Land at Hartnolls Farm, Tiverton

Transport Assessment

On behalf of **Waddeton Park Ltd.**

Project Ref: 332310088 | Rev: B | Date: July 2021

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Report Title: **Transport Assessment**

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For and on behalf of Stantec UK Limited				

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Contents

Figures

Drawings

Tables

Appendices

Figures

1 Introduction

1.1 Introduction

1.1.1 Stantec UK Ltd have been commissioned by Waddeton Park Ltd to produce a Transport Assessment (TA) in relation to a proposed mixed used development at Hartnolls Farm, Tiverton. It comprises of an extension to the existing business park for up to 3.9ha of new employment land and up to 150 residential units with associated access roads, open space and landscaping.

1.1.2 Further details of the residential and potential employment mix proposed is set out below:

- Up to 150 dwellings (30% of which will be affordable)
- 3,250m^2 of B1 employment land use
- 3,250m^2 of B2 employment land use
- 1,858m^2 of B8 employment land use
- 929m^2 of Gym / Leisure uses

1.1.3 The transport strategy outlined in this TA has been developed around a balanced and integrated package of measures. These seek to prioritise the use of alternative modes of travel to the private car, and therefore improve the sustainable nature of the development. The assessment will seek to determine whether the surrounding transport network is suitable to accommodate the trips associated with the proposed development in order to ensure that the site is accessible.

1.1.4 The TA has been produced in line with Planning Practice Guidance (PPG) on TAs and, as a result, will examine the sustainable modes of walking, cycling, and public transport and then consider the impact of the residual vehicular traffic.

1.1.5 The scope of this assessment has been discussed with the Local Highway Authority, Devon County Council (DCC) to establish the extent of assessment required to satisfy an outline planning application for the proposed site. A scoping note was produced which sets out the agreed approach to the assessment, and is included in **Appendix A**.

1.1.6 A Framework Travel Plan (TP) has also been prepared in support of the proposed development, in accordance with the agreed scope, and should be read in conjunction with this TA.

1.2 Aims of the Transport Assessment

1.2.1 The purpose of this TA is to demonstrate that:

- The development proposals generally conform with transport and planning policy and guidance
- The site is well located in respect of local facilities and amenities that can be accessed by sustainable modes of transport
- Appropriate access to the development can be achieved
- There are no transport reasons why the development proposals should not be approved.

1.3 Report Structure

1.3.1 This report is prepared to support the outline planning application for the development. In this respect, the TA is structured as follows:

- Chapter 2 – Sets the context of the proposed development in relation to local and national planning and transport policy / guidance
- Chapter 3 – Reviews the existing and committed transport conditions around the site including the local highway network, existing pedestrian, cycling, and public transport facilities. It also includes a review of highway safety near the site
- Chapter 4 – Sets out the emerging evidence on future travel trends
- Chapter 5 – Outlines the scope and scale of the proposed development, and details the accompanying transport strategy
- Chapter 6 – Forecasts the trip generation potential of the proposed development by all modes of transport
- Chapter 7 – Assesses the forecast residual transport impacts of the proposed development on the local highway network
- Chapter 8 – Provides a conclusion to the Assessment.

2 Review of Transport and Planning Policy and Guidance

2.1 Introduction

2.1.1 Stantec appreciates that the transportation elements of the planning application submission need to be undertaken in a consistent manner to take account of the other development proposals, policy background, and the strategy for development within Mid Devon. It is therefore important that the development generally accords with all appropriate national and local transport policy. Policy and guidance documents relevant to this site are outlined and reviewed in this chapter.

2.2 National Planning Policy and Guidance

National Planning Policy Framework (2021)

2.2.1 The revised National Planning Policy Framework (NPPF) came into force in July 2021 and replaced the 2019 edition of the NPPF. The presumption in favour of sustainable development remains the core objective of the NPPF (paragraph 10 states that "*so that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development*").

2.2.2 To promote sustainable transport, paragraph 110 states that "*in assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*

- *appropriate* opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
- safe and sustainable access to the site can be achieved for all users; and
- 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."

2.2.3 Additionally, paragraph 113 of the NPPF states "*all development that 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.*"

2.2.4 In Section 9 'Promoting sustainable transport', paragraph 104 states that "*transport issues should be considered from the earliest stages of plan-making and development proposals, so that:*

- *the potential* impacts of development on transport networks can be addressed;
- *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;
- opportunities to promote walking, cycling and public transport use are identified and pursued;

- 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

- *patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places".*

2.2.5 Paragraph 111 of the NPPF states "*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*."

Planning Practice Guidance (2014)

2.2.6 The Government launched its Planning Practice Guidance (PPG) on 6th March 2014. The associated website brings together many areas of English planning guidance into a new format, linked to the NPPF. The PPG includes a '*travel plans, transport assessments and statements in decision-taking*' section which is designed to assist in the screening and scoping of TAs, as well as detail the potential to positively contribute to the encouragement of sustainable travel.

2.2.7 In connection with Paragraph 111 of the NPPF which sets out that all developments that generate significant amounts of transport movement should be supported by a transport statement or TA, local planning authorities must make a judgement as to whether the development proposal would generate significant amounts of movement on a case-by-case basis. This significance may be a lower threshold where road capacity is already stretched or a higher threshold for a development in an area of high public transport accessibility.

2.2.8 The PPG confirms that the scope and level of detail for TAs will also vary from site to site. In general, it confirms that assessments should be based on normal traffic flow and usage conditions, but consideration should be given for local forecasts and committed developments and potential growth within the study area.

2.3 Local Policy

Tiverton Eastern Urban Extension

2.3.1 The Tiverton Eastern Urban Extension (EUE) will comprise the main growth area for the town over the coming years. The eastern extent of the land allocated for the EUE abuts the western boundary of the proposed development at Hartnoll Farm, with Manley Lane running between the two. A concept masterplan for the EUE is included in **Appendix B**. The Tiverton EUE Masterplan SPD was adopted in June 2018 and comprises of an area totalling 153 hectares and includes the following proposals:

- 1,580 to 1,830 dwellings

- A proportion of affordable dwellings subject to further assessment of viability to include at least five pitches for gypsies and travellers

- At least 30,000 square metres commercial floorspace

- 47 hectares strategic green infrastructure

- Highway mitigation measures and transport provision to ensure appropriate accessibility for all modes

- Environmental protection and enhancement

- Community facilities to meet local needs arising, including a new primary school and neighbourhood centre
- An agreed strategy to bring forward development and infrastructure in step and retain the overall viability of development
- Compliance with the adopted masterplan and completion of a public Masterplanning exercise in respect of the southeast of the site (Area B in the adopted masterplan).

2.3.2 To Support the Tiverton EUE the following transport infrastructure will be provided:

- Provision of a new grade-separated junction to the A361 and road links to the existing highway network
- Traffic calming and environmental enhancement between Heathcoat Way and Putson Lane, including Blundell's Road;
- Provision of bus, pedestrian and cycle routes at appropriate locations throughout the development, creating an attractive, permeable network for non-car modes travelling within, into and out of the area;
- Cycle and pedestrian links to the Railway Walk, Grand Western Canal and nearby public rights of way;
- Implementation of Travel Plans and other non-traditional transport measures to minimise carbon footprint and air quality impacts;
- Bus service enhancements between the main residential areas of Tiverton and the employment areas within the Eastern Urban Extension;
- Bus service enhancements between Exeter, Tiverton Bus Station, the Eastern Urban Extension and Tiverton Parkway Station; and
- New and improved offsite pedestrian and cycle links including improvements to a wider green infrastructure network.

2.3.3 The provision of appropriate transport infrastructure is a key requirement of the urban extension, minimising impact on adjoining uses and promoting sustainable development. A direct access to the A361 will ensure that the site is both attractive for employment growth and minimises the impact of traffic on other surrounding routes. The new junction is to be provided early in the development, along with improvements to Blundell's Road and traffic calming measures to ensure a safe environment for all users of the highway and adjacent land.

2.3.4 The development will be served by an attractive, convenient and safe network of sustainable transport routes and streets appropriate for bus use will be provided with all buildings are within 400 metres of a bus route. Cyclists will have safe, attractive and direct cycle routes within the urban extension, linking together the dwellings, businesses and services in a network, linking to existing cycling and walking provision in the surrounding area.

2.3.5 As the largest of Mid Devon's towns, Tiverton is a sustainable location for development to meet the housing and employment needs of a growing population.

Mid Devon Local Plan 2013-2033

2.3.6 The Mid Devon Local Plan was formally adopted by Mid Devon District Council (MDDC) in July 2020. The plan seeks to help achieve sustainable development and sets out the strategic policies for development, identifies sites for housing, employment, infrastructure and

environmental protection and provides general policies on matters such as the design of development. The Mid Devon Local plan also includes details of the Tiverton EUE as described above. The following therefore sets out relevant details of the Mid Devon Local Plan aside from the policies associated with the EUE.

2.3.7 MDDC will use their planning and related powers to achieve four core objectives:

- Promote community wellbeing
- Support sustainable economic success
- Conserve and enhance the area
- Respect environmental limits

2.3.8 In relation to transport, to achieve the vision MDDC will manage development through their Spatial Strategy, which seeks to:

- Reduce the need to travel by car, increasing the potential of public transport, cycling and walking
- Reduce carbon emissions in support of national targets
- Promote social inclusion and reduce inequalities by enhancing access for all to employment, services and housing

2.3.9 **Policy S1 Sustainable Development** sets out strategic sustainable development priorities needed to achieve the Vision. The most relevant priorities are set out below:

- Promoting sustainable transport by delivering appropriate infrastructure, reducing the need to travel by car, integrating public transport and other forms of sustainable travel such as walking and cycling, and providing safe environments while recognising Mid Devon's rural locality;
- Promoting healthy communities through the delivery of social, educational, recreational and cultural facilities and services, access to high quality open space, public rights of way, recreational trails, accessible land and other green infrastructure, and opportunities for sport and recreation and the designation of Local Green Space;
- Meeting the challenge of climate change by supporting a low carbon future, energy efficiency, increasing the use and supply of renewable and low carbon energy, managing flood risk and conserving natural resources. Encourage the effective use of land, taking into account the economic and other benefits of the best and most versatile agricultural land;

2.3.10 **Policy S10 Tiverton** sets out the development plans for Tiverton, aiming to maintain its status as the largest urban area in Mid Devon and increase the self-sufficiency of the town and its area by improving access to housing, employment and services for its population and that of the surrounding rural areas. Proposals will provide for approximately 2,358 dwellings, of which 660 will be affordable, and 29,400 gross square metres of commercial floor space over the plan period.

2.3.11 **Policy DM5 Parking** states "development must provide an appropriate level of parking, taking into account:

- The accessibility of the site, including the availability of public transport; and

- The type, mix and use of development.

2.3.12 Design must enable and encourage the maximum use of sustainable modes of transport, including provision for cyclists and low-emission vehicles. Within the towns of Tiverton, Cullompton and Crediton, infrastructure for electric vehicles should be built into development. The Council will seek parking provision and electric vehicle infrastructure according to the following standards, the variation of which must be justified on a case-by-case basis."

2.3.13 The relevant parking standards are set out in **Table 2.1** below.

Use Class	Description	Location	Min Car Parking Standard	Minimum Cycle Parking Standard	Electric Vehicle Infrastructure
C3, C4	Dwellings	General	1.7 per dwelling	1 or 2 beds – 2 per dwelling 3+ beds – 4 per dwelling	1 charging point per 10 units
B1, B2	Business and General Industry	General	1 per 30sqm GFA	1 per 300 sqm FGA	2 charging points per 200 sqm FGA
B8	Warehousing and Distribution	General	1 per 46.5 sqm GFA	1 per 46.5 sqm FGA	2 charging points per 10 parking spaces

Table 2.1: Mid Devon Parking Standards

Local Transport Plan: Devon and Torbay Strategy 2011-2026

2.3.14 Devon County Council and Torbay Council have produced a third Local Transport Plan (LPT3) covering the 2011 to 2026 period.

2.3.15 The two local authorities have set out a long-term strategy for economic growth and reducing carbon emissions. The transport vision, included within the LPT3, is that:

2.3.16 "Devon & Torbay's transport system will offer business, communities and individuals safe and sustainable travel choices. The transport system will help to deliver a low carbon future, a successful economy and a prosperous, healthy population living in an attractive environment."

2.3.17 The plan has five overarching key objectives:

a. Deliver and support new development and economic growth

b. Make best use of the transport network and protect the existing transport asset by prioritising maintenance

c. Work with communities to provide a safe, sustainable and low carbon transport choices

d. Strengthen and improve the public transport network

e. Make Devon the 'Place to be naturally active'

2.4 Conclusion

2.4.1 A full review has been undertaken to identify the national and local transport and planning policies / guidance documents that are most applicable to the proposed development. The remainder of this report will demonstrate that the proposed development scheme is compliant with current national and local policy.

3 Baseline Transport Conditions

3.1 Introduction

3.1.1 This section provides details of the site's location in relation to local facilities and amenities and sets out the local transport conditions for all modes, including available infrastructure and opportunities for travelling on foot, by bike, by public transport and by car.

3.1.2 This section also includes a review of the Personal Injury Collision data from a study area in the vicinity of the site as well as a summary of the baseline traffic surveys undertaken in June 2021.

3.2 Site Location

3.2.1 The site is located on the south eastern edge of an existing residential area known as Post Hill. It is situated approximately three kilometres to the east of Tiverton, which is the main commercial and administrative centre of the Mid Devon District, and 1.5km to the west of the village of Halberton. The site is currently agricultural land and is adjacent to an existing industrial estate known as Hartnoll Business Centre. The site is bound by Manley Lane to the west, agricultural land to the south and Post Hill to the north, which provides local accessibility into Tiverton town centre.

3.2.2 Access is proposed to be achieved via Post Hill, a road which runs along a predominantly east-west alignment connecting Tiverton to Willand. Manley Lane, which forms the western boundary of the site, also forms the eastern extent of the land allocated for the Tiverton EUE which comprises a large-scale mixed-use development with residential, commercial and ancillary uses. The Tiverton EUE Masterplan SPD was adopted in June 2018 and includes the delivery of an all-movement grade separated junction onto the A361.

3.2.3 A site location plan is provided in **Figure 3-1** whilst further details of the local facilities, services and amenities are illustrated in **Figure 3.2.**

3.3 Pedestrian and Cycling Accessibility

3.3.1 A footway exists on the southern side of the Post Hill carriageway from Manley Lane westwards through the adjacent residential neighbourhood. A footway is also present on the northern side of the carriageway up to a point 150m west of the Manley Lane junction. Fairway and Mayfair, local residential cul-de-sacs, connect to Post Hill in the vicinity and include footways and dropped kerbs to facilitate local pedestrian movements. A section of the local footway network is shown in **Figure 3-3** below:

Figure 3.3: Local Pedestrian Facilities

3.3.2 To the east of the existing Hartnoll Business Centre access on Post Hill there is no formal pedestrian or cycle infrastructure and no street lighting.

3.3.3 Manley Lane borders the western edge of the site and connects to Post Hill to the west of the existing Hartnoll Business Centre access junction. Manley Lane is a narrow rural lane with no formal pedestrian or cycle infrastructure, although it does provide access to National Cycle Route (NCR) 3 which bisects the road in an east / west alignment approximately 300m south of the site. NCR3 is a long distance, signed cycle route that connects Bristol with Land's End. Locally, NCR3 runs west into Tiverton, dissecting what will be the southern portion of the Tiverton EUE via an off-road cycleway and joins Old Road, south of the Blundells Road Roundabout.

3.3.4 The Grand Western Canal is also located a further 200m south of NCR3. The adjacent canal path offers a high-quality and direct leisure route to Tiverton Town Centre to the west, albeit this route is unsurfaced and unlit.

3.3.5 Most of Tiverton is located within 5km of the site and given the existing cycling facilities available as described above, cycling is considered to be a genuine alternative option to the private car for many journeys made to and from the site.

3.3.6 In addition, E- bikes have shown considerable growth globally and in the UK. E-bikes offer a longer range and increased distance travelled by bike, whilst also encouraging new users and less mobile people to cycle. The '*Transportation Research Interdisciplinary Perspectives*' report, which is based on data from an online survey in seven European cities, stated that E-bikers reported significantly longer trip distances for both e-bike (9.4 km) and bicycle trips (8.4

km) compared to cyclists for bicycle trips (4.8 km), as well as longer daily travel distances for e-bikers than cyclists for bicycle (8.0 vs. 5.3 km per person, per day, respectively).

3.3.7 The location of the facilities described above are illustrated in **Figure 3.2.**

3.4 Public Transport Accessibility

Bus Services

3.4.1 The nearest bus stops to the site are located on Post Hill, approximately 200m west of the existing Hartnoll Business Centre access. Whilst it is acknowledged that these stops are located more than 400m from some areas of the site, the proposed development includes the provision of new bus stops on Post Hill adjacent to the northern boundary of the site, described in more detail in Chapter 4. It is envisaged that these new stops would be served by the same services as the existing Post Hill stops.

3.4.2 A summary of the destinations accessible by bus from the existing Post Hill bus stops and the current frequency of services is presented in **Table 3.1**. It should be noted that many public transport providers have reduced the frequency of services during the COVID-19 pandemic period. At the time of writing (July 2021), limited travel restrictions were in place in the Mid Devon area and so the level of service that is currently operational is considered to be 'normal'. There are no indications from these public transport providers that this is not the case or that there are any plans to increase frequency or enhance services beyond what is currently offered.

Bus No.	Operator	Route	Frequency		
			Weekday Frequency	Saturday Frequency	Sunday Frequency
1	Stagecoach	Tiverton Bus Station - Exeter Bus Station	Hourly	Hourly	Every 2 hours
1A		Exeter Bus Station - Tiverton Bus Station	Hourly	Hourly	No Service
22	First Buses	Taunton - Tiverton	Every 3 Hours	Every 3 hours	No service

Table 3-1: Summary of Local Bus Services

3.4.3 The first bus to Tiverton Town centre from these stops is at 07:37, provided by the Number 1 service, whilst the last eastbound service is at 18:57, with journey times of approximately 8 minutes. The first eastbound service from these stops to Tiverton Parkway Station is at 06:21 and the last returning service is at 19:51, which would offer longer distance commuters to make journeys from the site via a combination of bus and train. Further details of the rail services available from the station are set out in the following section.

3.4.4 In addition, the EUE Masterplan SPD includes the enhancement of bus services along Blundells Road / Post Hill, for routes between Tiverton Town Centre and Tiverton Parkway. Whilst the exact nature of these services is not yet known, it is highly likely that future residents and employees of the sites will benefit from these enhanced services once they are operational, further improving the public transport accessibility of the site.

3.4.5 These timings of the existing services and potential enhancements are therefore considered to offer a genuine opportunity for commuting to and from the site by public transport, as well as a range of other journey purposes.

Rail Services

3.4.6 The nearest railway station to the site is Tiverton Parkway, located approximately 6.5km east of the proposed development site. The station is served by half hourly services to London Paddington via Taunton and Reading. Journey times to London Paddington are approximately 2 hours. The station is also served by hourly services to Bristol Temple Meads, Cardiff and Birmingham, whilst half hourly services also run to Penzance via Exeter St Davids. The journey time to Exeter is approximately 15 minutes.

3.4.7 The Number 1bus service stops at the railway station every hour, which provides future residents and employees with an opportunity to travel longer distances using a combination of the regular bus and train services directly from the site.

3.4.8 Tiverton Parkway benefits from having 70 cycle parking spaces covered by CCTV, a 453-space car park and a taxi rank available at the station entrance. The station also has a ticket office, step free access and accessible ticket machines, customer help points, toilets, a hot food takeaway / café, waiting rooms and WiFi. Tiverton Parkway provides sustainable alternative to private cars for travelling to further afield destinations, via bus-train or cycle-train linked journeys.

3.4.9 **Figure 3-2** illustrates the public transport routes and services in the vicinity of the site.

3.5 Accessibility to Local Facilities and Amenities

3.5.1 There are a wide variety of local facilities accessible from the site. A summary of these facilities is provided in **Table 3.2** and also illustrated in **Figure 3.2.**

Type of Amenity	Name	Approx. Distance from Centre of Site (km)
Food and Drink	The Hickory Inn	2.3km
	Canal Tea Rooms & Garden	3.1km
	Pho Nam	3.5km
	McDonalds	3.6km
Grocery Shops	Halberton Court Farm Shop	1.5km
	Tesco Superstore	3.2km
	Lidl	3.3km
Medical / Dental Facilities	Tiverton Dental Centre	4km
	Clare House Surgery	4.1km
	Lloyds Pharmacy	4.2km
	Tiverton and District Hospital	5.5km
Employment / Retail and Services	Hartnoll Business Centre	On Site
	Tiverton Business Park	3.6km
	Tiverton Town Centre	4.0km
	Woodward Road Industrial Park	4.5km
	Mid Devon Business Park	5.7km
Education	Blundells Preparatory School	1.6km
	Halberton Pre School	1.6km
	Halberton Primary School	1.7km
	Blundells School	2.1km
	Tiverton High School	4.9km
	Petroc College (Mid Devon Campus)	5.0km
Leisure and Recreation	Hartnoll Fitness Hub	On Site
	Tiverton Golf Club	300m
	Great Western Canal Nature Reserve	2.0km
	Great Western Canal Country Park	3.6km
	Exe Valley Leisure Centre	4.7km
Facilities proposed as part of the EUE	**Proposed Primary School**	**900m**
	Proposed Local / Neighbourhood Centre	**900m**
	Proposed sports facilities	**900m**
	Proposed Employment	**1.2km**

Table 3.2: Summary of Local Facilities and Amenities

3.5.3 The above Table shows that most of the facilities and amenities are within the recommended 5k cycling distance from the site. In addition, many facilities are also located within 2km of the site. This means that using a combination of walking, cycling and public transport modes, the future residents, employees and visitors to the site will be able to access many local facilities in the area without the need for a private car.

3.5.4 It is important to note that the facilities proposed as part of the EUE development (highlighted above), once delivered, will also be within a 2-kilometre walking distance from the site, thereby providing future residents and employees with additional services and amenities in the immediate vicinity of the site.

3.6 Accessibility by Walking and Cycling

3.6.1 In considering the proximity of key facilities and amenities with regards to walking distances, the most recent transport statistics are set out within the DfT's *'National Travel Survey: 2019 (NTS) Report'*[1]. This indicates that 24% of all journeys are under one mile and 80% of journeys under one mile are made on foot and that the average walking trip length is 17 minutes.

3.6.2 Whilst the NPPF now supersedes the previous Planning Policy Guidance (PPG), the underlying principles of PPG13: Transport (March 2001) remain relevant as they are based on recorded travel behaviour and generally accepted accessibility indicators. The relevant excerpts from PPG13 are therefore set out below:

"*Walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2 kilometres.*"

3.6.3 In addition, the guidance on this issue is provided by Manual for Streets (MfS) 2007 which, at Paragraph 4.4.1, states that:

"*Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' [up to about 800m] walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and walking offers the greatest potential to replace short car trips, particularly those under 2km*."

3.6.4 With regards to cycling, the recent NTS (updated August 2019) identifies that the average journey time by bicycle is 23 minutes which is equivalent to 4 miles (6.4km). Furthermore, Table NTS0308a[2] identifies that 85% of all cycle trips are over 1 mile (1.6km) and 54% over 2 miles (3.2km). A total of 82% of all cycle journeys are made over distances less than 5 miles (8km).

3.6.5 These statistics indicate that trips to the majority of the facilities and services in the site surroundings are within either a 2-kilometre walking distance, or 5-kilometre cycling distance from the site and could reasonably be expected to be undertaken on foot or by cycle, and by the majority of people, except where car use is an obvious prerequisite or indeed the reason for the trip.

3.7 Existing Local Highway Network

3.7.1 The site is located immediately to the south of Post Hill. Post Hill forms part of the main east / west road between Tiverton and Willand, as well as providing access to local villages such as

[1] 2019 National Travel Survey (publishing.service.gov.uk)

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/905950/nts0308.ods

Halberton and the rural area. **Figure 3.4** below shows Post Hill in its current arrangement adjacent to the site.

Figure 3.4: Local Highway Network

3.7.2 To the west of the site, Post Hill becomes Blundells Road which connects to the A396 on the eastern edge of Tiverton urban area. The A396 forms one of the main connections between the A361 which passes the town to the north, the town centre itself and Exeter to the south.

3.7.3 The A361 is the main arterial route to North Devon and parts of North Cornwall, connecting these areas with the Strategic Road Network at Junction 27 of the M5. J27 is located approximately 5.5km to the north east of the site. The M5 connects the south west of England with the rest of the UK via the SRN, providing direct highway routes to Exeter, Bristol, Birmingham and the M4 corridor.

3.7.4 Traffic calming measures have been recently implemented on Blundells Road in the vicinity of Blundells School. This scheme was delivered as part of the first phase of the EUE, known as Braid Park. These include an on-carriageway cycle lane on Blundells Road between Post Hill and the school as well as pedestrian improvements on Golf Club Lane.

3.8 Future Highway Network

3.8.1 As noted in the previous chapter, land allocated as the Tiverton EUE is located immediately to the west of the site. As part of this allocation, DCC undertook an assessment to establish whether a new highway connection to the A361 would be required. The assessment established that a new junction would be required and so planning permission has now been granted for a grade separated, all movements junction to be located approximately 1.3km to

the east of the existing A396 / A361 junction. This will provide an alternative route for traffic to access the town and in particular to facilitate vehicle movements generated by the EUE, reducing traffic that would otherwise utilise the A396 to access the A361.

3.8.2 The connection with the A361 will comprise of a priority junction with Blundells Road and a 3-arm roundabout to the north, which will provide access to westbound and eastbound movements onto the A361. The junction will be grade separated and access to the A361 will be achieved through new slip roads from the aforementioned roundabout. The on and off slips to the westbound A361 have already been constructed, albeit they are not yet open to traffic. The general layout plan illustrating the proposals for the junction are included in **Appendix C.**

3.8.3 This junction will also improve access between the proposed development and the A361 and SRN. Following discussion with DCC, it is understood that these works are imminent and therefore agreed that the assessment presented in this TA assumes that the new junction is in place at the time of development occupation.

3.9 Personal Injury Collision Data

3.9.1 In order to establish the existing highway safety record within the vicinity of the site, an assessment has been carried out of the Personal Injury Collision (PIC) data.

3.9.2 PIC data was obtained from DCC for the latest available five-year period, obtained in June 2021, which was from January 2016 to December 2020. The study area covers the local road network in close proximity of the site, including the Blundells Road / Post Hill corridor between Blundells Roundabout and the village of Halberton.

3.9.3 The following section summarises the PIC data analysis. The complete set of data received, including a plot of the locations of all recorded collisions within the study area, is contained within **Appendix D**.

3.9.4 A total of 9 collisions were recorded in the five-year period through the entire study area, of which 5 were classified as slight and 4 were classified as serious. No fatal collisions were recorded during the study period. Six of the collisions were recorded on Blundells Road, with three of these being located in the vicinity of the Blundells Road / A396 roundabout and the further three located in proximity to Blundells School. Two of the collisions were recorded on and in close proximity to the existing site access and Manley Lane. Lastly, a singular collision was recorded on the Post Hill / Uplowman Road junction to the west of the site. The collisions have been summarised below for each of these areas.

Blundells Road Roundabout

3.9.5 One serious collision was recorded on the approach to the roundabout from A369 Great Western Way. A pedestrian stepped out in front of a lorry whilst using the pedestrian crossing and the vehicle to the right of the lorry had its visibility blocked and failed to see the crossing pedestrian, causing them to collide. This collision was recorded in fine, daylight conditions on a dry road surface. No highway layout issues were identified in this collision as a contributing factor.

3.9.6 A slight collision was recorded on the approach to Blundells Road Roundabout from the north along A369 Heathcoat Way. The collision was a result of a vehicle hesitating to enter the roundabout, therefore the vehicle behind collided into the rear of the vehicle as they failed to check the vehicle had entered the roundabout. The collision was recorded in rainy, daylight conditions on a wet road surface. No highway layout issues were identified in this collision as a contributing factor.

3.9.7 The second slight collision in the vicinity of Blundells Road Roundabout was on the eastern arm on the crossing adjacent to Horsdon Garage. A pedestrian began to cross the road and

the vehicle travelling towards Tiverton failed to stop and collided with the pedestrian. The collision was recorded in fine, dry conditions during the night, although streetlighting is present in this location. No highway layout issues were identified in this collision as a contributing factor.

Blundell's Road

3.9.8 One serious collision was recorded along Blundells Road, opposite Blundells School. A vehicle mounted the pavement travelling westwards and collided with a wall, damaging the vehicle. The collision was recorded in fine, daylight conditions on a dry road surface. No highway layout issues were identified in this collision as a contributing factor.

3.9.9 A slight collision was recorded opposite Blundells School at the pedestrian crossing where a pedestrian crossed the road as the traffic lights were amber. The vehicle approaching the pedestrian crossing failed to stop and collided with the pedestrian causing minor injuries. The collision was recorded in fine, daylight conditions on a dry road surface. No highway layout issues were identified in this collision as a contributing factor.

3.9.10 A second slight collision was recorded along Blundells Road where the driver of a westbound vehicle had a medical episode, causing them to veer into the oncoming traffic and continued on the wrong side of the road until colliding with a lamppost and wall. An oncoming vehicle had to avoid the car but only slight impacts were recorded. The collision was recorded in fine, daylight conditions on a dry road surface. No highway layout issues were identified in this collision as a contributing factor.

Post Hill / Uplowman Road

3.9.11 One slight collision was recorded at the Post Hill / Uplowman Road junction as a vehicle turning right onto Uplowman Road pulled into the path of an oncoming vehicle causing them to collide. The collision was recorded in fine, daylight conditions on a dry road surface. No highway layout issues were identified in this collision as a contributing factor.

Post Hill / Manley Lane

3.9.12 One serious collision was recorded on Post Hill in the vicinity of Manley Lane where a motorcycle was travelling west towards Tiverton was looking to overtake a bus ahead, however when veering out to view past the bus, the motorcycle collided with an oncoming vehicle. The collision was recorded in fine, daylight conditions on a dry road surface. No highway layout issues were identified in this collision as a contributing factor.

Hartnolls Business Centre / Post Hill

3.9.13 One serious collision was recorded on Post Hill on the access to Hartnolls Business Centre where a motorcycle indicated to turn right into the Business Park but collided with a vehicle travelling in the same direction. Resulting from the collision the rider fell off and the motorcycle was thrown into the opposite carriageway under an oncoming vehicle. The collision was recorded in wet and dark conditions with no street lighting. No highway layout issues were identified in this collision as a contributing factor. However, the need for extending the streetlighting along Post Hill to the proposed site access can be explored with the Local Highway Authority at the detailed design / s278 stage.

Summary

3.9.14 Based on this review of the existing highway safety conditions, it has been determined that the incidents recorded occurred as a result of driver or rider error not as a result of any inherent safety risks associated with the local highway network. The assessment of the collision records do not show any pattern of incidents in terms of location / users / likely cause and therefore does not require further investigation. It is therefore concluded that there are not

any existing highway safety concerns in the local area that the proposed residential development is likely to exacerbate. However, the need for extending the streetlighting along Post Hill can be explored with the Local Highway Authority at the detailed design / s278 stage.

3.10 Baseline Traffic Data

3.10.1 In order to obtain baseline traffic data, Stantec commissioned Nationwide Data collection to undertake traffic surveys at junctions in the vicinity of the site. These surveys comprised of two Manual Classified Counts (MCCs) and two Automatic Traffic Counts (ATC). The MCCs were undertaken on the Tuesday 8th June 2021, whilst the ATCs were installed for a week from 5th June 2021. Unfortunately, the ATC located on Post Hill was damaged during the w/c 5th June and so was installed for a further 7 days to ensure sufficient useable data was collected.

3.10.2 The following locations were surveyed for inclusion within the TA analysis

- Blundell's Roundabout (MCC)
- Willand Road / High Street (MCC)
- Blundell's Road (ATC)
- Post Hill (ATC)

3.10.3 The surveys confirmed the AM and PM peak periods of 0800-0900 and 1700-1800 respectively. The peak hour traffic flows which have been obtained through the surveys are shown on **Figures 3.5** and **3.6**.

COVID-19 impact on Traffic Flows

3.10.4 COVID-19 has seen an unprecedented change in travel behaviour and traffic flows on both the local and strategic highway networks which is yet to fully understand. Whilst travel restrictions during June 2021 (the time of the surveys) was relatively limited compared to other periods during the previous 15 months, it remains important to validate the survey data to ensure that it is appropriate for use within the assessment. This matter was discussed with DCC and it was agreed that the surveyed data should be compared to traffic flows recorded prior to the pandemic.

3.10.5 A review of flows surveyed at a fixed ATC site on the A396 Heathcote Way to the south of Gornhay Roundabout has been undertaken to confirm the validity of the survey data. Data was obtained for the week as the surveys were undertaken (w/c 5th June) and also for the first week in February 2020. This date was before any COVID restrictions were implemented by the UK Government impact and so traffic flows at this time allow a comparison to be made.

3.10.6 The table below sets out this comparison and demonstrates that traffic flows in June 2021 were recorded as significantly higher than in February 2020 in all scenarios. A full week of data was collected for both periods and so this is considered to provide sufficient data to ensure no anomalous travel days could invalidate the comparison.

3.10.7 The two-way results for the AM and PM peaks for an average weekday, and the proportional impact between 2020 and 2021, are shown in **Table 3.3** below.

	Two-Way Flows		Difference	Proportional Difference
	February 2020	June 2021		
0800-0900	675	1171	+496	+73.5%
1700-1800	543	1266	+723	+133.1%

Table 3.3: COVID-19 Base flow comparison (Feb 2020; June 2021)

3.10.8 As the flows captured in June 2021 are substantially higher than those recorded in February 2020, it is considered that the surveyed flows provide a worst-case baseline scenario and are appropriate for use within the traffic impact assessment without any need for adjustment. The above findings have been communicated to DCC who have agreed in principle to this approach.

4 Emerging Evidence on Future Travel Trends and Covid-19 Context

4.1 Introduction

4.1.1 There is a growing evidence base demonstrating a shift in travel behaviour as a result of disruptive technological and societal changes, in particular amongst the younger generations for whom a significant part of future housing development demand applies.

4.1.2 There is widespread evidence demonstrating that there is less reliance on the car from younger generations, aspiration to socialise or work while travelling, high costs of car ownership and change in priorities of spend (car not being a status symbol) all leading to a consensus that future travel behaviour will lead to lower levels of private car use.

4.1.3 Furthermore, this TA has been prepared within the context of COVID-19, which has brought about a sudden change in the way people work and travel and is likely to have a significant effect on commuting patterns in the future.

4.1.4 This chapter provides an overview of the COVID 19 context as well as a summary of a selection of key documents that are underpinning general changes to travel trends.

4.2 COVID-19 Context

4.2.1 COVID-19 has inflicted an unparalleled shock to the global economy and, as a result, is having considerable, sustained impacts on how and why we travel. The Government's '*Opinion and Lifestyle Survey'* (OPN), presented in the recent daily briefings, has shown an increase in home working from 12% in 2019 to 35% in February 2021.[3] Furthermore, the '*COVID-19 Community Mobility Report'*[4], published on 15th May 2021, showed that there have been 13% less visits to workplaces during the lockdown period when compared with five-week data from 3rd January to 6th February 2020.

4.2.2 The lockdown has forced many people to work from home, some for the very first time. Many employees have therefore experienced a working day without the daily commute and with the increased flexibility that comes with working from home. Whilst a slow return to traditional travel and working patterns is expected to a certain extent, it is anticipated that a large proportion of employees will continue to utilise technology to maintain working from home for at least a part of the working week.

4.2.3 In addition, during the pandemic period the UK Government has released statutory guidance providing advice on techniques for managing roads to deal with COVID-19 response related issues. Although the short-term focus of current guidance is accelerating pedestrian and cycle schemes, longer term consideration is being given to improving public transport provision.

4.2.4 These measures in response to COVID-19 also support long-term objectives of decarbonisation which was the priority for many local authorities before the on start of pandemic. DCC has acknowledged a climate emergency and seeks to make the county carbon neutral by 2030. A key facet of the Plan will be the reduction in the use of private cars and enabling significant increases in walking, cycling, public transport and emerging micro-mobility (e.g., e-bike and e-scooter) use. Therefore, sustainable travel modes remain in focus in pre and post COVID environment.

[3]https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/bulletins/coronavirusandthesocialimpactsongreatbritain/26february2021#main-indicators

[4] https://www.gstatic.com/covid19/mobility/2021-05-15_GB_Devon_Mobility_Report_en-GB.pdf

4.3 Future Travel Trends

4.3.1 Further to the COVID-19 impact on travel, significant changes have been recorded in recent years and are expected to continue to disrupt and alter the way in which we travel over the coming years. The following section contains a review of relevant research regarding future travel trends. The documents reviewed are set out below:

- Understanding the drivers of road travel: current trends in and factors behind road use (DfT, Jan 2015);
- Provision of Travel Trends Analysis and Forecasting Model Research (Atkins, AECOM and Imperial College London (2017);
- Young People's Travel – What's Changed and Why? Review and Analysis: Report to DfT (UWE, 2018);
- Research undertaken by Devon County Council and presented to the DfT (2018); and
- A Time of Unprecedented Change in the Transport System, The Future of Mobility (Government Office for Science, January 2019).

Understanding the drivers of road travel: current trends in and factors behind road use (DfT, Jan 2015)

4.3.2 DfT research suggests that "*over recent decades growth in road traffic has been slowing*", and additionally indicates that "*car traffic has shown the greatest growth over the long-run but national levels are currently at the levels seen in 2002*."

4.3.3 As part of the 2015 report, the DfT have considered multiple factors affecting car use. Some of these include:

- Younger people not learning to drive due to the high cost of learning and car insurance, leading to a decline in car use in this demographic (based on NTS data)';
- Employment rates; a fall in 'real income' amongst younger people over the last decade has made driving cost-prohibitive, whilst employments rates among "females and older age groups", who are driving more, has increased;
- Traffic levels are shown to track and 'mirror' the changes in Gross Domestic Product;
- Declines in company car use have been found to account for the largest reduction in mileage amongst men between the ages of 30 and 60 and may also be linked with the decline of car use in London. DfT link this to changes in company car taxation rules;
- Urbanisation and increases in population density have been found to have brought down car demand in recent decades; and
- There is evidence to suggest that "increasing congestion in urban areas is contributing to the levelling of traffic in these areas, and that more people in these areas are travelling by public transport".

4.3.4 The report suggests also that "we may expect traffic in urban areas to grow less strongly, as… the availability of public transport services [keeps] traffic growth down, alongside more limited road capacity", and it additionally suggests that "public transport might be expected to continue becoming an increasingly important feature in these areas, whilst greater support and access to cycling… may encourage people to travel by other modes".

Provision of Travel Trends Analysis and Forecasting Model Research (Atkins, AECOM and Imperial College London (2017)

4.3.5 The report, which aimed to develop a forecasting model using statistical relationships identified in travel trends and drivers, cites evidence which suggests that:

- "Average trip rates have decreased between 1988 and 2010 for the majority of trip purposes", including commuting and leisure, and suggested that based on their analysis, it is "changes in walking trips and short trips… [which] have made a significant contribution to the overall observed trends in trip rates";
- Trip rates amongst all age groups except the 65+ age group have decreased, whilst the 65+ age group has increased only "slightly";
- Whilst annual car mileage has increased more amongst females and older age groups, there has been "a decline in distance travelled by car… predominantly [seen] amongst the young people and men"; and
- A comparison of 2001 and 2011 Census data has shown that "the proportions of workers categorised as 'working mainly at or from home' has increased by 1.4 percentage points to 10.6% in 2011".

4.3.6 The report therefore suggests that:

- "…reasons for changes in mobility patterns include the differential costs of motor insurance as well as learning to drive, which disproportionately accrue to younger age groups", which may have in impact on the number of people choosing to drive or own a car;
- "…an increase in the number of individuals who work from home regularly is linked to a reduction in the number of commuting trips made" and it is hypothesised that "using online social networks and online gaming substitute social travel to some extent", and;
- The overall decline in average trip rates may be mostly due to "changes in walking trips and short trips".

Research undertaken by Devon County Council and presented to the DfT (2018)

4.3.7 The DCC research suggests that the link between traffic growth and economic growth has been broken, and that there are significant changes amongst younger people whose propensity to travel by car has fallen, in men by some 47%. Whilst the older generation are generally travelling by car a little more, the trends amongst younger people away from the car might have very significant implications for future transport provision.

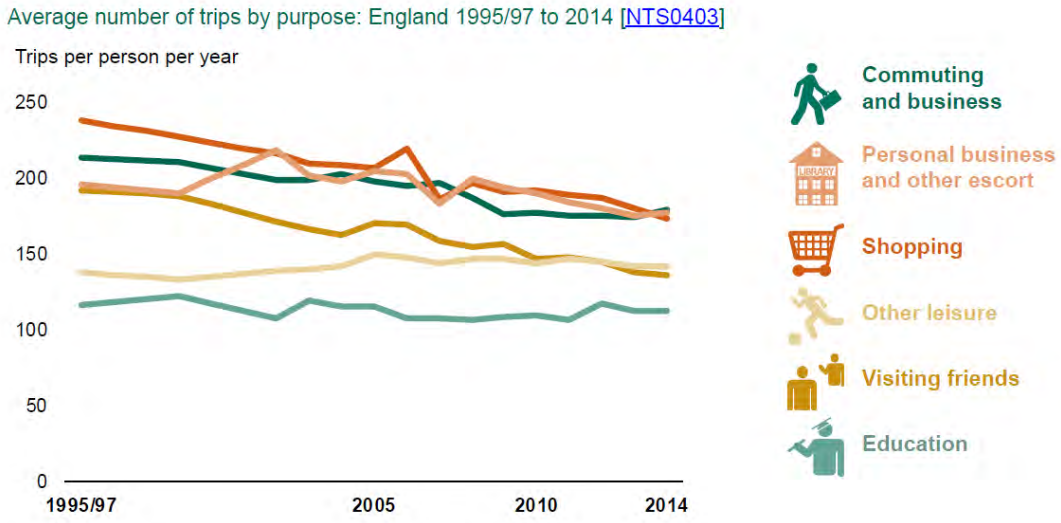


Figure 4-1 Average number of trips by purpose: England 1995/97 to 2014 (NTS)

4.3.8 The above research is therefore questioning the validity of current transport appraisal assumptions in forecasting future travel demands and traffic levels.

4.3.9 The research considers that there is a need to move away from the increasingly discredited traditional assessment approach by taking into account travel trends evidence, the capacity for the existing network to accommodate future growth, and wider transport interventions forming part of the JLP Transport Strategy. The anticipated outcome is that future traffic levels will be significantly lower than that forecast across the network using traditional approaches.

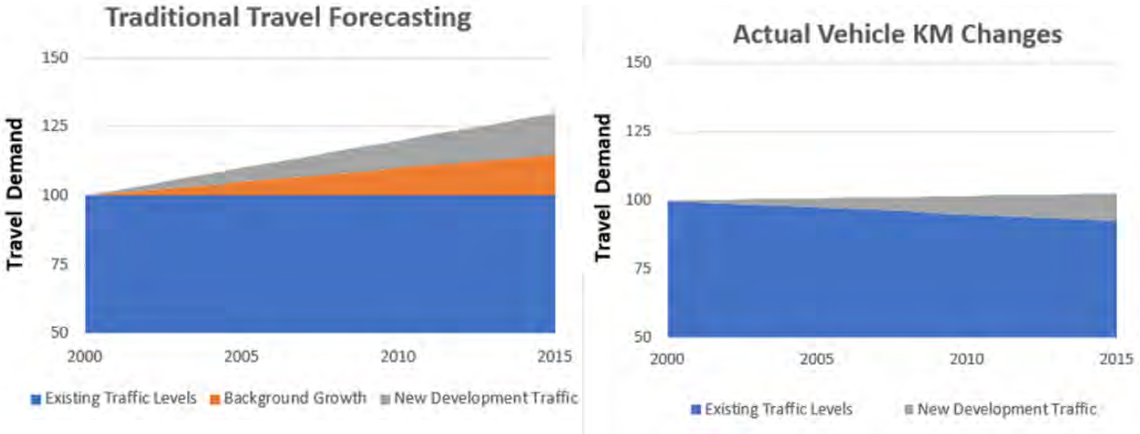


Figure 4-2 Traditional Travel Forecasting v Actual Vehicle KM Changes (Source: DCC, 2018)

Young People's Travel – What's Changed and Why? Review and Analysis: Report to DfT (UWE, 2018)

4.3.10 Research undertaken by the Centre for Transport & Society (UWE and University of Oxford) found that "*young adults* [ages 17-29] *in Great Britain and other countries are driving less now than young adults did in the early 1990s*", and that this change began approximately 25 years ago.

4.3.11 This is evidenced in that as of 2014, only 29% of 17-20 year olds and 63% of 21-29 year olds held a driving licence, representing a 19% and 12% decrease respectively. Additionally, it is

cited that "*between 1995-99 and 2010-14 there was a 36% drop in the number of car driver trips per person made by people aged 17-29*".

4.3.12 The causes behind this change are hypothesised to be the prohibitive cost of motoring amongst younger people (linked in also with the "*stagnation in wage rates*" and decline in disposable income) as well as younger people accepting not driving, or their peers not driving, as evidenced by surveys and interviews.

4.3.13 Additionally, these decreases are linked to increases in "*time spent at home*", more young people are living in urbanised areas with public transport having a "*greater impact" on commuting choice*", and increased enrolment in higher education which may delay when younger people choose to own a car.

4.3.14 The report also suggests that whilst evidence of the impact of technology on travel behaviour is "*contradictory*", it remains a "*a plausible contributor to the fall in total travel by young people*" as well as changes to signifiers and understandings of 'adulthood'.

A Time of Unprecedented Change in the Transport System, The Future of Mobility (Government Office for Science, January 2019)

4.3.15 The report notes that "*we are currently travelling less at an individual level*", with a greater shift away from use of the private car amongst young people linked in part to changing economic situations, choices of where people live, and a "*greater openness to the sharing economy, which new technology will increasingly facilitate*".

4.3.16 Additionally, the report confirms that the different modes of transport are "*deeply interrelated: the increasing use of one often leads to a reduction in another*". Whilst it does add that "*the relationship…* [can] *be complementary*", it can be inferred that a shift towards more sustainable modes of transport to fulfil trip purposes (the most common of which are cited to be commuting and shopping) will in turn lead to a shift away from the private car.

4.3.17 The report therefore advocates for transport to be considered as a system, as well as "*exploring different futures, identify*[ing] *opportunities and help*[ing to] *mitigate the unintended consequences of new transport modes, technologies and/or trends*", and concludes that:

"*transport needs to be considered as a holistic system, not as sequential or separate elements. The 'predict and provide' principle that guided transport planning between the 1950s and 1990s tended to treat modes separately, but this will no longer suffice*".

4.3.18 The report states that "*there has been a general decrease in both trips and mileage (per person) for personal transport in rural, semi-urban and urban areas*", evidenced by a 12% decrease in car trips and distance travelled since 2002. Whilst it is noted that the factors influencing travel behaviour, both now and in future are "*too many to list*", key considerations include:

- The digitalisation of services, which will impact future mobility of passengers and businesses
- Increased home-working may reduce the need to travel
- An ageing population who historically travel less and at different times to the working population, which will cause the "nature of travel demand to shift", whilst the younger cohort tend to also be travelling less
- A sharp increase in car, bike and lift sharing, are predicted likely to grow further towards 2040

- The influence of the built environment, i.e. people are more likely to walk and cycle if they are in proximity to local facilities and amenities that would otherwise necessitate car travel, i.e. shops, restaurants, schools

- Mobility as a Service (MaaS) could "support a move away from car ownership, potentially reducing congestion".

TRICS Guidance Note on Changes in Travel Behaviour (August 2019)

4.3.19 TRICS Consortium Limited (TRICS) is responding to the fact that the world is experiencing significant change in relation to social, technological, economic and environmental drivers which in turn is creating new dynamics in travel behaviour and challenges for transport planning. In the face of deep uncertainty, the "predict and provide" paradigm that has framed transport planning processes is to give way to "decide and provide" paradigm – decide on the preferred future and provide the means to work towards that which can accommodate uncertainty.

4.3.20 The TRICS report includes a review of the National Travel Survey (NTS) 2016 and Road Traffic Forecasts 2018. The following is stated:

- The total distance travelled per person per year has fallen by 9% between 2007 and 2016. Distance by all motorised private transport has fallen by about 13% since 2003, and as a car driver by about 10% since 2007

- Evidence from the NTS demonstrates vehicle trip rates have been declining over the last 20 years, with a reduction in trip rates of 13% since 2002

- Due to uncertainty around socio economic trends, the Road Traffic Forecasts assumes that young people reduce their licence holding acquisition compared to current levels and have extrapolated this trend in young people's licence holding up until 2050.

4.3.21 The TRICS report also sets out its own trend analysis dated May 2019. It states that there has been a 12% decline in vehicle trip rates (morning peak and all day) for residential development between 1989 and 2018.

4.3.22 The TRICS report further comments on the implications of the above evidence for TRICS. It states:

- "The evidence reviewed from All Change, the DfT RTF 18, NTS 2016 and the TRICS historic review demonstrates that there has been a sustained change in travel behaviour. This change is reflected in the trip rates for residential, retail (super food) and employment sites. Care need to be taken to ensure that the design of the residential and retail development, in particular, take account of these changes in travel behaviour";

- "If no recognition is given to the trends shown in the evidence from All Change and the DfT RTF18 report then it is inevitable that transport planning will continue to provide infrastructure that meets previous predicted needs rather than the transport needs of the future. This could lead to the over provision of highway capacity which in turn induces travel demand or the analysis could lead to the under provision of walking and cycling infrastructure or public transport services. The consequences are serious, and we run the risk of planning and developing stranded or underutilised assets"; and

- "The Business as Usual or "rear view mirror" approach, i.e. projecting past traffic growth trends and socio-economic trends to determine the need for infrastructure, in particular new roads and junction capacity has diminished relevance. The question becomes how to plan in light of the evidence of trends and the uncertainty that lies ahead. As change in travel behaviour continues, it is anticipated there would a need for a more flexible approach in adapting or providing new transport measures for the development".

Micromobility

4.3.23 The "*Inrix: Micromobility Potential in the US, UK and Germany*" report dated September 2019 explains that "*Driving and public transportation have historically been the most popular ways to travel, but the explosion of micromobility technology has brought a wide variety of new options that could make urban mobility more efficient, accessible and convenient. The emergence of micromobility-as-a-service – defined as shared bikes, e-bikes and e-scooters – highlights both the consumer and commercial appeal".*

4.3.24 The Inrix report further states that; "*The benefits of micromobility services stem from their higher efficiency in terms of energy and space. For example, the minimum square footage of one parallel parking space is 212 square feet, whereas scooters and bikes require three to six square feet to park. There's also a sharp contrast in energy efficiency; an e-scooter can travel up to 83-miles with the same amount of energy it takes an average gas vehicle to travel one-mile. However, nuance is needed in their adoption".*

4.3.25 The Inrix study concludes that *"micromobility faces a promising future by replacing short distance vehicle trips and providing currently underserved first- and last-mile solutions for public transit riders. The exceptionally high number of short duration trips found in all three countries highlights micromobility's massive market potential. Their flexible networks enable dynamic management of transportation networks providing travellers with fast, efficient alternatives to driving".*

4.3.26 Although not lawful to use on public highways at present (i.e. on highways, adopted footways, cycleways and the like), the growth of personal transport modes is likely to see changes to the way that these are used.

4.4 Implications for Land at Hartnolls Park Transport Strategy and Assessment

4.4.1 This growing evidence base, from both a national and local perspective, demonstrates that travel behaviour is changing and that traditional methods of predicting future car travel based on historical trends, and subsequently providing for the required capacity, is outdated and predicts inaccurate forecasts. Furthermore, the impact of COVID-19, whilst yet to be fully realised, is likely to increase the speed of travel changes in the Tiverton area.

4.4.2 Perhaps more importantly, providing for future car demand based on historical trends also creates negative (often unintended) consequences. A simple rule being that '*planning for people will result in places for people; planning for cars will result in places dominated by cars'*. Creating a car-dominant public realm, inducing additional traffic and therefore not solving congested networks in the medium term, worsening air pollution and diverting funding and undermining the success of sustainable alternatives does not meet the vision for the decarbonisation.

4.4.3 On this basis, the transport strategy and Transport Assessment for the site aligns fully with both national and local Policy and the intended consequences of planning for sustainable development. Policy states that sustainable modes are to be prioritised, therefore the networks on which people will walk, cycle and use public transport are considered before any highway capacity increases are planned. These are assessed to ensure that they meet the reasonable needs of local residents so that the existing and new community have a genuine opportunity to embrace more sustainable travel habits from the outset.

5 Development Proposals

5.1 Introduction

5.1.1 This chapter outlines details of the proposed development and the access strategy to be implemented. The access strategy is designed to manage and mitigate the impact of the development on the local transport network, whilst it also seeks to improve the accessibility by sustainable modes to minimise the number of vehicular trips that are generated.

5.2 Proposed Development

5.2.1 The proposed development comprises of an extension to the existing business park for up to 3.9ha of new employment land and up to 150 residential units with associated access roads, open space and landscaping.

5.2.2 Although the masterplan will be detailed at Reserved Matters Application stage, the concept masterplan presented with this outline application, proposes the residential dwellings to be located in the western side of the site, with a small parcel being located in the north immediately to the south of Post Hill.

5.2.3 The employment element of the development will comprise of the following land uses:

- Approximately 3,250m^2 of B1 employment Land Use.
- Approximately 3,250m^2 of B2 employment Land Use.
- Approximately 1,858m^2 of B8 employment Land Use.

5.2.4 Finally, the proposals also include approximately 929m^2 of Gym / Leisure uses.

5.2.5 Most of the employment and Gym leisure uses are located in the southern section of the site, essentially forming an extension of the existing Hartnoll Business Centre that is located adjacent to the proposed development area. A small parcel of employment land will be located in the north east corner of the site, between Post Hill and the site access junction.

5.2.6 Vehicular access to the site is to be gained via a new junction, located approximately 90m to the east of the existing Hartnoll Business Centre junction. The existing junction is to be stopped up and the land currently used as the access redeveloped as part of the proposals. Access to existing Hartnoll Business Centre will be provided via the internal primary street of the proposed site. Further details of the access strategy are set out in the following section.

5.2.7 Details of the proposals as described above are illustrated in the Framework Masterplan, included in **Appendix E**.

5.3 Access and Movement Strategy

5.3.1 In line with the NPPF, which places a strong focus on sustainability, a set of transport proposals has been developed to maximise the potential to travel by modes other than the private car. This also serves to manage the potential traffic impacts arising from the development, ensuring that highway safety is addressed.

5.3.2 The transport proposals consist of the following packages of measures that are discussed in more detail within this section:

- Vehicular Access Proposals;

- Walking and Cycling Strategy;
- Public Transport Strategy;
- Travel Plan.

Vehicular Site Access

5.3.3 Vehicular access to the site is proposed to be gained via a new priority junction onto Post Hill. It is to be located approximately 90m to the east of the existing Hartnoll Business Centre access junction, which is to be stopped up. The junction concept design is included as **Drawing 48582_5501_SK02_H** and has been agreed in principle with DCC. Swept path analysis has also been undertaken for the junction which is included in Drawing **48582_5501_SK06.**

5.3.4 Currently, a layby is situated on the southern side of Post Hill where the new junction is proposed to be located. The layby also comprises of a large, gated field access.

5.3.5 Discussions are ongoing with DCC, but at this stage it is expected that the developer will be required to provide an alternative layby facility to the east of the current location. This will be located within land that is under the control of the client as well as highway land. **Drawing 48582_5501_SK02_H** also provides details of the relocated layby proposals, which would be situated to the west of the Post Hill / Crown Hill junction.

5.3.6 Within the proposed development, the site access road will provide connections to all areas of the development. The existing Hartnoll Business Centre access road will be realigned so that it connects to the proposed access road via a priority junction. The proposed employment and Gym / leisure uses will be accessed via an extension to the existing Hartnoll Business Centre.

5.3.7 Residential and employment parcels of land will be accessed off the primary street via appropriate priority junctions. The masterplan will provide a network of secondary and tertiary streets with permeable pedestrian facilities to encourage walking, it is proposed that the internal roads in the masterplan will be subject to 20mph speed limit and will therefore be suitable for on-carriageway cycling. These proposals will be in accordance to the LTN1/20, Cycle Infrastructure Design.

5.3.8 For the purposes of these proposals, the main access road is proposed to extend to the western boundary of the site, on Manley Lane. There is therefore potential for this access road to connect into the EUE, across Manley Lane, in order to provide early access into the eastern part of the EUE as and when this comes forward for development. Indeed, the delivery of the spine road through the site could enable this EUE eastern parcel to come forward earlier than would otherwise be the case.

5.3.9 The Framework Masterplan, included in **Appendix E**, illustrates the indicative street layout for the site and the location of land uses as described above.

Pedestrian and Cycle Access

5.3.10 Good quality walking links into existing communities are essential for future residents in order to provide everyday access to jobs, education, local amenities and services. Good pedestrian links will help to encourage sustainable travel, reduce vehicular trip generation and benefit the health and wellbeing of existing and future residents. The site allows for high quality pedestrian connectivity into the existing community and provides connections to the existing network of footways.

5.3.11 **Drawing 48582_5501_SK02_H** illustrates details of the proposed offsite improvements to the pedestrian footway network. On the southern side of Post Hill, the existing footway will be extended from its existing extent to the west of Manley Lane junction along the northern

frontage of the site to the site access junction. This footway will be 2m in width throughout. Dropped Kerbs will be provided at Manley Lane to facilitate crossing of this carriageway, whilst an informal crossing facility with tactile paving will be provided on Post Hill to the west of Manley Lane to allow pedestrians to cross the carriageway.

5.3.12 This crossing will provide access to a new proposed bus stop located on the northern side of Post Hill for Eastbound services. A complimentary westbound bus stop will be provided immediately adjacent to the northern site boundary which will also be accessible via the new footway facility. In addition, given increased pedestrian / cycle movements in the vicinity, the extension of streetlighting along Post Hill to the proposed site access can be explored with the Local Highway Authority at the detailed design / s278 stage.

5.3.13 For reference, the existing location of the proposed footway described above is shown in Figure 5.1 below

Figure 5.1: Location of Proposed Pedestrian Improvements

5.3.14 As a result of the proposed improvements described above, pedestrians and cyclists will be able to access the site via several routes. A pedestrian / cycle connection will be provided in the north western corner of the site, along the desire line to travel to the town, immediately south of the proposed westbound bus stop and connecting to the internal footways. This will ensure pedestrians can easily travel to and from the site to both the footway for local destinations, or to access the bus stops. Alternatively, pedestrians will be able to access and egress the northern boundary of the site via the vehicle access junction.

5.3.15 Further, additional pedestrian / cycle links could potentially be provided on the western boundary of the site, connecting to Manley Lane. In the period before the EUE is fully developed, these access points will facilitate north / south pedestrian and cycle movements. Pedestrians may choose to use the leisure route that uses the canal path for much of its length, connecting Manley Lane to Tiverton town centre. Cyclists could therefore use the links

to Manley Lane to travel to and from Tiverton via National Cycle Route 3 that connects to Manley Lane to the south, avoiding Post Hill and Blundells Road.

5.3.16 The pedestrian and cycle access points on Manley Lane could also provide connections to the eastern parcel of the EUE, facilitating east / west movements from the site. Future residents and employees of the site could therefore potentially be able to gain direct access to the EUE, including the facilities that will be delivered as part of the development. The proposed access strategy could therefore provide seamless connections to the EUE in the future.

Public Transport Access

5.3.17 As described above, new bus stops will be delivered as part of the development access strategy. These bus stops will be accessible via the internal pedestrian network and the new offsite footway improvements, including the uncontrolled crossing point facilitating access to or from eastbound bus services. Both the eastbound and westbound bus stops will be provided with cantilever shelter and timetables.

5.3.18 The stops are served by several frequent services, described in more detail in Chapter 3, which provide connections to Tiverton, Taunton and Tiverton Parkway amongst other local destinations. Connections to Tiverton Parkway Rail Station means that residents, employees and visitors could therefore feasibly use a combination of bus and train to easily access the site.

5.4 Internal Site Layout

5.4.1 Detailed on-plot proposals will be developed through the submission of future Reserved Matters planning applications to ensure ease of movement and safety for all users of the development and all modes of transport. The internal road layout as shown in the illustrative masterplan will be appropriately designed in terms of road widths, junction radii and localised widening to accommodate the swept path of all vehicle types that will be required to access the site.

5.5 Parking

5.5.1 It is important that the parking provision for the site is appropriate to the local area and meets the requirements of the intended occupants. The illustrative site layout does not include detailed parking proposals given the outline nature of the planning application. The vehicle parking provisions will, however, be developed at the Reserved Matters stage and will be broadly in accordance with the latest guidance / Policy at the time. Currently, that is ‘The provision of parking in new development’ supplementary planning document (SPD) produced by Mid Devon District Council in June 2013.

5.6 Travel Plan

5.6.1 In addition to and in support of this TA, a Framework Travel Plan (TP) for the site has been developed in accordance with appropriate national guidance.

5.6.2 The TP is a standalone document and covers all residents, employees and visitors at the proposed development. The TP sets out a holistic package of measures designed to reduce single occupancy car use associated with the proposed development by supporting and providing alternative forms of transport. These measures will be integrated into the design, marketing and occupation of the site. It is anticipated that individual occupiers of the proposed employment units will prepare travel plans specifically relevant to their own employees that will be designed in line with the Framework Travel Plan that covers the site.

5.6.3 The broad aims and objectives of the Travel Plan are to:

- Reduce reliance on the private car, with a strategy of mode shift away from single occupancy private car trips;
- Build upon good urban design principles that maximise the permeability of the development for promoting alternative sustainable modes of travel such as walking, cycling, public transport use and car-sharing; and
- Reduce road traffic congestion and damage to the environment through mitigating the impact of additional traffic generation through the use of sustainable transport measures, in line with the approach advocated by Government policy.

5.6.4 There are a range of measures proposed to improve sustainable travel at the site and behavioural initiatives to encourage improved travel activity which will be managed by a Travel Plan Coordinator (TPC).

5.6.5 Annual reviews will be undertaken by the TPC in the form of a travel survey. The results of the travel survey will report on the failure and success of the TP and the need for additional measures if necessary.

5.6.6 It is the eventual aim that the TP will grow into a self-managing service which will deliver on its own without the need for the TPC.

5.6.7 The Travel Plan has been submitted as part of the planning application and should be read in parallel with this Transport Assessment.

5.7 Conclusion

5.7.1 This Chapter has presented details of the proposed development and access strategy. It has established that the site can be safely and efficiently accessed by pedestrians, cyclists and public transport users as well as vehicles. This will enhance the sustainability credentials of the development and ensure that residents, employees and visitors to the development have the ability to access the site by a variety of modes.

6 Travel Demand

6.1 Introduction

6.1.1 The following section presents the analysis undertaken to establish the predicted travel demand of the proposed development. The approach to the assessment has been agreed with DCC and presented in the scoping note, included at **Appendix A**

6.2 Trip Rates

6.2.1 Separate trip rates have been derived from the industry standard TRICS database for each of the proposed land uses at the site.

Residential Trip Rates

6.2.2 The residential element of the site is proposed to comprise of both private and affordable dwellings and so separate trip rates have been calculated to ensure the trip generation forecast is accurate as possible.

6.2.3 To calculate trip rates for private dwellings, a total of 19 sites were selected within the database, based on the following selection criteria:

- Land use '03/A – Houses Privately Owned'
- Number of dwellings ranging between 50 and 400
- Weekday surveys only
- 'Edge of Town' / 'Suburban' surveys only
- Sites within Greater London, Northern Ireland, and the Republic of Ireland excluded.

6.2.4 To calculate trip rates for affordable dwellings, a total of 8 sites were selected within the database, based on the following selection criteria:

- Land use '03/B – Affordable / Local Authority Houses
- Number of dwellings ranging between 10 and 516
- Weekday surveys only
- 'Edge of Town' / Suburban' surveys only
- Sites within Greater London, Northern Ireland, and the Republic of Ireland excluded.

6.2.5 The residential vehicle trip rates derived are set out in **Table 6-1** below.

Land Use	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	Dep	Tot	Arr	Dep	Tot
Private Residential[5]	0.140	0.389	0.529	0.364	0.152	0.516
Affordable Residential[5]	0.155	0.269	0.424	0.252	0.197	0.449

Table 6.1: Residential vehicle trip rates

Employment Trip Rates

B1 Office Trip Rates

6.2.6 Vehicle trip rates for the B1 Office aspect of the development have been derived from the TRICS database. A total of 9 sites were selected within the database, based on the following selection criteria:

- Land use '02/A – Employment / Office';
- Gross floor areas (GFA) ranging between 178 sqm and 175,000 sqm;
- Weekday surveys only;
- 'Edge of Town' surveys only; and
- Sites within Greater London, Northern Ireland, and the Republic of Ireland excluded.

6.2.7 The B1 employment vehicle trip rates derived are set out in **Table 6-2** below.

Land Use	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	Dep	Tot	Arr	Dep	Tot
B1 Office[6]	0.987	0.115	1.102	0.088	1.046	1.134

Table 6.2: B1 Office vehicle trip rates

B2 Industrial Trip Rates

6.2.8 Vehicle trip rates for the B2 Industrial aspect of the development have been derived from the TRICS database. A total of 9 sites were selected within the database, based on the following selection criteria:

- Land use '02/C – Employment / Industrial Estate';
- Gross floor areas (GFA) ranging between 150 sqm and 80,000 sqm;
- Weekday surveys only;

[5] Vehicle trip rates expressed as per residential dwelling / unit'

[6] Vehicle trip rates expressed as per 100 sqm – derived from TRICS trip rate category '*Employment A – Office'*

- 'Edge of Town' surveys only; and
- Sites within Greater London, Northern Ireland, and the Republic of Ireland excluded.

6.2.9 The B2 employment vehicle trip rates derived are set out in **Table 6-3** below.

Land Use	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	Dep	Tot	Arr	Dep	Tot
B2 Industrial[7]	0.432	0.099	0.531	0.042	0.398	0.440

Table 6.3: B2 Industrial vehicle trip rates

B8 Warehousing Trip Rates

6.2.10 Vehicle trip rates for the B8 Warehouse aspect of the development have been derived from the TRICS database. A total of 4 sites were selected within the database, based on the following selection criteria:

- Land use '02/F – Employment / Warehousing (Commercial);
- Gross floor areas (GFA) ranging between 190 sqm and 80,066 sqm;
- Weekday surveys only;
- 'Edge of Town' surveys only;
- Sites within Greater London, Northern Ireland, and the Republic of Ireland excluded.

6.2.11 The B8 employment vehicle trip rates derived are set out in **Table 6-4** below.

Land Use	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	Dep	Tot	Arr	Dep	Tot
B8 Warehousing[8]	0.278	0.105	0.383	0.111	0.323	0.434

Table 6.4: B8 Warehouse vehicle trip rates

D2 Gym/Leisure Trip Rates

6.2.12 Vehicle trip rates for the D2 Gym/Leisure aspect of the development have been derived from the TRICS database. A total of 4 sites were selected within the database, based on the following selection criteria:

- Land use '07/K – Leisure / Fitness Club (Private);

[7] Vehicle trip rates expressed as per 100 sqm – derived from TRICS trip rate category '*Employment D – Industrial Estate*'

[8] Vehicle trip rates expressed as per 100 sqm – derived from TRICS trip rate category '*Employment F – Commercial Warehousing*

- Gross floor areas (GFA) ranging between 404 and 2,000 sqm;
- Weekday surveys only;
- 'Edge of Town' surveys only;
- Sites within Greater London, Northern Ireland, and the Republic of Ireland excluded.

6.2.13 The vehicle trip rates derived are set out in **Table 6-5** below.

Land Use	AM Peak (0800-0900)			PM Peak (1700-1800)		
	Arr	Dep	Tot	Arr	Dep	Tot
D2 Gym[9]	0.278	0.105	0.383	0.111	0.323	0.434

Table 6.5: D2 Gym vehicle trip rates

Development Traffic Generation

6.2.14 The floor areas of each of the land uses and number of residential dwellings proposed at the site has been applied to each of the trip rates as set out in the tables above. The resulting peak hour vehicle trip generation for the development is presented in the table below.

Land Use	AM Peak			PM Peak		
	Arrival	Departure	Two-way	Arrival	Departure	Two-way
Private Residential	15	41	56	38	16	54
Affordable Residential	7	12	19	11	9	20
B1	32	4	36	3	34	37
B2	14	3	17	1	13	14
B8	5	2	7	2	6	8
Gym / Leisure Uses	4	5	8	11	6	16
Total	**77**	**67**	**143**	**67**	**83**	**150**

Table 6.6: Development vehicle trip generation

6.2.15 It should be noted that TRICS consortium's recent guidance, 'Implementation of Decide and Provide approach', challenges the traditional 'Predict and Provide' approach which is based on using current trip rates and instead recommends undertaking scenario planning to address the uncertainty in future travel patterns. The guidance states that number of scenarios will depend on the scale, complexity and sensitivity (rural location or highly dense urban area) of the project, however states, typically considering three plausible scenarios; Scenario 1 – using current trip rate, Scenario 2 – extrapolated trip rates and Scenario 3 – adjusted trip rates based internalisation, working from home etc.

[9] Vehicle trip rates expressed as per 100 sqm – derived from TRICS trip rate category '*Leisure K – Fitness Club*'

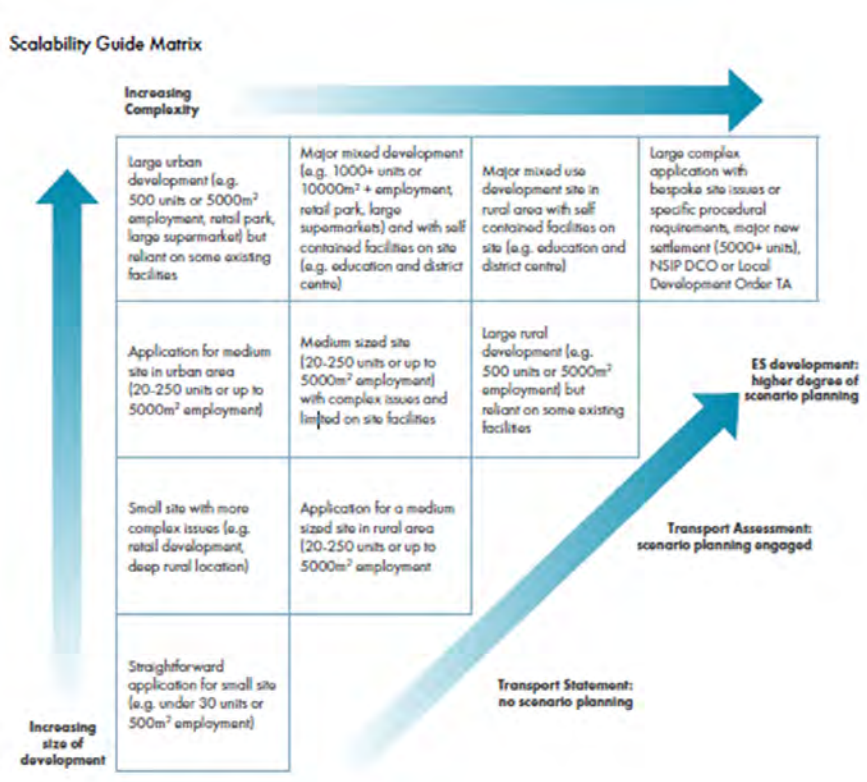


Figure 6-1 Scalability Guide Matrix

6.2.16 The **Figure 6-1** (Figure 9.1 of the Guidance) shows scalability guide matrix and suggests considering scenario planning for sites up to 250 units or employment area up to 5000sqm. As the current site is located at the edge of urban area and is proposed for 150 dwellings (small / medium scale) the assessment is based on a' Scenario 1' of the guidance, based on current trip rates taken from TRICs, as was requested by DCC during the scoping consultation, and does not include any adjustment to the trip rates or use of extrapolated rates. Therefore, the forecast trip rates and resulting trips provided in **Table 6.6** are considered robust and does not take account of ongoing and future changes in travel behaviour.

6.2.17 In addition, this assessment assumes no internalisation of trips – either to the complimentary uses proposed as part of this planning application, or to the future facilities within the EUE, which would avoid the need to use the existing public highway. On this basis, the assessment presents a robust position.

6.3 Multi Modal Trip Generation

6.3.1 In order to forecast the total person trip generation for each proposed land use from the vehicle trip generation set out above, modal shares have been derived from the 2011 Census datasets '*QS701EW – Method of travel to work'* for the residential and employment aspects respectively. For the purposes of this analysis, trips associated with the gym / fitness element of the development have been applied to the employment modal share figures.

6.3.2 The modal share figures presented in **Table 6-6** are based on data related specifically to the 'Mid Devon 006' MSOA within which the site is located.

Mode of Transport	Proposed Modal Share	
	Residential	Employment
Walk	8.6%	8.7%
Cycle	2.1%	2.8%
Public Transport	4.4%	3.5%
Vehicle Passenger	5.2%	12.0%
Vehicle Driver	79.7%	73.1%
Total	**100%**	**100%**

Table 6.7: Proposed modal shares

Residential

6.3.3 The resulting person trip generation for the residential aspect of the proposed development has been calculated from the information included in **Tables 6.1** and **6.7** and is summarised in **Table 6.8** below.

Mode of Transport	AM Peak (0800-0900)		PM Peak (1700-1800)	
	Arr	Dep	Arr	Dep
Walk	2	6	5	3
Cycle	1	1	1	1
Public Transport	1	3	3	1
Vehicle Passenger	1	3	3	2
Vehicle Driver	22	53	50	25
Total	**27**	**66**	**62**	**31**

Table 6.8: Multi-modal trip generation - 150 dwellings (70% private, 30% affordable)

Employment and Gym

6.3.4 The resulting person trip generation for the employment aspect of the development in full (B1, B2, and B8 floorspace) has been calculated from the information included in **Tables 6-2** to **6-5** and **Table 6-8** above and is summarised in **Table 6-9** below.

Mode of Transport	AM Peak (0800-0900)		PM Peak (1700-1800)	
	Arr	Dep	Arr	Dep
Walk	7	2	2	7
Cycle	2	1	1	2
Public Transport	3	1	1	3
Vehicle Passenger	9	2	3	10
Vehicle Driver	55	14	17	59
Total	**75**	**19**	**23**	**80**

Table 6.9: Multi-modal trip generation (Employment and Gym / Leisure Uses)

Total Development

6.3.5 Having assessed the multi-modal trip generation for each aspect of the proposed development, the multi-modal trip generation for the overall quantum of development combined is summarised in **Table 6-10** below.

Mode of Transport	AM Peak (0800-0900)		PM Peak (1700-1800)	
	Arr	Dep	Arr	Dep
Walk	9	7	7	10
Cycle	3	2	2	3
Public Transport	4	4	4	4
Vehicle Passenger	10	6	6	11
Vehicle Driver	77	67	67	83
Total	**102**	**85**	**86**	**111**

**The above figures are subject to rounding errors*

Table 6.10: Total multi-modal trip generation

6.3.6 As stated above, it is likely that the proposed mixed-use development will have some internal trips; residential to employment and linked trips between employment and Gym, for the purpose of this assessment we have not deducted any trips from the total trip generation of the development, and as such it is considered robust. The provision of continuous footways and cycle facilities on the site will enable these internal trips to be made by sustainable mode.

6.4 Assessment of Development Impact

Pedestrian / Cycle Impact

6.4.1 The multi modal trip generation analysis set out above indicates that there will be approximately 16 and 17 two-way pedestrian movements during the AM and PM Peak hours respectively. There is forecast to be approximately 5 two-way cycle movements in both peak hours.

6.4.2 As previously described, the existing pedestrian network around the site is considered to be suitable to accommodate the additional walking trips brought about by the development. In addition, it is thought that the existing cycle facilities will be able to accommodate the forecast cycle movements generated by the development in a safe and efficient manner.

6.4.3 The requirements of pedestrians and cyclists have been fully considered within the design of the proposed development from the outset. As a result, it is considered that the proposed infrastructure will be well suited to ensure the forecast level of pedestrian and cycle movements and will provide connections with the existing network in order to facilitate trips to local destinations.

Public Transport Impact

6.4.4 It is forecast that the development will generate approximately 8 public transport movements during both peak hours. The existing services that utilise the Blundells Road / Post Hill corridor will be able to accommodate the additional trips and allow residents and visitors of the site to easily reach local destinations using public transport.

Traffic Impact

6.4.5 The impact of the vehicle trips forecast to be generated by the proposed development on the surrounding highway network is subject to detailed analysis within the following chapter.

6.5 Conclusion

6.5.1 The above analysis is based on an industry-standard trip generation methodology, namely using the TRICS database to derive comparable trip rates. This approach was agreed with DCC at the scoping stage and is set out in the scoping note.

6.5.2 It is also important to note that the above analysis is focused on a single fixed hour peak, without any adjustments being made to take account of changes in travel behaviour that would be expected due to:

- Adjusting the time of the trip, such as leaving for work earlier / later due to more flexible and agile working arrangements
- Not making the trip, such as by working from home
- Shifting the journey mode from private car to sustainable transport modes such as walking / cycling or making use of public transport
- Shifting the journey mode to new / emerging modes, such as shared / personal (imminent in the near future) e-scooters and shared / personal e-bikes.

6.5.3 In addition, the recent travel trends and post COVID-19 ‘new normal’ would likely include a greater proportion of the workforce working from home than previously and employers embracing agile working, which is thought likely to significantly reduce peak hour commute trips. These trends have not been accounted for within the analysis, and as such, it is therefore considered to be robust.

7 Traffic Impact Assessment

7.1 Introduction

7.1.1 This section assesses in detail the forecast impact of the proposed development on the local highway network. It includes a summary of the analysis undertaken in order to generate future year scenarios and then assesses the capacity of the junctions within the study area under these scenarios.

7.2 Traffic Impact Study Area

7.2.1 In order to assess the impact of the vehicular traffic generated by the application, the following study area has been agreed with DCC as part of the scoping process.

- Proposed Site Access / Post Hill priority junction
- A396 / Blundell's Road roundabout
- Proposed A361 Link Road / Blundell's Road priority junction
- High Street / Willand Road priority junction.

7.2.2 Together, these junctions comprise the study area to be considered within the TA. Beyond the scope of these junctions, it is considered that the traffic associated with the proposed development will have dispersed across the network to a degree at which it is unlikely to have a significant effect on any further junctions.

7.2.3 It should be noted that two further locations had earlier been considered for inclusion in the study area but have been discounted due to the reasons set out below.

7.2.4 Firstly, the Gornhay Double Roundabout on the A361 is currently one of the key access points to Tiverton and the surrounding area. However, discussions with DCC established that all the analysis undertaken should only consider a scenario where the newly proposed A361 junction is in place. The westbound on and off slip roads on the southern side of the carriageway have been fully constructed, although are not yet open to traffic. As such, there is a high level of certainty that by the time the proposed development opens, the junction will be operational.

7.2.5 The location of this junction in relation to the proposed development means that it is highly unlikely that a significant level traffic generated by the development would route via the Gornhay roundabout. The new junction would provide a far more efficient route to the A361. Therefore, this junction has not been included within this assessment.

7.2.6 In addition, the proposed new link road to the A361 comprises of a priority junction with Blundells Road and a new roundabout to the north of this junction to connect the on and off slips, facilitating access to the A361 for all movements. This is illustrated in the proposed layout for this junction, included at **Appendix C**. For the purposes of this assessment, only the priority junction has been included within the study area. This is because at this stage it is difficult to establish the exact nature of the traffic flows that would likely use this roundabout without relying on direct SATURN output flows used in the original modelling, which are now relatively historic (as set out in **Chapter 3**) and the use of which was discouraged by DCC. Furthermore, the priority junction at the southern end of the link road will be the location with the largest development impact. Up to date survey data has been obtained for the existing movements on Blundells Road and so the likely turning movements that have been included in this assessment are considered to be more accurate than using historic SATURN flows, enhancing the accuracy of conclusions derived from this assessment.

7.2.7 Therefore, the study area considered comprises the four junctions set out above at paragraph 7.2.1, as agreed with DCC.

7.3 Redistribution of Base Flows

7.3.1 During the scoping process undertaken with DCC, it was agreed that all assessment scenarios included should assume the new junction onto the A361 is in place. Whilst it is not yet open to traffic, parts of this junction have been constructed and Phase 2 (completion) delivery is imminent. On this basis, it will likely form part of the local highway network by the opening year of the proposed development in 2024. Therefore, consideration needs to be given to the junctions' impact on traffic flows once open.

7.3.2 Through correspondence with DCC, it was agreed that the most appropriate way to do this was to make reference to the SATURN modelling that has been undertaken by DCC to establish the need for the junction in relation to the development of the EUE. DCC subsequently provided traffic flows for scenarios that modelled the local highway network both with and without the junction in place. The traffic flows provided were for both AM and PM Peak hours.

7.3.3 By comparing the 'with junction' and 'without junction' traffic flow outputs, the proportional difference at each turning movement and junction within the study area could be identified and these proportional differences applied to the 2021 Surveyed Traffic flows that were commissioned for this assessment. By undertaking this exercise, a baseline traffic flow scenario could be developed based on current traffic data, whilst also incorporating the impact of the new junction on these traffic flows.

7.3.4 The proportional differences described above have been applied to all 2021 surveyed turning movements. The delivery of the new route to the A361 does mean, however, that 4 additional movements need to have traffic flows assigned as at the time of the surveys these movements do not exist and so turning movements could not be extracted from the survey data. These are the movements between Blundells Road and the proposed A361 Link Road.

7.3.5 In order to ensure appropriate traffic flows for these movements are included within the traffic analysis and subsequently the capacity modelling, turning movements have been extracted directly form the SATURN Modelling outputs provided to Stantec by DCC. These movements have been manually inputted into the traffic analysis model for the purposes of this assessment. This is considered to be the most appropriate approach to assessing the likely traffic flows at the proposed new link road junction, given the data available.

7.3.6 This adjusted baseline scenario informed all scenarios undertaken in this assessment. The proportional differences to traffic flows brought about by the proposed A361 junction (although not including A361 junction movements, as described above) are presented in **Figures 7.1** and **7.2**. The adjusted 2021 surveyed traffic flows are presented in **Figures 7.3** and **7.4**

7.4 Existing Hartnoll Business Centre Traffic

7.4.1 As set out in Chapter 5, the existing Hartnoll Business Centre will be accessed via the proposed site access junction, with the existing access stopped up. Surveys were not undertaken for the existing access junction, but ATCs installed on Post Hill will have captured traffic associated with the existing employment land uses.

7.4.2 In order to ensure that the traffic associated with the business centre is included within the proposed site access junction assessment, trips associated with the existing employment uses have been calculated. Based on information provided by Waddeton Park Ltd, the proposed employment element of the development is in line with the employment land uses already in place. Therefore, the trip generation for the existing employment uses replicates that

calculated for the proposed uses. These trips have been assigned to the turning movements at the proposed site access junction and incorporated into the reference case traffic flows.

7.5 Assessment Years and Traffic Growth

7.5.1 The impact of new development on the highway network needs to be considered beyond its opening year and the baseline traffic flows have been adjusted to represent future conditions in forecast years. These flows are generally presumed to have increased to account for background growth in traffic flows caused by developments allocated within local policy and other demographic changes. This ensures that the impact of the development on the local highway network is considered under a 'worst case' scenario in terms of total traffic flow.

7.5.2 An opening year of 2024 is considered appropriate for this assessment, taking into account the timelines for outline application permission, likely post application negotiations, detailed design and eventual detailed planning application(s). In addition, a future year scenario of 2029, or five years post-opening, is considered appropriate as this takes into account the time for full development buildout. This was agreed with DCC at the scoping stage.

7.5.3 The methodology for undertaking the adjustment from 2021 to 2024 and 2029 is based on National Traffic Model (NTM) figures and National / Local Trip End figures obtained from TEMPro 7.2b. These are used to provide the overall AM and PM peak growth rates, which reflect local conditions within the area.

7.5.4 The site falls within the boundary of the 'Mid Devon 006' Middle Super Output Area (MSOA). Growth rates have therefore been extracted for this zone and informed by the following search criteria.

- Weekday AM and PM Peak Hours;
- 'Mid Devon 006' Middle Super Output Area;
- All trip purposes;
- Principle road type;
- Origin / Destination Trip End types

7.5.5 These growth factors are shown in **Table 7-1** below.

Year	AM	PM
2021 - 2024	1.0244	1.0248
2021 - 2029	1.0612	1.0627

Table 7.1: Unadjusted TEMPro growth factors

7.5.6 The above growth factors are considered to provide a realistic forecast of traffic growth during the period between the baseline and future year scenarios. However, the main source of housing growth in the local area is the EUE and the traffic associated with this is to be included within the impact assessment as committed development. Therefore, the TEMPro growth factors presented in Table 3.2 will also include the impact of the EUE housing on the local highway network. In order to prevent double counting, the alternative assumptions tool within TEMPro has been used to generate adjusted TEMPro growth factors. Housing growth that is incorporated within the calculation of growth factors has been removed to reflect the fact that traffic associated will be included within the assessment as committed development.

7.5.7 The forecast growth in employment has been retained within the growth factor calculation. Although the EUE does include employment land uses, other employment sites within the Tiverton area will likely result in increased traffic flow and so should not be discounted from the TEMPro growth factors. This approach is considered to be robust.

7.5.8 The adjusted inputs are shown in the table below. The figures in bold represent where changes have been applied.

	Current Assumptions				Alternative Assumptions			
Time Period	Base Houses	Base Jobs	Future Houses	Future Jobs	Base Houses	Base Jobs	Future Houses	Future Jobs
2021-2024	3165	3522	3265	3554	3165	3522	**3165**	3554
2021-2029	3165	3522	3425	3601	3165	3522	**3165**	3601

Table 7.2: TEMPro planning assumptions

7.5.9 The above assumptions have been applied within the TEMPro software to generate the resulting growth factors.

Year	AM	PM
2021 - 2024	1.008	1.007
2021 - 2029	1.020	1.018

Table 7.3: Adjusted TEMPro growth factors

7.5.10 The growth factors presented in the table above have been applied to the 2021 baseline peak hour traffic flows in order to provide future baseline scenarios, against which the impact of the development traffic is assessed.

7.5.11 The 2024 and 2029 AM and PM peak baseline flows are presented in **Figures 7.5-7.8**.

7.6 Committed Development

7.6.1 The main source of housing growth within the study area will be the Eastern Urban Extension (EUE). Therefore, traffic flows associated with permitted parts of this urban extension have been obtained and included within this assessment.

7.6.2 The EUE will eventually comprise of up to 1,500 dwellings and approximately 30,000m^2 of employment space, as well as associated facilities including a primary school. The site will come forward in phases, with approximately 300 dwellings already constructed in the northern parcel as a development known as Braid Park. Traffic associated with this element of the EUE has therefore already been included within the surveyed flows undertaken for the purposes of this assessment.

7.6.3 Outline planning consent was granted in 2017 for up to 700 dwellings, c. 22,000 sqm of employment land, and associated ancillary facilities such as a neighbourhood centre (Planning Ref: 14/00881/MOUT). Traffic flows associated with this application have therefore been included within the traffic analysis.

7.6.4 To do this, reference has been made to the trip generation information set out in the TA submitted in support of the above application. Insufficient information was included in the TA to extract traffic flows directly, and so trip generation figures for both employment and

residential uses has been extracted and applied to the network based on the residential and employment trip distribution analysis used for the purposes of the proposed development analysis (as described in the following section). The EUE TA included a 10% internalisation factor for all trips which has been retained.

7.6.5 The resulting committed development trips are illustrated in **Figures 7.9** and **7.10.** The permitted portion of the EUE includes two access points onto Blundells Road and so an assumption has been made regarding the proportion of traffic that would use each of these access points. For the purposes of this assessment, 50% of traffic generated by the committed development would use each of the access junctions.

7.6.6 The committed development flows have been added to both the 2024 and 2029 AM and PM peak flows to generate 4 Reference Case scenarios. These are presented in **Figures 7.11-7.14.**

7.7 Development Traffic Distribution and Assignment

7.7.1 The development traffic has been distributed across the study area based on 2011 Census data for the Mid Devon 006 MSOA. Different datasets have been used for both the residential and employment element of the trip generation. The trips associated with the Gym / Leisure uses have been applied to the network in line with the employment uses proposed at the site.

Residential Distribution

7.7.2 For the residential trips, the 'location of usual residence and place of work by method of travel to work' (WU03EW) dataset. This allows distribution analysis to be undertaken based on the commuting patterns of existing residents in the vicinity of the site and the surrounding area.

7.7.3 MSOAs where more than 4 people travelled to for work were identified and extracted from the data. These locations, the proportion of trips associated with each MSOA are presented in the table below:

Place of Work - MSOA	Proportion of Trips
Torbay 013	0.2%
East Devon 001	0.6%
East Devon 002	0.6%
East Devon 004	1.0%
East Devon 006	4.0%
East Devon 013	0.4%
East Devon 014	1.5%
East Devon 019	0.4%
Exeter 001	0.9%
Exeter 003	1.0%
Exeter 004	0.5%
Exeter 006	0.3%
Exeter 007	0.3%
Exeter 008	4.8%

Exeter 009	0.9%
Exeter 011	9.3%
Exeter 013	2.6%
Exeter 014	2.3%
Exeter 015	0.3%
Mid Devon 001	1.5%
Mid Devon 002	2.2%
Mid Devon 003	2.9%
Mid Devon 004	10.5%
Mid Devon 005	10.5%
Mid Devon 006	9.6%
Mid Devon 007	11.3%
Mid Devon 008	3.4%
Mid Devon 010	0.3%
Mid Devon 011	0.5%
North Devon 008	0.5%
North Devon 013	0.9%
North Devon 014	0.2%
Teignbridge 001	0.3%
Teignbridge 002	0.5%
Teignbridge 014	0.2%
West Devon 001	0.3%
Sedgemoor 009	0.4%
Sedgemoor 014	0.4%
South Somerset 018	0.3%
Taunton Deane 002	0.3%
Taunton Deane 003	0.3%
Taunton Deane 004	0.4%
Taunton Deane 006	1.4%
Taunton Deane 007	0.9%
Taunton Deane 008	0.5%
Taunton Deane 009	0.3%
Taunton Deane 010	2.3%
Taunton Deane 011	0.9%
Taunton Deane 012	1.5%

Taunton Deane 013	2.2%
Taunton Deane 014	0.3%
West Somerset 004	0.2%
Total	**100%**

Table 7.4: Residential Census Distribution Analysis

7.7.4 Routes between the site and the locations set out in **Table 7.3** have been identified using an online route planner tool to establish the impact on each turning movement within the study area. As the network included in this assessment includes the proposed A361 link road, trips have been manually reassigned to use this route where it is considered it would be quicker or more efficient. Generally, trips travelling to locations accessible via the M5 or travelling northwest on the North Devon Link Road have been rerouted via the new junction.

7.7.5 The residential trip distribution is presented in **Figure 7.15.**

Employment Trip Distribution

7.7.6 Similarly, for the employment trips the 'location of usual residence and place of work by method of travel to work' (WU03EW) dataset was used. However, the analysis extracted data of those who work in the local MSOA and commute from other locations. This allows distribution analysis to be undertaken based on the commuting patterns of those who currently work in the vicinity of the site and the surrounding area.

7.7.7 MSOAs where more than 4 people travelled to for work were identified and extracted from the data. These locations and the proportion of trips associated with each MSOA are presented in the table below:

Place of Work - MSOA	Proportion of Trips
East Devon 001	0.6%
East Devon 002	0.7%
East Devon 004	0.9%
East Devon 006	0.6%
East Devon 013	0.3%
East Devon 014	0.4%
East Devon 018	0.6%
East Devon 019	0.3%
Exeter 001	1.0%
Exeter 002	0.6%
Exeter 003	1.0%
Exeter 004	0.6%
Exeter 005	1.0%
Exeter 006	0.8%
Exeter 007	0.9%
Exeter 008	1.0%

Exeter 009	0.4%
Exeter 010	1.0%
Exeter 011	0.6%
Exeter 012	0.4%
Exeter 013	1.4%
Exeter 014	0.8%
Exeter 015	0.4%
Mid Devon 001	4.7%
Mid Devon 002	11.5%
Mid Devon 003	7.3%
Mid Devon 004	9.7%
Mid Devon 005	7.6%
Mid Devon 006	14.5%
Mid Devon 007	14.5%
Mid Devon 008	4.0%
Mid Devon 009	0.9%
Mid Devon 010	0.9%
Mid Devon 011	0.9%
North Devon 012	0.3%
North Devon 014	0.6%
Teignbridge 004	0.6%
Taunton Deane 002	0.5%
Taunton Deane 003	0.4%
Taunton Deane 006	0.5%
Taunton Deane 008	0.4%
Taunton Deane 012	1.5%
Taunton Deane 013	2.2%
Total	**100%**

Table 7.5: Employment Census Distribution Analysis

7.7.8 In line with the analysis undertaken for the residential distribution, routes between the site and the locations set out in the table above have been identified using an online route planner tool to establish the impact on each turning movement within the study area. The same approach to incorporating the new A361 link road was also applied, ensuring that employment trips likely to be routed via this new link are distributed appropriately to the network.

7.7.9 The residential trip distribution is presented in **Figure 7.16.**

7.7.10 The turning proportions for both residential and employment distribution as described above have been applied to the respective residential and employment development trip generation in order to establish the number of development trips at each of the junctions within the study area. This is illustrated in **Figures 7.17** and **7.18**.

7.7.11 Subsequently, the development trips have been added to the Reference Case traffic flows in order to generate Test Case scenarios. This has been completed for both opening and future year scenarios and is presented in **Figures 7.19 to 7.22.** The calculation of these traffic flow scenarios allows the impact of the development to be assessed through the capacity analysis.

7.8 Junction Impact Assessment

7.8.1 A proportional impact assessment has been undertaken at the four junctions that form the study area. This has been completed to determine the proportional increase in traffic brought about by the development at each of the junctions in the study area. Where an insignificant level of increase is identified, detailed capacity assessments have not been undertaken in accordance with the agreed scope. A significant increase is deemed to be greater than 5%, which is generally considered to be the level of daily variation in traffic flow experienced at a typical junction.

7.8.2 The Reference and Test case totals for each of the junctions are presented in the tables below, alongside the proportional increase.

Blundell's Roundabout

7.8.3 The table below presents the 2024 and 2029 Reference and Test case traffic flows for the Blundell's Roundabout, and shows the proportional impact forecast as a result of the development.

Scenario	AM Peak	PM Peak
2024 Reference Case	2475	2522
2024 Test Case	2528	2577
% Impact	**2.15%**	**2.20%**
2029 Reference Case	2501	2546
2029 Test Case	2554	2601
% Impact	**2.13%**	**2.18%**

Table 7.6: Blundell's Roundabout Impact Assessment

Proposed A361 Link Road Junction

7.8.4 The table below presents the 2024 and 2029 Reference and Test case traffic flows for the proposed A361 Link Road junction and shows the proportional impact forecast as a result of the development.

Scenario	AM Peak	PM Peak
2024 Reference Case	1216	1260
2024 Test Case	1325	1374
% Impact	**8.95%**	**9.04%**
2029 Reference Case	1227	1271
2029 Test Case	1336	1385
% Impact	**8.87%**	**8.97%**

Table 7.7: Proposed A361 Link Road Junction Impact Assessment

Site Access Junction

7.8.5 The table below presents the 2024 and 2029 Reference and Test case traffic flows for the proposed Site Access junction and shows the proportional impact forecast as a result of the development.

Scenario	AM Peak	PM Peak
2024 Reference Case	826	851
2024 Test Case	969	1001
% Impact	**17.34%**	**17.64%**
2029 Reference Case	833	858
2029 Test Case	977	1008
% Impact	**17.18%**	**17.49%**

Table 7.8: Proposed Site Access Junction Impact Assessment

Willand Road / High Street Junction

7.8.6 The table below presents the 2024 and 2029 Reference and Test case traffic flows for the Willand Road / High Street Junction and shows the proportional impact forecast as a result of the development.

Scenario	AM Peak	PM Peak
2024 Reference Case	669	779
2024 Test Case	703	815
Impact	**5.14%**	**4.63%**
2029 Reference Case	675	785
2029 Test Case	709	822
Impact	**5.09%**	**4.60%**

Table 7.9: Willand Road / High Street Junction Impact Assessment

7.8.7 Based on the tables presented above, capacity assessments have been undertaken at three of the four locations within the study area. The development impact at Blundell's roundabout is around 2% which is within the general daily variation threshold. Therefore, it is not considered necessary to undertake capacity assessments for this location.

7.8.8 The following section sets out further details of the capacity assessments completed for the remaining three junctions.

7.9 Capacity Assessment

7.9.1 The operational capacities of the junctions within the study area have been assessed using the PICADY module of 'industry standard' software programme Junctions 10. The following three junctions have been subject to capacity assessment:

- Site Access / Post Hill
- Willand Road / High Street
- Blundells Road / A361 Link Road

7.9.2 The capacity assessment comprises the following scenarios, assess for both the AM and PM network peaks.

- 2021 Surveyed Base
- 2024 Reference Case
- 2024 Reference Case
- 2024 Test Case
- 2024 Test Case

7.9.3 The capacity analysis results for each junction are summarised in the following tables. The results are presented as ratio of flow to capacity (RFC) and mean maximum queue in passenger car units for each arm. It is generally considered that where the RFC is less than 0.85, the junction is operating within capacity and operating at capacity between 0.85 and 1.00. All values above 1.00 mean that a junction is operating above capacity and long vehicle queues will begin to accumulate.

7.9.4 Full modelling outputs are included in **Appendix F.**

Site Access / Post Hill

Table 7.4 below summarises the capacity assessment results for the Site Access / Post Hill junction, assessed using the PICADY module of Junctions 9. As the junction will only be built should the development come forward, no assessment has been included for the 2021 base year scenario, or 2024 and 2029 Reference Case Scenarios. It should be noted that the results presented below do include flows associated with the existing Hartnoll Business Centre.

Scenario	Junction Arm	AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
		Max RFC	Queue (PCU)	Max RFC	Queue (PCU)
2024 Test Case	Site Access (Left Turn)	0.11	0.1	0.20	0.3
	Site Access (Right Turn)	0.07	0.1	0.12	0.1
	Post Hill	0.26	0.6	0.17	0.4
2029 Test Case	Site Access (Left Turn)	0.11	0.1	0.21	0.3
	Site Access (Right Turn)	0.07	0.1	0.12	0.1
	Post Hill	0.27	0.6	0.17	0.4

Table 7.10: Site Access Junction Capacity Assessment

7.9.5 The results presented in **Table 7.10** demonstrate that the proposed Site Access Junction is forecast to operate well within capacity during both the AM and PM peak periods. A maximum RFC of 0.27 is forecast on Post Hill, during the AM peak hour. Minimal queueing is forecast across both scenarios and both peak hours.

Willand Road / High Street

Table 7.4 below summarises the capacity assessment results for the Willand Road / High Street junction, assessed using the PICADY module of Junctions 9. A queue length survey was also undertaken at the same time as the MCC survey for this junction. The queues recorded are very comparable to the queueing generated in the 2021 base scenario modelling, therefore validating the analysis undertaken as part of this capacity assessment.

2020 Base Year		AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
		Max RFC	Queue (PCU)	Max RFC	Queue (PCU)
2021 Base Year	Willand Road (Left Turn)	0.28	0.4	0.36	0.6
	Willand Road (Right Turn)	0.03	0	0.05	0.1
	High Street	0.29	0.4	0.38	0.7
2024 Reference Case	Willand Road (Left Turn)	0.40	0.7	0.45	0.8
	Willand Road (Right Turn)	0.03	0	0.06	0.1
	High Street	0.40	0.7	0.53	1.3
2024 Test Case	Willand Road (Left Turn)	0.43	0.8	0.47	0.9
	Willand Road (Right Turn)	0.03	0	0.06	0.1
	High Street	0.42	0.8	0.57	1.5
2029 Reference Case	Willand Road (Left Turn)	0.41	0.7	0.45	0.8
	Willand Road (Right Turn)	0.03	0	0.06	0.1
	High Street	0.40	0.7	0.53	1.3
2029 Test Case	Willand Road (Left Turn)	0.43	0.8	0.47	0.9
	Willand Road (Right Turn)	0.03	0	0.06	0.1
	High Street	0.43	0.8	0.57	1.5

Table 7.11: Willand Road / High Street Capacity Assessment

7.9.6 The results presented in **Table 7.11** demonstrate that the Willand Road / High Street Junction is forecast to operate well within capacity during both the AM and PM peak periods in all scenarios. A maximum RFC of 0.57 is forecast on High Street, during the AM peak hour in both Test Case scenarios. Minimal queueing is forecast across all scenarios in both peak hours. Overall, the junction operates well within capacity in the reference case scenarios and addition of development traffic has insignificant impact on the operation of the junction.

Proposed A361 Link Road / Blundell's Road

Table 7.4 below summarises the 2020 Base Year results for the proposed A361 Link Road / Blundells Road junction, assessed using the PICADY module of Junctions 9. As the junction has not yet been constructed, 2021 base year results for this scenario haven't been included.

2020 Base Year		AM Peak (08:00 – 09:00)		PM Peak (17:00 – 18:00)	
		Max RFC	Queue (PCU)	Max RFC	Queue (PCU)
2024 Reference Case	A361 Link Rd (Left Turn)	0.13	0.2	0.13	0.2
	A361 Link Rd (Right Turn)	0.33	0.5	0.30	0.4
	Blundell's Road	0.57	2	0.59	2.2
2024 Test Case	A361 Link Rd (Left Turn)	0.19	0.2	0.18	0.2
	A361 Link Rd (Right Turn)	0.36	0.6	0.34	0.5
	Blundell's Road	0.65	2.8	0.68	3.3
2029 Reference Case	A361 Link Rd (Left Turn)	0.14	0.2	0.13	0.2
	A361 Link Rd (Right Turn)	0.33	0.5	0.31	0.4
	Blundell's Road	0.58	2.1	0.60	2.2
2029 Test Case	A361 Link Rd (Left Turn)	0.19	0.2	0.18	0.2
	A361 Link Rd (Right Turn)	0.37	0.6	0.35	0.5
	Blundell's Road	0.66	2.9	0.69	3.4

Table 7.12: Proposed A361 Link Road / Blundells Road Junction Capacity Assessment

7.9.7 The results presented in **Table 7.12** demonstrate that the A361 Link Road / Blundells Road Junction is forecast to operate within capacity during both the AM and PM peak periods in all scenarios. A maximum RFC of 0.69 is forecast on Blundells Road, during the PM peak hour in the 2029 Test Case scenarios. A maximum queue of three vehicles is forecast in the same scenario. Overall the junction operates well within capacity during the AM and PM peak hours of 2024 and 2029.

7.10 Conclusion

7.10.1 This section of the TA evaluates three off-site junctions that form the study area to assess the impact of development traffic in future year scenarios.

7.10.2 The traffic impact of the proposed development has been assessed and is considered acceptable as development impacts are not considered to be severe.

7.10.3 The above analysis and outcomes are considered to be a robust assessment and provides a worst-case scenario, as whilst we have highlighted the wider changes in travel trends, we have not included any of this within the assessment. Furthermore, the development of the EUE is likely to result in a level of internalisation of trips generated by the site, therefore reducing the external trips onto the local highway network. This hasn't been considered within this assessment. Finally, Travel Planning measures will be implemented to encourage use of alternative modes and reduce levels of single occupancy vehicle trips arising from the

proposed development and therefore further reduce impacts of the development on the local highway network.

8 Summary and Conclusion

8.1.1 This Transport Assessment (TA) has been prepared by Stantec on behalf of Waddeton Park Ltd. and presents a comprehensive assessment of the transport context and impact in relation to a proposed mixed-use development of up to 150 residential dwellings and around 9,300m^2 of employment and leisure uses at Hartnoll Farm, Tiverton.

8.1.2 The TA has been prepared in accordance with advice set out within national and local planning policy and guidance.

8.2 Summary

8.2.1 The key findings of the TA are summarised below:

- A scoping report has been produced and submitted to DCC (May 2020) and a subsequent agreement was reached with the highway authority regarding the scope of the assessment.
- The proposed development will be accessed via a new junction onto Post Hill. Pedestrians and cyclists will be able to use this access, as well as others located to the west of the access junction on Post Hill and also via Manley Lane.
- The development is compliant with all transport related policies at a national and local level
- The proposed development will be accessible to the local facilities and public transport services in the vicinity of the site, utilising the existing pedestrian and cycle links that are already in place in the area, including the National Cycle Route 3. This will ensure that many of the travel needs of residents and visitors of the site can be met without the requirement of a private car.
- Offsite enhancements will improve and encourage access to sustainable modes and include the provision of new bus stops, a new footway along the northern frontage to connect with the existing footway network and crossing points over both Manley Lane and Post Hill.
- The existing road network is of a good condition and well aligned in the vicinity of the site. Based on the existing conditions on the surrounding highway network and a review of the accident history within the area, it is not envisaged that the proposed development will result in any highway safety concerns.
- The vehicle trip generation of the site has been based on analysis informed by the TRICs database and indicates that a total of 143 and 150 two-way vehicle trips will be generated during both the AM and PM peak hours respectively.
- The application of a modal split based on local data indicates that the multi modal trip generation of the site will equate to 187 and 197 two-way movements during the AM and PM peak hours respectively.
- Vehicle trip distribution analysis has been based on Census ‘Journey to Work’ data and assigned to the local highway network
- Traffic surveys were undertaken in June 2021 in order to inform the assessment and on which to base the traffic analysis assessment. These were validated against pre-pandemic flows and concluded to be appropriate for use. TEMPro growth factors have been

generated and applied to the surveyed traffic in order to produced future year baseline scenarios.

- These flows have been subject to redistribution analysis to take account of the impact of the new A361 junction in the vicinity of the site. This has been based on SATURN outputs provided by DCC.
- Committed development traffic associated with the permitted part of the Tiverton EUE has been generated following liaison with DCC and assigned to the highway network to generate Reference Case modelling scenarios.
- Development traffic has been added to the Reference Case traffic flows in order to generate Test Case scenarios for modelling
- Junction models have been built using industry standard software and the traffic flows inputted. The junctions are all forecast to operate within capacity and the development impact is considered to be minimal.

8.3 Conclusion

8.3.1 Taking into account the findings of the TA outlined above, with regards to the accessibility of the development and the minimal impact to the existing operation of the local road network, it is concluded that the proposed development is considered acceptable on transport grounds, in line with NPPF, on the basis that:

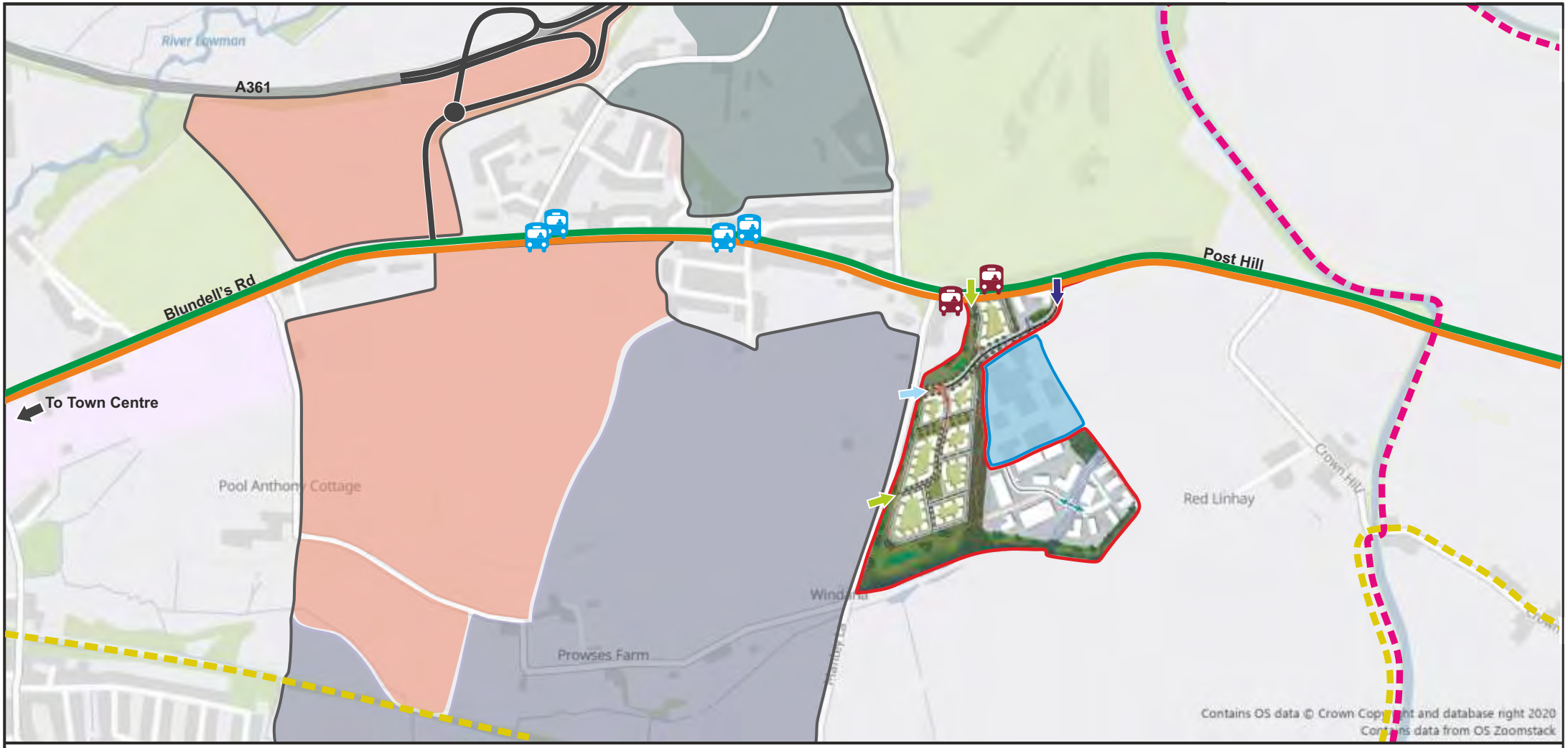
i. appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

ii. safe and suitable access to the site can be achieved for all users; and

iii. 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.

8.3.2 This TA has confirmed that there would be no unacceptable impact on highway safety, and the residual cumulative impacts on the road network would not be severe.

Figures



Key

- Site Location
- Proposed Vehicle Access
- Proposed Pedestrian / Cycle Access
- Proposed Pedestrian / Cycle Access and Future Potential Connection to EUE
- Tiverton Eastern Urban Extension (EUE)
- Constructed EUE Parcels (Braid Park)
- Permitted EUE Parcels (14/00881/MOUT)
- Future EUE Phases
- Proposed A361 Link Road / Junction
- Existing Bus Stop
- Proposed Bus Stop
- PRoW Route - Canal Path Leisure Route
- National Cycle Route 3 (NCN3)
- No. 1/1A Stagecoach Bus Service
- No. 22 First Buses Service
- Hartnoll Business Park

Stantec

Client: Waddeton Park Ltd

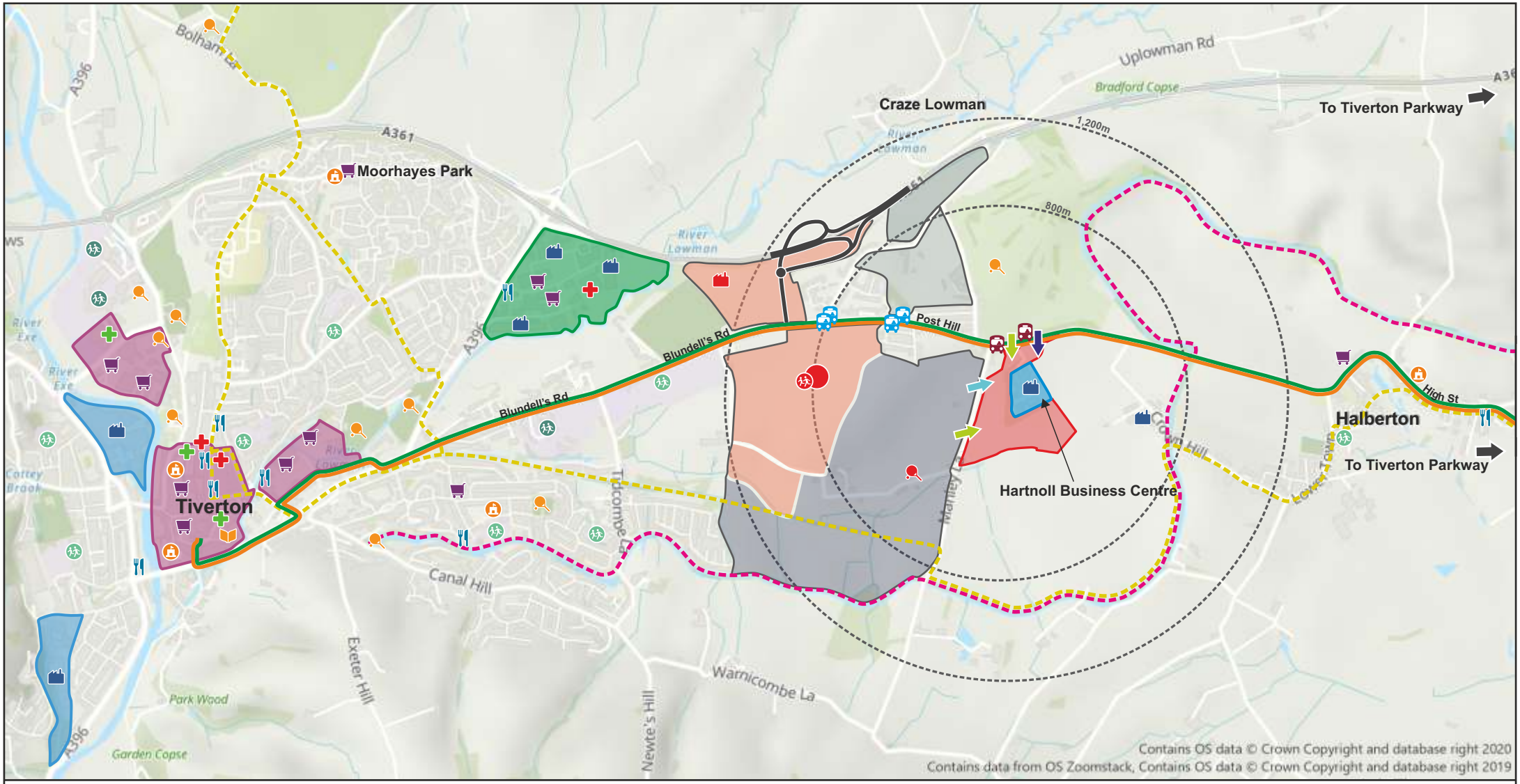
Project

Hartnolls Farm, Tiverton

Site Location Plan

Mark		Drawn	Date	Chked
Date	12/07/21			
Scale	NTS			
Drawn By	NL			
Checked by	JH			

Figure 3.1



Key

- Site Location
- Proposed Vehicle Access
- Proposed Pedestrian / Cycle Access
- Proposed Pedestrian / Cycle Access and Future Potential Vehicle Connection to EUE
- Tiverton Eastern Urban Extension (EUE)
- Constructed EUE Parcels (Braid Park)
- Permitted EUE Parcels (14/00881/MOUT)
- Future EUE Phases
- Proposed A361 Link Road / Junction
- Existing Bus Stop
- Proposed Bus Stop
- PRoW Route - Canal Path Leisure Route
- National Cycle Route 3 (NCN3)
- No. 1/1A Stagecoach Bus Services
- No. 22 First Buses Service
- Retail Area / Local Centre
- Employment Area
- Tiverton Business Park
- Shops
- Employment
- Primary School
- Secondary School
- Public House / Café / Restaurant / Takeaway
- Hospital / Medical Centre / Dental Centre
- Pharmacy
- Leisure / Sport Facilities
- Public Library
- Community Centre
- Proposed School
- Proposed Mixed-Use Centre
- Proposed Sports Facilities
- Proposed Employment

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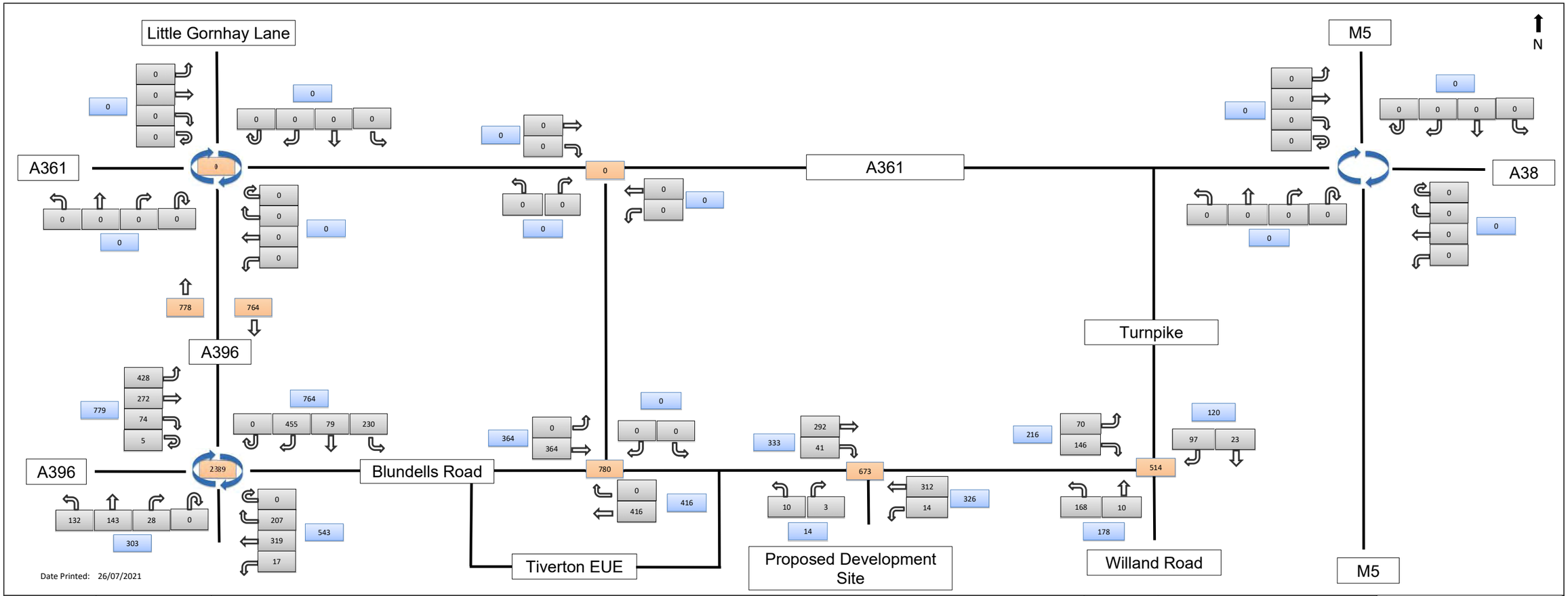
Project

Hartnolls Farm, Tiverton

Existing and Proposed Facilities and Amenities

Mark		Drawn	Date	Chked
Date	12/07/21			
Scale	NTS			
Drawn By	NL			
Checked by	JH			

Figure 3.2



Stantec

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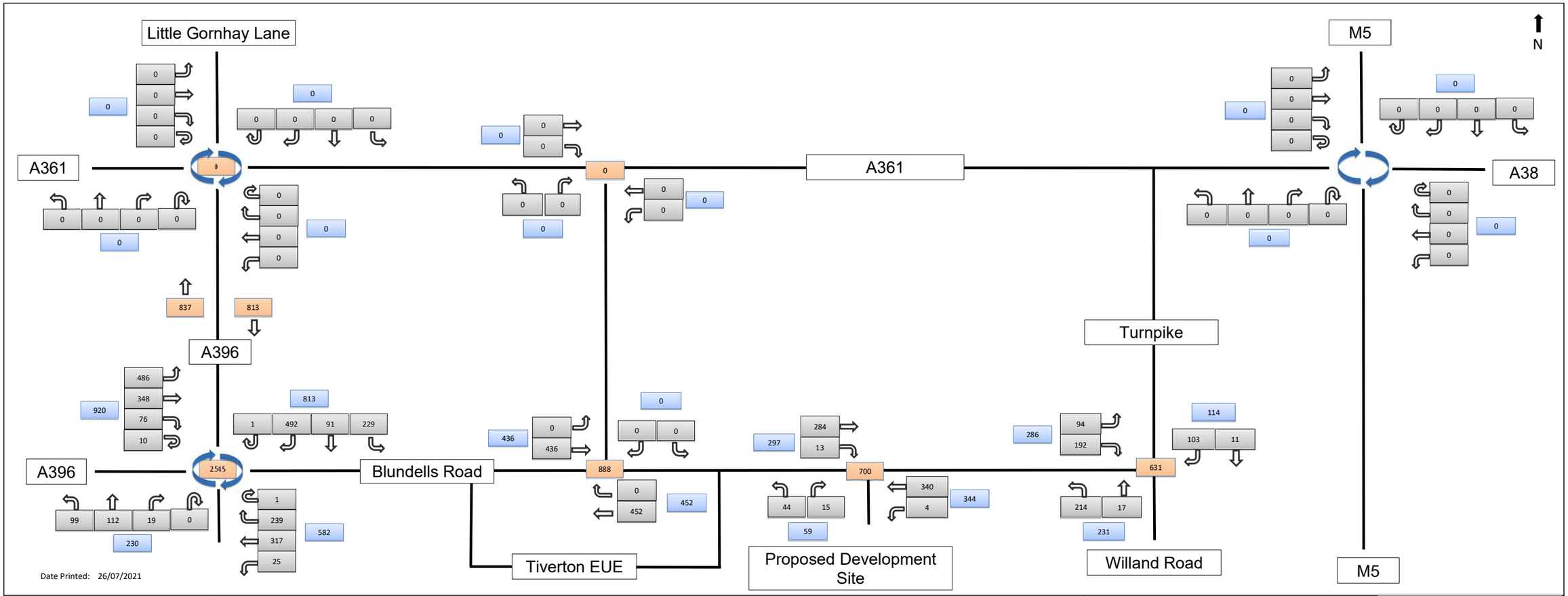
STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Surveyed Base - 0800-0900 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 3.5



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Client: Waddeton Park Ltd.

STANTEC
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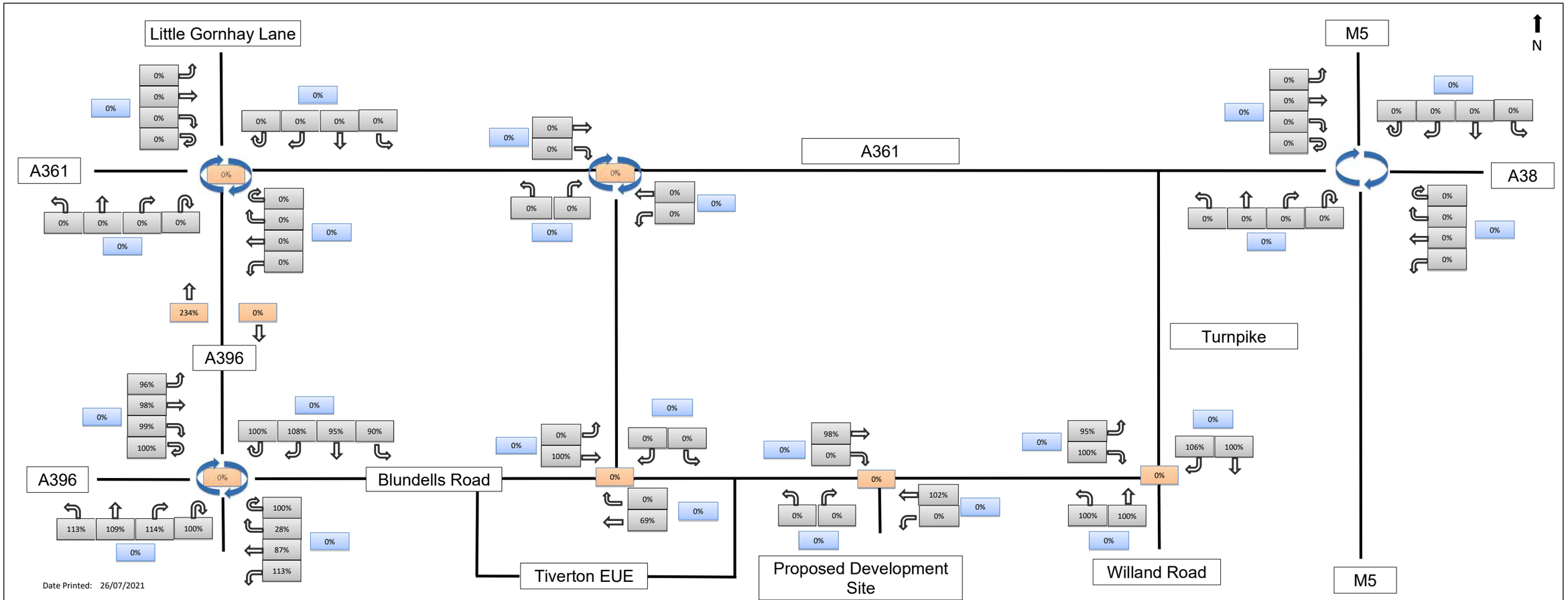
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Surveyed Base - 1700-1800 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 3.6



Stantec

Client: Waddeton Park Ltd.

STANTEC
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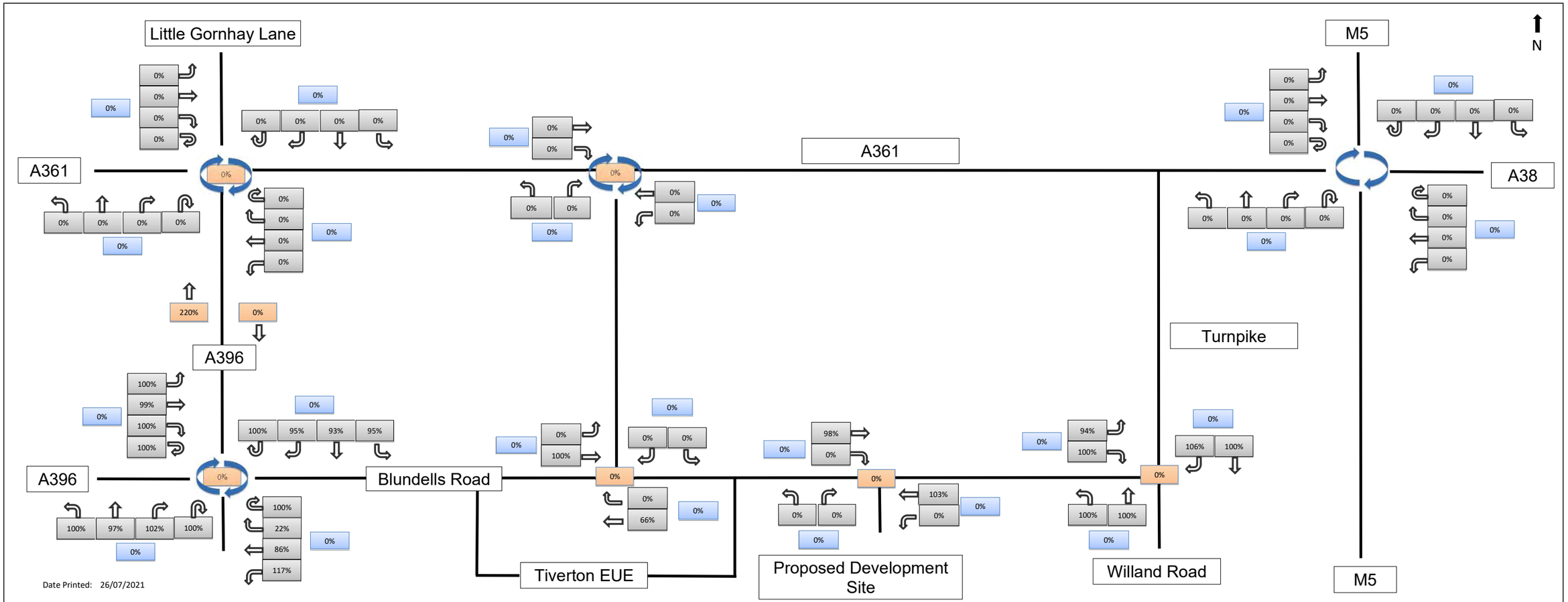
Proportional Traffic Flow Adjustments - AM Peak

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	Jul-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.1



Stantec

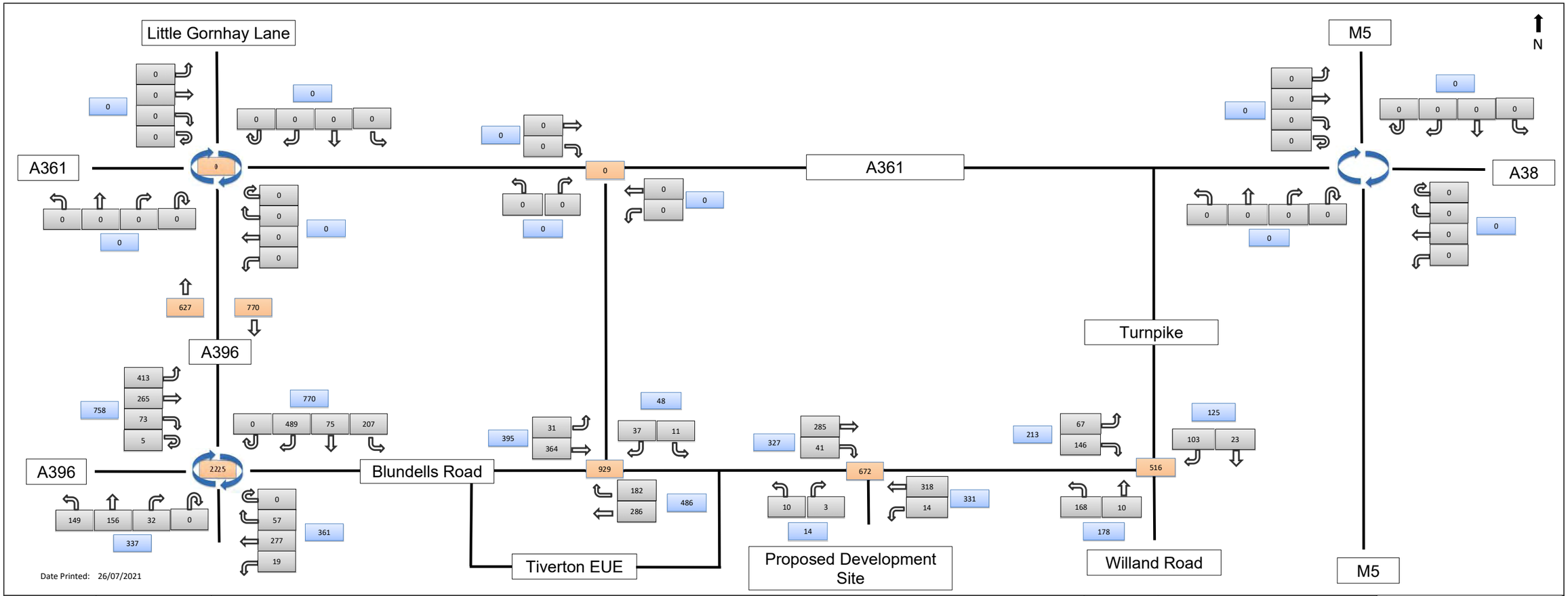
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Proportional Traffic Flow Adjustments - PM Peak

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	Jul-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.2



Stantec

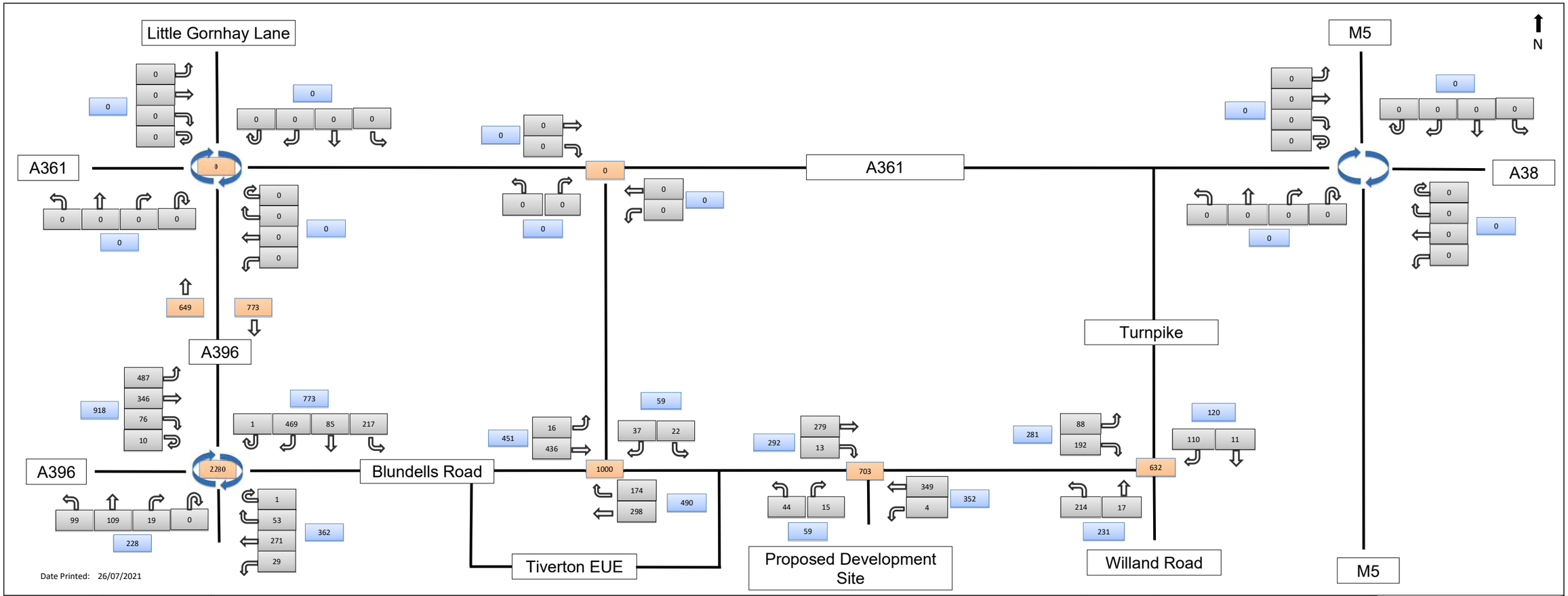
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Adjusted 2021 Traffic Flows - AM Peak 0800-0900 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.3



Stantec

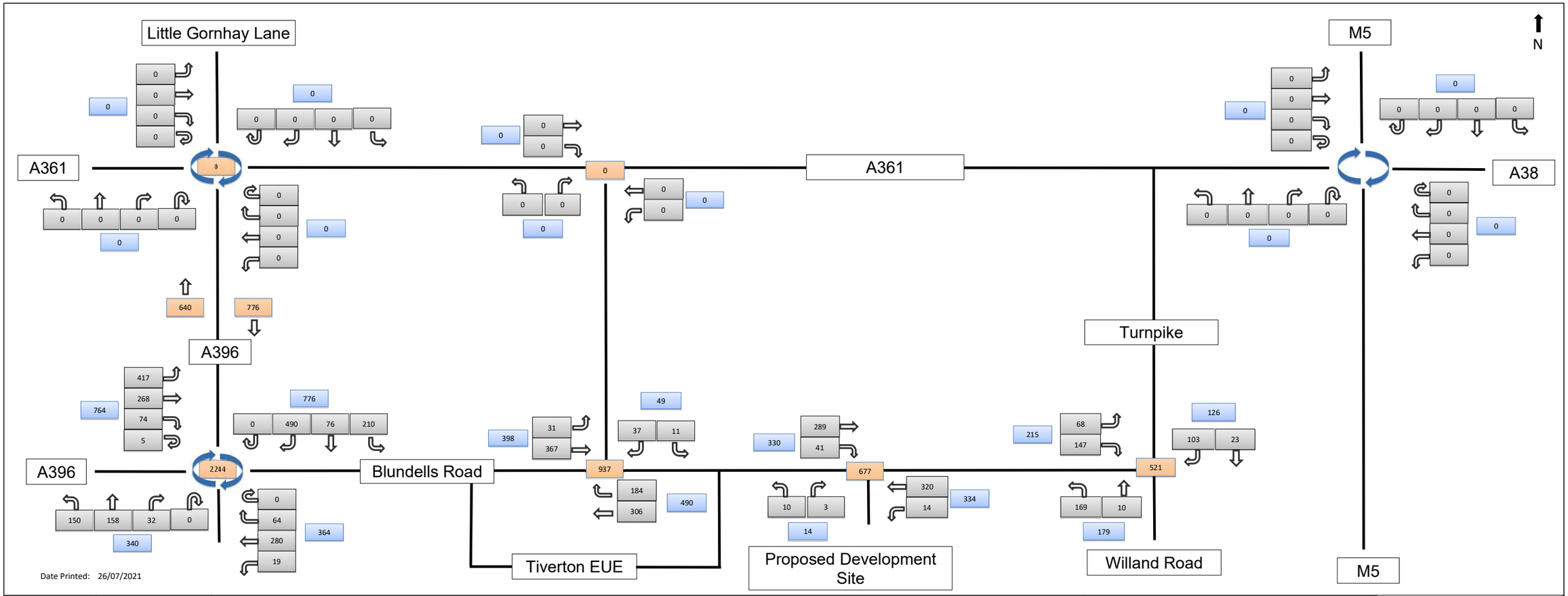
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Adjusted 2021 Traffic Flows - AM Peak 1700-1800 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.4



Stantec

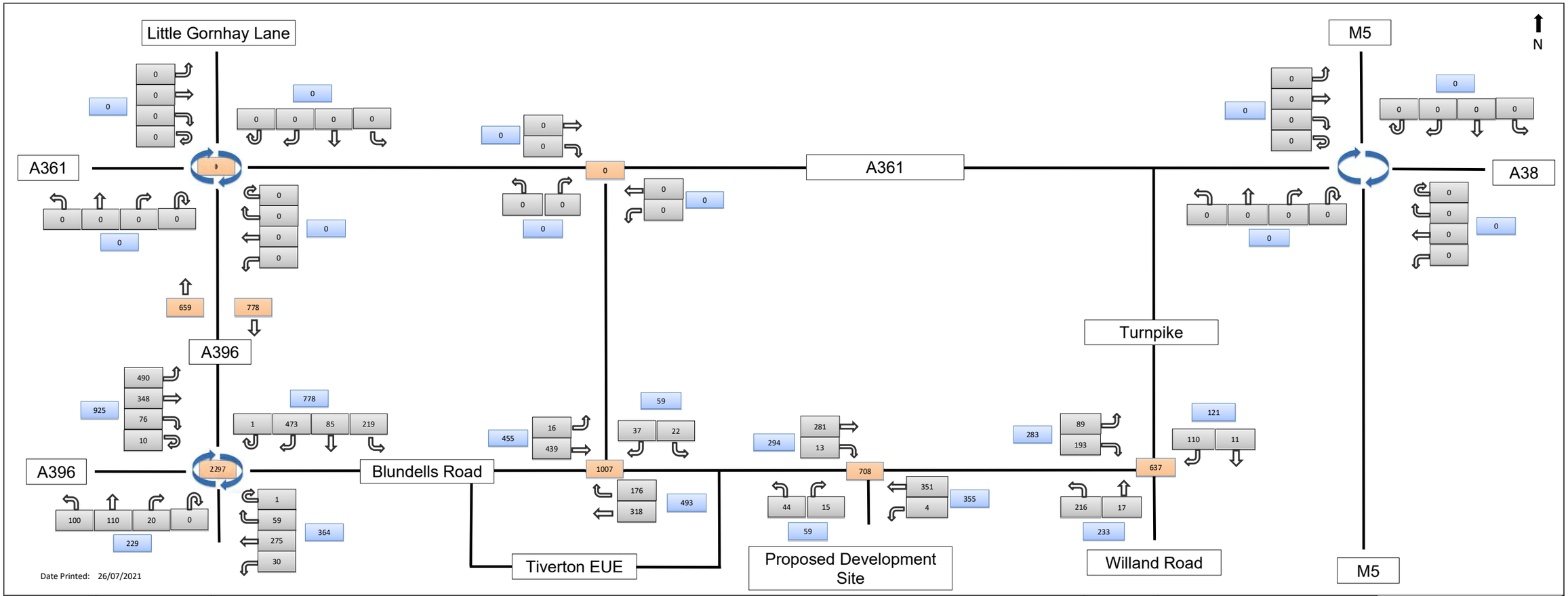
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2024 Base Traffic - 0800-0900 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.5



Stantec

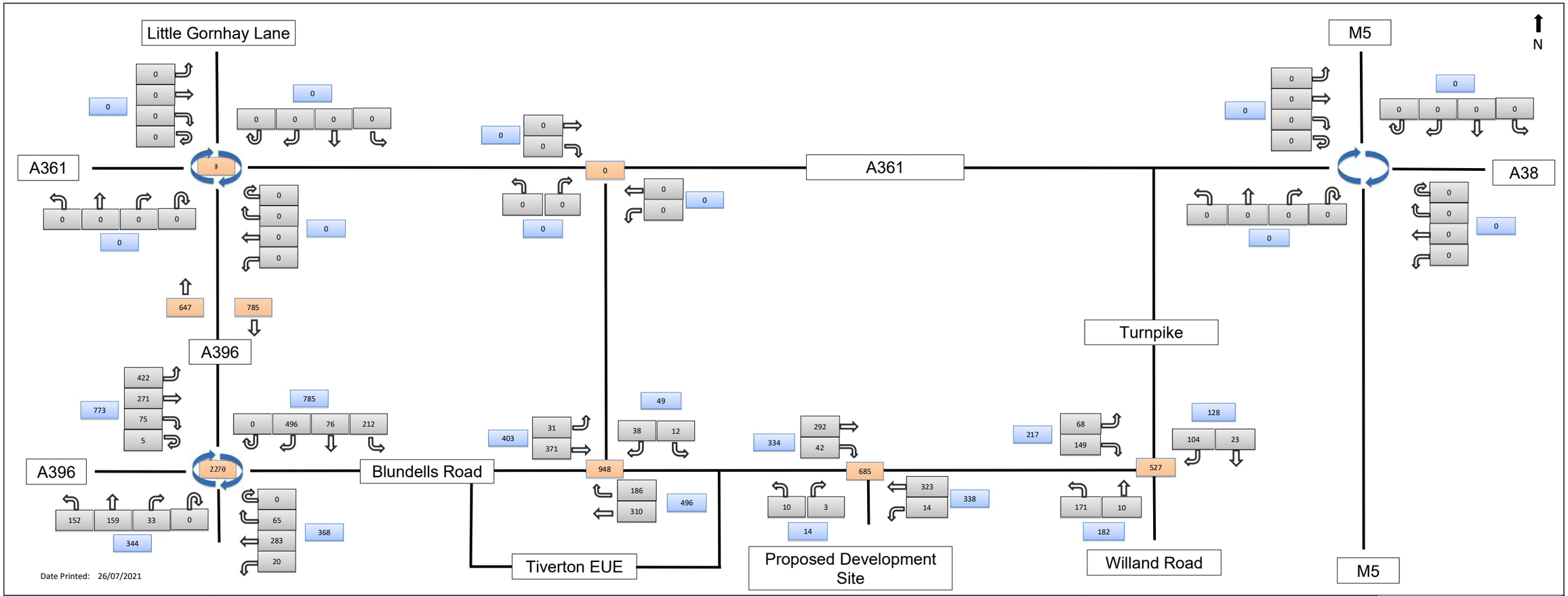
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2024 Base Traffic - 1700-1800 PCUs

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.6



Stantec

Client: Waddeton Park Ltd.

STANTEC
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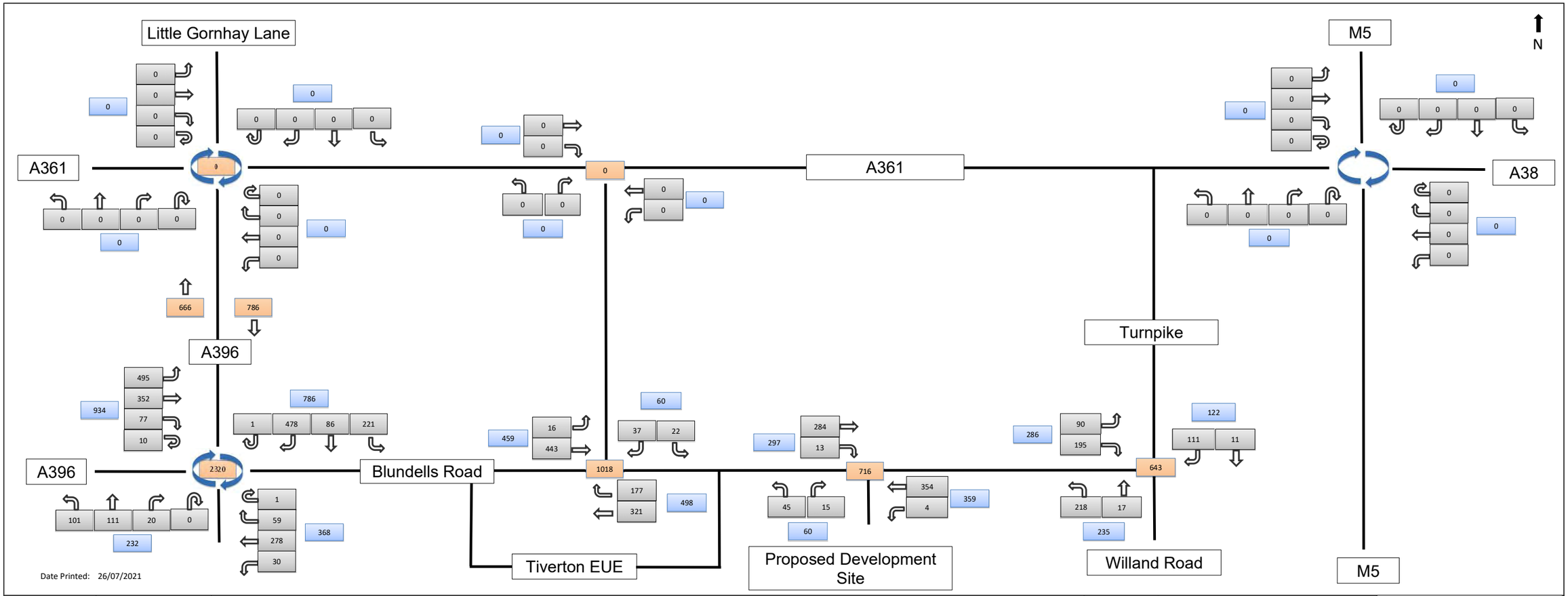
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2029 Base Traffic - 0800-0900 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.7



Stantec

Client: Waddeton Park Ltd.

STANTEC
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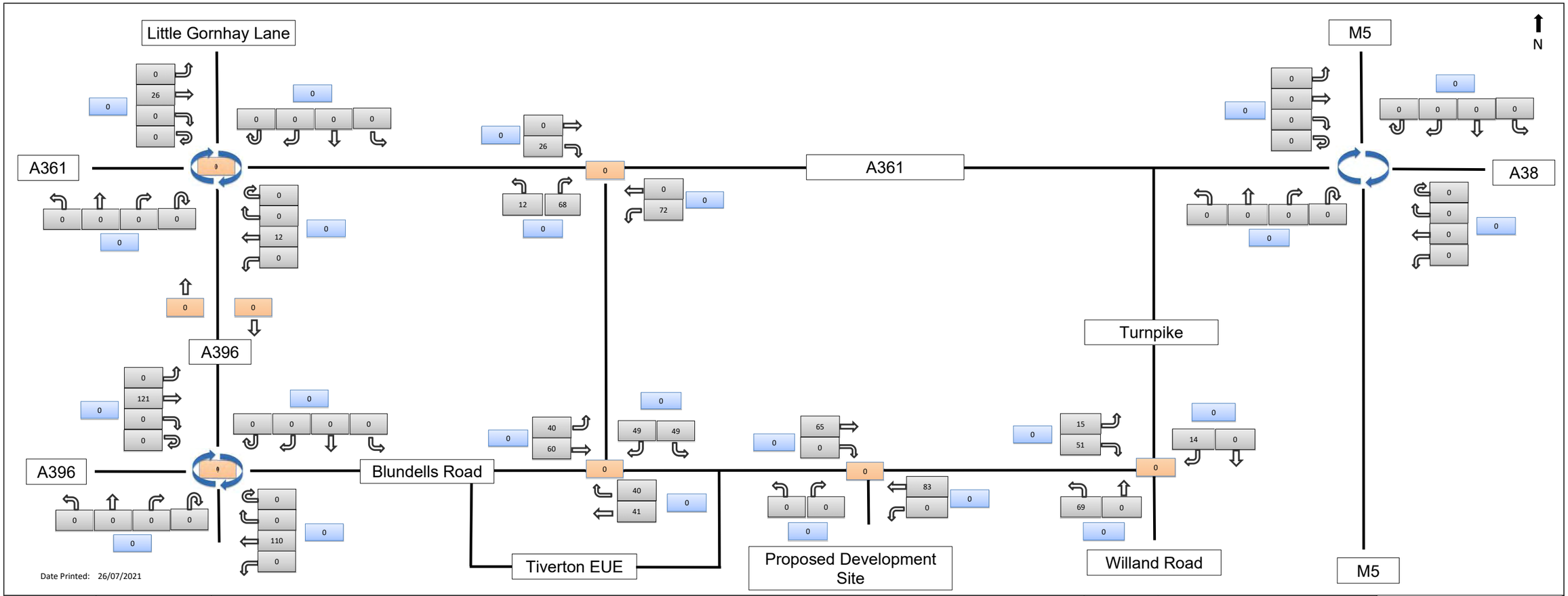
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2029 Base Traffic - 1700-1800 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.8



Stantec

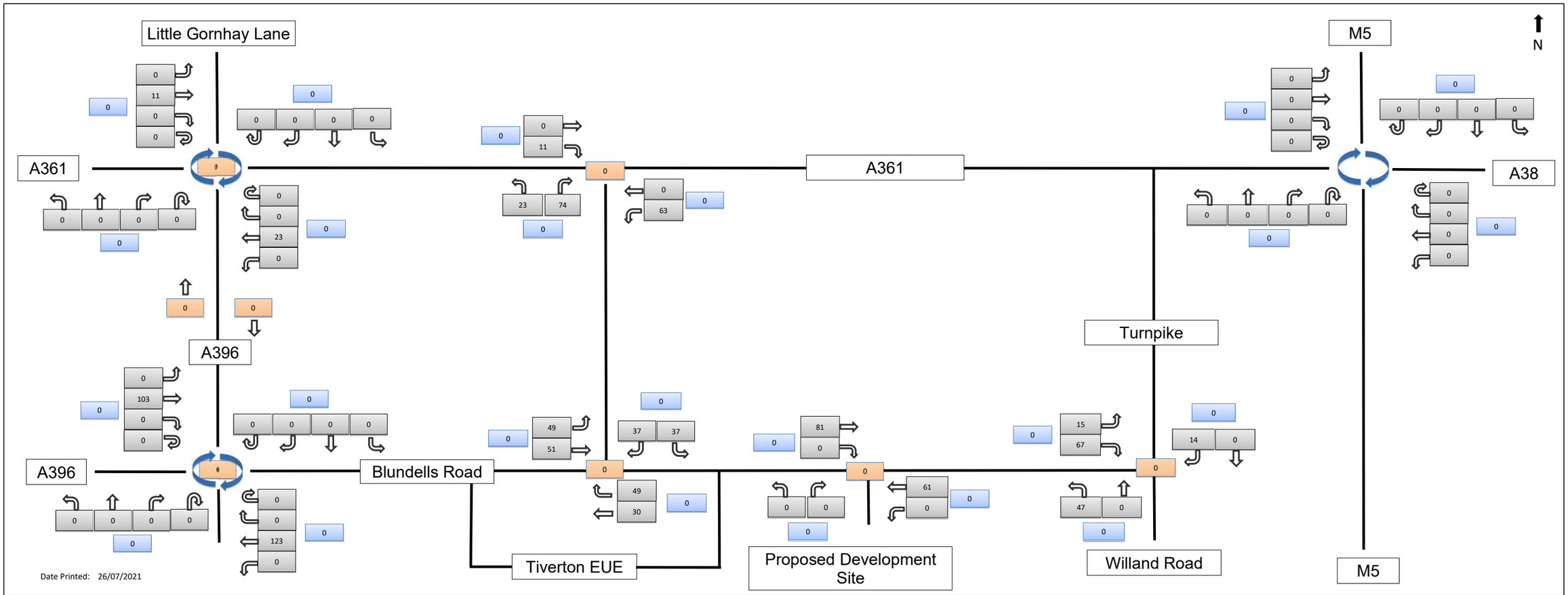
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Total Committed Develepment Traffic - AM Peak

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

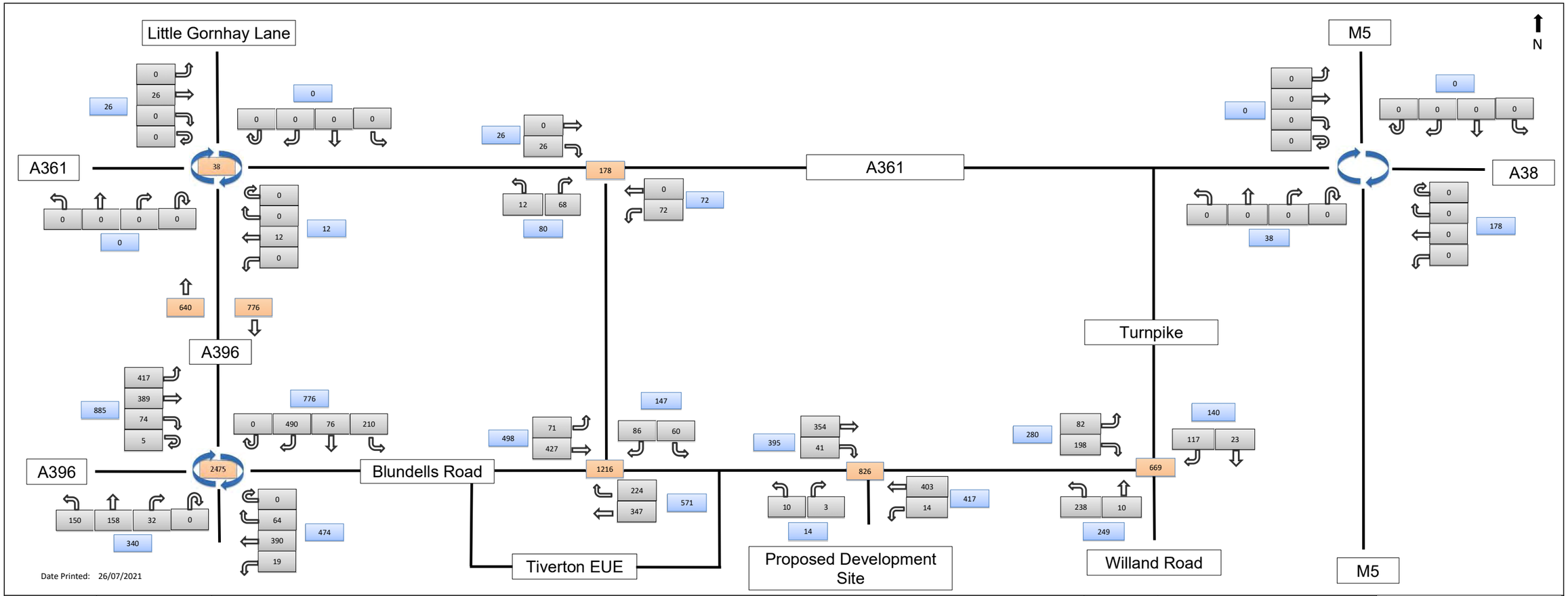
Figure 7.9



Stantec	Client: Waddeton Park Ltd.	Total Committed Develepment Traffic - PM Peak	Figure 7.10

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH



Stantec

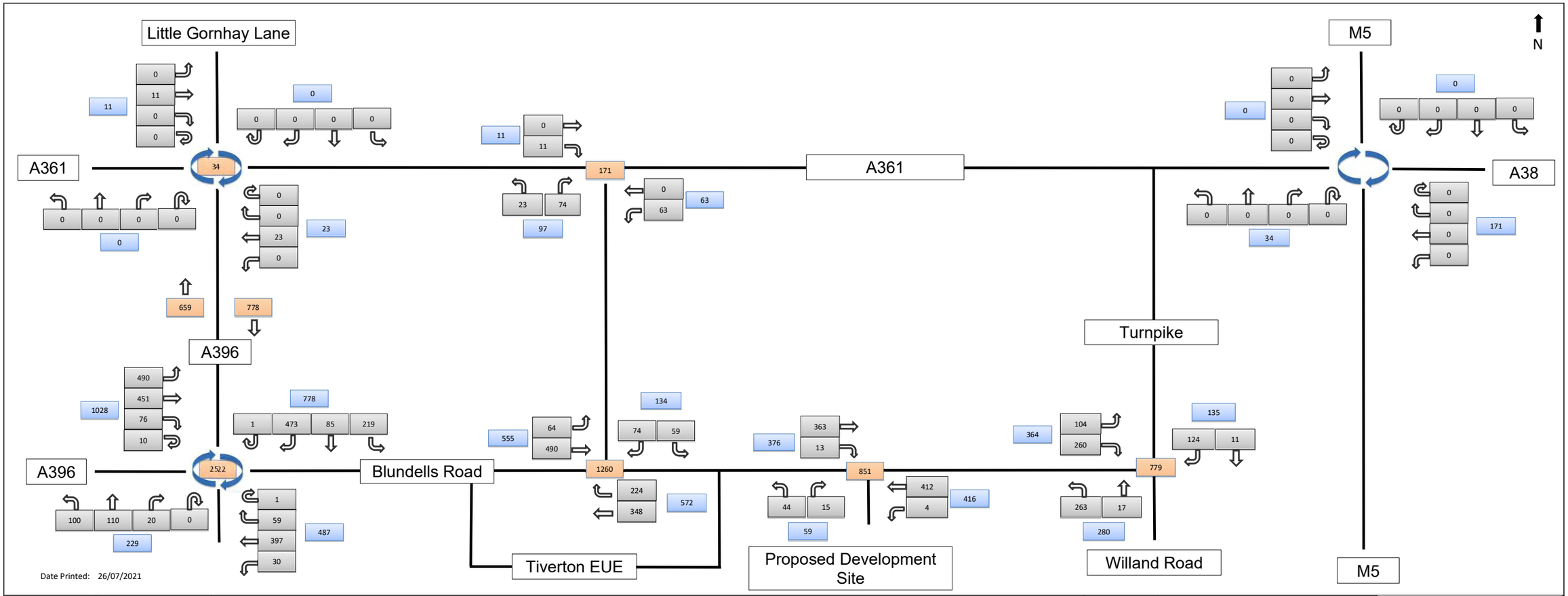
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2024 Reference Case - 0800-0900 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

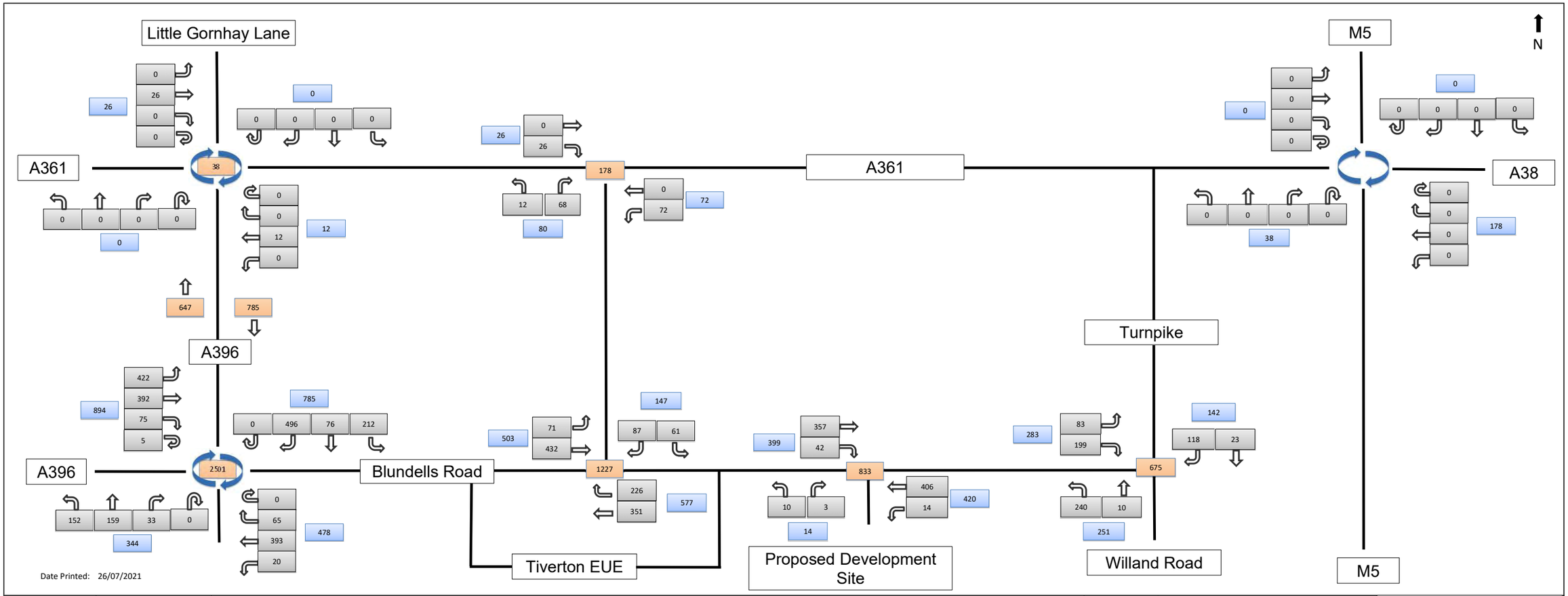
Figure 7.11



Stantec	Client: Waddeton Park Ltd.	2024 Reference Case - 1700-1800 PCUs	Figure 7.12

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH



Stantec

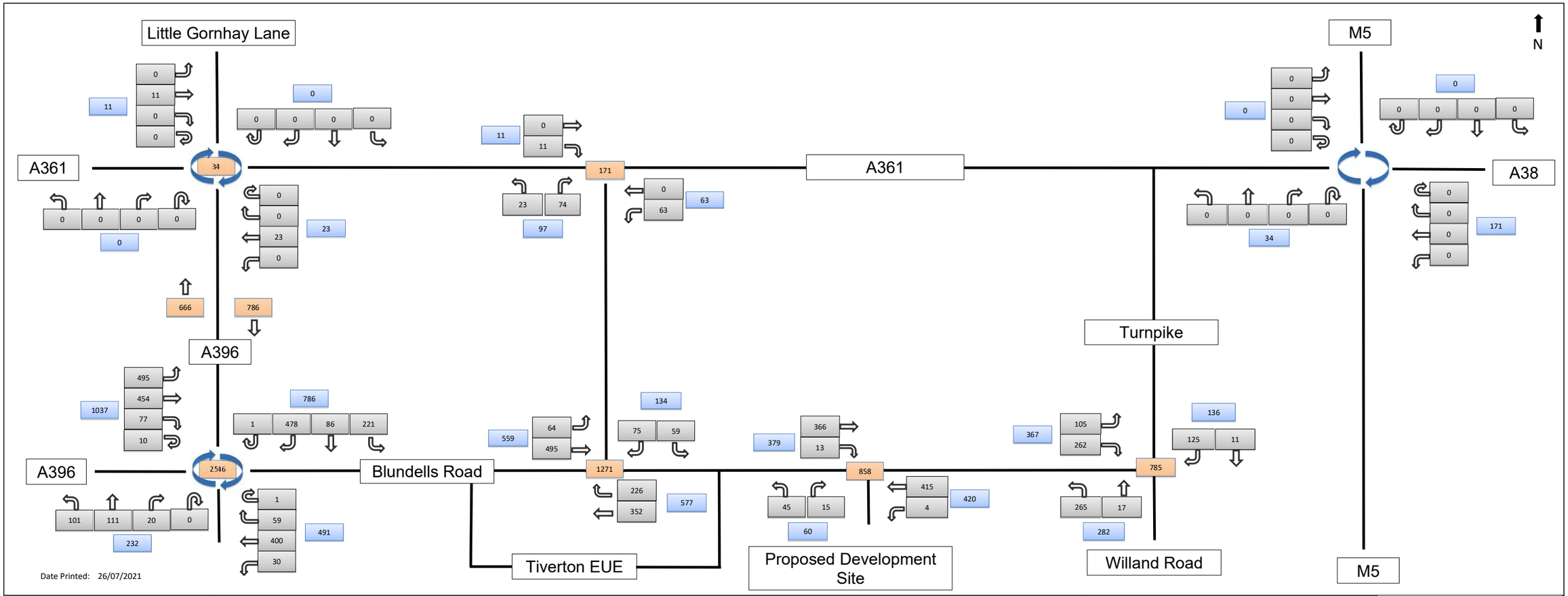
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2029 Reference Case - 0800-0900 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.13



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Client: Waddeton Park Ltd.

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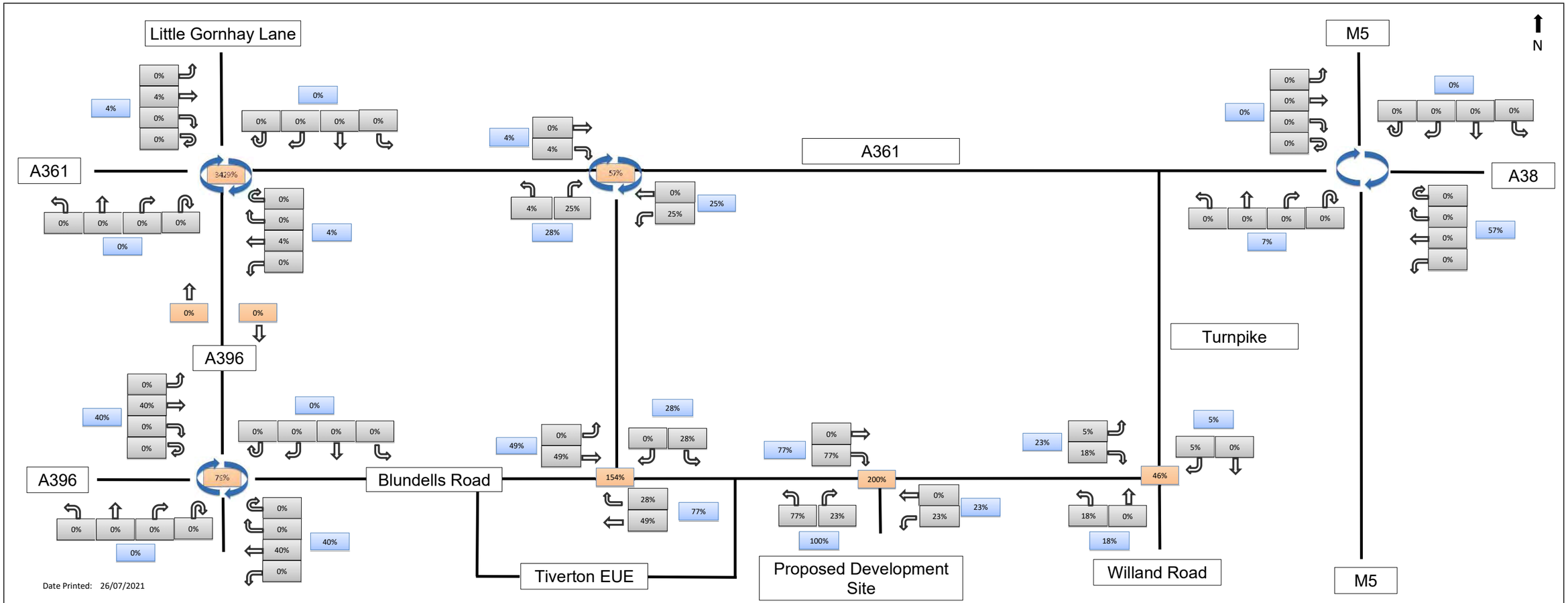
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2029 Reference Case - 1700-1800 PCUs

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.14



Stantec

Client: Waddeton Park Ltd.

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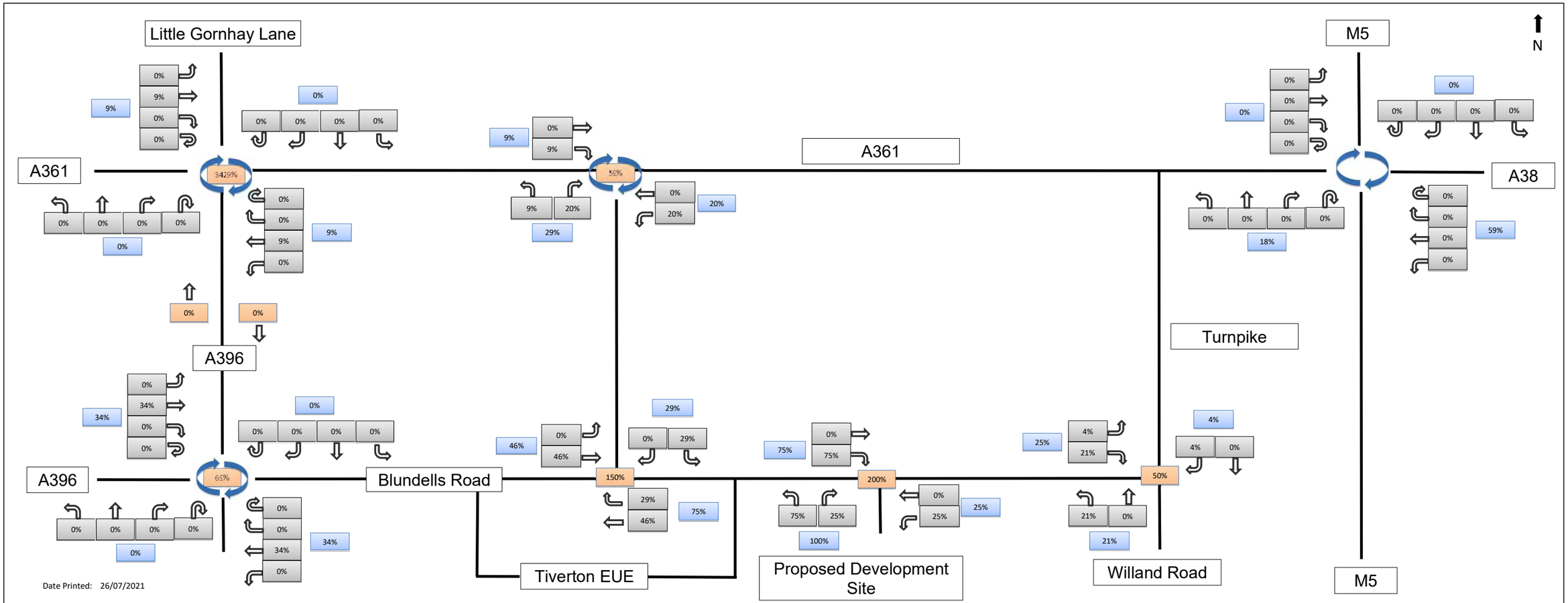
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Residential Distribution

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	Jul-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.15

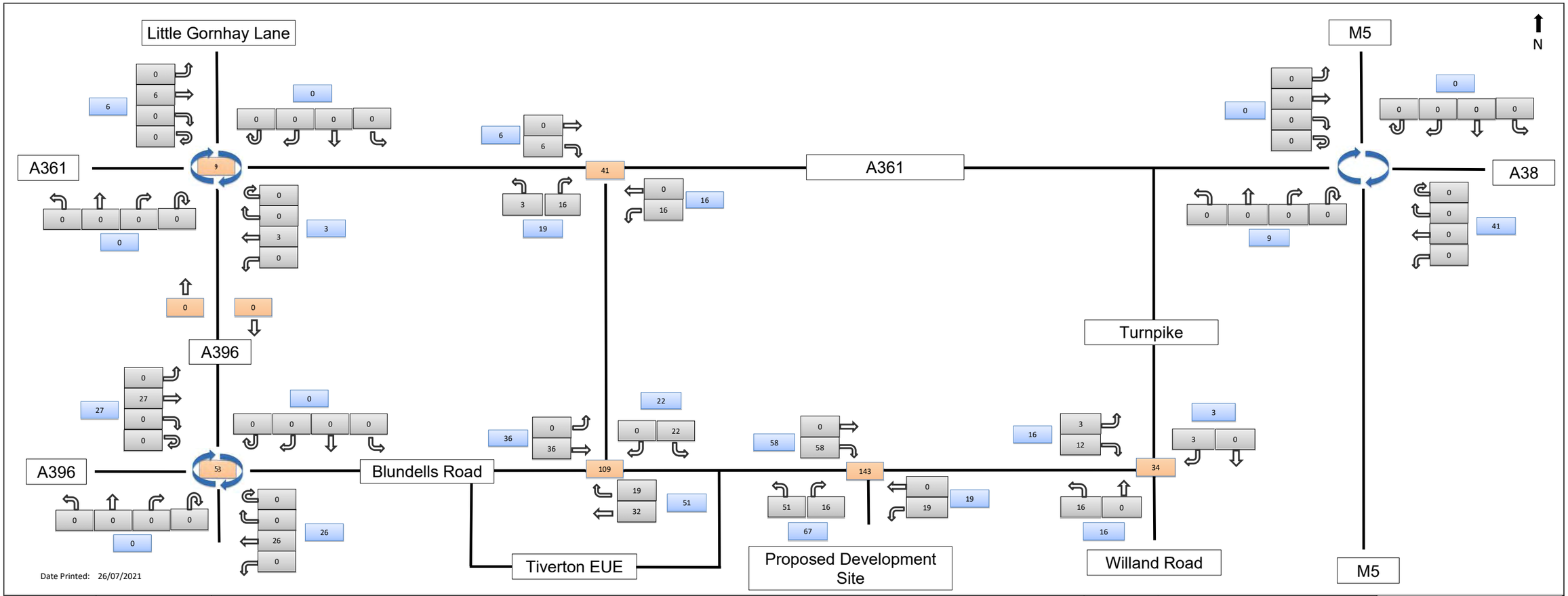


Stantec	Client: Waddeton Park Ltd.
STANTEC 10 QUEEN SQUARE BRISTOL BS1 4NT Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com © Stantec	

Employment Distribution

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	Jul-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.16



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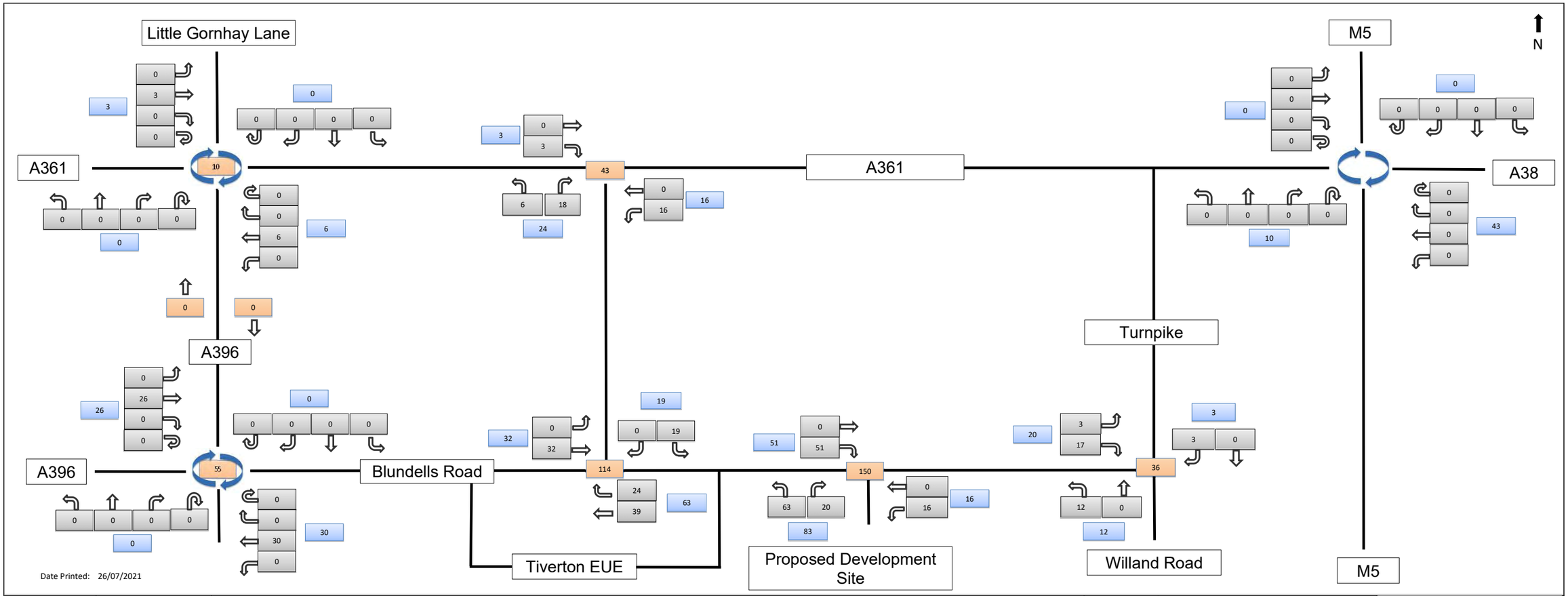
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Total Development - AM Peak

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

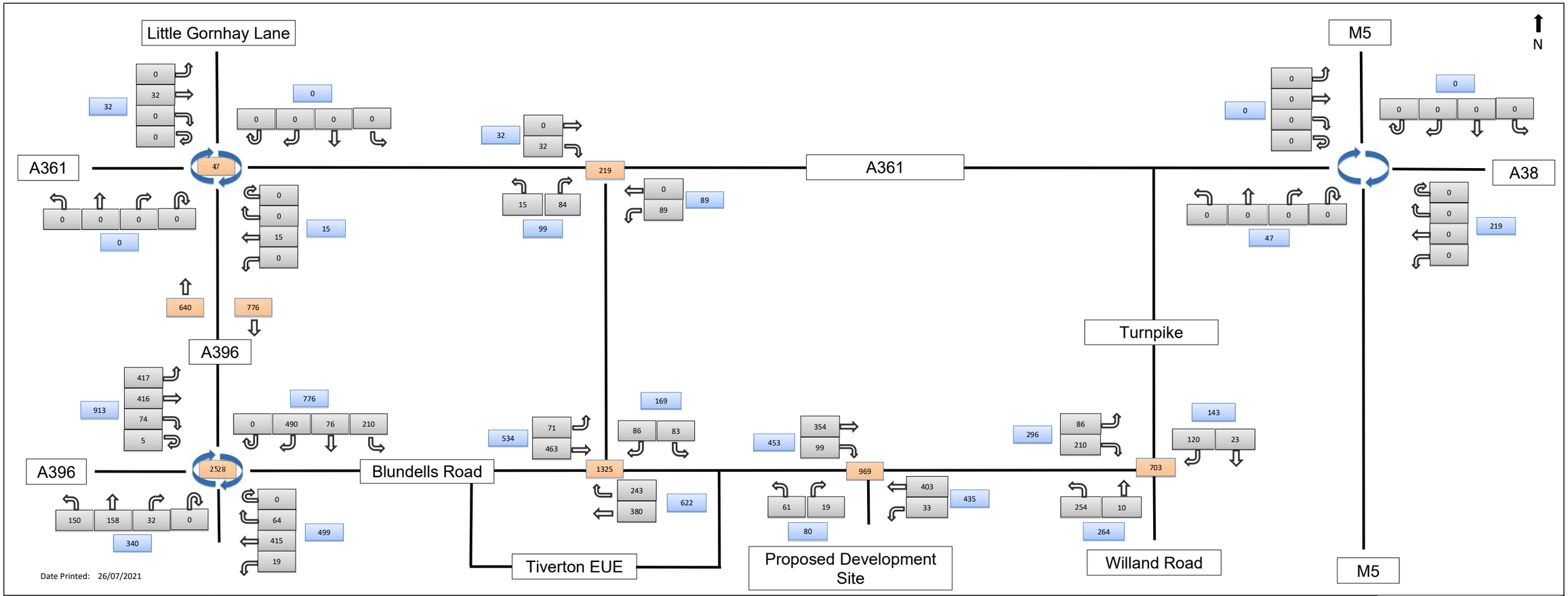
Figure 7.17



Stantec	Client: Waddeton Park Ltd.	Total Development - PM Peak	Figure 7.18

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

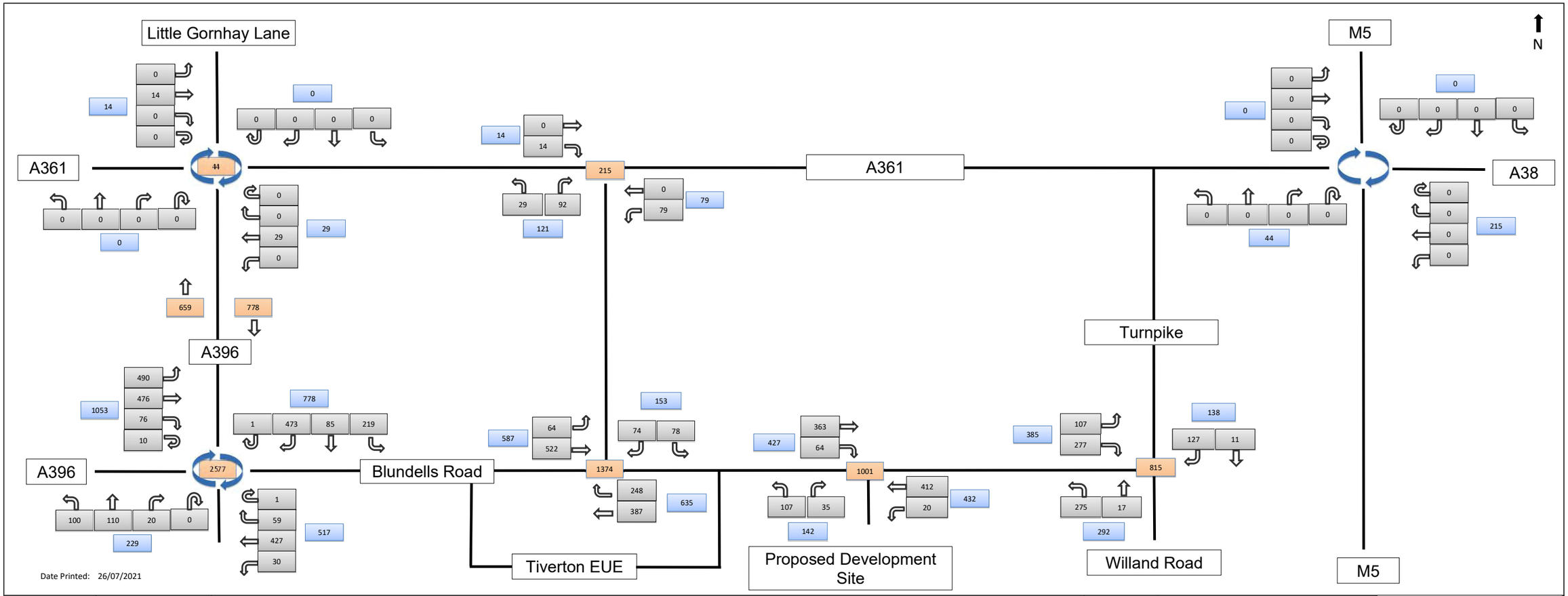
Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH



Stantec	Client: Waddeton Park Ltd.	2024 Test Case - 0800-0900 (PCUs)	Project: Land at Hartnolls Farm, Tiverton Client: Waddeton Park Ltd. Date: May-21 Scale: NTS Drawn: MP Checked: JH

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

Figure 7.19



Stantec

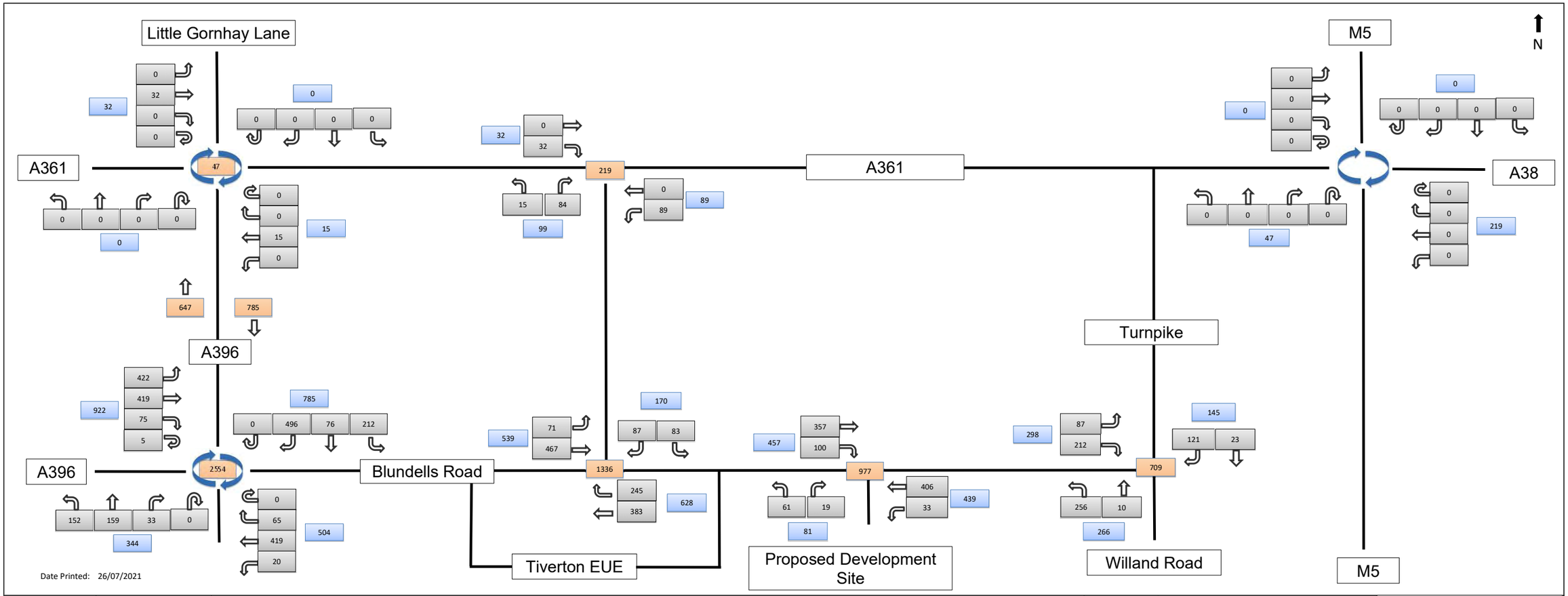
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2024 Test Case - 1700-1800 PCUs

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.20



Stantec

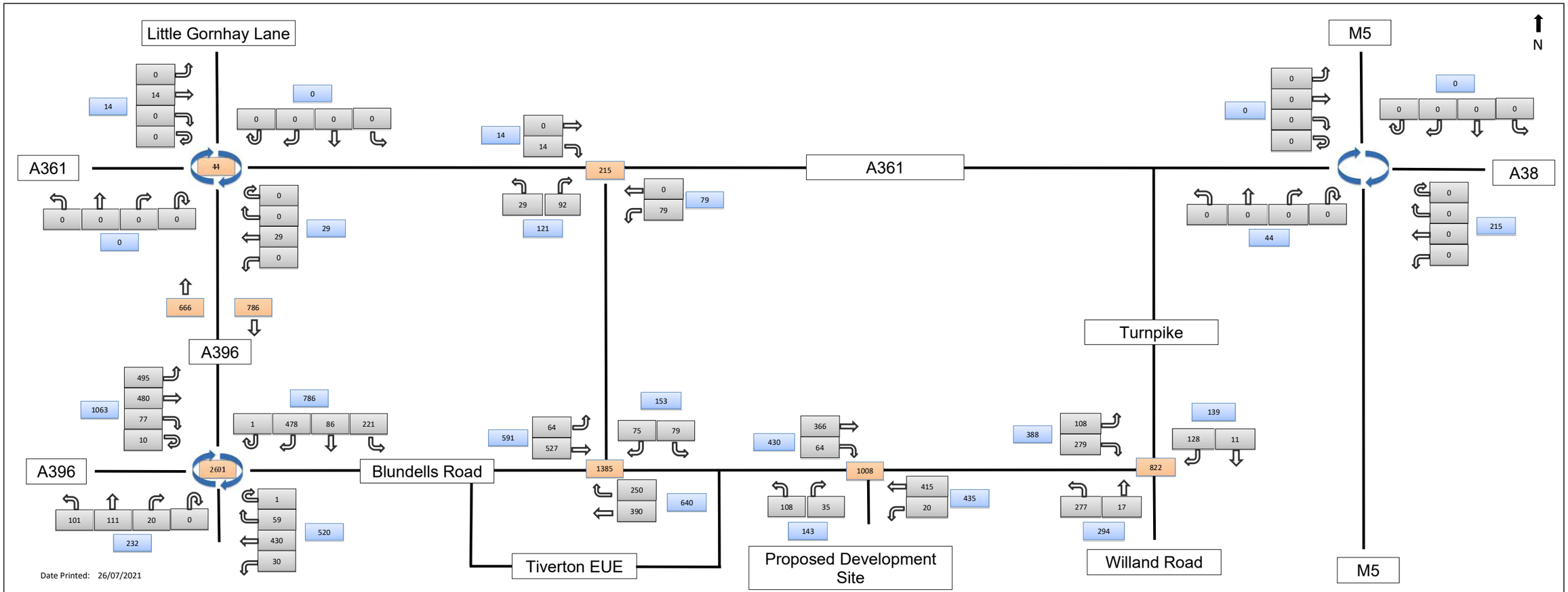
Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2029 Test Case - 0800-0900 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP
Checked	JH

Figure 7.21



Stantec

Client: Waddeton Park Ltd.

STANTEC
10 QUEEN SQUARE BRISTOL BS1 4NT
Tel: 0117 332 7840 Email: pba.bristol@stantec.com Website: www.stantec.com

2029 Test Case - 1700-1800 (PCUs)

Project	Land at Hartnolls Farm, Tiverton
Client	Waddeton Park Ltd.
Date	May-21
Scale	NTS
Drawn	MP

Figure 7.22

Drawings

POST HILL

EXTEND NEW FOOTWAY TO TIE INTO EXISTING FACILITIES

CROSSING FACILITY TO BE IMPROVED TO INCLUDE DROPPED KERBS AND TACTILE PAVING

3.0m DROPPED KERB TO ALLOW CYCLISTS TO REJOIN CARRIAGEWAY

PROPOSED 2m WIDE FOOTWAY + 0.5 (min) ROADSIDE VERGE CONNECTING NEW PEDESTRIAN CROSSING AND BUS STOP

PROPOSED UNCONTROLLED PEDESTRIAN CROSSING WITH TACTILE PAVING

PROPOSED NEW BUS STOP WITH CANTILEVER SHELTER

PROPOSED UNCONTROLLED PEDESTRIAN CROSSING WITH TACTILE PAVING

EXISTING ACCESS INTO HARTNOLL'S BUSINESS PARK TO BE CLOSED AND NEW JUNCTION PROVIDED AT SHOWGROUND ENTRANCE

52.8m

R15.0m

R15.0m

7.3m

CUT LINE

N

PROPOSED NEW BUS STOP WITH CANTILEVER SHELTER

CENTRAL BOLLARD AND CYCLE DISMOUNT SIGN

PROPOSED PEDESTRIAN CYCLE ROUTE LINKING THE INTERNAL WALK-CYCLE FACILITIES IN THE MASTERPLAN

PROPOSED 2m WIDE FOOTWAY + 0.5 (min) ROADSIDE VERGE CONNECTING NEW ACCESS ROAD AND BUS STOP

93.6m

EXISTING ACCESS INTO HARTNOLL BUSINESS CENTRE TO BE CLOSED

NEW PRIMARY STREET

Ward Bdy

MANLEY LANE

094.0m

Barnsclose

ACCESS INTO BUSINESS CENTRE TO BE REALIGNED TO MEET NEW PRIMARY STREET

HARTNOLL BUSINESS CENTRE

NOTES:

1. THE LAYOUT IS SUBJECT TO DETAILED DESIGN, CAPACITY TESTING, GROUND INVESTIGATIONS RESULTS & EARTHWORKS MODELLING, UTILITIES & SERVICES AND CONFIRMATION OF LAND OWNERSHIP;
2. THE DETAILED DESIGN LAYOUT WILL BE DESIGNED IN ACCORDANCE WITH ALL RELEVANT DESIGN GUIDANCE AND STANDARDS;
3. THE LAYOUT HAS BEEN BASED ON THE APPROPRIATE DESIGN SPEED FOR OUR CURRENT PROPOSALS;
4. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT ASSOCIATED DOCUMENTS;
5. THE USE OF THE DRAWING DOES NOT ABSOLVE THE CLIENT FROM THEIR RESPONSIBILITIES IN REGARDS TO HEALTH & SAFETY AND CDM REGULATIONS;
6. THE DESIGN HAS BEEN BASED ON OS DATA AND THEREFORE REQUIRES CONFIRMATION WITH A TOPOGRAPHICAL SURVEY; AND
7. SUBJECT TO REVIEW AND COMMENTS FROM THE LOCAL HIGHWAY AUTHORITY.

KEY:

- HIGHWAY MAINTAINED AT PUBLIC'S EXPENSE AS PER DCC PLAN DATED 23/09/20
- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY
- PROPOSED VERGE
- INDICATIVE RED LINE BOUNDARY (INTERPRETED FROM TITLE PLANS DN659066 & DN597668)
- 4.5m x 120m VISIBILITY SPLAY (IN LINE WITH DMRB GUIDANCE FOR 40mph DESIGN SPEED)
- 120m LAYBY VISIBILITY SPLAY (IN LINE WITH DMRB GUIDANCE FOR 40mph DESIGN SPEED)
- 2.4m x 43m VISIBILITY SPLAY (IN LINE WITH MfS GUIDANCE FOR 30mph DESIGN SPEED)
- 80m PEDESTRIAN CROSSING VISIBILITY (TRAFFIC SIGNS MANUAL CHAPTER 6)

REPLACEMENT LAYBY PLAN

CUT LINE

CUT LINE

POST HILL

DRAINAGE DITCH TO BE REALIGNED / REDESIGNED AROUND NEW LAYBY

87.6m

PROPOSED RELOCATION OF LAYBY 250m EAST OF EXISTING LAYBY

25.0m

55.0m

2.5m

88.4m

CROWN HILL

Mark	Revision	Date	Drawn	Chkd	Appd
H	AMENDED FOR CLIENT COMMENTS	16.07.21	CE	JH	NK
G	CYCLE TRANSITION ONTO POST HILL	14.07.21	CE	JH	NK
F	LAYBY RELOCATED AND BUS STOPS ADDED + TITLE REVISED	07.07.21	CE	JH	NK
E	EXTENT OF HMPE UPDATED	24.09.20	SEL	NK	NK
D	AMENDED FOR CLIENT COMMENTS	15.07.20	SEL	NK	NT
C	AMENDED FOR CLIENT COMMENTS	13.07.20	SEL	NT	NT
B	REVISED VISI SPLAY	13.07.20	SEL	NK	NT
A	UPDATED ACCESS LOACTION	13.07.20	SEL	NK	NT

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status

FOR PLANNING

LAND AT HARTNOLL'S FARM, PROPOSED SITE ACCESS STRATEGY

Client

WADDETON PARK LTD.

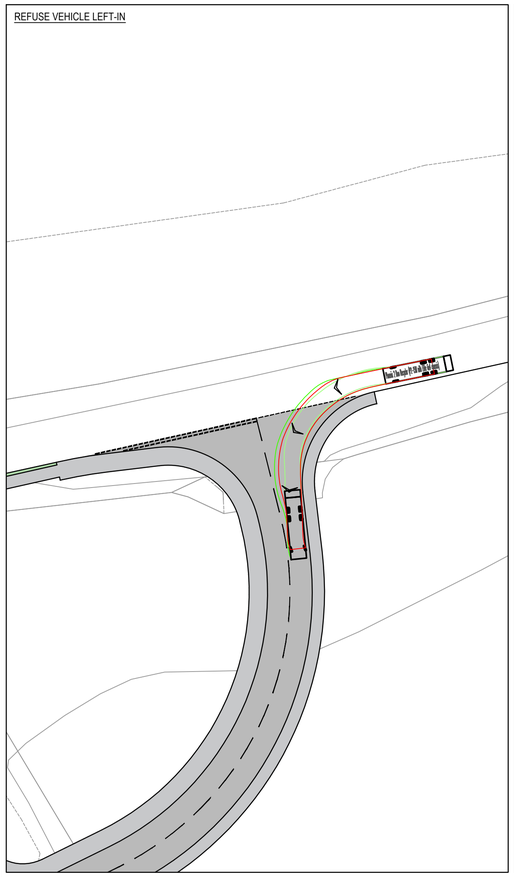
Date of 1st Issue: 07.07.20	Designed: SEL	Drawn: SEL
A1 Scale: 1:500	Checked: NK	Approved: NT
Drawing Number: 48582/5501/SK02		Revision: H

Stantec

stantec.com/uk

TAUNTON
Tel: 01823 218 940

REFUSE VEHICLE LEFT-IN



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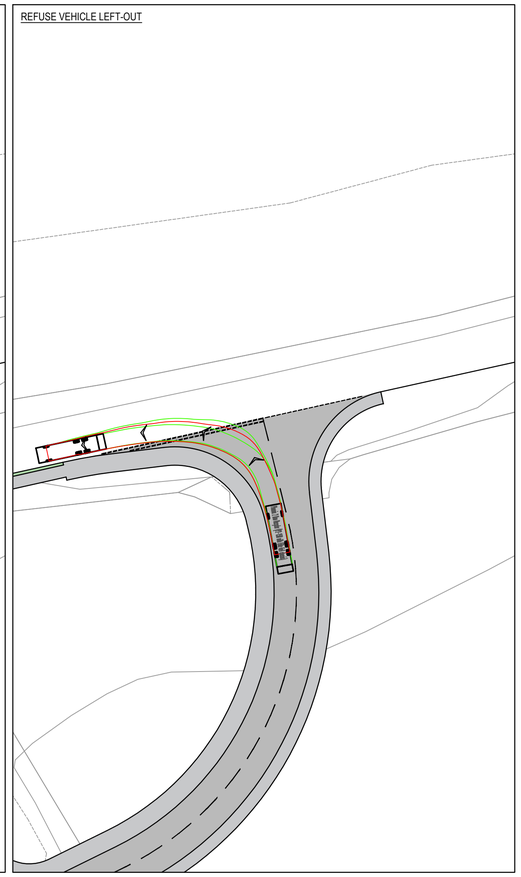

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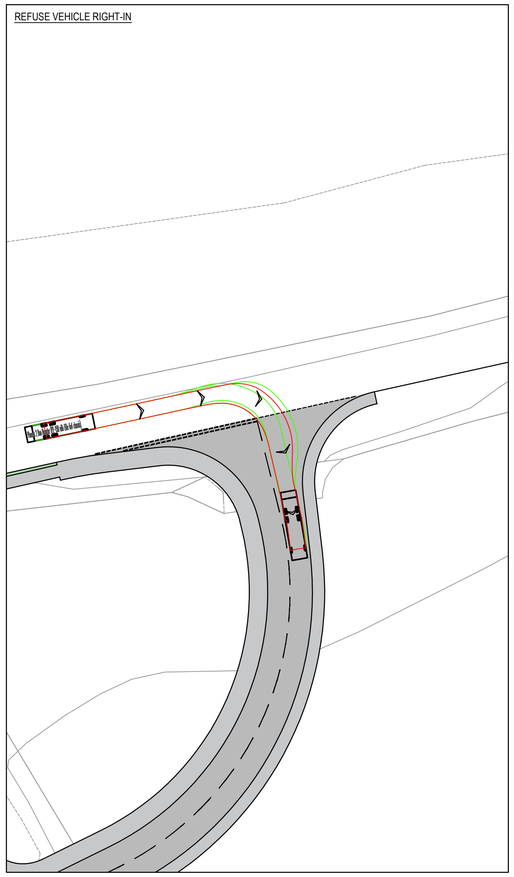

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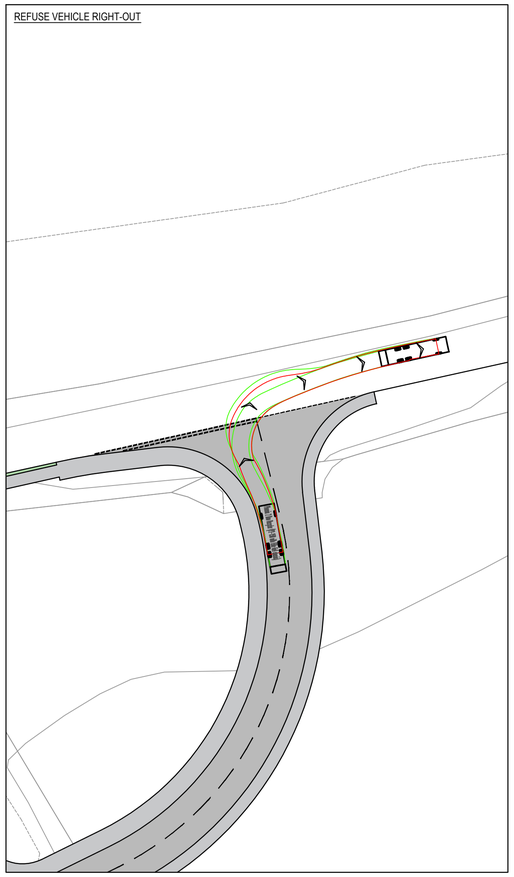
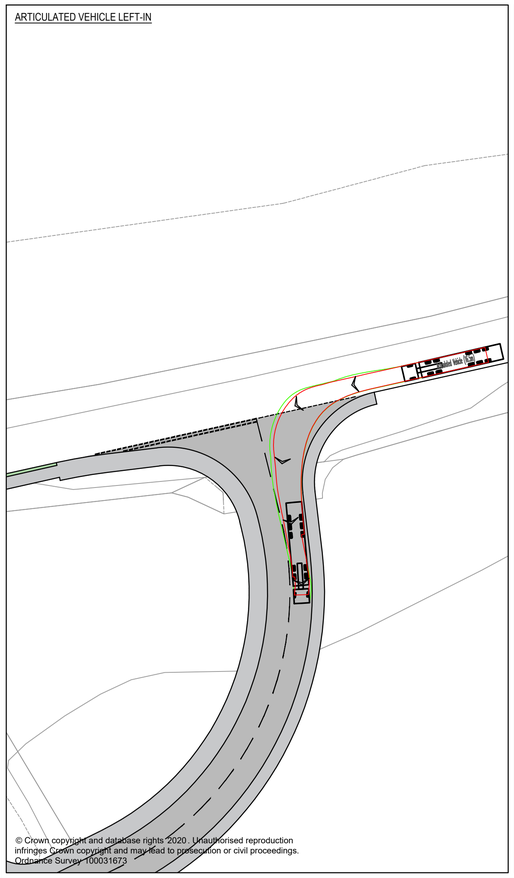


ARTICULATED VEHICLE LEFT-IN



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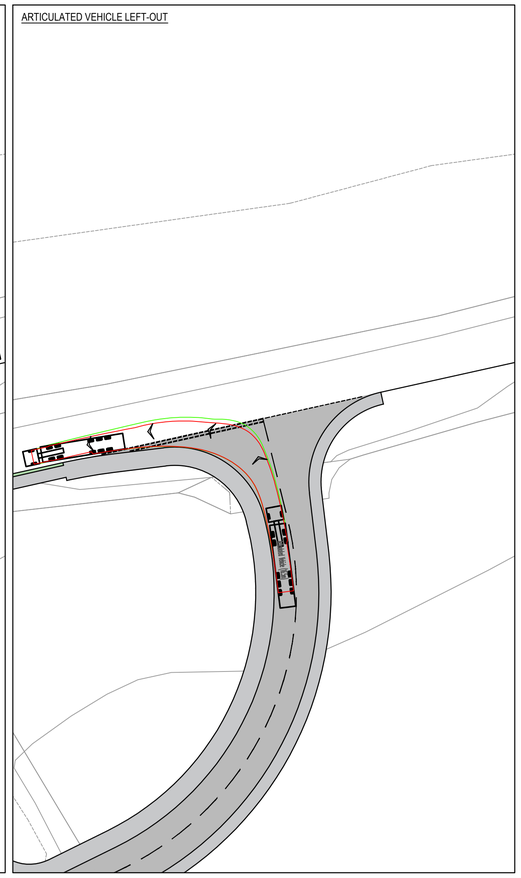

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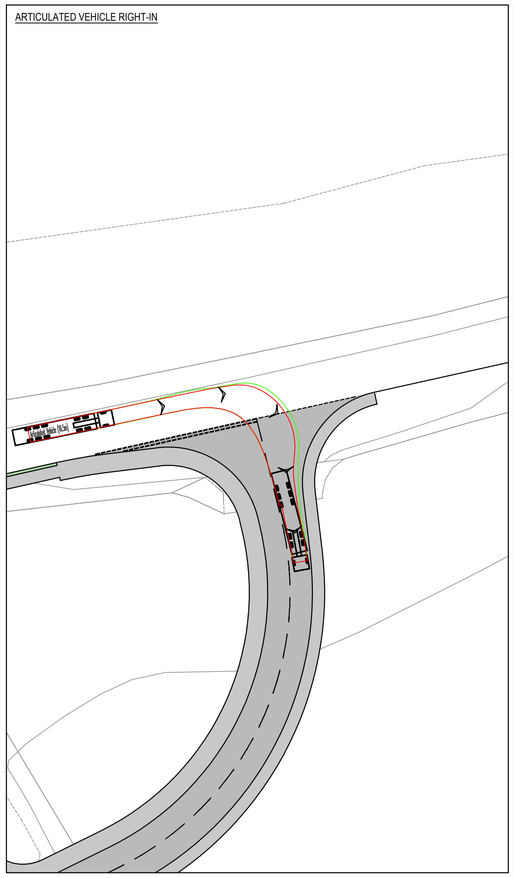
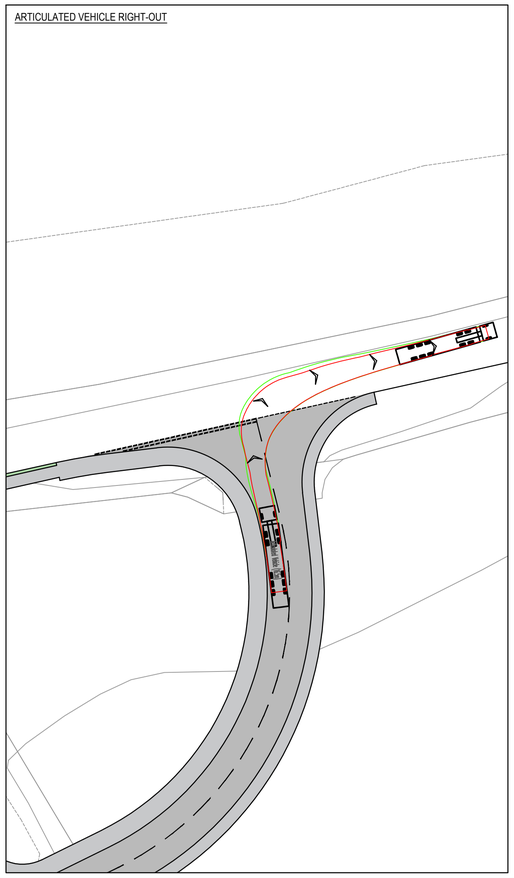
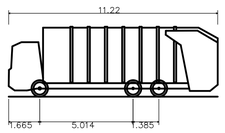


ARTICULATED VEHICLE RIGHT-OUT

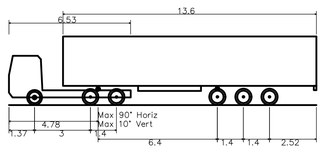


VEHICLE PROFILES



Phoenix 2 Duo Recycler (P2-15W with Elite 6x4 chassis)

Overall Length	11.220m
Overall Width	2.530m
Overall Body Height	3.756m
Min Body Ground Clearance	0.309m
Track Width	2.530m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	11.550m



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

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status

FOR INFORMATION

LAND AT HARTNOLL'S FARM, PROPOSED SITE ACCESS STRATEGY SWEPT PATH ANALYSIS

Client

WADDETON PARK LTD.

Date of 1st Issue: 14.07.21	Designed: -	Drawn: CE
A1 Scale: 1:500	Checked: JH	Approved:
Drawing Number: 48582/5501/SK06		Revision: -

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Appendix A Scoping Technical Note

TECHNICAL NOTE

Job Name: Hartnoll Park, Tiverton

Job No: 48582

Note No: 001

Date: 19th May 2021

Prepared By: Matt Pearce / Jack Harris

Subject: **Transport Assessment Scoping Note**

1. Introduction

1.1. Stantec have been commissioned by Waddeton Park Ltd. to provide Transport Planning support in relation to a forthcoming Outline Planning application at Land at Hartnoll Park, Tiverton, Mid Devon. The application will comprise of the development of approximately 150 dwellings and approximately 4 hectares of employment land. Whilst the precise quantum of commercial development will be finalised in due course, at present it is anticipated to comprise of 3,250m^2 of B1 Office, 3,250m^2 of B2 Light Industry, 1,858m^2 B8 Warehousing and 929m^2 D2 Leisure uses. The site currently comprises of undeveloped land immediately west and south of the Hartnoll Business Centre and east of Manley Lane.

1.2. This Technical Note sets out the scope and methodology for a Transport Assessment (TA) to support the mixed-use development. It will also summarise the proposed content of an accompanying Travel Plan to be delivered at the site. The purpose of this document is to form the basis of an agreement with Devon County Council (DCC) as the Local Highway Authority (LHA) on the extent of assessment required to satisfy an outline planning application for the proposed site.

2. Proposed Development and Site Context

Proposed Development

2.1. The site is located approximately three kilometres to the east of Tiverton, which is the main commercial and administrative centre of the Mid Devon district. The proposed development site is adjacent to an existing industrial estate known as Hartnoll Business Centre and abuts the eastern extent of the land allocated for the Tiverton Eastern Urban Extension (EUE). The Tiverton EUE is proposed to comprise of a large-scale mixed-use development with residential, commercial and ancillary uses. Several planning applications have been approved for individual parcels within the EUE, and approximately 300 dwellings have so far been delivered.

2.2. The western site boundary comprises of Manley Lane, which is a rural single carriageway road. The northern edge of the site is bordered by Post Hill which is the key highway connection between Tiverton and Willand and runs parallel to the A361 (North Devon Link Road).

2.3. The proposed development will comprise of approximately 150 dwellings and 4 hectares of employment land. Vehicular access is proposed to be gained via a new priority junction onto Post Hill, approximately 90m to the east of the existing Hartnoll's Business Centre access. The access junction is shown on **Drawing 48582/5501/SK02** and is appended to this note for DCC comment. This junction will provide access to both Hartnoll's Business Centre and the proposed development, with the existing access to be closed.

2.4. It is considered that, based on the site's location, there is an opportunity to provide a further connection to the EUE from the south western boundary. This connection would provide a link via the site from the EUE to Post Hill and extend the spine road, via the proposed Site Access junction. Whilst the access strategy for the proposed development is only reliant on the proposed Post Hill junction, it is considered that an additional connection to the EUE will help to distribute traffic flow on the local highway network and enhance the overall connectivity of both the proposed development and the EUE.

2.5. Pedestrians and cyclists will be able to utilise the proposed site access junction, whilst it is anticipated that connections will be made to Manley Road that forms the western boundary. From here pedestrian and cyclists will be able to access Post Hill, in particular the bus stops, as well as connecting to the eastern boundary of the Tiverton EUE, and the extensive network of pedestrian and cycle facilities within the urban extension, once delivered to the boundary.

2.6. It is proposed that the car parking and cycle parking provision will be provided in accordance with the Mid Devon Policy, 'Parking Provision in New Developments' SPD adopted in June 2013. Electric Vehicle standards are included within the adopted Local Plan under Policy DM5. The proposals would come forward in line with parking and EV charging policy relevant at the time of the subsequent Reserved Matters application.

Site Context

2.7. The A361 is to the north of the proposed site access and provides the primary route between Junction 27 of the M5 and Barnstaple on the North Devon Coast. It is currently accessed via Blundell's Road and the A396, approximately 4km to the northwest. A new junction to the A361 is proposed to facilitate the development of the EUE at a location approximately 800m to the north west of the site.

2.8. Currently the nearest local centre is located in Tiverton. Tiverton contains a wide range of facilities, including provision of primary and secondary education, employment, supermarkets, healthcare, leisure uses and public transport hubs. All of these facilities are within cycling distance of the site. The closest bus stop is 350 metres from the site, with high frequency bus services provided by numbers 1a/b/c and 22 connecting to Tiverton, Tiverton Parkway and Exeter among other destinations. It is anticipated the EUE will contain a new local centre and primary school, which will be within recommended walking distances.

2.9. The TA will include a review of local Personal Injury Collision (PIC) data for the last 5 years to establish whether the impact of the development will have any material effect on the local highway safety conditions. The review will include the Post Hill / Blundell's Road corridor, from the Crown Hill / Post Hill junction to the east of the site up to and including the A396 / Blundell's Road roundabout junction to the west.

3. Proposed Transport Assessment Methodology

3.1. This section presents the proposed approach to assessing the transport impacts of the development on the local highway and transport network. It summarises the study area, trip generation, high level trip distribution and proposed assessment years.

Study Area

3.2. In order to determine the study area within which to assess the impact of the vehicular traffic generated by the development, we have liaised with the DCC Highway Development Officer and agreed to include the following junctions:

- Proposed Site Access / Post Hill Priority Junction
- A396 / Blundells Road Roundabout
- A361 / A396 Linked Roundabouts

- Proposed A361 access / Blundells Road Roundabout
- High Street / Willand Road Priority Junction
- Halberton Village

3.3. Together, these junctions comprise the study area to be considered within the TA. Beyond the scope of these junctions, it is considered that the traffic associated with the proposed development will have dispersed across the network to a degree at which it is unlikely to have a significant effect on any further junctions.

3.4. The proportional impact of development traffic will be assessed for all the junctions within the study area, and based on the outcome of the assessment, junctions will be subject to capacity assessments using the industry standard junction modelling software. The PICADY module of Junctions 10 will be used to assess the operation of all priority junctions, whilst ARCADY will be using to assess the roundabouts.

3.5. In Halberton Village, DCC have requested an impact assessment is undertaken to assess the increase in traffic that travels through the village as a result of the development.

3.6. At the A361 / A396 linked roundabouts the development impact is anticipated to be very low due to the provision of the new A361 access junction which will provide a more convenient route for development traffic using the A361. This will be confirmed through a proportional impact assessment undertaken as part of the traffic analysis works.

Base Traffic Flows

3.7. Base traffic data will be obtained from a variety of sources. The proposed new junction onto the A361 means that consideration will need to be given to the redistribution of base flows that occur as a result. The delivery of the Tiverton EUE also needs to be considered and the impact that this may have in terms of base traffic changes.

3.8. DCC has confirmed that the traffic surveys undertaken now will be acceptable with adjustments to pre-COVID19 levels. It is proposed that Manual Turning Counts (0700 – 1000 and 1600 – 1900hrs) and 7-day ATCs will be undertaken in due course during a neutral time period at four locations within the study area.

3.9. In addition, ATC data will be purchased form DCC for the A396, immediately to the south of the A361 / A396 Linked roundabout junction, as live data is available here. This data will be obtained during the same time period as traffic surveys are undertaken to ensure consistency. Queue length surveys will also be undertaken at both A396 / Blundell's Road Roundabout and Halberton High Street / Willand Road junction to allow queue validation to be completed during the capacity modelling.

3.10. ATC data will be purchased from DCC for comparison purposes between the time of the survey and a point before March 2020. This will allow factors to be applied to the surveyed traffic flows to account for the potential impact on traffic flows of COVID-19.

3.11. **Table 3.1** below summarises the source of the traffic flow data for each junction or location within the study area.

Junction or Location within Study Area	Origin of Data
Proposed Site Access	ATC installed on Post Hill at the location of the proposed access junction
A396 / Blundell's Road Roundabout	Manual Turning Count Survey
A361 / A396 Linked Roundabouts	ATC data purchased from DCC at a location immediately to the south, on the A396
Proposed A361 Access Road / Blundell's Road Roundabout Junction	ATC installed on Blundells Road at the proposed location of the junction.
Halberton High Street / Willand Road	Manual Turning Count Survey
Halberton Village	Flows informed by Halberton High Street / Willand Road Manual Turning Count Survey

Table 3.1: Study Area

Base Traffic Redistribution

3.12. As set out above, the study area needs to include the proposed new junction on the A361. Early discussions with DCC have indicated that due to the certainty around the delivery of this junction, it should be included in all future modelling scenarios. Therefore, although it is not currently part of the network, consideration of the redistribution impact that it will have on the baseline traffic flows needs to be given.

3.13. In order to establish the effect it will have on traffic flows, discussions have been held with DCC regarding the Tiverton EUE SATURN Model, which was developed as part of the business case for the delivery of the junction. Whilst the traffic flows that are available in the model are considered too dated for the purpose of this assessment, the redistributive effects can be extracted and applied to the baseline traffic obtained from surveys and DCC data.

3.14. In order to do so, Stantec intend to purchase the 2017 traffic flow scenario SATURN outputs from DCC. This will include traffic flow scenarios both with and without the junction on the highway network. By applying the proportionate differences in traffic flows brought about by the new junction on the locations within the study area, factors can be applied to the base traffic flows to represent a scenario where the new junction has been delivered. This will therefore present a realistic reflection of future traffic flows on the network, following the delivery of the junction.

3.15. As the new junction is to be constructed in order to facilitate the Tiverton EUE, all scenarios include traffic associated with the development, based on the phased build out over the course of 2012-2032.

3.16. The impact of the EUE will be considered as committed development, but for the purposes of base traffic redistribution, ideally no committed development would be included. The 2017 traffic flow scenarios do, however, contain traffic associated with the build out of approximately 300 dwellings within the EUE, in line with the development schedule that was incorporated into the model at the time.

3.17. Presently, a portion of the EUE has recently been constructed. Approximately 300 dwellings, known as Braid Park, form the north eastern section of the urban extension and is the first phase to be delivered. Traffic associated with this development will therefore be captured in the baseline traffic surveys. By applying the differences in traffic flow associated with the 2017 SATURN traffic scenarios, trips associated with the dwellings included in the model will broadly equate to trips associated with Braid Park. This means that the changes in traffic calculated from the 2017 with and without junction scenarios can be effectively applied to the 2021 surveyed traffic flows.

3.18. In addition, and subject to consultation with DCC and SATURN model outputs a sensitivity test could be undertaken that includes the potential link to the EUE from the south western edge of the site. This will distribute a proportion of EUE traffic through the site, via the proposed junction with Post Hill and will also result in some development traffic utilising roads within the EUE to access the local highway network.

3.19. This approach has been developed following advice from DCC and is considered to be the most appropriate way in which to generate assessment scenarios using recent traffic flow data under a future scenario where the new A361 junction is delivered.

Traffic Growth

3.20. It is considered that the opening year for the development proposal is likely to be 2024. This assumes that the application will be submitted in 2021, with the first occupation occurring within 2/3 years. As such, 2029 will represent the future year scenario, 5 years post opening.

3.21. In order to present a robust assessment, background traffic growth will be incorporated within the assessment in order to growth the traffic from the 2021 baseline to the future year scenarios. Traffic growth factors have been derived using TEMPro version 7.2b. The following criteria have been used:

- Weekday AM and PM peak hours
- Willand, Sampford Peverell & Halberton E02004169 Middle Super Output Area (MSOA), within which the site is located
- Principal road types

3.22. The calculated growth factors are shown in **Table 3.2**.

Year	AM	PM
2021 – 2024	1.0244	1.0248
2021 - 2029	1.0612	1.0627

Table 3.2: TEMPro Growth Factors

3.23. The above growth factors are considered to provide a realistic forecast of traffic growth during the period between the baseline and future year scenarios. However, the main source of housing growth in the local area is the EUE and the traffic associated with this is to be included within the impact assessment as committed development. Therefore, the TEMPro growth factors presented in **Table 3.2** will also include the impact of the EUE housing on the local highway network. In order to prevent double counting, the alternative assumptions tool within TEMPro has been used to generate adjusted TEMPro growth factors. Housing growth that is incorporated within the calculation of growth factors has been removed to reflect the fact that traffic associated will be included within the assessment as committed development.

3.24. The forecast growth in employment has been retained within the growth factor calculation as the EUE predominantly deliver residential dwellings rather than significant levels of employment.

3.25. The adjusted inputs are shown in the table below. The figures in bold represent where changes have been applied.

	Current Assumptions				Alternative Assumptions			
Time Period	Base Houses	Base Jobs	Future Houses	Future Jobs	Base Houses	Base Jobs	Future Houses	Future Jobs
2021-2024	3165	3522	3265	3554	3165	3522	**3165**	3554
2021-2029	3165	3522	3425	3601	3165	3522	**3165**	3601

Table 3.3: TEMPro Alternative Assumptions

3.26. The above assumptions have been applied within the TEMPro software to generate the resulting growth factors.

Year	AM	PM
2021 – 2024	1.0084	1.0074
2021 - 2029	1.021	1.0178

Table 3.4: Adjusted TEMPro Growth Factors

3.27. The growth factors presented in the table above will be applied to the 2021 surveyed peak hour traffic flows in order to provide future baseline scenarios, against which the impact of the development traffic can be assessed.

Committed Development

3.28. The assessment will need to consider the impact of committed developments in the vicinity of the site. Given the location of the site adjacent to the Tiverton EUE, traffic associated with this will be incorporated into the traffic analysis model and included within capacity assessments.

3.29. In order to obtain appropriate traffic flows associated with the planned development, traffic flows will be generated from information contained within planning applications submitted as part of the EUE, as well as information contained within the Local Model Validation Report and Forecasting Report that summarise the results and inputs used in the Tiverton EUE SATURN model. The proportion of the EUE that is included within the future traffic flow scenarios as committed development will reflect land parcels that have been granted outline planning permission and as such represents consented development.

3.30. These committed development flows will be assigned to the traffic flow network and incorporated into the modelling traffic flow scenarios.

Trip Generation

3.31. In order to calculate the potential trip generation of the proposed development, reference has been made to the industry standard TRICs database. The database has been interrogated in order to generate appropriate trip rates for the site. Both residential and employment trip rates have been generated in this manner.

3.32. The trip rates generated have been applied to the proposed development quantum at the site. The final development mix is likely to change as the masterplan develops, but the approximate mix is set out below. Vehicle trip generation figures have therefore been based on this quantum.

- 150 dwellings
- 3,252m² of B1 Office – (35% of total commercial floorspace)

- 3,252m² of B2 Light Industry – (35% of total commercial floorspace)
- 1,858m² of B8 Warehousing – (20% of total commercial floorspace)
- Additional floorspace (10%) will potentially be utilised as D2 (assembly and leisure) or other uses. For the purposes of this scoping report, trip generation analysis has not been undertaken for this land use as the nature of the proposals are not yet known, but will be included within the TA analysis.

3.33. The table below summarises the trip rates and resulting trip generation of the development quantum as currently proposed.

		AM Peak			PM Peak		
		Arrival	Departure	Two-way	Arrival	Departure	Two-way
Houses	Trip Rate	0.14	0.389	0.529	0.364	0.152	0.516
	Vehicle Trips	21	58	79	55	23	77
B1 Employment	Trip Rate	0.987	0.115	1.102	0.088	1.046	1.134
	Vehicle trips	32	4	36	3	34	37
B2 Employment	Trip Rate	0.432	0.099	0.531	0.042	0.398	0.44
	Vehicle Trips	14	3	17	1	13	14
B8 Employment	Trip Rate	0.278	0.105	0.383	0.111	0.323	0.434
	Vehicle Trips	5	2	7	2	6	8
Total Vehicle Trips		72	67	140	61	76	137

Table 3.5: Forecast Vehicle Trip Generation

3.34. For reference, the trip rates used in the EUE SATURN model have been presented for comparison in **Table 3.6** below.

EUE Trip Rates	AM Peak			PM Peak		
	Arrival	Departure	Two-way	Arrival	Departure	Two-way
Houses	0.144	0.398	0.542	0.376	0.214	0.590
General Employment	1.262	0.154	1.416	0.129	1.025	1.154

Table 3.6: Trip Rates used in EUE SATURN Modelling

3.35. As shown, the trip rates proposed in **Table 3.5** are broadly comparable to those used in the SATURN model, albeit the SATURN trip rates are slightly higher. However, the most recent TRICs guidance document, '*The Decide and Provide Approach*', acknowledges that current travel trends indicate both lower car usage and reduced level of ownership, alongside a general increase in remote or flexible working. In general, this means that trip rates generated from more recent surveys will likely provide lower levels of trip generation than historic surveys at comparable sites. This means that historic trip rates may not be representative of actual future travel demand and the changing approaches to commuting and working practices brought about during the COVID 19 Pandemic. Considering the age of the trip rates used in the SATURN Modelling (2012), trip rates extracted from the TRICs database are therefore considered more appropriate for use within this assessment.

3.36. Notwithstanding the above, the trip generation assessment proposed in this assessment will not take into account any additional flexible working considerations that are not included within the TRICs trip rates as extracted from the database. Therefore, the assessment proposed is considered to be robust.

Trip Distribution

3.37. To forecast the distribution of the development vehicle trips, reference will be made to the 'Location of usual residence and place of work' dataset taken from the 2011 Census for the Willand, Sampford Peverell & Halberton MSOA (E02004169). Data for residents who commute as car drivers will be extracted to calculate the vehicle trip distribution for the residential element of the development. Additionally, the distribution of employment trips generated by the site will be calculated based on data associated with employees who currently work within the MSOA.

3.38. It is likely that the majority of vehicle traffic generated by the site will use Blundell's Road to travel to Tiverton, or the A361 to access the SRN via M5 J27 or locations to the north west. It is likely that most trips that would currently access the A361 via the A396 linked roundabout junction will use the new junction, as this is more conveniently located to the site. Manual adjustments will be made to the development trip distribution in order to incorporate the new junction onto the A361 into the traffic analysis.

3.39. A detailed assessment will be undertaken in the TA, to assess how traffic generated by the development will impact the junctions within the study area.

Traffic Impact Assessment

3.40. Several scenarios will be generated to assess the impact of the development on the local highway network. The TEMPro Growth Factors will be added to base flows described in paragraphs 3.5 and 3.6, once they have been redistributed to accommodate the impact of the new A361 junction. Traffic flows associated with the committed development (as described in paragraphs 3.19 and 3.20) will be added to these future base flows in order to generate a Reference Case scenario.

3.41. Development traffic flows will be added to the Reference Case flows to generate Test Case scenarios, for both opening and future forecast years. The scenarios produced for modelling purposes are described below:

- 2024 Reference Case (Base + Committed Development)
- 2024 Test Case (Base + Committed Development + Development)
- 2029 Reference Case (Base + Committed Development)
- 2029 Test Case (Base + Committed Development + Development)

3.42. As set out in paragraph 3.4, a proportional impact assessment will be undertaken at each of the junctions within the study area. Where the development impact is greater than 30 vehicles during the peak hour, capacity analysis will be required in order to gain a clear understanding of how the junctions operate with and without development traffic. It is proposed to construct PICADY and ARCADY models of the junctions within the study area, using industry standard Junctions 10 Software. This approach will allow determination of any junction improvements which may be necessary to mitigate the impact of the development traffic and allow the impact of the development to be observed in terms of Ratio of Flow to Capacity (RFC) and Vehicle Queue lengths.

4. Report Structure

4.1. The analysis and methodology described above will be incorporated into the Transport Assessment report. The proposed report structure is summarised below:

- **Introduction** – setting out the project brief, scope of assessment and planning background.
- **Policy Review** – a summary of national and local transport policies that are relevant to the proposed development.
- **Existing Transport Conditions** – a detailed review of the local transport context for all modes of travel, a summary of local facilities and analysis of the highway safety conditions in the vicinity of the site.
- **Future Baseline Transport Conditions** – setting out the changes to the existing transport conditions and facilities brought about by the Eastern Urban Extension and associated transport improvements.
- **Development Proposals** – a description of the development proposals, the associated transport infrastructure and/or service improvements and proposed access arrangements.
- **Development Travel Demand** – consideration of the forecast multi-modal trip generation of the proposed development and the likely distribution of these trips across the local transport network.
- **Traffic Impact Analysis** – an assessment of the base conditions on the surrounding highway network, the assignment of the vehicle trips associated with the development and analysis of the impact of the development on the operation of the junctions within the study area
- **Summary and Conclusions**

5. Framework Travel Plan

5.1. In addition to the Transport Assessment, to enhance the sustainability credentials of the proposed development the site will be supported by a Framework Travel Plan (FTP). This will be based on Planning Practice Guidance and our professional experience of delivering FTPs within Devon.

5.2. This document will include a selection of potential measures that could be implemented at the site, taking account of the existing transport opportunities and constraints. It will also include a monitoring strategy and key objectives.

5.3. The below provides a summary of the key elements of the FTP:

- **Introduction** – setting out the scope of the Travel Plan, background information on the site and description of development.
- **Travel Plan Policy and Planning Context -** National and local travel plan policy review, placing the site in the planning context and demonstrating why it is appropriate for the location.
- **Existing Transport Conditions –** a review of the existing transport conditions, including accessibility to/from the site including non-car modes and to existing local facilities/amenities. This will reflect the equivalent section prepared in the TA.
- **Future Baseline Transport Conditions** – setting out the changes to the existing transport conditions and facilities brought about by the Eastern Urban Extension and associated transport improvements. This will reflect the equivalent section prepared in the TA.
- **Measures –** this will set out the measures that could be implemented at the site following occupation to encourage and facilitate sustainable travel behaviours.
- **Targets –** this will include, subject to agreement with DCC, mode shift targets that will need to be achieved through the implementation of the Travel Plan.

- **Implementation and Responsibilities** - outlines how the Travel Plan will be managed and will operate on a daily basis.

- **Monitoring Strategy –** this will set out the process by which the impact of the Travel Plan can be monitored over its lifetime. It will also present remedial measures that may need to be implemented if the Travel Plan does not achieve the targets.

- **Summary and Conclusions** – provides conclusions to the report.

6. Summary

6.1. This Technical Note has presented the site context, the proposed Transport Assessment approach and the proposed content of the Travel Plan. It has been designed to form the basis of an agreement with DCC to progress the assessment. The Note will be updated to incorporate comments and input from DCC, and written agreement will be sought in due course.

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
48582/TN001	-	18th May	JH	NK	NT	NT

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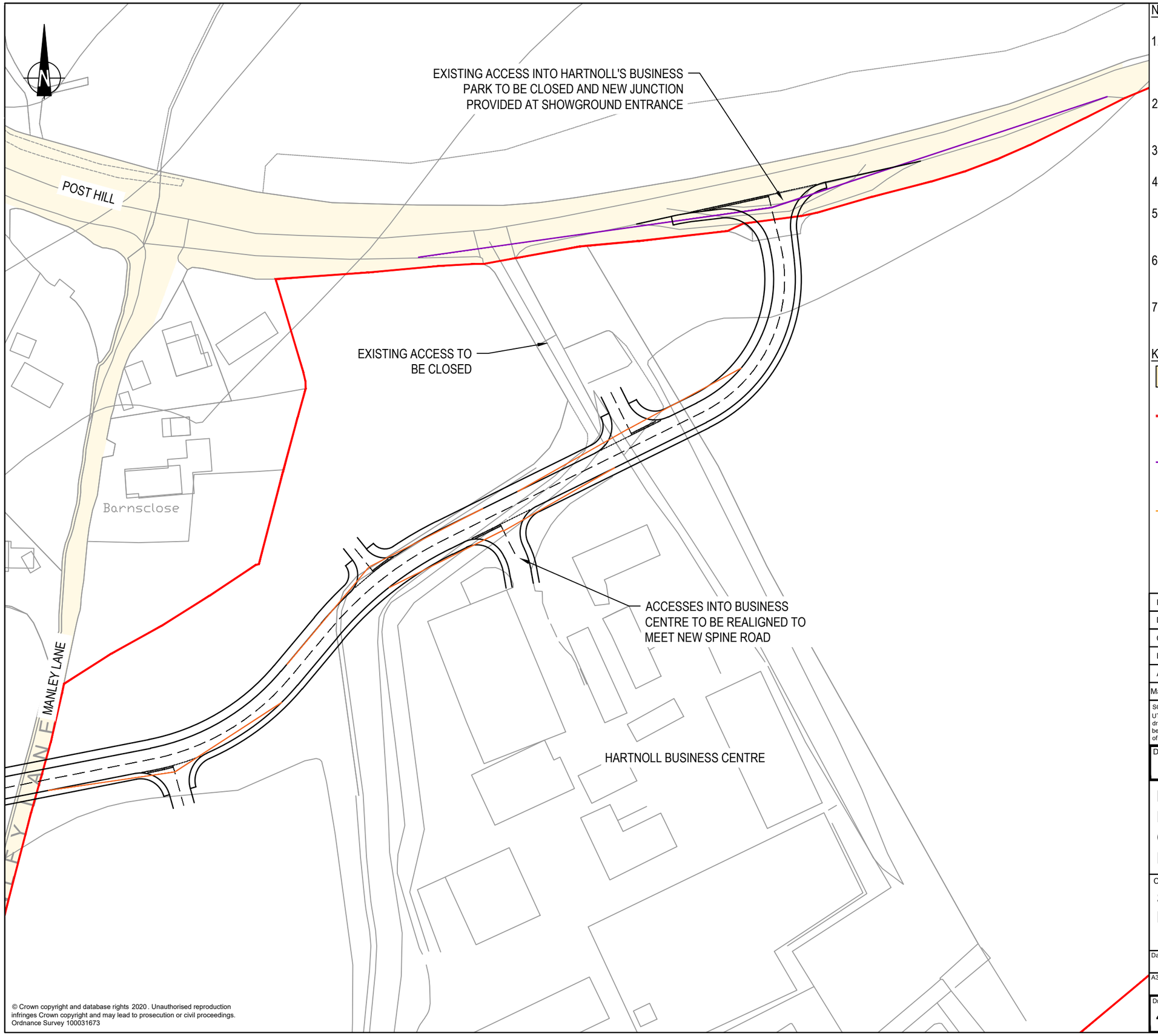
Appendix



NOTES:

1. THE LAYOUT IS SUBJECT TO DETAILED DESIGN, CAPACITY TESTING, GROUND INVESTIGATIONS RESULTS & EARTHWORKS MODELLING, UTILITIES & SERVICES AND CONFIRMATION OF LAND OWNERSHIP;
2. THE DETAILED DESIGN LAYOUT WILL BE DESIGNED IN ACCORDANCE WITH ALL RELEVANT DESIGN GUIDANCE AND STANDARDS;
3. THE LAYOUT HAS BEEN BASED ON THE APPROPRIATE DESIGN SPEED FOR OUR CURRENT PROPOSALS;
4. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT ASSOCIATED DOCUMENTS;
5. THE USE OF THE DRAWING DOES NOT ABSOLVE THE CLIENT FROM THEIR RESPONSIBILITIES IN REGARDS TO HEALTH & SAFETY AND CDM REGULATIONS;
6. THE DESIGN HAS BEEN BASED ON OS DATA AND THEREFORE REQUIRES CONFIRMATION WITH A TOPOGRAPHICAL SURVEY; AND
7. SUBJECT TO REVIEW AND COMMENTS FROM THE LOCAL HIGHWAY AUTHORITY.

KEY:

- HIGHWAY MAINTAINED AT PUBLIC'S EXPENSE AS PER DCC PLAN DATED 23/09/20
- INDICATIVE RED LINE BOUNDARY (INTERPRETED FROM TITLE PLANS DN659066 & DN597668)
- 4.5m x 120m VISIBILITY SPLAY (IN LINE WITH DMRB GUIDANCE FOR 40mph DESIGN SPEED)
- 2.4m x 43m VISIBILITY SPLAY (IN LINE WITH MfS GUIDANCE FOR 30mph DESIGN SPEED)

Mark	Revision	Date	Drawn	Chkd	Appd
E	EXTENT OF HMPE UPDATED	24.09.20	SEL	NK	NK
D	AMENDED FOR CLIENT COMMENTS	15.07.20	SEL	NK	NT
C	AMENDED FOR CLIENT COMMENTS	13.07.20	SEL	NT	NT
B	REVISED VISI SPLAY	13.07.20	SEL	NK	NT
A	UPDATED ACCESS LOCATION	13.07.20	SEL	NK	NT

SCALING NOTE: Do not scale this drawing - any errors or omissions shall be reported to Stantec without delay.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status

CONCEPT

LAND AT HARTNOLL'S FARM
PROPOSED SITE ACCESS
OPTION 2 - UPGRADE OF EXISTING PRIORITY JUNCTION

Client

STRATEGIC LAND PARTNERSHIP

Date of 1st Issue	Designed	Drawn
07.07.20	SEL	SEL
A3 Scale	**Checked**	**Approved**
1:1250	NK	NT

Drawing Number	Revision
48582/5501/SK02	E

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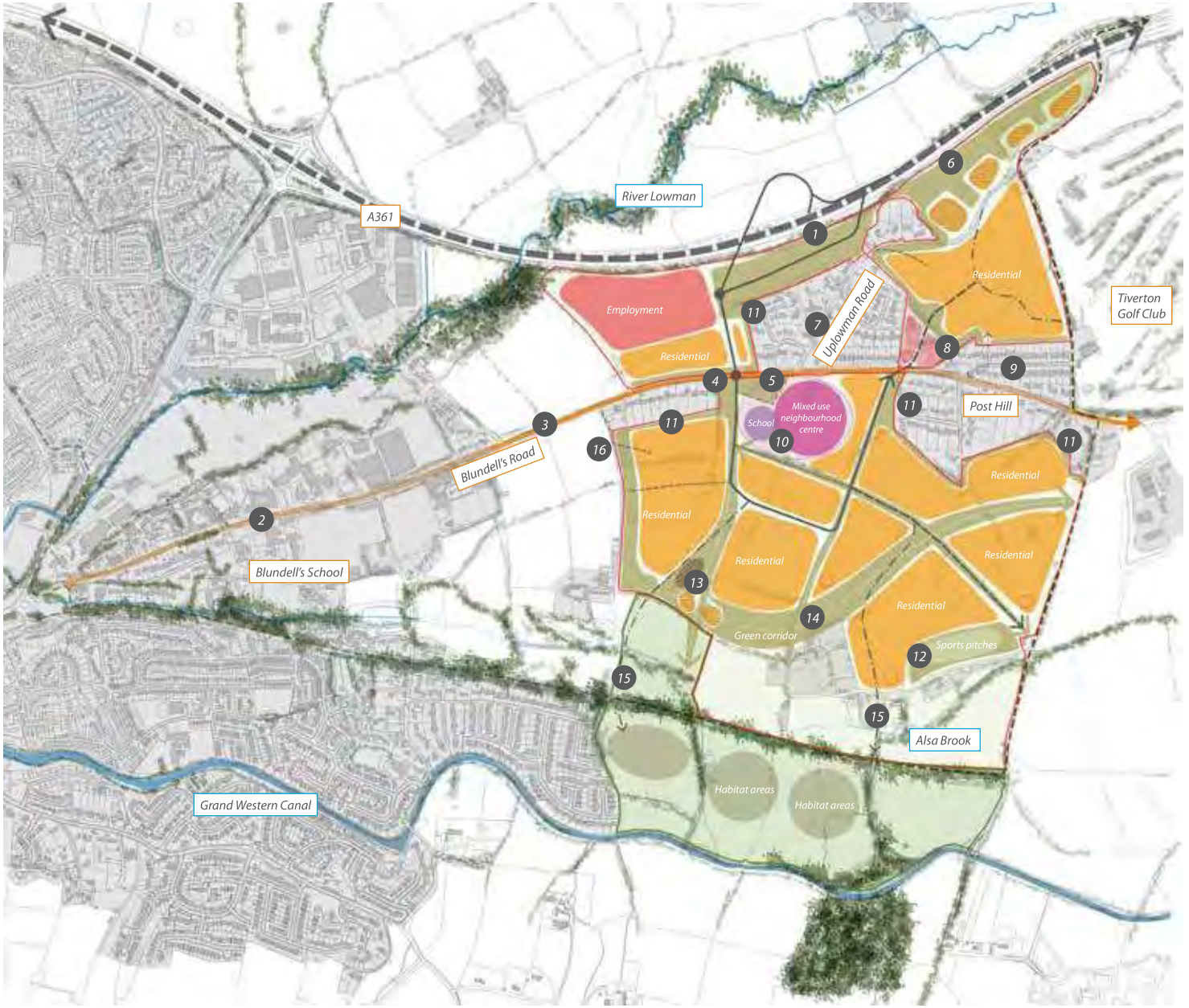
TAUNTON
Tel: 01823 218 940

user name: ledger, sarah

File Location: z:\projects\48582 hartnolls farm, tiverton\cad\brief xxx\sketches\48582_5501_sk02 priority junc option.dwg

Appendix B Tiverton EUE Concept Masterplan



Legend

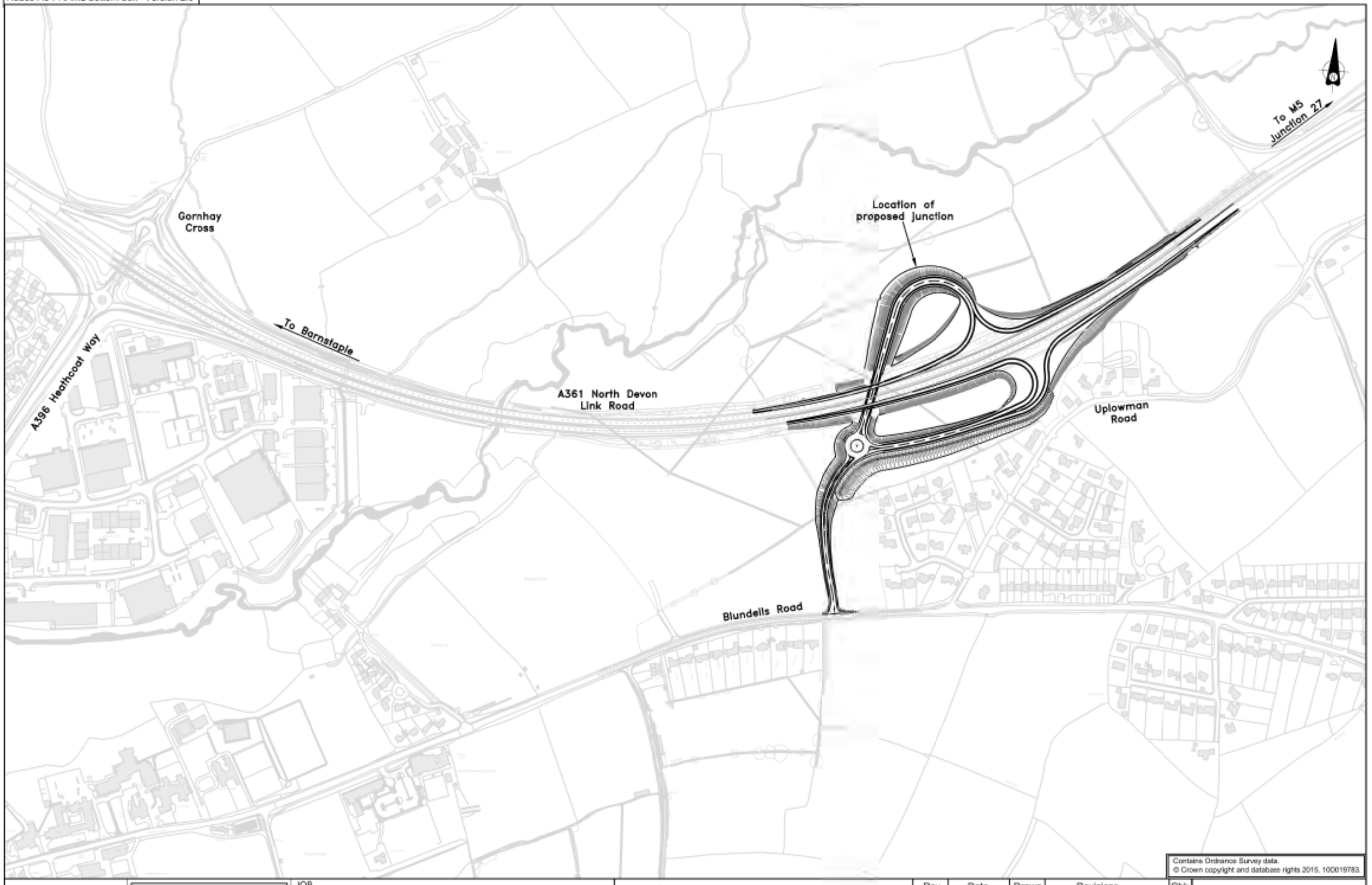
1. New junction onto the A361
2. Traffic calming at Blundell's School
3. Environmental enhancements along Blundell's Road
4. New junction on Blundell's Road linking to A361
5. Shared space and village green at neighbourhood centre
6. Open space with attenuation ponds
7. Highway improvements to Uplowman Road
8. Possible link to north eastern area
9. Possible link onto Fairway
10. Mixed use neighbourhood centre including school, shops and employment space
11. Green buffer to existing properties
12. Sports pitches
13. Allotments
14. Greenspace on steep ground
15. Links to southern area of Green Infrastructure
16. Possible secondary link to Blundell's Road

- Eastern Urban Extension Area AL/TIV/1-7
- Green Infrastructure Area AL/TIV/3GI
- Employment
- Employment (care home)
- Satellite Employment
- Residential
- Residential with rural character
- Education
- Open space and landscape
- Mixed use centre
- Playing fields
- Existing development
- Primary route
- Secondary routes
- Tertiary
- Other routes and connections

Above: Plan highlighting the key development concepts

Appendix C Proposed A361 Junction – General Layout

Roads A3 FRAME bottom box - Version 2.0



Devon County Council

Engineering Design Group

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www.devon.gov.uk

JOB

A361 NORTH DEVON LINK
TIVERTON
EASTERN URBAN EXTENSION
PHASE 2

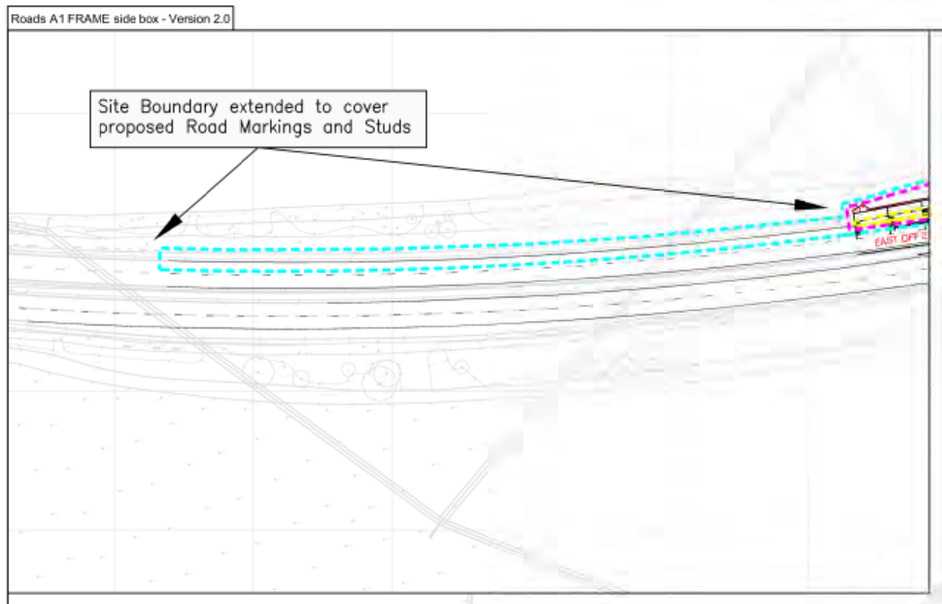
DRAWING TITLE

LOCATION PLAN

Rev	Date	Drawn	Revisions	Chk
0	30.09.2015	AS	N/A	
A	11.01.2017	AS	Junction layout updated	

drawing number: C11017/102
Revision: A
scale(s): 1/5000
size: A3

Roads A1 FRAME side box - Version 2.0



Phase 2 works comprising of:
- Left in left out north of A361 to CH 690
- Bridge Construction
- Drainage – pond and swales
- Landscaping
- Utility Diversions

Single Steel Field Gate – Type H17
1.1m high x 3.6m wide.

Single Steel Field Gate – Type H17
1.1m high x 3.6m wide.

Indicative location for 10.0m x 3.0m Grasspaving hardstanding as standard detail GP/2

KEY

- Site Boundary
- Surface Water Storage Pond
- Acoustic Fence type ARF/1
- Timber Post and 4 Rail Fence type PR/4
- Hedge Planting – See Landscaping Plan
- Area of Drainage Blanket 600mm deep
- Area of Drainage Blanket 150mm deep
- Archaeological Trench Locations
- Extent of Junction Works

Do not scale from this drawing in either hard or electronic format. No responsibility is accepted where this drawing is used in circumstances other than that for which it was originally prepared and issued.

NOTES

no.	details
1	For the extent o/ new Road Signs please refer to drawing no's. C11017/1250, 1251 & 1252.

Rev	Date	Drawn	Revisions	Chk
A	01-11-2016	DD	Area of Drainage Blanket added	
B	29-11-2016	DD	Area of additional land required added	
C	14-03-2017	AS	Resurfacing changed	
D	18-10-2017	DD	Batter names & chainage to Batter 4 added	
E	7-07-2020	DD	General update for Phase 2 works	

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JOB

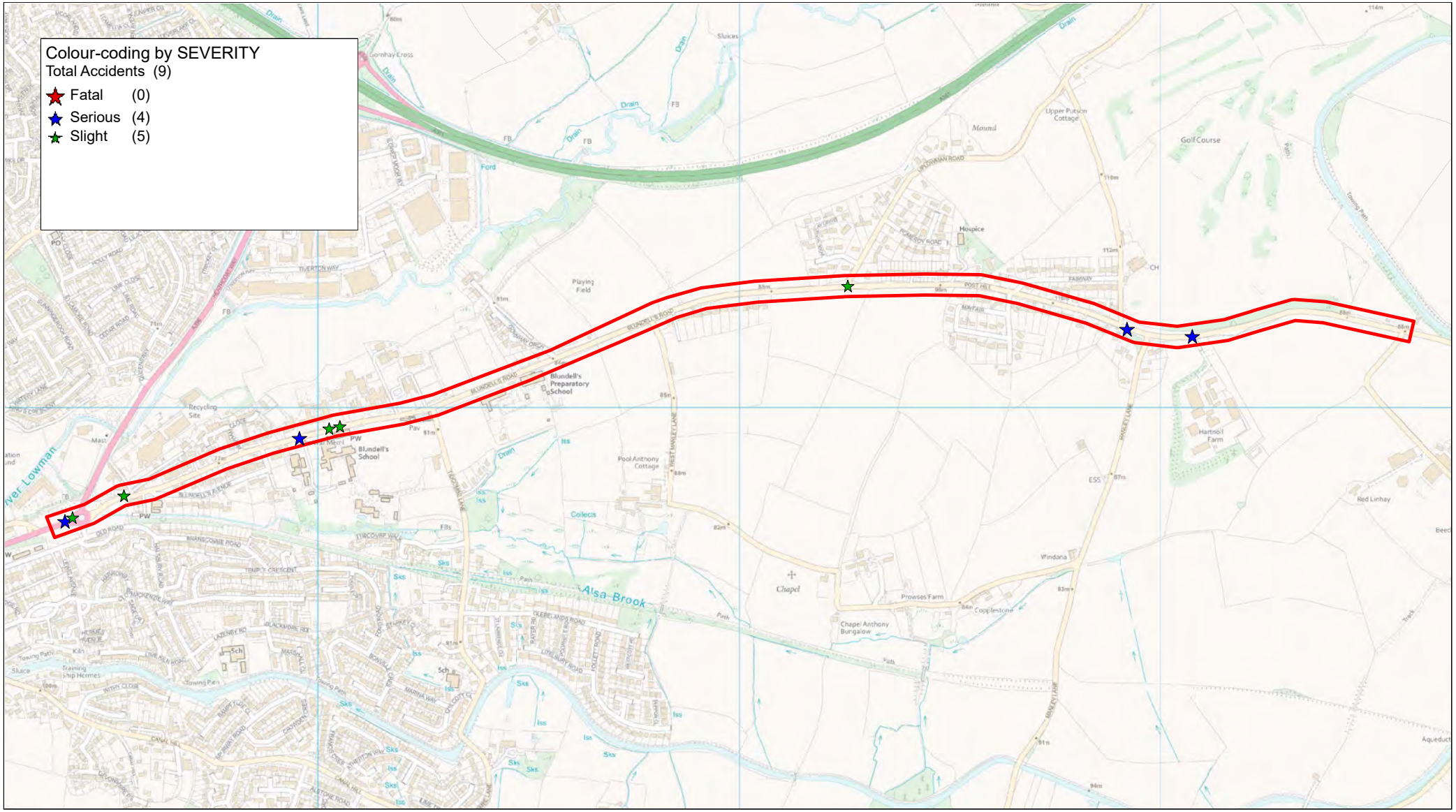
A361 NORTH DEVON LINK
TIVERTON
EASTERN URBAN EXTENSION

DRAWING TITLE

GENERAL SCHEME PLAN

drawing number	Revision
C11017/104	E
scale(s) 1:1250	size A1

Appendix D Personal Injury Collision Data



Devon County Council

Blundell's Road, Tiverton

This data covers injury collisions reported to/recorded by the Police
Accidents between dates 01/01/2016 and 31/12/2020
AccsMap version 6.1

COLLISION MAP: www.devoncctraffweb.co.uk/public/collisionmap

SCALE	**1 : 12500**
DATE	**01/07/2021**
DRAWING No.	
DRAWN BY	**OFD**
	Page 1 of 1

Collisions between dates 01/01/2016 and 31/12/2020 - (60) months
; Refined using Accidents within selected Polygons -D_Data Requests Latest ("21_06_30_Stantec_Blundells")

Notes: Collisions have been ordered from West to East to help align with the collision map.

LAYOUT
Police Ref. | Date | Time | Day | Darkness / Light
Severity | Weather
Road No. | Speed | Grid Ref. | Rd cond
Location Description
POLICE OFFICERS ACCOUNT OF COLLISION

VEHICLE / CASUALTY DETAILS
Veh No / Type | Manoeuvre | Direction | Casualty Info

Selected Polygon:21_06_30_Stantec_Blundells

16KT3B004 03/03/2016 0840 hrs Thu Daylight
Serious — Fine without high winds — Road Dry
A396 40 mph E 296401 N 112730
TIVERTON, A396 GREAT WESTERN WAY AT JUNCTION WITH BLUNDELLS ROAD

Veh 1	Car	Stopping	SW - NE	Casualty:Ped	Serious

VEH 1 WAS TRAVELLING ALONG GREAT WESTERN WAY TOWARDS THE TOWN VEH 1 APPROACHED THE PEDESTRIAN CROSSING BEFORE THE ROUNDABOUT. A PEDESTRIAN STEPPED OUT IN FRONT OF A LORRY WHICH WAS TO THE LEFT HAND SIDE OF VEH 1. AS THE PEDESTRIAN STEPS IN FRONT OF VEH 1 SHE STEPPED AWAY AND FELL TO THE FLOOR.

18803210 03/12/2018 0910 hrs Mon Daylight
Slight — Raining without high winds — Road Wet/Damp
A396 40 mph E 296419 N 112739
BLUNDELLS ROAD (A396) NEAR JUNCTION WITH HEATHCOAT WAY (A396)

Veh 1	Car	Starting	E - W	Casualty:Dri	Slight
Veh 2	Goods <3.5t/Van	Starting	E - W	Casualty:	

VEHICLE 1 WAS ON THE APPROACH TO THE ROUNDABOUT AT END OF GREAT WESTERN WAY, VEHICLE 1 HAS HESITATED, VEHICLE 2 TRAVELLING BEHIND VEHICLE 1. VEHICLE 2 HAD THOUGHT VEHICLE 1 HAD MOVED OFF BUT HAD NOT. VEHICLE 2 COLLIDED WITH THE REAR OF VEHICLE 1

16143768 16/11/2016 1720 hrs Wed Dark: street lights lit
Slight — Fine without high winds — Road Dry
C769 30 mph E 296541 N 112791
HORSDON GARAGE BLUNDELLS ROAD UNSPECIFIED ROAD OR LOCATION

Veh 1	Car	Going ahead	NW - SE	Casualty:Ped	Slight

REPORTING PERSON HAS WAITED AT TRAFFIC LIGHTS ON BLUNDELLS ROAD IN TIVERTON, SHE WAS STANDING ON THE HORSDON GARAGE SIDE OF THE ROAD. CAS1 HEARD THE LIGHTS BEEP INDICATING SIG COULD CROSS. STEPPED OUT WITHOUT LOOKING AND A CAR FAILED TO STOP AT THE LIGHTS AND RAN OVER HER FOOT. CAR STOPPED APROX 30M FURTHER AND THE DROVE ON.

18320892 16/07/2018 1235 hrs Mon Daylight
Serious — Fine without high winds — Road Dry
C769 20 mph E 296957 N 112927
BLUNDELLS SCHOOL BLUNDELLS ROAD

Veh 1	Car	Going ahead	E - W	Casualty:FSP	Slight
Veh 1	Car	Going ahead	E - W	Casualty:Dri	Serious

VEH 1 HAS MOUNTED THE PAVEMENT OUTSIDE BLUNDELLS SCHOOL CAUSING DAMAGE TO A LOW WALL.

16KT3B002 25/02/2016 1352 hrs Thu Daylight
Slight — Fine without high winds — Road Dry
C769 30 mph E 297028 N 112950
TIVERTON - BLUNDELLS ROAD - O/S SCHOOL

Veh 1	Car	Going ahead	W - E	Casualty:Ped	Slight

VEH1 APPROACHED PED CROSSING AND LIGHTS CHANGED TO AMBER. PED CAS1 RAN OUT FROM THE NEARSIDE IN FRONT OF VEH1. LIGHTS WERE STILL ON AMBER. VEH1 STRUCK CAS1 CAUSING HIM TO ROLL ONTO THE BONNET AND CARRIED HIM FOR A SHORT DISTANCE UNTIL CAS1 FELL INTOTHE ROAD.

18327520 25/08/2018 1810 hrs Sat Daylight
Slight — Fine without high winds — Road Dry
C769 30 mph E 297053 N 112955
BLUNDELLS ROAD, TIVERTON

Veh 1	Car	Going ahead	N - S	Casualty:Dri	Slight
Veh 1	Car	Going ahead	N - S	Casualty:FSP	Slight
Veh 2	Car	Going ahead	S - N	Casualty:Dri	Slight

VEH1 WAS DRIVING ALONG BLUNDELLS ROAD IN THE DIRECTION OF TIVERTON AND VEH2 WAS DRIVING IN THE OPPOSITE DIRECTION TOWARDS HALBERTON. DRV1 SEEMS TO HAVE SUFFERED A MEDICAL EPISODE AND VEERED INTO THE PATH OF VEH2. DRV1 CONTINUED ON THE WRONG SIDE OF THE ROAD AND CAME TO A STOP ON THE PAVEMENT AND COLLIDED WITH A LAMPOST AND WALL.

Collisions between dates 01/01/2016 and 31/12/2020 - (60) months
; Refined using Accidents within selected Polygons -D_Data Requests Latest ("21_06_30_Stantec_Blundells")

Notes: Collisions have been ordered from West to East to help align with the collision map.

LAYOUT Police Ref. Severity Road No. Speed Location Description POLICE OFFICERS ACCOUNT OF COLLISION | Date Weather Grid Ref. | Time | Day Rd cond | Darkness / Light

VEHICLE / CASUALTY DETAILS

Veh No / Type	Manoeuvre	Direction	Casualty Info

1649834 14/02/2016 1823 hrs Sun Daylight
Slight Fine without high winds Road Dry
C 137 30 mph E 298258 N 113288
BLUNDELLS ROAD UNSPECIFIED ROAD OR LOCATION UPLOWMAN ROAD

Veh 1	Car	Turning right	N - S	Casualty:
Veh 2	M/C 50-125cc	Going ahead	S - N	Casualty:Dri Slight

VEH1 TRAVELLING ALONG BLUNDELLS ROAD AND WAS STATIONARY WAITING TO TURN RIGHT INTO UPLOWMAN ROAD. VEH2 TRAVELLING IN THE OPPOSITE DIRECTION. VEH1 PULLED INTO THE PATH OF ONCOMING VEH2.

17179931 22/04/2017 1311 hrs Sat Daylight
Serious Fine without high winds Road Dry
C 769 30 mph E 298920 N 113186
POST HILL UNSPECIFIED ROAD OR LOCATION

Veh 1	M/C 500cc>	O/take m/veh o/side	N - S	Casualty:Dri Serious
Veh 2	Car	Going ahead	S - N	Casualty:

VEH1 WAS TRAVELLING ALONG POST HILL TOWARDS TIVERTON. VEH1 WAS TRAVELLING BEHIND A DOUBLE DECKER AND VEERED OUT SLIGHTLY TO VIEW PAST WITH THE THOUGHT OF OVER TAKING. VEH2 WAS TRAVELLING IN THE OPPOSITE DIRECTION AND HAS COLLIDED WITH VEH1.

18800431 09/10/2018 0555 hrs Tue Dark: no street lighting
Serious Fine without high winds Road Wet/Damp
C 769 40 mph E 299075 N 113169
POST HILL

Veh 1	M/C 50-125cc	Going ahead	W - E	Casualty:Dri Serious
Veh 2	Car	Wait to turn right	W - E	Casualty:
Veh 3	Goods <3.5t/Van	Going ahead	E - W	Casualty:

VEH1 MOTORCYCLE INDICATED TO TURN RIGHT, COLLIDING WITH VEH2 AND FALLING OFF MOTORCYCLE, WHICH WAS THROWN INTO OPPOSITE CARRIAGEWAY, UNDER VEH3.

Appendix E Framework Masterplan

DEFINE

Legend

- Red Line Site Boundary
- Primary Road
- Secondary Road
- Tertiary Road
- Pedestrian/Cycle Route
- Vehicular Link to TEUE
- Vehicular Site Access
- Employment Access Point
- Residential Access Point
- Pedestrian/Cycle Access Point
- Proposed Bridge - Vehicular Access
- Canal Beach - No build
- Open Space (incl. SuDS)
- New Woodland Planting
- Development / New Homes
- Development / Employment

N

10 30
0m 20 50 100

D	Rev
DE_425_SK11	Drg No
Waddeton Park LTD	Client
425 Hartnoll Park, Tiverton	Project
Framework Plan	Title
1:2500@A3	Scale

Appendix F Capacity Assessment Output Reports

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.0.1499

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

Filename: A361 Blundells Road Link Road.j10
Path: J:\48582 Hartnolls Farm, Tiverton\Technical\Transport\Junction Assessments
Report generation date: 15/07/2021 12:33:23

Summary of junction performance

	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
	2021 Base Year			
Stream B-C	0.0	0.00	0.0	0.00
Stream B-A	0.0	0.00	0.0	0.00
Stream C-AB	0.0	0.00	0.0	0.00
	2024 Future Year + Com Dev			
Stream B-C	0.2	0.13	0.2	0.13
Stream B-A	0.5	0.33	0.4	0.30
Stream C-AB	2.0	0.57	2.2	0.59
	2024 Future Year + Com Dev + Dev			
Stream B-C	0.2	0.19	0.2	0.18
Stream B-A	0.6	0.36	0.5	0.34
Stream C-AB	2.8	0.65	3.3	0.68
	2029 Future Year + Com Dev			
Stream B-C	0.2	0.14	0.2	0.13
Stream B-A	0.5	0.33	0.4	0.31
Stream C-AB	2.1	0.58	2.2	0.60
	2029 Future Year + Com Dev + Dev			
Stream B-C	0.2	0.19	0.2	0.18
Stream B-A	0.6	0.37	0.5	0.35
Stream C-AB	2.9	0.66	3.4	0.69

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

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

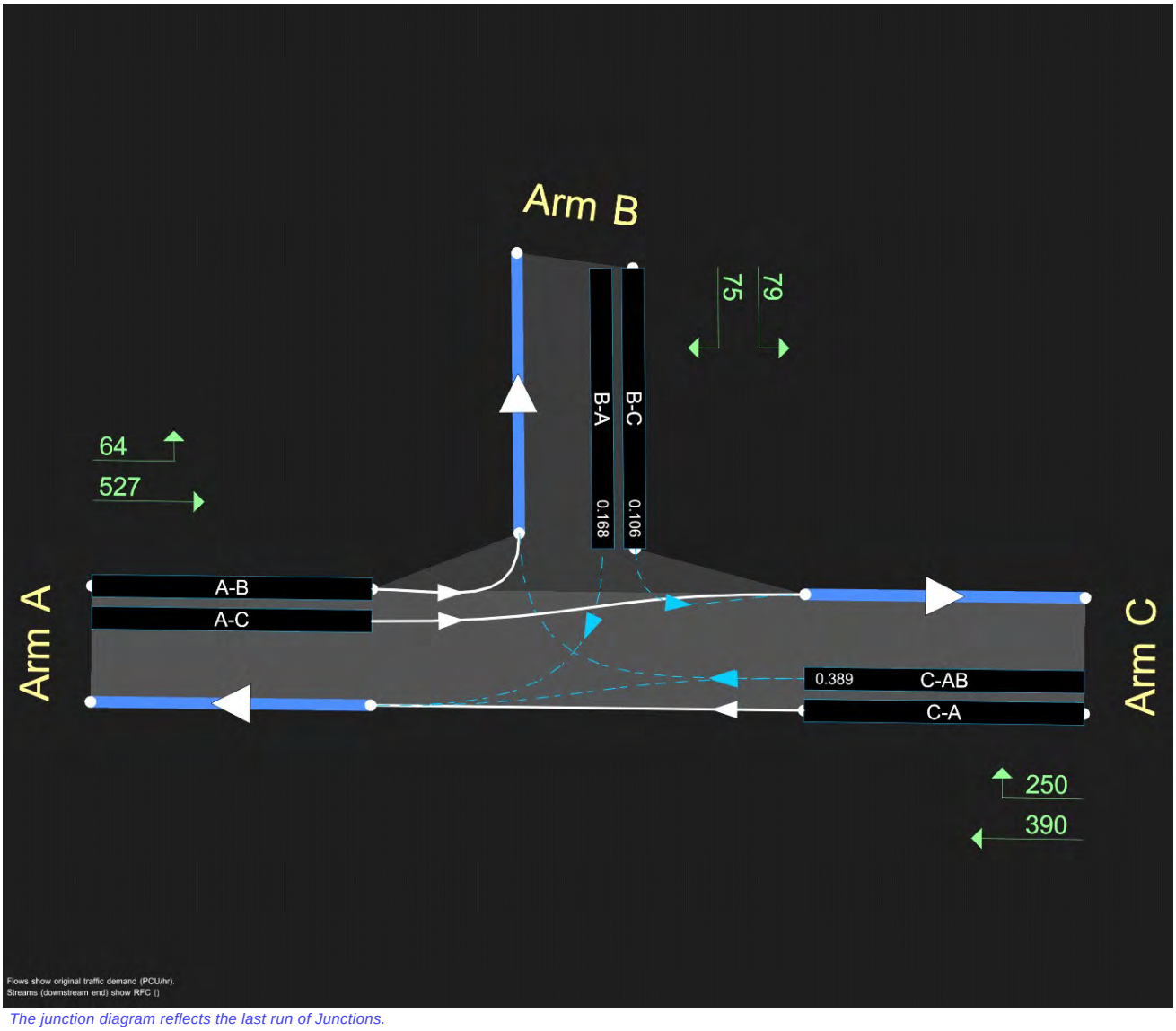
File summary

File Description

Title	
Location	
Site number	
Date	06/07/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\matpearce
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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

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	2021 Base Year	AM	ONE HOUR	07:45	09:15	15	✓
D2	2021 Base Year	PM	ONE HOUR	16:45	18:15	15	✓
D3	2024 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓
D4	2024 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓
D5	2024 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D6	2024 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓
D7	2029 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓
D8	2029 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓
D9	2029 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D10	2029 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

2021 Base Year, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.00	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.00	A

Arms

Arms

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

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.50			200.0	✓	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	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	5.20	4.00	3.50	3.20	✓	1.00	30	27

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	541	0.092	0.233	0.146	0.332
B-C	692	0.099	0.251	-	-
C-B	690	0.250	0.250	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

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	2021 Base Year	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	364	100.000
B		ONE HOUR	✓	0	100.000
C		ONE HOUR	✓	416	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	364
	B	0	0	0
	C	416	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	18
	B	0	0	0
	C	16	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-C	0.00	0.00	0.0	A	0	0
B-A	0.00	0.00	0.0	A	0	0
C-AB	0.00	0.00	0.0	A	0	0
C-A					382	573
A-B					0	0
A-C					334	501

Main Results for each time segment

07:45 - 08:00

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-C	0	0	624	0.000	0	0.0	0.0	0.000	A
B-A	0	0	431	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	621	0.000	0	0.0	0.0	0.000	A
C-A	313	78			313				
A-B	0	0			0				
A-C	274	69			274				

08:00 - 08:15

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-C	0	0	610	0.000	0	0.0	0.0	0.000	A
B-A	0	0	410	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	608	0.000	0	0.0	0.0	0.000	A
C-A	374	93			374				
A-B	0	0			0				
A-C	327	82			327				

08:15 - 08:30

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-C	0	0	592	0.000	0	0.0	0.0	0.000	A
B-A	0	0	380	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	590	0.000	0	0.0	0.0	0.000	A
C-A	458	115			458				
A-B	0	0			0				
A-C	401	100			401				

08:30 - 08:45

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-C	0	0	592	0.000	0	0.0	0.0	0.000	A
B-A	0	0	380	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	590	0.000	0	0.0	0.0	0.000	A
C-A	458	115			458				
A-B	0	0			0				
A-C	401	100			401				

08:45 - 09:00

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-C	0	0	610	0.000	0	0.0	0.0	0.000	A
B-A	0	0	410	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	608	0.000	0	0.0	0.0	0.000	A
C-A	374	93			374				
A-B	0	0			0				
A-C	327	82			327				

09:00 - 09:15

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-C	0	0	624	0.000	0	0.0	0.0	0.000	A
B-A	0	0	431	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	621	0.000	0	0.0	0.0	0.000	A
C-A	313	78			313				
A-B	0	0			0				
A-C	274	69			274				

2021 Base Year, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.00	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.00	A

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	2021 Base Year	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	436	100.000
B		ONE HOUR	✓	0	100.000
C		ONE HOUR	✓	452	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	0	436
	B	0	0	0
	C	452	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	11
	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-C	0.00	0.00	0.0	A	0	0
B-A	0.00	0.00	0.0	A	0	0
C-AB	0.00	0.00	0.0	A	0	0
C-A					415	622
A-B					0	0
A-C					400	600

Main Results for each time segment

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-C	0	0	610	0.000	0	0.0	0.0	0.000	A
B-A	0	0	414	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	608	0.000	0	0.0	0.0	0.000	A
C-A	340	85			340				
A-B	0	0			0				
A-C	328	82			328				

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-C	0	0	594	0.000	0	0.0	0.0	0.000	A
B-A	0	0	390	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	592	0.000	0	0.0	0.0	0.000	A
C-A	406	102			406				
A-B	0	0			0				
A-C	392	98			392				

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-C	0	0	572	0.000	0	0.0	0.0	0.000	A
B-A	0	0	356	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	570	0.000	0	0.0	0.0	0.000	A
C-A	498	124			498				
A-B	0	0			0				
A-C	480	120			480				

17:30 - 17:45

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-C	0	0	572	0.000	0	0.0	0.0	0.000	A
B-A	0	0	356	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	570	0.000	0	0.0	0.0	0.000	A
C-A	498	124			498				
A-B	0	0			0				
A-C	480	120			480				

17:45 - 18:00

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-C	0	0	594	0.000	0	0.0	0.0	0.000	A
B-A	0	0	390	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	592	0.000	0	0.0	0.0	0.000	A
C-A	406	102			406				
A-B	0	0			0				
A-C	392	98			392				

18:00 - 18:15

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-C	0	0	610	0.000	0	0.0	0.0	0.000	A
B-A	0	0	414	0.000	0	0.0	0.0	0.000	A
C-AB	0	0	608	0.000	0	0.0	0.0	0.000	A
C-A	340	85			340				
A-B	0	0			0				
A-C	328	82			328				

2024 Future Year + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.24	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.24	A

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	2024 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	498	100.000
B		ONE HOUR	✓	146	100.000
C		ONE HOUR	✓	571	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	71	427
	B	86	0	60
	C	347	224	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	15
	B	0	0	0
	C	18	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-C	0.13	8.46	0.2	A	55	83
B-A	0.33	18.51	0.5	C	79	118
C-AB	0.57	11.11	2.0	B	352	529
C-A					172	257
A-B					65	98
A-C					392	588

Main Results for each time segment

07:45 - 08:00

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-C	45	11	565	0.080	45	0.0	0.1	6.915	A
B-A	65	16	374	0.173	64	0.0	0.2	11.574	B
C-AB	255	64	771	0.331	252	0.0	0.7	7.302	A
C-A	175	44			175				
A-B	53	13			53				
A-C	321	80			321				

08:00 - 08:15

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-C	54	13	538	0.100	54	0.1	0.1	7.436	A
B-A	77	19	339	0.228	77	0.2	0.3	13.738	B
C-AB	334	84	790	0.423	333	0.7	1.0	8.330	A
C-A	179	45			179				
A-B	64	16			64				
A-C	384	96			384				

08:15 - 08:30

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-C	66	17	493	0.134	66	0.1	0.2	8.432	A
B-A	95	24	290	0.327	94	0.3	0.5	18.307	C
C-AB	465	116	819	0.569	462	1.0	1.9	10.777	B
C-A	163	41			163				
A-B	78	20			78				
A-C	470	118			470				

08:30 - 08:45

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-C	66	17	492	0.134	66	0.2	0.2	8.460	A
B-A	95	24	289	0.328	95	0.5	0.5	18.507	C
C-AB	467	117	820	0.570	467	1.9	2.0	11.113	B
C-A	161	40			161				
A-B	78	20			78				
A-C	470	118			470				

08:45 - 09:00

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-C	54	13	537	0.101	54	0.2	0.1	7.462	A
B-A	77	19	338	0.229	78	0.5	0.3	13.906	B
C-AB	336	84	792	0.424	339	2.0	1.1	8.679	A
C-A	177	44			177				
A-B	64	16			64				
A-C	384	96			384				

09:00 - 09:15

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-C	45	11	564	0.080	45	0.1	0.1	6.942	A
B-A	65	16	373	0.174	65	0.3	0.2	11.702	B
C-AB	257	64	772	0.332	258	1.1	0.7	7.497	A
C-A	173	43			173				
A-B	53	13			53				
A-C	321	80			321				

2024 Future Year + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.13	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.13	A

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	2024 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	554	100.000
B		ONE HOUR	✓	133	100.000
C		ONE HOUR	✓	572	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	64	490
	B	74	0	59
	C	348	224	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	10
	B	0	0	0
	C	17	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-C	0.13	8.51	0.2	A	54	81
B-A	0.30	18.97	0.4	C	68	102
C-AB	0.59	11.72	2.2	B	357	535
C-A					168	252
A-B					59	88
A-C					450	674

Main Results for each time segment

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-C	44	11	562	0.079	44	0.0	0.1	6.941	A
B-A	56	14	361	0.155	55	0.0	0.2	11.756	B
C-AB	257	64	762	0.337	254	0.0	0.7	7.437	A
C-A	174	43			174				
A-B	48	12			48				
A-C	369	92			369				

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-C	53	13	534	0.099	53	0.1	0.1	7.476	A
B-A	67	17	323	0.206	66	0.2	0.3	13.990	B
C-AB	338	84	781	0.432	336	0.7	1.1	8.559	A
C-A	177	44			177				
A-B	58	14			58				
A-C	440	110			440				

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-C	65	16	489	0.133	65	0.1	0.2	8.480	A
B-A	81	20	272	0.300	81	0.3	0.4	18.770	C
C-AB	473	118	807	0.585	469	1.1	2.1	11.324	B
C-A	157	39			157				
A-B	70	18			70				
A-C	540	135			540				

17:30 - 17:45

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-C	65	16	488	0.133	65	0.2	0.2	8.507	A
B-A	81	20	271	0.301	81	0.4	0.4	18.972	C
C-AB	475	119	809	0.587	474	2.1	2.2	11.718	B
C-A	155	39			155				
A-B	70	18			70				
A-C	540	135			540				

17:45 - 18:00

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-C	53	13	533	0.099	53	0.2	0.1	7.501	A
B-A	67	17	322	0.207	67	0.4	0.3	14.160	B
C-AB	340	85	783	0.434	344	2.2	1.2	8.944	A
C-A	175	44			175				
A-B	58	14			58				
A-C	440	110			440				

18:00 - 18:15

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-C	44	11	561	0.079	45	0.1	0.1	6.967	A
B-A	56	14	359	0.155	56	0.3	0.2	11.875	B
C-AB	259	65	764	0.339	260	1.2	0.7	7.641	A
C-A	172	43			172				
A-B	48	12			48				
A-C	369	92			369				

2024 Future Year + Com Dev + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.41	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.41	A

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	2024 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	534	100.000
B		ONE HOUR	✓	169	100.000
C		ONE HOUR	✓	623	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	71	463
	B	86	0	83
	C	380	243	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	14
	B	0	0	0
	C	16	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-C	0.19	9.24	0.2	A	76	114
B-A	0.36	21.76	0.6	C	79	118
C-AB	0.65	13.29	2.8	B	405	607
C-A					167	251
A-B					65	98
A-C					425	637

Main Results for each time segment

07:45 - 08:00

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-C	62	16	568	0.110	62	0.0	0.1	7.116	A
B-A	65	16	352	0.184	64	0.0	0.2	12.458	B
C-AB	289	72	782	0.369	285	0.0	0.8	7.612	A
C-A	180	45			180				
A-B	53	13			53				
A-C	349	87			349				

08:00 - 08:15

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-C	75	19	537	0.139	74	0.1	0.2	7.789	A
B-A	77	19	314	0.246	77	0.2	0.3	15.167	C
C-AB	382	95	804	0.475	380	0.8	1.3	8.971	A
C-A	178	45			178				
A-B	64	16			64				
A-C	416	104			416				

08:15 - 08:30

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-C	91	23	483	0.189	91	0.2	0.2	9.183	A
B-A	95	24	261	0.363	94	0.3	0.5	21.389	C
C-AB	540	135	837	0.645	534	1.3	2.7	12.668	B
C-A	146	37			146				
A-B	78	20			78				
A-C	510	127			510				

08:30 - 08:45

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-C	91	23	481	0.190	91	0.2	0.2	9.237	A
B-A	95	24	260	0.364	95	0.5	0.6	21.760	C
C-AB	543	136	839	0.647	542	2.7	2.8	13.293	B
C-A	143	36			143				
A-B	78	20			78				
A-C	510	127			510				

08:45 - 09:00

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-C	75	19	535	0.140	75	0.2	0.2	7.832	A
B-A	77	19	312	0.248	78	0.6	0.3	15.441	C
C-AB	385	96	807	0.477	390	2.8	1.4	9.490	A
C-A	175	44			175				
A-B	64	16			64				
A-C	416	104			416				

09:00 - 09:15

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-C	62	16	566	0.110	63	0.2	0.1	7.152	A
B-A	65	16	351	0.185	65	0.3	0.2	12.627	B
C-AB	291	73	783	0.371	293	1.4	0.9	7.861	A
C-A	178	45			178				
A-B	53	13			53				
A-C	349	87			349				

2024 Future Year + Com Dev + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.72	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.72	A

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	2024 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	586	100.000
B		ONE HOUR	✓	152	100.000
C		ONE HOUR	✓	635	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	64	522
	B	74	0	78
	C	387	248	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	9
	B	0	0	0
	C	15	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-C	0.18	9.18	0.2	A	72	107
B-A	0.34	22.47	0.5	C	68	102
C-AB	0.68	14.90	3.3	B	422	633
C-A					161	241
A-B					59	88
A-C					479	718

Main Results for each time segment

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-C	59	15	564	0.104	58	0.0	0.1	7.110	A
B-A	56	14	338	0.165	55	0.0	0.2	12.664	B
C-AB	299	75	777	0.384	295	0.0	0.9	7.827	A
C-A	179	45			179				
A-B	48	12			48				
A-C	393	98			393				

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-C	70	18	533	0.132	70	0.1	0.2	7.776	A
B-A	67	17	298	0.223	66	0.2	0.3	15.485	C
C-AB	397	99	799	0.497	395	0.9	1.4	9.400	A
C-A	174	43			174				
A-B	58	14			58				
A-C	469	117			469				

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-C	86	21	480	0.179	86	0.2	0.2	9.131	A
B-A	81	20	243	0.335	81	0.3	0.5	22.069	C
C-AB	565	141	831	0.680	559	1.4	3.1	14.003	B
C-A	134	33			134				
A-B	70	18			70				
A-C	575	144			575				

17:30 - 17:45

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-C	86	21	478	0.180	86	0.2	0.2	9.181	A
B-A	81	20	241	0.337	81	0.5	0.5	22.474	C
C-AB	569	142	834	0.682	569	3.1	3.3	14.898	B
C-A	130	32			130				
A-B	70	18			70				
A-C	575	144			575				

17:45 - 18:00

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-C	70	18	531	0.132	70	0.2	0.2	7.816	A
B-A	67	17	296	0.225	67	0.5	0.3	15.777	C
C-AB	401	100	803	0.499	408	3.3	1.6	10.046	B
C-A	170	42			170				
A-B	58	14			58				
A-C	469	117			469				

18:00 - 18:15

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-C	59	15	563	0.104	59	0.2	0.1	7.141	A
B-A	56	14	337	0.165	56	0.3	0.2	12.831	B
C-AB	301	75	779	0.386	304	1.6	0.9	8.108	A
C-A	177	44			177				
A-B	48	12			48				
A-C	393	98			393				

2029 Future Year + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.36	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.36	A

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
D7	2029 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	503	100.000
B		ONE HOUR	✓	148	100.000
C		ONE HOUR	✓	577	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	71	432
	B	87	0	61
	C	351	226	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	15
	B	0	0	0
	C	18	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-C	0.14	8.55	0.2	A	56	84
B-A	0.33	18.90	0.5	C	80	120
C-AB	0.58	11.32	2.1	B	358	537
C-A					171	257
A-B					65	98
A-C					396	595

Main Results for each time segment

07:45 - 08:00

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-C	46	11	564	0.081	46	0.0	0.1	6.942	A
B-A	65	16	372	0.176	65	0.0	0.2	11.675	B
C-AB	259	65	772	0.335	256	0.0	0.7	7.339	A
C-A	176	44			176				
A-B	53	13			53				
A-C	325	81			325				

08:00 - 08:15

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-C	55	14	536	0.102	55	0.1	0.1	7.478	A
B-A	78	20	336	0.233	78	0.2	0.3	13.909	B
C-AB	339	85	792	0.428	338	0.7	1.1	8.398	A
C-A	179	45			179				
A-B	64	16			64				
A-C	388	97			388				

08:15 - 08:30

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-C	67	17	490	0.137	67	0.1	0.2	8.515	A
B-A	96	24	287	0.334	95	0.3	0.5	18.681	C
C-AB	473	118	821	0.577	470	1.1	2.0	10.960	B
C-A	162	40			162				
A-B	78	20			78				
A-C	476	119			476				

08:30 - 08:45

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-C	67	17	488	0.138	67	0.2	0.2	8.545	A
B-A	96	24	286	0.335	96	0.5	0.5	18.900	C
C-AB	475	119	822	0.578	475	2.0	2.1	11.321	B
C-A	160	40			160				
A-B	78	20			78				
A-C	476	119			476				

08:45 - 09:00

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-C	55	14	535	0.103	55	0.2	0.1	7.506	A
B-A	78	20	335	0.233	79	0.5	0.3	14.090	B
C-AB	341	85	794	0.430	345	2.1	1.2	8.766	A
C-A	178	44			178				
A-B	64	16			64				
A-C	388	97			388				

09:00 - 09:15

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-C	46	11	563	0.082	46	0.1	0.1	6.967	A
B-A	65	16	371	0.176	66	0.3	0.2	11.806	B
C-AB	260	65	773	0.337	262	1.2	0.7	7.537	A
C-A	174	44			174				
A-B	53	13			53				
A-C	325	81			325				

2029 Future Year + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.26	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.26	A

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
D8	2029 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	559	100.000
B		ONE HOUR	✓	134	100.000
C		ONE HOUR	✓	578	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	64	495
	B	75	0	59
	C	352	226	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	10
	B	0	0	0
	C	17	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-C	0.13	8.58	0.2	A	54	81
B-A	0.31	19.34	0.4	C	69	103
C-AB	0.60	11.96	2.2	B	362	544
C-A					168	252
A-B					59	88
A-C					454	681

Main Results for each time segment

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-C	44	11	561	0.079	44	0.0	0.1	6.966	A
B-A	56	14	359	0.157	56	0.0	0.2	11.844	B
C-AB	261	65	764	0.341	258	0.0	0.7	7.474	A
C-A	175	44			175				
A-B	48	12			48				
A-C	373	93			373				

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-C	53	13	532	0.100	53	0.1	0.1	7.512	A
B-A	67	17	321	0.210	67	0.2	0.3	14.148	B
C-AB	343	86	782	0.438	341	0.7	1.1	8.632	A
C-A	177	44			177				
A-B	58	14			58				
A-C	445	111			445				

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-C	65	16	486	0.134	65	0.1	0.2	8.548	A
B-A	83	21	269	0.306	82	0.3	0.4	19.125	C
C-AB	481	120	809	0.594	477	1.1	2.2	11.531	B
C-A	156	39			156				
A-B	70	18			70				
A-C	545	136			545				

17:30 - 17:45

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-C	65	16	485	0.134	65	0.2	0.2	8.577	A
B-A	83	21	269	0.308	83	0.4	0.4	19.345	C
C-AB	483	121	811	0.595	483	2.2	2.2	11.957	B
C-A	153	38			153				
A-B	70	18			70				
A-C	545	136			545				

17:45 - 18:00

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-C	53	13	531	0.100	53	0.2	0.1	7.541	A
B-A	67	17	320	0.211	68	0.4	0.3	14.329	B
C-AB	345	86	784	0.440	349	2.2	1.2	9.038	A
C-A	175	44			175				
A-B	58	14			58				
A-C	445	111			445				

18:00 - 18:15

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-C	44	11	560	0.079	45	0.1	0.1	6.992	A
B-A	56	14	358	0.158	57	0.3	0.2	11.969	B
C-AB	262	66	765	0.343	264	1.2	0.8	7.684	A
C-A	173	43			173				
A-B	48	12			48				
A-C	373	93			373				

2029 Future Year + Com Dev + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.58	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.58	A

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
D9	2029 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	538	100.000
B		ONE HOUR	✓	170	100.000
C		ONE HOUR	✓	628	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	71	467
	B	87	0	83
	C	383	245	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	14
	B	0	0	0
	C	16	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-C	0.19	9.32	0.2	A	76	114
B-A	0.37	22.21	0.6	C	80	120
C-AB	0.66	13.61	2.9	B	410	615
C-A					166	249
A-B					65	98
A-C					429	643

Main Results for each time segment

07:45 - 08:00

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-C	62	16	566	0.110	62	0.0	0.1	7.139	A
B-A	65	16	351	0.187	65	0.0	0.2	12.545	B
C-AB	292	73	783	0.373	289	0.0	0.8	7.654	A
C-A	181	45			181				
A-B	53	13			53				
A-C	352	88			352				

08:00 - 08:15

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-C	75	19	534	0.140	74	0.1	0.2	7.826	A
B-A	78	20	312	0.251	78	0.2	0.3	15.330	C
C-AB	387	97	805	0.480	385	0.8	1.3	9.057	A
C-A	178	44			178				
A-B	64	16			64				
A-C	420	105			420				

08:15 - 08:30

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-C	91	23	479	0.191	91	0.2	0.2	9.267	A
B-A	96	24	259	0.370	95	0.3	0.6	21.800	C
C-AB	548	137	838	0.653	542	1.3	2.8	12.929	B
C-A	144	36			144				
A-B	78	20			78				
A-C	514	129			514				

08:30 - 08:45

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-C	91	23	477	0.191	91	0.2	0.2	9.325	A
B-A	96	24	258	0.372	96	0.6	0.6	22.206	C
C-AB	551	138	841	0.655	550	2.8	2.9	13.609	B
C-A	141	35			141				
A-B	78	20			78				
A-C	514	129			514				

08:45 - 09:00

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-C	75	19	533	0.140	75	0.2	0.2	7.870	A
B-A	78	20	310	0.252	79	0.6	0.3	15.624	C
C-AB	390	98	809	0.482	396	2.9	1.5	9.601	A
C-A	175	44			175				
A-B	64	16			64				
A-C	420	105			420				

09:00 - 09:15

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-C	62	16	565	0.111	63	0.2	0.1	7.176	A
B-A	65	16	349	0.187	66	0.3	0.2	12.721	B
C-AB	294	74	784	0.375	296	1.5	0.9	7.911	A
C-A	179	45			179				
A-B	53	13			53				
A-C	352	88			352				

2029 Future Year + Com Dev + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.94	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.94	A

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
D10	2029 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	591	100.000
B		ONE HOUR	✓	154	100.000
C		ONE HOUR	✓	640	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	64	527
	B	75	0	79
	C	390	250	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	9
	B	0	0	0
	C	15	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-C	0.18	9.30	0.2	A	72	109
B-A	0.35	23.02	0.5	C	69	103
C-AB	0.69	15.34	3.4	C	428	642
C-A					159	239
A-B					59	88
A-C					484	725

Main Results for each time segment

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-C	59	15	563	0.106	59	0.0	0.1	7.142	A
B-A	56	14	337	0.168	56	0.0	0.2	12.773	B
C-AB	302	76	778	0.389	299	0.0	0.9	7.876	A
C-A	179	45			179				
A-B	48	12			48				
A-C	397	99			397				

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-C	71	18	531	0.134	71	0.1	0.2	7.826	A
B-A	67	17	296	0.228	67	0.2	0.3	15.685	C
C-AB	402	101	800	0.503	400	0.9	1.5	9.502	A
C-A	173	43			173				
A-B	58	14			58				
A-C	474	118			474				

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-C	87	22	476	0.183	87	0.2	0.2	9.238	A
B-A	83	21	240	0.344	82	0.3	0.5	22.572	C
C-AB	574	143	833	0.689	567	1.5	3.2	14.360	B
C-A	131	33			131				
A-B	70	18			70				
A-C	580	145			580				

17:30 - 17:45

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-C	87	22	474	0.183	87	0.2	0.2	9.295	A
B-A	83	21	239	0.346	83	0.5	0.5	23.019	C
C-AB	578	144	836	0.691	577	3.2	3.4	15.340	C
C-A	127	32			127				
A-B	70	18			70				
A-C	580	145			580				

17:45 - 18:00

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-C	71	18	529	0.134	71	0.2	0.2	7.869	A
B-A	67	17	294	0.229	68	0.5	0.3	15.999	C
C-AB	406	102	804	0.505	414	3.4	1.6	10.191	B
C-A	169	42			169				
A-B	58	14			58				
A-C	474	118			474				

18:00 - 18:15

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-C	59	15	561	0.106	60	0.2	0.1	7.174	A
B-A	56	14	335	0.168	57	0.3	0.2	12.945	B
C-AB	305	76	780	0.391	307	1.6	1.0	8.166	A
C-A	177	44			177				
A-B	48	12			48				
A-C	397	99			397				

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.0.1499

Filename: Halberton High Street Willand Road.j10
Path: J:\48582 Hartnolls Farm, Tiverton\Technical\Transport\Junction Assessments
Report generation date: 15/07/2021 12:38:39

Summary of junction performance

	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
	2021 Base Year			
Stream B-C	0.4	0.28	0.6	0.36
Stream B-A	0.0	0.03	0.1	0.05
Stream C-AB	0.4	0.29	0.7	0.38
	2024 Future Year + Com Dev			
Stream B-C	0.7	0.40	0.8	0.45
Stream B-A	0.0	0.03	0.1	0.06
Stream C-AB	0.7	0.40	1.3	0.53
	2024 Future Year + Com Dev + Dev			
Stream B-C	0.8	0.43	0.9	0.47
Stream B-A	0.0	0.03	0.1	0.06
Stream C-AB	0.8	0.42	1.5	0.57
	2029 Future Year + Com Dev			
Stream B-C	0.7	0.41	0.8	0.45
Stream B-A	0.0	0.03	0.1	0.06
Stream C-AB	0.7	0.40	1.3	0.53
	2029 Future Year + Com Dev + Dev			
Stream B-C	0.8	0.43	0.9	0.47
Stream B-A	0.0	0.03	0.1	0.06
Stream C-AB	0.8	0.43	1.5	0.57

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

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

File summary

File Description

Title	
Location	
Site number	
Date	06/07/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\matpearce
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	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

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	2021 Base Year	AM	ONE HOUR	07:45	09:15	15	✓
D2	2021 Base Year	PM	ONE HOUR	16:45	18:15	15	✓
D3	2024 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓
D4	2024 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓
D5	2024 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D6	2024 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓
D7	2029 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓
D8	2029 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓
D9	2029 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D10	2029 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

2021 Base Year, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		5.34	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.34	A

Arms

Arms

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

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	5.80			70.0	✓	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	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	5.30	3.80	3.30	2.90	✓	1.00	31	12

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	476	0.087	0.221	0.139	0.316
B-C	695	0.107	0.272	-	-
C-B	615	0.240	0.240	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

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	2021 Base Year	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	120	100.000
B		ONE HOUR	✓	178	100.000
C		ONE HOUR	✓	216	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	23	97
	B	10	0	168
	C	70	146	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	9
	B	0	0	4
	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-C	0.28	7.91	0.4	A	154	231
B-A	0.03	9.76	0.0	A	9	14
C-AB	0.29	8.09	0.4	A	150	225
C-A					48	73
A-B					21	32
A-C					89	134

Main Results for each time segment

07:45 - 08:00

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-C	126	32	670	0.189	126	0.0	0.2	6.865	A
B-A	8	2	414	0.018	7	0.0	0.0	8.861	A
C-AB	120	30	628	0.191	119	0.0	0.3	7.127	A
C-A	43	11			43				
A-B	17	4			17				
A-C	73	18			73				

08:00 - 08:15

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-C	151	38	665	0.227	151	0.2	0.3	7.276	A
B-A	9	2	400	0.022	9	0.0	0.0	9.210	A
C-AB	146	36	631	0.231	146	0.3	0.3	7.491	A
C-A	48	12			48				
A-B	21	5			21				
A-C	87	22			87				

08:15 - 08:30

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-C	185	46	658	0.281	185	0.3	0.4	7.898	A
B-A	11	3	380	0.029	11	0.0	0.0	9.758	A
C-AB	183	46	635	0.288	183	0.3	0.4	8.056	A
C-A	55	14			55				
A-B	25	6			25				
A-C	107	27			107				

08:30 - 08:45

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-C	185	46	658	0.281	185	0.4	0.4	7.911	A
B-A	11	3	380	0.029	11	0.0	0.0	9.763	A
C-AB	183	46	635	0.288	183	0.4	0.4	8.086	A
C-A	55	14			55				
A-B	25	6			25				
A-C	107	27			107				

08:45 - 09:00

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-C	151	38	665	0.227	151	0.4	0.3	7.293	A
B-A	9	2	400	0.023	9	0.0	0.0	9.220	A
C-AB	146	36	631	0.231	146	0.4	0.3	7.538	A
C-A	48	12			48				
A-B	21	5			21				
A-C	87	22			87				

09:00 - 09:15

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-C	126	32	670	0.189	127	0.3	0.2	6.893	A
B-A	8	2	413	0.018	8	0.0	0.0	8.876	A
C-AB	120	30	628	0.191	120	0.3	0.3	7.173	A
C-A	43	11			43				
A-B	17	4			17				
A-C	73	18			73				

2021 Base Year, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.48	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.48	A

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	2021 Base Year	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	114	100.000
B		ONE HOUR	✓	231	100.000
C		ONE HOUR	✓	286	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	11	103
	B	17	0	214
	C	94	192	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	5
	B	0	0	1
	C	4	2	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-C	0.36	8.72	0.6	A	196	295
B-A	0.05	10.76	0.1	B	16	23
C-AB	0.38	9.15	0.7	A	204	306
C-A					58	87
A-B					10	15
A-C					95	142

Main Results for each time segment

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-C	161	40	666	0.242	160	0.0	0.3	7.162	A
B-A	13	3	399	0.032	13	0.0	0.0	9.306	A
C-AB	162	41	641	0.253	161	0.0	0.4	7.642	A
C-A	53	13			53				
A-B	8	2			8				
A-C	78	19			78				

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-C	192	48	661	0.291	192	0.3	0.4	7.752	A
B-A	15	4	381	0.040	15	0.0	0.0	9.846	A
C-AB	199	50	647	0.307	198	0.4	0.5	8.204	A
C-A	58	15			58				
A-B	10	2			10				
A-C	93	23			93				

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-C	236	59	653	0.361	235	0.4	0.6	8.693	A
B-A	19	5	354	0.053	19	0.0	0.1	10.742	B
C-AB	251	63	654	0.384	251	0.5	0.7	9.113	A
C-A	63	16			63				
A-B	12	3			12				
A-C	113	28			113				

17:30 - 17:45

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-C	236	59	653	0.361	236	0.6	0.6	8.719	A
B-A	19	5	353	0.053	19	0.1	0.1	10.755	B
C-AB	252	63	655	0.384	252	0.7	0.7	9.152	A
C-A	63	16			63				
A-B	12	3			12				
A-C	113	28			113				

17:45 - 18:00

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-C	192	48	661	0.291	193	0.6	0.4	7.784	A
B-A	15	4	380	0.040	15	0.1	0.0	9.864	A
C-AB	199	50	647	0.307	200	0.7	0.5	8.255	A
C-A	58	15			58				
A-B	10	2			10				
A-C	93	23			93				

18:00 - 18:15

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-C	161	40	666	0.242	161	0.4	0.3	7.210	A
B-A	13	3	399	0.032	13	0.0	0.0	9.331	A
C-AB	163	41	641	0.254	163	0.5	0.4	7.708	A
C-A	53	13			53				
A-B	8	2			8				
A-C	78	19			78				

2024 Future Year + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.73	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.73	A

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	2024 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	140	100.000
B		ONE HOUR	✓	248	100.000
C		ONE HOUR	✓	280	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	23	117
	B	10	0	238
	C	82	198	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	7
	B	0	0	2
	C	11	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-C	0.40	9.42	0.7	A	218	328
B-A	0.03	10.94	0.0	B	9	14
C-AB	0.40	9.50	0.7	A	207	311
C-A					50	75
A-B					21	32
A-C					107	161

Main Results for each time segment

07:45 - 08:00

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-C	179	45	666	0.269	178	0.0	0.4	7.499	A
B-A	8	2	392	0.019	7	0.0	0.0	9.359	A
C-AB	165	41	631	0.262	164	0.0	0.4	7.763	A
C-A	46	11			46				
A-B	17	4			17				
A-C	88	22			88				

08:00 - 08:15

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-C	214	53	660	0.324	214	0.4	0.5	8.215	A
B-A	9	2	371	0.024	9	0.0	0.0	9.935	A
C-AB	202	50	634	0.318	201	0.4	0.5	8.403	A
C-A	50	13			50				
A-B	21	5			21				
A-C	105	26			105				

08:15 - 08:30

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-C	262	66	652	0.402	261	0.5	0.7	9.382	A
B-A	11	3	340	0.032	11	0.0	0.0	10.927	B
C-AB	254	64	639	0.398	253	0.5	0.7	9.442	A
C-A	54	14			54				
A-B	25	6			25				
A-C	129	32			129				

08:30 - 08:45

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-C	262	66	652	0.402	262	0.7	0.7	9.417	A
B-A	11	3	340	0.032	11	0.0	0.0	10.943	B
C-AB	254	64	639	0.398	254	0.7	0.7	9.500	A
C-A	54	13			54				
A-B	25	6			25				
A-C	129	32			129				

08:45 - 09:00

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-C	214	53	660	0.324	215	0.7	0.5	8.259	A
B-A	9	2	371	0.024	9	0.0	0.0	9.956	A
C-AB	202	50	634	0.318	203	0.7	0.5	8.478	A
C-A	50	12			50				
A-B	21	5			21				
A-C	105	26			105				

09:00 - 09:15

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-C	179	45	666	0.269	180	0.5	0.4	7.559	A
B-A	8	2	391	0.019	8	0.0	0.0	9.387	A
C-AB	165	41	631	0.262	166	0.5	0.4	7.843	A
C-A	45	11			45				
A-B	17	4			17				
A-C	88	22			88				

2024 Future Year + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		8.37	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.37	A

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	2024 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	135	100.000
B		ONE HOUR	✓	280	100.000
C		ONE HOUR	✓	364	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	11	124
	B	17	0	263
	C	104	260	0

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.45	10.19	0.8	B	241	362
B-A	0.06	12.41	0.1	B	16	23
C-AB	0.53	11.84	1.3	B	281	422
C-A					53	79
A-B					10	15
A-C					114	171

Main Results for each time segment

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-C	198	50	663	0.299	196	0.0	0.4	7.771	A
B-A	13	3	373	0.034	13	0.0	0.0	9.990	A
C-AB	223	56	643	0.347	221	0.0	0.6	8.606	A
C-A	51	13			51				
A-B	8	2			8				
A-C	93	23			93				

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-C	236	59	656	0.361	236	0.4	0.6	8.647	A
B-A	15	4	347	0.044	15	0.0	0.0	10.835	B
C-AB	273	68	649	0.422	273	0.6	0.8	9.696	A
C-A	54	13			54				
A-B	10	2			10				
A-C	111	28			111				

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-C	290	72	646	0.448	289	0.6	0.8	10.139	B
B-A	19	5	309	0.060	19	0.0	0.1	12.377	B
C-AB	347	87	657	0.529	346	0.8	1.2	11.704	B
C-A	53	13			53				
A-B	12	3			12				
A-C	137	34			137				

17:30 - 17:45

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-C	290	72	646	0.448	290	0.8	0.8	10.195	B
B-A	19	5	309	0.061	19	0.1	0.1	12.413	B
C-AB	348	87	657	0.529	348	1.2	1.3	11.838	B
C-A	53	13			53				
A-B	12	3			12				
A-C	137	34			137				

17:45 - 18:00

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-C	236	59	656	0.361	237	0.8	0.6	8.710	A
B-A	15	4	346	0.044	15	0.1	0.0	10.875	B
C-AB	274	68	649	0.422	276	1.3	0.8	9.845	A
C-A	53	13			53				
A-B	10	2			10				
A-C	111	28			111				

18:00 - 18:15

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-C	198	50	662	0.299	199	0.6	0.4	7.849	A
B-A	13	3	372	0.034	13	0.0	0.0	10.031	B
C-AB	223	56	643	0.347	224	0.8	0.6	8.745	A
C-A	51	13			51				
A-B	8	2			8				
A-C	93	23			93				

2024 Future Year + Com Dev + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		7.12	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.12	A

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	2024 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	143	100.000
B		ONE HOUR	✓	264	100.000
C		ONE HOUR	✓	296	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	23	120
	B	10	0	254
	C	86	210	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	7
	B	0	0	2
	C	10	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-C	0.43	9.89	0.8	A	233	350
B-A	0.03	11.30	0.0	B	9	14
C-AB	0.42	9.89	0.8	A	221	332
C-A					51	76
A-B					21	32
A-C					110	165

Main Results for each time segment

07:45 - 08:00

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-C	191	48	665	0.287	190	0.0	0.4	7.695	A
B-A	8	2	387	0.019	7	0.0	0.0	9.491	A
C-AB	176	44	632	0.279	174	0.0	0.4	7.916	A
C-A	47	12			47				
A-B	17	4			17				
A-C	90	23			90				

08:00 - 08:15

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-C	228	57	659	0.346	228	0.4	0.5	8.501	A
B-A	9	2	364	0.025	9	0.0	0.0	10.137	B
C-AB	215	54	636	0.338	215	0.4	0.6	8.623	A
C-A	51	13			51				
A-B	21	5			21				
A-C	108	27			108				

08:15 - 08:30

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-C	280	70	651	0.430	279	0.5	0.8	9.844	A
B-A	11	3	330	0.033	11	0.0	0.0	11.279	B
C-AB	272	68	641	0.424	271	0.6	0.8	9.818	A
C-A	54	14			54				
A-B	25	6			25				
A-C	132	33			132				

08:30 - 08:45

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-C	280	70	651	0.430	280	0.8	0.8	9.889	A
B-A	11	3	330	0.033	11	0.0	0.0	11.300	B
C-AB	272	68	641	0.424	272	0.8	0.8	9.888	A
C-A	54	14			54				
A-B	25	6			25				
A-C	132	33			132				

08:45 - 09:00

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-C	228	57	659	0.346	229	0.8	0.5	8.557	A
B-A	9	2	363	0.025	9	0.0	0.0	10.162	B
C-AB	215	54	636	0.338	216	0.8	0.6	8.716	A
C-A	51	13			51				
A-B	21	5			21				
A-C	108	27			108				

09:00 - 09:15

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-C	191	48	665	0.287	192	0.5	0.4	7.765	A
B-A	8	2	386	0.020	8	0.0	0.0	9.523	A
C-AB	176	44	632	0.279	177	0.6	0.4	8.006	A
C-A	46	12			46				
A-B	17	4			17				
A-C	90	23			90				

2024 Future Year + Com Dev + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		9.02	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.02	A

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	2024 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	138	100.000
B		ONE HOUR	✓	292	100.000
C		ONE HOUR	✓	384	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	11	127
	B	17	0	275
	C	107	277	0

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.47	10.62	0.9	B	252	379
B-A	0.06	12.91	0.1	B	16	23
C-AB	0.57	12.81	1.5	B	301	452
C-A					51	77
A-B					10	15
A-C					117	175

Main Results for each time segment

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-C	207	52	662	0.313	205	0.0	0.5	7.923	A
B-A	13	3	367	0.035	13	0.0	0.0	10.162	B
C-AB	238	60	644	0.370	236	0.0	0.6	8.901	A
C-A	51	13			51				
A-B	8	2			8				
A-C	96	24			96				

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-C	247	62	655	0.377	247	0.5	0.6	8.888	A
B-A	15	4	339	0.045	15	0.0	0.0	11.109	B
C-AB	293	73	650	0.450	292	0.6	0.9	10.177	B
C-A	53	13			53				
A-B	10	2			10				
A-C	114	29			114				

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-C	303	76	645	0.469	302	0.6	0.9	10.550	B
B-A	19	5	298	0.063	19	0.0	0.1	12.865	B
C-AB	372	93	658	0.565	370	0.9	1.4	12.622	B
C-A	51	13			51				
A-B	12	3			12				
A-C	140	35			140				

17:30 - 17:45

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-C	303	76	645	0.469	303	0.9	0.9	10.617	B
B-A	19	5	298	0.063	19	0.1	0.1	12.910	B
C-AB	373	93	659	0.566	372	1.4	1.5	12.809	B
C-A	50	13			50				
A-B	12	3			12				
A-C	140	35			140				

17:45 - 18:00

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-C	247	62	655	0.377	248	0.9	0.6	8.962	A
B-A	15	4	338	0.045	15	0.1	0.0	11.161	B
C-AB	293	73	650	0.451	295	1.5	0.9	10.372	B
C-A	52	13			52				
A-B	10	2			10				
A-C	114	29			114				

18:00 - 18:15

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-C	207	52	662	0.313	208	0.6	0.5	8.017	A
B-A	13	3	365	0.035	13	0.0	0.0	10.219	B
C-AB	239	60	644	0.371	240	0.9	0.7	9.071	A
C-A	50	13			50				
A-B	8	2			8				
A-C	96	24			96				

2029 Future Year + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		6.76	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.76	A

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
D7	2029 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	141	100.000
B		ONE HOUR	✓	250	100.000
C		ONE HOUR	✓	282	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	23	118
	B	10	0	240
	C	83	199	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	7
	B	0	0	2
	C	11	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-C	0.41	9.48	0.7	A	220	330
B-A	0.03	10.99	0.0	B	9	14
C-AB	0.40	9.53	0.7	A	208	313
C-A					50	75
A-B					21	32
A-C					108	162

Main Results for each time segment

07:45 - 08:00

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-C	181	45	666	0.271	179	0.0	0.4	7.526	A
B-A	8	2	391	0.019	7	0.0	0.0	9.376	A
C-AB	166	42	631	0.264	165	0.0	0.4	7.776	A
C-A	46	12			46				
A-B	17	4			17				
A-C	89	22			89				

08:00 - 08:15

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-C	216	54	660	0.327	215	0.4	0.5	8.253	A
B-A	9	2	370	0.024	9	0.0	0.0	9.961	A
C-AB	203	51	635	0.320	202	0.4	0.5	8.414	A
C-A	51	13			51				
A-B	21	5			21				
A-C	106	27			106				

08:15 - 08:30

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-C	264	66	652	0.406	263	0.5	0.7	9.441	A
B-A	11	3	339	0.032	11	0.0	0.0	10.971	B
C-AB	256	64	639	0.400	255	0.5	0.7	9.474	A
C-A	55	14			55				
A-B	25	6			25				
A-C	130	32			130				

08:30 - 08:45

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-C	264	66	652	0.406	264	0.7	0.7	9.478	A
B-A	11	3	339	0.033	11	0.0	0.0	10.988	B
C-AB	256	64	640	0.400	256	0.7	0.7	9.533	A
C-A	54	14			54				
A-B	25	6			25				
A-C	130	32			130				

08:45 - 09:00

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-C	216	54	660	0.327	217	0.7	0.5	8.298	A
B-A	9	2	370	0.024	9	0.0	0.0	9.980	A
C-AB	203	51	635	0.320	204	0.7	0.5	8.498	A
C-A	50	13			50				
A-B	21	5			21				
A-C	106	27			106				

09:00 - 09:15

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-C	181	45	666	0.271	181	0.5	0.4	7.586	A
B-A	8	2	390	0.019	8	0.0	0.0	9.403	A
C-AB	166	42	631	0.264	167	0.5	0.4	7.858	A
C-A	46	11			46				
A-B	17	4			17				
A-C	89	22			89				

2029 Future Year + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		8.45	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.45	A

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
D8	2029 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	136	100.000
B		ONE HOUR	✓	282	100.000
C		ONE HOUR	✓	367	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	11	125
	B	17	0	265
	C	105	262	0

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.45	10.27	0.8	B	243	365
B-A	0.06	12.49	0.1	B	16	23
C-AB	0.53	11.95	1.3	B	284	426
C-A					53	79
A-B					10	15
A-C					115	172

Main Results for each time segment

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-C	200	50	662	0.301	198	0.0	0.4	7.798	A
B-A	13	3	372	0.034	13	0.0	0.0	10.018	B
C-AB	225	56	643	0.350	223	0.0	0.6	8.638	A
C-A	51	13			51				
A-B	8	2			8				
A-C	94	24			94				

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-C	238	60	656	0.363	238	0.4	0.6	8.689	A
B-A	15	4	346	0.044	15	0.0	0.0	10.877	B
C-AB	276	69	649	0.425	275	0.6	0.8	9.749	A
C-A	54	13			54				
A-B	10	2			10				
A-C	112	28			112				

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-C	292	73	646	0.452	291	0.6	0.8	10.209	B
B-A	19	5	308	0.061	19	0.0	0.1	12.452	B
C-AB	351	88	657	0.534	349	0.8	1.3	11.808	B
C-A	53	13			53				
A-B	12	3			12				
A-C	138	34			138				

17:30 - 17:45

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-C	292	73	646	0.452	292	0.8	0.8	10.267	B
B-A	19	5	307	0.061	19	0.1	0.1	12.490	B
C-AB	351	88	658	0.534	351	1.3	1.3	11.951	B
C-A	53	13			53				
A-B	12	3			12				
A-C	138	34			138				

17:45 - 18:00

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-C	238	60	655	0.363	239	0.8	0.6	8.755	A
B-A	15	4	345	0.044	15	0.1	0.0	10.921	B
C-AB	276	69	649	0.426	278	1.3	0.9	9.905	A
C-A	54	13			54				
A-B	10	2			10				
A-C	112	28			112				

18:00 - 18:15

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-C	200	50	662	0.301	200	0.6	0.4	7.878	A
B-A	13	3	371	0.035	13	0.0	0.0	10.062	B
C-AB	225	56	643	0.350	226	0.9	0.6	8.783	A
C-A	51	13			51				
A-B	8	2			8				
A-C	94	24			94				

2029 Future Year + Com Dev + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		7.18	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.18	A

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
D9	2029 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	144	100.000
B		ONE HOUR	✓	266	100.000
C		ONE HOUR	✓	299	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	23	121
	B	10	0	256
	C	87	212	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	5	7
	B	0	0	2
	C	10	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-C	0.43	9.96	0.8	A	235	352
B-A	0.03	11.36	0.0	B	9	14
C-AB	0.43	9.96	0.8	A	224	335
C-A					51	76
A-B					21	32
A-C					111	167

Main Results for each time segment

07:45 - 08:00

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-C	193	48	665	0.290	191	0.0	0.4	7.721	A
B-A	8	2	386	0.020	7	0.0	0.0	9.516	A
C-AB	178	45	633	0.281	176	0.0	0.4	7.942	A
C-A	47	12			47				
A-B	17	4			17				
A-C	91	23			91				

08:00 - 08:15

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-C	230	58	659	0.349	230	0.4	0.5	8.542	A
B-A	9	2	363	0.025	9	0.0	0.0	10.173	B
C-AB	218	54	636	0.342	217	0.4	0.6	8.665	A
C-A	51	13			51				
A-B	21	5			21				
A-C	109	27			109				

08:15 - 08:30

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-C	282	70	651	0.433	281	0.5	0.8	9.910	A
B-A	11	3	328	0.034	11	0.0	0.0	11.341	B
C-AB	275	69	642	0.428	274	0.6	0.8	9.887	A
C-A	54	14			54				
A-B	25	6			25				
A-C	133	33			133				

08:30 - 08:45

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-C	282	70	651	0.433	282	0.8	0.8	9.957	A
B-A	11	3	328	0.034	11	0.0	0.0	11.362	B
C-AB	275	69	642	0.428	275	0.8	0.8	9.960	A
C-A	54	14			54				
A-B	25	6			25				
A-C	133	33			133				

08:45 - 09:00

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-C	230	58	659	0.349	231	0.8	0.6	8.599	A
B-A	9	2	362	0.025	9	0.0	0.0	10.198	B
C-AB	218	54	637	0.342	219	0.8	0.6	8.760	A
C-A	51	13			51				
A-B	21	5			21				
A-C	109	27			109				

09:00 - 09:15

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-C	193	48	665	0.290	193	0.6	0.4	7.793	A
B-A	8	2	385	0.020	8	0.0	0.0	9.546	A
C-AB	178	45	633	0.282	179	0.6	0.4	8.034	A
C-A	47	12			47				
A-B	17	4			17				
A-C	91	23			91				

2029 Future Year + Com Dev + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.
Warning	Major arm width	Arm C - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		9.11	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.11	A

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
D10	2029 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	139	100.000
B		ONE HOUR	✓	294	100.000
C		ONE HOUR	✓	387	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	11	128
	B	17	0	277
	C	108	279	0

Vehicle Mix

Heavy Vehicle Percentages

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

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.47	10.70	0.9	B	254	381
B-A	0.06	12.99	0.1	B	16	23
C-AB	0.57	12.94	1.5	B	304	456
C-A					51	77
A-B					10	15
A-C					117	176

Main Results for each time segment

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-C	209	52	662	0.315	207	0.0	0.5	7.958	A
B-A	13	3	366	0.035	13	0.0	0.0	10.194	B
C-AB	240	60	644	0.373	238	0.0	0.7	8.937	A
C-A	51	13			51				
A-B	8	2			8				
A-C	96	24			96				

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-C	249	62	655	0.380	248	0.5	0.6	8.932	A
B-A	15	4	338	0.045	15	0.0	0.0	11.155	B
C-AB	295	74	650	0.454	294	0.7	0.9	10.237	B
C-A	53	13			53				
A-B	10	2			10				
A-C	115	29			115				

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-C	305	76	645	0.473	304	0.6	0.9	10.629	B
B-A	19	5	297	0.063	19	0.0	0.1	12.948	B
C-AB	376	94	659	0.570	373	0.9	1.5	12.746	B
C-A	51	13			51				
A-B	12	3			12				
A-C	141	35			141				

17:30 - 17:45

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-C	305	76	645	0.473	305	0.9	0.9	10.696	B
B-A	19	5	296	0.063	19	0.1	0.1	12.994	B
C-AB	376	94	659	0.570	376	1.5	1.5	12.944	B
C-A	50	13			50				
A-B	12	3			12				
A-C	141	35			141				

17:45 - 18:00

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-C	249	62	655	0.380	250	0.9	0.6	9.008	A
B-A	15	4	337	0.045	15	0.1	0.0	11.208	B
C-AB	296	74	651	0.454	298	1.5	1.0	10.438	B
C-A	52	13			52				
A-B	10	2			10				
A-C	115	29			115				

18:00 - 18:15

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-C	209	52	662	0.315	209	0.6	0.5	8.047	A
B-A	13	3	364	0.035	13	0.0	0.0	10.248	B
C-AB	241	60	644	0.374	242	1.0	0.7	9.111	A
C-A	50	13			50				
A-B	8	2			8				
A-C	96	24			96				

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.0.1499

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

Filename: Site Access Junction.j10
Path: J:\48582 Hartnolls Farm, Tiverton\Technical\Transport\Junction Assessments
Report generation date: 15/07/2021 12:34:43

Summary of junction performance

	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
	2021 Base Year			
Stream B-C	0.0	0.02	0.1	0.08
Stream B-A	0.0	0.01	0.0	0.04
Stream C-AB	0.2	0.10	0.0	0.03
	2024 Future Year + Com Dev			
Stream B-C	0.0	0.02	0.1	0.08
Stream B-A	0.0	0.01	0.0	0.05
Stream C-AB	0.2	0.11	0.0	0.03
	2024 Future Year + Com Dev + Dev			
Stream B-C	0.1	0.11	0.3	0.20
Stream B-A	0.1	0.07	0.1	0.12
Stream C-AB	0.6	0.26	0.4	0.17
	2029 Future Year + Com Dev			
Stream B-C	0.0	0.02	0.1	0.08
Stream B-A	0.0	0.01	0.0	0.05
Stream C-AB	0.3	0.11	0.0	0.03
	2029 Future Year + Com Dev + Dev			
Stream B-C	0.1	0.11	0.3	0.21
Stream B-A	0.1	0.07	0.1	0.12
Stream C-AB	0.6	0.27	0.4	0.17

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

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

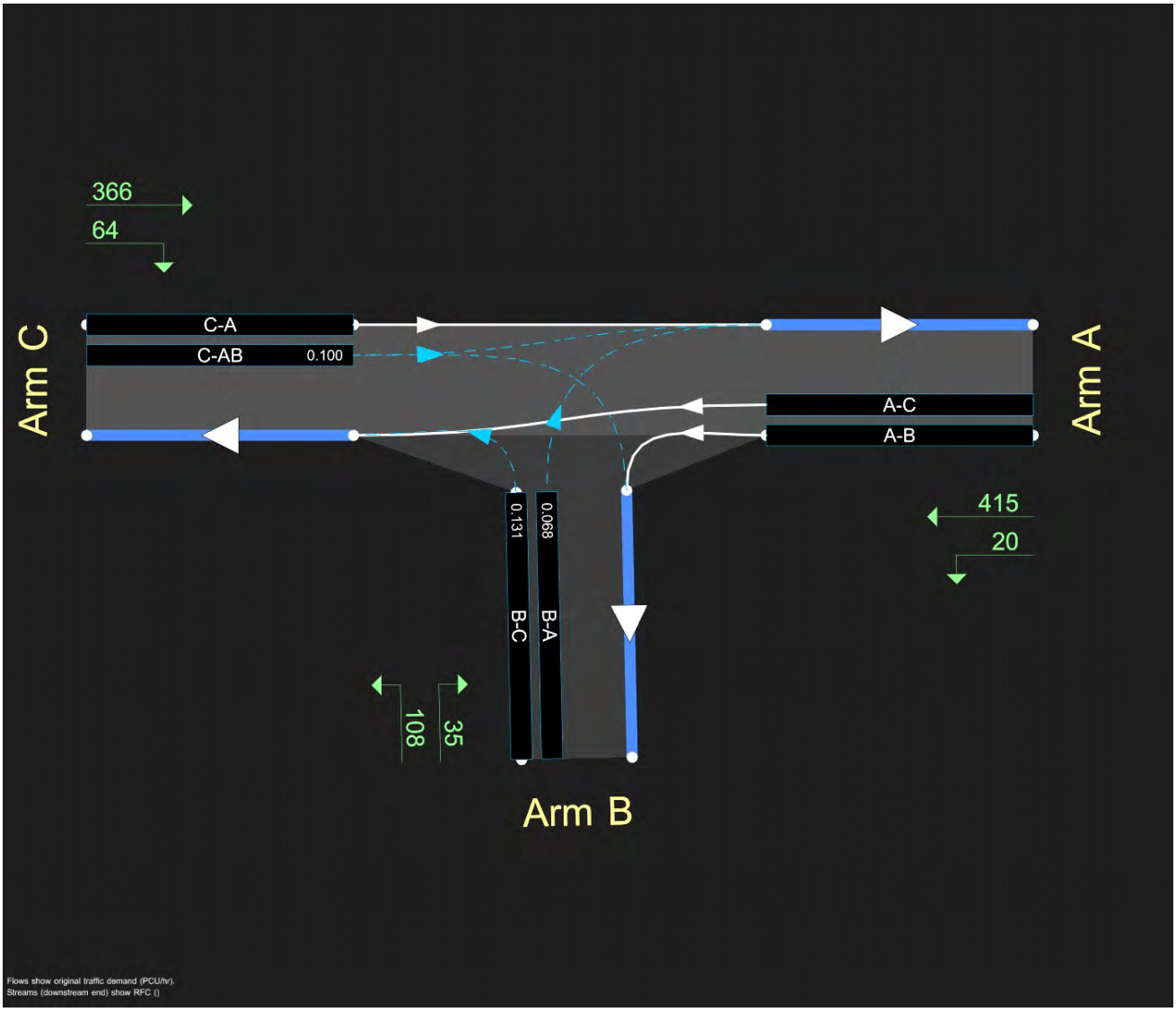
File summary

File Description

Title	
Location	
Site number	
Date	06/07/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORP\matpearce
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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

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	2021 Base Year	AM	ONE HOUR	07:45	09:15	15	✓
D2	2021 Base Year	PM	ONE HOUR	16:45	18:15	15	✓
D3	2024 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓
D4	2024 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓
D5	2024 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D6	2024 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓
D7	2029 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓
D8	2029 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓
D9	2029 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D10	2029 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

2021 Base Year, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.65	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.65	A

Arms

Arms

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

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.80			130.0	✓	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	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	8.60	5.00	3.60	3.50	✓	2.00	40	30

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	518	0.091	0.230	0.145	0.329
B-C	719	0.106	0.269	-	-
C-B	649	0.243	0.243	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

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	2021 Base Year	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	326	100.000
B		ONE HOUR	✓	13	100.000
C		ONE HOUR	✓	333	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	14	312
	B	3	0	10
	C	292	41	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	13
	B	0	0	0
	C	16	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-C	0.02	5.87	0.0	A	9	14
B-A	0.01	9.66	0.0	A	3	4
C-AB	0.10	5.44	0.2	A	59	89
C-A					246	370
A-B					13	19
A-C					286	429

Main Results for each time segment

07:45 - 08:00

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-C	8	2	654	0.012	7	0.0	0.0	5.566	A
B-A	2	0.56	421	0.005	2	0.0	0.0	8.596	A
C-AB	44	11	737	0.060	44	0.0	0.1	5.410	A
C-A	207	52			207				
A-B	11	3			11				
A-C	235	59			235				

08:00 - 08:15

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-C	9	2	641	0.014	9	0.0	0.0	5.691	A
B-A	3	0.67	402	0.007	3	0.0	0.0	9.013	A
C-AB	57	14	756	0.075	56	0.1	0.1	5.388	A
C-A	243	61			243				
A-B	13	3			13				
A-C	280	70			280				

08:15 - 08:30

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-C	11	3	624	0.018	11	0.0	0.0	5.873	A
B-A	3	0.83	376	0.009	3	0.0	0.0	9.658	A
C-AB	77	19	783	0.098	77	0.1	0.2	5.382	A
C-A	290	72			290				
A-B	15	4			15				
A-C	344	86			344				

08:30 - 08:45

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-C	11	3	624	0.018	11	0.0	0.0	5.873	A
B-A	3	0.83	376	0.009	3	0.0	0.0	9.659	A
C-AB	77	19	783	0.098	77	0.2	0.2	5.409	A
C-A	290	72			290				
A-B	15	4			15				
A-C	344	86			344				

08:45 - 09:00

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-C	9	2	641	0.014	9	0.0	0.0	5.691	A
B-A	3	0.67	402	0.007	3	0.0	0.0	9.015	A
C-AB	57	14	757	0.075	57	0.2	0.1	5.444	A
C-A	243	61			243				
A-B	13	3			13				
A-C	280	70			280				

09:00 - 09:15

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-C	8	2	654	0.012	8	0.0	0.0	5.569	A
B-A	2	0.56	421	0.005	2	0.0	0.0	8.600	A
C-AB	44	11	738	0.060	44	0.1	0.1	5.443	A
C-A	207	52			207				
A-B	11	3			11				
A-C	235	59			235				

2021 Base Year, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.76	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.76	A

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	2021 Base Year	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	344	100.000
B		ONE HOUR	✓	59	100.000
C		ONE HOUR	✓	297	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	340
	B	15	0	44
	C	284	13	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	9
	B	0	0	0
	C	9	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-C	0.08	6.41	0.1	A	40	61
B-A	0.04	9.82	0.0	A	14	21
C-AB	0.03	5.16	0.0	A	19	28
C-A					254	381
A-B					4	6
A-C					312	468

Main Results for each time segment

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-C	33	8	645	0.051	33	0.0	0.1	5.885	A
B-A	11	3	426	0.026	11	0.0	0.0	8.671	A
C-AB	14	3	731	0.019	14	0.0	0.0	5.146	A
C-A	210	52			210				
A-B	3	0.75			3				
A-C	256	64			256				

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-C	40	10	630	0.063	40	0.1	0.1	6.095	A
B-A	13	3	408	0.033	13	0.0	0.0	9.123	A
C-AB	18	4	748	0.024	18	0.0	0.0	5.063	A
C-A	249	62			249				
A-B	4	0.90			4				
A-C	306	76			306				

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-C	48	12	610	0.079	48	0.1	0.1	6.408	A
B-A	17	4	383	0.043	16	0.0	0.0	9.823	A
C-AB	24	6	773	0.031	24	0.0	0.0	4.960	A
C-A	303	76			303				
A-B	4	1			4				
A-C	374	94			374				

17:30 - 17:45

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-C	48	12	610	0.079	48	0.1	0.1	6.408	A
B-A	17	4	383	0.043	17	0.0	0.0	9.825	A
C-AB	24	6	773	0.031	24	0.0	0.0	4.974	A
C-A	303	76			303				
A-B	4	1			4				
A-C	374	94			374				

17:45 - 18:00

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-C	40	10	630	0.063	40	0.1	0.1	6.099	A
B-A	13	3	408	0.033	14	0.0	0.0	9.124	A
C-AB	18	4	748	0.024	18	0.0	0.0	5.091	A
C-A	249	62			249				
A-B	4	0.90			4				
A-C	306	76			306				

18:00 - 18:15

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-C	33	8	644	0.051	33	0.1	0.1	5.891	A
B-A	11	3	426	0.026	11	0.0	0.0	8.675	A
C-AB	14	3	731	0.019	14	0.0	0.0	5.162	A
C-A	210	52			210				
A-B	3	0.75			3				
A-C	256	64			256				

2024 Future Year + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.57	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.57	A

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	2024 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	417	100.000
B		ONE HOUR	✓	13	100.000
C		ONE HOUR	✓	395	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	14	403
	B	3	0	10
	C	354	41	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	9
	B	0	0	0
	C	11	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-C	0.02	6.14	0.0	A	9	14
B-A	0.01	10.60	0.0	B	3	4
C-AB	0.11	5.30	0.2	A	66	99
C-A					297	445
A-B					13	19
A-C					370	555

Main Results for each time segment

07:45 - 08:00

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-C	8	2	636	0.012	7	0.0	0.0	5.730	A
B-A	2	0.56	398	0.006	2	0.0	0.0	9.085	A
C-AB	48	12	755	0.063	47	0.0	0.1	5.275	A
C-A	250	62			250				
A-B	11	3			11				
A-C	303	76			303				

08:00 - 08:15

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-C	9	2	619	0.015	9	0.0	0.0	5.896	A
B-A	3	0.67	375	0.007	3	0.0	0.0	9.664	A
C-AB	63	16	778	0.080	62	0.1	0.2	5.232	A
C-A	293	73			293				
A-B	13	3			13				
A-C	362	91			362				

08:15 - 08:30

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-C	11	3	597	0.018	11	0.0	0.0	6.144	A
B-A	3	0.83	343	0.010	3	0.0	0.0	10.595	B
C-AB	87	22	811	0.108	87	0.2	0.2	5.207	A
C-A	348	87			348				
A-B	15	4			15				
A-C	444	111			444				

08:30 - 08:45

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-C	11	3	597	0.018	11	0.0	0.0	6.144	A
B-A	3	0.83	343	0.010	3	0.0	0.0	10.596	B
C-AB	87	22	811	0.108	87	0.2	0.2	5.227	A
C-A	348	87			348				
A-B	15	4			15				
A-C	444	111			444				

08:45 - 09:00

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-C	9	2	619	0.015	9	0.0	0.0	5.899	A
B-A	3	0.67	375	0.007	3	0.0	0.0	9.666	A
C-AB	63	16	778	0.081	63	0.2	0.2	5.281	A
C-A	292	73			292				
A-B	13	3			13				
A-C	362	91			362				

09:00 - 09:15

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-C	8	2	636	0.012	8	0.0	0.0	5.733	A
B-A	2	0.56	398	0.006	2	0.0	0.0	9.090	A
C-AB	48	12	755	0.063	48	0.2	0.1	5.304	A
C-A	249	62			249				
A-B	11	3			11				
A-C	303	76			303				

2024 Future Year + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.67	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.67	A

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	2024 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	416	100.000
B		ONE HOUR	✓	59	100.000
C		ONE HOUR	✓	376	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	412
	B	15	0	44
	C	363	13	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	6	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-C	0.08	6.66	0.1	A	40	61
B-A	0.05	10.73	0.0	B	14	21
C-AB	0.03	4.95	0.0	A	21	32
C-A					324	486
A-B					4	6
A-C					378	567

Main Results for each time segment

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-C	33	8	630	0.053	33	0.0	0.1	6.030	A
B-A	11	3	405	0.028	11	0.0	0.0	9.137	A
C-AB	15	4	759	0.020	15	0.0	0.0	4.937	A
C-A	268	67			268				
A-B	3	0.75			3				
A-C	310	78			310				

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-C	40	10	613	0.065	40	0.1	0.1	6.282	A
B-A	13	3	383	0.035	13	0.0	0.0	9.747	A
C-AB	20	5	784	0.026	20	0.0	0.0	4.821	A
C-A	318	79			318				
A-B	4	0.90			4				
A-C	370	93			370				

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-C	48	12	589	0.082	48	0.1	0.1	6.664	A
B-A	17	4	352	0.047	16	0.0	0.0	10.729	B
C-AB	28	7	818	0.034	28	0.0	0.0	4.676	A
C-A	386	96			386				
A-B	4	1			4				
A-C	454	113			454				

17:30 - 17:45

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-C	48	12	588	0.082	48	0.1	0.1	6.665	A
B-A	17	4	352	0.047	17	0.0	0.0	10.731	B
C-AB	28	7	818	0.034	28	0.0	0.0	4.687	A
C-A	386	96			386				
A-B	4	1			4				
A-C	454	113			454				

17:45 - 18:00

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-C	40	10	612	0.065	40	0.1	0.1	6.287	A
B-A	13	3	383	0.035	14	0.0	0.0	9.751	A
C-AB	20	5	784	0.026	20	0.0	0.0	4.844	A
C-A	318	79			318				
A-B	4	0.90			4				
A-C	370	93			370				

18:00 - 18:15

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-C	33	8	630	0.053	33	0.1	0.1	6.036	A
B-A	11	3	405	0.028	11	0.0	0.0	9.144	A
C-AB	15	4	760	0.020	15	0.0	0.0	4.950	A
C-A	268	67			268				
A-B	3	0.75			3				
A-C	310	78			310				

2024 Future Year + Com Dev + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.82	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.82	A

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	2024 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	436	100.000
B		ONE HOUR	✓	80	100.000
C		ONE HOUR	✓	453	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	33	403
	B	19	0	61
	C	354	99	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	9
	B	0	0	0
	C	11	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-C	0.11	6.94	0.1	A	56	84
B-A	0.07	12.03	0.1	B	17	26
C-AB	0.26	6.36	0.6	A	160	240
C-A					256	384
A-B					30	45
A-C					370	555

Main Results for each time segment

07:45 - 08:00

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-C	46	11	629	0.073	46	0.0	0.1	6.170	A
B-A	14	4	383	0.037	14	0.0	0.0	9.750	A
C-AB	115	29	752	0.154	114	0.0	0.3	5.851	A
C-A	226	56			226				
A-B	25	6			25				
A-C	303	76			303				

08:00 - 08:15

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-C	55	14	611	0.090	55	0.1	0.1	6.473	A
B-A	17	4	357	0.048	17	0.0	0.0	10.598	B
C-AB	152	38	775	0.196	151	0.3	0.4	6.009	A
C-A	256	64			256				
A-B	30	7			30				
A-C	362	91			362				

08:15 - 08:30

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-C	67	17	586	0.115	67	0.1	0.1	6.936	A
B-A	21	5	320	0.065	21	0.0	0.1	12.021	B
C-AB	212	53	808	0.262	211	0.4	0.6	6.321	A
C-A	287	72			287				
A-B	36	9			36				
A-C	444	111			444				

08:30 - 08:45

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-C	67	17	586	0.115	67	0.1	0.1	6.939	A
B-A	21	5	320	0.065	21	0.1	0.1	12.033	B
C-AB	212	53	808	0.262	212	0.6	0.6	6.365	A
C-A	287	72			287				
A-B	36	9			36				
A-C	444	111			444				

08:45 - 09:00

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-C	55	14	611	0.090	55	0.1	0.1	6.477	A
B-A	17	4	356	0.048	17	0.1	0.1	10.612	B
C-AB	152	38	775	0.196	153	0.6	0.4	6.085	A
C-A	255	64			255				
A-B	30	7			30				
A-C	362	91			362				

09:00 - 09:15

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-C	46	11	629	0.073	46	0.1	0.1	6.178	A
B-A	14	4	383	0.037	14	0.1	0.0	9.769	A
C-AB	116	29	752	0.154	116	0.4	0.3	5.907	A
C-A	225	56			225				
A-B	25	6			25				
A-C	303	76			303				

2024 Future Year + Com Dev + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.89	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.89	A

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	2024 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	432	100.000
B		ONE HOUR	✓	142	100.000
C		ONE HOUR	✓	427	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	20	412
	B	35	0	107
	C	363	64	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	6	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-C	0.20	7.85	0.3	A	98	147
B-A	0.12	12.32	0.1	B	32	48
C-AB	0.17	5.49	0.4	A	105	157
C-A					287	431
A-B					18	28
A-C					378	567

Main Results for each time segment

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-C	81	20	623	0.129	80	0.0	0.1	6.626	A
B-A	26	7	391	0.067	26	0.0	0.1	9.872	A
C-AB	75	19	757	0.100	75	0.0	0.2	5.385	A
C-A	246	62			246				
A-B	15	4			15				
A-C	310	78			310				

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-C	96	24	603	0.159	96	0.1	0.2	7.092	A
B-A	31	8	366	0.086	31	0.1	0.1	10.770	B
C-AB	99	25	781	0.127	99	0.2	0.2	5.404	A
C-A	285	71			285				
A-B	18	4			18				
A-C	370	93			370				

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-C	118	29	577	0.204	118	0.2	0.3	7.837	A
B-A	39	10	331	0.117	38	0.1	0.1	12.306	B
C-AB	139	35	815	0.170	138	0.2	0.4	5.465	A
C-A	331	83			331				
A-B	22	6			22				
A-C	454	113			454				

17:30 - 17:45

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-C	118	29	576	0.204	118	0.3	0.3	7.849	A
B-A	39	10	331	0.117	39	0.1	0.1	12.322	B
C-AB	139	35	815	0.171	139	0.4	0.4	5.487	A
C-A	331	83			331				
A-B	22	6			22				
A-C	454	113			454				

17:45 - 18:00

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-C	96	24	603	0.159	96	0.3	0.2	7.104	A
B-A	31	8	365	0.086	32	0.1	0.1	10.788	B
C-AB	99	25	781	0.127	100	0.4	0.3	5.440	A
C-A	284	71			284				
A-B	18	4			18				
A-C	370	93			370				

18:00 - 18:15

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-C	81	20	623	0.129	81	0.2	0.1	6.648	A
B-A	26	7	391	0.067	26	0.1	0.1	9.891	A
C-AB	76	19	757	0.100	76	0.3	0.2	5.413	A
C-A	246	61			246				
A-B	15	4			15				
A-C	310	78			310				

2029 Future Year + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.58	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.58	A

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
D7	2029 Future Year + Com Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	420	100.000
B		ONE HOUR	✓	13	100.000
C		ONE HOUR	✓	399	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	14	406
	B	3	0	10
	C	357	42	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	9
	B	0	0	0
	C	11	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-C	0.02	6.15	0.0	A	9	14
B-A	0.01	10.65	0.0	B	3	4
C-AB	0.11	5.31	0.3	A	68	102
C-A					298	447
A-B					13	19
A-C					373	559

Main Results for each time segment

07:45 - 08:00

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-C	8	2	635	0.012	7	0.0	0.0	5.735	A
B-A	2	0.56	397	0.006	2	0.0	0.0	9.110	A
C-AB	49	12	756	0.065	49	0.0	0.1	5.275	A
C-A	251	63			251				
A-B	11	3			11				
A-C	306	76			306				

08:00 - 08:15

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-C	9	2	619	0.015	9	0.0	0.0	5.904	A
B-A	3	0.67	374	0.007	3	0.0	0.0	9.698	A
C-AB	64	16	779	0.083	64	0.1	0.2	5.237	A
C-A	294	74			294				
A-B	13	3			13				
A-C	365	91			365				

08:15 - 08:30

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-C	11	3	596	0.018	11	0.0	0.0	6.153	A
B-A	3	0.83	341	0.010	3	0.0	0.0	10.645	B
C-AB	90	22	813	0.111	90	0.2	0.2	5.215	A
C-A	349	87			349				
A-B	15	4			15				
A-C	447	112			447				

08:30 - 08:45

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-C	11	3	596	0.018	11	0.0	0.0	6.153	A
B-A	3	0.83	341	0.010	3	0.0	0.0	10.647	B
C-AB	90	23	813	0.111	90	0.2	0.3	5.238	A
C-A	349	87			349				
A-B	15	4			15				
A-C	447	112			447				

08:45 - 09:00

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-C	9	2	619	0.015	9	0.0	0.0	5.904	A
B-A	3	0.67	374	0.007	3	0.0	0.0	9.701	A
C-AB	65	16	779	0.083	65	0.3	0.2	5.287	A
C-A	294	74			294				
A-B	13	3			13				
A-C	365	91			365				

09:00 - 09:15

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-C	8	2	635	0.012	8	0.0	0.0	5.736	A
B-A	2	0.56	397	0.006	2	0.0	0.0	9.115	A
C-AB	49	12	756	0.065	49	0.2	0.1	5.305	A
C-A	251	63			251				
A-B	11	3			11				
A-C	306	76			306				

2029 Future Year + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.67	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.67	A

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
D8	2029 Future Year + Com Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	419	100.000
B		ONE HOUR	✓	60	100.000
C		ONE HOUR	✓	379	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	4	415
	B	15	0	45
	C	366	13	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	6	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-C	0.08	6.69	0.1	A	41	62
B-A	0.05	10.78	0.0	B	14	21
C-AB	0.03	4.94	0.0	A	21	32
C-A					327	490
A-B					4	6
A-C					381	571

Main Results for each time segment

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-C	34	8	629	0.054	34	0.0	0.1	6.041	A
B-A	11	3	404	0.028	11	0.0	0.0	9.164	A
C-AB	15	4	761	0.020	15	0.0	0.0	4.931	A
C-A	270	67			270				
A-B	3	0.75			3				
A-C	312	78			312				

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-C	40	10	612	0.066	40	0.1	0.1	6.297	A
B-A	13	3	382	0.035	13	0.0	0.0	9.781	A
C-AB	20	5	785	0.026	20	0.0	0.0	4.814	A
C-A	321	80			321				
A-B	4	0.90			4				
A-C	373	93			373				

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-C	50	12	588	0.084	49	0.1	0.1	6.686	A
B-A	17	4	350	0.047	16	0.0	0.0	10.777	B
C-AB	28	7	820	0.034	28	0.0	0.0	4.668	A
C-A	389	97			389				
A-B	4	1			4				
A-C	457	114			457				

17:30 - 17:45

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-C	50	12	588	0.084	50	0.1	0.1	6.687	A
B-A	17	4	350	0.047	17	0.0	0.0	10.779	B
C-AB	28	7	820	0.034	28	0.0	0.0	4.677	A
C-A	389	97			389				
A-B	4	1			4				
A-C	457	114			457				

17:45 - 18:00

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-C	40	10	612	0.066	41	0.1	0.1	6.302	A
B-A	13	3	382	0.035	14	0.0	0.0	9.785	A
C-AB	20	5	785	0.026	20	0.0	0.0	4.835	A
C-A	321	80			321				
A-B	4	0.90			4				
A-C	373	93			373				

18:00 - 18:15

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-C	34	8	629	0.054	34	0.1	0.1	6.046	A
B-A	11	3	404	0.028	11	0.0	0.0	9.168	A
C-AB	15	4	761	0.020	15	0.0	0.0	4.942	A
C-A	270	67			270				
A-B	3	0.75			3				
A-C	312	78			312				

2029 Future Year + Com Dev + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.83	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.83	A

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
D9	2029 Future Year + Com Dev + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	439	100.000
B		ONE HOUR	✓	80	100.000
C		ONE HOUR	✓	457	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	33	406
	B	19	0	61
	C	357	100	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	9
	B	0	0	0
	C	11	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-C	0.11	6.95	0.1	A	56	84
B-A	0.07	12.10	0.1	B	17	26
C-AB	0.27	6.39	0.6	A	162	243
C-A					257	386
A-B					30	45
A-C					373	559

Main Results for each time segment

07:45 - 08:00

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-C	46	11	628	0.073	46	0.0	0.1	6.177	A
B-A	14	4	382	0.037	14	0.0	0.0	9.779	A
C-AB	117	29	753	0.156	116	0.0	0.3	5.855	A
C-A	227	57			227				
A-B	25	6			25				
A-C	306	76			306				

08:00 - 08:15

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-C	55	14	610	0.090	55	0.1	0.1	6.482	A
B-A	17	4	355	0.048	17	0.0	0.0	10.639	B
C-AB	154	38	776	0.198	153	0.3	0.4	6.017	A
C-A	257	64			257				
A-B	30	7			30				
A-C	365	91			365				

08:15 - 08:30

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-C	67	17	585	0.115	67	0.1	0.1	6.948	A
B-A	21	5	319	0.066	21	0.0	0.1	12.086	B
C-AB	215	54	809	0.266	214	0.4	0.6	6.343	A
C-A	288	72			288				
A-B	36	9			36				
A-C	447	112			447				

08:30 - 08:45

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-C	67	17	585	0.115	67	0.1	0.1	6.952	A
B-A	21	5	318	0.066	21	0.1	0.1	12.098	B
C-AB	215	54	810	0.266	215	0.6	0.6	6.388	A
C-A	288	72			288				
A-B	36	9			36				
A-C	447	112			447				

08:45 - 09:00

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-C	55	14	610	0.090	55	0.1	0.1	6.486	A
B-A	17	4	355	0.048	17	0.1	0.1	10.654	B
C-AB	154	39	777	0.199	155	0.6	0.4	6.097	A
C-A	257	64			257				
A-B	30	7			30				
A-C	365	91			365				

09:00 - 09:15

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-C	46	11	628	0.073	46	0.1	0.1	6.185	A
B-A	14	4	382	0.037	14	0.1	0.0	9.798	A
C-AB	118	29	753	0.156	118	0.4	0.3	5.914	A
C-A	226	57			226				
A-B	25	6			25				
A-C	306	76			306				

2029 Future Year + Com Dev + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	Arm B - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		1.90	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.90	A

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
D10	2029 Future Year + Com Dev + Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	435	100.000
B		ONE HOUR	✓	143	100.000
C		ONE HOUR	✓	430	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	20	415
	B	35	0	108
	C	366	64	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	7
	B	0	0	0
	C	6	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-C	0.21	7.88	0.3	A	99	149
B-A	0.12	12.38	0.1	B	32	48
C-AB	0.17	5.48	0.4	A	105	158
C-A					289	434
A-B					18	28
A-C					381	571

Main Results for each time segment

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-C	81	20	622	0.131	81	0.0	0.1	6.641	A
B-A	26	7	390	0.068	26	0.0	0.1	9.898	A
C-AB	76	19	758	0.100	75	0.0	0.2	5.379	A
C-A	248	62			248				
A-B	15	4			15				
A-C	312	78			312				

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-C	97	24	603	0.161	97	0.1	0.2	7.114	A
B-A	31	8	364	0.086	31	0.1	0.1	10.807	B
C-AB	100	25	782	0.127	99	0.2	0.3	5.396	A
C-A	287	72			287				
A-B	18	4			18				
A-C	373	93			373				

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-C	119	30	576	0.207	119	0.2	0.3	7.871	A
B-A	39	10	329	0.117	38	0.1	0.1	12.363	B
C-AB	140	35	817	0.171	139	0.3	0.4	5.459	A
C-A	334	83			334				
A-B	22	6			22				
A-C	457	114			457				

17:30 - 17:45

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-C	119	30	576	0.207	119	0.3	0.3	7.882	A
B-A	39	10	329	0.117	39	0.1	0.1	12.379	B
C-AB	140	35	817	0.171	140	0.4	0.4	5.479	A
C-A	334	83			334				
A-B	22	6			22				
A-C	457	114			457				

17:45 - 18:00

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-C	97	24	603	0.161	97	0.3	0.2	7.126	A
B-A	31	8	364	0.086	32	0.1	0.1	10.827	B
C-AB	100	25	783	0.128	100	0.4	0.3	5.434	A
C-A	287	72			287				
A-B	18	4			18				
A-C	373	93			373				

18:00 - 18:15

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-C	81	20	622	0.131	81	0.2	0.2	6.661	A
B-A	26	7	390	0.068	26	0.1	0.1	9.917	A
C-AB	76	19	758	0.100	76	0.3	0.2	5.409	A
C-A	248	62			248				
A-B	15	4			15				
A-C	312	78			312				