0.1	6.489	A
			2	2, 3, 4, 5	208	618	0.337	211	207	0.2	0.4	8.728	A
		2	1	(1, 2, 3, 4, 5)	275			275	273	0.0	0.0	0.057	A
	Exit	1	1		199			199	201	0.0	0.0	0.000	A

15:00 - 15:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	278	863	0.322	279	281	0.4	0.4	6.203	A
			2	3, 4	369	863	0.427	369	370	0.5	0.6	5.855	A
			3	1, 4, 5	395	863	0.458	394	390	0.5	0.6	5.836	A
		2	1	(2, 3, 4)	645			645	647	0.0	0.0	0.005	A
			2	(1, 4, 5)	397			397	395	0.0	0.0	0.000	A
	Exit	1	1		1102			1102	1107	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	313	953	0.328	313	312	0.2	0.3	4.483	A
			2	1, 2, 4, 5	346	953	0.364	347	343	0.2	0.4	4.604	A
	Exit	1	1		701			701	700	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	164	473	0.346	166	172	0.3	0.5	11.281	B
			2	1, 2, 3	132	473	0.279	131	134	0.3	0.4	10.537	B
		2	1	(1, 2, 3, 4, 5)	296			296	307	0.0	0.0	0.061	A
	Exit	1	1		163			163	168	0.0	0.0	0.000	A
4	Entry	1	1	5	83	717	0.116	83	86	0.0	0.1	6.153	A
			2	1	431	717	0.601	428	416	0.6	1.2	8.957	A
			3	1, 2, 3, 4	557	717	0.777	553	556	0.8	1.8	10.657	B
		2	1	(1, 5)	456			455	448	0.0	0.2	0.991	A
			2	(1, 2, 3, 4)	618			616	618	0.2	0.7	3.834	A
	Exit	1	1		1178			1178	1166	0.0	0.0	0.000	A
5	Entry	1	1	1	76	543	0.140	77	83	0.1	0.2	7.363	A
			2	2, 3, 4, 5	255	543	0.469	256	251	0.4	0.7	12.120	B
		2	1	(1, 2, 3, 4, 5)	331			331	335	0.0	0.0	0.224	A
	Exit	1	1		252			252	253	0.0	0.0	0.000	A

15:15 - 15:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	275	862	0.319	274	271	0.4	0.5	5.935	A
			2	3, 4	376	862	0.436	377	378	0.6	0.5	5.748	A
			3	1, 4, 5	389	862	0.451	391	389	0.6	0.6	5.821	A
		2	1	(2, 3, 4)	639			639	643	0.0	0.0	0.009	A
			2	(1, 4, 5)	400			400	395	0.0	0.0	0.002	A
	Exit	1	1		1094			1094	1101	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	308	952	0.324	308	311	0.3	0.5	4.682	A
			2	1, 2, 4, 5	341	952	0.358	341	340	0.4	0.5	4.931	A
	Exit	1	1		704			704	696	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	170	478	0.356	171	169	0.5	0.6	12.226	B
			2	1, 2, 3	137	478	0.287	135	137	0.4	0.5	10.579	B
		2	1	(1, 2, 3, 4, 5)	307			307	307	0.0	0.0	0.107	A
	Exit	1	1		171			171	166	0.0	0.0	0.000	A
4	Entry	1	1	5	83	717	0.116	83	85	0.1	0.1	5.853	A
			2	1	421	717	0.587	420	418	1.2	1.2	8.882	A
			3	1, 2, 3, 4	559	717	0.779	558	556	1.8	1.8	10.793	B
		2	1	(1, 5)	456			457	449	0.2	0.1	0.904	A
			2	(1, 2, 3, 4)	603			605	609	0.7	0.4	3.448	A
	Exit	1	1		1172			1172	1174	0.0	0.0	0.000	A
5	Entry	1	1	1	74	544	0.136	74	80	0.2	0.1	7.899	A
			2	2, 3, 4, 5	256	544	0.470	256	252	0.7	0.9	12.478	B
		2	1	(1, 2, 3, 4, 5)	330			330	332	0.0	0.0	0.234	A
	Exit	1	1		248			248	246	0.0	0.0	0.000	A

15:30 - 15:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	213	896	0.237	211	217	0.5	0.4	5.547	A
			2	3, 4	313	896	0.349	311	309	0.5	0.5	5.324	A
			3	1, 4, 5	320	896	0.357	320	321	0.6	0.4	5.264	A
		2	1	(2, 3, 4)	515			515	522	0.0	0.0	0.001	A
			2	(1, 4, 5)	331			331	324	0.0	0.0	0.002	A
	Exit	1	1		913			913	916	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	258	1014	0.254	258	258	0.5	0.2	4.094	A
			2	1, 2, 4, 5	281	1014	0.277	282	282	0.5	0.3	4.312	A
	Exit	1	1		555			555	564	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	141	545	0.259	138	143	0.6	0.6	9.497	A
			2	1, 2, 3	108	545	0.198	107	109	0.5	0.4	8.677	A
		2	1	(1, 2, 3, 4, 5)	250			250	252	0.0	0.0	0.035	A

	Exit	1	1		132			132	138	0.0	0.0	0.000	A
4	Entry	1	1	5	70	742	0.094	70	70	0.1	0.1	5.809	A
			2	1	333	742	0.449	331	331	1.2	0.8	7.366	A
			3	1, 2, 3, 4	479	742	0.646	478	482	1.8	1.2	8.967	A
		2	1	(1, 5)	352			353	345	0.1	0.0	0.304	A
			2	(1, 2, 3, 4)	529			530	535	0.4	0.1	1.185	A
	Exit	1	1		972			972	974	0.0	0.0	0.000	A
5	Entry	1	1	1	69	616	0.112	69	68	0.1	0.1	7.179	A
			2	2, 3, 4, 5	201	616	0.327	203	205	0.9	0.5	9.231	A
		2	1	(1, 2, 3, 4, 5)	270			270	271	0.0	0.0	0.036	A
	Exit	1	1		204			204	203	0.0	0.0	0.000	A

15:45 - 16:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	186	912	0.204	187	189	0.4	0.2	5.154	A
			2	3, 4	258	912	0.283	257	256	0.5	0.4	4.757	A
			3	1, 4, 5	276	912	0.303	277	276	0.4	0.4	4.728	A
		2	1	(2, 3, 4)	440			440	441	0.0	0.0	0.001	A
			2	(1, 4, 5)	280			280	279	0.0	0.0	0.000	A
	Exit	1	1		758			758	766	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	208	1055	0.197	208	210	0.2	0.3	3.834	A
			2	1, 2, 4, 5	242	1055	0.230	243	237	0.3	0.2	3.881	A
	Exit	1	1		491			491	489	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	120	595	0.201	120	121	0.6	0.2	7.873	A
			2	1, 2, 3	90	595	0.151	90	94	0.4	0.1	7.213	A
		2	1	(1, 2, 3, 4, 5)	210			210	213	0.0	0.0	0.000	A
	Exit	1	1		111			111	111	0.0	0.0	0.000	A
4	Entry	1	1	5	56	757	0.074	55	57	0.1	0.1	5.011	A
			2	1	266	757	0.351	266	269	0.8	0.5	6.214	A
			3	1, 2, 3, 4	412	757	0.544	410	411	1.2	1.0	7.792	A
		2	1	(1, 5)	278			278	279	0.0	0.0	0.067	A
			2	(1, 2, 3, 4)	456			456	455	0.1	0.1	0.575	A
	Exit	1	1		821			821	817	0.0	0.0	0.000	A
5	Entry	1	1	1	53	666	0.079	53	55	0.1	0.1	6.173	A
			2	2, 3, 4, 5	178	666	0.267	178	177	0.5	0.3	7.474	A
		2	1	(1, 2, 3, 4, 5)	231			231	231	0.0	0.0	0.010	A
	Exit	1	1		166			166	170	0.0	0.0	0.000	A

2023 Survey, Friday PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	8.90	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2023 Survey	Friday PM	ONE HOUR	16:00	17:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1023	100.000
2		ONE HOUR	✓	565	100.000
3		ONE HOUR	✓	387	100.000
4		ONE HOUR	✓	955	100.000
5		ONE HOUR	✓	159	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	225	50	707	39
	2	247	1	33	217	67
	3	174	32	0	177	4
	4	643	188	68	4	52
	5	32	60	2	65	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	1	14	2	0
	2	0	0	3	0	2
	3	2	0	0	3	0
	4	2	1	10	0	2
	5	3	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.87	1.9	A	939	1408
2	4.71	1.2	A	515	772
3	14.89	2.1	B	354	531
4	11.98	3.5	B	881	1322
5	10.12	0.5	B	145	218

Main Results for each time segment

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	779	195	313	779	766	839	0.0	1.0	4.620	A
2	417	104	713	417	425	379	0.0	0.4	3.716	A
3	294	74	1010	292	292	119	0.0	0.8	7.943	A
4	724	181	425	725	713	877	0.0	1.5	7.082	A
5	124	31	1027	125	124	124	0.0	0.2	6.522	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	921	230	379	921	920	994	1.0	1.3	4.974	A
2	515	129	834	511	508	467	0.4	0.8	4.098	A
3	349	87	1211	353	352	135	0.8	0.8	9.480	A
4	871	218	511	871	866	1052	1.5	2.1	8.505	A
5	138	35	1235	138	139	148	0.2	0.2	7.713	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1108	277	455	1106	1123	1205	1.3	1.8	5.547	A
2	626	156	1017	620	621	544	0.8	1.2	4.643	A
3	427	107	1464	418	415	173	0.8	2.1	13.396	B
4	1052	263	616	1054	1045	1267	2.1	3.2	10.992	B
5	171	43	1492	168	168	177	0.2	0.5	8.765	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1148	287	476	1145	1141	1214	1.8	1.9	5.875	A
2	607	152	1037	609	624	583	1.2	0.9	4.706	A
3	427	107	1482	436	434	164	2.1	1.5	14.892	B
4	1054	263	630	1053	1067	1289	3.2	3.5	11.980	B
5	183	46	1507	183	179	176	0.5	0.3	10.116	B

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	928	232	364	927	927	987	1.9	1.4	5.040	A
2	498	125	851	501	513	440	0.9	0.4	4.285	A
3	354	89	1214	353	353	137	1.5	1.0	10.571	B
4	859	215	513	855	867	1055	3.5	2.0	8.467	A
5	134	33	1216	134	141	152	0.3	0.2	7.778	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	749	187	307	745	764	833	1.4	1.1	4.567	A
2	426	107	683	425	424	369	0.4	0.5	3.667	A
3	273	68	999	274	290	109	1.0	0.7	7.829	A
4	726	182	413	722	727	860	2.0	1.6	7.122	A
5	123	31	1018	121	123	116	0.2	0.3	6.700	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:00 - 16:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	176	949	0.185	175	171	0.0	0.3	4.934	A
			2	3, 4	306	949	0.323	305	300	0.0	0.4	4.471	A
			3	1, 4, 5	297	949	0.313	299	295	0.0	0.3	4.587	A
		2	1	(2, 3, 4)	480			480	472	0.0	0.0	0.000	A
			2	(1, 4, 5)	299			299	298	0.0	0.0	0.000	A
	Exit	1	1		839			839	834	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	199	1045	0.190	199	202	0.0	0.2	3.654	A
			2	1, 2, 4, 5	219	1045	0.209	218	223	0.0	0.3	3.772	A
	Exit	1	1		379			379	381	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	148	598	0.248	146	145	0.0	0.4	8.161	A
			2	1, 2, 3	146	598	0.244	145	147	0.0	0.4	7.726	A
		2	1	(1, 2, 3, 4, 5)	294			294	295	0.0	0.0	0.001	A
	Exit	1	1		119			119	113	0.0	0.0	0.000	A
4	Entry	1	1	5	38	755	0.051	38	38	0.0	0.1	5.080	A
			2	1	294	755	0.389	296	287	0.0	0.5	6.290	A
			3	1, 2, 3, 4	392	755	0.519	391	388	0.0	1.0	7.425	A
		2	1	(1, 5)	294			294	288	0.0	0.0	0.089	A
			2	(1, 2, 3, 4)	430			430	431	0.0	0.1	0.336	A
	Exit	1	1		877			877	868	0.0	0.0	0.000	A
5	Entry	1	1	1	26	653	0.039	26	26	0.0	0.0	5.940	A
			2	2, 3, 4, 5	98	653	0.151	99	97	0.0	0.2	6.675	A
		2	1	(1, 2, 3, 4, 5)	124			124	125	0.0	0.0	0.000	A
	Exit	1	1		124			124	124	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	206	931	0.222	207	203	0.3	0.3	5.120	A
			2	3, 4	363	931	0.390	363	363	0.4	0.5	4.998	A
			3	1, 4, 5	352	931	0.377	351	354	0.3	0.5	4.856	A
		2	1	(2, 3, 4)	573			573	572	0.0	0.0	0.006	A
			2	(1, 4, 5)	349			349	349	0.0	0.0	0.001	A
	Exit	1	1		994			994	992	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	245	1004	0.244	244	242	0.2	0.3	4.035	A
			2	1, 2, 4, 5	270	1004	0.269	268	267	0.3	0.4	4.154	A
	Exit	1	1		467			467	456	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	178	545	0.326	179	181	0.4	0.4	9.400	A
			2	1, 2, 3	172	545	0.315	174	170	0.4	0.3	9.452	A
		2	1	(1, 2, 3, 4, 5)	349			349	352	0.0	0.0	0.055	A

	Exit	1	1		135			135	139	0.0	0.0	0.000	A
4	Entry	1	1	5	49	736	0.067	49	48	0.1	0.1	5.263	A
			2	1	361	736	0.491	360	356	0.5	0.7	7.390	A
			3	1, 2, 3, 4	460	736	0.625	461	461	1.0	1.1	8.658	A
		2	1	(1, 5)	352			352	352	0.0	0.0	0.252	A
			2	(1, 2, 3, 4)	519			519	516	0.1	0.1	0.774	A
	Exit	1	1		1052			1052	1054	0.0	0.0	0.000	A
5	Entry	1	1	1	28	593	0.048	28	28	0.0	0.1	6.934	A
			2	2, 3, 4, 5	110	593	0.185	110	111	0.2	0.2	7.896	A
		2	1	(1, 2, 3, 4, 5)	138			138	139	0.0	0.0	0.009	A
	Exit	1	1		148			148	144	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	245	912	0.269	244	248	0.3	0.4	5.497	A
			2	3, 4	436	912	0.479	434	441	0.5	0.8	5.558	A
			3	1, 4, 5	427	912	0.468	428	434	0.5	0.6	5.544	A
		2	1	(2, 3, 4)	682			682	690	0.0	0.0	0.014	A
			2	(1, 4, 5)	426			426	435	0.0	0.0	0.000	A
	Exit	1	1		1205			1205	1195	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	298	940	0.317	295	297	0.3	0.6	4.518	A
			2	1, 2, 4, 5	327	940	0.348	325	324	0.4	0.6	4.758	A
	Exit	1	1		544			544	549	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	220	477	0.460	215	213	0.4	0.9	12.894	B
			2	1, 2, 3	207	477	0.433	204	202	0.3	1.0	13.414	B
		2	1	(1, 2, 3, 4, 5)	427			426	420	0.0	0.1	0.232	A
	Exit	1	1		173			173	166	0.0	0.0	0.000	A
4	Entry	1	1	5	56	713	0.079	56	57	0.1	0.1	6.067	A
			2	1	450	713	0.631	450	442	0.7	1.0	8.980	A
			3	1, 2, 3, 4	548	713	0.769	548	546	1.1	1.6	10.023	B
		2	1	(1, 5)	452			452	446	0.0	0.1	1.053	A
			2	(1, 2, 3, 4)	600			601	602	0.1	0.3	2.040	A
	Exit	1	1		1267			1267	1283	0.0	0.0	0.000	A
5	Entry	1	1	1	36	520	0.069	36	35	0.1	0.1	7.281	A
			2	2, 3, 4, 5	135	520	0.259	132	133	0.2	0.5	9.137	A
		2	1	(1, 2, 3, 4, 5)	171			171	169	0.0	0.0	0.004	A
	Exit	1	1		177			177	180	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	262	906	0.290	262	255	0.4	0.3	5.489	A
			2	3, 4	440	906	0.486	438	439	0.8	0.9	6.079	A
			3	1, 4, 5	444	906	0.490	445	447	0.6	0.7	5.824	A
		2	1	(2, 3, 4)	703			702	698	0.0	0.0	0.037	A
			2	(1, 4, 5)	445			445	443	0.0	0.0	0.014	A
	Exit	1	1		1214			1214	1222	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	297	934	0.318	299	304	0.6	0.4	4.632	A
			2	1, 2, 4, 5	310	934	0.332	310	320	0.6	0.5	4.775	A
	Exit	1	1		583			583	576	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	216	472	0.457	218	219	0.9	0.9	14.104	B
			2	1, 2, 3	215	472	0.455	218	215	1.0	0.7	14.263	B
		2	1	(1, 2, 3, 4, 5)	427			431	432	0.1	0.0	0.723	A
	Exit	1	1		164			164	167	0.0	0.0	0.000	A
4	Entry	1	1	5	55	709	0.078	56	58	0.1	0.1	6.038	A
			2	1	451	709	0.636	451	456	1.0	1.1	9.244	A
			3	1, 2, 3, 4	547	709	0.771	546	552	1.6	1.6	10.666	B
		2	1	(1, 5)	460			460	476	0.1	0.1	1.165	A
			2	(1, 2, 3, 4)	594			593	591	0.3	0.5	2.998	A
	Exit	1	1		1289			1289	1298	0.0	0.0	0.000	A
5	Entry	1	1	1	37	516	0.072	36	35	0.1	0.1	7.175	A
			2	2, 3, 4, 5	145	516	0.282	146	144	0.5	0.3	10.756	B
		2	1	(1, 2, 3, 4, 5)	183			183	178	0.0	0.0	0.052	A
	Exit	1	1		176			176	182	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	200	935	0.214	199	202	0.3	0.4	5.039	A
			2	3, 4	374	935	0.400	373	365	0.9	0.6	5.079	A
			3	1, 4, 5	354	935	0.379	356	360	0.7	0.4	5.000	A
		2	1	(2, 3, 4)	559			559	568	0.0	0.0	0.001	A
			2	(1, 4, 5)	369			369	358	0.0	0.0	0.001	A
	Exit	1	1		987			987	988	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	235	998	0.236	237	246	0.4	0.1	4.267	A
			2	1, 2, 4, 5	263	998	0.264	264	267	0.5	0.3	4.302	A
	Exit	1	1		440			440	456	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	174	544	0.320	175	179	0.9	0.5	10.613	B
			2	1, 2, 3	180	544	0.331	179	174	0.7	0.5	10.392	B
		2	1	(1, 2, 3, 4, 5)	354			354	351	0.0	0.0	0.067	A
	Exit	1	1		137			137	142	0.0	0.0	0.000	A
4	Entry	1	1	5	49	735	0.066	50	48	0.1	0.0	5.417	A
			2	1	352	735	0.479	352	356	1.1	0.7	7.211	A
			3	1, 2, 3, 4	458	735	0.623	453	463	1.6	1.1	8.645	A
		2	1	(1, 5)	350			350	356	0.1	0.0	0.252	A
			2	(1, 2, 3, 4)	509			510	507	0.5	0.1	0.845	A
	Exit	1	1		1055			1055	1065	0.0	0.0	0.000	A
5	Entry	1	1	1	29	599	0.049	29	29	0.1	0.1	6.152	A
			2	2, 3, 4, 5	104	599	0.174	105	112	0.3	0.2	8.180	A
		2	1	(1, 2, 3, 4, 5)	134			134	140	0.0	0.0	0.009	A
	Exit	1	1		152			152	149	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

1	Entry	1	1	2	165	950	0.174	164	170	0.4	0.3	4.534	A
			2	3, 4	297	950	0.313	296	302	0.6	0.4	4.533	A
			3	1, 4, 5	286	950	0.301	285	292	0.4	0.4	4.620	A
		2	1	(2, 3, 4)	463			463	470	0.0	0.0	0.000	A
			2	(1, 4, 5)	286			286	292	0.0	0.0	0.000	A
	Exit	1	1		833			833	842	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	200	1055	0.190	200	203	0.1	0.1	3.647	A
			2	1, 2, 4, 5	226	1055	0.214	225	221	0.3	0.3	3.686	A
	Exit	1	1		369			369	383	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	139	602	0.231	138	145	0.5	0.4	7.411	A
			2	1, 2, 3	134	602	0.222	136	146	0.5	0.2	8.177	A
		2	1	(1, 2, 3, 4, 5)	273			273	289	0.0	0.0	0.034	A
	Exit	1	1		109			109	113	0.0	0.0	0.000	A
4	Entry	1	1	5	40	758	0.053	40	39	0.0	0.0	4.889	A
			2	1	285	758	0.376	283	292	0.7	0.6	6.490	A
			3	1, 2, 3, 4	401	758	0.530	398	396	1.1	0.9	7.350	A
		2	1	(1, 5)	299			299	296	0.0	0.0	0.108	A
			2	(1, 2, 3, 4)	427			427	430	0.1	0.0	0.351	A
	Exit	1	1		860			860	873	0.0	0.0	0.000	A
5	Entry	1	1	1	22	655	0.034	22	24	0.1	0.0	5.798	A
			2	2, 3, 4, 5	100	655	0.153	99	99	0.2	0.3	6.910	A
		2	1	(1, 2, 3, 4, 5)	123			123	124	0.0	0.0	0.001	A
	Exit	1	1		116			116	118	0.0	0.0	0.000	A

2023 Survey, Saturday

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	7.36	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2023 Survey	Saturday	ONE HOUR	12:00	13:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	948	100.000
2		ONE HOUR	✓	479	100.000
3		ONE HOUR	✓	123	100.000
4		ONE HOUR	✓	956	100.000
5		ONE HOUR	✓	127	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	4	236	42	628	38
	2	218	0	16	222	23
	3	48	19	0	54	2
	4	665	192	68	4	27
	5	31	35	9	52	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	2	2	3
	2	1	0	0	0	0
	3	4	0	0	6	0
	4	1	2	12	0	0
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.40	1.7	A	880	1320
2	4.40	0.6	A	434	652
3	8.23	0.4	A	114	171
4	10.59	3.0	B	872	1308
5	8.05	0.3	A	119	178

Main Results for each time segment

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	708	177	287	710	700	711	0.0	0.9	4.381	A
2	349	87	628	351	364	369	0.0	0.3	3.528	A
3	92	23	875	93	95	104	0.0	0.2	6.769	A
4	706	177	257	702	707	711	0.0	1.5	6.523	A
5	101	25	896	102	100	63	0.0	0.1	6.238	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	871	218	334	870	860	877	0.9	1.2	4.583	A
2	425	106	759	426	429	444	0.3	0.5	3.855	A
3	116	29	1058	119	111	127	0.2	0.1	6.828	A
4	874	219	319	870	873	858	1.5	2.2	8.127	A
5	109	27	1105	106	109	84	0.1	0.3	6.087	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1067	267	423	1064	1045	1045	1.2	1.7	5.206	A
2	518	130	951	518	533	536	0.5	0.5	4.114	A
3	138	34	1317	136	135	151	0.1	0.4	7.928	A
4	1045	261	385	1046	1053	1067	2.2	2.8	10.032	B
5	139	35	1328	139	141	102	0.3	0.3	7.693	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1051	263	416	1052	1054	1084	1.7	1.7	5.401	A
2	529	132	925	531	529	543	0.5	0.6	4.402	A
3	146	36	1312	146	141	144	0.4	0.4	8.234	A
4	1050	262	398	1057	1055	1060	2.8	3.0	10.593	B
5	140	35	1359	141	142	96	0.3	0.3	8.047	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	857	214	352	856	862	864	1.7	1.1	4.704	A
2	428	107	769	427	436	438	0.6	0.5	3.840	A
3	105	26	1080	104	109	117	0.4	0.2	6.950	A
4	858	214	313	862	869	871	3.0	2.0	8.034	A
5	120	30	1094	121	117	80	0.3	0.2	6.526	A

13:15 - 13:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	726	182	286	725	715	707	1.1	1.0	4.426	A
2	358	89	651	357	364	360	0.5	0.3	3.553	A
3	88	22	908	86	90	100	0.2	0.3	7.233	A
4	699	175	260	697	724	734	2.0	1.5	6.509	A
5	104	26	889	103	102	67	0.2	0.2	5.869	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

12:00 - 12:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	186	955	0.195	185	179	0.0	0.3	4.736	A
			2	3, 4	265	955	0.277	265	263	0.0	0.4	4.234	A
			3	1, 4, 5	258	955	0.270	260	259	0.0	0.2	4.281	A
		2	1	(2, 3, 4)	451			451	443	0.0	0.0	0.000	A
			2	(1, 4, 5)	257			257	261	0.0	0.0	0.000	A
	Exit	1	1		711			711	719	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	172	1074	0.160	172	182	0.0	0.2	3.469	A
			2	1, 2, 4, 5	177	1074	0.165	179	181	0.0	0.1	3.588	A
	Exit	1	1		369			369	366	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	51	635	0.080	51	52	0.0	0.1	6.774	A
			2	1, 2, 3	41	635	0.065	43	43	0.0	0.0	6.762	A
		2	1	(1, 2, 3, 4, 5)	92			92	96	0.0	0.0	0.000	A
	Exit	1	1		104			104	102	0.0	0.0	0.000	A
4	Entry	1	1	5	19	792	0.024	19	19	0.0	0.0	4.651	A
			2	1	286	792	0.361	285	289	0.0	0.5	5.840	A
			3	1, 2, 3, 4	402	792	0.507	398	399	0.0	0.9	6.786	A
		2	1	(1, 5)	261			261	271	0.0	0.0	0.057	A
			2	(1, 2, 3, 4)	445			445	442	0.0	0.0	0.263	A
	Exit	1	1		711			711	716	0.0	0.0	0.000	A
5	Entry	1	1	1	26	690	0.038	26	24	0.0	0.0	6.414	A
			2	2, 3, 4, 5	75	690	0.109	76	76	0.0	0.1	6.182	A
		2	1	(1, 2, 3, 4, 5)	101			101	101	0.0	0.0	0.000	A
	Exit	1	1		63			63	64	0.0	0.0	0.000	A

12:15 - 12:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	223	943	0.236	222	212	0.3	0.3	4.779	A
			2	3, 4	324	943	0.343	323	322	0.4	0.4	4.569	A
			3	1, 4, 5	324	943	0.344	324	326	0.2	0.4	4.466	A
		2	1	(2, 3, 4)	548			548	540	0.0	0.0	0.001	A
			2	(1, 4, 5)	323			323	320	0.0	0.0	0.000	A
	Exit	1	1		877			877	878	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	213	1029	0.207	213	211	0.2	0.3	3.841	A
			2	1, 2, 4, 5	212	1029	0.206	212	218	0.1	0.2	3.868	A
	Exit	1	1		444			444	432	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	63	586	0.107	64	59	0.1	0.0	7.098	A
			2	1, 2, 3	53	586	0.091	54	52	0.0	0.0	6.526	A
		2	1	(1, 2, 3, 4, 5)	116			116	111	0.0	0.0	0.000	A

	Exit	1	1		127			127	127	0.0	0.0	0.000	A
4	Entry	1	1	5	27	779	0.035	27	26	0.0	0.0	4.813	A
			2	1	365	779	0.469	365	373	0.5	0.7	6.859	A
			3	1, 2, 3, 4	480	779	0.617	478	473	0.9	1.3	8.196	A
		2	1	(1, 5)	331			330	347	0.0	0.1	0.265	A
			2	(1, 2, 3, 4)	544			543	529	0.0	0.1	0.831	A
	Exit	1	1		858			858	862	0.0	0.0	0.000	A
5	Entry	1	1	1	29	630	0.046	28	30	0.0	0.1	5.781	A
			2	2, 3, 4, 5	80	630	0.127	78	79	0.1	0.2	6.202	A
		2	1	(1, 2, 3, 4, 5)	109			109	110	0.0	0.0	0.000	A
	Exit	1	1		84			84	84	0.0	0.0	0.000	A

12:30 - 12:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	266	920	0.290	267	262	0.3	0.3	5.208	A
			2	3, 4	401	920	0.435	399	390	0.4	0.6	5.276	A
			3	1, 4, 5	400	920	0.435	399	393	0.4	0.7	5.129	A
		2	1	(2, 3, 4)	663			663	655	0.0	0.0	0.003	A
			2	(1, 4, 5)	404			404	392	0.0	0.0	0.002	A
	Exit	1	1		1045			1045	1063	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	256	963	0.266	255	263	0.3	0.3	4.121	A
			2	1, 2, 4, 5	263	963	0.273	262	270	0.2	0.2	4.107	A
	Exit	1	1		536			536	535	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	77	516	0.149	76	75	0.0	0.3	8.083	A
			2	1, 2, 3	61	516	0.118	60	60	0.0	0.2	7.736	A
		2	1	(1, 2, 3, 4, 5)	138			138	136	0.0	0.0	0.000	A
	Exit	1	1		151			151	153	0.0	0.0	0.000	A
4	Entry	1	1	5	28	764	0.037	28	27	0.0	0.1	4.860	A
			2	1	453	764	0.593	452	461	0.7	1.1	7.996	A
			3	1, 2, 3, 4	566	764	0.741	565	565	1.3	1.5	9.361	A
		2	1	(1, 5)	421			421	432	0.1	0.0	0.778	A
			2	(1, 2, 3, 4)	625			626	624	0.1	0.2	1.834	A
	Exit	1	1		1067			1067	1058	0.0	0.0	0.000	A
5	Entry	1	1	1	32	567	0.057	33	36	0.1	0.0	6.746	A
			2	2, 3, 4, 5	107	567	0.188	107	105	0.2	0.2	8.012	A
		2	1	(1, 2, 3, 4, 5)	139			139	141	0.0	0.0	0.005	A
	Exit	1	1		102			102	100	0.0	0.0	0.000	A

12:45 - 13:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	267	922	0.289	268	261	0.3	0.4	5.479	A
			2	3, 4	392	922	0.426	392	395	0.6	0.6	5.481	A
			3	1, 4, 5	392	922	0.425	393	398	0.7	0.6	5.253	A
		2	1	(2, 3, 4)	667			666	657	0.0	0.0	0.006	A
			2	(1, 4, 5)	384			384	398	0.0	0.0	0.001	A
	Exit	1	1		1084			1084	1079	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	261	972	0.269	263	263	0.3	0.2	4.398	A
			2	1, 2, 4, 5	268	972	0.276	267	266	0.2	0.3	4.407	A
	Exit	1	1		543			543	529	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	78	518	0.152	79	74	0.3	0.2	8.714	A
			2	1, 2, 3	67	518	0.129	67	67	0.2	0.2	7.710	A
		2	1	(1, 2, 3, 4, 5)	146			146	141	0.0	0.0	0.000	A
	Exit	1	1		144			144	150	0.0	0.0	0.000	A
4	Entry	1	1	5	30	761	0.039	30	31	0.1	0.0	4.879	A
			2	1	463	761	0.609	463	461	1.1	1.1	8.364	A
			3	1, 2, 3, 4	561	761	0.737	564	563	1.5	1.5	9.597	A
		2	1	(1, 5)	443			444	446	0.0	0.2	0.960	A
			2	(1, 2, 3, 4)	607			610	609	0.2	0.3	2.204	A
	Exit	1	1		1060			1060	1064	0.0	0.0	0.000	A
5	Entry	1	1	1	36	558	0.064	35	35	0.0	0.0	6.490	A
			2	2, 3, 4, 5	105	558	0.188	106	106	0.2	0.2	8.561	A
		2	1	(1, 2, 3, 4, 5)	140			140	142	0.0	0.0	0.000	A
	Exit	1	1		96			96	99	0.0	0.0	0.000	A

13:00 - 13:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	211	939	0.225	212	218	0.4	0.3	5.022	A
			2	3, 4	319	939	0.340	318	322	0.6	0.4	4.585	A
			3	1, 4, 5	326	939	0.348	325	322	0.6	0.4	4.612	A
		2	1	(2, 3, 4)	532			532	537	0.0	0.0	0.001	A
			2	(1, 4, 5)	325			325	323	0.0	0.0	0.000	A
	Exit	1	1		864			864	873	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	212	1026	0.207	212	214	0.2	0.2	3.907	A
			2	1, 2, 4, 5	216	1026	0.210	215	222	0.3	0.2	3.775	A
	Exit	1	1		438			438	441	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	59	580	0.102	59	59	0.2	0.2	6.957	A
			2	1, 2, 3	46	580	0.079	46	50	0.2	0.1	6.943	A
		2	1	(1, 2, 3, 4, 5)	105			105	108	0.0	0.0	0.000	A
	Exit	1	1		117			117	122	0.0	0.0	0.000	A
4	Entry	1	1	5	23	780	0.030	23	26	0.0	0.0	4.705	A
			2	1	360	780	0.462	363	364	1.1	0.7	7.101	A
			3	1, 2, 3, 4	474	780	0.607	475	479	1.5	1.1	7.964	A
		2	1	(1, 5)	331			331	340	0.2	0.0	0.298	A
			2	(1, 2, 3, 4)	527			526	526	0.3	0.2	0.696	A
	Exit	1	1		871			871	872	0.0	0.0	0.000	A
5	Entry	1	1	1	27	633	0.042	28	28	0.0	0.0	6.408	A
			2	2, 3, 4, 5	93	633	0.147	94	89	0.2	0.2	6.563	A
		2	1	(1, 2, 3, 4, 5)	120			120	116	0.0	0.0	0.000	A
	Exit	1	1		80			80	84	0.0	0.0	0.000	A

13:15 - 13:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

1	Entry	1	1	2	180	956	0.188	178	176	0.3	0.3	4.624	A
			2	3, 4	276	956	0.289	277	271	0.4	0.3	4.410	A
			3	1, 4, 5	271	956	0.284	271	268	0.4	0.3	4.311	A
		2	1	(2, 3, 4)	449			449	444	0.0	0.0	0.000	A
			2	(1, 4, 5)	277			277	270	0.0	0.0	0.000	A
	Exit	1	1		707			707	731	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	173	1066	0.162	173	178	0.2	0.1	3.526	A
			2	1, 2, 4, 5	184	1066	0.173	184	187	0.2	0.2	3.578	A
	Exit	1	1		360			360	361	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	48	626	0.077	47	48	0.2	0.1	7.771	A
			2	1, 2, 3	40	626	0.063	38	43	0.1	0.2	6.637	A
		2	1	(1, 2, 3, 4, 5)	88			88	90	0.0	0.0	0.000	A
	Exit	1	1		100			100	102	0.0	0.0	0.000	A
4	Entry	1	1	5	21	792	0.027	22	23	0.0	0.0	4.785	A
			2	1	287	792	0.362	285	298	0.7	0.5	5.841	A
			3	1, 2, 3, 4	391	792	0.494	389	403	1.1	0.9	6.791	A
		2	1	(1, 5)	264			264	279	0.0	0.0	0.049	A
			2	(1, 2, 3, 4)	436			435	443	0.2	0.0	0.265	A
	Exit	1	1		734			734	732	0.0	0.0	0.000	A
5	Entry	1	1	1	24	692	0.034	24	24	0.0	0.0	5.475	A
			2	2, 3, 4, 5	80	692	0.116	79	78	0.2	0.2	5.991	A
		2	1	(1, 2, 3, 4, 5)	104			104	102	0.0	0.0	0.000	A
	Exit	1	1		67			67	69	0.0	0.0	0.000	A



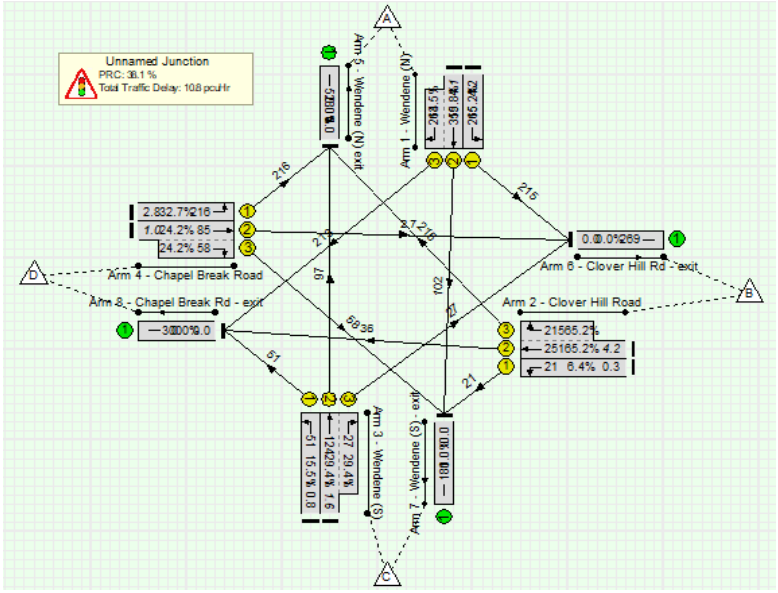
APPENDIX TA15

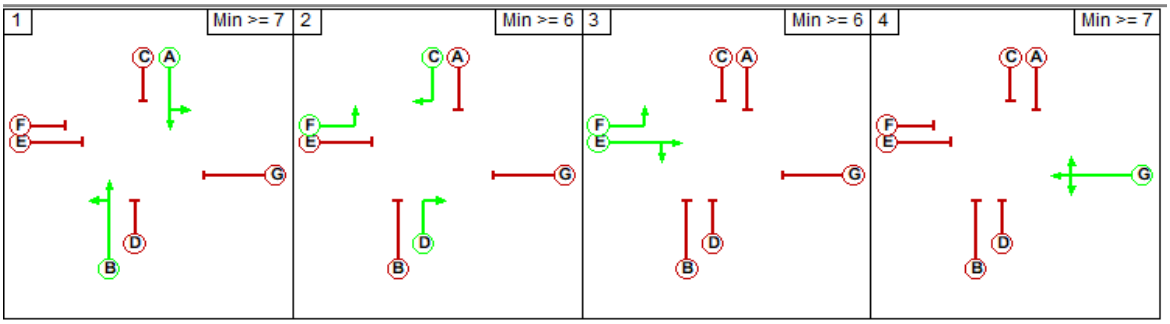
Appendix TA15 - Wendene / Clover Hill Road / Chapel Break Road - Summary of LINSIG Assessment Runs

Key

- 0-89% DoS (within capacity conditions)
- 90-99% DoS (variable operating conditions)
- 100%+ DoS (over capacity conditions)

Lane Ref	Lane Description	2023 Survey Flows								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	**77.1%**	-	-	**66.4%**	-	-	**60.6%**	-
1/1	Wendene (N) - Left	242	73.3%	5.1	213	64.5%	4.2	188	57.0%	3.5
1/2 + 1/3	Wendene (N) - Ahead & Right	390	77.1% : 77.1%	6.7	302	66.4% : 66.4%	4.6	296	55.9% : 60.6%	3.8
2/1	Clover Hill Road - Left	25	10.4%	0.4	21	7.0%	0.3	20	6.1%	0.3
2/2 + 2/3	Clover Hill Road - Right & Ahead	253	75.4% : 75.4%	4.3	202	60.0% : 60.0%	3.5	228	58.8% : 58.8%	3.6
3/1	Wendene (S) - Left	40	12.1%	0.6	54	16.4%	0.8	48	14.5%	0.8
3/2 + 3/3	Wendene (S) - Ahead & Right	115	24.8% : 24.8%	1.3	107	24.2% : 24.2%	1.3	116	27.6% : 27.6%	1.5
4/1	Chapel Break Road - Left	334	44.5%	4.3	301	43.6%	4.1	203	30.8%	2.6
4/2 + 4/3	Chapel Break Road - Ahead & Right	128	29.6% : 27.3%	1.3	84	16.6% : 19.2%	0.8	79	22.5% : 22.5%	0.9
Cycle Time		60s			60s			60s		
Junction PRC		16.7%			35.6%			48.5%		



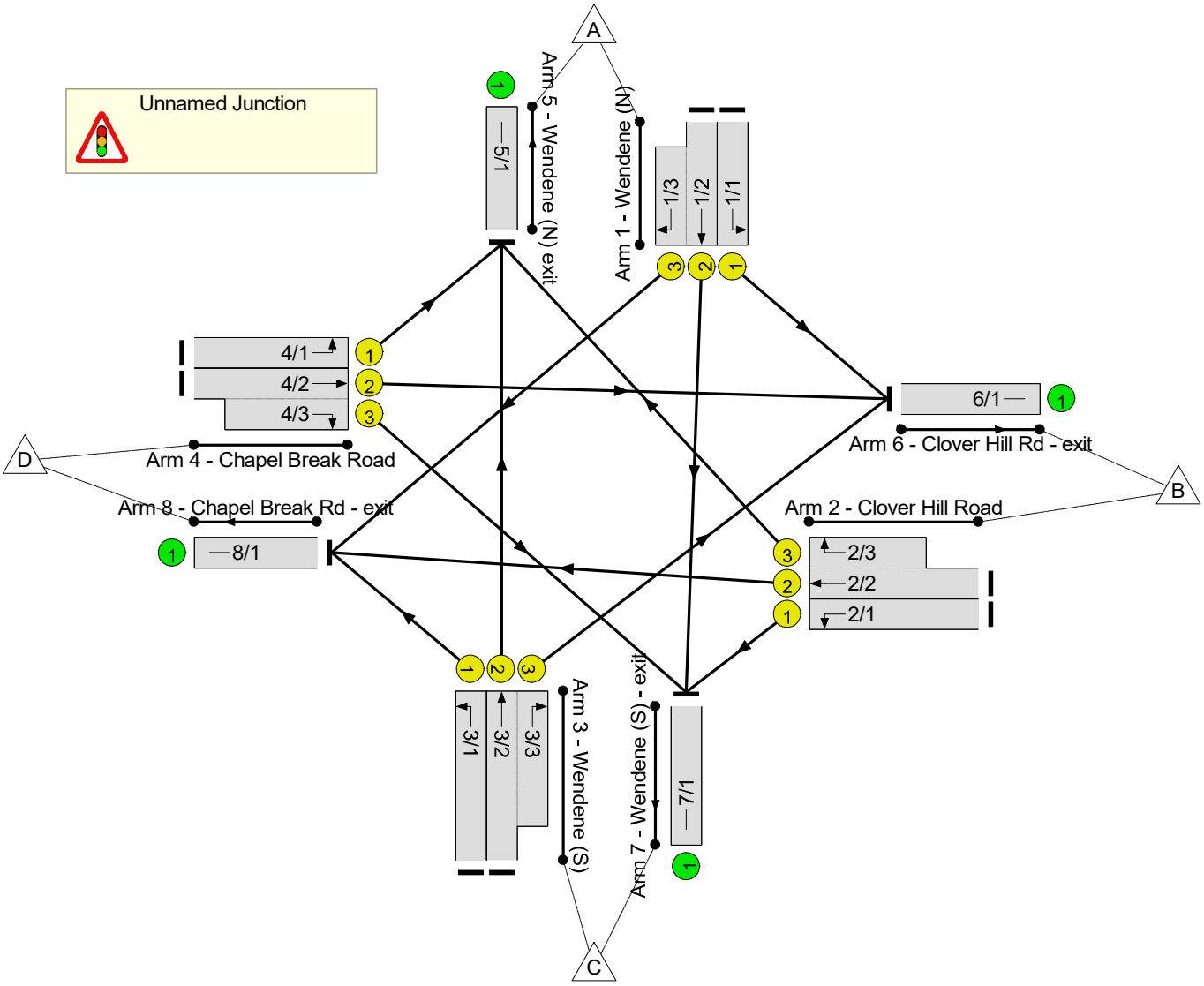


Full Input Data And Results

User and Project Details

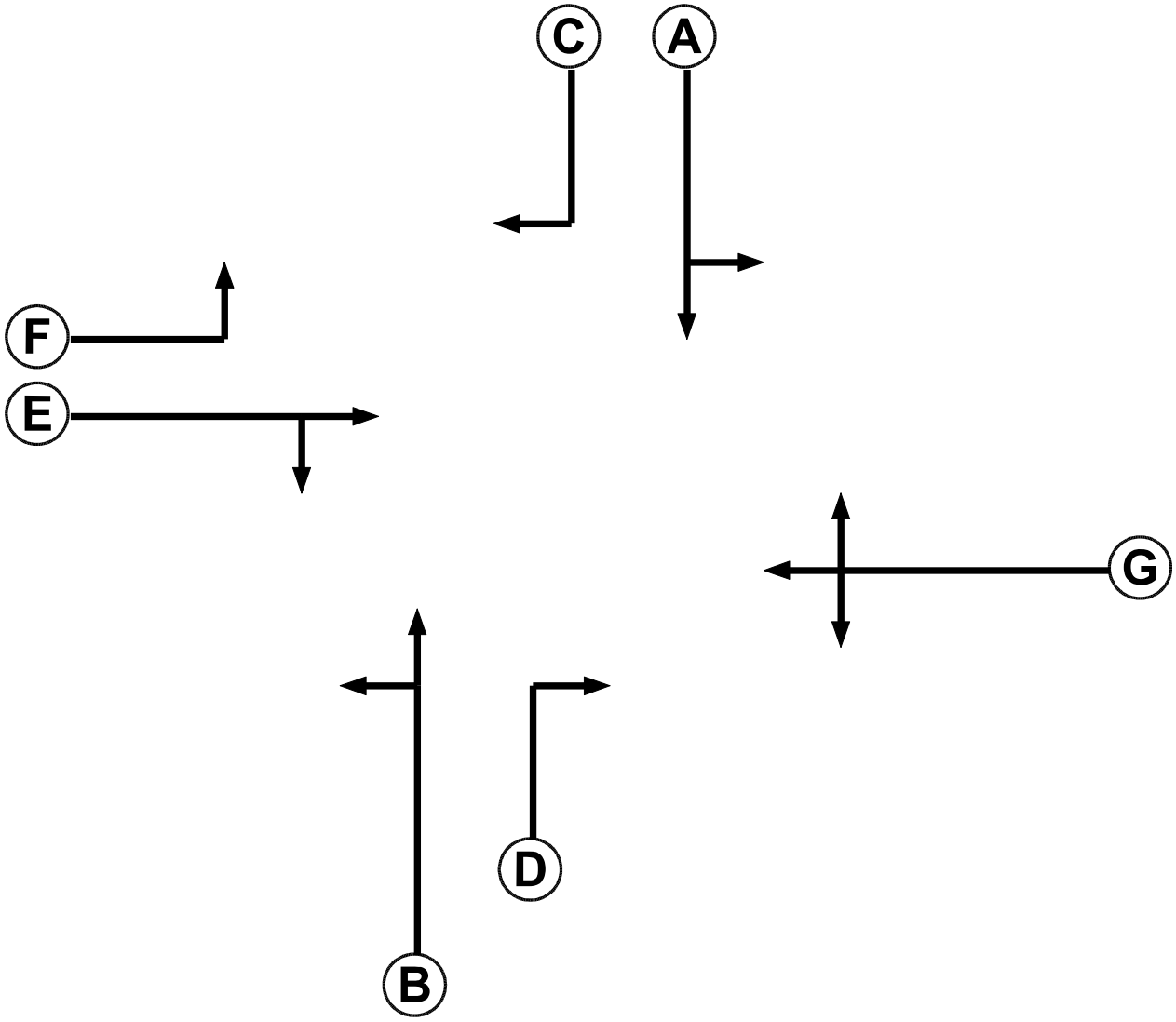
Project:	
Title:	
Location:	
Additional detail:	
File name:	1800 Wendene signals for TA.lsg3x
Author:	
Company:	Focus Transport Planning Ltd.
Address:	Pentland House, Village Way, Wilmslow, Cheshire SK9 2GH

Network Layout Diagram



Full Input Data And Results

Phase 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	Traffic		7	7
F	Traffic		7	7
G	Traffic		7	7

Full Input Data And Results

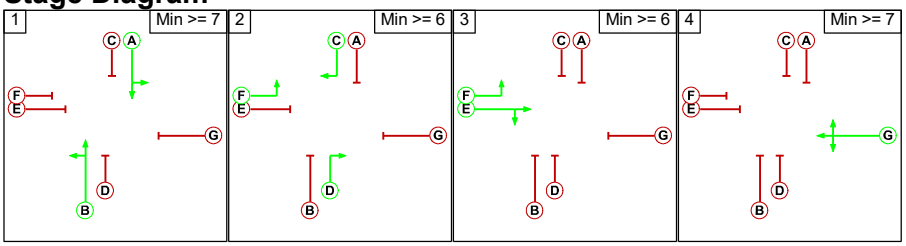
Phase Intergreens Matrix

	Starting Phase							
Terminating Phase		A	B	C	D	E	F	G
	A		-	-	6	5	-	7
	B	-		6	-	6	7	7
	C	-	6		-	5	-	6
	D	6	-	-		5	-	6
	E	5	5	5	5		-	6
	F	-	5	-	-	-		6
	G	6	6	6	6	7	7	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C D F
3	E F
4	G

Stage Diagram



Phase Delays

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

Prohibited Stage Change

	To Stage				
From Stage		1	2	3	4
	1		7	7	7
	2	6		5	6
	3	5	5		6
	4	6	7	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Full Input Data And Results

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 (Wendene (N))	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/2 (Wendene (N))	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/3 (Wendene (N))	U	C	2	3	9.8	User	1800	-	-	-	-	-
2/1 (Clover Hill Road)	U	G	2	3	10.8	User	1800	-	-	-	-	-
2/2 (Clover Hill Road)	U	G	2	3	60.0	User	1800	-	-	-	-	-
2/3 (Clover Hill Road)	U	G	2	3	5.7	User	1800	-	-	-	-	-
3/1 (Wendene (S))	U	B	2	3	12.2	User	1800	-	-	-	-	-
3/2 (Wendene (S))	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/3 (Wendene (S))	U	D	2	3	9.4	User	1800	-	-	-	-	-
4/1 (Chapel Break Road)	U	F	2	3	17.4	User	1800	-	-	-	-	-
4/2 (Chapel Break Road)	U	E	2	3	60.0	User	1800	-	-	-	-	-
4/3 (Chapel Break Road)	U	E	2	3	6.3	User	1800	-	-	-	-	-
5/1 (Wendene (N) exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Clover Hill Rd - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

7/1 (Wendene (S) - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Chapel Break Rd - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Friday Daytime'	14:45	15:45	01:00	

Scenario 1: 'Survey' (FG1: 'Friday Daytime', Plan 1: 'All stages')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	242	66	324	632
	B	181	0	25	72	278
	C	82	33	0	40	155
	D	334	71	57	0	462
	Tot.	597	346	148	436	1527

Traffic Lane Flows

Lane	Scenario 1: Survey
Junction: Unnamed Junction	
1/1	242
1/2 (with short)	390(In) 66(Out)
1/3 (short)	324
2/1	25
2/2 (with short)	253(In) 72(Out)
2/3 (short)	181
3/1	40
3/2 (with short)	115(In) 82(Out)
3/3 (short)	33
4/1	334
4/2 (with short)	128(In) 71(Out)
4/3 (short)	57
5/1	597
6/1	346
7/1	148
8/1	436

Lane Saturation Flows

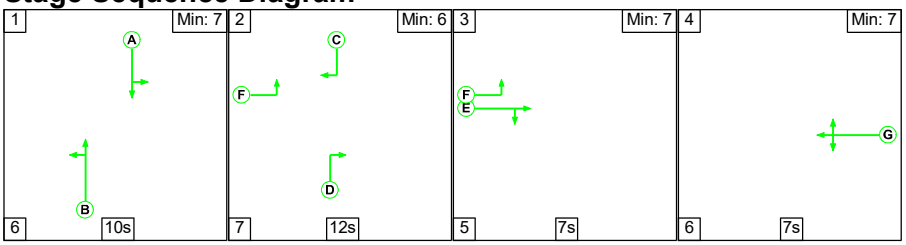
Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Wendene (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (Wendene (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (Wendene (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Clover Hill Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Clover Hill Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Clover Hill Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Wendene (S) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Wendene (S) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Wendene (S) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Chapel Break Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Chapel Break Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Chapel Break Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Wendene (N) exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Clover Hill Rd - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Wendene (S) - exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

8/1 (Chapel Break Rd - exit Lane 1)	Infinite Saturation Flow	Inf	Inf

Scenario 1: 'Survey' (FG1: 'Friday Daytime', Plan 1: 'All stages')

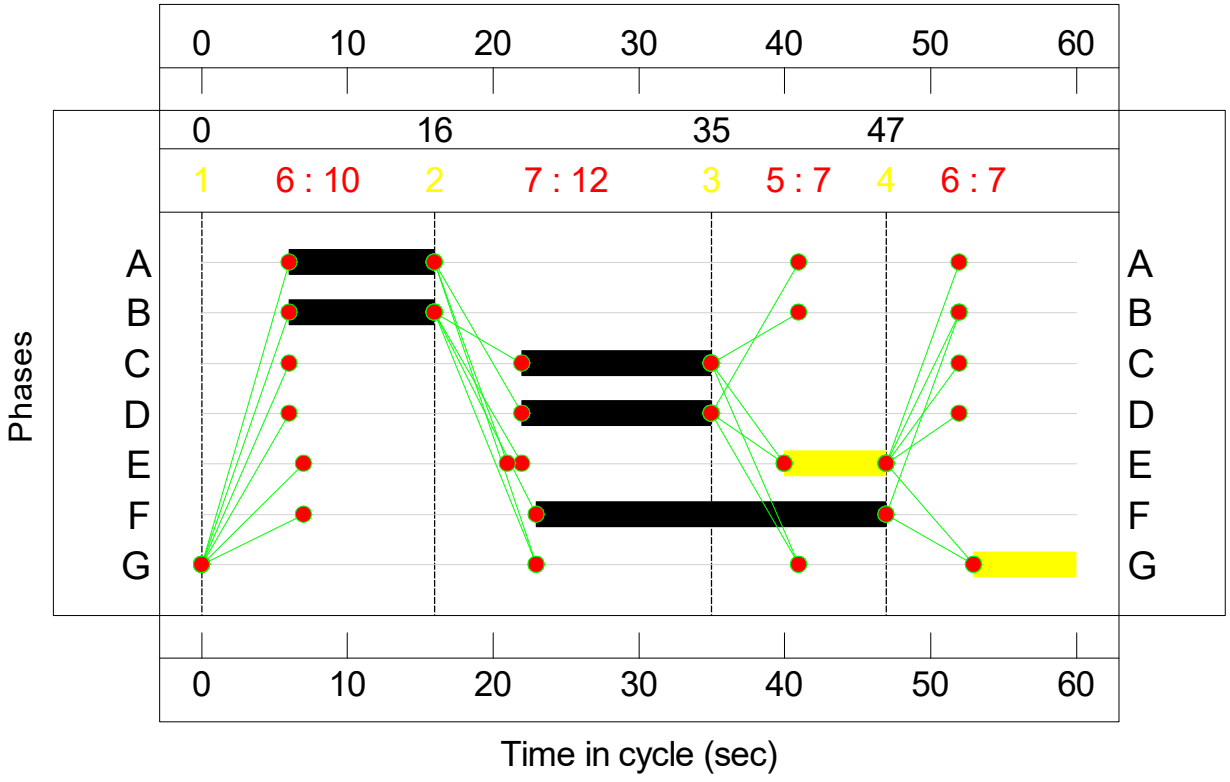
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	12	7	7
Change Point	0	16	35	47

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.1%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**77.1%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	10	-	242	1800	330	73.3%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	10:13	-	390	1800:1800	86+420	77.1 : 77.1%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	7	-	25	1800	240	10.4%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	7	-	253	1800:1800	95+240	75.4 : 75.4%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	10	-	40	1800	330	12.1%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	10:13	-	115	1800:1800	330+133	24.8 : 24.8%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	24	-	334	1800	750	44.5%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	128	1800:1800	240+209	29.6 : 27.3%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	597	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	346	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	148	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%

Full Input Data And Results

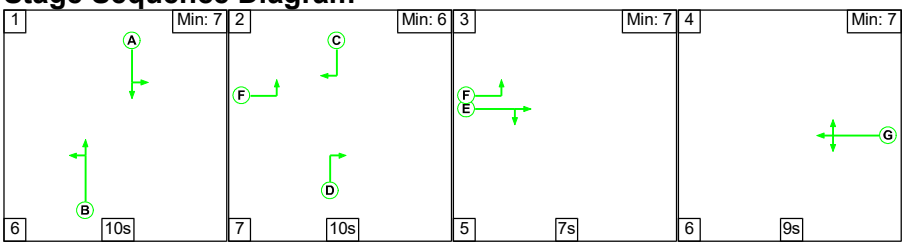
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**8.6**	**5.3**	**0.0**	**14.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**8.6**	**5.3**	**0.0**	**14.0**	**-**	**-**	**-**	**-**
1/1	242	242	-	-	-	1.6	1.3	-	2.9	43.0	3.8	1.3	5.1
1/2+1/3	390	390	-	-	-	2.3	1.6	-	4.0	36.5	5.0	1.6	6.7
2/1	25	25	-	-	-	0.2	0.1	-	0.2	31.3	0.4	0.1	0.4
2/2+2/3	253	253	-	-	-	1.7	1.5	-	3.2	45.7	2.9	1.5	4.3
3/1	40	40	-	-	-	0.2	0.1	-	0.3	26.7	0.6	0.1	0.6
3/2+3/3	115	115	-	-	-	0.6	0.2	-	0.8	25.3	1.2	0.2	1.3
4/1	334	334	-	-	-	1.2	0.4	-	1.6	16.9	3.9	0.4	4.3
4/2+4/3	128	128	-	-	-	0.8	0.2	-	1.0	29.0	1.1	0.2	1.3
5/1	597	597	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	346	346	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	148	148	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	436	436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 16.7 Total Delay for Signalled Lanes (pcuHr): 13.98 Cycle Time (s): 60
PRC Over All Lanes (%): 16.7 Total Delay Over All Lanes(pcuHr): 13.98

Full Input Data And Results

Scenario 2: 'Survey' (FG2: 'Friday PM', Plan 1: 'All stages')

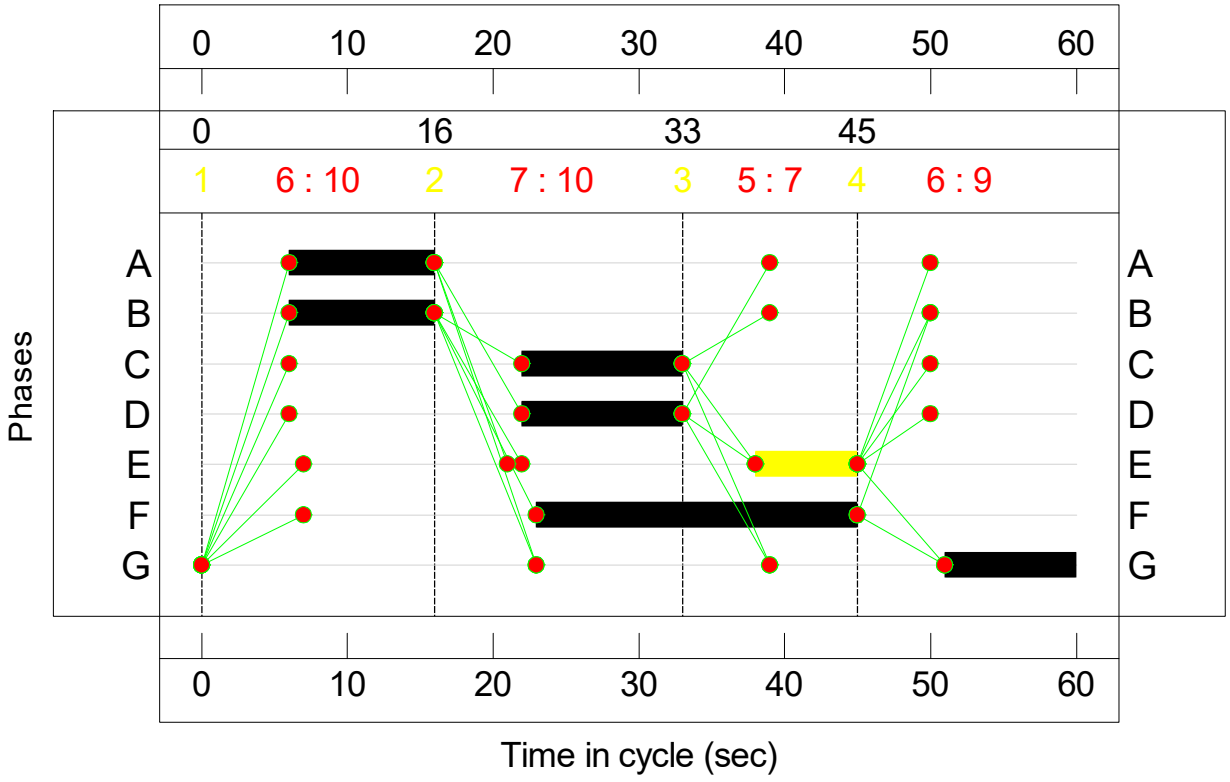
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	10	7	9
Change Point	0	16	33	45

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**66.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**66.4%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	10	-	213	1800	330	64.5%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	10:11	-	302	1800:1800	95+360	66.4 : 66.4%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	9	-	21	1800	300	7.0%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	9	-	202	1800:1800	37+300	60.0 : 60.0%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	10	-	54	1800	330	16.4%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	10:11	-	107	1800:1800	330+111	24.2 : 24.2%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	22	-	301	1800	690	43.6%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	84	1800:1800	229+240	16.6 : 19.2%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	561	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	278	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	130	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	315	Inf	Inf	0.0%

Full Input Data And Results

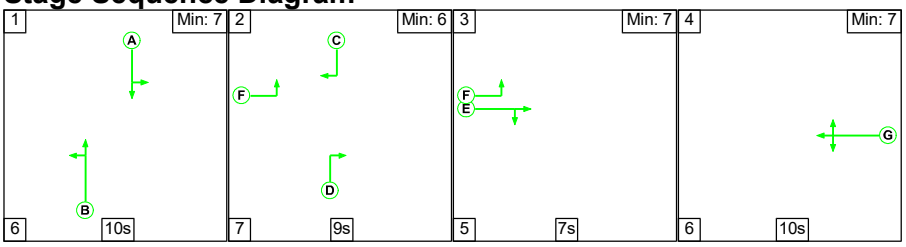
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**7.2**	**3.4**	**0.0**	**10.6**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.2**	**3.4**	**0.0**	**10.6**	**-**	**-**	**-**	**-**
1/1	213	213	-	-	-	1.3	0.9	-	2.2	37.9	3.3	0.9	4.2
1/2+1/3	302	302	-	-	-	1.8	1.0	-	2.8	33.5	3.7	1.0	4.6
2/1	21	21	-	-	-	0.1	0.0	-	0.2	27.7	0.3	0.0	0.3
2/2+2/3	202	202	-	-	-	1.3	0.7	-	2.0	36.2	2.8	0.7	3.5
3/1	54	54	-	-	-	0.3	0.1	-	0.4	27.2	0.8	0.1	0.8
3/2+3/3	107	107	-	-	-	0.6	0.2	-	0.8	26.0	1.1	0.2	1.3
4/1	301	301	-	-	-	1.1	0.4	-	1.5	18.3	3.7	0.4	4.1
4/2+4/3	84	84	-	-	-	0.5	0.1	-	0.6	27.8	0.7	0.1	0.8
5/1	561	561	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	278	278	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	130	130	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	315	315	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 35.6 Total Delay for Signalled Lanes (pcuHr): 10.60 Cycle Time (s): 60
PRC Over All Lanes (%): 35.6 Total Delay Over All Lanes(pcuHr): 10.60

Full Input Data And Results

Scenario 3: 'Survey' (FG3: 'Saturday', Plan 1: 'All stages')

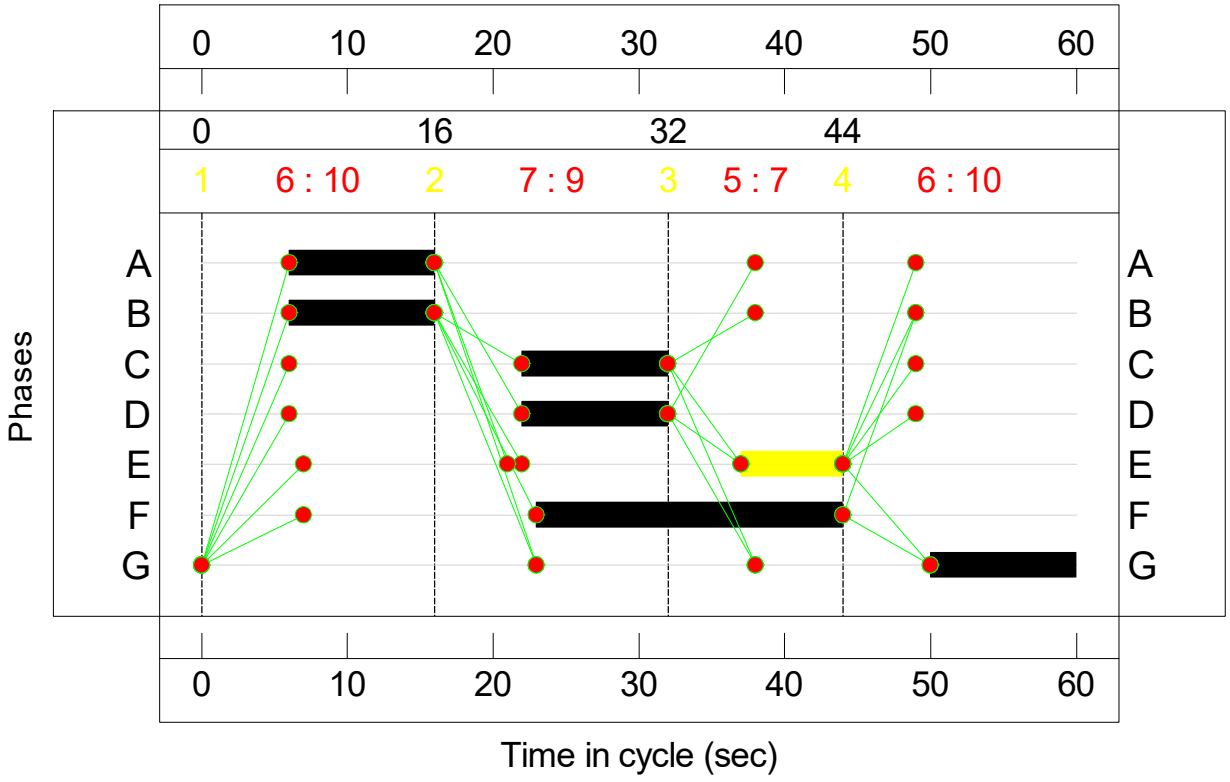
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	9	7	10
Change Point	0	16	32	44

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**60.6%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**60.6%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	10	-	188	1800	330	57.0%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	10	-	296	1800:1800	172+330	55.9 : 60.6%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	10	-	20	1800	330	6.1%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	10	-	228	1800:1800	58+330	58.8 : 58.8%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	10	-	48	1800	330	14.5%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	10	-	116	1800:1800	330+91	27.6 : 27.6%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	21	-	203	1800	660	30.8%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	79	1800:1800	111+240	22.5 : 22.5%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	488	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	238	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	170	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	282	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**6.7**	**2.8**	**0.0**	**9.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**6.7**	**2.8**	**0.0**	**9.5**	**-**	**-**	**-**	**-**
1/1	188	188	-	-	-	1.2	0.7	-	1.8	34.9	2.8	0.7	3.5
1/2+1/3	296	296	-	-	-	1.8	0.7	-	2.5	30.8	3.1	0.7	3.8
2/1	20	20	-	-	-	0.1	0.0	-	0.1	26.2	0.3	0.0	0.3
2/2+2/3	228	228	-	-	-	1.4	0.7	-	2.1	33.3	2.9	0.7	3.6
3/1	48	48	-	-	-	0.3	0.1	-	0.4	27.0	0.7	0.1	0.8
3/2+3/3	116	116	-	-	-	0.7	0.2	-	0.9	26.9	1.3	0.2	1.5
4/1	203	203	-	-	-	0.8	0.2	-	1.0	17.5	2.4	0.2	2.6
4/2+4/3	79	79	-	-	-	0.5	0.1	-	0.7	29.8	0.8	0.1	0.9
5/1	488	488	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	238	238	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	170	170	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	282	282	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 48.5 Total Delay for Signalled Lanes (pcuHr): 9.47 Cycle Time (s): 60
PRC Over All Lanes (%): 48.5 Total Delay Over All Lanes(pcuHr): 9.47



APPENDIX TA16

Appendix TA16 - 2028 Do Nothing - Summary of Junction Assessment Runs

Key

- 0-0.85 RFC (within capacity conditions)
- 0.86-0.99 RFC (variable operating conditions)
- 1.0+ RFC (over capacity conditions)

Wendene Roundabout		2028 Do Nothing								
Arm	Lane Description	Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	RFC	Q	Flow	RFC	Q	Flow	RFC	Q
1	Dereham Road (E)	997	0.43	0.8	1089	0.44	0.8	1009	0.41	0.7
2	Wendene	628	0.37	0.6	600	0.36	0.6	511	0.30	0.4
3	Barnard Road	310	0.37	0.6	419	0.51	1.1	141	0.16	0.2
4	Dereham Road (W)	1024	0.53	1.2	1019	0.53	1.2	1019	0.49	1.0
5	Breckland Road	318	0.34	0.5	169	0.19	0.2	134	0.14	0.2

Wendene Roundabout - Lane Designation		2028 Do Nothing - Lane Designation								
Arm	Lane Description	Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	RFC	Q	Flow	RFC	Q	Flow	RFC	Q
1	Dereham Road (E)	997	0.445	2.1	1089	0.505	2.2	1009	0.466	1.7
2	Wendene	628	0.386	0.9	600	0.370	0.9	511	0.311	0.8
3	Barnard Road	310	0.397	1.4	419	0.528	2.6	141	0.168	0.3
4	Dereham Road (W)	1024	0.821	4.5	1019	0.748	3.5	1019	0.788	4.1
5	Breckland Road	318	0.513	1.7	169	0.292	0.5	134	0.214	0.4

Wendene Signals		2028 Do Nothing								
Lane Ref	Lane Description	Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	**81.7%**	-	-	**72.2%**	-	-	**64.2%**	-
1/1	Wendene (N) - Left	269	81.5%	6.3	242	67.2%	4.7	212	64.2%	4.1
1/2 + 1/3	Wendene (N) - Ahead & Right	409	81.0% : 81.0%	7.3	317	69.7% :69.7%	5.0	311	58.4% : 63.6%	4.0
2/1	Clover Hill Road - Left	26	10.8%	0.4	22	8.1%	0.4	21	6.4%	0.3
2/2 + 2/3	Clover Hill Road - Right & Ahead	271	81.7% :81.7%	5.2	218	72.2% : 72.2%	4.3	248	64.2% : 64.2%	4.1
3/1	Wendene (S) - Left	42	12.7%	0.7	57	15.8%	0.9	50	15.2%	0.8
3/2 + 3/3	Wendene (S) - Ahead & Right	121	26.1% 26.1%	1.4	112	23.3% : 23.3%	1.3	121	28.8% : 28.8%	1.5
4/1	Chapel Break Road - Left	350	46.7%	4.6	316	45.8%	4.3	213	32.3%	2.8
4/2 + 4/3	Chapel Break Road - Ahead & Right	134	30.8% : 27.8%	1.3	88	17.0% : 20.0%	0.8	83	23.8% : 23.8%	1.0
Cycle Time		60s			60s			60s		
Junction PRC		10.2%			24.6%			40.1%		

Appendix TA16 - 2028 Do Nothing - NCC WESTERN BUS GATE INCLUDING FOR NEW TOUCAN CROSSING: SUMMARY OF LINSIG ASSESSMENT RUNS

Key

- 0-89% DoS (within capacity conditions)
- 90-99% DoS (variable operating conditions)
- 100%+ DoS (over capacity conditions)

Lane Ref	Lane Description	SCENARIO 1: Stage Sequence: 1, 2								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	-	-	-	-	-	-	-	-
1/1	Dereham Road (W) - bus lane eastbound	6	0.3%	0.0	6	0.3%	0.0	6	0.3%	0.0
1/2	Dereham Road (W) - ahead	1024	70.8%	14.6	1019	70.4%	14.5	1019	7.0%	14.5
2/1	Bus Lane (westbound)	6	-	3.9	6	-	3.9	6	-	3.9
3/1	Dereham Road (E) - ahead	1132	74.7%	17.2	1238	81.7%	21.8	1018	67.2%	13.5
Cycle Time		90s			90s			90s		
Junction PRC		-			-			-		

Lane Ref	Lane Description	SCENARIO 2: Stage Sequence: 1, 2, 1, 2, 1, 3								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	**72.6%**	-	-	**79.4%**	-	-	**68.4%**	-
1/1	Dereham Road (W) - bus lane eastbound	6	0.3%	0.0	6	0.3%	0.0	6	0.3%	0.0
1/2	Dereham Road (W) - ahead	1024	68.8%	14.5	1019	68.4%	14.4	1019	68.4%	14.4
2/1	Bus Lane (westbound)	6	10.5%	0.5	6	10.5%	0.5	6	10.5%	0.5
3/1	Dereham Road (E) - ahead	1132	72.6%	17.0	1238	79.4%	21.5	1018	65.3%	13.4
Cycle Time		270s			270s			270s		
Junction PRC		24.0%			13.4%			31.6%		

Lane Ref	Lane Description	SCENARIO 3: Stage Sequence: 1, 2, 1, 2, 1, 2, 3								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	**79.4%**	-	-	**86.8%**	-	-	**74.8%**	-
1/1	Dereham Road (W) - bus lane eastbound	6	0.3%	0.0	6	0.3%	0.0	6	0.3%	0.0
1/2	Dereham Road (W) - ahead	1024	75.2%	22.3	1019	74.8%	21.9	1019	74.8%	21.9
2/1	Bus Lane (westbound)	6	10.5%	0.2	6	10.5%	0.5	6	10.5%	0.5
3/1	Dereham Road (E) - ahead	1132	79.4%	26.4	1238	86.8%	33.5	1018	71.4%	20.8
Cycle Time		270s			270s			270s		
Junction PRC		13.4%			3.7%			20.3%		

Appendix TA16 - 2028 Do Something - Summary of Junction Assessment Runs

Key

- 0-0.85 RFC (within capacity conditions)
- 0.86-0.99 RFC (variable operating conditions)
- 1.0+ RFC (over capacity conditions)

Site Access

Movement	Arm	2028 Do Something								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	RFC	Q	Flow	RFC	Q	Flow	RFC	Q
B-AC	Site Access	113	0.19	0.2	105	0.19	0.2	155	0.25	0.3
C-AB	Barnard Road (East)	205	0.20	0.3	210	0.21	0.3	179	0.25	0.4

Wendene Roundabout

Arm	Lane Description	2028 Do Something								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	RFC	Q	Flow	RFC	Q	Flow	RFC	Q
1	Dereham Road (E)	1014	0.44	0.8	1103	0.46	0.9	1033	0.42	0.7
2	Wendene	641	0.39	0.6	611	0.37	0.6	531	0.31	0.5
3	Barnard Road	376	0.45	0.8	486	0.59	1.4	246	0.27	0.4
4	Dereham Road (W)	1033	0.54	1.2	1027	0.55	1.2	1027	0.51	1.1
5	Breckland Road	320	0.35	0.6	171	0.20	0.2	136	0.15	0.2

Wendene Roundabout - Lane Designation

Arm	Lane Description	2028 Do Something - Lane Designation								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	RFC	Q	Flow	RFC	Q	Flow	RFC	Q
1	Dereham Road (E)	1014	0.500	2.2	1103	0.542	2.1	1033	0.493	1.9
2	Wendene	641	0.391	1.0	611	0.385	1.0	531	0.324	0.8
3	Barnard Road	376	0.488	1.7	486	0.584	2.9	246	0.261	0.8
4	Dereham Road (W)	1033	0.848	4.9	1027	0.850	5.7	1027	0.811	5.0
5	Breckland Road	320	0.542	1.6	171	0.321	0.7	136	0.167	0.3

Wendene Signals

Lane Ref	Lane Description	2028 Do Something								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	**83.8%**	-	-	**73.7%**	-	-	**67.0%**	-
1/1	Wendene (N) - Left	274	83.0%	6.6	246	68.3%	4.8	220	66.7%	4.3
1/2 + 1/3	Wendene (N) - Ahead & Right	418	82.4% : 82.4%	7.6	326	71.4% :71.4%	5.2	325	64.5% : 67.0%	4.3
2/1	Clover Hill Road - Left	26	10.8%	0.4	22	8.1%	0.4	21	6.4%	0.3
2/2 + 2/3	Clover Hill Road - Right & Ahead	276	83.8% :83.8%	5.6	222	73.7% : 73.7%	4.5	254	66.4% : 66.4%	4.3
3/1	Wendene (S) - Left	41	12.4%	0.6	56	15.6%	0.9	50	15.2%	0.8
3/2 + 3/3	Wendene (S) - Ahead & Right	122	26.7% 26.7%	1.4	114	23.9% : 23.9%	1.4	125	30.0% : 30.0%	1.6
4/1	Chapel Break Road - Left	356	47.5%	4.7	321	46.5%	4.4	223	33.8%	2.9
4/2 + 4/3	Chapel Break Road - Ahead & Right	133	30.8% : 28.9%	1.3	87	18.0% : 20.0%	0.8	82	23.3% : 23.3%	1.0
Cycle Time		60s			60s			60s		
Junction PRC		7.5%			22.1%			34.4%		

Appendix TA16 - 2028 Do Something - NCC WESTERN BUS GATE INCLUDING FOR NEW TOUCAN CROSSING: SUMMARY OF LINSIG ASSESSMENT RUNS

Key

0-89% DoS (within capacity conditions)
90-99% DoS (variable operating conditions)
100%+ DoS (over capacity conditions)

Lane Ref	Lane Description	SCENARIO 1: Stage Sequence: 1, 2								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	-	-	-	-	-	-	-	-
1/1	Dereham Road (W) - bus lane eastbound	6	0.3%	0.0	6	0.3%	0.0	6	0.3%	0.0
1/2	Dereham Road (W) - ahead	1033	71.4%	14.7	1027	71.0%	14.6	1029	71.1%	14.7
2/1	Bus Lane (westbound)	6	-	3.9	6	-	3.9	6	-	3.9
3/1	Dereham Road (E) - ahead	1135	74.9%	17.2	1245	82.2%	22.3	1036	68.4%	14.0
Cycle Time		90s			90s			90s		
Junction PRC		-			-			-		

Lane Ref	Lane Description	SCENARIO 2: Stage Sequence: 1, 2, 1, 2, 1, 3								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	**72.8%**	-	-	**79.8%**	-	-	**69.1%**	-
1/1	Dereham Road (W) - bus lane eastbound	6	0.3%	0.0	6	0.3%	0.0	6	0.3%	0.0
1/2	Dereham Road (W) - ahead	1033	69.4%	14.6	1027	69.0%	14.5	1029	69.1%	14.5
2/1	Bus Lane (westbound)	6	10.5%	0.5	6	10.5%	0.5	6	10.5%	0.5
3/1	Dereham Road (E) - ahead	1135	72.8%	17.1	1245	79.8%	22.0	1036	66.4%	13.9
Cycle Time		270s			270s			270s		
Junction PRC		23.7%			12.7%			30.3%		

Lane Ref	Lane Description	SCENARIO 3: Stage Sequence: 1, 2, 1, 2, 1, 2, 3								
		Friday Daytime Peak			Friday PM Peak			Saturday Peak		
		Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ	Flow	Deg of Sat	MMQ
		-	**79.6%**	-	-	**87.3%**	-	-	**75.6%**	-
1/1	Dereham Road (W) - bus lane eastbound	6	0.3%	0.0	6	0.3%	0.0	6	0.3%	0.0
1/2	Dereham Road (W) - ahead	1033	75.9%	22.5	1027	75.4%	22.3	1029	75.6%	22.4
2/1	Bus Lane (westbound)	6	10.5%	0.5	6	10.5%	0.5	6	10.5%	0.5
3/1	Dereham Road (E) - ahead	1135	79.6%	26.5	1245	87.3%	34.1	1036	72.7%	21.5
Cycle Time		270s			270s			270s		
Junction PRC		13.1%			3.1%			19.1%		



APPENDIX TA17

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: TA_2028_Dereham Road Roundabout.j9
Path: C:\Data\Projects\J000401-J000450\J000420 New Foodstore Norwich\Background Information\Junction Assessments
Report generation date: 02/11/2023 16:16:51

»2028 Do Nothing, Friday Daytime
»2028 Do Nothing, Friday PM
»2028 Do Nothing, Saturday

Summary of junction performance

	Friday Daytime								Friday PM								Saturday							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	2028 Do Nothing																							
Arm 1	D1	0.8	2.54	0.43	A	3.66	A	40 % [Arm 3]	D2	0.8	2.45	0.44	A	3.83	A	26 % [Arm 3]	D3	0.7	2.24	0.41	A	2.86	A	77 % [Arm 4]
Arm 2		0.6	3.09	0.37	A					0.6	3.11	0.36	A					0.4	2.71	0.30	A			
Arm 3		0.6	6.47	0.37	A					1.1	8.38	0.51	A					0.2	4.44	0.16	A			
Arm 4		1.2	3.74	0.53	A					1.2	3.74	0.53	A					1.0	3.20	0.49	A			
Arm 5		0.5	5.36	0.34	A					0.2	4.60	0.19	A					0.2	3.90	0.14	A			

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. 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	
Location	
Site number	
Date	02/11/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	FTPDT-01\Office
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	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)	Run automatically
D1	2028 Do Nothing	Friday Daytime	ONE HOUR	14:30	16:00	15	✓
D2	2028 Do Nothing	Friday PM	ONE HOUR	16:00	17:30	15	✓
D3	2028 Do Nothing	Saturday	ONE HOUR	12:00	13:30	15	✓
D4	2028 Do Something	Friday Daytime	ONE HOUR	14:30	16:00	15	
D5	2028 Do Something	Friday PM	ONE HOUR	16:00	17:30	15	
D6	2028 Do Something	Saturday	ONE HOUR	12:00	13:30	15	

Analysis Set Details

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

2028 Do Nothing, Friday Daytime

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	3.66	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	40	Arm 3

Arms

Arms

Arm	Name	Description
1	Derehame Road (E)	
2	Wendene	
3	Barnard Road	
4	Dereham Road (W)	
5	Breckland Road	

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	7.55	10.42	23.5	29.6	64.0	17.0	
2	7.20	8.76	6.0	25.9	65.2	16.5	
3	3.95	7.93	8.5	37.1	66.9	26.5	
4	6.00	10.58	10.9	27.9	67.7	17.5	
5	3.23	7.60	28.3	18.7	63.9	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.782	3091
2	0.688	2581
3	0.535	1737
4	0.666	2548
5	0.571	1892

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	2028 Do Nothing	Friday Daytime	ONE HOUR	14:30	16:00	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		ONE HOUR	✓	998	100.000
2		ONE HOUR	✓	628	100.000
3		ONE HOUR	✓	310	100.000
4		ONE HOUR	✓	1023	100.000
5		ONE HOUR	✓	317	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	266	43	624	63
	2	275	0	37	228	88
	3	122	25	1	158	4
	4	587	270	80	5	81
	5	75	116	8	116	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	11	4	2
	2	0	0	0	2	0
	3	2	0	0	3	0

	4	3	1	13	0	1
	5	1	1	0	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.43	2.54	0.8	A	916	1374
2	0.37	3.09	0.6	A	576	864
3	0.37	6.47	0.6	A	284	427
4	0.53	3.74	1.2	A	939	1408
5	0.34	5.36	0.5	A	291	436

Main Results for each time segment

14:30 - 14:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	751	188	468	2725	0.276	750	796	0.0	0.4	1.871	A
2	473	118	709	2093	0.226	472	508	0.0	0.3	2.238	A
3	233	58	1054	1174	0.199	232	127	0.0	0.3	3.913	A
4	770	193	437	2257	0.341	768	849	0.0	0.5	2.494	A
5	239	60	1026	1306	0.183	238	179	0.0	0.2	3.423	A

14:45 - 15:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	897	224	559	2653	0.338	897	953	0.4	0.5	2.107	A
2	565	141	848	1997	0.283	564	608	0.3	0.4	2.533	A
3	279	70	1260	1063	0.262	278	152	0.3	0.4	4.695	A
4	920	230	523	2200	0.418	919	1016	0.5	0.7	2.901	A
5	285	71	1228	1191	0.239	285	214	0.2	0.3	4.038	A

15:00 - 15:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1099	275	685	2555	0.430	1098	1166	0.5	0.8	2.539	A
2	691	173	1038	1867	0.370	691	744	0.4	0.6	3.086	A
3	341	85	1543	912	0.374	340	186	0.4	0.6	6.438	A
4	1126	282	640	2122	0.531	1125	1244	0.7	1.2	3.722	A
5	349	87	1503	1034	0.338	348	262	0.3	0.5	5.335	A

15:15 - 15:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1099	275	686	2554	0.430	1099	1168	0.8	0.8	2.542	A
2	691	173	1039	1866	0.371	691	745	0.6	0.6	3.091	A
3	341	85	1545	911	0.375	341	186	0.6	0.6	6.469	A
4	1126	282	641	2121	0.531	1126	1245	1.2	1.2	3.737	A
5	349	87	1505	1032	0.338	349	262	0.5	0.5	5.356	A

15:30 - 15:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	897	224	561	2652	0.338	898	956	0.8	0.5	2.113	A
2	565	141	850	1996	0.283	565	610	0.6	0.4	2.538	A
3	279	70	1263	1062	0.262	280	152	0.6	0.4	4.719	A
4	920	230	524	2199	0.418	921	1018	1.2	0.7	2.916	A
5	285	71	1231	1189	0.240	286	214	0.5	0.3	4.058	A

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	751	188	470	2723	0.276	752	800	0.5	0.4	1.877	A
2	473	118	711	2091	0.226	473	510	0.4	0.3	2.243	A
3	233	58	1057	1172	0.199	234	127	0.4	0.3	3.933	A
4	770	193	439	2256	0.341	771	852	0.7	0.5	2.507	A
5	239	60	1030	1303	0.183	239	179	0.3	0.2	3.439	A

2028 Do Nothing, Friday 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	untitled	Standard Roundabout		1, 2, 3, 4, 5	3.83	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	26	Arm 3

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	2028 Do Nothing	Friday PM	ONE HOUR	16:00	17:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1088	100.000
2		ONE HOUR	✓	600	100.000
3		ONE HOUR	✓	419	100.000
4		ONE HOUR	✓	1019	100.000
5		ONE HOUR	✓	169	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	244	58	743	41
	2	262	1	35	231	71
	3	188	35	0	192	4
	4	676	204	80	4	55
	5	34	65	2	68	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	1	12	2	0
	2	0	0	3	0	2
	3	2	0	0	3	0
	4	2	1	9	0	2
	5	3	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.44	2.45	0.8	A	998	1498
2	0.36	3.11	0.6	A	551	826
3	0.51	8.38	1.1	A	384	577
4	0.53	3.74	1.2	A	935	1403
5	0.19	4.60	0.2	A	155	233

Main Results for each time segment

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	819	205	344	2821	0.290	817	872	0.0	0.4	1.830	A
2	452	113	750	2065	0.219	451	412	0.0	0.3	2.241	A
3	315	79	1069	1166	0.271	314	131	0.0	0.4	4.306	A
4	767	192	453	2246	0.342	765	930	0.0	0.5	2.482	A
5	127	32	1090	1269	0.100	127	128	0.0	0.1	3.187	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	978	245	412	2768	0.353	978	1044	0.4	0.6	2.051	A
2	539	135	897	1964	0.275	539	493	0.3	0.4	2.539	A
3	377	94	1278	1054	0.357	376	157	0.4	0.6	5.414	A
4	916	229	542	2186	0.419	915	1112	0.5	0.7	2.894	A
5	152	38	1304	1147	0.132	152	154	0.1	0.2	3.661	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1198	299	504	2696	0.444	1197	1277	0.6	0.8	2.449	A
2	661	165	1098	1826	0.362	660	604	0.4	0.6	3.103	A
3	461	115	1565	900	0.512	459	192	0.6	1.1	8.293	A
4	1122	280	663	2106	0.533	1120	1361	0.7	1.2	3.728	A
5	186	47	1596	981	0.190	186	188	0.2	0.2	4.583	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1198	299	505	2695	0.444	1198	1279	0.8	0.8	2.452	A
2	661	165	1099	1825	0.362	661	604	0.6	0.6	3.107	A
3	461	115	1567	899	0.513	461	193	1.1	1.1	8.382	A
4	1122	280	665	2105	0.533	1122	1363	1.2	1.2	3.743	A
5	186	47	1599	979	0.190	186	188	0.2	0.2	4.596	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	978	245	414	2767	0.353	979	1047	0.8	0.6	2.056	A
2	539	135	898	1963	0.275	540	494	0.6	0.4	2.544	A
3	377	94	1281	1052	0.358	379	158	1.1	0.6	5.469	A
4	916	229	545	2185	0.419	918	1115	1.2	0.7	2.907	A
5	152	38	1308	1145	0.133	152	154	0.2	0.2	3.675	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	819	205	346	2820	0.290	820	876	0.6	0.4	1.838	A
2	452	113	752	2064	0.219	452	414	0.4	0.3	2.246	A
3	315	79	1072	1164	0.271	316	132	0.6	0.4	4.338	A
4	767	192	455	2244	0.342	768	933	0.7	0.5	2.495	A
5	127	32	1095	1267	0.100	127	129	0.2	0.1	3.198	A

2028 Do Nothing, Saturday

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	2.86	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	77	Arm 4

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	2028 Do Nothing	Saturday	ONE HOUR	12:00	13:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1009	100.000
2		ONE HOUR	✓	512	100.000
3		ONE HOUR	✓	141	100.000
4		ONE HOUR	✓	1018	100.000
5		ONE HOUR	✓	135	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	4	255	51	659	40
	2	233	0	17	237	25
	3	56	20	0	63	2
	4	698	207	81	4	28
	5	33	38	9	55	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	2	2	3
	2	1	0	0	0	0
	3	4	0	0	5	0
	4	1	2	10	0	0
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.41	2.24	0.7	A	926	1389
2	0.30	2.71	0.4	A	470	705
3	0.16	4.44	0.2	A	129	194
4	0.49	3.20	1.0	A	934	1401
5	0.14	3.90	0.2	A	124	186

Main Results for each time segment

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	760	190	311	2848	0.267	758	769	0.0	0.4	1.743	A
2	385	96	678	2114	0.182	385	391	0.0	0.2	2.085	A
3	106	27	944	1232	0.086	106	119	0.0	0.1	3.320	A
4	766	192	285	2358	0.325	764	765	0.0	0.5	2.302	A
5	102	25	978	1333	0.076	101	71	0.0	0.1	2.922	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	907	227	372	2800	0.324	907	920	0.4	0.5	1.924	A
2	460	115	811	2023	0.228	460	467	0.2	0.3	2.309	A
3	127	32	1129	1133	0.112	127	142	0.1	0.1	3.714	A
4	915	229	341	2320	0.394	914	915	0.5	0.7	2.610	A
5	121	30	1170	1223	0.099	121	85	0.1	0.1	3.265	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1111	278	455	2735	0.406	1110	1126	0.5	0.7	2.241	A
2	564	141	993	1897	0.297	563	572	0.3	0.4	2.704	A
3	155	39	1383	998	0.156	155	174	0.1	0.2	4.436	A
4	1121	280	418	2269	0.494	1120	1120	0.7	1.0	3.191	A
5	149	37	1433	1074	0.138	148	104	0.1	0.2	3.890	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1111	278	456	2734	0.406	1111	1127	0.7	0.7	2.243	A
2	564	141	994	1897	0.297	564	573	0.4	0.4	2.706	A
3	155	39	1384	997	0.156	155	174	0.2	0.2	4.441	A
4	1121	280	418	2269	0.494	1121	1121	1.0	1.0	3.197	A
5	149	37	1435	1073	0.139	149	105	0.2	0.2	3.896	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	907	227	373	2799	0.324	908	922	0.7	0.5	1.926	A
2	460	115	813	2022	0.228	461	468	0.4	0.3	2.311	A
3	127	32	1131	1132	0.112	127	142	0.2	0.1	3.722	A
4	915	229	342	2320	0.394	916	916	1.0	0.7	2.620	A
5	121	30	1173	1222	0.099	122	85	0.2	0.1	3.271	A

13:15 - 13:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	760	190	312	2847	0.267	760	772	0.5	0.4	1.745	A
2	385	96	680	2113	0.182	386	392	0.3	0.2	2.089	A
3	106	27	947	1231	0.086	106	119	0.1	0.1	3.325	A
4	766	192	286	2357	0.325	767	767	0.7	0.5	2.312	A
5	102	25	982	1331	0.076	102	72	0.1	0.1	2.927	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: TA_2028 Dereham Road Rbt LANES.j9
Path: C:\Data\Projects\J000401-J000450\J000420 New Foodstore Norwich\Background Information\Junction Assessments
Report generation date: 02/11/2023 16:21:19

»2028 Do Nothing, Friday Daytime
»2028 Do Nothing, Friday PM
»2028 Do Nothing, Saturday

Summary of junction performance

	Friday Daytime								Friday PM								Saturday							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	[Lane Simulation] - 2028 Do Nothing																							
Arm 1		2.1	6.10		A					2.2	5.85		A					1.7	5.53		A			
Arm 2		0.9	4.86		A			%		0.9	4.81		A			%		0.8	4.45		A			%
Arm 3	D1	1.4	12.37		B	9.74	A		D2	2.6	17.76		C	9.07	A		D3	0.3	8.85		A	7.87	A	
Arm 4		4.5	14.14		B			[ ]		3.5	11.46		B			[ ]		4.1	11.78		B			[ ]
Arm 5		1.7	13.39		B					0.5	9.75		A					0.4	8.10		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 encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay. 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	
Location	
Site number	
Date	02/11/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	FTPDT-01\Office
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			1538999851	80	22.34

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	2028 Do Nothing	Friday Daytime	ONE HOUR	14:30	16:00	15	✓
D2	2028 Do Nothing	Friday PM	ONE HOUR	16:00	17:30	15	✓
D3	2028 Do Nothing	Saturday	ONE HOUR	12:00	13:30	15	✓
D4	2028 Do Something	Friday Daytime	ONE HOUR	14:30	16:00	15	
D5	2028 Do Something	Friday PM	ONE HOUR	16:00	17:30	15	
D6	2028 Do Something	Saturday	ONE HOUR	12:00	13:30	15	

Analysis Set Details

ID	Use Lane Simulation	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	✓	100.000	100.000

2028 Do Nothing, Friday Daytime

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	9.74	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Derehame Road (E)	
2	Wendene	
3	Barnard Road	
4	Dereham Road (W)	
5	Breckland Road	

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	7.55	10.42	23.5	29.6	64.0	17.0	
2	7.20	8.76	6.0	25.9	65.2	16.5	
3	3.95	7.93	8.5	37.1	66.9	26.5	
4	6.00	10.58	10.9	27.9	67.7	17.5	
5	3.23	7.60	28.3	18.7	63.9	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.782	3091
2	0.688	2581
3	0.535	1737
4	0.666	2548
5	0.571	1892

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

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00
5	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	2	✓	5.00		0	99999	
			2	3, 4	✓	5.00		0	99999	
			3	1, 4, 5	✓	5.00		0	99999	
		2	1	(2, 3, 4)		Infinity				
			2	(1, 4, 5)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	1, 3, 4		Infinity		0	99999	
			2	1, 2, 4, 5		Infinity		0	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	2, 4, 5	✓	5.00		0	99999	
			2	1, 2, 3	✓	5.00		0	99999	
		2	1	(1, 2, 3, 4, 5)		Infinity				
	Exit	1	1			Infinity				
4	Entry	1	1	5	✓	3.00		0	99999	
			2	1	✓	3.00		0	99999	
			3	1, 2, 3, 4	✓	3.00		0	99999	
		2	1	(1, 5)		Infinity				
			2	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
5	Entry	1	1	1	✓	5.00		0	99999	
			2	2, 3, 4, 5	✓	5.00		0	99999	
		2	1	(1, 2, 3, 4, 5)		Infinity				
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.261	1030

			2	0.261	1030
			3	0.261	1030
2	Entry	1	1	0.344	1290
			2	0.344	1290
3	Entry	1	1	0.267	869
			2	0.267	869
4	Entry	1	1	0.222	849
			2	0.222	849
			3	0.222	849
5	Entry	1	1	0.285	946
			2	0.285	946

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm				
			1	2	3	4	5
1	1	1		✓			
		2			✓	✓	
		3	✓			✓	✓
	2	1		✓	✓	✓	
		2	✓			✓	✓
2	1	1	✓		✓	✓	
		2	✓	✓		✓	✓
3	1	1		✓		✓	✓
		2	✓	✓	✓		
	2	1	✓	✓	✓	✓	✓
4	1	1					✓
		2	✓				
		3	✓	✓	✓	✓	
	2	1	✓				✓
		2	✓	✓	✓	✓	
5	1	1	✓				
		2		✓	✓	✓	✓
	2	1	✓	✓	✓	✓	✓

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	2028 Do Nothing	Friday Daytime	ONE HOUR	14:30	16:00	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		ONE HOUR	✓	938	100.000
2		ONE HOUR	✓	628	100.000
3		ONE HOUR	✓	310	100.000
4		ONE HOUR	✓	1023	100.000
5		ONE HOUR	✓	317	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	266	43	624	3
	2	275	0	37	228	88
	3	122	25	1	158	4
	4	587	270	80	5	81
	5	75	116	8	116	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	11	4	2
	2	0	0	0	2	0
	3	2	0	0	3	0
	4	3	0	3	0	1
	5	1	1	0	3	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.10	2.1	A	855	1282
2	4.86	0.9	A	581	871
3	12.37	1.4	B	286	429
4	14.14	4.5	B	939	1409
5	13.39	1.7	B	288	433

Main Results for each time segment

14:30 - 14:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	698	175	467	697	700	800	0.0	1.0	4.795	A
2	480	120	656	479	469	508	0.0	0.6	3.794	A
3	230	57	1011	229	238	125	0.0	0.5	7.387	A
4	771	193	404	770	760	835	0.0	1.7	7.348	A
5	230	58	1037	230	240	137	0.0	0.7	7.969	A

14:45 - 15:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	838	209	553	838	844	959	1.0	1.2	5.142	A
2	562	141	787	565	561	604	0.6	0.6	4.061	A
3	285	71	1203	283	280	149	0.5	0.7	8.996	A
4	909	227	471	913	914	1015	1.7	2.1	8.565	A
5	288	72	1226	286	288	158	0.7	0.8	8.792	A

15:00 - 15:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1028	257	672	1035	1022	1162	1.2	1.5	5.811	A
2	697	174	975	702	695	733	0.6	0.6	4.793	A
3	345	86	1488	341	341	189	0.7	1.4	11.653	B
4	1118	280	583	1109	1109	1246	2.1	4.5	13.006	B
5	350	87	1486	348	347	206	0.8	1.4	13.391	B

15:15 - 15:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1025	256	682	1020	1041	1186	1.5	2.1	6.104	A
2	705	176	963	704	704	738	0.6	0.9	4.859	A
3	340	85	1480	340	335	187	1.4	1.1	12.366	B
4	1135	284	591	1137	1138	1229	4.5	4.2	14.136	B
5	339	85	1532	336	351	196	1.4	1.7	13.184	B

15:30 - 15:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	827	207	565	828	847	957	2.1	1.2	5.273	A
2	562	141	802	561	561	591	0.9	0.7	4.213	A
3	283	71	1207	281	286	156	1.1	0.9	9.713	A
4	924	231	470	923	927	1018	4.2	2.2	9.188	A
5	288	72	1235	288	294	158	1.7	0.9	10.268	B

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	711	178	465	713	711	814	1.2	0.9	4.874	A
2	479	120	669	479	480	509	0.7	0.5	3.823	A
3	235	59	1024	235	237	124	0.9	0.5	7.983	A
4	778	194	400	769	779	859	2.2	2.0	7.597	A
5	236	59	1041	238	242	129	0.9	0.4	7.720	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

14:30 - 14:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	195	908	0.214	193	200	0.0	0.4	5.235	A
			2	3, 4	259	908	0.285	258	259	0.0	0.4	4.734	A
			3	1, 4, 5	245	908	0.269	245	241	0.0	0.3	4.479	A
		2	1	(2, 3, 4)	463			463	471	0.0	0.0	0.003	A
			2	(1, 4, 5)	236			236	233	0.0	0.0	0.000	A
	Exit	1	1		800			800	796	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	225	1065	0.211	224	220	0.0	0.3	3.660	A
			2	1, 2, 4, 5	256	1065	0.240	255	248	0.0	0.4	3.912	A
	Exit	1	1		508			508	505	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	125	598	0.209	125	128	0.0	0.3	7.600	A
			2	1, 2, 3	104	598	0.174	104	109	0.0	0.2	7.130	A
		2	1	(1, 2, 3, 4, 5)	230			230	240	0.0	0.0	0.004	A
	Exit	1	1		125			125	124	0.0	0.0	0.000	A
4	Entry	1	1	5	61	759	0.080	61	63	0.0	0.1	5.049	A
			2	1	276	759	0.363	276	271	0.0	0.5	6.351	A
			3	1, 2, 3, 4	434	759	0.571	433	426	0.0	1.0	7.652	A
		2	1	(1, 5)	287			287	290	0.0	0.0	0.080	A
			2	(1, 2, 3, 4)	484			484	477	0.0	0.1	0.550	A
	Exit	1	1		835			835	845	0.0	0.0	0.000	A
5	Entry	1	1	1	53	650	0.082	53	56	0.0	0.2	6.161	A
			2	2, 3, 4, 5	177	650	0.273	177	184	0.0	0.5	8.459	A
		2	1	(1, 2, 3, 4, 5)	230			230	242	0.0	0.0	0.044	A
	Exit	1	1		137			137	135	0.0	0.0	0.000	A

14:45 - 15:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	239	886	0.270	240	240	0.4	0.2	5.259	A
			2	3, 4	312	886	0.352	312	319	0.4	0.4	4.970	A
			3	1, 4, 5	287	886	0.324	286	285	0.3	0.5	5.230	A
		2	1	(2, 3, 4)	554			554	557	0.0	0.0	0.001	A
			2	(1, 4, 5)	284			284	288	0.0	0.0	0.000	A
	Exit	1	1		959			959	952	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	264	1020	0.259	266	264	0.3	0.2	3.971	A
			2	1, 2, 4, 5	298	1020	0.292	299	297	0.4	0.3	4.142	A
	Exit	1	1		604			604	610	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	160	547	0.292	159	155	0.3	0.4	9.558	A
			2	1, 2, 3	125	547	0.228	124	125	0.2	0.3	8.197	A
		2	1	(1, 2, 3, 4, 5)	285			285	281	0.0	0.0	0.049	A
	Exit	1	1		149			149	153	0.0	0.0	0.000	A
4	Entry	1	1	5	68	745	0.092	69	75	0.1	0.1	5.352	A
			2	1	353	745	0.474	354	345	0.5	0.7	6.978	A
			3	1, 2, 3, 4	490	745	0.658	490	494	1.0	1.2	8.801	A
		2	1	(1, 5)	359			359	363	0.0	0.0	0.190	A
			2	(1, 2, 3, 4)	551			552	553	0.1	0.1	1.073	A
	Exit	1	1		1015			1015	1010	0.0	0.0	0.000	A
5	Entry	1	1	1	64	596	0.108	65	67	0.2	0.1	7.223	A
			2	2, 3, 4, 5	224	596	0.375	222	221	0.5	0.7	9.227	A
		2	1	(1, 2, 3, 4, 5)	288			288	289	0.0	0.0	0.029	A
	Exit	1	1		158			158	163	0.0	0.0	0.000	A

15:00 - 15:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	292	855	0.341	293	290	0.2	0.5	5.944	A
			2	3, 4	381	855	0.445	382	377	0.4	0.6	5.812	A
			3	1, 4, 5	355	855	0.416	359	355	0.5	0.5	5.690	A
		2	1	(2, 3, 4)	683			683	676	0.0	0.0	0.004	A
			2	(1, 4, 5)	345			345	348	0.0	0.0	0.000	A
	Exit	1	1		1162			1162	1157	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	329	955	0.345	331	331	0.2	0.3	4.697	A
			2	1, 2, 4, 5	368	955	0.385	371	363	0.3	0.3	4.881	A
	Exit	1	1		733			733	731	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	187	471	0.397	184	189	0.4	0.8	12.245	B
			2	1, 2, 3	158	471	0.334	157	152	0.3	0.5	10.662	B
		2	1	(1, 2, 3, 4, 5)	345			344	343	0.0	0.1	0.105	A
	Exit	1	1		189			189	186	0.0	0.0	0.000	A
4	Entry	1	1	5	89	720	0.123	87	89	0.1	0.2	5.637	A
			2	1	452	720	0.628	452	444	0.7	1.1	8.894	A
			3	1, 2, 3, 4	571	720	0.793	570	577	1.2	2.0	11.257	B
		2	1	(1, 5)	490			490	483	0.0	0.1	1.087	A
			2	(1, 2, 3, 4)	629			621	631	0.1	1.2	4.651	A
	Exit	1	1		1246			1246	1245	0.0	0.0	0.000	A
5	Entry	1	1	1	83	522	0.160	84	82	0.1	0.2	8.614	A
			2	2, 3, 4, 5	266	522	0.510	264	265	0.7	1.2	14.304	B
		2	1	(1, 2, 3, 4, 5)	350			349	349	0.0	0.1	0.427	A
	Exit	1	1		206			206	196	0.0	0.0	0.000	A

15:15 - 15:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	292	853	0.342	289	297	0.5	0.5	6.584	A
			2	3, 4	372	853	0.437	373	383	0.6	0.7	5.895	A
			3	1, 4, 5	361	853	0.424	358	361	0.5	0.9	5.896	A
		2	1	(2, 3, 4)	684			684	689	0.0	0.0	0.010	A
			2	(1, 4, 5)	341			341	354	0.0	0.0	0.002	A
	Exit	1	1		1186			1186	1176	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	335	959	0.349	335	336	0.3	0.4	4.772	A
			2	1, 2, 4, 5	370	959	0.386	369	368	0.3	0.5	4.938	A
	Exit	1	1		738			738	754	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	188	473	0.397	187	186	0.8	0.7	12.919	B
			2	1, 2, 3	152	473	0.322	153	150	0.5	0.4	11.088	B
		2	1	(1, 2, 3, 4, 5)	340			340	335	0.1	0.0	0.291	A
	Exit	1	1		187			187	192	0.0	0.0	0.000	A
4	Entry	1	1	5	89	718	0.123	89	90	0.2	0.1	5.892	A
			2	1	462	718	0.643	459	459	1.1	1.3	9.459	A
			3	1, 2, 3, 4	589	718	0.821	588	589	2.0	2.0	11.519	B
		2	1	(1, 5)	501			501	500	0.1	0.1	1.497	A
			2	(1, 2, 3, 4)	634			639	639	1.2	0.7	5.753	A
	Exit	1	1		1229			1229	1249	0.0	0.0	0.000	A
5	Entry	1	1	1	77	508	0.152	76	81	0.2	0.4	8.803	A
			2	2, 3, 4, 5	261	508	0.513	260	269	1.2	1.3	13.966	B
		2	1	(1, 2, 3, 4, 5)	339			338	352	0.1	0.1	0.428	A
	Exit	1	1		196			196	197	0.0	0.0	0.000	A

15:30 - 15:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	230	883	0.260	230	238	0.5	0.4	5.591	A
			2	3, 4	306	883	0.346	306	309	0.7	0.4	5.252	A
			3	1, 4, 5	293	883	0.331	292	299	0.9	0.4	5.027	A
		2	1	(2, 3, 4)	542			542	552	0.0	0.0	0.004	A
			2	(1, 4, 5)	286			286	292	0.0	0.0	0.000	A
	Exit	1	1		957			957	966	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	264	1015	0.260	265	265	0.4	0.3	4.103	A
			2	1, 2, 4, 5	299	1015	0.294	297	296	0.5	0.4	4.311	A
	Exit	1	1		591			591	614	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	161	546	0.295	159	160	0.7	0.5	10.436	B
			2	1, 2, 3	122	546	0.223	121	126	0.4	0.3	8.699	A
		2	1	(1, 2, 3, 4, 5)	283			283	285	0.0	0.0	0.053	A

	Exit	1	1		156			156	151	0.0	0.0	0.000	A
4	Entry	1	1	5	74	745	0.100	74	73	0.1	0.1	5.795	A
			2	1	351	745	0.471	353	349	1.3	0.5	7.567	A
			3	1, 2, 3, 4	497	745	0.667	496	505	2.0	1.2	9.070	A
		2	1	(1, 5)	355			355	361	0.1	0.0	0.303	A
			2	(1, 2, 3, 4)	569			568	560	0.7	0.4	1.374	A
	Exit	1	1		1018			1018	1027	0.0	0.0	0.000	A
5	Entry	1	1	1	67	593	0.114	67	71	0.4	0.2	7.306	A
			2	2, 3, 4, 5	221	593	0.372	221	223	1.3	0.7	11.065	B
		2	1	(1, 2, 3, 4, 5)	288			288	291	0.1	0.0	0.132	A
	Exit	1	1		158			158	158	0.0	0.0	0.000	A

15:45 - 16:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	199	909	0.219	201	200	0.4	0.2	5.078	A
			2	3, 4	264	909	0.290	265	266	0.4	0.3	4.834	A
			3	1, 4, 5	249	909	0.273	247	245	0.4	0.4	4.744	A
		2	1	(2, 3, 4)	466			466	465	0.0	0.0	0.000	A
			2	(1, 4, 5)	245			245	244	0.0	0.0	0.000	A
	Exit	1	1		814			814	815	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	225	1060	0.212	225	228	0.3	0.2	3.822	A
			2	1, 2, 4, 5	254	1060	0.240	254	252	0.4	0.2	3.823	A
	Exit	1	1		509			509	516	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	130	595	0.218	129	131	0.5	0.3	8.057	A
			2	1, 2, 3	105	595	0.177	106	107	0.3	0.2	7.893	A
		2	1	(1, 2, 3, 4, 5)	235			235	236	0.0	0.0	0.000	A
	Exit	1	1		124			124	123	0.0	0.0	0.000	A
4	Entry	1	1	5	56	760	0.074	57	58	0.1	0.1	5.150	A
			2	1	279	760	0.367	276	285	0.5	0.6	6.533	A
			3	1, 2, 3, 4	440	760	0.579	437	435	1.2	1.0	7.961	A
		2	1	(1, 5)	290			289	293	0.0	0.1	0.100	A
			2	(1, 2, 3, 4)	488			486	485	0.4	0.2	0.546	A
	Exit	1	1		859			859	865	0.0	0.0	0.000	A
5	Entry	1	1	1	57	649	0.087	57	57	0.2	0.1	6.450	A
			2	2, 3, 4, 5	180	649	0.277	181	185	0.7	0.3	8.097	A
		2	1	(1, 2, 3, 4, 5)	236			236	240	0.0	0.0	0.013	A
	Exit	1	1		129			129	131	0.0	0.0	0.000	A

2028 Do Nothing, Friday PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	9.07	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2028 Do Nothing	Friday PM	ONE HOUR	16:00	17:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1088	100.000
2		ONE HOUR	✓	600	100.000
3		ONE HOUR	✓	419	100.000
4		ONE HOUR	✓	939	100.000
5		ONE HOUR	✓	169	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	244	58	743	41
	2	262	1	35	231	71
	3	188	35	0	192	4
	4	676	204	0	4	55
	5	34	65	2	68	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	1	12	2	0
	2	0	0	3	0	2
	3	2	0	0	3	0
	4	2	1	9	0	2
	5	3	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.85	2.2	A	994	1492
2	4.81	0.9	A	551	826
3	17.76	2.6	C	386	579
4	11.46	3.5	B	868	1301
5	9.75	0.5	A	159	239

Main Results for each time segment

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	811	203	287	810	819	893	0.0	1.0	4.695	A
2	449	112	683	451	448	414	0.0	0.4	3.784	A
3	320	80	1061	322	320	73	0.0	0.8	8.566	A
4	724	181	454	725	709	929	0.0	1.3	6.799	A
5	133	33	1047	133	132	132	0.0	0.2	6.611	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	981	245	341	981	984	1035	1.0	1.3	5.151	A
2	532	133	834	530	540	488	0.4	0.7	4.087	A
3	371	93	1276	373	373	88	0.8	1.2	10.531	B
4	850	212	533	848	838	1115	1.3	1.9	7.880	A
5	157	39	1220	156	152	161	0.2	0.3	7.352	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1185	296	422	1183	1190	1281	1.3	2.2	5.854	A
2	668	167	1009	666	665	596	0.7	0.9	4.582	A
3	459	115	1566	456	452	109	1.2	2.1	16.494	C
4	1034	259	658	1034	1027	1363	1.9	3.5	11.081	B
5	190	47	1511	192	188	181	0.3	0.4	9.196	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1188	297	420	1193	1208	1272	2.2	1.7	5.811	A
2	658	165	993	660	664	620	0.9	0.9	4.813	A
3	462	115	1550	460	458	103	2.1	2.6	17.757	C
4	1036	259	658	1036	1029	1351	3.5	3.3	11.461	B
5	189	47	1505	187	188	189	0.4	0.5	9.754	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	990	248	353	990	982	1061	1.7	1.3	5.121	A
2	545	136	837	545	545	507	0.9	0.6	4.141	A
3	387	97	1301	389	391	81	2.6	1.0	11.819	B
4	859	215	549	862	855	1141	3.3	1.9	8.561	A
5	154	38	1260	154	156	150	0.5	0.3	8.023	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	811	203	283	813	823	869	1.3	0.9	4.693	A
2	454	113	687	452	452	408	0.6	0.5	3.914	A
3	316	79	1068	316	319	72	1.0	0.7	9.002	A
4	702	175	447	707	714	936	1.9	1.1	6.971	A
5	133	33	1019	133	131	136	0.3	0.3	6.756	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:00 - 16:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	181	955	0.190	182	182	0.0	0.2	4.740	A
			2	3, 4	320	955	0.335	319	323	0.0	0.4	4.750	A
			3	1, 4, 5	310	955	0.324	308	314	0.0	0.4	4.607	A
		2	1	(2, 3, 4)	504			504	511	0.0	0.0	0.004	A
			2	(1, 4, 5)	308			308	312	0.0	0.0	0.000	A
	Exit	1	1		893			893	876	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	212	1056	0.201	213	211	0.0	0.2	3.744	A
			2	1, 2, 4, 5	237	1056	0.224	238	237	0.0	0.2	3.820	A
	Exit	1	1		414			414	415	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	165	585	0.282	167	163	0.0	0.4	8.795	A
			2	1, 2, 3	154	585	0.264	155	157	0.0	0.4	8.282	A
		2	1	(1, 2, 3, 4, 5)	320			320	323	0.0	0.0	0.021	A
	Exit	1	1		73			73	72	0.0	0.0	0.000	A
4	Entry	1	1	5	40	748	0.053	40	41	0.0	0.0	5.232	A
			2	1	301	748	0.403	302	293	0.0	0.5	6.350	A
			3	1, 2, 3, 4	383	748	0.511	384	376	0.0	0.7	7.044	A
		2	1	(1, 5)	309			309	303	0.0	0.0	0.081	A
			2	(1, 2, 3, 4)	415			415	411	0.0	0.0	0.189	A
	Exit	1	1		929			929	936	0.0	0.0	0.000	A
5	Entry	1	1	1	29	647	0.045	29	28	0.0	0.1	6.189	A
			2	2, 3, 4, 5	104	647	0.160	104	105	0.0	0.2	6.708	A
		2	1	(1, 2, 3, 4, 5)	133			133	133	0.0	0.0	0.009	A
	Exit	1	1		132			132	131	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	215	941	0.229	215	214	0.2	0.3	5.085	A
			2	3, 4	382	941	0.406	382	386	0.4	0.5	5.224	A
			3	1, 4, 5	383	941	0.407	383	383	0.4	0.5	5.111	A
		2	1	(2, 3, 4)	595			595	607	0.0	0.0	0.002	A
			2	(1, 4, 5)	386			386	378	0.0	0.0	0.002	A
	Exit	1	1		1035			1035	1030	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	263	1004	0.262	262	262	0.2	0.4	3.969	A
			2	1, 2, 4, 5	270	1004	0.269	268	278	0.2	0.4	4.198	A
	Exit	1	1		488			488	487	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	193	528	0.366	194	190	0.4	0.6	11.082	B
			2	1, 2, 3	178	528	0.338	179	183	0.4	0.6	9.849	A
		2	1	(1, 2, 3, 4, 5)	371			371	375	0.0	0.0	0.060	A

	Exit	1	1		88			88	88	0.0	0.0	0.000	A
4	Entry	1	1	5	51	731	0.069	51	50	0.0	0.1	5.407	A
			2	1	358	731	0.490	357	351	0.5	0.7	7.288	A
			3	1, 2, 3, 4	440	731	0.602	440	437	0.7	1.0	7.981	A
		2	1	(1, 5)	371			371	362	0.0	0.0	0.193	A
			2	(1, 2, 3, 4)	479			478	478	0.0	0.1	0.451	A
	Exit	1	1		1115			1115	1125	0.0	0.0	0.000	A
5	Entry	1	1	1	32	598	0.053	33	31	0.1	0.1	6.747	A
			2	2, 3, 4, 5	125	598	0.209	124	121	0.2	0.3	7.501	A
		2	1	(1, 2, 3, 4, 5)	157			157	152	0.0	0.0	0.000	A
	Exit	1	1		161			161	157	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	262	920	0.284	258	259	0.3	0.6	5.535	A
			2	3, 4	459	920	0.498	459	467	0.5	0.8	6.018	A
			3	1, 4, 5	465	920	0.505	466	464	0.5	0.8	5.837	A
		2	1	(2, 3, 4)	732			732	734	0.0	0.0	0.016	A
			2	(1, 4, 5)	453			453	459	0.0	0.0	0.009	A
	Exit	1	1		1281			1281	1273	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	319	943	0.338	318	319	0.4	0.5	4.495	A
			2	1, 2, 4, 5	349	943	0.370	348	345	0.4	0.5	4.664	A
	Exit	1	1		596			596	594	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	238	450	0.528	235	230	0.6	1.0	15.678	C
			2	1, 2, 3	221	450	0.491	221	223	0.6	1.1	15.440	C
		2	1	(1, 2, 3, 4, 5)	459			459	456	0.0	0.1	0.926	A
	Exit	1	1		109			109	108	0.0	0.0	0.000	A
4	Entry	1	1	5	58	703	0.082	58	61	0.1	0.1	5.719	A
			2	1	453	703	0.645	453	443	0.7	1.2	9.190	A
			3	1, 2, 3, 4	525	703	0.746	523	523	1.0	1.6	9.986	A
		2	1	(1, 5)	468			468	468	0.0	0.2	1.149	A
			2	(1, 2, 3, 4)	567			567	563	0.1	0.4	2.115	A
	Exit	1	1		1363			1363	1360	0.0	0.0	0.000	A
5	Entry	1	1	1	40	514	0.077	41	38	0.1	0.1	7.343	A
			2	2, 3, 4, 5	150	514	0.292	151	150	0.3	0.4	9.645	A
		2	1	(1, 2, 3, 4, 5)	190			190	188	0.0	0.0	0.002	A
	Exit	1	1		181			181	186	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	275	921	0.299	278	273	0.6	0.4	5.661	A
			2	3, 4	461	921	0.501	462	469	0.8	0.7	5.894	A
			3	1, 4, 5	452	921	0.491	453	465	0.8	0.7	5.800	A
		2	1	(2, 3, 4)	743			743	752	0.0	0.0	0.006	A
			2	(1, 4, 5)	446			446	454	0.0	0.0	0.007	A
	Exit	1	1		1272			1272	1277	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	313	949	0.330	314	318	0.5	0.5	4.743	A
			2	1, 2, 4, 5	345	949	0.364	346	347	0.5	0.4	4.878	A
	Exit	1	1		620			620	610	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	233	454	0.514	233	230	1.0	1.2	16.523	C
			2	1, 2, 3	230	454	0.506	226	227	1.1	1.3	16.684	C
		2	1	(1, 2, 3, 4, 5)	462			463	460	0.1	0.1	1.154	A
	Exit	1	1		103			103	108	0.0	0.0	0.000	A
4	Entry	1	1	5	64	703	0.092	66	61	0.1	0.1	6.113	A
			2	1	447	703	0.636	446	443	1.2	1.3	9.438	A
			3	1, 2, 3, 4	526	703	0.748	524	526	1.6	1.4	10.208	B
		2	1	(1, 5)	464			465	469	0.2	0.2	1.175	A
			2	(1, 2, 3, 4)	572			573	560	0.4	0.4	2.368	A
	Exit	1	1		1351			1351	1363	0.0	0.0	0.000	A
5	Entry	1	1	1	39	516	0.076	40	38	0.1	0.0	7.423	A
			2	2, 3, 4, 5	149	516	0.289	147	150	0.4	0.5	10.299	B
		2	1	(1, 2, 3, 4, 5)	189			189	188	0.0	0.0	0.024	A
	Exit	1	1		189			189	189	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	222	938	0.237	222	223	0.4	0.3	4.983	A
			2	3, 4	382	938	0.407	381	381	0.7	0.6	5.232	A
			3	1, 4, 5	386	938	0.411	387	377	0.7	0.4	5.071	A
		2	1	(2, 3, 4)	613			613	608	0.0	0.0	0.009	A
			2	(1, 4, 5)	377			377	372	0.0	0.0	0.004	A
	Exit	1	1		1061			1061	1063	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	263	1003	0.262	263	260	0.5	0.3	4.141	A
			2	1, 2, 4, 5	282	1003	0.281	282	284	0.4	0.3	4.140	A
	Exit	1	1		507			507	505	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	203	521	0.389	204	201	1.2	0.6	11.332	B
			2	1, 2, 3	185	521	0.354	185	190	1.3	0.4	11.590	B
		2	1	(1, 2, 3, 4, 5)	387			387	385	0.1	0.0	0.376	A
	Exit	1	1		81			81	86	0.0	0.0	0.000	A
4	Entry	1	1	5	51	727	0.070	51	49	0.1	0.1	5.504	A
			2	1	359	727	0.494	360	360	1.3	0.8	7.625	A
			3	1, 2, 3, 4	451	727	0.619	451	446	1.4	1.0	8.697	A
		2	1	(1, 5)	367			367	365	0.2	0.0	0.293	A
			2	(1, 2, 3, 4)	492			493	486	0.4	0.1	0.666	A
	Exit	1	1		1141			1141	1121	0.0	0.0	0.000	A
5	Entry	1	1	1	31	586	0.052	30	32	0.0	0.1	6.608	A
			2	2, 3, 4, 5	124	586	0.211	124	124	0.5	0.2	8.280	A
		2	1	(1, 2, 3, 4, 5)	154			154	155	0.0	0.0	0.085	A
	Exit	1	1		150			150	153	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

1	Entry	1	1	2	183	957	0.191	184	180	0.3	0.3	4.801	A
			2	3, 4	316	957	0.330	317	325	0.6	0.3	4.627	A
			3	1, 4, 5	312	957	0.326	313	318	0.4	0.4	4.701	A
		2	1	(2, 3, 4)	512			512	514	0.0	0.0	0.001	A
			2	(1, 4, 5)	299			299	308	0.0	0.0	0.000	A
	Exit	1	1		869			869	878	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	210	1054	0.199	210	213	0.3	0.2	3.932	A
			2	1, 2, 4, 5	244	1054	0.231	243	239	0.3	0.3	3.898	A
	Exit	1	1		408			408	414	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	168	583	0.288	167	163	0.6	0.3	9.073	A
			2	1, 2, 3	148	583	0.253	148	156	0.4	0.4	8.874	A
		2	1	(1, 2, 3, 4, 5)	316			316	318	0.0	0.0	0.028	A
	Exit	1	1		72			72	74	0.0	0.0	0.000	A
4	Entry	1	1	5	45	750	0.061	45	42	0.1	0.1	5.143	A
			2	1	287	750	0.383	290	292	0.8	0.4	6.424	A
			3	1, 2, 3, 4	370	750	0.494	372	380	1.0	0.6	7.258	A
		2	1	(1, 5)	298			298	298	0.0	0.0	0.081	A
			2	(1, 2, 3, 4)	404			405	414	0.1	0.0	0.256	A
	Exit	1	1		936			936	939	0.0	0.0	0.000	A
5	Entry	1	1	1	27	655	0.042	28	26	0.1	0.0	6.248	A
			2	2, 3, 4, 5	105	655	0.161	105	105	0.2	0.2	6.872	A
		2	1	(1, 2, 3, 4, 5)	133			133	131	0.0	0.0	0.003	A
	Exit	1	1		136			136	134	0.0	0.0	0.000	A

2028 Do Nothing, Saturday

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	7.87	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2028 Do Nothing	Saturday	ONE HOUR	12:00	13:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1009	100.000
2		ONE HOUR	✓	512	100.000
3		ONE HOUR	✓	141	100.000
4		ONE HOUR	✓	1018	100.000
5		ONE HOUR	✓	135	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	4	255	51	659	40
	2	233	0	17	237	25
	3	56	20	0	63	2
	4	698	207	81	4	28
	5	33	38	9	55	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	2	2	3
	2	1	0	0	0	0
	3	4	0	0	5	0
	4	1	2	10	0	0
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.53	1.7	A	930	1394
2	4.45	0.8	A	473	710
3	8.85	0.3	A	128	192
4	11.78	4.1	B	930	1395
5	8.10	0.4	A	124	186

Main Results for each time segment

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	745	186	312	741	747	761	0.0	1.2	4.469	A
2	378	94	672	378	386	381	0.0	0.5	3.705	A
3	105	26	932	104	109	118	0.0	0.2	6.404	A
4	761	190	280	759	759	756	0.0	1.6	7.022	A
5	102	25	970	103	105	70	0.0	0.2	5.818	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	914	228	373	916	904	900	1.2	1.4	4.891	A
2	466	117	813	466	461	476	0.5	0.6	3.867	A
3	118	29	1139	117	125	140	0.2	0.3	6.977	A
4	906	227	337	906	912	919	1.6	2.3	8.244	A
5	114	29	1157	115	117	86	0.2	0.2	6.676	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1120	280	464	1121	1108	1129	1.4	1.7	5.530	A
2	567	142	1006	566	563	579	0.6	0.8	4.312	A
3	157	39	1392	157	156	180	0.3	0.3	8.658	A
4	1126	281	413	1132	1111	1136	2.3	3.6	11.777	B
5	152	38	1438	154	151	107	0.2	0.3	7.985	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1112	278	445	1112	1120	1125	1.7	1.7	5.405	A
2	581	145	984	581	567	573	0.8	0.7	4.446	A
3	152	38	1396	153	154	169	0.3	0.3	8.853	A
4	1113	278	424	1106	1108	1125	3.6	4.1	11.557	B
5	146	36	1425	145	146	105	0.3	0.4	8.099	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	917	229	372	912	907	924	1.7	1.4	4.999	A
2	458	115	825	457	457	459	0.7	0.5	3.969	A
3	133	33	1132	131	127	150	0.3	0.3	7.563	A
4	915	229	341	916	924	923	4.1	2.1	8.537	A
5	127	32	1170	126	124	87	0.4	0.3	6.879	A

13:15 - 13:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	770	193	299	767	770	779	1.4	1.1	4.666	A
2	389	97	676	389	393	391	0.5	0.3	3.607	A
3	103	26	948	104	106	117	0.3	0.2	7.039	A
4	759	190	289	757	775	762	2.1	1.5	6.896	A
5	102	25	977	101	103	70	0.3	0.2	6.277	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

12:00 - 12:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	182	949	0.192	181	190	0.0	0.3	4.617	A
			2	3, 4	281	949	0.296	280	279	0.0	0.4	4.364	A
			3	1, 4, 5	281	949	0.296	280	278	0.0	0.4	4.471	A
		2	1	(2, 3, 4)	459			459	471	0.0	0.0	0.000	A
			2	(1, 4, 5)	286			286	280	0.0	0.0	0.000	A
	Exit	1	1		761			761	768	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	187	1059	0.176	186	190	0.0	0.2	3.767	A
			2	1, 2, 4, 5	191	1059	0.180	191	196	0.0	0.2	3.644	A
	Exit	1	1		381			381	392	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	57	619	0.091	56	59	0.0	0.1	6.589	A
			2	1, 2, 3	48	619	0.078	48	50	0.0	0.1	6.190	A
		2	1	(1, 2, 3, 4, 5)	105			105	110	0.0	0.0	0.000	A
	Exit	1	1		118			118	114	0.0	0.0	0.000	A
4	Entry	1	1	5	22	787	0.028	22	22	0.0	0.0	4.493	A
			2	1	307	787	0.391	307	311	0.0	0.6	6.267	A
			3	1, 2, 3, 4	432	787	0.549	431	427	0.0	0.9	7.300	A
		2	1	(1, 5)	290			290	290	0.0	0.0	0.064	A
			2	(1, 2, 3, 4)	471			471	475	0.0	0.1	0.328	A
	Exit	1	1		756			756	762	0.0	0.0	0.000	A
5	Entry	1	1	1	24	669	0.037	25	25	0.0	0.0	5.123	A
			2	2, 3, 4, 5	77	669	0.115	78	80	0.0	0.1	6.033	A
		2	1	(1, 2, 3, 4, 5)	102			102	105	0.0	0.0	0.000	A
	Exit	1	1		70			70	69	0.0	0.0	0.000	A

12:15 - 12:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	228	933	0.245	230	232	0.3	0.3	5.153	A
			2	3, 4	346	933	0.371	346	340	0.4	0.6	4.768	A
			3	1, 4, 5	339	933	0.363	340	332	0.4	0.5	4.822	A
		2	1	(2, 3, 4)	567			567	567	0.0	0.0	0.005	A
			2	(1, 4, 5)	346			346	338	0.0	0.0	0.000	A
	Exit	1	1		900			900	910	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	232	1011	0.229	231	226	0.2	0.3	3.929	A
			2	1, 2, 4, 5	235	1011	0.232	235	234	0.2	0.3	3.806	A
	Exit	1	1		476			476	470	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	66	564	0.116	66	67	0.1	0.1	7.165	A
			2	1, 2, 3	52	564	0.092	52	58	0.1	0.2	6.765	A
		2	1	(1, 2, 3, 4, 5)	118			118	125	0.0	0.0	0.000	A

	Exit	1	1		140			140	143	0.0	0.0	0.000	A
4	Entry	1	1	5	25	774	0.033	25	26	0.0	0.0	4.576	A
			2	1	377	774	0.486	377	385	0.6	0.8	7.074	A
			3	1, 2, 3, 4	505	774	0.652	504	502	0.9	1.3	8.230	A
		2	1	(1, 5)	355			355	354	0.0	0.0	0.287	A
			2	(1, 2, 3, 4)	551			552	561	0.1	0.1	0.804	A
	Exit	1	1		919			919	912	0.0	0.0	0.000	A
5	Entry	1	1	1	27	616	0.044	27	28	0.0	0.0	6.100	A
			2	2, 3, 4, 5	87	616	0.142	88	90	0.1	0.1	6.854	A
		2	1	(1, 2, 3, 4, 5)	114			114	117	0.0	0.0	0.000	A
	Exit	1	1		86			86	84	0.0	0.0	0.000	A

12:30 - 12:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	278	909	0.306	280	279	0.3	0.3	5.500	A
			2	3, 4	418	909	0.460	416	412	0.6	0.8	5.596	A
			3	1, 4, 5	424	909	0.466	425	416	0.5	0.6	5.466	A
		2	1	(2, 3, 4)	718			718	701	0.0	0.0	0.007	A
			2	(1, 4, 5)	402			402	408	0.0	0.0	0.006	A
	Exit	1	1		1129			1129	1130	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	278	944	0.295	278	278	0.3	0.4	4.285	A
			2	1, 2, 4, 5	289	944	0.306	288	285	0.3	0.4	4.338	A
	Exit	1	1		579			579	566	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	80	496	0.162	81	82	0.1	0.1	8.888	A
			2	1, 2, 3	76	496	0.154	76	74	0.2	0.2	8.410	A
		2	1	(1, 2, 3, 4, 5)	157			157	156	0.0	0.0	0.000	A
	Exit	1	1		180			180	171	0.0	0.0	0.000	A
4	Entry	1	1	5	33	758	0.043	33	31	0.0	0.0	5.002	A
			2	1	500	758	0.660	502	494	0.8	1.1	8.791	A
			3	1, 2, 3, 4	597	758	0.788	598	586	1.3	1.8	10.138	B
		2	1	(1, 5)	488			488	475	0.0	0.2	1.365	A
			2	(1, 2, 3, 4)	638			642	639	0.1	0.5	3.141	A
	Exit	1	1		1136			1136	1117	0.0	0.0	0.000	A
5	Entry	1	1	1	37	535	0.070	39	39	0.0	0.0	6.873	A
			2	2, 3, 4, 5	115	535	0.214	115	112	0.1	0.3	8.367	A
		2	1	(1, 2, 3, 4, 5)	152			152	152	0.0	0.0	0.000	A
	Exit	1	1		107			107	106	0.0	0.0	0.000	A

12:45 - 13:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	290	914	0.317	289	289	0.3	0.5	5.512	A
			2	3, 4	417	914	0.457	417	419	0.8	0.6	5.361	A
			3	1, 4, 5	405	914	0.443	406	413	0.6	0.6	5.357	A
		2	1	(2, 3, 4)	704			704	706	0.0	0.0	0.008	A
			2	(1, 4, 5)	408			408	414	0.0	0.0	0.003	A
	Exit	1	1		1125			1125	1120	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	285	952	0.300	286	281	0.4	0.3	4.434	A
			2	1, 2, 4, 5	296	952	0.311	295	287	0.4	0.4	4.459	A
	Exit	1	1		573			573	577	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	83	495	0.168	83	83	0.1	0.2	9.366	A
			2	1, 2, 3	69	495	0.140	70	71	0.2	0.1	8.251	A
		2	1	(1, 2, 3, 4, 5)	152			152	154	0.0	0.0	0.000	A
	Exit	1	1		169			169	173	0.0	0.0	0.000	A
4	Entry	1	1	5	33	755	0.043	32	31	0.0	0.1	5.158	A
			2	1	494	755	0.654	493	493	1.1	1.3	8.740	A
			3	1, 2, 3, 4	582	755	0.771	581	584	1.8	1.7	10.114	B
		2	1	(1, 5)	482			481	469	0.2	0.3	1.239	A
			2	(1, 2, 3, 4)	631			628	639	0.5	0.7	2.903	A
	Exit	1	1		1125			1125	1119	0.0	0.0	0.000	A
5	Entry	1	1	1	37	539	0.069	36	35	0.0	0.1	6.995	A
			2	2, 3, 4, 5	108	539	0.201	109	111	0.3	0.2	8.436	A
		2	1	(1, 2, 3, 4, 5)	146			146	146	0.0	0.0	0.012	A
	Exit	1	1		105			105	106	0.0	0.0	0.000	A

13:00 - 13:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	225	933	0.241	224	224	0.5	0.3	5.276	A
			2	3, 4	349	933	0.374	347	342	0.6	0.6	4.982	A
			3	1, 4, 5	343	933	0.367	342	341	0.6	0.5	4.817	A
		2	1	(2, 3, 4)	581			581	566	0.0	0.0	0.008	A
			2	(1, 4, 5)	336			336	340	0.0	0.0	0.000	A
	Exit	1	1		924			924	925	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	226	1007	0.225	226	227	0.3	0.3	3.957	A
			2	1, 2, 4, 5	232	1007	0.231	231	231	0.4	0.2	3.981	A
	Exit	1	1		459			459	462	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	71	566	0.125	71	69	0.2	0.1	7.916	A
			2	1, 2, 3	62	566	0.110	60	58	0.1	0.2	7.146	A
		2	1	(1, 2, 3, 4, 5)	133			133	127	0.0	0.0	0.000	A
	Exit	1	1		150			150	145	0.0	0.0	0.000	A
4	Entry	1	1	5	24	774	0.031	24	25	0.1	0.0	4.863	A
			2	1	395	774	0.511	397	395	1.3	0.6	7.097	A
			3	1, 2, 3, 4	495	774	0.640	495	505	1.7	1.3	8.482	A
		2	1	(1, 5)	358			359	363	0.3	0.0	0.385	A
			2	(1, 2, 3, 4)	557			556	557	0.7	0.2	1.022	A
	Exit	1	1		923			923	923	0.0	0.0	0.000	A
5	Entry	1	1	1	30	612	0.049	30	29	0.1	0.1	6.461	A
			2	2, 3, 4, 5	97	612	0.159	96	95	0.2	0.2	7.004	A
		2	1	(1, 2, 3, 4, 5)	127			127	124	0.0	0.0	0.000	A
	Exit	1	1		87			87	85	0.0	0.0	0.000	A

13:15 - 13:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

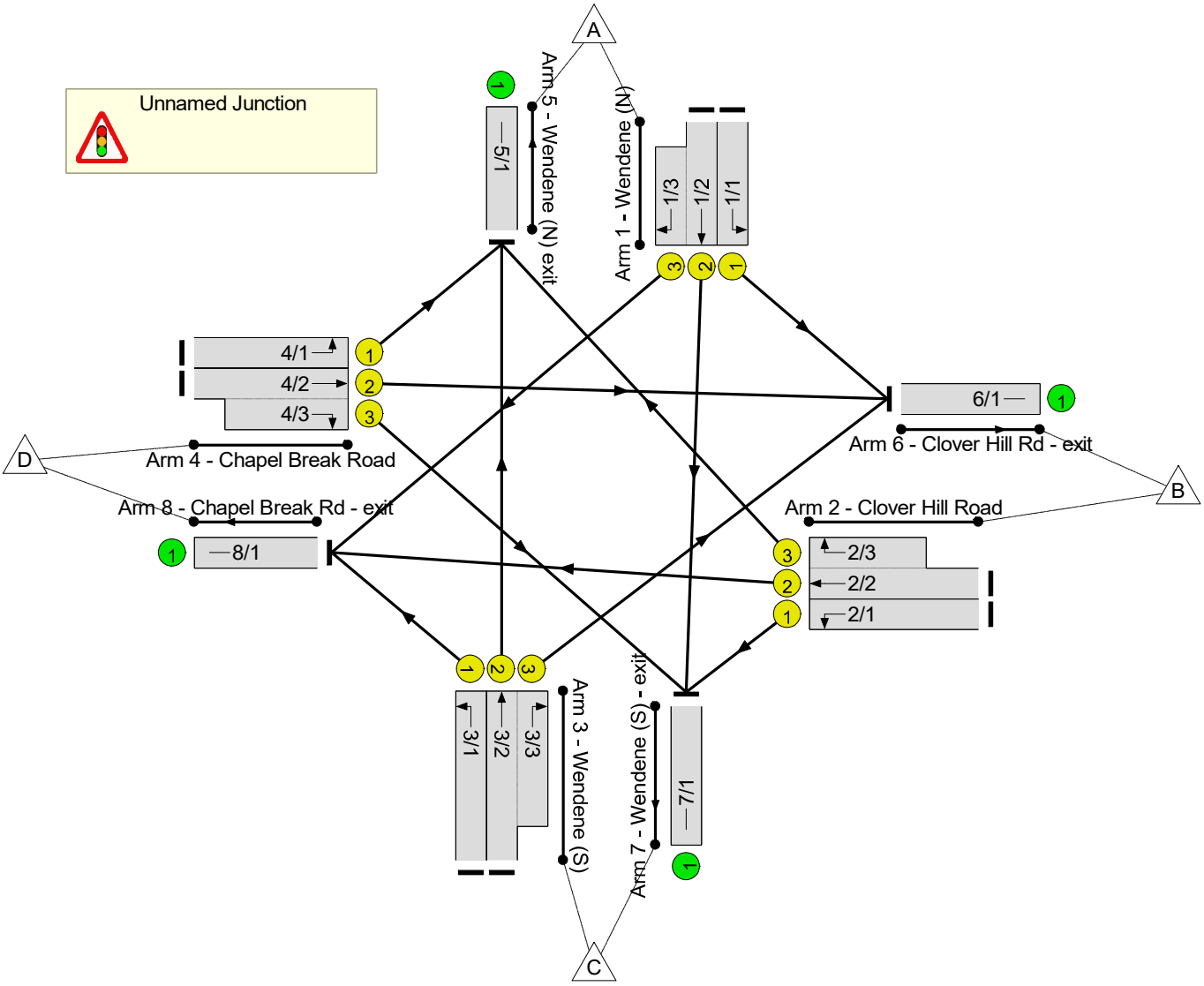
1	Entry	1	1	2	203	952	0.213	202	200	0.3	0.3	5.028	A
			2	3, 4	284	952	0.299	283	287	0.6	0.4	4.496	A
			3	1, 4, 5	283	952	0.297	282	283	0.5	0.3	4.577	A
		2	1	(2, 3, 4)	487			487	487	0.0	0.0	0.001	A
			2	(1, 4, 5)	282			282	281	0.0	0.0	0.000	A
	Exit	1	1		779			779	791	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	193	1058	0.183	193	192	0.3	0.2	3.548	A
			2	1, 2, 4, 5	196	1058	0.185	196	201	0.2	0.1	3.664	A
	Exit	1	1		391			391	399	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	53	615	0.086	54	55	0.1	0.1	6.865	A
			2	1, 2, 3	50	615	0.081	50	51	0.2	0.1	7.228	A
		2	1	(1, 2, 3, 4, 5)	103			103	105	0.0	0.0	0.000	A
	Exit	1	1		117			117	118	0.0	0.0	0.000	A
4	Entry	1	1	5	21	785	0.027	22	21	0.0	0.0	4.851	A
			2	1	310	785	0.395	310	321	0.6	0.5	6.142	A
			3	1, 2, 3, 4	426	785	0.543	425	432	1.3	0.9	7.207	A
		2	1	(1, 5)	285			285	292	0.0	0.0	0.064	A
			2	(1, 2, 3, 4)	474			474	481	0.2	0.0	0.294	A
	Exit	1	1		762			762	767	0.0	0.0	0.000	A
5	Entry	1	1	1	26	667	0.039	26	27	0.1	0.0	5.813	A
			2	2, 3, 4, 5	76	667	0.114	76	76	0.2	0.2	6.440	A
		2	1	(1, 2, 3, 4, 5)	102			102	102	0.0	0.0	0.000	A
	Exit	1	1		70			70	71	0.0	0.0	0.000	A

Full Input Data And Results

User and Project Details

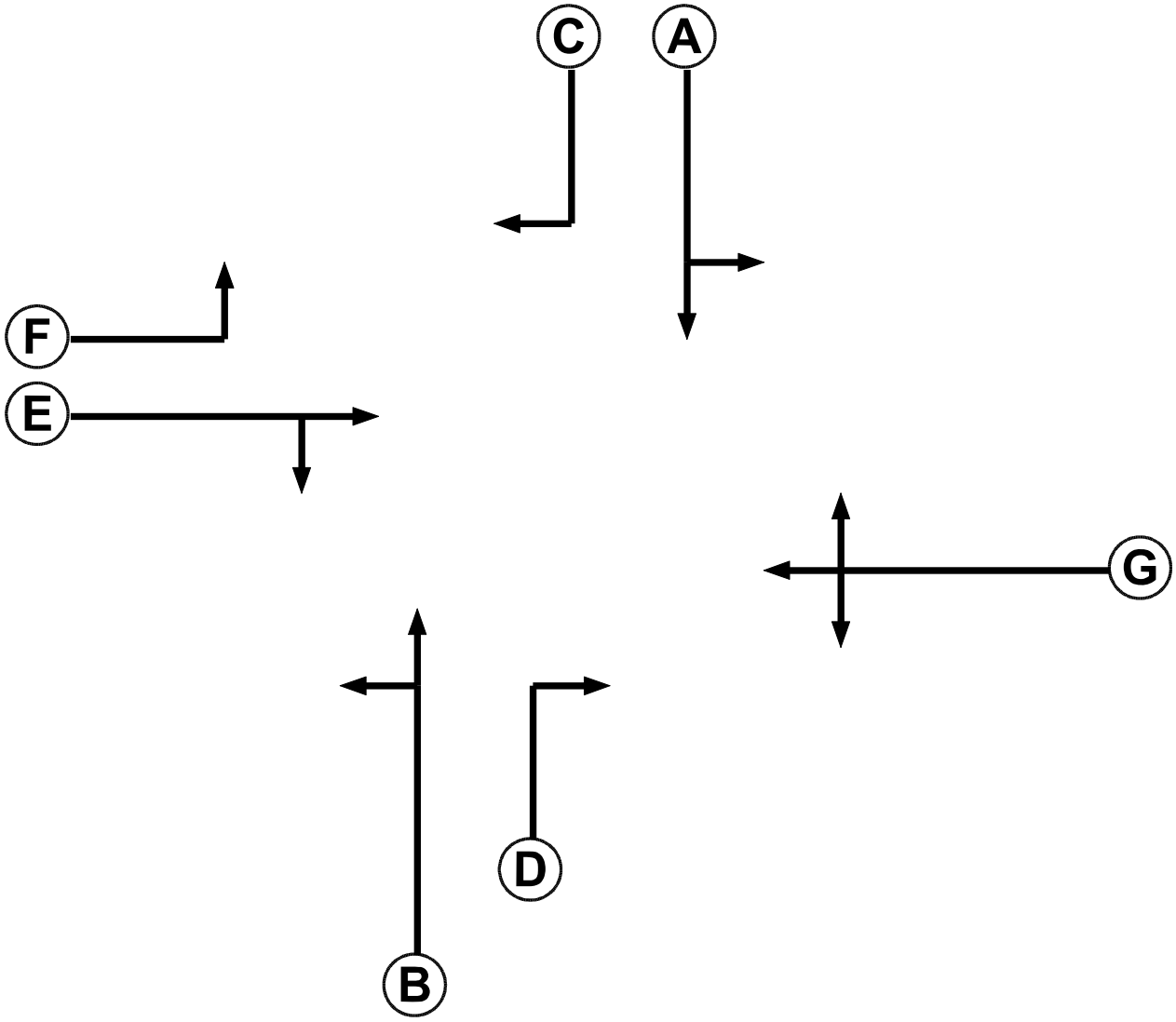
Project:	
Title:	
Location:	
Additional detail:	
File name:	TA_2028_1800 Wendene signals.lsg3x
Author:	
Company:	Focus Transport Planning Ltd.
Address:	Pentland House, Village Way, Wilmslow, Cheshire SK9 2GH

Network Layout Diagram



Full Input Data And Results

Phase 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	Traffic		7	7
F	Traffic		7	7
G	Traffic		7	7

Full Input Data And Results

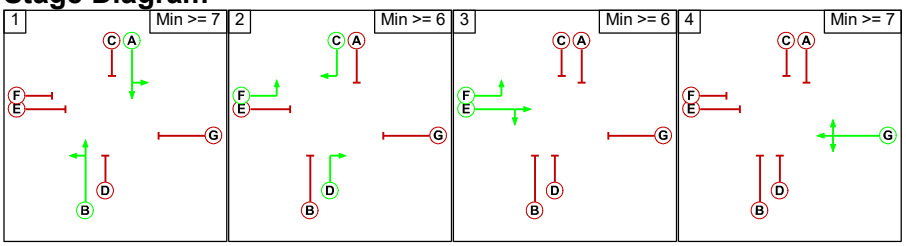
Phase Intergreens Matrix

	Starting Phase							
Terminating Phase		A	B	C	D	E	F	G
	A		-	-	6	5	-	7
	B	-		6	-	6	7	7
	C	-	6		-	5	-	6
	D	6	-	-		5	-	6
	E	5	5	5	5		-	6
	F	-	5	-	-	-		6
	G	6	6	6	6	7	7	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C D F
3	E F
4	G

Stage Diagram



Phase Delays

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

Prohibited Stage Change

	To Stage				
From Stage		1	2	3	4
	1		7	7	7
	2	6		5	6
	3	5	5		6
	4	6	7	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Full Input Data And Results

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 (Wendene (N))	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/2 (Wendene (N))	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/3 (Wendene (N))	U	C	2	3	9.8	User	1800	-	-	-	-	-
2/1 (Clover Hill Road)	U	G	2	3	10.8	User	1800	-	-	-	-	-
2/2 (Clover Hill Road)	U	G	2	3	60.0	User	1800	-	-	-	-	-
2/3 (Clover Hill Road)	U	G	2	3	5.7	User	1800	-	-	-	-	-
3/1 (Wendene (S))	U	B	2	3	12.2	User	1800	-	-	-	-	-
3/2 (Wendene (S))	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/3 (Wendene (S))	U	D	2	3	9.4	User	1800	-	-	-	-	-
4/1 (Chapel Break Road)	U	F	2	3	17.4	User	1800	-	-	-	-	-
4/2 (Chapel Break Road)	U	E	2	3	60.0	User	1800	-	-	-	-	-
4/3 (Chapel Break Road)	U	E	2	3	6.3	User	1800	-	-	-	-	-
5/1 (Wendene (N) exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Clover Hill Rd - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

7/1 (Wendene (S) - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Chapel Break Rd - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2028 Do Nothing Friday Daytime'	14:45	15:45	01:00	

Scenario 1: '2028 Do Nothing' (FG1: '2028 Do Nothing Friday Daytime', Plan 1: 'All stages')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	269	69	340	678
	B	196	0	26	75	297
	C	86	35	0	42	163
	D	350	74	60	0	484
	Tot.	632	378	155	457	1622

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 1: 2028 Do Nothing
Junction: Unnamed Junction	
1/1	269
1/2 (with short)	409(In) 69(Out)
1/3 (short)	340
2/1	26
2/2 (with short)	271(In) 75(Out)
2/3 (short)	196
3/1	42
3/2 (with short)	121(In) 86(Out)
3/3 (short)	35
4/1	350
4/2 (with short)	134(In) 74(Out)
4/3 (short)	60
5/1	632
6/1	378
7/1	155
8/1	457

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

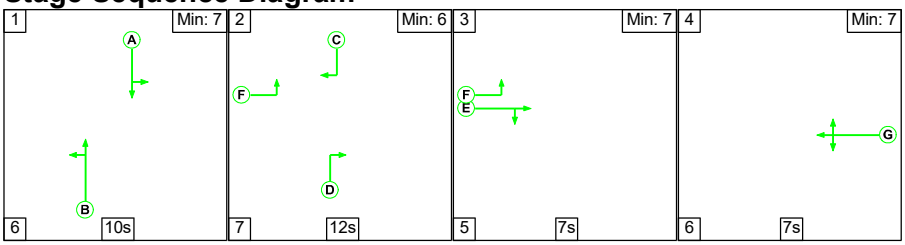
Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Wendene (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (Wendene (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (Wendene (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Clover Hill Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Clover Hill Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Clover Hill Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Wendene (S) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Wendene (S) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Wendene (S) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Chapel Break Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Chapel Break Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Chapel Break Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Wendene (N) exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Clover Hill Rd - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Wendene (S) - exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

8/1 (Chapel Break Rd - exit Lane 1)	Infinite Saturation Flow	Inf	Inf

Scenario 1: '2028 Do Nothing' (FG1: '2028 Do Nothing Friday Daytime', Plan 1: 'All stages')

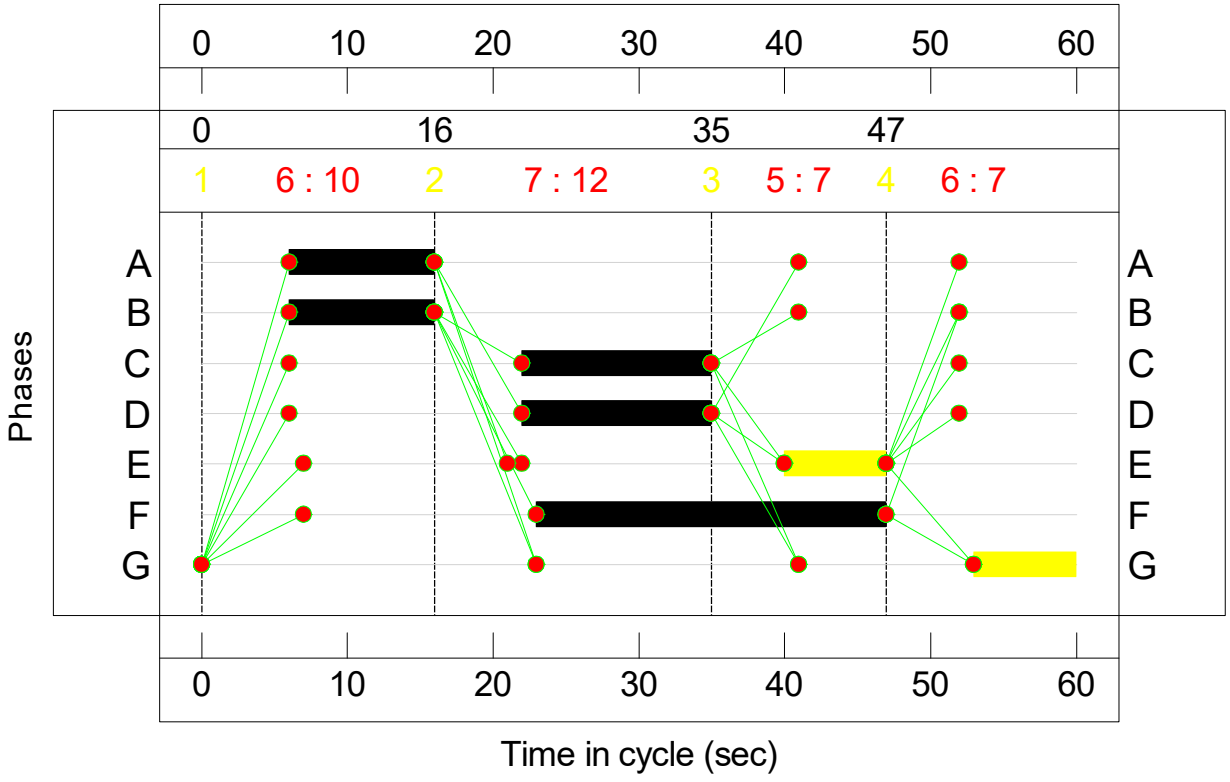
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	12	7	7
Change Point	0	16	35	47

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.7%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.7%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	10	-	269	1800	330	81.5%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	10:13	-	409	1800:1800	85+420	81.0 : 81.0%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	7	-	26	1800	240	10.8%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	7	-	271	1800:1800	92+240	81.7 : 81.7%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	10	-	42	1800	330	12.7%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	10:13	-	121	1800:1800	330+134	26.1 : 26.1%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	24	-	350	1800	750	46.7%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	134	1800:1800	240+216	30.8 : 27.8%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	632	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	378	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	155	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	457	Inf	Inf	0.0%

Full Input Data And Results

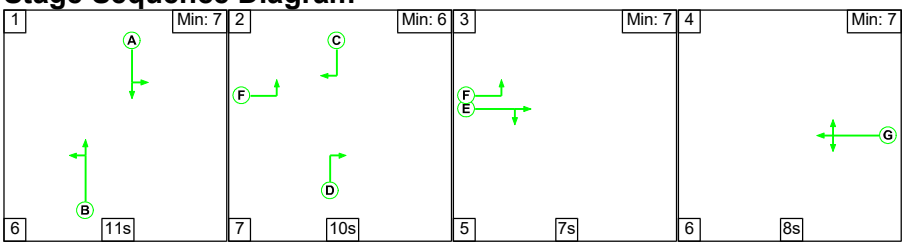
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**9.3**	**7.1**	**0.0**	**16.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**9.3**	**7.1**	**0.0**	**16.4**	**-**	**-**	**-**	**-**
1/1	269	269	-	-	-	1.8	2.1	-	3.8	51.2	4.3	2.1	6.3
1/2+1/3	409	409	-	-	-	2.5	2.0	-	4.5	39.5	5.3	2.0	7.3
2/1	26	26	-	-	-	0.2	0.1	-	0.2	31.4	0.4	0.1	0.4
2/2+2/3	271	271	-	-	-	1.9	2.1	-	4.0	52.5	3.2	2.1	5.2
3/1	42	42	-	-	-	0.2	0.1	-	0.3	26.8	0.6	0.1	0.7
3/2+3/3	121	121	-	-	-	0.7	0.2	-	0.9	25.4	1.2	0.2	1.4
4/1	350	350	-	-	-	1.2	0.4	-	1.7	17.2	4.2	0.4	4.6
4/2+4/3	134	134	-	-	-	0.9	0.2	-	1.1	29.0	1.1	0.2	1.3
5/1	632	632	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	378	378	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	155	155	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	457	457	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 10.2 Total Delay for Signalled Lanes (pcuHr): 16.41 Cycle Time (s): 60
PRC Over All Lanes (%): 10.2 Total Delay Over All Lanes(pcuHr): 16.41

Full Input Data And Results

Scenario 2: '2028 Do Nothing' (FG2: '2028 Do Nothing Friday PM', Plan 1: 'All stages')

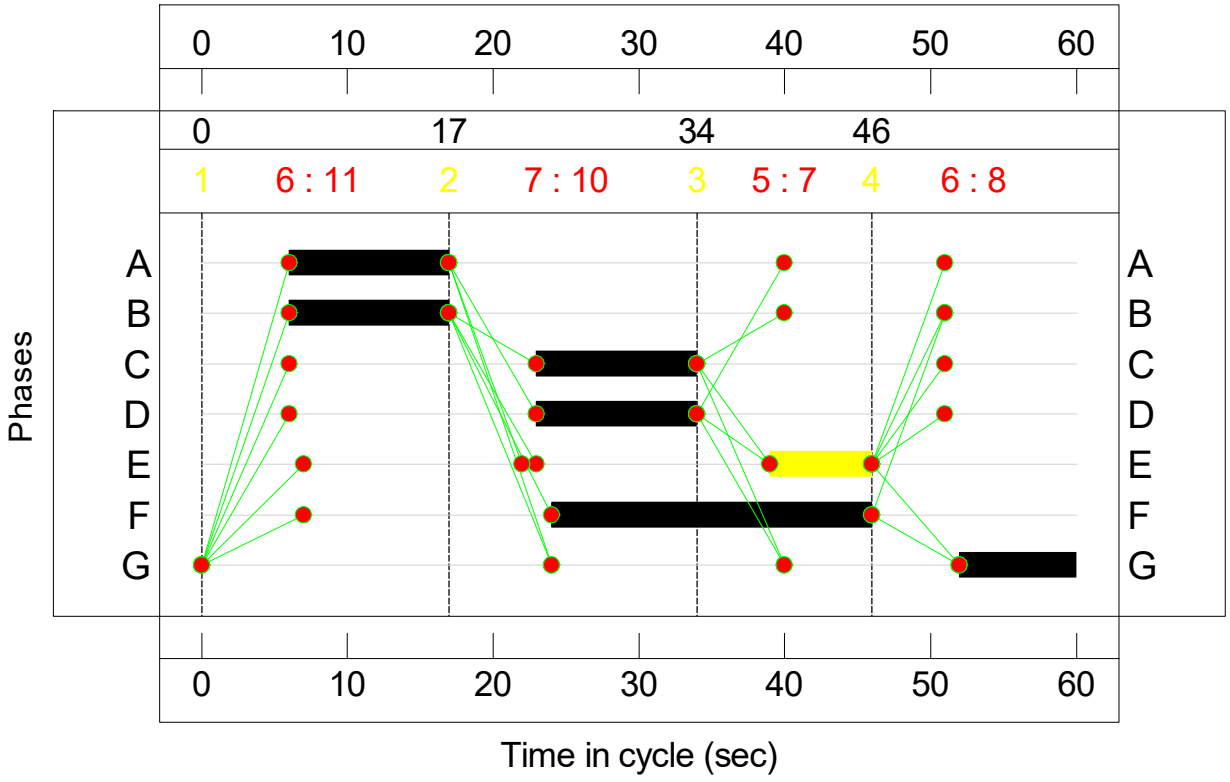
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	11	10	7	8
Change Point	0	17	34	46

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**72.2%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**72.2%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	11	-	242	1800	360	67.2%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	11	-	317	1800:1800	95+360	69.7 : 69.7%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	8	-	22	1800	270	8.1%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	8	-	218	1800:1800	32+270	72.2 : 72.2%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	11	-	57	1800	360	15.8%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	11	-	112	1800:1800	360+120	23.3 : 23.3%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	22	-	316	1800	690	45.8%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	88	1800:1800	235+240	17.0 : 20.0%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	595	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	310	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	136	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	331	Inf	Inf	0.0%

Full Input Data And Results

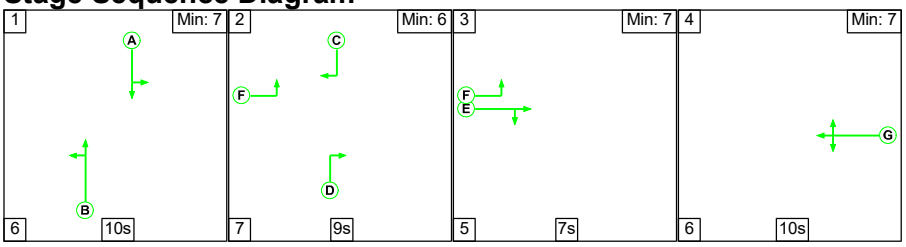
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**7.7**	**4.2**	**0.0**	**12.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.7**	**4.2**	**0.0**	**12.0**	**-**	**-**	**-**	**-**
1/1	242	242	-	-	-	1.5	1.0	-	2.5	37.2	3.7	1.0	4.7
1/2+1/3	317	317	-	-	-	1.9	1.1	-	3.1	34.7	3.8	1.1	5.0
2/1	22	22	-	-	-	0.1	0.0	-	0.2	29.4	0.3	0.0	0.4
2/2+2/3	218	218	-	-	-	1.5	1.3	-	2.7	44.9	3.1	1.3	4.3
3/1	57	57	-	-	-	0.3	0.1	-	0.4	25.8	0.8	0.1	0.9
3/2+3/3	112	112	-	-	-	0.6	0.2	-	0.8	24.9	1.2	0.2	1.3
4/1	316	316	-	-	-	1.2	0.4	-	1.6	18.6	3.9	0.4	4.3
4/2+4/3	88	88	-	-	-	0.6	0.1	-	0.7	27.8	0.7	0.1	0.8
5/1	595	595	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	310	310	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	136	136	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	331	331	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 24.6 Total Delay for Signalled Lanes (pcuHr): 11.96 Cycle Time (s): 60
PRC Over All Lanes (%): 24.6 Total Delay Over All Lanes(pcuHr): 11.96

Full Input Data And Results

Scenario 3: '2028 Do Nothing' (FG3: '2028 Do Nothing Saturday', Plan 1: 'All stages')

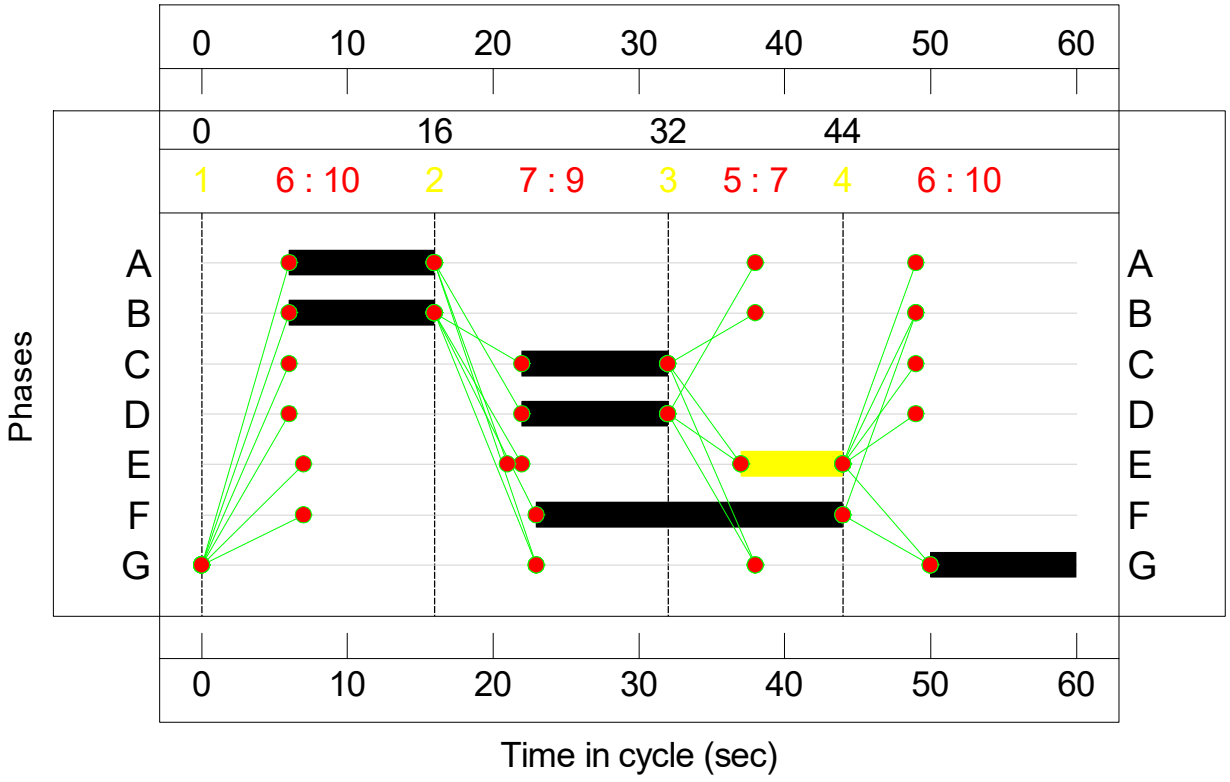
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	9	7	10
Change Point	0	16	32	44

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**64.2%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**64.2%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	10	-	212	1800	330	64.2%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	10	-	311	1800:1800	173+330	58.4 : 63.6%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	10	-	21	1800	330	6.4%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	10	-	248	1800:1800	56+330	64.2 : 64.2%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	10	-	50	1800	330	15.2%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	10	-	121	1800:1800	330+90	28.8 : 28.8%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	21	-	213	1800	660	32.3%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	83	1800:1800	109+240	23.8 : 23.8%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	520	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	264	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	179	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	296	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**7.2**	**3.3**	**0.0**	**10.5**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.2**	**3.3**	**0.0**	**10.5**	**-**	**-**	**-**	**-**
1/1	212	212	-	-	-	1.3	0.9	-	2.2	37.7	3.2	0.9	4.1
1/2+1/3	311	311	-	-	-	1.9	0.8	-	2.7	31.5	3.2	0.8	4.0
2/1	21	21	-	-	-	0.1	0.0	-	0.2	26.2	0.3	0.0	0.3
2/2+2/3	248	248	-	-	-	1.5	0.9	-	2.4	35.2	3.2	0.9	4.1
3/1	50	50	-	-	-	0.3	0.1	-	0.4	27.1	0.7	0.1	0.8
3/2+3/3	121	121	-	-	-	0.7	0.2	-	0.9	27.0	1.3	0.2	1.5
4/1	213	213	-	-	-	0.8	0.2	-	1.0	17.7	2.5	0.2	2.8
4/2+4/3	83	83	-	-	-	0.5	0.2	-	0.7	30.0	0.8	0.2	1.0
5/1	520	520	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	264	264	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	179	179	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	296	296	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

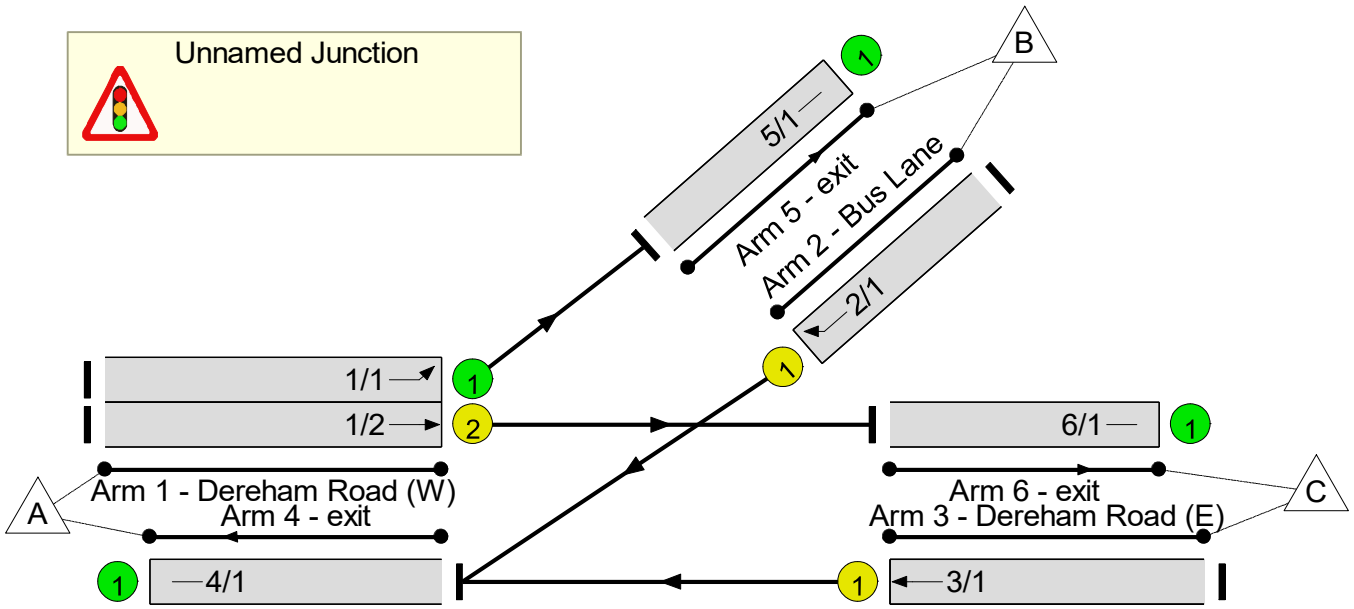
C1 PRC for Signalled Lanes (%): 40.1 Total Delay for Signalled Lanes (pcuHr): 10.54 Cycle Time (s): 60
PRC Over All Lanes (%): 40.1 Total Delay Over All Lanes(pcuHr): 10.54

Full Input Data And Results

User and Project Details

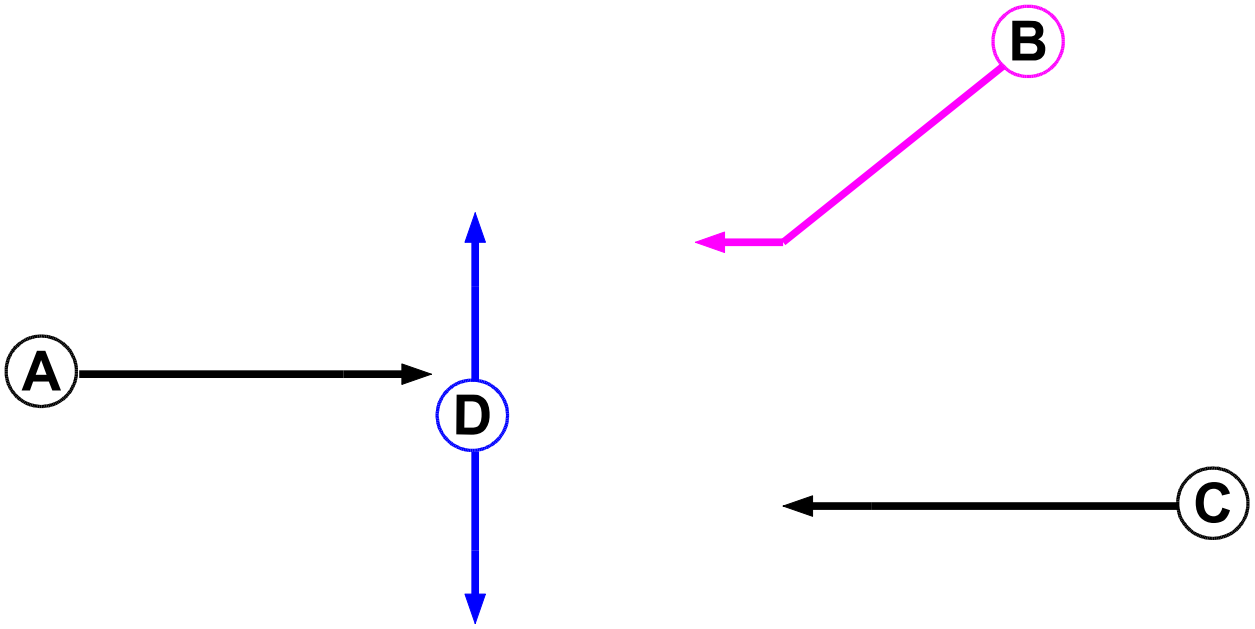
Project:	
Title:	
Location:	
Additional detail:	
File name:	TA_2028_Bus Bypass.lsg3x
Author:	
Company:	Focus Transport Planning Ltd.
Address:	Pentland House, Village Way, Wilmslow, Cheshire SK9 2GH

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Bus		7	7
C	Traffic		7	7
D	Pedestrian		8	8

Phase Intergreens Matrix

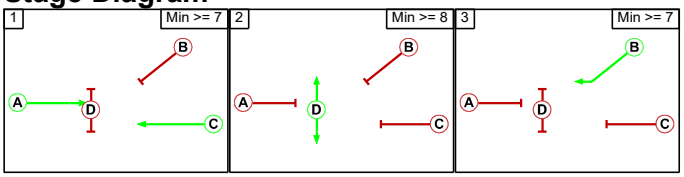
	Starting Phase				
Terminating Phase		A	B	C	D
	A		5	-	5
	B	5		5	7
	C	-	5		7
	D	8	8	8	

Phases in Stage

Stage No.	Phases in Stage
1	A C
2	D
3	B

Full Input Data And Results

Stage Diagram



Phase Delays

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

Prohibited Stage Change

	To Stage			
From Stage		1	2	3
	1		7	5
	2	8		8
	3	5	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Full Input Data And Results

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 (Dereham Road (W))	U		2	3	60.0	User	1800	-	-	-	-	-
1/2 (Dereham Road (W))	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
2/1 (Bus Lane)	U	B	2	3	60.0	Geom	-	3.10	0.00	Y	Arm 4 Ahead	Inf
3/1 (Dereham Road (E))	U	C	2	3	26.1	Geom	-	3.90	0.00	Y	Arm 4 Ahead	Inf
4/1 (exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2028 Do Nothing Friday Daytime'	14:45	15:45	01:00	

Scenario 1: '2028 Do Nothing' (FG1: '2028 Do Nothing Friday Daytime', Plan 1: 'No bus call')

Traffic Flows, Desired

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	6	1024	1030
	B	6	0	0	6
	C	1132	0	0	1132
	Tot.	1138	6	1024	2168

Full Input Data And Results

Traffic Lane Flows

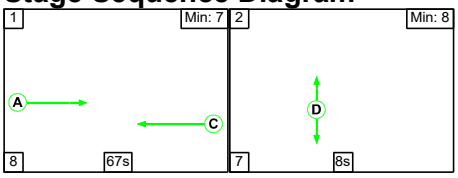
Lane	Scenario 1: 2028 Do Nothing
Junction: Unnamed Junction	
1/1	6
1/2	1024
2/1	6
3/1	1132
4/1	1138
5/1	6
6/1	1024

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 (Dereham Road (W) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (Dereham Road (W))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/1 (Bus Lane)	3.10	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1925	1925
3/1 (Dereham Road (E))	3.90	0.00	Y	Arm 4 Ahead	Inf	100.0 %	2005	2005
4/1 (exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 1: '2028 Do Nothing' (FG1: '2028 Do Nothing Friday Daytime', Plan 1: 'No bus call')

Stage Sequence Diagram

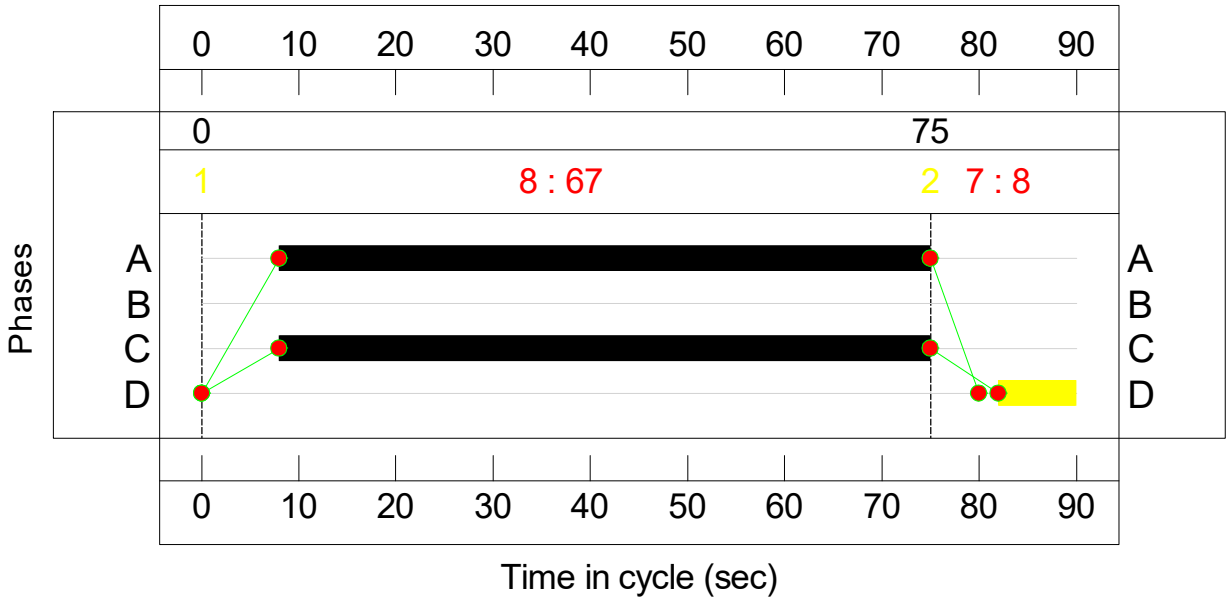


Stage Timings

Stage	1	2
Duration	67	8
Change Point	0	75

Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		1	67	-	1024	1915	1447	70.8%
2/1	Bus Lane Ahead	U	N/A	N/A	B		0	0	-	6	1925	0	Inf %
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		1	67	-	1132	2005	1515	74.7%
4/1	exit	U	N/A	N/A	-		-	-	-	1138	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1024	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**4.0**	**6.1**	**0.0**	**10.1**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**4.0**	**6.1**	**0.0**	**10.1**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1024	1024	-	-	-	1.6	1.2	-	2.8	10.0	13.4	1.2	14.6
2/1	6	0	-	-	-	0.4	3.4	-	3.8	2287.4	0.5	3.4	3.9
3/1	1132	1132	-	-	-	1.9	1.5	-	3.4	10.8	15.7	1.5	17.2
4/1	1132	1132	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1024	1024	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

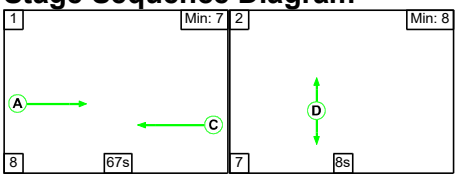
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-Inf	Total Delay for Signalled Lanes (pcuHr):	10.07	Cycle Time (s):	90	
	PRC Over All Lanes (%):	-Inf	Total Delay Over All Lanes(pcuHr):	10.07			

Full Input Data And Results

Scenario 2: '2028 Do Nothing' (FG2: '2028 Do Nothing - Friday PM', Plan 1: 'No bus call')

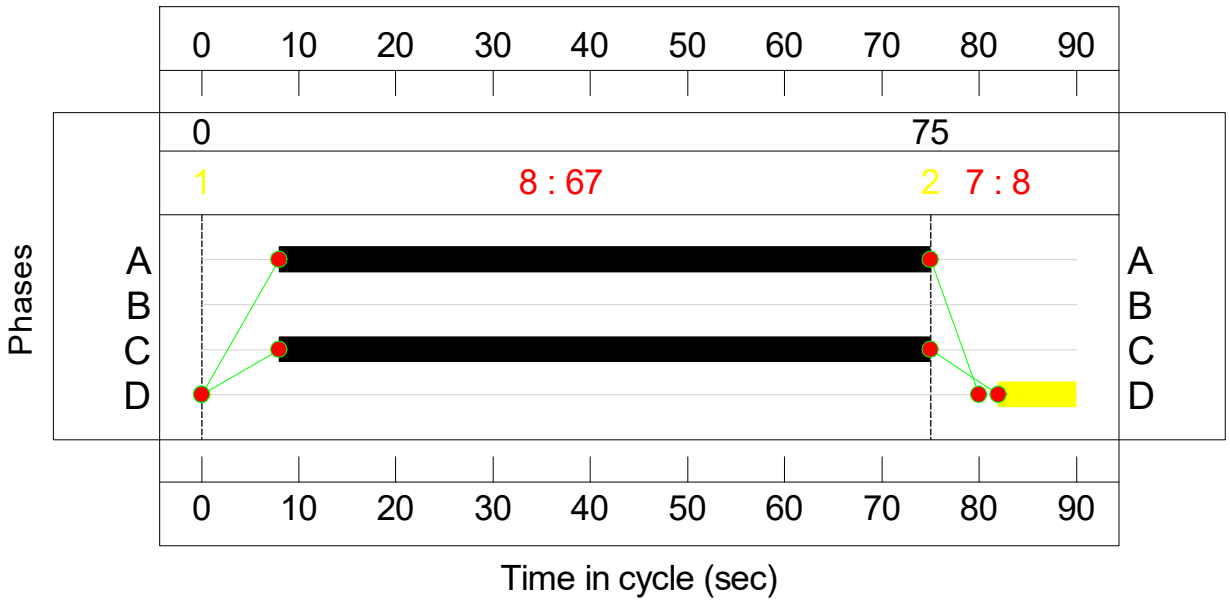
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	67	8
Change Point	0	75

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		1	67	-	1019	1915	1447	70.4%
2/1	Bus Lane Ahead	U	N/A	N/A	B		0	0	-	6	1925	0	Inf %
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		1	67	-	1238	2005	1515	81.7%
4/1	exit	U	N/A	N/A	-		-	-	-	1244	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**4.4**	**6.8**	**0.0**	**11.2**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**4.4**	**6.8**	**0.0**	**11.2**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1019	1019	-	-	-	1.6	1.2	-	2.8	9.9	13.3	1.2	14.5
2/1	6	0	-	-	-	0.4	3.4	-	3.8	2287.4	0.5	3.4	3.9
3/1	1238	1238	-	-	-	2.4	2.2	-	4.6	13.4	19.6	2.2	21.8
4/1	1238	1238	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

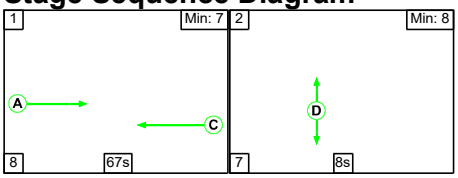
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-Inf	Total Delay for Signalled Lanes (pcuHr):	11.24	Cycle Time (s):	90
	PRC Over All Lanes (%):	-Inf	Total Delay Over All Lanes(pcuHr):	11.24		

Full Input Data And Results

Scenario 3: '2028 Do Nothing' (FG3: '2028 Do Nothing - Saturday', Plan 1: 'No bus call')

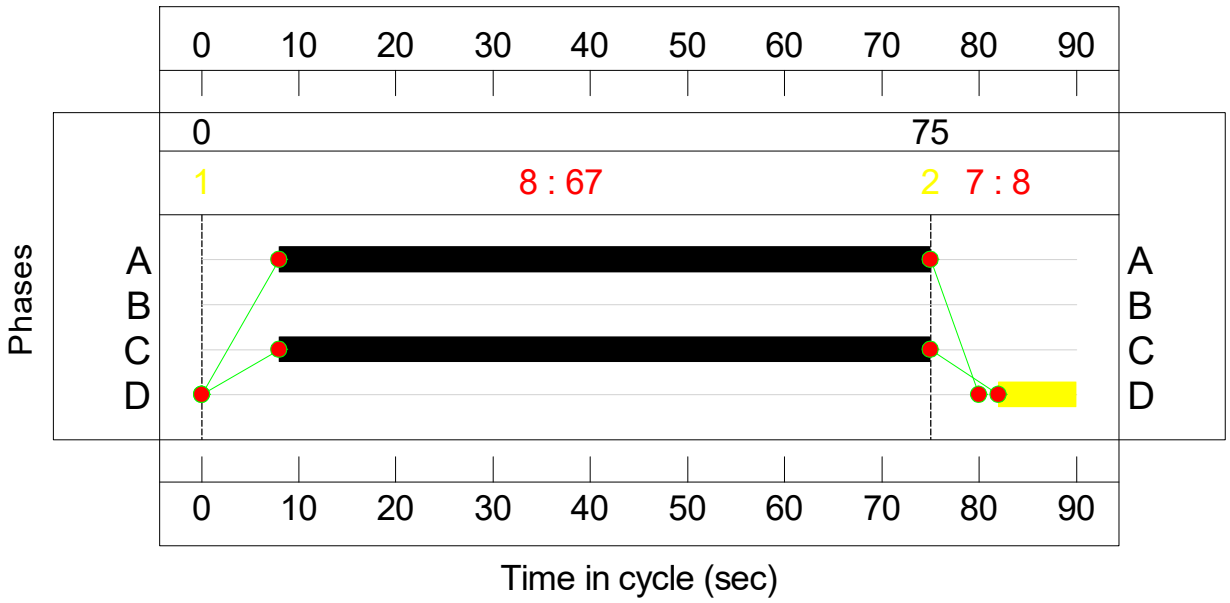
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	67	8
Change Point	0	75

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		1	67	-	1019	1915	1447	70.4%
2/1	Bus Lane Ahead	U	N/A	N/A	B		0	0	-	6	1925	0	Inf %
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		1	67	-	1018	2005	1515	67.2%
4/1	exit	U	N/A	N/A	-		-	-	-	1024	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**3.5**	**5.6**	**0.0**	**9.2**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**3.5**	**5.6**	**0.0**	**9.2**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1019	1019	-	-	-	1.6	1.2	-	2.8	9.9	13.3	1.2	14.5
2/1	6	0	-	-	-	0.4	3.4	-	3.8	2287.4	0.5	3.4	3.9
3/1	1018	1018	-	-	-	1.5	1.0	-	2.6	9.1	12.4	1.0	13.5
4/1	1018	1018	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

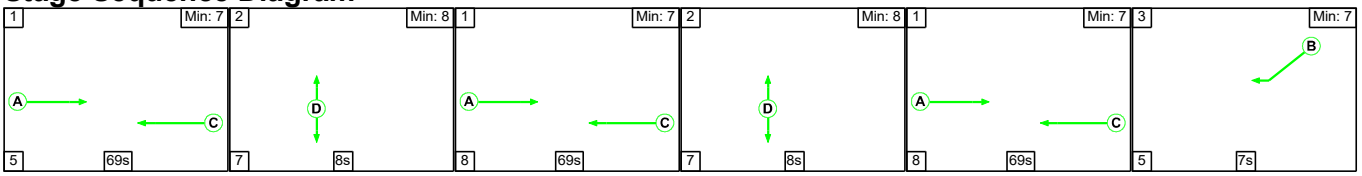
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-Inf	Total Delay for Signalled Lanes (pcuHr):	9.19	Cycle Time (s):	90	
	PRC Over All Lanes (%):	-Inf	Total Delay Over All Lanes(pcuHr):	9.19			

Full Input Data And Results

Scenario 4: '2028 Do Nothing' (FG1: '2028 Do Nothing Friday Daytime', Plan 3: 'Bus instead of pedestrian')

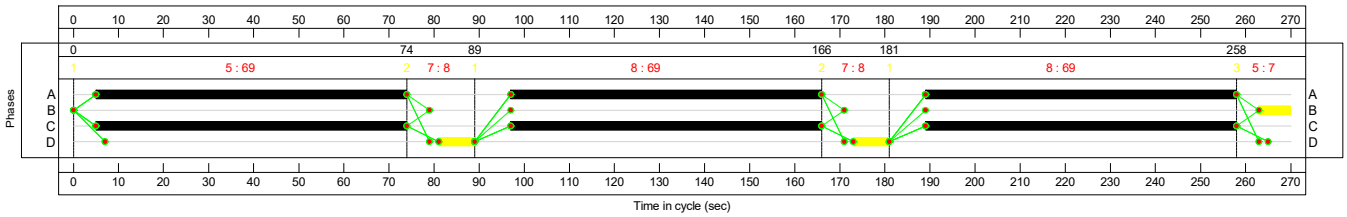
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	3
Duration	69	8	69	8	69	7
Change Point	0	74	89	166	181	258

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**72.6%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**72.6%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	207	-	1024	1915	1489	68.8%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	207	-	1132	2005	1559	72.6%
4/1	exit	U	N/A	N/A	-		-	-	-	1138	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1024	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**3.2**	**2.5**	**0.0**	**5.7**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**3.2**	**2.5**	**0.0**	**5.7**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1024	1024	-	-	-	1.4	1.1	-	2.5	8.7	13.4	1.1	14.5
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1132	1132	-	-	-	1.6	1.3	-	3.0	9.4	15.7	1.3	17.0
4/1	1138	1138	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1024	1024	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

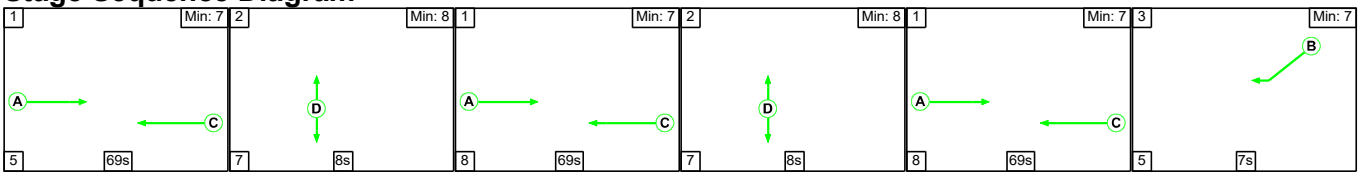
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	24.0	Total Delay for Signalled Lanes (pcuHr):	5.71	Cycle Time (s):	270
	PRC Over All Lanes (%):	24.0	Total Delay Over All Lanes(pcuHr):	5.71		

Full Input Data And Results

Scenario 5: '2028 Do Nothing' (FG2: '2028 Do Nothing - Friday PM', Plan 3: 'Bus instead of pedestrian')

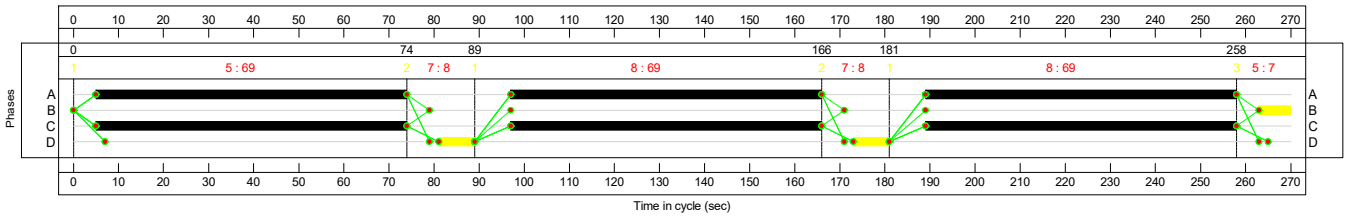
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	3
Duration	69	8	69	8	69	7
Change Point	0	74	89	166	181	258

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.4%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	207	-	1019	1915	1489	68.4%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	207	-	1238	2005	1559	79.4%
4/1	exit	U	N/A	N/A	-		-	-	-	1244	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**3.6**	**3.0**	**0.0**	**6.7**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**3.6**	**3.0**	**0.0**	**6.7**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1019	1019	-	-	-	1.4	1.1	-	2.4	8.7	13.3	1.1	14.4
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1238	1238	-	-	-	2.0	1.9	-	3.9	11.5	19.6	1.9	21.5
4/1	1244	1244	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

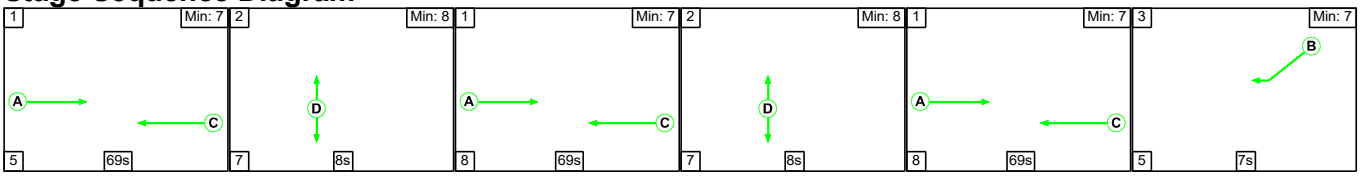
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	13.4	Total Delay for Signalled Lanes (pcuHr):	6.66	Cycle Time (s):	270
	PRC Over All Lanes (%):	13.4	Total Delay Over All Lanes(pcuHr):	6.66		

Full Input Data And Results

Scenario 6: '2028 Do Nothing' (FG3: '2028 Do Nothing - Saturday', Plan 3: 'Bus instead of pedestrian')

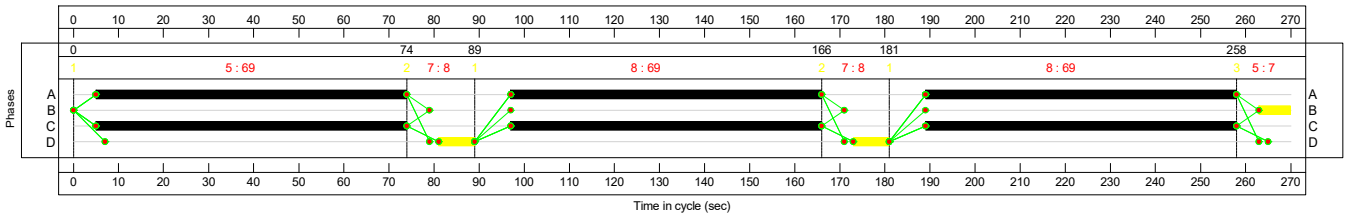
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	3
Duration	69	8	69	8	69	7
Change Point	0	74	89	166	181	258

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.4%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**68.4%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	207	-	1019	1915	1489	68.4%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	207	-	1018	2005	1559	65.3%
4/1	exit	U	N/A	N/A	-		-	-	-	1024	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**2.9**	**2.1**	**0.0**	**5.0**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**2.9**	**2.1**	**0.0**	**5.0**	**-**	**-**	**-**	**-**
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1019	1019	-	-	-	1.4	1.1	-	2.4	8.7	13.3	1.1	14.4
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1018	1018	-	-	-	1.3	0.9	-	2.2	7.9	12.4	0.9	13.4
4/1	1024	1024	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

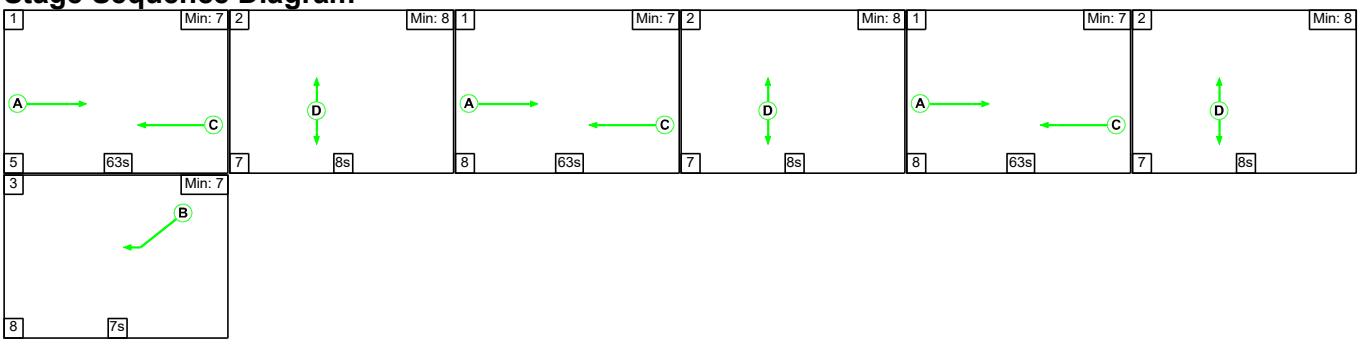
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	31.6	Total Delay for Signalled Lanes (pcuHr):	4.96	Cycle Time (s):	270
	PRC Over All Lanes (%):	31.6	Total Delay Over All Lanes(pcuHr):	4.96		

Full Input Data And Results

Scenario 7: '2028 Do Nothing' (FG1: '2028 Do Nothing Friday Daytime', Plan 2: 'Worst Case bus after pedestrian')

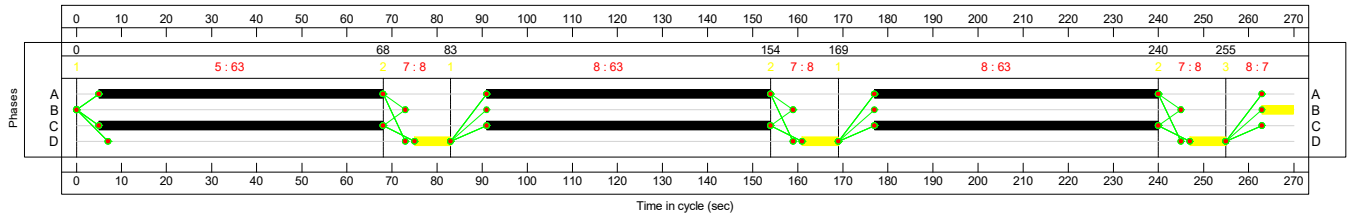
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	2	3
Duration	63	8	63	8	63	8	7
Change Point	0	68	83	154	169	240	255

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.4%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.4%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	189	-	1024	1915	1362	75.2%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	189	-	1132	2005	1426	79.4%
4/1	exit	U	N/A	N/A	-		-	-	-	1138	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1024	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**5.5**	**3.5**	**0.0**	**8.9**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**5.5**	**3.5**	**0.0**	**8.9**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1024	1024	-	-	-	2.4	1.5	-	3.9	13.7	20.8	1.5	22.3
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1132	1132	-	-	-	2.8	1.9	-	4.7	15.1	24.5	1.9	26.4
4/1	1138	1138	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1024	1024	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

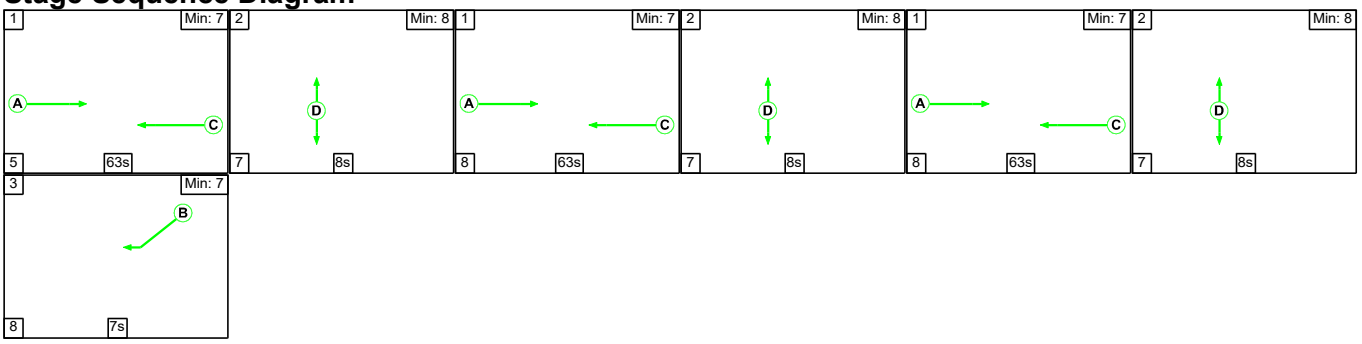
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	13.4	Total Delay for Signalled Lanes (pcuHr):	8.92	Cycle Time (s):	270
	PRC Over All Lanes (%):	13.4	Total Delay Over All Lanes(pcuHr):	8.92		

Full Input Data And Results

Scenario 8: '2028 Do Nothing' (FG2: '2028 Do Nothing - Friday PM', Plan 2: 'Worst Case bus after pedestrian')

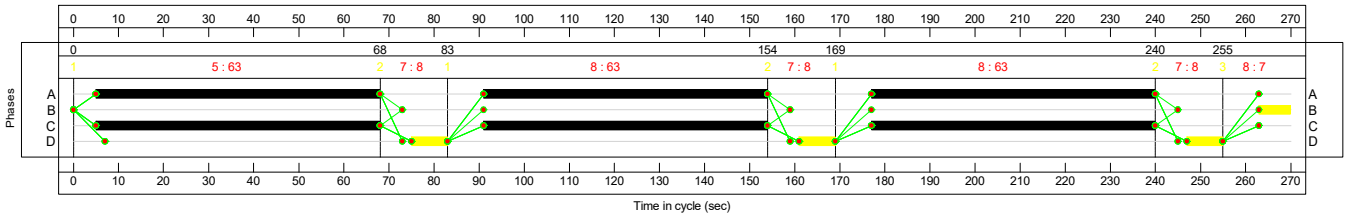
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	2	3
Duration	63	8	63	8	63	8	7
Change Point	0	68	83	154	169	240	255

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.8%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.8%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	189	-	1019	1915	1362	74.8%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	189	-	1238	2005	1426	86.8%
4/1	exit	U	N/A	N/A	-		-	-	-	1244	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**6.1**	**4.7**	**0.0**	**10.9**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**6.1**	**4.7**	**0.0**	**10.9**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1019	1019	-	-	-	2.4	1.5	-	3.9	13.6	20.4	1.5	21.9
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1238	1238	-	-	-	3.5	3.2	-	6.7	19.6	30.3	3.2	33.5
4/1	1244	1244	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

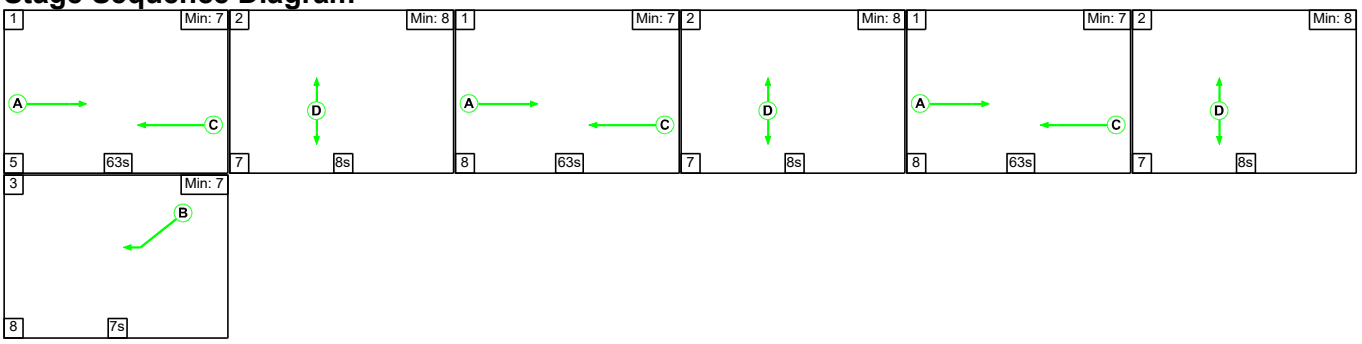
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	3.7	Total Delay for Signalled Lanes (pcuHr):	10.85	Cycle Time (s):	270
	PRC Over All Lanes (%):	3.7	Total Delay Over All Lanes(pcuHr):	10.85		

Full Input Data And Results

Scenario 9: '2028 Do Nothing' (FG3: '2028 Do Nothing - Saturday', Plan 2: 'Worst Case bus after pedestrian')

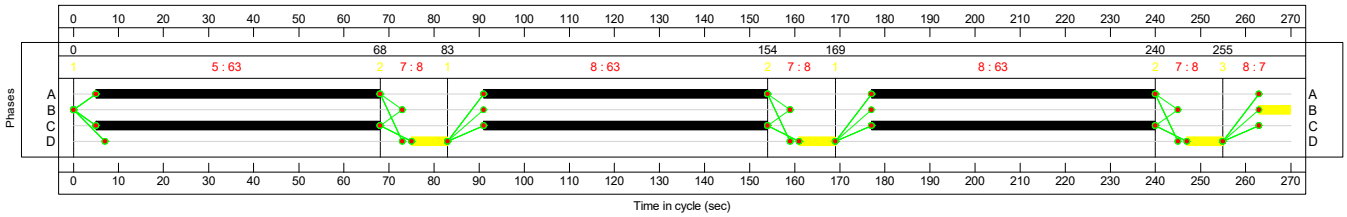
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	2	3
Duration	63	8	63	8	63	8	7
Change Point	0	68	83	154	169	240	255

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**74.8%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**74.8%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	189	-	1019	1915	1362	74.8%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	189	-	1018	2005	1426	71.4%
4/1	exit	U	N/A	N/A	-		-	-	-	1024	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1019	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**4.9**	**2.8**	**0.0**	**7.6**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**4.9**	**2.8**	**0.0**	**7.6**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1019	1019	-	-	-	2.4	1.5	-	3.9	13.6	20.4	1.5	21.9
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1018	1018	-	-	-	2.3	1.2	-	3.5	12.4	19.5	1.2	20.8
4/1	1024	1024	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1019	1019	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	20.3	Total Delay for Signalled Lanes (pcuHr):	7.63	Cycle Time (s):	270
	PRC Over All Lanes (%):	20.3	Total Delay Over All Lanes(pcuHr):	7.63		



APPENDIX TA18

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
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Filename: Site Access_Barnard Road.j9
Path: C:\Data\Projects\J000401-J000450\J000420 New Foodstore Norwich\Background Information\Junction Assessments
Report generation date: 02/11/2023 14:18:44

»2028 Do Something, Friday Daytime
»2028 Do Something, Friday PM
»2028 Do Something, Saturday

Summary of junction performance

	Friday Daytime								Friday PM								Saturday							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	2028 Do Something																							
Stream B-AC	D1	0.2	6.91	0.19	A	3.03	A	194 % [Stream C-AB]	D2	0.2	7.23	0.19	A	2.51	A	160 % [Stream C-AB]	D3	0.3	6.91	0.25	A	5.58	A	201 % [Stream C-AB]
Stream C-AB		0.3	7.04	0.20	A					0.3	7.38	0.21	A					0.4	7.59	0.25	A			

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. 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	Site Access
Location	
Site number	
Date	02/11/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	FTPDT-01\Office
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	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)	Run automatically
D1	2028 Do Something	Friday Daytime	ONE HOUR	14:30	16:00	15	✓
D2	2028 Do Something	Friday PM	ONE HOUR	16:00	17:30	15	✓
D3	2028 Do Something	Saturday	ONE HOUR	12:00	13:30	15	✓

Analysis Set Details

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

2028 Do Something, Friday Daytime

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.03	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	194	Stream C-AB

Arms

Arms

Arm	Name	Description	Arm type
A	Barnard Road (west)		Major
B	site access		Minor
C	Barnard Road (east)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.43			100.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	4.16	24	25

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	555	0.095	0.240	0.151	0.342
B-C	714	0.103	0.259	-	-
C-B	632	0.230	0.230	-	-

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2028 Do Something	Friday Daytime	ONE HOUR	14:30	16:00	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 (%)
A		ONE HOUR	✓	214	100.000
B		ONE HOUR	✓	113	100.000
C		ONE HOUR	✓	205	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	7	207
	B	3	0	110
	C	105	100	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	0
	C	14	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand	Total Junction

					(PCU/hr)	Arrivals (PCU)
B-AC	0.19	6.91	0.2	A	104	156
C-AB	0.20	7.04	0.3	A	108	162
C-A					80	120
A-B					6	10
A-C					190	285

Main Results for each time segment

14:30 - 14:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	85	21	666	0.128	84	0.0	0.1	6.188	A
C-AB	86	21	648	0.132	85	0.0	0.2	6.486	A
C-A	69	17			69				
A-B	5	1			5				
A-C	156	39			156				

14:45 - 15:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	102	25	657	0.155	101	0.1	0.2	6.475	A
C-AB	105	26	651	0.162	105	0.2	0.2	6.698	A
C-A	79	20			79				
A-B	6	2			6				
A-C	186	47			186				

15:00 - 15:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	124	31	646	0.193	124	0.2	0.2	6.900	A
C-AB	134	33	656	0.204	133	0.2	0.3	7.019	A
C-A	92	23			92				
A-B	8	2			8				
A-C	228	57			228				

15:15 - 15:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	124	31	646	0.193	124	0.2	0.2	6.905	A
C-AB	134	33	656	0.204	134	0.3	0.3	7.044	A
C-A	92	23			92				
A-B	8	2			8				
A-C	228	57			228				

15:30 - 15:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	102	25	657	0.155	102	0.2	0.2	6.483	A
C-AB	105	26	651	0.162	106	0.3	0.2	6.736	A
C-A	79	20			79				
A-B	6	2			6				
A-C	186	47			186				

15:45 - 16:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	85	21	666	0.128	85	0.2	0.1	6.206	A
C-AB	86	21	648	0.133	86	0.2	0.2	6.521	A
C-A	68	17			68				
A-B	5	1			5				
A-C	156	39			156				

2028 Do Something, Friday 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		2.51	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	160	Stream C-AB

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	2028 Do Something	Friday PM	ONE HOUR	16:00	17:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	334	100.000
B		ONE HOUR	✓	105	100.000
C		ONE HOUR	✓	210	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	7	327
	B	2	0	103
	C	112	98	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	0
	C	13	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.19	7.23	0.2	A	96	145
C-AB	0.21	7.38	0.3	A	108	162
C-A					85	127
A-B					6	10
A-C					300	450

Main Results for each time segment

16:00 - 16:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	79	20	644	0.123	78	0.0	0.1	6.360	A
C-AB	85	21	632	0.135	84	0.0	0.2	6.675	A
C-A	73	18			73				
A-B	5	1			5				
A-C	246	62			246				

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	94	24	631	0.150	94	0.1	0.2	6.701	A
C-AB	105	26	632	0.166	105	0.2	0.2	6.940	A
C-A	84	21			84				
A-B	6	2			6				
A-C	294	73			294				

16:30 - 16:45

	Total Demand	Junction Arrivals			Throughput				Unsignalised

Stream	(PCU/hr)	(PCU)	Capacity (PCU/hr)	RFC	(PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	level of service
B-AC	116	29	614	0.188	115	0.2	0.2	7.222	A
C-AB	134	34	633	0.212	134	0.2	0.3	7.354	A
C-A	97	24			97				
A-B	8	2			8				
A-C	360	90			360				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	116	29	614	0.188	116	0.2	0.2	7.228	A
C-AB	134	34	633	0.212	134	0.3	0.3	7.379	A
C-A	97	24			97				
A-B	8	2			8				
A-C	360	90			360				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	94	24	631	0.150	95	0.2	0.2	6.709	A
C-AB	105	26	632	0.166	105	0.3	0.2	6.986	A
C-A	84	21			84				
A-B	6	2			6				
A-C	294	73			294				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	79	20	644	0.123	79	0.2	0.1	6.376	A
C-AB	85	21	632	0.135	86	0.2	0.2	6.710	A
C-A	73	18			73				
A-B	5	1			5				
A-C	246	62			246				

2028 Do Something, Saturday

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		5.58	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	201	Stream C-AB

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	2028 Do Something	Saturday	ONE HOUR	12:00	13:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	59	100.000
B		ONE HOUR	✓	155	100.000
C		ONE HOUR	✓	179	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	55
	B	3	0	152
	C	40	139	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	8
	B	0	0	0
	C	27	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.25	6.91	0.3	A	142	213
C-AB	0.25	7.59	0.4	A	136	203
C-A					29	43
A-B					4	6
A-C					50	76

Main Results for each time segment

12:00 - 12:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	117	29	697	0.167	116	0.0	0.2	6.185	A
C-AB	110	27	641	0.171	109	0.0	0.2	6.820	A
C-A	25	6			25				
A-B	3	0.75			3				
A-C	41	10			41				

12:15 - 12:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	139	35	695	0.201	139	0.2	0.2	6.477	A
C-AB	132	33	643	0.206	132	0.2	0.3	7.119	A
C-A	29	7			29				
A-B	4	0.90			4				
A-C	49	12			49				

12:30 - 12:45

	Total Demand	Junction Arrivals			Throughput				Unsignalised

Stream	(PCU/hr)	(PCU)	Capacity (PCU/hr)	RFC	(PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	level of service
B-AC	171	43	691	0.247	170	0.2	0.3	6.903	A
C-AB	164	41	646	0.254	164	0.3	0.4	7.562	A
C-A	33	8			33				
A-B	4	1			4				
A-C	61	15			61				

12:45 - 13:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	171	43	691	0.247	171	0.3	0.3	6.911	A
C-AB	164	41	646	0.254	164	0.4	0.4	7.588	A
C-A	33	8			33				
A-B	4	1			4				
A-C	61	15			61				

13:00 - 13:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	139	35	695	0.201	140	0.3	0.3	6.486	A
C-AB	132	33	643	0.206	133	0.4	0.3	7.157	A
C-A	28	7			28				
A-B	4	0.90			4				
A-C	49	12			49				

13:15 - 13:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	117	29	697	0.167	117	0.3	0.2	6.206	A
C-AB	110	27	641	0.171	110	0.3	0.2	6.858	A
C-A	25	6			25				
A-B	3	0.75			3				
A-C	41	10			41				

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: TA_2028_Dereham Road Roundabout.j9
Path: C:\Data\Projects\J000401-J000450\J000420 New Foodstore Norwich\Background Information\Junction Assessments
Report generation date: 02/11/2023 16:23:30

»2028 Do Something, Friday Daytime
»2028 Do Something, Friday PM
»2028 Do Something, Saturday

Summary of junction performance

	Friday Daytime								Friday PM								Saturday							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	2028 Do Something																							
Arm 1	D4	0.8	2.64	0.44	A	3.93	A	33 % [Arm 3]	D5	0.9	2.53	0.46	A	4.22	A	20 % [Arm 3]	D6	0.7	2.34	0.42	A	3.09	A	63 % [Arm 3]
Arm 2		0.6	3.22	0.39	A					0.6	3.22	0.37	A					0.5	2.83	0.31	A			
Arm 3		0.8	7.24	0.45	A					1.4	9.79	0.59	A					0.4	5.00	0.27	A			
Arm 4		1.2	3.91	0.54	A					1.2	3.90	0.55	A					1.1	3.39	0.51	A			
Arm 5		0.6	5.66	0.35	A					0.2	4.79	0.20	A					0.2	4.12	0.15	A			

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. 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	
Location	
Site number	
Date	02/11/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	FTPDT-01\Office
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	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)	Run automatically
D1	2028 Do Nothing	Friday Daytime	ONE HOUR	14:30	16:00	15	
D2	2028 Do Nothing	Friday PM	ONE HOUR	16:00	17:30	15	
D3	2028 Do Nothing	Saturday	ONE HOUR	12:00	13:30	15	
D4	2028 Do Something	Friday Daytime	ONE HOUR	14:30	16:00	15	✓
D5	2028 Do Something	Friday PM	ONE HOUR	16:00	17:30	15	✓
D6	2028 Do Something	Saturday	ONE HOUR	12:00	13:30	15	✓

Analysis Set Details

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

2028 Do Something, Friday Daytime

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	3.93	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	33	Arm 3

Arms

Arms

Arm	Name	Description
1	Derehame Road (E)	
2	Wendene	
3	Barnard Road	
4	Dereham Road (W)	
5	Breckland Road	

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	7.55	10.42	23.5	29.6	64.0	17.0	
2	7.20	8.76	6.0	25.9	65.2	16.5	
3	3.95	7.93	8.5	37.1	66.9	26.5	
4	6.00	10.58	10.9	27.9	67.7	17.5	
5	3.23	7.60	28.3	18.7	63.9	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.782	3091
2	0.688	2581
3	0.535	1737
4	0.666	2548
5	0.571	1892

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
D4	2028 Do Something	Friday Daytime	ONE HOUR	14:30	16:00	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		ONE HOUR	✓	1014	100.000
2		ONE HOUR	✓	641	100.000
3		ONE HOUR	✓	376	100.000
4		ONE HOUR	✓	1033	100.000
5		ONE HOUR	✓	320	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	263	71	616	62
	2	272	0	57	225	87
	3	145	47	1	174	9
	4	580	267	101	5	80
	5	75	114	14	115	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	6	4	2
	2	0	0	0	2	0
	3	2	0	0	3	0

	4	3	1	10	0	1
	5	1	1	0	3	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.44	2.64	0.8	A	930	1396
2	0.39	3.22	0.6	A	588	882
3	0.45	7.24	0.8	A	345	518
4	0.54	3.91	1.2	A	948	1422
5	0.35	5.66	0.6	A	294	440

Main Results for each time segment

14:30 - 14:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	763	191	500	2700	0.283	762	806	0.0	0.4	1.906	A
2	483	121	743	2070	0.233	481	519	0.0	0.3	2.284	A
3	283	71	1041	1181	0.240	282	183	0.0	0.3	4.079	A
4	778	194	471	2234	0.348	776	852	0.0	0.5	2.545	A
5	241	60	1066	1283	0.188	240	180	0.0	0.2	3.504	A

14:45 - 15:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	912	228	598	2623	0.348	911	965	0.4	0.5	2.160	A
2	576	144	888	1970	0.293	576	621	0.3	0.4	2.604	A
3	338	85	1245	1071	0.315	337	219	0.3	0.5	4.998	A
4	929	232	563	2173	0.427	928	1019	0.5	0.8	2.985	A
5	288	72	1275	1164	0.247	287	216	0.2	0.3	4.174	A

15:00 - 15:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1116	279	732	2518	0.443	1115	1180	0.5	0.8	2.635	A
2	706	176	1088	1833	0.385	705	760	0.4	0.6	3.218	A
3	414	103	1524	922	0.449	413	268	0.5	0.8	7.184	A
4	1137	284	689	2089	0.545	1136	1248	0.8	1.2	3.893	A
5	352	88	1561	1001	0.352	351	264	0.3	0.5	5.630	A

15:15 - 15:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1116	279	733	2517	0.444	1116	1182	0.8	0.8	2.640	A
2	706	176	1089	1832	0.385	706	761	0.6	0.6	3.223	A
3	414	103	1526	921	0.449	414	269	0.8	0.8	7.237	A
4	1137	284	690	2088	0.545	1137	1250	1.2	1.2	3.910	A
5	352	88	1563	999	0.353	352	264	0.5	0.6	5.657	A

15:30 - 15:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	912	228	600	2621	0.348	913	968	0.8	0.5	2.167	A
2	576	144	890	1968	0.293	577	622	0.6	0.4	2.612	A
3	338	85	1248	1070	0.316	339	220	0.8	0.5	5.037	A
4	929	232	565	2171	0.428	930	1022	1.2	0.8	3.001	A
5	288	72	1279	1161	0.248	289	216	0.6	0.3	4.196	A

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	763	191	502	2698	0.283	764	810	0.5	0.4	1.915	A
2	483	121	745	2068	0.233	483	521	0.4	0.3	2.292	A
3	283	71	1044	1179	0.240	284	184	0.5	0.3	4.104	A
4	778	194	473	2233	0.348	779	855	0.8	0.6	2.557	A
5	241	60	1070	1281	0.188	241	181	0.3	0.2	3.524	A

2028 Do Something, Friday 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	untitled	Standard Roundabout		1, 2, 3, 4, 5	4.22	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	20	Arm 3

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	2028 Do Something	Friday PM	ONE HOUR	16:00	17:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1102	100.000
2		ONE HOUR	✓	611	100.000
3		ONE HOUR	✓	487	100.000
4		ONE HOUR	✓	1027	100.000
5		ONE HOUR	✓	170	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	241	85	734	40
	2	259	1	53	228	70
	3	212	54	0	212	9
	4	667	202	100	4	54
	5	33	64	6	67	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	1	8	2	0
	2	0	0	2	0	2
	3	2	0	0	3	0
	4	2	1	7	0	2
	5	3	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.46	2.53	0.9	A	1011	1517
2	0.37	3.22	0.6	A	561	841
3	0.59	9.79	1.4	A	447	670
4	0.55	3.90	1.2	A	942	1414
5	0.20	4.79	0.2	A	156	234

Main Results for each time segment

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	830	207	374	2798	0.296	828	880	0.0	0.4	1.861	A
2	460	115	780	2044	0.225	459	422	0.0	0.3	2.281	A
3	367	92	1055	1173	0.313	365	183	0.0	0.5	4.522	A
4	773	193	485	2224	0.348	771	935	0.0	0.5	2.528	A
5	128	32	1126	1249	0.103	128	130	0.0	0.1	3.250	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	991	248	447	2741	0.361	990	1053	0.4	0.6	2.097	A
2	549	137	933	1939	0.283	549	505	0.3	0.4	2.602	A
3	438	109	1262	1062	0.412	437	219	0.5	0.7	5.845	A
4	923	231	581	2161	0.427	922	1118	0.5	0.8	2.970	A
5	153	38	1348	1122	0.136	153	155	0.1	0.2	3.760	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1213	303	547	2663	0.456	1212	1289	0.6	0.8	2.531	A
2	673	168	1142	1795	0.375	672	618	0.4	0.6	3.219	A
3	536	134	1545	911	0.589	533	268	0.7	1.4	9.627	A
4	1131	283	710	2075	0.545	1129	1368	0.8	1.2	3.884	A
5	187	47	1649	950	0.197	187	190	0.2	0.2	4.773	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1213	303	548	2662	0.456	1213	1291	0.8	0.9	2.534	A
2	673	168	1143	1795	0.375	673	619	0.6	0.6	3.224	A
3	536	134	1547	910	0.589	536	269	1.4	1.4	9.787	A
4	1131	283	712	2073	0.545	1131	1371	1.2	1.2	3.903	A
5	187	47	1653	948	0.197	187	190	0.2	0.2	4.790	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	991	248	449	2740	0.362	992	1057	0.9	0.6	2.103	A
2	549	137	934	1938	0.283	550	506	0.6	0.4	2.608	A
3	438	109	1265	1061	0.413	441	220	1.4	0.7	5.932	A
4	923	231	584	2159	0.428	925	1122	1.2	0.8	2.988	A
5	153	38	1353	1119	0.137	153	156	0.2	0.2	3.774	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	830	207	375	2797	0.297	830	884	0.6	0.4	1.869	A
2	460	115	782	2043	0.225	460	424	0.4	0.3	2.286	A
3	367	92	1059	1171	0.313	368	184	0.7	0.5	4.563	A
4	773	193	488	2223	0.348	774	938	0.8	0.5	2.542	A
5	128	32	1132	1246	0.103	128	130	0.2	0.1	3.264	A

2028 Do Something, Saturday

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	untitled	Standard Roundabout		1, 2, 3, 4, 5	3.09	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	63	Arm 3

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	2028 Do Something	Saturday	ONE HOUR	12:00	13:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1033	100.000
2		ONE HOUR	✓	531	100.000
3		ONE HOUR	✓	246	100.000
4		ONE HOUR	✓	1029	100.000
5		ONE HOUR	✓	136	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	4	252	86	652	39
	2	230	0	43	234	24
	3	97	49	0	92	8
	4	690	205	102	4	28
	5	32	37	13	54	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	1	2	3
	2	1	0	0	0	0
	3	2	0	0	4	0
	4	1	2	8	0	0
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.42	2.34	0.7	A	948	1422
2	0.31	2.83	0.5	A	487	731
3	0.27	5.00	0.4	A	226	339
4	0.51	3.39	1.1	A	944	1416
5	0.15	4.12	0.2	A	125	187

Main Results for each time segment

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	778	194	348	2818	0.276	776	791	0.0	0.4	1.783	A
2	400	100	717	2088	0.191	399	408	0.0	0.2	2.135	A
3	185	46	932	1239	0.150	184	183	0.0	0.2	3.487	A
4	775	194	339	2322	0.334	773	778	0.0	0.5	2.366	A
5	102	26	1037	1300	0.079	102	74	0.0	0.1	3.006	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	929	232	417	2765	0.336	928	946	0.4	0.5	1.982	A
2	477	119	857	1991	0.240	477	488	0.2	0.3	2.382	A
3	221	55	1115	1141	0.194	221	219	0.2	0.2	3.996	A
4	925	231	405	2278	0.406	924	931	0.5	0.7	2.711	A
5	122	31	1240	1183	0.103	122	89	0.1	0.1	3.391	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1137	284	510	2692	0.423	1136	1158	0.5	0.7	2.340	A
2	585	146	1049	1859	0.315	584	597	0.3	0.5	2.828	A
3	271	68	1365	1007	0.269	270	268	0.2	0.4	4.987	A
4	1133	283	496	2217	0.511	1131	1140	0.7	1.1	3.377	A
5	150	37	1519	1025	0.146	150	109	0.1	0.2	4.112	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1137	284	511	2691	0.423	1137	1159	0.7	0.7	2.342	A
2	585	146	1050	1858	0.315	585	598	0.5	0.5	2.832	A
3	271	68	1366	1007	0.269	271	269	0.4	0.4	4.997	A
4	1133	283	497	2217	0.511	1133	1141	1.1	1.1	3.386	A
5	150	37	1520	1024	0.146	150	109	0.2	0.2	4.119	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	929	232	418	2764	0.336	930	948	0.7	0.5	1.987	A
2	477	119	859	1990	0.240	478	489	0.5	0.3	2.386	A
3	221	55	1117	1140	0.194	222	220	0.4	0.2	4.006	A
4	925	231	406	2277	0.406	926	932	1.1	0.7	2.720	A
5	122	31	1243	1182	0.103	122	89	0.2	0.1	3.401	A

13:15 - 13:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	778	194	350	2817	0.276	778	794	0.5	0.4	1.785	A
2	400	100	719	2086	0.192	400	409	0.3	0.2	2.139	A
3	185	46	935	1237	0.150	185	184	0.2	0.2	3.496	A
4	775	194	340	2321	0.334	775	781	0.7	0.5	2.375	A
5	102	26	1041	1297	0.079	103	75	0.1	0.1	3.014	A

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462
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Filename: TA_2028 Dereham Road Rbt LANES.j9
Path: C:\Data\Projects\J000401-J000450\J000420 New Foodstore Norwich\Background Information\Junction Assessments
Report generation date: 02/11/2023 16:19:27

»2028 Do Something, Friday Daytime
»2028 Do Something, Friday PM
»2028 Do Something, Saturday

Summary of junction performance

	Friday Daytime								Friday PM								Saturday							
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
	[Lane Simulation] - 2028 Do Something																							
Arm 1		2.2	6.66		A					2.1	6.39		A					1.9	5.71		A			
Arm 2		1.0	5.14		A					1.0	5.07		A					0.8	4.73		A			
Arm 3	D4	1.7	13.71		B	10.67	B	% [ ]	D5	2.9	21.10		C	11.38	B	% [ ]	D6	0.8	9.91		A	8.83	A	% [ ]
Arm 4		4.9	15.65		C					5.7	15.89		C					5.0	13.87		B			
Arm 5		1.6	14.61		B					0.7	11.16		B					0.3	8.36		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 encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Arm and junction delays are averages for all movements, including movements with zero delay. 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	
Location	
Site number	
Date	02/11/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	FTPDT-01\Office
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	Delay	0.85	36.00	20.00

Lane Simulation options

Criteria type	Stop criteria (%)	Stop criteria time (s)	Stop criteria number of trials	Random seed	Results refresh speed (s)	Individual vehicle animation number of trials	Average animation capture interval (s)	Use quick response	Do flow sampling	Suppress automatic lane creation	Last run random seed	Last run number of trials	Last run time taken (s)
Delay	1.00	100000	100000	-1	3	1	60	✓			85022861	69	21.08

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	2028 Do Nothing	Friday Daytime	ONE HOUR	14:30	16:00	15	
D2	2028 Do Nothing	Friday PM	ONE HOUR	16:00	17:30	15	
D3	2028 Do Nothing	Saturday	ONE HOUR	12:00	13:30	15	
D4	2028 Do Something	Friday Daytime	ONE HOUR	14:30	16:00	15	✓
D5	2028 Do Something	Friday PM	ONE HOUR	16:00	17:30	15	✓
D6	2028 Do Something	Saturday	ONE HOUR	12:00	13:30	15	✓

Analysis Set Details

ID	Use Lane Simulation	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	✓	100.000	100.000

2028 Do Something, Friday Daytime

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	10.67	B

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Derehame Road (E)	
2	Wendene	
3	Barnard Road	
4	Dereham Road (W)	
5	Breckland Road	

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	7.55	10.42	23.5	29.6	64.0	17.0	
2	7.20	8.76	6.0	25.9	65.2	16.5	
3	3.95	7.93	8.5	37.1	66.9	26.5	
4	6.00	10.58	10.9	27.9	67.7	17.5	
5	3.23	7.60	28.3	18.7	63.9	25.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.782	3091
2	0.688	2581
3	0.535	1737
4	0.666	2548
5	0.571	1892

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

Lane Simulation: Arm options

Arm	Lane capacity source	Traffic considering secondary lanes (%)
1	Evenly split	10.00
2	Evenly split	10.00
3	Evenly split	10.00
4	Evenly split	10.00
5	Evenly split	10.00

Lanes

Arm	Side	Lane level	Lane	Destination arms	Has limited storage	Storage (PCU)	Has bottleneck	Minimum capacity (PCU/hr)	Maximum capacity (PCU/hr)	Signalised
1	Entry	1	1	2	✓	5.00		0	99999	
			2	3, 4	✓	5.00		0	99999	
			3	1, 4, 5	✓	5.00		0	99999	
		2	1	(2, 3, 4)		Infinity				
			2	(1, 4, 5)		Infinity				
	Exit	1	1			Infinity				
2	Entry	1	1	1, 3, 4		Infinity		0	99999	
			2	1, 2, 4, 5		Infinity		0	99999	
	Exit	1	1			Infinity				
3	Entry	1	1	2, 4, 5	✓	5.00		0	99999	
			2	1, 2, 3	✓	5.00		0	99999	
		2	1	(1, 2, 3, 4, 5)		Infinity				
	Exit	1	1			Infinity				
4	Entry	1	1	5	✓	3.00		0	99999	
			2	1	✓	3.00		0	99999	
			3	1, 2, 3, 4	✓	3.00		0	99999	
		2	1	(1, 5)		Infinity				
			2	(1, 2, 3, 4)		Infinity				
	Exit	1	1			Infinity				
5	Entry	1	1	1	✓	5.00		0	99999	
			2	2, 3, 4, 5	✓	5.00		0	99999	
		2	1	(1, 2, 3, 4, 5)		Infinity				
	Exit	1	1			Infinity				

Entry Lane slope and intercept

Arm	Side	Lane level	Lane	Final slope	Final intercept (PCU/hr)
1	Entry	1	1	0.261	1030

			2	0.261	1030
			3	0.261	1030
2	Entry	1	1	0.344	1290
			2	0.344	1290
3	Entry	1	1	0.267	869
			2	0.267	869
4	Entry	1	1	0.222	849
			2	0.222	849
			3	0.222	849
5	Entry	1	1	0.285	946
			2	0.285	946

Summary of Entry Lane allowed movements

Arm	Lane Level	Lane	Destination arm				
			1	2	3	4	5
1	1	1		✓			
		2			✓	✓	
		3	✓			✓	✓
	2	1		✓	✓	✓	
		2	✓			✓	✓
2	1	1	✓		✓	✓	
		2	✓	✓		✓	✓
3	1	1		✓		✓	✓
		2	✓	✓	✓		
	2	1	✓	✓	✓	✓	✓
4	1	1					✓
		2	✓				
		3	✓	✓	✓	✓	
	2	1	✓				✓
		2	✓	✓	✓	✓	
5	1	1	✓				
		2		✓	✓	✓	✓
	2	1	✓	✓	✓	✓	✓

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	2028 Do Something	Friday Daytime	ONE HOUR	14:30	16:00	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		ONE HOUR	✓	1014	100.000
2		ONE HOUR	✓	641	100.000
3		ONE HOUR	✓	376	100.000
4		ONE HOUR	✓	1033	100.000
5		ONE HOUR	✓	320	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	263	71	616	62
	2	272	0	57	225	87
	3	145	47	1	174	9
	4	580	267	101	5	80
	5	75	114	14	115	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	6	4	2
	2	0	0	0	2	0
	3	2	0	0	3	0
	4	3	1	10	0	1
	5	1	1	0	3	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.66	2.2	A	928	1391
2	5.14	1.0	A	578	868
3	13.71	1.7	B	346	519
4	15.65	4.9	C	949	1423
5	14.61	1.6	B	294	441

Main Results for each time segment

14:30 - 14:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	754	189	499	751	761	802	0.0	1.1	4.877	A
2	483	121	736	481	487	513	0.0	0.7	4.034	A
3	277	69	1039	277	282	178	0.0	0.6	7.885	A
4	773	193	469	769	770	847	0.0	1.9	7.933	A
5	251	63	1050	250	244	188	0.0	0.6	7.633	A

14:45 - 15:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	915	229	620	914	919	945	1.1	1.2	5.520	A
2	561	140	895	561	574	639	0.7	0.6	4.358	A
3	326	81	1239	325	322	218	0.6	0.9	9.415	A
4	942	235	538	941	928	1026	1.9	2.9	10.241	B
5	301	75	1265	300	287	215	0.6	0.9	8.988	A

15:00 - 15:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1114	278	731	1109	1095	1169	1.2	1.9	6.385	A
2	691	173	1091	690	699	750	0.6	1.0	4.940	A
3	411	103	1500	412	408	281	0.9	1.7	12.901	B
4	1133	283	668	1143	1132	1244	2.9	4.2	14.429	B
5	348	87	1554	347	344	257	0.9	1.6	13.462	B

15:15 - 15:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1121	280	734	1119	1115	1184	1.9	2.2	6.659	A
2	703	176	1086	702	711	768	1.0	0.9	5.138	A
3	416	104	1519	415	412	269	1.7	1.7	13.706	B
4	1129	282	688	1136	1131	1245	4.2	4.9	15.651	C
5	351	88	1567	350	358	257	1.6	1.3	14.606	B

15:30 - 15:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	907	227	584	906	918	983	2.2	1.6	5.652	A
2	567	142	886	567	570	604	0.9	0.7	4.519	A
3	350	88	1236	350	340	217	1.7	1.1	10.147	B
4	941	235	557	946	950	1029	4.9	2.5	10.384	B
5	280	70	1286	282	281	218	1.3	0.8	9.846	A

15:45 - 16:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	754	189	500	752	762	813	1.6	1.3	5.023	A
2	466	116	733	467	472	520	0.7	0.5	3.968	A
3	294	73	1005	296	296	195	1.1	0.6	8.320	A
4	775	194	480	781	776	821	2.5	1.4	7.954	A
5	231	58	1085	229	241	176	0.8	0.6	7.772	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

14:30 - 14:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	199	900	0.221	199	198	0.0	0.3	4.943	A
			2	3, 4	276	900	0.307	276	282	0.0	0.4	4.872	A
			3	1, 4, 5	279	900	0.309	276	281	0.0	0.4	4.835	A
		2	1	(2, 3, 4)	470			470	482	0.0	0.0	0.000	A
			2	(1, 4, 5)	283			283	283	0.0	0.0	0.000	A
	Exit	1	1		802			802	815	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	233	1037	0.225	232	233	0.0	0.3	3.891	A
			2	1, 2, 4, 5	249	1037	0.241	249	254	0.0	0.4	4.165	A
	Exit	1	1		513			513	515	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	149	591	0.253	149	154	0.0	0.3	7.956	A
			2	1, 2, 3	128	591	0.217	128	127	0.0	0.3	7.800	A
		2	1	(1, 2, 3, 4, 5)	277			277	284	0.0	0.0	0.001	A
	Exit	1	1		178			178	178	0.0	0.0	0.000	A
4	Entry	1	1	5	62	745	0.083	62	59	0.0	0.1	5.379	A
			2	1	284	745	0.381	283	283	0.0	0.5	6.612	A
			3	1, 2, 3, 4	425	745	0.571	424	428	0.0	1.2	8.272	A
		2	1	(1, 5)	292			292	292	0.0	0.0	0.110	A
			2	(1, 2, 3, 4)	480			479	485	0.0	0.1	0.715	A
	Exit	1	1		847			847	853	0.0	0.0	0.000	A
5	Entry	1	1	1	60	646	0.093	61	62	0.0	0.1	6.074	A
			2	2, 3, 4, 5	191	646	0.295	189	182	0.0	0.6	8.133	A
		2	1	(1, 2, 3, 4, 5)	251			251	247	0.0	0.0	0.022	A
	Exit	1	1		188			188	184	0.0	0.0	0.000	A

14:45 - 15:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	245	869	0.282	246	234	0.3	0.3	5.623	A
			2	3, 4	332	869	0.382	332	344	0.4	0.3	5.532	A
			3	1, 4, 5	338	869	0.389	336	341	0.4	0.5	5.396	A
		2	1	(2, 3, 4)	572			572	574	0.0	0.0	0.021	A
			2	(1, 4, 5)	343			343	345	0.0	0.0	0.002	A
	Exit	1	1		945			945	947	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	276	982	0.281	277	280	0.3	0.3	4.226	A
			2	1, 2, 4, 5	285	982	0.290	286	294	0.4	0.3	4.483	A
	Exit	1	1		639			639	620	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	180	537	0.335	179	177	0.3	0.6	9.952	A
			2	1, 2, 3	145	537	0.271	146	146	0.3	0.3	8.758	A
		2	1	(1, 2, 3, 4, 5)	326			326	324	0.0	0.0	0.003	A
	Exit	1	1		218			218	219	0.0	0.0	0.000	A
4	Entry	1	1	5	71	730	0.098	72	70	0.1	0.1	5.772	A
			2	1	353	730	0.484	351	350	0.5	1.0	8.025	A
			3	1, 2, 3, 4	518	730	0.709	519	509	1.2	1.4	9.600	A
		2	1	(1, 5)	377			376	362	0.0	0.1	0.488	A
			2	(1, 2, 3, 4)	565			566	568	0.1	0.4	2.197	A
	Exit	1	1		1026			1026	1027	0.0	0.0	0.000	A
5	Entry	1	1	1	71	585	0.121	71	66	0.1	0.2	7.144	A
			2	2, 3, 4, 5	230	585	0.394	229	221	0.6	0.7	9.491	A
		2	1	(1, 2, 3, 4, 5)	301			301	288	0.0	0.0	0.038	A
	Exit	1	1		215			215	217	0.0	0.0	0.000	A

15:00 - 15:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	280	840	0.334	278	285	0.3	0.5	6.358	A
			2	3, 4	420	840	0.500	420	408	0.3	0.7	6.427	A
			3	1, 4, 5	414	840	0.493	412	402	0.5	0.7	6.322	A
		2	1	(2, 3, 4)	711			711	698	0.0	0.0	0.023	A
			2	(1, 4, 5)	402			402	400	0.0	0.0	0.002	A
	Exit	1	1		1169			1169	1176	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	341	915	0.373	340	341	0.3	0.5	4.887	A
			2	1, 2, 4, 5	351	915	0.383	349	359	0.3	0.6	4.991	A
	Exit	1	1		750			750	750	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	226	468	0.483	227	223	0.6	1.1	13.595	B
			2	1, 2, 3	186	468	0.397	185	185	0.3	0.7	11.632	B
		2	1	(1, 2, 3, 4, 5)	411			411	411	0.0	0.0	0.194	A
	Exit	1	1		281			281	269	0.0	0.0	0.000	A
4	Entry	1	1	5	89	701	0.127	88	84	0.1	0.2	5.940	A
			2	1	457	701	0.651	461	457	1.0	1.1	9.513	A
			3	1, 2, 3, 4	591	701	0.843	594	591	1.4	1.9	11.971	B
		2	1	(1, 5)	500			501	493	0.1	0.1	1.277	A
			2	(1, 2, 3, 4)	633			636	642	0.4	1.0	5.914	A
	Exit	1	1		1244			1244	1228	0.0	0.0	0.000	A
5	Entry	1	1	1	85	502	0.168	83	82	0.2	0.3	8.619	A
			2	2, 3, 4, 5	261	502	0.520	264	262	0.7	1.1	14.132	B
		2	1	(1, 2, 3, 4, 5)	348			346	346	0.0	0.2	0.601	A
	Exit	1	1		257			257	255	0.0	0.0	0.000	A

15:15 - 15:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	291	839	0.347	290	287	0.5	0.8	6.660	A
			2	3, 4	413	839	0.493	413	411	0.7	0.8	6.635	A
			3	1, 4, 5	416	839	0.496	417	417	0.7	0.7	6.613	A
		2	1	(2, 3, 4)	712			712	708	0.0	0.0	0.032	A
			2	(1, 4, 5)	408			408	409	0.0	0.0	0.013	A
	Exit	1	1		1184			1184	1186	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	344	917	0.376	343	347	0.5	0.5	5.085	A
			2	1, 2, 4, 5	358	917	0.391	360	364	0.6	0.4	5.188	A
	Exit	1	1		768			768	763	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	226	463	0.488	224	221	1.1	0.9	14.079	B
			2	1, 2, 3	190	463	0.411	191	191	0.7	0.8	12.597	B
		2	1	(1, 2, 3, 4, 5)	416			416	412	0.0	0.0	0.328	A
	Exit	1	1		269			269	269	0.0	0.0	0.000	A
4	Entry	1	1	5	86	696	0.123	87	91	0.2	0.1	6.279	A
			2	1	459	696	0.659	459	454	1.1	1.3	9.785	A
			3	1, 2, 3, 4	590	696	0.848	590	586	1.9	2.1	12.256	B
		2	1	(1, 5)	507			507	509	0.1	0.3	1.509	A
			2	(1, 2, 3, 4)	622			628	624	1.0	1.0	7.607	A
	Exit	1	1		1245			1245	1244	0.0	0.0	0.000	A
5	Entry	1	1	1	81	499	0.162	79	86	0.3	0.3	8.980	A
			2	2, 3, 4, 5	270	499	0.542	271	272	1.1	1.0	15.425	C
		2	1	(1, 2, 3, 4, 5)	351			351	358	0.2	0.0	0.768	A
	Exit	1	1		257			257	266	0.0	0.0	0.000	A

15:30 - 15:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	239	878	0.272	238	239	0.8	0.3	5.730	A
			2	3, 4	338	878	0.385	337	341	0.8	0.7	5.515	A
			3	1, 4, 5	330	878	0.376	331	338	0.7	0.7	5.718	A
		2	1	(2, 3, 4)	589			589	584	0.0	0.0	0.003	A
			2	(1, 4, 5)	318			318	332	0.0	0.0	0.009	A
	Exit	1	1		983			983	978	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	277	986	0.281	277	278	0.5	0.3	4.336	A
			2	1, 2, 4, 5	289	986	0.294	290	292	0.4	0.3	4.694	A
	Exit	1	1		604			604	618	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	194	538	0.360	194	189	0.9	0.5	10.660	B
			2	1, 2, 3	157	538	0.292	156	151	0.8	0.6	9.455	A
		2	1	(1, 2, 3, 4, 5)	350			350	338	0.0	0.0	0.026	A

	Exit	1	1		217			217	221	0.0	0.0	0.000	A
4	Entry	1	1	5	76	725	0.105	77	76	0.1	0.1	5.232	A
			2	1	350	725	0.483	353	359	1.3	0.7	8.043	A
			3	1, 2, 3, 4	517	725	0.712	517	516	2.1	1.5	10.032	B
		2	1	(1, 5)	370			370	375	0.3	0.0	0.530	A
			2	(1, 2, 3, 4)	571			573	570	1.0	0.1	2.174	A
	Exit	1	1		1029			1029	1022	0.0	0.0	0.000	A
5	Entry	1	1	1	65	579	0.113	65	65	0.3	0.1	7.686	A
			2	2, 3, 4, 5	215	579	0.371	216	216	1.0	0.7	10.417	B
		2	1	(1, 2, 3, 4, 5)	280			280	279	0.0	0.0	0.065	A
	Exit	1	1		218			218	220	0.0	0.0	0.000	A

15:45 - 16:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	193	900	0.214	193	195	0.3	0.3	5.366	A
			2	3, 4	287	900	0.319	286	287	0.7	0.5	4.928	A
			3	1, 4, 5	274	900	0.305	273	280	0.7	0.5	4.871	A
		2	1	(2, 3, 4)	481			481	482	0.0	0.0	0.001	A
			2	(1, 4, 5)	273			273	279	0.0	0.0	0.000	A
	Exit	1	1		813			813	812	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	227	1038	0.219	227	231	0.3	0.2	3.923	A
			2	1, 2, 4, 5	239	1038	0.230	240	241	0.3	0.3	4.011	A
	Exit	1	1		520			520	520	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	154	600	0.257	155	158	0.5	0.3	8.500	A
			2	1, 2, 3	140	600	0.233	142	138	0.6	0.2	8.094	A
		2	1	(1, 2, 3, 4, 5)	294			294	294	0.0	0.0	0.010	A
	Exit	1	1		195			195	189	0.0	0.0	0.000	A
4	Entry	1	1	5	60	743	0.081	61	61	0.1	0.0	5.371	A
			2	1	281	743	0.379	283	276	0.7	0.4	6.794	A
			3	1, 2, 3, 4	436	743	0.586	437	439	1.5	0.9	8.180	A
		2	1	(1, 5)	285			285	284	0.0	0.0	0.134	A
			2	(1, 2, 3, 4)	490			492	488	0.1	0.0	0.705	A
	Exit	1	1		821			821	847	0.0	0.0	0.000	A
5	Entry	1	1	1	53	636	0.083	53	56	0.1	0.2	6.468	A
			2	2, 3, 4, 5	178	636	0.280	176	185	0.7	0.5	8.073	A
		2	1	(1, 2, 3, 4, 5)	231			231	240	0.0	0.0	0.075	A
	Exit	1	1		176			176	179	0.0	0.0	0.000	A

2028 Do Something, Friday PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	11.38	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
D5	2028 Do Something	Friday PM	ONE HOUR	16:00	17:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1102	100.000
2		ONE HOUR	✓	611	100.000
3		ONE HOUR	✓	487	100.000
4		ONE HOUR	✓	1027	100.000
5		ONE HOUR	✓	170	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	2	241	85	734	40
	2	259	1	53	228	70
	3	212	54	0	212	9
	4	667	202	100	4	54
	5	33	64	6	67	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	1	8	2	0
	2	0	0	2	0	2
	3	2	0	0	3	0
	4	2	1	7	0	2
	5	3	2	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	6.39	2.1	A	1007	1510
2	5.07	1.0	A	562	844
3	21.10	2.9	C	447	671
4	15.89	5.7	C	945	1417
5	11.16	0.7	B	154	231

Main Results for each time segment

16:00 - 16:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	828	207	381	826	833	891	0.0	1.1	4.811	A
2	464	116	779	465	456	427	0.0	0.6	3.971	A
3	373	93	1062	371	367	182	0.0	1.1	8.631	A
4	776	194	498	773	770	935	0.0	1.7	7.667	A
5	135	34	1137	135	129	133	0.0	0.3	6.735	A

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	990	247	442	988	995	1063	1.1	1.6	5.390	A
2	536	134	930	535	540	500	0.6	0.7	4.285	A
3	444	111	1244	438	436	221	1.1	1.6	10.781	B
4	926	232	573	934	917	1109	1.7	2.3	9.407	A
5	151	38	1352	153	151	155	0.3	0.3	7.741	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1214	303	551	1212	1200	1281	1.6	2.0	6.284	A
2	672	168	1142	670	674	621	0.7	1.0	4.990	A
3	528	132	1543	526	527	269	1.6	2.9	17.552	C
4	1127	282	707	1133	1116	1362	2.3	5.1	15.371	C
5	186	46	1648	184	187	192	0.3	0.7	10.698	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1199	300	552	1196	1206	1289	2.0	2.1	6.394	A
2	672	168	1131	671	669	617	1.0	1.0	5.074	A
3	532	133	1531	537	539	270	2.9	2.9	21.097	C
4	1146	287	704	1140	1131	1365	5.1	5.7	15.891	C
5	184	46	1658	183	188	186	0.7	0.7	11.162	B

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	990	248	442	989	997	1049	2.1	1.6	5.393	A
2	564	141	930	563	557	501	1.0	0.7	4.494	A
3	441	110	1279	441	444	214	2.9	1.6	12.871	B
4	918	230	592	915	932	1128	5.7	2.5	10.079	B
5	146	36	1346	145	151	161	0.7	0.5	8.470	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	821	205	371	820	825	887	1.6	1.2	4.900	A
2	465	116	771	465	466	420	0.7	0.5	4.037	A
3	365	91	1052	364	365	184	1.6	1.0	8.995	A
4	775	194	493	774	776	923	2.5	1.6	7.755	A
5	123	31	1134	124	129	132	0.5	0.2	6.732	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

16:00 - 16:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	177	931	0.191	177	186	0.0	0.2	4.793	A
			2	3, 4	330	931	0.355	329	330	0.0	0.5	4.939	A
			3	1, 4, 5	320	931	0.344	319	318	0.0	0.4	4.690	A
		2	1	(2, 3, 4)	523			523	530	0.0	0.0	0.000	A
			2	(1, 4, 5)	305			305	308	0.0	0.0	0.000	A
	Exit	1	1		891			891	880	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	228	1022	0.223	228	223	0.0	0.3	4.040	A
			2	1, 2, 4, 5	237	1022	0.232	237	233	0.0	0.3	3.906	A
	Exit	1	1		427			427	433	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	187	585	0.320	185	184	0.0	0.6	8.558	A
			2	1, 2, 3	186	585	0.319	186	183	0.0	0.5	8.635	A
		2	1	(1, 2, 3, 4, 5)	373			373	372	0.0	0.0	0.035	A
	Exit	1	1		182			182	185	0.0	0.0	0.000	A
4	Entry	1	1	5	41	739	0.055	40	40	0.0	0.1	5.100	A
			2	1	306	739	0.414	305	308	0.0	0.5	6.679	A
			3	1, 2, 3, 4	429	739	0.581	427	423	0.0	1.1	8.040	A
		2	1	(1, 5)	294			294	299	0.0	0.0	0.102	A
			2	(1, 2, 3, 4)	482			481	478	0.0	0.1	0.454	A
	Exit	1	1		935			935	928	0.0	0.0	0.000	A
5	Entry	1	1	1	28	621	0.045	28	25	0.0	0.1	6.626	A
			2	2, 3, 4, 5	107	621	0.172	108	104	0.0	0.2	6.747	A
		2	1	(1, 2, 3, 4, 5)	135			135	130	0.0	0.0	0.012	A
	Exit	1	1		133			133	129	0.0	0.0	0.000	A

16:15 - 16:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	218	915	0.239	218	221	0.2	0.3	5.353	A
			2	3, 4	393	915	0.429	392	396	0.5	0.7	5.447	A
			3	1, 4, 5	379	915	0.414	377	377	0.4	0.6	5.328	A
		2	1	(2, 3, 4)	621			621	628	0.0	0.0	0.009	A
			2	(1, 4, 5)	369			369	369	0.0	0.0	0.009	A
	Exit	1	1		1063			1063	1051	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	260	970	0.268	259	265	0.3	0.3	4.219	A
			2	1, 2, 4, 5	276	970	0.284	276	274	0.3	0.4	4.349	A
	Exit	1	1		500			500	504	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	223	536	0.417	221	218	0.6	0.8	10.715	B
			2	1, 2, 3	220	536	0.411	217	218	0.5	0.9	10.492	B
		2	1	(1, 2, 3, 4, 5)	444			444	438	0.0	0.0	0.173	A

	Exit	1	1		221			221	220	0.0	0.0	0.000	A
4	Entry	1	1	5	52	722	0.072	51	49	0.1	0.1	5.464	A
			2	1	386	722	0.534	388	381	0.5	0.8	7.729	A
			3	1, 2, 3, 4	490	722	0.679	495	488	1.1	1.1	9.361	A
		2	1	(1, 5)	378			378	370	0.0	0.0	0.429	A
			2	(1, 2, 3, 4)	548			550	549	0.1	0.2	1.270	A
	Exit	1	1		1109			1109	1110	0.0	0.0	0.000	A
5	Entry	1	1	1	31	560	0.055	31	29	0.1	0.0	7.144	A
			2	2, 3, 4, 5	120	560	0.215	121	121	0.2	0.3	7.879	A
		2	1	(1, 2, 3, 4, 5)	151			151	151	0.0	0.0	0.000	A
	Exit	1	1		155			155	153	0.0	0.0	0.000	A

16:30 - 16:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	264	887	0.298	263	263	0.3	0.4	5.865	A
			2	3, 4	480	887	0.542	480	477	0.7	0.8	6.457	A
			3	1, 4, 5	469	887	0.529	470	460	0.6	0.7	6.285	A
		2	1	(2, 3, 4)	766			766	756	0.0	0.0	0.030	A
			2	(1, 4, 5)	447			447	446	0.0	0.0	0.012	A
	Exit	1	1		1281			1281	1277	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	327	897	0.365	326	330	0.3	0.5	5.034	A
			2	1, 2, 4, 5	345	897	0.385	344	344	0.4	0.5	4.947	A
	Exit	1	1		621			621	608	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	267	456	0.584	265	266	0.8	1.4	16.460	C
			2	1, 2, 3	259	456	0.568	261	260	0.9	1.2	15.674	C
		2	1	(1, 2, 3, 4, 5)	528			526	530	0.0	0.3	1.451	A
	Exit	1	1		269			269	270	0.0	0.0	0.000	A
4	Entry	1	1	5	63	692	0.091	63	59	0.1	0.1	5.758	A
			2	1	478	692	0.690	479	476	0.8	1.5	10.490	B
			3	1, 2, 3, 4	589	692	0.850	591	581	1.1	1.9	11.728	B
		2	1	(1, 5)	523			522	513	0.0	0.4	2.258	A
			2	(1, 2, 3, 4)	604			608	609	0.2	1.1	6.314	A
	Exit	1	1		1362			1362	1360	0.0	0.0	0.000	A
5	Entry	1	1	1	36	475	0.076	36	35	0.0	0.1	8.417	A
			2	2, 3, 4, 5	150	475	0.315	149	152	0.3	0.6	11.171	B
		2	1	(1, 2, 3, 4, 5)	186			186	188	0.0	0.0	0.032	A
	Exit	1	1		192			192	187	0.0	0.0	0.000	A

16:45 - 17:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	258	886	0.291	258	263	0.4	0.4	5.930	A
			2	3, 4	478	886	0.539	476	479	0.8	0.9	6.642	A
			3	1, 4, 5	463	886	0.523	461	463	0.7	0.9	6.352	A
		2	1	(2, 3, 4)	747			747	760	0.0	0.0	0.024	A
			2	(1, 4, 5)	451			451	446	0.0	0.0	0.016	A
	Exit	1	1		1289			1289	1287	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	327	901	0.363	326	327	0.5	0.5	5.077	A
			2	1, 2, 4, 5	345	901	0.383	344	342	0.5	0.4	5.071	A
	Exit	1	1		617			617	619	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	268	459	0.583	271	276	1.4	1.3	18.153	C
			2	1, 2, 3	267	459	0.581	266	262	1.2	1.2	17.314	C
		2	1	(1, 2, 3, 4, 5)	532			535	539	0.3	0.4	3.344	A
	Exit	1	1		270			270	269	0.0	0.0	0.000	A
4	Entry	1	1	5	63	693	0.090	63	58	0.1	0.1	5.862	A
			2	1	505	693	0.729	503	490	1.5	1.7	10.528	B
			3	1, 2, 3, 4	576	693	0.831	575	582	1.9	2.1	12.162	B
		2	1	(1, 5)	549			548	526	0.4	0.4	2.318	A
			2	(1, 2, 3, 4)	597			597	607	1.1	1.4	6.921	A
	Exit	1	1		1365			1365	1370	0.0	0.0	0.000	A
5	Entry	1	1	1	33	472	0.070	34	36	0.1	0.1	8.069	A
			2	2, 3, 4, 5	151	472	0.321	149	152	0.6	0.6	11.780	B
		2	1	(1, 2, 3, 4, 5)	184			184	188	0.0	0.0	0.077	A
	Exit	1	1		186			186	186	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	209	915	0.229	210	218	0.4	0.3	5.415	A
			2	3, 4	401	915	0.438	400	399	0.9	0.7	5.452	A
			3	1, 4, 5	381	915	0.416	379	380	0.9	0.6	5.307	A
		2	1	(2, 3, 4)	618			618	622	0.0	0.0	0.008	A
			2	(1, 4, 5)	372			372	373	0.0	0.0	0.001	A
	Exit	1	1		1049			1049	1060	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	277	970	0.286	277	272	0.5	0.3	4.499	A
			2	1, 2, 4, 5	287	970	0.296	286	285	0.4	0.4	4.490	A
	Exit	1	1		501			501	511	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	223	527	0.424	223	226	1.3	0.7	12.425	B
			2	1, 2, 3	216	527	0.411	218	218	1.2	0.7	12.376	B
		2	1	(1, 2, 3, 4, 5)	441			440	440	0.4	0.2	0.528	A
	Exit	1	1		214			214	219	0.0	0.0	0.000	A
4	Entry	1	1	5	52	718	0.072	52	50	0.1	0.1	5.385	A
			2	1	373	718	0.520	371	384	1.7	0.8	8.239	A
			3	1, 2, 3, 4	495	718	0.689	492	497	2.1	1.4	9.719	A
		2	1	(1, 5)	375			375	380	0.4	0.0	0.474	A
			2	(1, 2, 3, 4)	544			544	545	1.4	0.1	1.772	A
	Exit	1	1		1128			1128	1132	0.0	0.0	0.000	A
5	Entry	1	1	1	27	562	0.049	28	29	0.1	0.0	7.079	A
			2	2, 3, 4, 5	119	562	0.212	117	123	0.6	0.4	8.746	A
		2	1	(1, 2, 3, 4, 5)	146			146	150	0.0	0.0	0.036	A
	Exit	1	1		161			161	159	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

1	Entry	1	1	2	180	934	0.193	180	181	0.3	0.3	4.866	A
			2	3, 4	330	934	0.354	330	330	0.7	0.5	4.954	A
			3	1, 4, 5	311	934	0.333	310	313	0.6	0.5	4.863	A
		2	1	(2, 3, 4)	517			517	521	0.0	0.0	0.001	A
			2	(1, 4, 5)	304			304	303	0.0	0.0	0.000	A
	Exit	1	1		887			887	885	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	229	1025	0.223	229	229	0.3	0.3	3.996	A
			2	1, 2, 4, 5	236	1025	0.230	236	238	0.4	0.3	4.077	A
	Exit	1	1		420			420	426	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	185	587	0.316	184	186	0.7	0.5	9.023	A
			2	1, 2, 3	180	587	0.306	179	179	0.7	0.4	8.804	A
		2	1	(1, 2, 3, 4, 5)	365			365	363	0.2	0.0	0.100	A
	Exit	1	1		184			184	186	0.0	0.0	0.000	A
4	Entry	1	1	5	41	740	0.055	41	40	0.1	0.1	5.435	A
			2	1	308	740	0.417	308	307	0.8	0.6	6.731	A
			3	1, 2, 3, 4	427	740	0.577	426	428	1.4	0.9	7.953	A
		2	1	(1, 5)	307			307	303	0.0	0.0	0.111	A
			2	(1, 2, 3, 4)	468			469	469	0.1	0.1	0.622	A
	Exit	1	1		923			923	933	0.0	0.0	0.000	A
5	Entry	1	1	1	25	622	0.040	25	25	0.0	0.0	5.847	A
			2	2, 3, 4, 5	98	622	0.158	98	104	0.4	0.2	6.942	A
		2	1	(1, 2, 3, 4, 5)	123			123	128	0.0	0.0	0.000	A
	Exit	1	1		132			132	131	0.0	0.0	0.000	A

2028 Do Something, Saturday

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Lane Simulation	A1 - [Lane Simulation]	This analysis set uses Lane Simulation mode. This is provided as an investigative tool and the user should apply judgement when interpreting the results.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	8.83	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2028 Do Something	Saturday	ONE HOUR	12:00	13:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	1033	100.000
2		ONE HOUR	✓	531	100.000
3		ONE HOUR	✓	246	100.000
4		ONE HOUR	✓	1029	100.000
5		ONE HOUR	✓	106	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1	2	3	4	5
From	1	4	252	86	652	39
	2	230	0	43	234	24
	3	97	49	0	92	8
	4	690	205	102	4	28
	5	32	7	13	54	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	1	2	3
	2	1	0	0	0	0
	3	2	0	0	4	0
	4	1	2	8	0	0
	5	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	5.71	1.9	A	947	1420
2	4.73	0.8	A	487	730
3	9.91	0.8	A	223	335
4	13.87	5.0	B	940	1410
5	8.36	0.3	A	100	150

Main Results for each time segment

12:00 - 12:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	755	189	334	756	768	800	0.0	0.9	4.560	A
2	400	100	710	399	397	379	0.0	0.4	3.711	A
3	190	47	923	189	186	186	0.0	0.3	6.790	A
4	785	196	337	786	770	775	0.0	1.7	7.319	A
5	84	21	1050	84	82	73	0.0	0.2	5.759	A

12:15 - 12:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	931	233	386	934	931	948	0.9	1.1	5.114	A
2	485	121	860	482	475	460	0.4	0.6	4.000	A
3	224	56	1128	225	219	214	0.3	0.4	7.534	A
4	919	230	406	922	926	947	1.7	2.2	9.187	A
5	95	24	1239	94	94	89	0.2	0.2	6.690	A

12:30 - 12:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1139	285	485	1141	1137	1139	1.1	1.7	5.711	A
2	587	147	1053	587	586	573	0.6	0.7	4.513	A
3	254	63	1361	253	262	279	0.4	0.8	9.383	A
4	1122	280	477	1131	1124	1137	2.2	3.4	12.828	B
5	119	30	1504	120	116	104	0.2	0.3	8.137	A

12:45 - 13:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	1141	285	477	1138	1148	1143	1.7	1.9	5.678	A
2	579	145	1054	578	586	562	0.7	0.8	4.732	A
3	263	66	1363	261	269	268	0.8	0.8	9.908	A
4	1125	281	487	1124	1126	1137	3.4	5.0	13.875	B
5	119	30	1501	119	117	109	0.3	0.3	8.363	A

13:00 - 13:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	927	232	395	929	924	944	1.9	1.1	5.025	A
2	478	120	859	478	483	465	0.8	0.5	4.162	A
3	222	55	1117	223	221	220	0.8	0.4	8.013	A
4	920	230	405	923	929	935	5.0	2.1	8.991	A
5	99	25	1240	99	97	88	0.3	0.1	6.883	A

13:15 - 13:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Throughput (PCU/hr)	Average throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	787	197	320	789	782	791	1.1	0.9	4.646	A
2	392	98	738	391	399	372	0.5	0.4	3.705	A
3	187	47	940	186	182	188	0.4	0.4	6.898	A
4	768	192	334	772	776	793	2.1	1.4	7.242	A
5	82	21	1030	82	82	75	0.1	0.1	6.026	A

Lane Results

Lane Level notation: Lane Level 1 is always closest to the junction.

Lanes: Main Results for each time segment

12:00 - 12:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	182	943	0.193	183	187	0.0	0.2	4.693	A
			2	3, 4	298	943	0.316	299	300	0.0	0.4	4.502	A
			3	1, 4, 5	274	943	0.291	274	282	0.0	0.4	4.530	A
		2	1	(2, 3, 4)	487			487	498	0.0	0.0	0.001	A
			2	(1, 4, 5)	268			268	274	0.0	0.0	0.000	A
	Exit	1	1		800			800	789	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	209	1046	0.199	209	206	0.0	0.2	3.678	A
			2	1, 2, 4, 5	191	1046	0.183	191	190	0.0	0.2	3.748	A
	Exit	1	1		379			379	382	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	96	622	0.154	96	94	0.0	0.2	6.535	A
			2	1, 2, 3	94	622	0.151	94	93	0.0	0.1	7.045	A
		2	1	(1, 2, 3, 4, 5)	190			190	188	0.0	0.0	0.000	A
	Exit	1	1		186			186	183	0.0	0.0	0.000	A
4	Entry	1	1	5	23	774	0.029	23	21	0.0	0.0	4.716	A
			2	1	318	774	0.411	318	312	0.0	0.6	6.373	A
			3	1, 2, 3, 4	444	774	0.574	446	437	0.0	0.9	7.476	A
		2	1	(1, 5)	301			301	295	0.0	0.0	0.131	A
			2	(1, 2, 3, 4)	484			484	481	0.0	0.1	0.512	A
	Exit	1	1		775			775	776	0.0	0.0	0.000	A
5	Entry	1	1	1	24	646	0.037	24	24	0.0	0.0	5.982	A
			2	2, 3, 4, 5	60	646	0.093	60	59	0.0	0.1	5.668	A
		2	1	(1, 2, 3, 4, 5)	84			84	83	0.0	0.0	0.000	A
	Exit	1	1		73			73	74	0.0	0.0	0.000	A

12:15 - 12:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	224	930	0.241	225	226	0.2	0.2	5.157	A
			2	3, 4	361	930	0.388	362	362	0.4	0.4	5.203	A
			3	1, 4, 5	347	930	0.373	348	343	0.4	0.4	4.956	A
		2	1	(2, 3, 4)	603			603	598	0.0	0.0	0.018	A
			2	(1, 4, 5)	328			328	334	0.0	0.0	0.004	A
	Exit	1	1		948			948	945	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	250	995	0.252	249	243	0.2	0.3	4.000	A
			2	1, 2, 4, 5	235	995	0.236	233	232	0.2	0.3	4.001	A
	Exit	1	1		460			460	459	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	113	567	0.199	114	111	0.2	0.2	7.811	A
			2	1, 2, 3	111	567	0.196	110	108	0.1	0.2	7.253	A
		2	1	(1, 2, 3, 4, 5)	224			224	220	0.0	0.0	0.000	A

	Exit	1	1		214			214	217	0.0	0.0	0.000	A
4	Entry	1	1	5	27	759	0.035	27	26	0.0	0.1	4.867	A
			2	1	387	759	0.510	389	390	0.6	0.7	7.608	A
			3	1, 2, 3, 4	506	759	0.666	506	510	0.9	1.3	8.906	A
		2	1	(1, 5)	364			364	365	0.0	0.0	0.465	A
			2	(1, 2, 3, 4)	555			555	563	0.1	0.2	1.261	A
	Exit	1	1		947			947	935	0.0	0.0	0.000	A
5	Entry	1	1	1	30	592	0.050	29	28	0.0	0.1	6.738	A
			2	2, 3, 4, 5	65	592	0.110	65	65	0.1	0.1	6.670	A
		2	1	(1, 2, 3, 4, 5)	95			95	94	0.0	0.0	0.000	A
	Exit	1	1		89			89	90	0.0	0.0	0.000	A

12:30 - 12:45

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	282	904	0.312	283	282	0.2	0.5	5.805	A
			2	3, 4	445	904	0.493	446	445	0.4	0.6	5.691	A
			3	1, 4, 5	412	904	0.456	411	411	0.4	0.6	5.628	A
		2	1	(2, 3, 4)	728			728	734	0.0	0.0	0.016	A
			2	(1, 4, 5)	411			411	406	0.0	0.0	0.009	A
	Exit	1	1		1139			1139	1141	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	301	928	0.324	301	300	0.3	0.3	4.527	A
			2	1, 2, 4, 5	286	928	0.308	285	285	0.3	0.4	4.499	A
	Exit	1	1		573			573	571	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	128	505	0.254	129	133	0.2	0.4	9.770	A
			2	1, 2, 3	126	505	0.249	124	129	0.2	0.4	8.938	A
		2	1	(1, 2, 3, 4, 5)	254			254	264	0.0	0.0	0.024	A
	Exit	1	1		279			279	275	0.0	0.0	0.000	A
4	Entry	1	1	5	29	743	0.039	29	30	0.1	0.0	5.037	A
			2	1	497	743	0.669	497	491	0.7	1.3	9.201	A
			3	1, 2, 3, 4	602	743	0.810	605	603	1.3	1.6	10.584	B
		2	1	(1, 5)	475			476	477	0.0	0.1	1.558	A
			2	(1, 2, 3, 4)	647			652	651	0.2	0.5	4.057	A
	Exit	1	1		1137			1137	1132	0.0	0.0	0.000	A
5	Entry	1	1	1	33	516	0.064	33	34	0.1	0.1	8.051	A
			2	2, 3, 4, 5	86	516	0.167	87	83	0.1	0.2	8.161	A
		2	1	(1, 2, 3, 4, 5)	119			119	117	0.0	0.0	0.000	A
	Exit	1	1		104			104	107	0.0	0.0	0.000	A

12:45 - 13:00

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	281	906	0.310	279	280	0.5	0.5	5.613	A
			2	3, 4	438	906	0.483	437	444	0.6	0.7	5.771	A
			3	1, 4, 5	423	906	0.467	422	424	0.6	0.8	5.611	A
		2	1	(2, 3, 4)	736			736	736	0.0	0.0	0.005	A
			2	(1, 4, 5)	405			405	413	0.0	0.0	0.004	A
	Exit	1	1		1143			1143	1156	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	295	928	0.318	294	298	0.3	0.4	4.765	A
			2	1, 2, 4, 5	284	928	0.305	283	288	0.4	0.4	4.698	A
	Exit	1	1		562			562	562	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	131	504	0.260	131	137	0.4	0.4	10.020	B
			2	1, 2, 3	132	504	0.261	130	132	0.4	0.4	9.769	A
		2	1	(1, 2, 3, 4, 5)	263			263	269	0.0	0.0	0.013	A
	Exit	1	1		268			268	265	0.0	0.0	0.000	A
4	Entry	1	1	5	27	741	0.037	27	29	0.0	0.0	4.773	A
			2	1	497	741	0.671	496	500	1.3	1.5	9.403	A
			3	1, 2, 3, 4	601	741	0.811	600	597	1.6	2.1	10.981	B
		2	1	(1, 5)	489			490	496	0.1	0.3	1.916	A
			2	(1, 2, 3, 4)	636			636	634	0.5	1.1	5.197	A
	Exit	1	1		1137			1137	1153	0.0	0.0	0.000	A
5	Entry	1	1	1	36	517	0.070	36	36	0.1	0.1	7.771	A
			2	2, 3, 4, 5	83	517	0.160	82	82	0.2	0.2	8.627	A
		2	1	(1, 2, 3, 4, 5)	119			119	117	0.0	0.0	0.003	A
	Exit	1	1		109			109	110	0.0	0.0	0.000	A

13:00 - 13:15

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	Entry	1	1	2	230	927	0.248	229	227	0.5	0.3	5.218	A
			2	3, 4	356	927	0.384	357	359	0.7	0.4	5.022	A
			3	1, 4, 5	340	927	0.367	343	339	0.8	0.4	4.869	A
		2	1	(2, 3, 4)	594			594	593	0.0	0.0	0.014	A
			2	(1, 4, 5)	333			333	328	0.0	0.0	0.000	A
	Exit	1	1		944			944	949	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	243	995	0.244	243	250	0.4	0.2	4.146	A
			2	1, 2, 4, 5	235	995	0.236	235	233	0.4	0.3	4.180	A
	Exit	1	1		465			465	464	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	111	570	0.196	113	111	0.4	0.2	8.195	A
			2	1, 2, 3	110	570	0.193	110	110	0.4	0.2	7.831	A
		2	1	(1, 2, 3, 4, 5)	222			222	219	0.0	0.0	0.000	A
	Exit	1	1		220			220	218	0.0	0.0	0.000	A
4	Entry	1	1	5	25	759	0.033	25	25	0.0	0.0	5.131	A
			2	1	394	759	0.518	396	394	1.5	0.7	7.353	A
			3	1, 2, 3, 4	501	759	0.660	502	509	2.1	1.2	8.821	A
		2	1	(1, 5)	356			356	361	0.3	0.0	0.368	A
			2	(1, 2, 3, 4)	564			564	561	1.1	0.1	1.305	A
	Exit	1	1		935			935	934	0.0	0.0	0.000	A
5	Entry	1	1	1	29	592	0.049	29	29	0.1	0.0	6.933	A
			2	2, 3, 4, 5	70	592	0.119	70	68	0.2	0.1	6.862	A
		2	1	(1, 2, 3, 4, 5)	99			99	96	0.0	0.0	0.000	A
	Exit	1	1		88			88	89	0.0	0.0	0.000	A

13:15 - 13:30

Arm	Side	Lane level	Lane	Destination arms	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Average throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

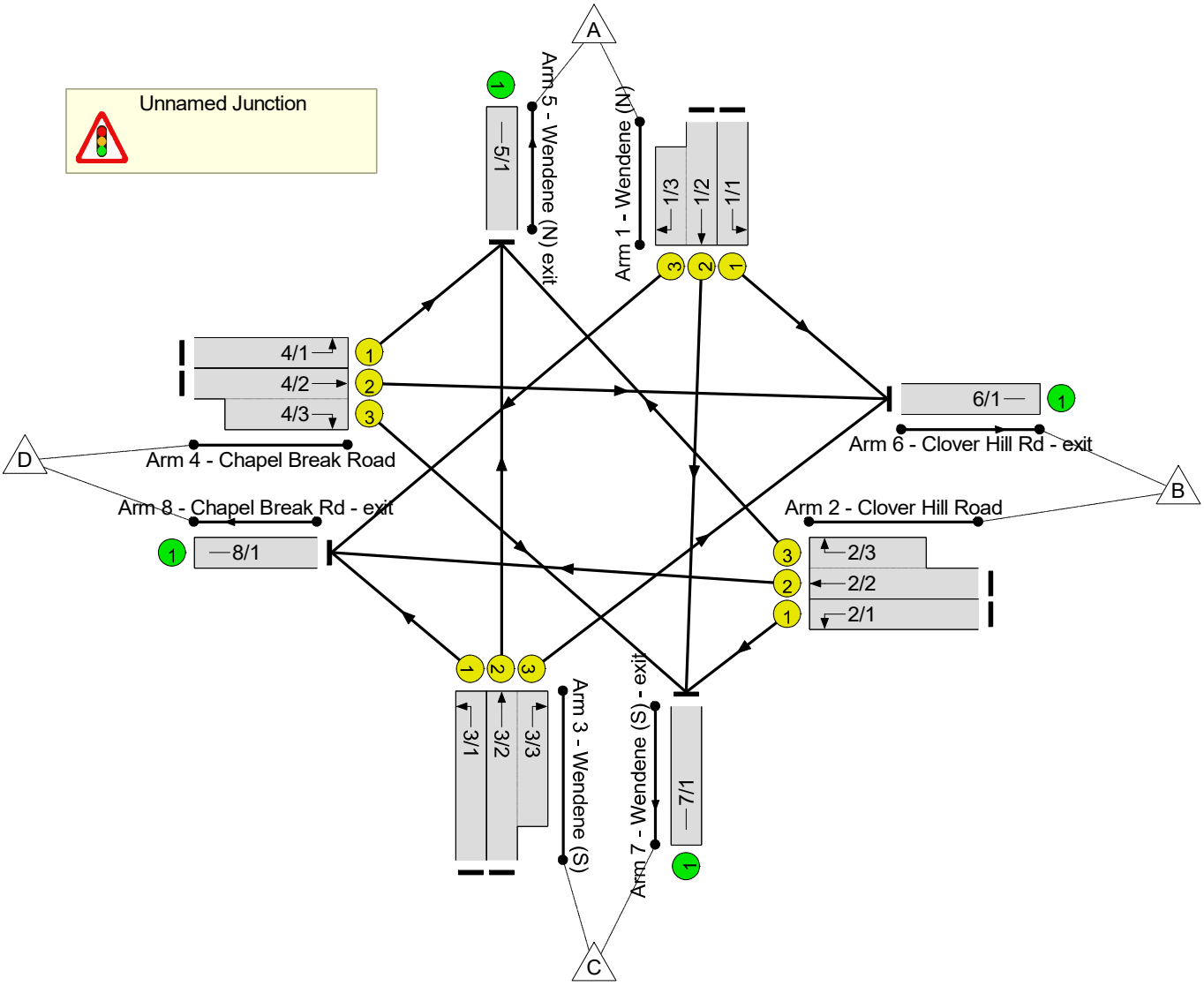
1	Entry	1	1	2	182	947	0.192	184	185	0.3	0.2	4.800	A
			2	3, 4	313	947	0.330	313	305	0.4	0.3	4.716	A
			3	1, 4, 5	292	947	0.309	293	292	0.4	0.3	4.472	A
		2	1	(2, 3, 4)	508			508	502	0.0	0.0	0.002	A
			2	(1, 4, 5)	279			279	279	0.0	0.0	0.000	A
	Exit	1	1		791			791	796	0.0	0.0	0.000	A
2	Entry	1	1	1, 3, 4	205	1037	0.198	204	207	0.2	0.2	3.646	A
			2	1, 2, 4, 5	186	1037	0.180	187	192	0.3	0.2	3.768	A
	Exit	1	1		372			372	378	0.0	0.0	0.000	A
3	Entry	1	1	2, 4, 5	95	617	0.154	96	91	0.2	0.1	6.817	A
			2	1, 2, 3	92	617	0.149	91	91	0.2	0.2	6.978	A
		2	1	(1, 2, 3, 4, 5)	187			187	182	0.0	0.0	0.000	A
	Exit	1	1		188			188	185	0.0	0.0	0.000	A
4	Entry	1	1	5	21	775	0.027	21	22	0.0	0.0	5.167	A
			2	1	318	775	0.410	318	321	0.7	0.5	6.273	A
			3	1, 2, 3, 4	429	775	0.553	433	434	1.2	0.8	7.491	A
		2	1	(1, 5)	291			291	292	0.0	0.0	0.131	A
			2	(1, 2, 3, 4)	477			478	482	0.1	0.0	0.456	A
	Exit	1	1		793			793	787	0.0	0.0	0.000	A
5	Entry	1	1	1	27	652	0.041	27	26	0.0	0.1	5.741	A
			2	2, 3, 4, 5	55	652	0.085	55	56	0.1	0.1	6.158	A
		2	1	(1, 2, 3, 4, 5)	82			82	82	0.0	0.0	0.000	A
	Exit	1	1		75			75	75	0.0	0.0	0.000	A

Full Input Data And Results

User and Project Details

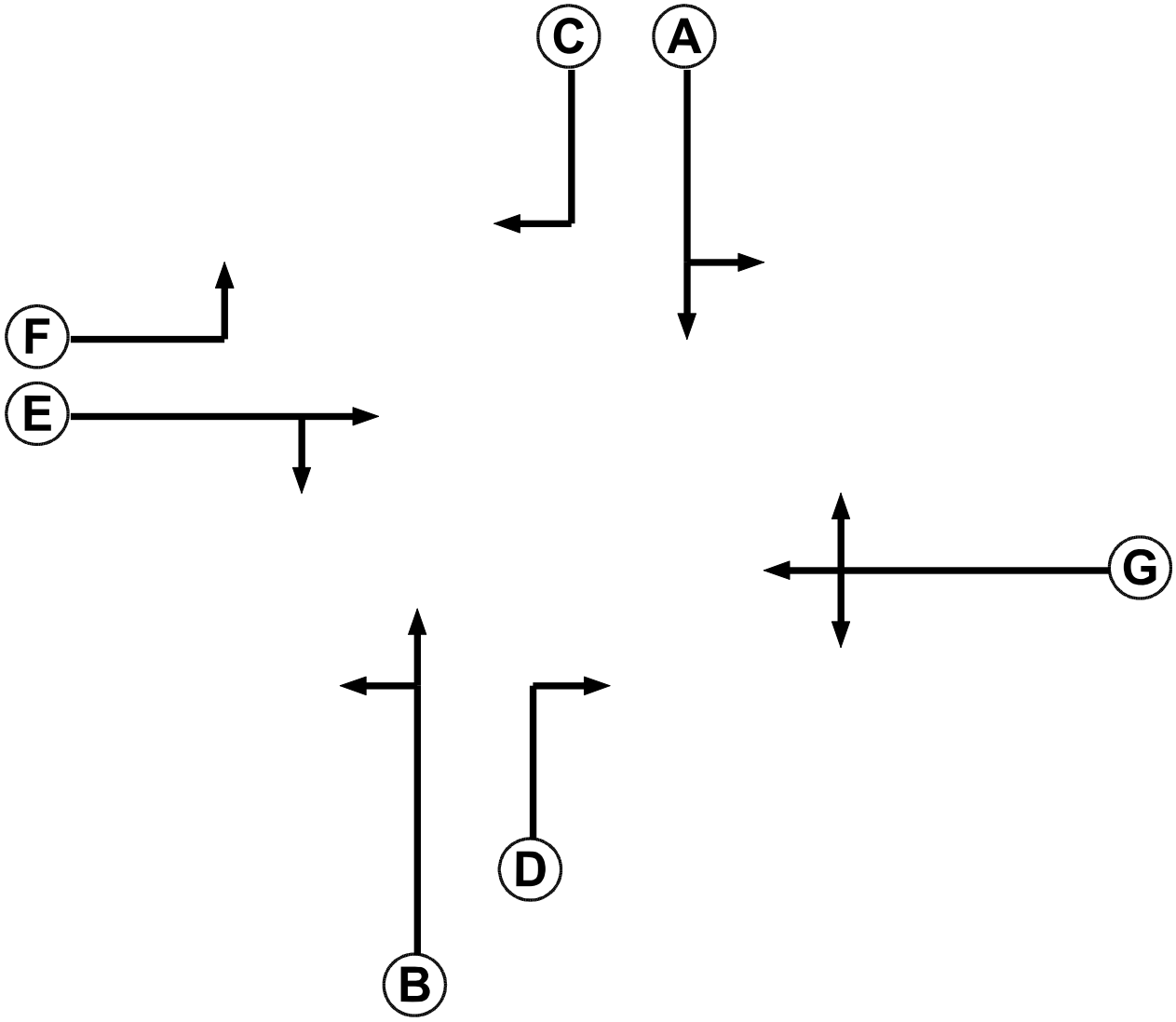
Project:	
Title:	
Location:	
Additional detail:	
File name:	TA_2028_1800 Wendene signals.lsg3x
Author:	
Company:	Focus Transport Planning Ltd.
Address:	Pentland House, Village Way, Wilmslow, Cheshire SK9 2GH

Network Layout Diagram



Full Input Data And Results

Phase 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	Traffic		7	7
F	Traffic		7	7
G	Traffic		7	7

Full Input Data And Results

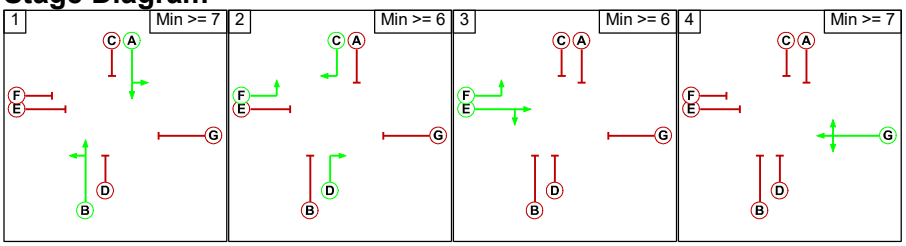
Phase Intergreens Matrix

	Starting Phase							
Terminating Phase		A	B	C	D	E	F	G
	A		-	-	6	5	-	7
	B	-		6	-	6	7	7
	C	-	6		-	5	-	6
	D	6	-	-		5	-	6
	E	5	5	5	5		-	6
	F	-	5	-	-	-		6
	G	6	6	6	6	7	7	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C D F
3	E F
4	G

Stage Diagram



Phase Delays

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

Prohibited Stage Change

	To Stage				
From Stage		1	2	3	4
	1		7	7	7
	2	6		5	6
	3	5	5		6
	4	6	7	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Full Input Data And Results

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 (Wendene (N))	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/2 (Wendene (N))	U	A	2	3	60.0	User	1800	-	-	-	-	-
1/3 (Wendene (N))	U	C	2	3	9.8	User	1800	-	-	-	-	-
2/1 (Clover Hill Road)	U	G	2	3	10.8	User	1800	-	-	-	-	-
2/2 (Clover Hill Road)	U	G	2	3	60.0	User	1800	-	-	-	-	-
2/3 (Clover Hill Road)	U	G	2	3	5.7	User	1800	-	-	-	-	-
3/1 (Wendene (S))	U	B	2	3	12.2	User	1800	-	-	-	-	-
3/2 (Wendene (S))	U	B	2	3	60.0	User	1800	-	-	-	-	-
3/3 (Wendene (S))	U	D	2	3	9.4	User	1800	-	-	-	-	-
4/1 (Chapel Break Road)	U	F	2	3	17.4	User	1800	-	-	-	-	-
4/2 (Chapel Break Road)	U	E	2	3	60.0	User	1800	-	-	-	-	-
4/3 (Chapel Break Road)	U	E	2	3	6.3	User	1800	-	-	-	-	-
5/1 (Wendene (N) exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Clover Hill Rd - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

7/1 (Wendene (S) - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Chapel Break Rd - exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
4: '2028 Do Something Friday Daytime'	14:45	15:45	01:00	

Scenario 4: '2028 Do Something' (FG4: '2028 Do Something Friday Daytime', Plan 1: 'All stages')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	274	72	346	692
	B	201	0	26	75	302
	C	88	34	0	41	163
	D	356	74	59	0	489
	Tot.	645	382	157	462	1646

Traffic Lane Flows

Lane	Scenario 4: 2028 Do Something
Junction: Unnamed Junction	
1/1	274
1/2 (with short)	418(In) 72(Out)
1/3 (short)	346
2/1	26
2/2 (with short)	276(In) 75(Out)
2/3 (short)	201
3/1	41
3/2 (with short)	122(In) 88(Out)
3/3 (short)	34
4/1	356
4/2 (with short)	133(In) 74(Out)
4/3 (short)	59
5/1	645
6/1	382
7/1	157
8/1	462

Full Input Data And Results

Lane Saturation Flows

Full Input Data And Results

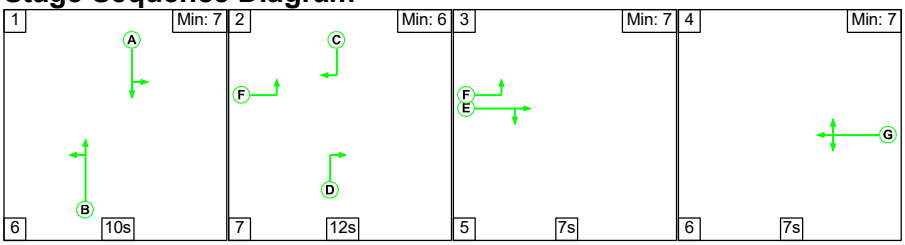
Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Wendene (N) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (Wendene (N) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
1/3 (Wendene (N) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
2/1 (Clover Hill Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
2/2 (Clover Hill Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
2/3 (Clover Hill Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
3/1 (Wendene (S) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
3/2 (Wendene (S) Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
3/3 (Wendene (S) Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (Chapel Break Road Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/2 (Chapel Break Road Lane 2)	This lane uses a directly entered Saturation Flow						1800	1800
4/3 (Chapel Break Road Lane 3)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Wendene (N) exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Clover Hill Rd - exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (Wendene (S) - exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

8/1 (Chapel Break Rd - exit Lane 1)	Infinite Saturation Flow	Inf	Inf

Scenario 4: '2028 Do Something' (FG4: '2028 Do Something Friday Daytime', Plan 1: 'All stages')

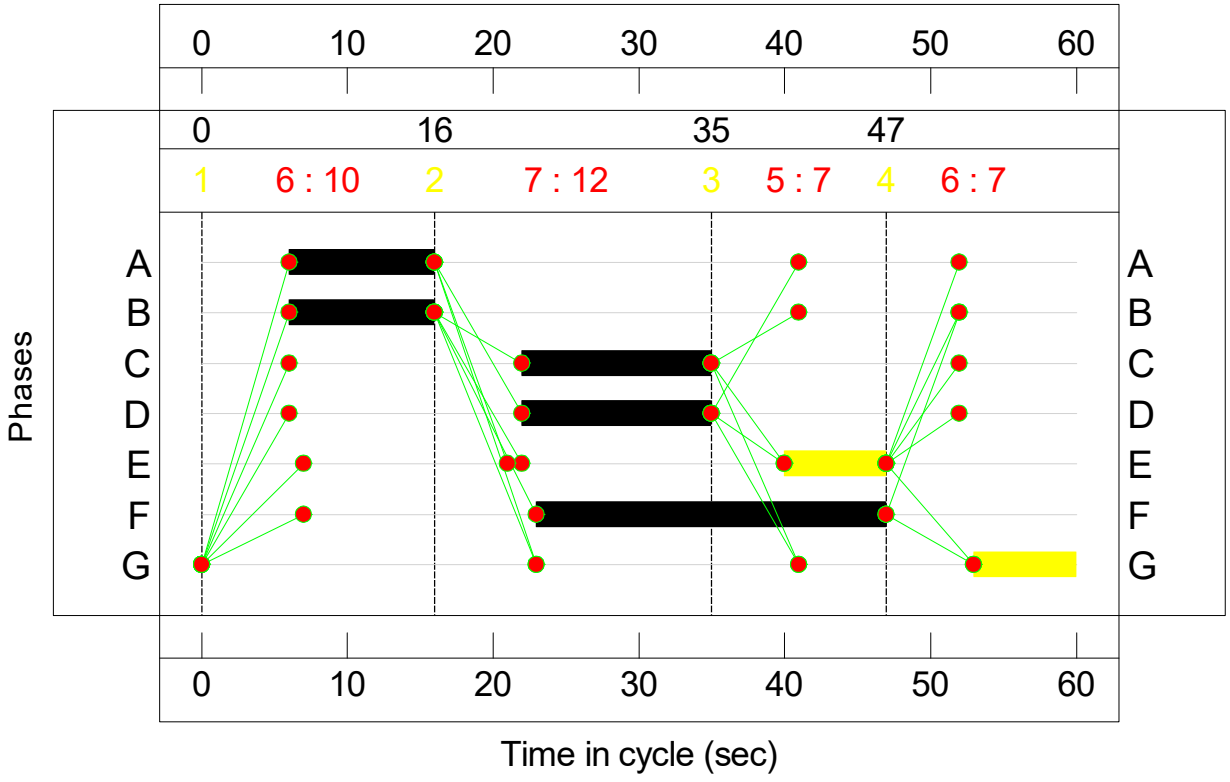
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	12	7	7
Change Point	0	16	35	47

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**83.8%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**83.8%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	10	-	274	1800	330	83.0%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	10:13	-	418	1800:1800	87+420	82.4 : 82.4%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	7	-	26	1800	240	10.8%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	7	-	276	1800:1800	90+240	83.8 : 83.8%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	10	-	41	1800	330	12.4%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	10:13	-	122	1800:1800	330+128	26.7 : 26.7%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	24	-	356	1800	750	47.5%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	133	1800:1800	240+204	30.8 : 28.9%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	645	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	382	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	157	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	462	Inf	Inf	0.0%

Full Input Data And Results

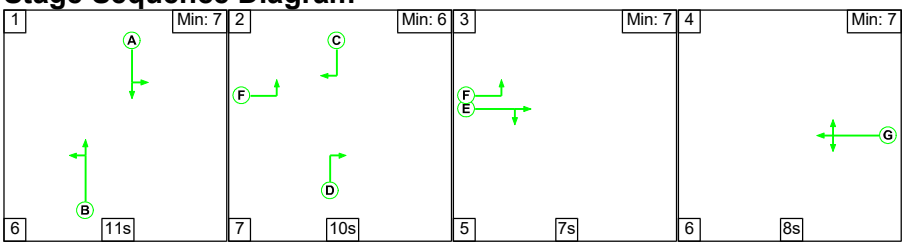
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**9.4**	**7.8**	**0.0**	**17.3**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**9.4**	**7.8**	**0.0**	**17.3**	**-**	**-**	**-**	**-**
1/1	274	274	-	-	-	1.8	2.3	-	4.1	53.3	4.3	2.3	6.6
1/2+1/3	418	418	-	-	-	2.5	2.2	-	4.7	40.8	5.4	2.2	7.6
2/1	26	26	-	-	-	0.2	0.1	-	0.2	31.4	0.4	0.1	0.4
2/2+2/3	276	276	-	-	-	1.9	2.4	-	4.3	55.8	3.2	2.4	5.6
3/1	41	41	-	-	-	0.2	0.1	-	0.3	26.7	0.6	0.1	0.6
3/2+3/3	122	122	-	-	-	0.7	0.2	-	0.9	25.6	1.2	0.2	1.4
4/1	356	356	-	-	-	1.3	0.5	-	1.7	17.3	4.3	0.5	4.7
4/2+4/3	133	133	-	-	-	0.9	0.2	-	1.1	29.2	1.1	0.2	1.3
5/1	645	645	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	382	382	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	157	157	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	462	462	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 7.5 Total Delay for Signalled Lanes (pcuHr): 17.27 Cycle Time (s): 60
PRC Over All Lanes (%): 7.5 Total Delay Over All Lanes(pcuHr): 17.27

Full Input Data And Results

Scenario 5: '2028 Do Something' (FG5: '2028 Do Something Friday PM', Plan 1: 'All stages')

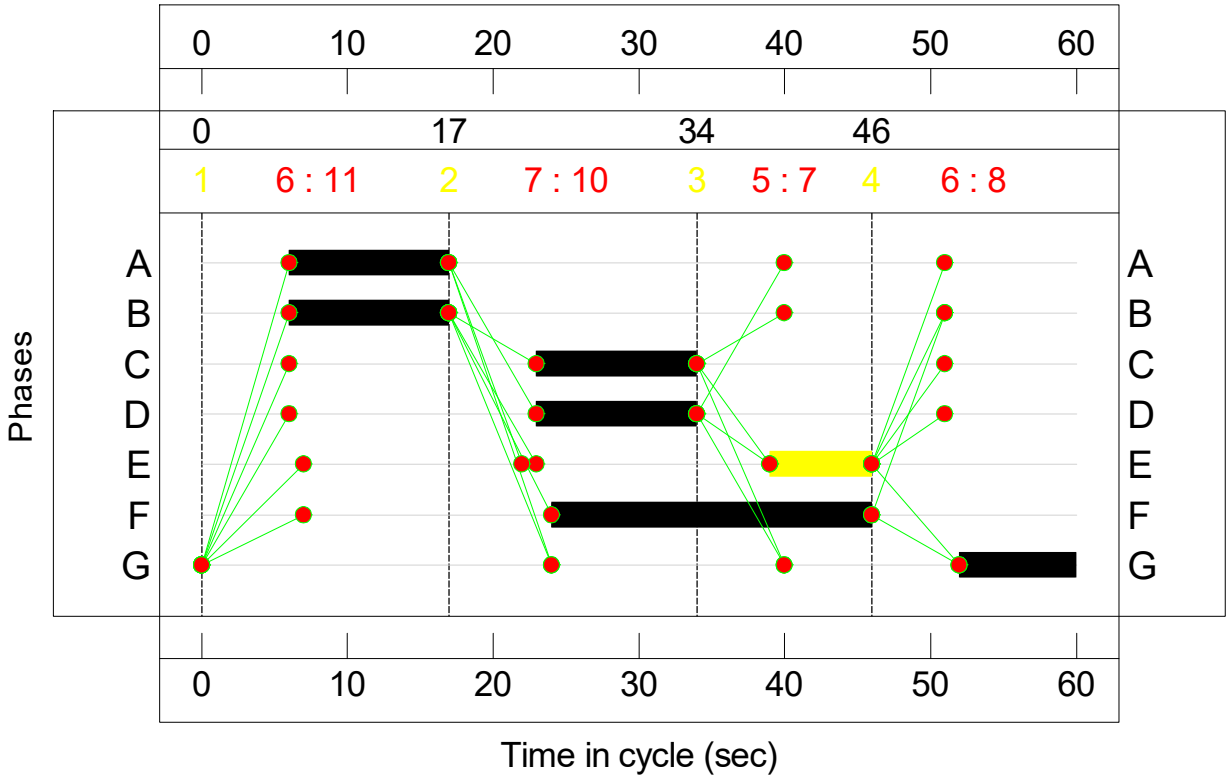
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	11	10	7	8
Change Point	0	17	34	46

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**73.7%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**73.7%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	11	-	246	1800	360	68.3%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	11	-	326	1800:1800	97+360	71.4 : 71.4%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	8	-	22	1800	270	8.1%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	8	-	222	1800:1800	31+270	73.7 : 73.7%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	11	-	56	1800	360	15.6%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	11	-	114	1800:1800	360+117	23.9 : 23.9%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	22	-	321	1800	690	46.5%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	87	1800:1800	217+240	18.0 : 20.0%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	606	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	313	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	139	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	336	Inf	Inf	0.0%

Full Input Data And Results

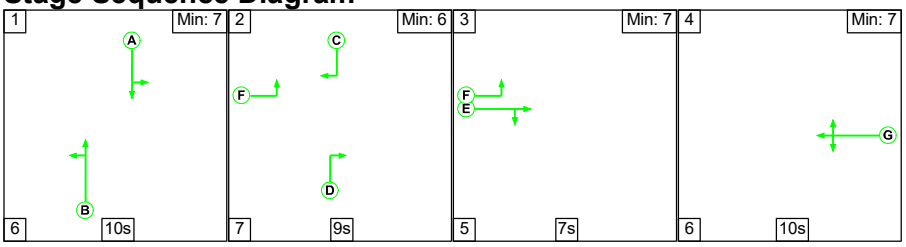
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**7.9**	**4.5**	**0.0**	**12.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.9**	**4.5**	**0.0**	**12.4**	**-**	**-**	**-**	**-**
1/1	246	246	-	-	-	1.5	1.1	-	2.6	37.8	3.8	1.1	4.8
1/2+1/3	326	326	-	-	-	2.0	1.2	-	3.2	35.4	3.9	1.2	5.2
2/1	22	22	-	-	-	0.1	0.0	-	0.2	29.4	0.3	0.0	0.4
2/2+2/3	222	222	-	-	-	1.5	1.4	-	2.8	46.1	3.2	1.4	4.5
3/1	56	56	-	-	-	0.3	0.1	-	0.4	25.8	0.8	0.1	0.9
3/2+3/3	114	114	-	-	-	0.6	0.2	-	0.8	25.0	1.2	0.2	1.4
4/1	321	321	-	-	-	1.2	0.4	-	1.7	18.8	4.0	0.4	4.4
4/2+4/3	87	87	-	-	-	0.6	0.1	-	0.7	28.0	0.7	0.1	0.8
5/1	606	606	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	313	313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	139	139	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	336	336	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 22.1 Total Delay for Signalled Lanes (pcuHr): 12.35 Cycle Time (s): 60
PRC Over All Lanes (%): 22.1 Total Delay Over All Lanes(pcuHr): 12.35

Full Input Data And Results

Scenario 6: '2028 Do Something' (FG6: '2028 Do Something Saturday', Plan 1: 'All stages')

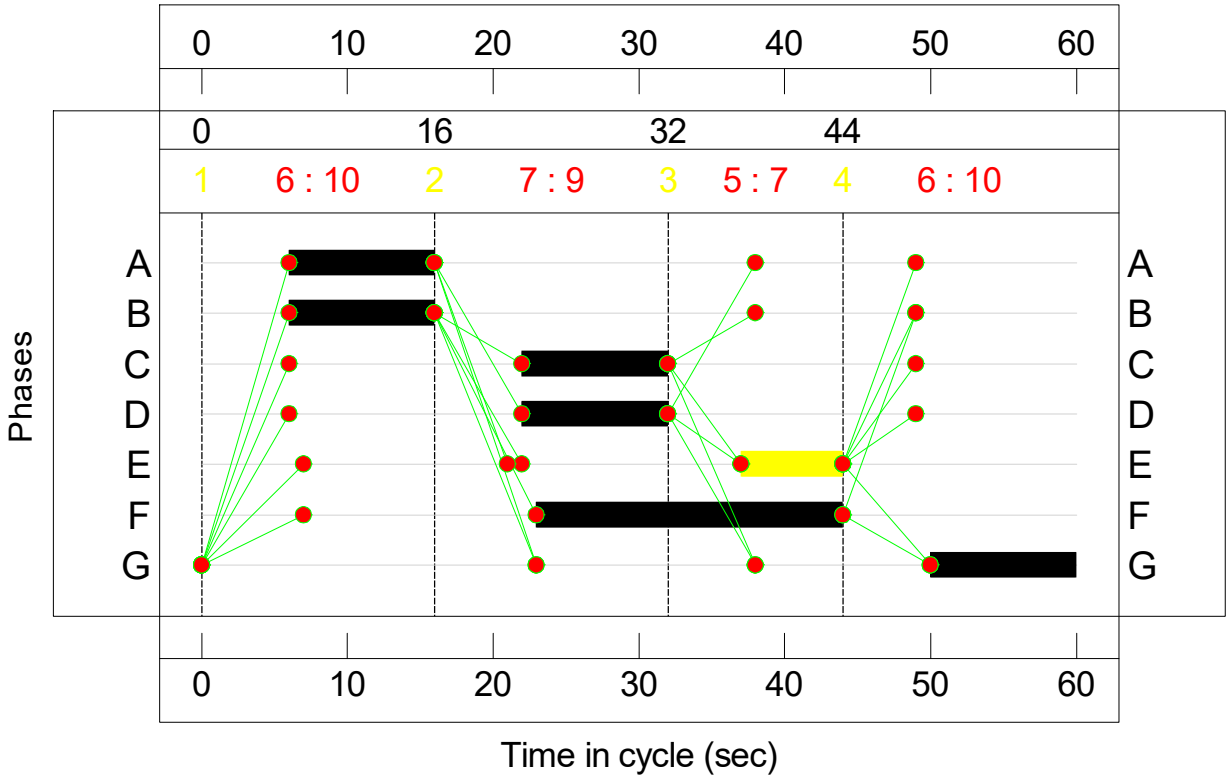
Stage Sequence Diagram



Stage Timings

Stage	1	2	3	4
Duration	10	9	7	10
Change Point	0	16	32	44

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**67.0%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**67.0%**
1/1	Wendene (N) Left	U	N/A	N/A	A		1	10	-	220	1800	330	66.7%
1/2+1/3	Wendene (N) Ahead Right	U	N/A	N/A	A C		1	10	-	325	1800:1800	161+330	64.5 : 67.0%
2/1	Clover Hill Road Left	U	N/A	N/A	G		1	10	-	21	1800	330	6.4%
2/2+2/3	Clover Hill Road Right Ahead	U	N/A	N/A	G		1	10	-	254	1800:1800	53+330	66.4 : 66.4%
3/1	Wendene (S) Left	U	N/A	N/A	B		1	10	-	50	1800	330	15.2%
3/2+3/3	Wendene (S) Ahead Right	U	N/A	N/A	B D		1	10	-	125	1800:1800	330+87	30.0 : 30.0%
4/1	Chapel Break Road Left	U	N/A	N/A	F		1	21	-	223	1800	660	33.8%
4/2+4/3	Chapel Break Road Ahead Right	U	N/A	N/A	E		1	7	-	82	1800:1800	111+240	23.3 : 23.3%
5/1	Wendene (N) exit	U	N/A	N/A	-		-	-	-	541	Inf	Inf	0.0%
6/1	Clover Hill Rd - exit	U	N/A	N/A	-		-	-	-	272	Inf	Inf	0.0%
7/1	Wendene (S) - exit	U	N/A	N/A	-		-	-	-	181	Inf	Inf	0.0%
8/1	Chapel Break Rd - exit	U	N/A	N/A	-		-	-	-	306	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**7.5**	**3.7**	**0.0**	**11.2**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**7.5**	**3.7**	**0.0**	**11.2**	**-**	**-**	**-**	**-**
1/1	220	220	-	-	-	1.4	1.0	-	2.4	38.9	3.4	1.0	4.3
1/2+1/3	325	325	-	-	-	2.0	1.0	-	3.0	33.0	3.4	1.0	4.3
2/1	21	21	-	-	-	0.1	0.0	-	0.2	26.2	0.3	0.0	0.3
2/2+2/3	254	254	-	-	-	1.6	1.0	-	2.6	36.2	3.3	1.0	4.3
3/1	50	50	-	-	-	0.3	0.1	-	0.4	27.1	0.7	0.1	0.8
3/2+3/3	125	125	-	-	-	0.7	0.2	-	0.9	27.2	1.4	0.2	1.6
4/1	223	223	-	-	-	0.9	0.3	-	1.1	17.9	2.7	0.3	2.9
4/2+4/3	82	82	-	-	-	0.5	0.2	-	0.7	29.9	0.8	0.2	1.0
5/1	541	541	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	272	272	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	181	181	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	306	306	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

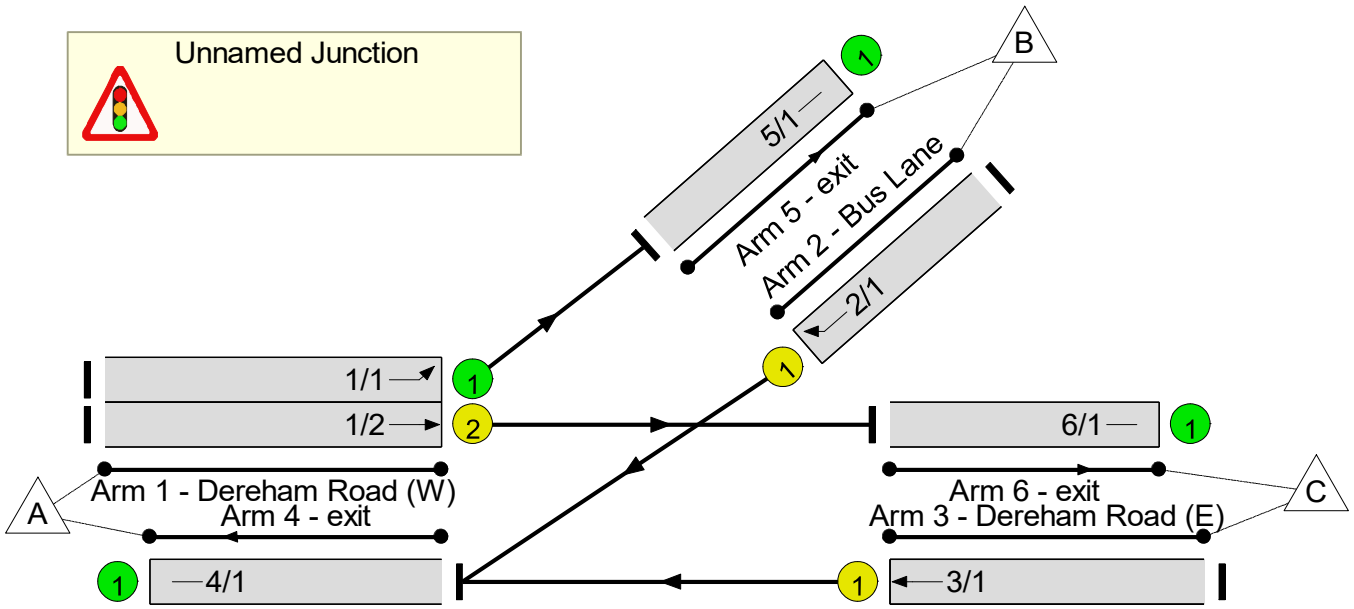
C1 PRC for Signalled Lanes (%): 34.4 Total Delay for Signalled Lanes (pcuHr): 11.17 Cycle Time (s): 60
PRC Over All Lanes (%): 34.4 Total Delay Over All Lanes(pcuHr): 11.17

Full Input Data And Results

User and Project Details

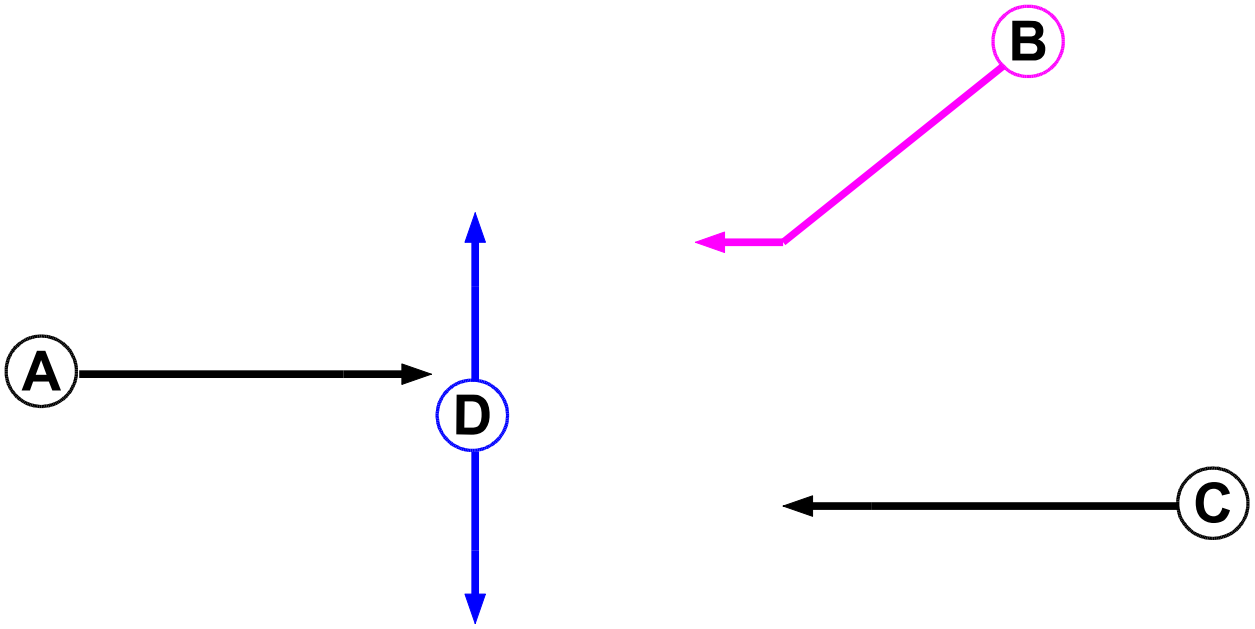
Project:	
Title:	
Location:	
Additional detail:	
File name:	TA_2028_Bus Bypass.lsg3x
Author:	
Company:	Focus Transport Planning Ltd.
Address:	Pentland House, Village Way, Wilmslow, Cheshire SK9 2GH

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Bus		7	7
C	Traffic		7	7
D	Pedestrian		8	8

Phase Intergreens Matrix

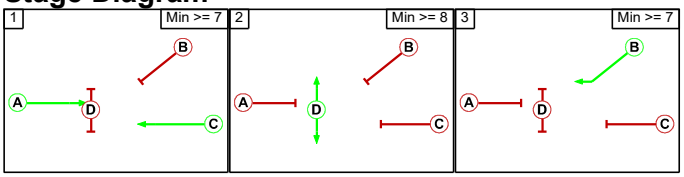
	Starting Phase				
Terminating Phase		A	B	C	D
	A		5	-	5
	B	5		5	7
	C	-	5		7
	D	8	8	8	

Phases in Stage

Stage No.	Phases in Stage
1	A C
2	D
3	B

Full Input Data And Results

Stage Diagram



Phase Delays

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

Prohibited Stage Change

	To Stage			
From Stage		1	2	3
	1		7	5
	2	8		8
	3	5	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Full Input Data And Results

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 (Dereham Road (W))	U		2	3	60.0	User	1800	-	-	-	-	-
1/2 (Dereham Road (W))	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Ahead	Inf
2/1 (Bus Lane)	U	B	2	3	60.0	Geom	-	3.10	0.00	Y	Arm 4 Ahead	Inf
3/1 (Dereham Road (E))	U	C	2	3	26.1	Geom	-	3.90	0.00	Y	Arm 4 Ahead	Inf
4/1 (exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
4: '2028 + Development - Friday Daytime'	14:45	15:45	01:00	

Scenario 10: '2028+Dev' (FG4: '2028 + Development - Friday Daytime', Plan 1: 'No bus call')

Traffic Flows, Desired

Desired Flow :

	Destination				
Origin		A	B	C	Tot.
	A	0	6	1033	1039
	B	6	0	0	6
	C	1135	0	0	1135
	Tot.	1141	6	1033	2180

Full Input Data And Results

Traffic Lane Flows

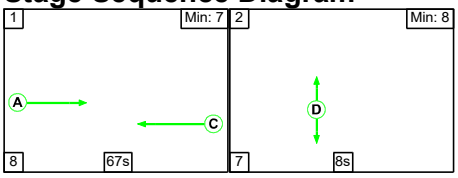
Lane	Scenario 10: 2028+Dev
Junction: Unnamed Junction	
1/1	6
1/2	1033
2/1	6
3/1	1135
4/1	1141
5/1	6
6/1	1033

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 (Dereham Road (W) Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
1/2 (Dereham Road (W))	3.00	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1915	1915
2/1 (Bus Lane)	3.10	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1925	1925
3/1 (Dereham Road (E))	3.90	0.00	Y	Arm 4 Ahead	Inf	100.0 %	2005	2005
4/1 (exit Lane 1)	Infinite Saturation Flow						Inf	Inf
5/1 (exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 10: '2028+Dev' (FG4: '2028 + Development - Friday Daytime', Plan 1: 'No bus call')

Stage Sequence Diagram

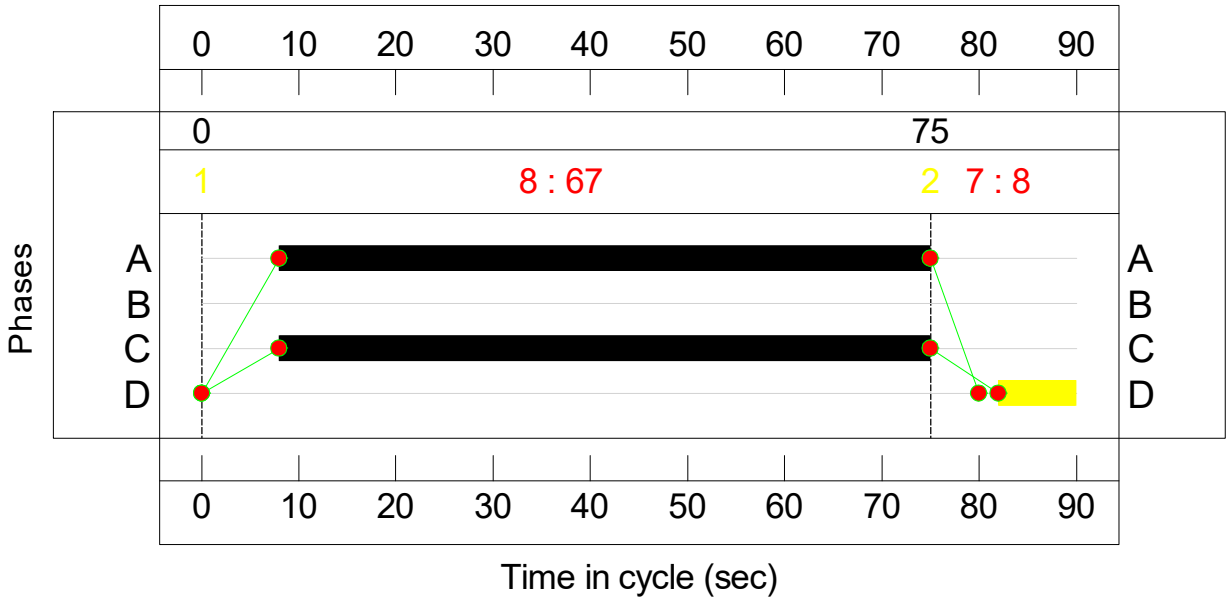


Stage Timings

Stage	1	2
Duration	67	8
Change Point	0	75

Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		1	67	-	1033	1915	1447	71.4%
2/1	Bus Lane Ahead	U	N/A	N/A	B		0	0	-	6	1925	0	Inf %
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		1	67	-	1135	2005	1515	74.9%
4/1	exit	U	N/A	N/A	-		-	-	-	1141	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1033	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**4.0**	**6.2**	**0.0**	**10.2**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**4.0**	**6.2**	**0.0**	**10.2**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1033	1033	-	-	-	1.7	1.2	-	2.9	10.2	13.5	1.2	14.7
2/1	6	0	-	-	-	0.4	3.4	-	3.8	2287.4	0.5	3.4	3.9
3/1	1135	1135	-	-	-	2.0	1.5	-	3.4	10.9	15.8	1.5	17.2
4/1	1135	1135	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1033	1033	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

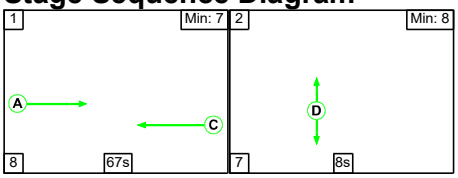
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-Inf	Total Delay for Signalled Lanes (pcuHr):	10.16	Cycle Time (s):	90	
	PRC Over All Lanes (%):	-Inf	Total Delay Over All Lanes(pcuHr):	10.17			

Full Input Data And Results

Scenario 11: '2028+Dev' (FG5: '2028 + Development - Friday PM', Plan 1: 'No bus call')

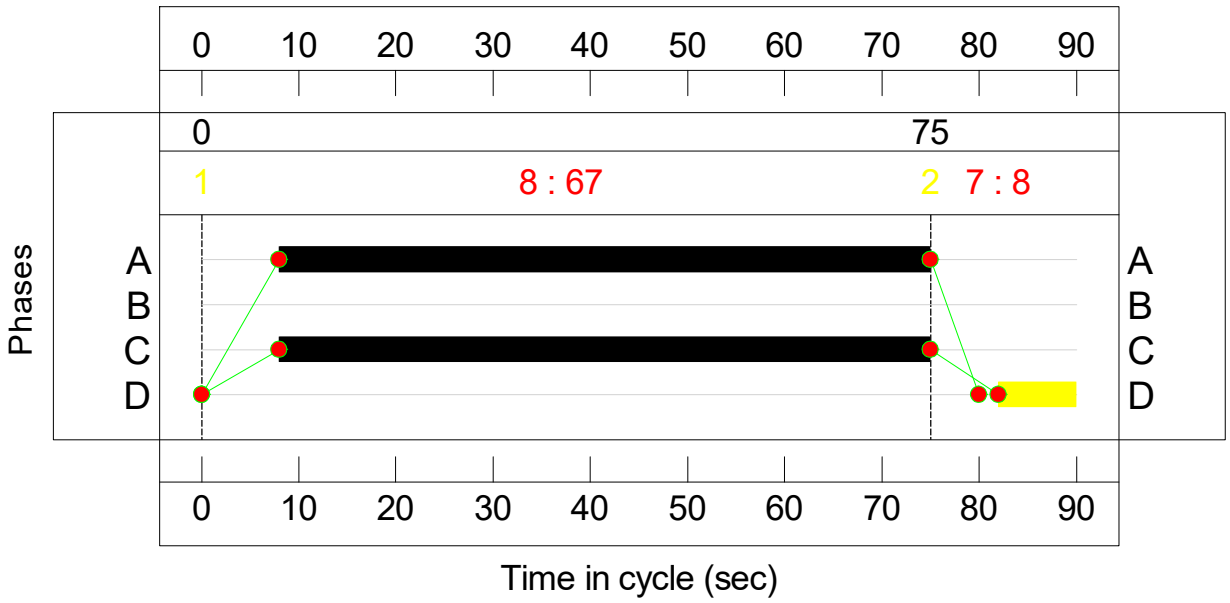
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	67	8
Change Point	0	75

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		1	67	-	1027	1915	1447	71.0%
2/1	Bus Lane Ahead	U	N/A	N/A	B		0	0	-	6	1925	0	Inf %
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		1	67	-	1245	2005	1515	82.2%
4/1	exit	U	N/A	N/A	-		-	-	-	1251	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1027	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**4.5**	**6.9**	**0.0**	**11.4**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**4.5**	**6.9**	**0.0**	**11.4**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1027	1027	-	-	-	1.7	1.2	-	2.9	10.1	13.4	1.2	14.6
2/1	6	0	-	-	-	0.4	3.4	-	3.8	2287.4	0.5	3.4	3.9
3/1	1245	1245	-	-	-	2.5	2.3	-	4.7	13.7	20.1	2.3	22.3
4/1	1245	1245	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1027	1027	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

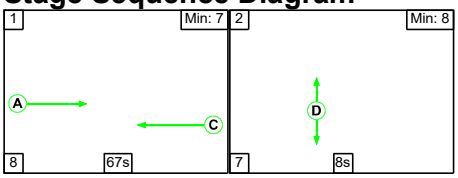
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-Inf	Total Delay for Signalled Lanes (pcuHr):	11.40	Cycle Time (s):	90
	PRC Over All Lanes (%):	-Inf	Total Delay Over All Lanes(pcuHr):	11.41		

Full Input Data And Results

Scenario 12: '2028+Dev' (FG6: '2028 + Development - Saturday', Plan 1: 'No bus call')

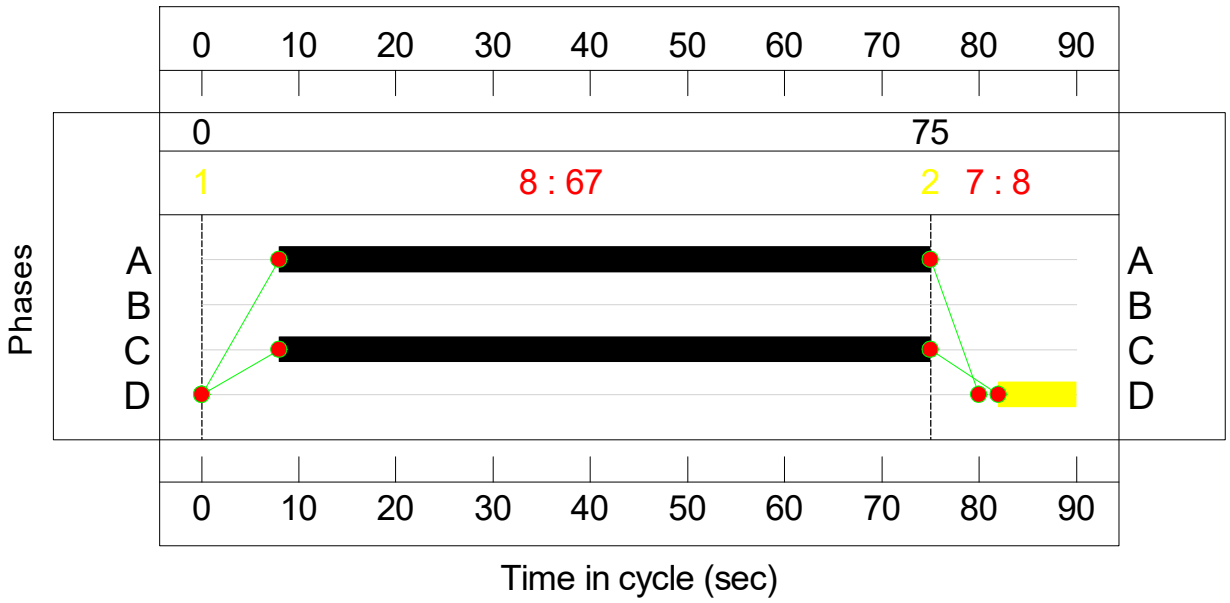
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	67	8
Change Point	0	75

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**Inf %**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		1	67	-	1029	1915	1447	71.1%
2/1	Bus Lane Ahead	U	N/A	N/A	B		0	0	-	6	1925	0	Inf %
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		1	67	-	1036	2005	1515	68.4%
4/1	exit	U	N/A	N/A	-		-	-	-	1042	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1029	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**3.6**	**5.7**	**0.0**	**9.4**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**3.6**	**5.7**	**0.0**	**9.4**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1029	1029	-	-	-	1.7	1.2	-	2.9	10.1	13.4	1.2	14.7
2/1	6	0	-	-	-	0.4	3.4	-	3.8	2287.4	0.5	3.4	3.9
3/1	1036	1036	-	-	-	1.6	1.1	-	2.7	9.3	13.0	1.1	14.0
4/1	1036	1036	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1029	1029	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

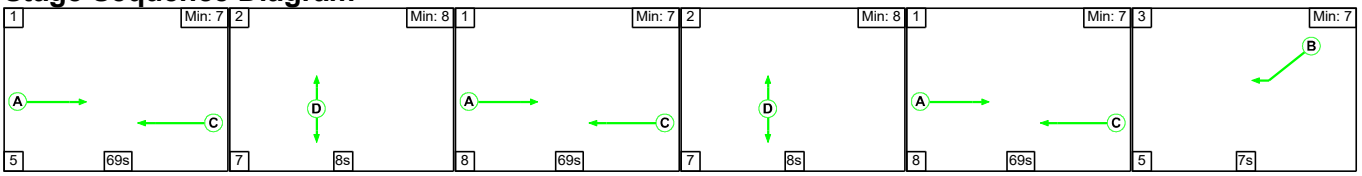
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	-Inf	Total Delay for Signalled Lanes (pcuHr):	9.38	Cycle Time (s):	90
	PRC Over All Lanes (%):	-Inf	Total Delay Over All Lanes(pcuHr):	9.38		

Full Input Data And Results

Scenario 13: '2028+Dev' (FG4: '2028 + Development - Friday Daytime', Plan 3: 'Bus instead of pedestrian')

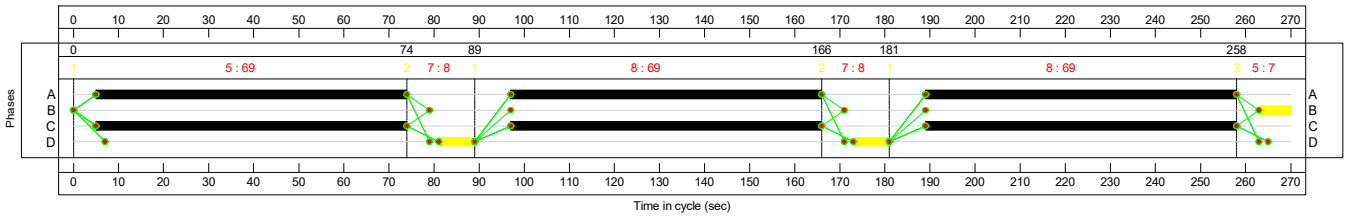
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	3
Duration	69	8	69	8	69	7
Change Point	0	74	89	166	181	258

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.8%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**72.8%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	207	-	1033	1915	1489	69.4%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	207	-	1135	2005	1559	72.8%
4/1	exit	U	N/A	N/A	-		-	-	-	1141	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1033	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**3.3**	**2.5**	**0.0**	**5.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**3.3**	**2.5**	**0.0**	**5.8**	**-**	**-**	**-**	**-**
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1033	1033	-	-	-	1.4	1.1	-	2.5	8.8	13.5	1.1	14.6
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1135	1135	-	-	-	1.6	1.3	-	3.0	9.4	15.8	1.3	17.1
4/1	1141	1141	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1033	1033	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

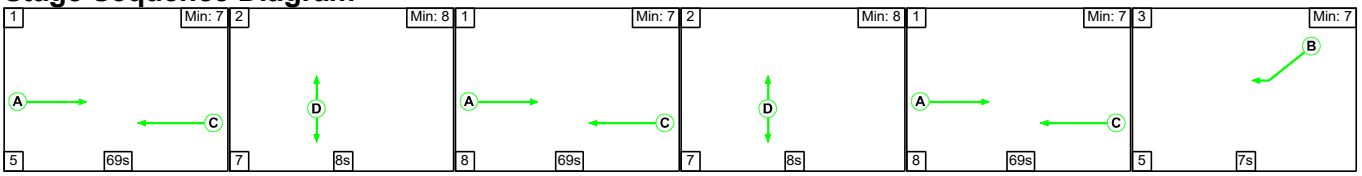
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	23.7	Total Delay for Signalled Lanes (pcuHr):	5.79	Cycle Time (s):	270
	PRC Over All Lanes (%):	23.7	Total Delay Over All Lanes(pcuHr):	5.79		

Full Input Data And Results

Scenario 14: '2028+Dev' (FG5: '2028 + Development - Friday PM', Plan 3: 'Bus instead of pedestrian')

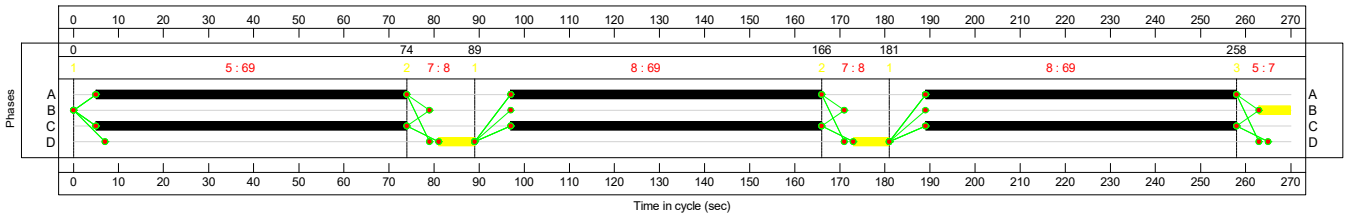
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	3
Duration	69	8	69	8	69	7
Change Point	0	74	89	166	181	258

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.8%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.8%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	207	-	1027	1915	1489	69.0%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	207	-	1245	2005	1559	79.8%
4/1	exit	U	N/A	N/A	-		-	-	-	1251	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1027	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**3.7**	**3.1**	**0.0**	**6.8**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**3.7**	**3.1**	**0.0**	**6.8**	**-**	**-**	**-**	**-**
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1027	1027	-	-	-	1.4	1.1	-	2.5	8.8	13.4	1.1	14.5
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1245	1245	-	-	-	2.1	2.0	-	4.0	11.6	20.1	2.0	22.0
4/1	1251	1251	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1027	1027	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

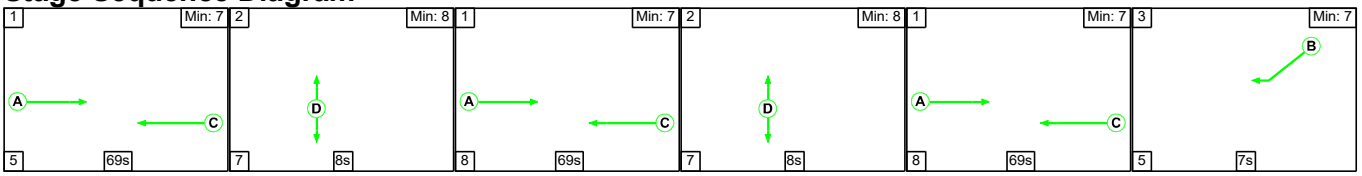
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	12.7	Total Delay for Signalled Lanes (pcuHr):	6.79	Cycle Time (s):	270
	PRC Over All Lanes (%):	12.7	Total Delay Over All Lanes(pcuHr):	6.80		

Full Input Data And Results

Scenario 15: '2028+Dev' (FG6: '2028 + Development - Saturday', Plan 3: 'Bus instead of pedestrian')

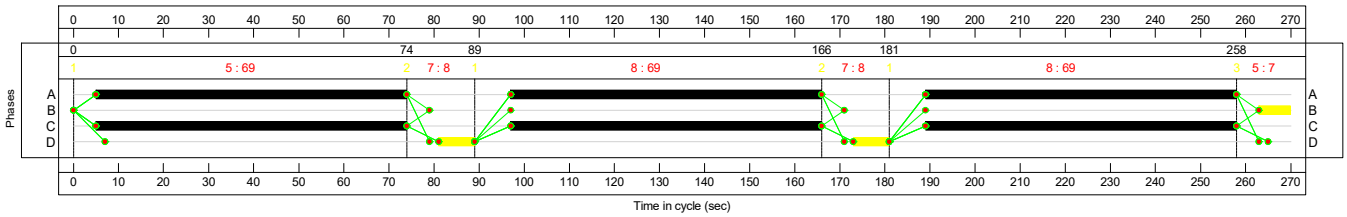
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	3
Duration	69	8	69	8	69	7
Change Point	0	74	89	166	181	258

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**69.1%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**69.1%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	207	-	1029	1915	1489	69.1%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	207	-	1036	2005	1559	66.4%
4/1	exit	U	N/A	N/A	-		-	-	-	1042	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1029	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**3.0**	**2.2**	**0.0**	**5.1**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**3.0**	**2.2**	**0.0**	**5.1**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1029	1029	-	-	-	1.4	1.1	-	2.5	8.8	13.4	1.1	14.5
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1036	1036	-	-	-	1.3	1.0	-	2.3	8.1	13.0	1.0	13.9
4/1	1042	1042	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1029	1029	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

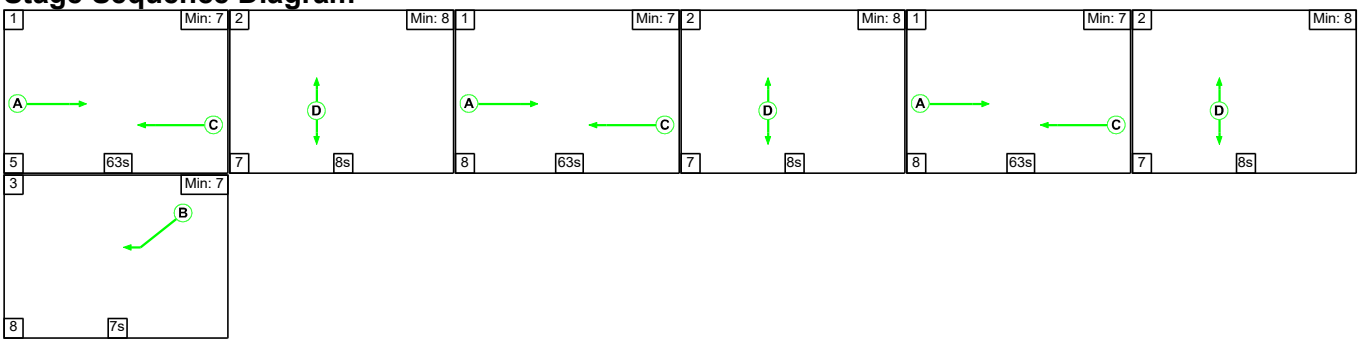
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	30.3	Total Delay for Signalled Lanes (pcuHr):	5.12	Cycle Time (s):	270
	PRC Over All Lanes (%):	30.3	Total Delay Over All Lanes(pcuHr):	5.12		

Full Input Data And Results

Scenario 16: '2028+Dev' (FG4: '2028 + Development - Friday Daytime', Plan 2: 'Worst Case bus after pedestrian')

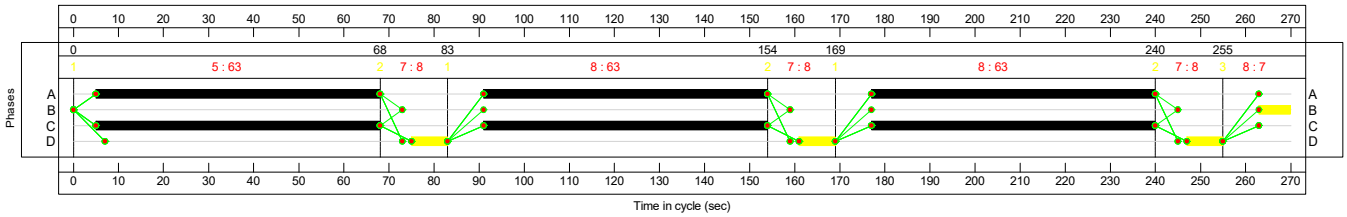
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	2	3
Duration	63	8	63	8	63	8	7
Change Point	0	68	83	154	169	240	255

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.6%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.6%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	189	-	1033	1915	1362	75.9%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	189	-	1135	2005	1426	79.6%
4/1	exit	U	N/A	N/A	-		-	-	-	1141	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1033	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**5.5**	**3.5**	**0.0**	**9.1**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**5.5**	**3.5**	**0.0**	**9.1**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1033	1033	-	-	-	2.5	1.6	-	4.0	14.0	20.9	1.6	22.5
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1135	1135	-	-	-	2.9	1.9	-	4.8	15.2	24.6	1.9	26.5
4/1	1141	1141	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1033	1033	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

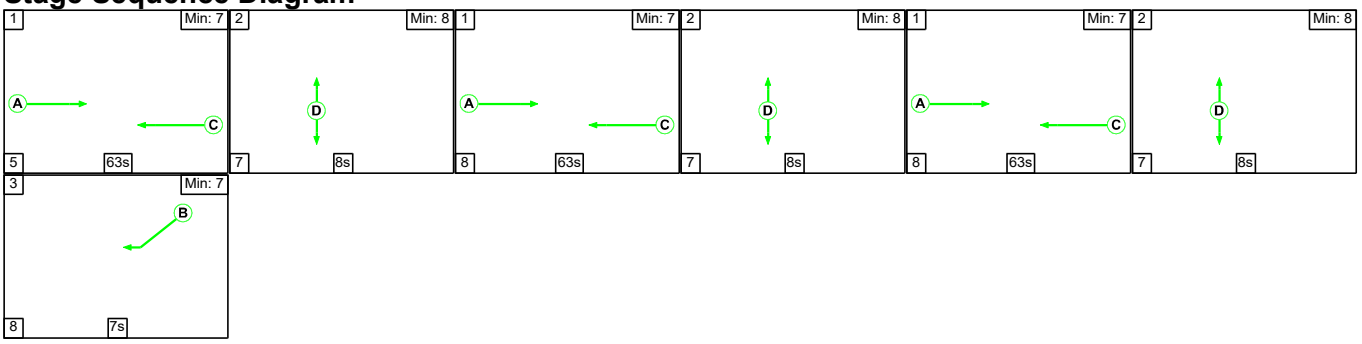
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	13.1	Total Delay for Signalled Lanes (pcuHr):	9.06	Cycle Time (s):	270
	PRC Over All Lanes (%):	13.1	Total Delay Over All Lanes(pcuHr):	9.06		

Full Input Data And Results

Scenario 17: '2028+Dev' (FG5: '2028 + Development - Friday PM', Plan 2: 'Worst Case bus after pedestrian')

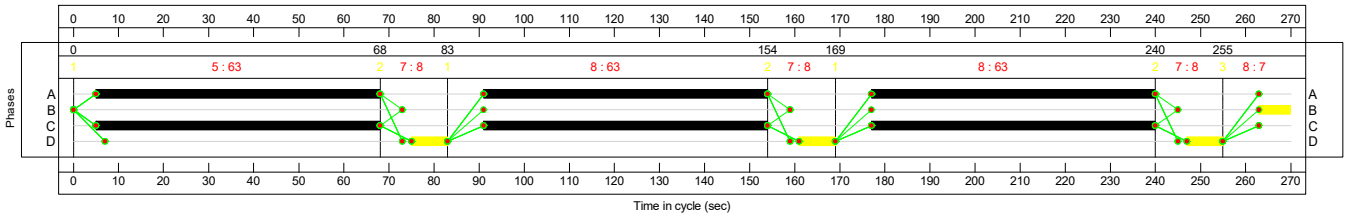
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	2	3
Duration	63	8	63	8	63	8	7
Change Point	0	68	83	154	169	240	255

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.3%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**87.3%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	189	-	1027	1915	1362	75.4%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	189	-	1245	2005	1426	87.3%
4/1	exit	U	N/A	N/A	-		-	-	-	1251	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1027	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**6.2**	**4.9**	**0.0**	**11.1**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**6.2**	**4.9**	**0.0**	**11.1**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1027	1027	-	-	-	2.4	1.5	-	3.9	13.8	20.8	1.5	22.3
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1245	1245	-	-	-	3.6	3.3	-	6.9	20.0	30.8	3.3	34.1
4/1	1251	1251	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1027	1027	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

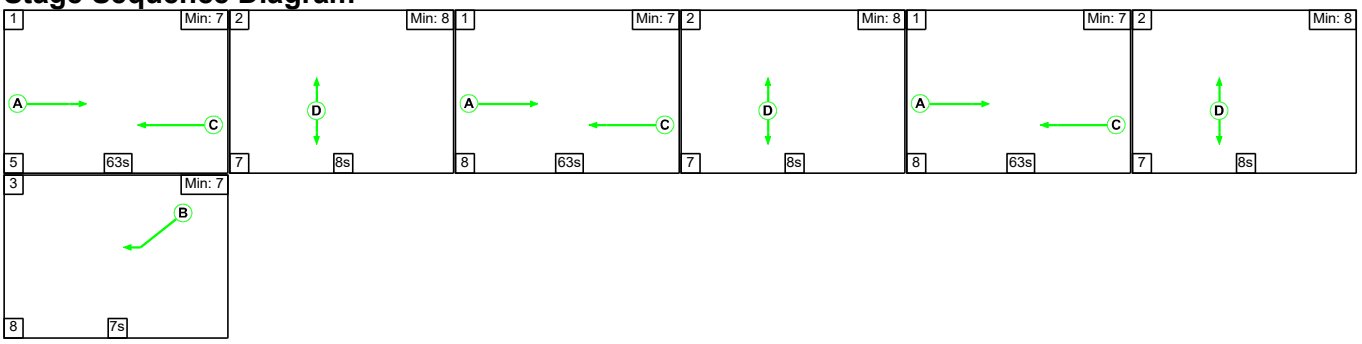
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	3.1	Total Delay for Signalled Lanes (pcuHr):	11.12	Cycle Time (s):	270
	PRC Over All Lanes (%):	3.1	Total Delay Over All Lanes(pcuHr):	11.12		

Full Input Data And Results

Scenario 18: '2028+Dev' (FG6: '2028 + Development - Saturday', Plan 2: 'Worst Case bus after pedestrian')

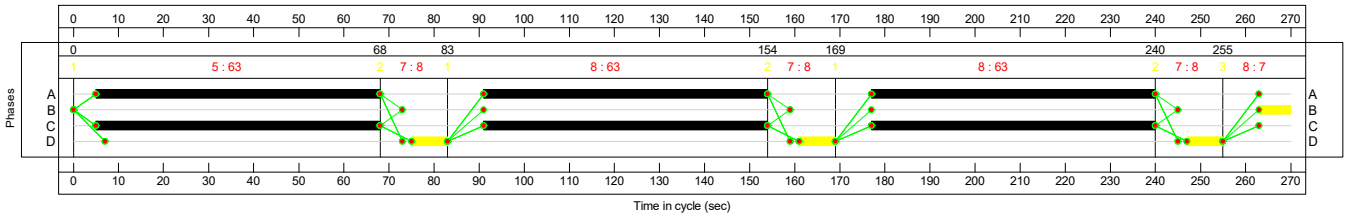
Stage Sequence Diagram



Stage Timings

Stage	1	2	1	2	1	2	3
Duration	63	8	63	8	63	8	7
Change Point	0	68	83	154	169	240	255

Signal Timings Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.6%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.6%**
1/1	Dereham Road (W) Ahead	U	N/A	N/A	-		-	-	-	6	1800	1800	0.3%
1/2	Dereham Road (W) Ahead	U	N/A	N/A	A		3	189	-	1029	1915	1362	75.6%
2/1	Bus Lane Ahead	U	N/A	N/A	B		1	7	-	6	1925	57	10.5%
3/1	Dereham Road (E) Ahead	U	N/A	N/A	C		3	189	-	1036	2005	1426	72.7%
4/1	exit	U	N/A	N/A	-		-	-	-	1042	Inf	Inf	0.0%
5/1	exit	U	N/A	N/A	-		-	-	-	6	Inf	Inf	0.0%
6/1	exit	U	N/A	N/A	-		-	-	-	1029	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**0**	**0**	**0**	**5.0**	**2.9**	**0.0**	**7.9**	-	-	-	-
Unnamed Junction	-	-	**0**	**0**	**0**	**5.0**	**2.9**	**0.0**	**7.9**	-	-	-	-
1/1	6	6	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
1/2	1029	1029	-	-	-	2.4	1.5	-	4.0	13.9	20.9	1.5	22.4
2/1	6	6	-	-	-	0.2	0.1	-	0.3	162.8	0.4	0.1	0.5
3/1	1036	1036	-	-	-	2.3	1.3	-	3.7	12.7	20.1	1.3	21.5
4/1	1042	1042	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	6	6	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1029	1029	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	19.1	Total Delay for Signalled Lanes (pcuHr):	7.90	Cycle Time (s):	270
	PRC Over All Lanes (%):	19.1	Total Delay Over All Lanes(pcuHr):	7.90		