



# **Lingfield (Uttoxeter) Ltd**

## **Carter's Square Uttoxeter**

### **Transport Assessment**

**May 2012**

Project Code 772

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# Lingfield (Uttoxeter) Ltd

## Carter's Square Uttoxeter

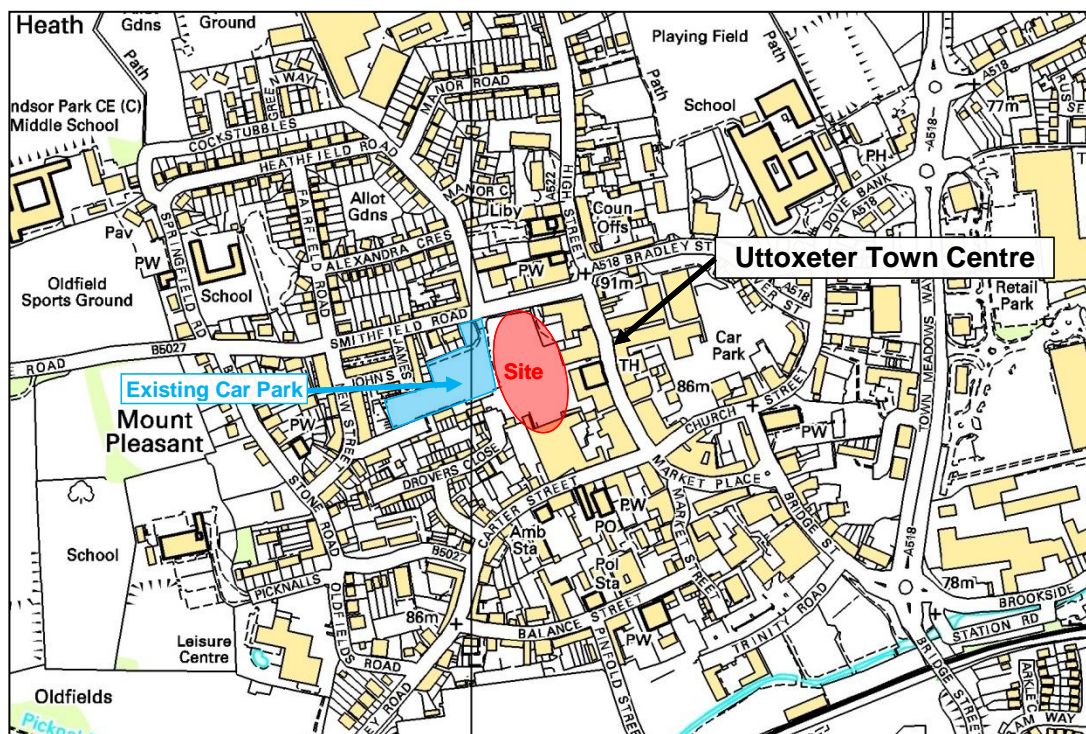
### Transport Assessment

#### 1 INTRODUCTION

1.1 Phil Jones Associates (PJA) has been appointed by Lingfield (Uttoxeter) Ltd to prepare this Transport Assessment (TA) to support a planning application for the proposed redevelopment of the former Uttoxeter Cattle Market site to create Carter's Square; a mixed food and non-food shopping mall including a new primary care trust doctor's surgery.

1.2 The site has been included in several proposals for residential development on adjacent sites and for the construction of the existing adjacent car park completed as part of an extant planning approval which includes a development on the Carter's Square site. The location of the site relative to the existing town centre is shown in Figure 1.1.

Figure 1.1 - Site Location



## History of proposals

1.3 The majority of the developments included in earlier planning applications have been constructed. These included the new residential areas to the east and south of the site, the recently completed Drovers Close, and the car park adjacent to the site. The Carter's Square site is part of an extant planning approval granted in January 2007 (PA03014/032/PO) which included the following proposals, none of which have been constructed:

- Non-food retail 3,839 sqm
- Office 484 sqm
- Apartments 41 units

## Proposed Development

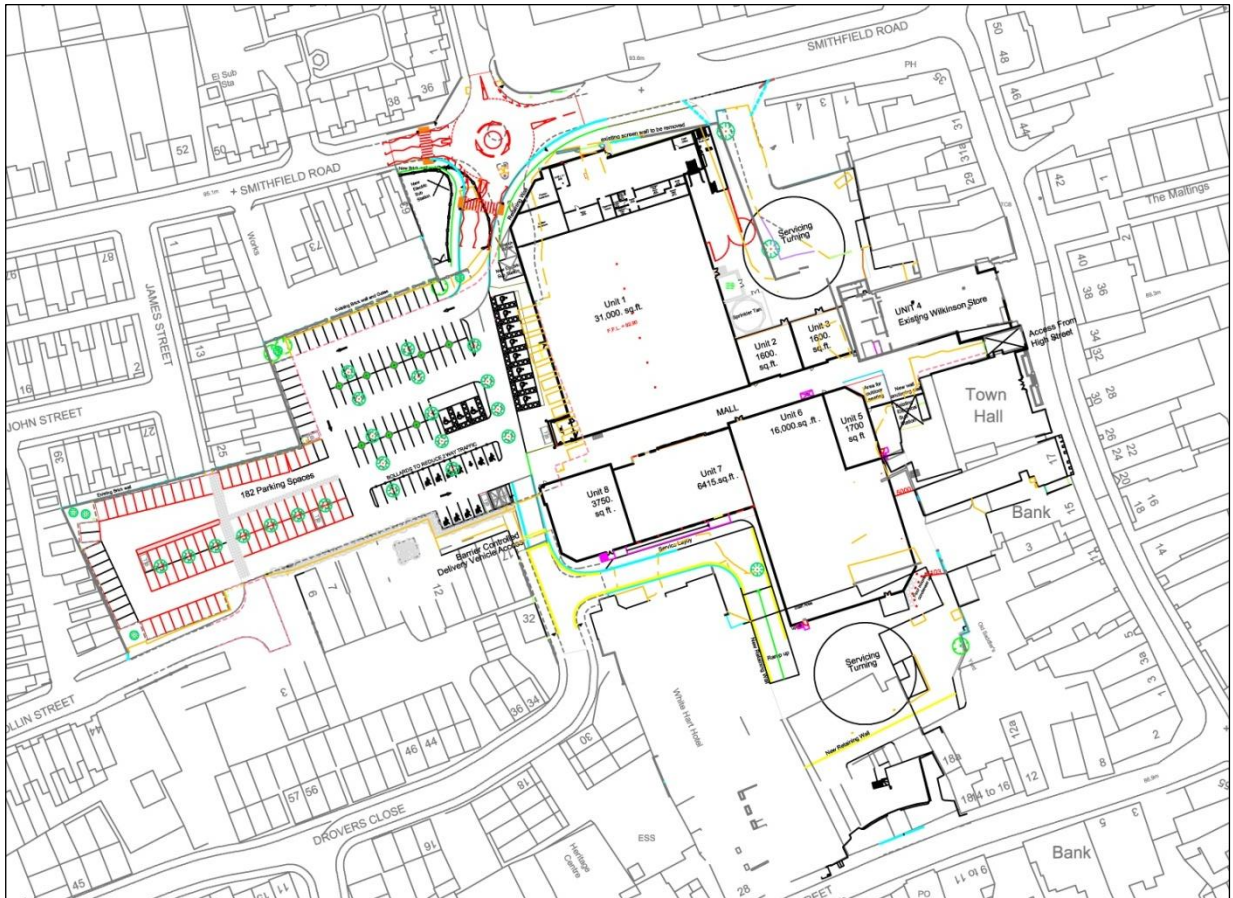
1.4 The site has remained undeveloped for many years due in part to the lack of commercial viability of the earlier proposals. There is now firm commitment to the delivery of Carter's Square with ASDA as the operator of Unit 1, the proposed food retail unit, located at the entrance to the car park. This unit has been designed in joint consultation with ASDA and ESBC. To the south of the mall Unit 6 is a further anchor store and a potential (non-food) operator has informed the proposals for the servicing arrangements to this unit.

1.5 Overall the Carter's Square development has been designed as an extension to the existing Town Centre, with direct pedestrian access from the High Street, through the proposed shopping mall, to the existing and currently underutilised car park.

1.6 The proposed development which is the subject of this Transport Assessment (TA) comprises the following and the layout of the site is shown in Figure 2.1 overleaf:

- Non-Food Retail 2258 sqm
- Food Retail (ASDA) 2880 sqm
- Primary Care Trust Doctors Surgery 3 Doctors - This TA assumes 4 doctors to allow for potential future expansion.

**Figure 1.2 - Site Layout MasterPlan (Nicol Thomas Architects)**



1.7 The remainder of this TA is organised as follows:

- Section 2 provides a summary of the recent discussions with SCC and the agreed parameters for the TA;
- Section 3 contains a summary of the policies relevant to the site and a brief description of the roads and access points within the scope of the TA;
- Section 4 evaluates the accessibility of the town centre and Carter's Square by sustainable transport;
- Section 5 describes the proposed changes to the existing car park access and the access arrangements for service vehicles;
- Section 6 is a Framework Travel Plan which outlines how employees will be encouraged to travel to and from work in a sustainable manner;
- Section 7 describes the proposed measures to control service traffic and in particular the proposed arrangements for access to South Yard;
- Section 8 explains the traffic generation and highway capacity assessment; and
- Section 9 is an overall summary of the conclusions drawn from the TA.

## **2 DISCUSSIONS WITH THE HIGHWAY AUTHORITY**

2.1 The scope of this TA has evolved from work carried out over the past two years which has included discussion with Staffordshire County Council as highway authority (SCC) and the planning authority, East Staffs Borough Council (ESBC). Discussions have taken place with potential tenants to ensure that the proposed layout presents a workable and commercially viable scheme. Recent discussions with SCC have established the main parameters and content of this TA as described below.

2.2 As the site has an existing consent reference has been made to the TA prepared by Peter Brett Associate (PBA) in 2006 submitted in support of this, and in particular the trip rates and traffic generations.

2.3 The trip rates were submitted to SCC for comment/agreement. Initially the trip rates for the proposed food store were considered to be too low. The evening peak hour trip rate was derived from a Thursday count, the only data available from a comparable town centre site in the TRICS database.

2.4 New traffic surveys have been carried out at the existing Smithfield Road car park access and also the Bradley Street/High Street/Smithfield Road mini roundabout.

2.5 Since the original approval planning approval has been granted for a mixed use development on the site of the former Bamford engineering works to the south of the town centre. SCC has directed that this development is to be considered as committed and taken into account in the TA and that the scope of the capacity assessment is to include the Smithfield Road/Stone Road/Springfield Road junction. The Stone Road and Bradley Street junctions therefore define the west and east extent of the highway area considered in this TA.

2.6 Whilst this TA considers the cumulative impact of the proposals for the Bamford site, at this stage commencement of that development appears to be some way into the future.

2.7 Reference has been made to the TA prepared by Sanderson Associates, available on ESBC's planning web site, to establish the impact of the Bamford proposals relative to this TA. For consistency and in response to SCC's comments it has been agreed with the highway authority that the food store TRICS sites used in the Sanderson TA are a reasonable basis for deriving the trip rates for the proposed food store at Carter's Square.

2.8 The following parameters have been agreed as the basis for estimating traffic generations:

- Non-food: although it is likely that the majority of these trips will be diverted from other parts of the town, for consistency with the PBA report all trips are assumed to be new;
- Doctors: All trips are diverted from the existing surgery to the Smithfield Road car park; and
- Food store:
  - 10% of the trips are assumed to be new to the network;
  - 30% are assumed to be cars already passing the site (divert); and
  - 60% are assumed to result from people changing their choice of shopping from other food retail within the town. In this case the Lidl and Tesco stores and car parking areas to the east of the A518/town centre.

2.9 It has been agreed with SCC that a five year assessment horizon is to be considered, based on TEMPRO traffic growth predictions. The traffic data on which this TA has been based is a combination of committed development from the Sanderson TA and new traffic counts commissioned by PJA. All traffic data has been rebased to 2013 and 2018. The full methodology for deriving traffic flows is set out in Section 8 of this document.

2.10 Servicing arrangements to Carter's Square is to be via two service yards, north and south of the site. The compact town centre location of the site does present some challenges to the design of the servicing arrangements and this has been the subject of discussions with both SCC and ESBC officers. Information has also been provided by ASDA and the prospective occupiers of the large retail Unit 6 on the south side of the shopping mall. These discussions and information have informed the design of the proposed servicing arrangements described in Section 7.

### 3 RELEVANT POLICIES AND EXISTING SITUATION

#### Relevant Policies

3.1 The **East Staffs Local Plan Saved Policies (2009)** refers to the Cattle Market as a high priority site and an opportunity in the regeneration strategy for the town, with potential to increase the current retail provision within the town centre.

3.2 In 2011 SCC published its **Staffordshire Local Transport Plan – Strategy Plan** which cites the proposed Carter’s Square development as part of investment in the revitalisation of Uttoxeter Town Centre.

3.3 Currently published as a draft document the **East Staffordshire Borough Integrated Transport Strategy 2011 to 2026** identifies the objectives and challenges to delivery of the Strategy. The document identifies safety, environmental and sustainable transport improvements already delivered in Uttoxeter to support regeneration. The development of the centrally located Carter’s Square is referenced throughout and is integral to the delivery of these local strategies.

3.4 The **New National Planning Policy Framework (NPPF)** published in March 2012 encourages the effective use of previously developed. The document also encourages development in areas where the need for travel can be minimised and states that development should only be refused on transport grounds where the residual cumulative impacts are severe. As a town centre development many of the trips to the development will be linked to other activities within the town and as such the site ranks highly against the NPPF criteria and this TA demonstrates that the impact of the development can be accommodated with traffic predicted from committed development and additional background traffic growth.

#### Existing Roads

3.5 The existing car park to the east of the site is accessed via a four arm 20 meter ICD mini roundabout on Smithfield Road and Short Street (opposite). The car park is to be purchased from ESBC and will become an integral part of the Carter’s Square development.

3.6 Smithfield Road is a town centre route between the A522 Bradley Street/High Street and the B5027 Stone Road. Past the site the carriageway is around 6.5 metres with footways on both sides, 3 metres wide to the north and 3.5 metres to the south.



3.7 There is frontage access along Smithfield Road, to a mixture of commercial activities on the northern side opposite the site and to an existing service yard on the south side of Smithfield Road. This yard is to be reconstructed to service proposed retail units on the northern side of Carter's Square. Further details of this are set out in Section 7.

3.8 To the west of the existing car park/Short Street mini roundabout Smithfield Road is predominantly residential with footways on both sides (narrow on the south side). There is street lighting along the whole of the route and double-yellow line 'no parking' restrictions along between High Street and up to the junction with James Street. Some frontage parking is permitted to the west of James Street.

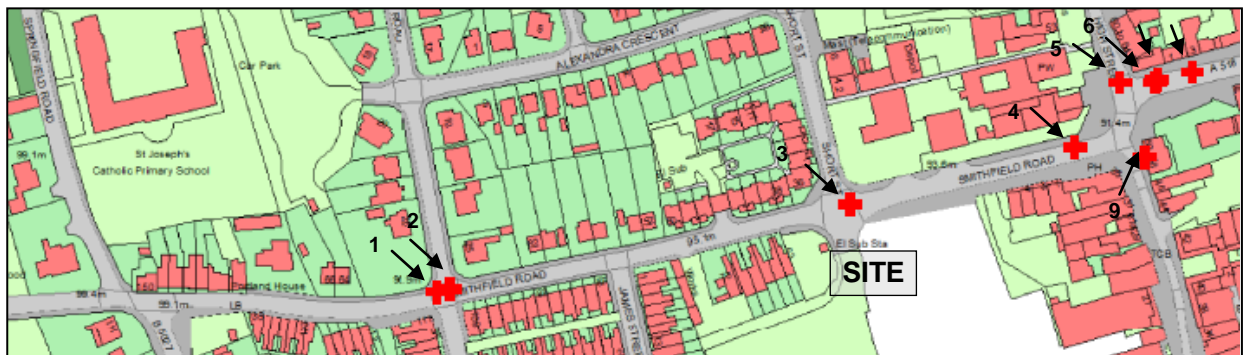
3.9 The Bradley Street/High Street/Smithfield Road junction has recently been converted to a mini roundabout as part of the wider town centre improvements secured under the S106 obligation attached to early planning consents. High Street to the south of this junction has controlled access into a semi-pedestrianised space. Direct access for pedestrians will be provided from this space into the Carter's Square mall.

3.10 The B5027 Stone Road/Springfield Road/Smithfield Road is a staggered crossroads (16 metres between side roads) with the B5027 as a minor arm to the south and Smithfield Road/Stone Road the major road. The footway on the northern side of Smithfield Road ends around 30 metres before the junction.

### Road Safety

3.11 Records of Personal Injury Accidents have been obtained from SCC for the latest three year period held on the database, between the 1<sup>st</sup> October 2008 and the 20<sup>th</sup> September 2011. A total of nine injury accidents occurred within the study area as shown in Figure 3.1 (extract from plan provided by SCC).

**Figure 3.1 - Location of Personal Injury Accidents October 2008 to September 2011**



**Table 3.1 – Recorded Personal Injury Accidents**

<b>N°</b>	<b>Conditions</b>	<b>Vehicles</b>	<b>Severity</b>	<b>Type &amp; Manoeuvre</b>	<b>Recorded Cause</b>
1	Dry/Day	Two Cars	Slight	junction crossover	Failure to look/judge speed (parked vehicle present)
2	Wet/Day	Two Cars	Slight	junction turning	Failure to look
3	Dry/Day	Two Cars	Slight	junction turning	Failure to look/signal (sun dazzle)
4	Dry/Day	Car & Pedestrian	Slight	zebra crossing	Failure to look
5	Dry/Day	Two Cars	Slight	mid junction shunt	Failure to look/judge speed (distraction in vehicle)
6	Dry/Day	Two Cars	Slight	Shunt	Travelling too close/too fast
7	Dry/Day	Two Cars	Slight	Shunt	Distraction in vehicle
8	Dry/Day	Car & Pedestrian	Slight	Reversing	Failure to look
9	Dry/Day	Motorcycle	Slight	In motion	Failure to look

3.12 The analysis of injury accidents shows a concentration around the Bradley Street/Smithfield Road junction however, the recent conversion to a mini roundabout arrangement should improve highway safety at this location.

3.13 One accident was recorded at the existing car park access and bright sun appears to have been a contributory factor.

3.14 Overall the analysis of injury accidents has not revealed any trends or features of the highway that are contributing to the accidents or that road safety will be affected by the proposed development.

3.15 The detailed accident records are included as Appendix A

## **4 EVALUATION OF TRANSPORT SUSTAINABILITY**

4.1 The Carter's Square development will extend the shopping area within the town centre and provide a food store close to many of the existing residential areas to the north and south of the centre. As such many of the trips to the development will be part of an existing visit to the town.

### **Walking and Cycling**

4.2 For many residents the proposed ASDA food store is in a more convenient location than the existing food stores to the east of the A518 and some trips to the store for day to day provisions could be undertaken by walking or cycling. For example (distances are approximate):

- Heathfield Road and adjacent roads via Short Street – 400 to 500 metres from the store;
- Manor Road and adjacent roads via Short Street – 300 to 400 metres from the store; and
- New Street, Colin Street, James Street and Drovers Close via pedestrian routes – 50 to 200 metres from the store.

4.3 As described in the following Section 5, access to Carter's Square for pedestrians and cyclists will be provided from High Street, Drovers Close, Colin Street and James Street. As part of the development an additional pedestrian route will be provided through the White Hart Hotel yard to the northern end of Drovers Close. This will create a shorter route from the eastern end of Carters Street to the western end of the Carter's Square mall. Cycle parking facilities are to be provided within the western end of the mall.

4.4 Shared footway/cycle way is provided along the busy A518 to the east of the town centre. The majority of roads within the central area have been designated as advisory cycle routes, including Smithfield Road to the east of the site access. There are also a number of dedicated pedestrian/cycle links between road routes within the town. Cycle mapping is available free from SCC.

### **Rail**

4.5 The railway station is adjacent to Uttoxeter Race course and around 700 metres (around 10 minutes walking time) from the Town centre and Carter's Square. It is understood that improvements to station infrastructure has been agreed through partnership working with the rail industry and the North Staffordshire Community Rail partnership. There is an hourly service between Crewe and Derby calling at Uttoxeter as described in the following Table:

**Table 4.2 – Rail Services via Uttoxeter Station**

To	Journey	Calling at	First	Last	Frequency
Crewe	50 minutes	Blythe Bridge; Longton; Stoke; Longport; Kidsgrove; Alsager	07:05	21:42	Hourly
Derby	30 minutes	Tutbury & Hatton	06:58	21:07	Hourly

**Bus**

4.6 The Uttoxeter Bus Station is around 250 metres from the Carter’s Square Development (similar distance for routes via Smithfield Road or via the proposed mall and High Street).

4.7 The bus station is on the route of number services; regular town circular, local and longer distance services. A summary of the services are set out in the following Table (information from various publicly available sources):

**Table 4.1 – Bus Services via Uttoxeter Bus Station**

Service	General Details	Operator	Destinations on Route
1 - Burton upon Trent to Uttoxeter	Mon to Sat (every 60 mins) Sun (7 trips)	First Midland Red North	Horninglow, Beam Hill, Tutbury, Hatton, Foston
4 - Uttoxeter Circular	Mon to Sat (every 30 mins)	First Midland Red North	Town Circular using Stone Road & Carter’s Street to the bus Station and via Smithfield Road on Fridays
30 - Uttoxeter to Alton Towers	Mon to Sat (6 trips) Sun (5 trips)	Alton Towers	Via Rocester, Denstone, Alton
32 - Cheadle to Uttoxeter	Mon to Sun (1 trip)	First Potteries	Via Tean, Checkley, Stramshall
32 - Hanley to Uttoxeter	Mon to Sat (every 60 mins)	First Potteries	Via Werrington, Kingsley, Cheadle, Tean, Checkley, Stramshall
32A - Hanley to Uttoxeter	Mon to Sat (every 120 mins) Sun (5 trips)	First Potteries	Via Werrington, Kingsley, Cheadle, Greendale, Oakamoor
248 - Sharpley Heath to Uttoxeter	Sat (1 trip)	First Midland Red North	Via Milwich, Dodsleigh, Church Leigh, Withington, Bramshall
402 - Burton upon Trent to Uttoxeter	Mon to Sat (7 trips)	First Midland Red North	Via Marchington, Draycott In The Clay, Hanbury
411 - Uttoxeter Circular	Wed (1 trip)	Paragon	Via Bramshall, Field, Fradswell, Milwich, Morrilow Heath
428 - Uttoxeter to Abbots Bromley	Mon to Sat (1 trip this direction only)	Paragon	Via Willslock, Kingstone, Dapple Heath
428 - Uttoxeter to Lichfield	Mon to Sat (5 trips)	First Midland Red North	Via Willslock, Kingstone, Dapple Heath, Abbots Bromley
841 - Stafford to Uttoxeter	Mon to Sat (6 trips)	First Midland Red North	Via Tixall, Great Haywood, Hixon, Stowe by Chartley
Swift - Derby to Uttoxeter	Mon to Sat (every 60 mins)	Trent Barton	Via Kirk Langley, Ashbourne, Mayfield, Rocester

4.8 Overall it can be concluded that there are ample and frequent opportunities for people both within the town and from the surrounding villages to access the Uttoxeter and Carter’s Square by sustainable modes of transport and that the development will improve connectivity between areas to the west High Street and Carter Street.

## 5 PROPOSED ACCESS ARRANGEMENTS

### Modification of Existing Car Park Access

5.1 In order to accommodate the proposed ASDA, modifications are required to the existing mini roundabout junction between Smithfield Road, Short Street and the access to the Carter's Square car park.

5.2 Several options have been considered and through discussions with SCC it has been established that a mini roundabout arrangement should be retained and that the geometry of any modified layout should be designed to accommodate the same manoeuvres as the existing 20 metre inscribed circle diameter (ICD) junction.

5.3 Swept path analysis of the existing layout has shown that the largest vehicle capable of a 'U' turn at the junction (the manoeuvre requiring most road space) is an 8 metre long 7.5 tonne box van.

5.4 The existing car park access mini-roundabout does not have formal pedestrian facilities. There is one raised traffic separation island within the car park access arm and this is located forward of the ICD by approximately 3 metres. All other splitter islands are painted road markings. The solid traffic separation island restricts the maximum sized of vehicle that can manoeuvre around the junction.

5.5 The proposed modifications have been informed by discussions with SCC, ASDA and the potential operators of retail unit 6. The principle of the proposed layout is to keep the junction as near as possible to its existing position and size (ICD) whilst providing sufficient site frontage along Smithfield Road to accommodate the proposed store.

5.6 The access roundabout scheme has been subjected to a Stage 1 Road Safety Audit carried out by TMS Ltd. No significant problems were identified and the recommendations have been accepted (subject to agreement with SCC during detailed design). The audit report along with the designer's response is included in Appendix C and the layout Plan included in Appendix B has been changed in response to the audits recommendations.

5.7 The scheme retains the same 20 metre ICD as the existing junction. The car park access is realigned and semi flush traffic separation islands are proposed on all approaches, paved in a contrasting material and similar to the mini roundabout recently installed by SCC at Smithfield Road/High Street/Bradley Street. No street furniture (signs or bollards) are to be located as these could be overrun by the occasional HGV which will use the junction.

5.8 The proposed roundabout layout can accommodate a 'U' turn by a three axle, 9.8 metre long refuse vehicle to at the junction, a manoeuvre not possible at the existing junction due to the solid splitter island within the car park access. SCC's requirements for the proposed junction to accommodate the same manoeuvres as the existing are therefore exceeded.

5.9 The servicing arrangements for the large non-food retail unit 6 on the south side of the mall will require one HGV per day to service the store, via the Carter's Square car park. Plans showing the swept path analysis of this manoeuvre and of the refuse vehicle 'U' turn are also included in Appendix B.

5.10 Capacity analysis of the proposed access roundabout is summarised in Section 8

### **Pedestrian and Cycle Access**

5.11 The Carter's Square development has been designed as an extension to the existing Uttoxeter High Street with the pedestrian shopping mall connecting to the semi-pedestrianised High Street and providing a direct route through to the existing Carter's Square car park.

5.12 Existing pedestrian/cycle connections from the car park to Drovers Close are retained along with the existing route across the car park between James Street and Collin Street. Cycle parking is to be provided at the western end of the shopping mall, adjacent to the proposed ASDA.

5.13 It has been agreed with the land owners to provide an additional pedestrian route Carter Street through the White Hart Hotel yard to connect to the northern end of Drovers Close. This will provide an alternative route between the eastern end of Carter Street and the western end of the Carter's Square mall which will be considerably shorter route (by approximately 100 metres) than the route via Drovers Close. This will also improve access to Carter Street and facilities at this end of the town for residents in Drovers Close and other residential areas to the north west of the town.

5.14 The proposed access roundabout includes zebra crossings on the Smithfield Road west and the car park access arms. Ideally a zebra crossing would also be provided on Smithfield Road east however the wide access to the premises north of Smithfield Road prevents this and in any case, there is an existing zebra crossing around 75 metres to the east of the roundabout. As flows on Short Street are light a formal pedestrian crossing is not considered to be necessary on the northern arm of the proposed mini roundabout. Tactile paving and dropped kerbs are however, proposed on this arm.

5.15 The pedestrian crossing on Smithfield West is located where the footway on the southern side of road is 2.2 metres wide. To the west of the proposed crossing the existing footway on the south side of the road narrows to 1.2 metres wide.

5.16 It is considered that pedestrian guard rail is not required at this junction as this would present a cluttered street scene and could also be a hazard for cyclists.

### **Parking**

5.17 ESBC's Draft Supplementary Planning Guidance on Parking Standards sets out the following maximum provision:

- Food Retail – 1 space per 14 sqm GFA
- None Food Retail – 1 space per 20 sqm GFA
- Health Centres – 5 spaces per consulting room.

5.18 Assuming a standalone development then the following parking would be required for Carter's Square:

- ASDA Food Retail – 205 spaces
- Other None Food Retail – 116 spaces
- PCT (assuming 6 consulting rooms) – 30 spaces

5.19 ESBCs guidance states that locations well served by sustainable transport and within or adjacent to town centres, maximising development by reducing the number of onsite parking spaces, whilst simultaneously encouraging alternative sustainable travel choices may be acceptable.

5.20 The proposed development will utilise the majority of the existing parking area for car parking and will provide 182 spaces. This level of parking is considered appropriate for a town centre some trips to Carter’s Square will be part of an existing visit to the town for shopping or other business and where there are other car parks. Pay and Display car parks near to Carter’s Square are listed in the following Table along with walking distances from the centre of the mall (approximate):

**Table 5.1 – Car parks within Uttoxeter**

<b>Name/Location</b>	<b>Spaces</b>	<b>Distance from Carter’s Square (Walking)</b>
Proposed Carter’s Square	182	-
The Maltings	296	250 metres
Fairfield Road	160	350 metres
Trinity Road	113	380 metres
Leisure Centre (off Stone Road)	78	380 metres



## 6 SUSTAINABLE TRANSPORT - EMPLOYEE TRAVEL PLAN FRAMEWORK

6.1 As set out in Section 4, the Carter's Square development is an extension to the existing town centre and is readily accessible by alternative modes of transport to the car. There is an opportunity for employees making regular journeys to consider alternative modes of travel and it is probable that many employees will be recruited from the local population some of who may be within walking and cycling distance.

6.2 The occupiers of each unit within Carter's Square will endeavour to appoint a member of Staff to promote sustainable transport; their role will be to make colleagues aware of the benefits and support available for those choosing to travel by sustainable transport, including any related offers and promotions.

6.3 Information will be circulated on notice boards and where available, via intranet systems. Examples of typical information which can be made readily available are set out below. Each appointed person will establish e-mail links with officers of SCC's Sustainable Travel Team to receive updates on any travel initiatives promoted by the Council and '*Staffordshire TravelWise*'.

- Information at [www.staffordshire.gov.uk/transport/greentravel/](http://www.staffordshire.gov.uk/transport/greentravel/); and [www.acttravelwise.org](http://www.acttravelwise.org).

### **Walking & Cycling**

6.4 As identified in the TA, there are ample and convenient opportunities to access the town centre and Carter's Square by sustainable transport. There are good links to adjacent residential areas and cycle facilities are provided within the mall. Cycle Mapping for Uttoxeter is available free on the SCCs web site and many of the roads within the town are advisory cycle routes.

6.5 *Cyclescheme* are the UK's number one provider of tax free bikes for work through independent bike shops. The scheme is run in accordance with the government's green travel plan and conforms to the requirements of the HMRC, OFT and DfT.

- Information available at [www.cyclescheme.co.uk](http://www.cyclescheme.co.uk)

## **Car Share**

6.6 Staffordshire County Council promotes a scheme to assist workers within the County to find a travel companion. The scheme provides employees with free access to a database of other people searching for someone to share their journey to work with.

- e-mail [carshare@staffordshire.gov.uk](mailto:carshare@staffordshire.gov.uk) or information available at [www.share-a-lift.com](http://www.share-a-lift.com)

## **Taxis**

6.7 Taxis have an important role when other means of transport may not be available, such as in the early morning or late evening when public transport is less frequent or, for example, where a car share arrangement has been changed at late notice. Contact details for local taxi operators will be posted on notice boards and via intranet where available.

## **Bus & Rail**

6.8 Local bus and railway route and timetable information is readily available and information on how to obtain this will be provided to all employees within Carter's Square. Information on any service changes will be monitored and circulated via notice boards and where available, intranet.

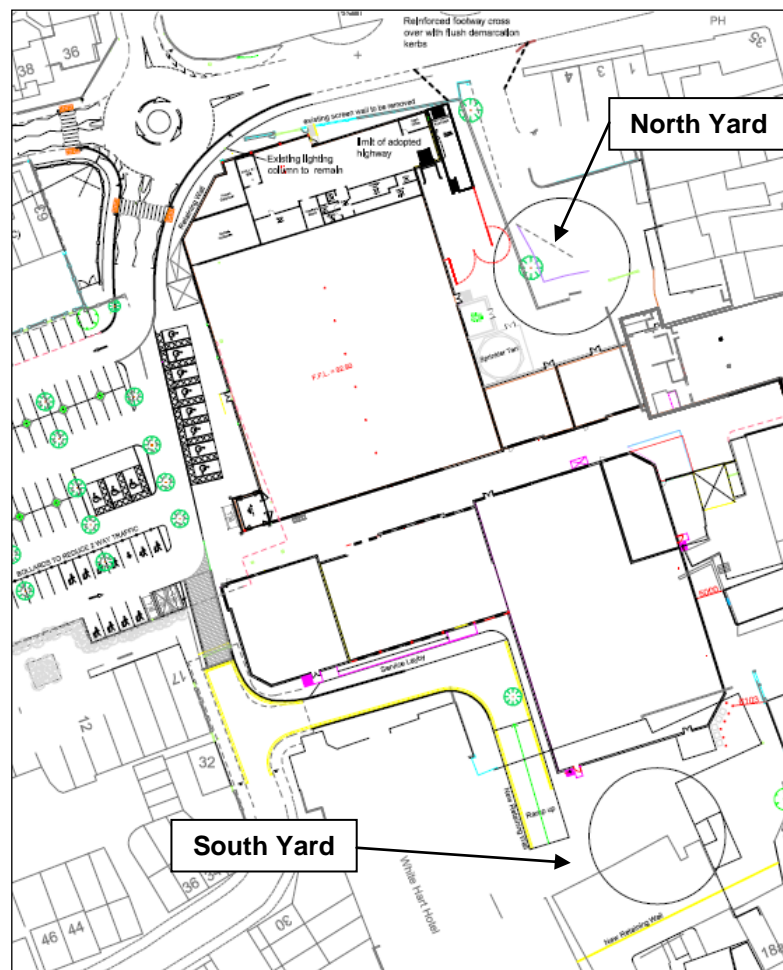
## 7 PROPOSED SERVICE AREA MANAGEMENT

7.1 In many town centre locations access for service vehicles, especially HGVs, can be problematic. Typically specific traffic management plans are devised to control these situations.

7.2 The Carter's Square development requires two service yards, shown in Figure 7.1:

- South Yard, serving the proposed Primary Care Trust's medical centre and non-food retail units on the southern side of the shopping mall; and
- North Yard serving existing commercial properties (most notably Wilkinson's store), the proposed ASDA food store and other proposed non-food retail units on the northern side of the shopping mall.

Figure 7.1 – Location of Service Yards



## **South Yard**

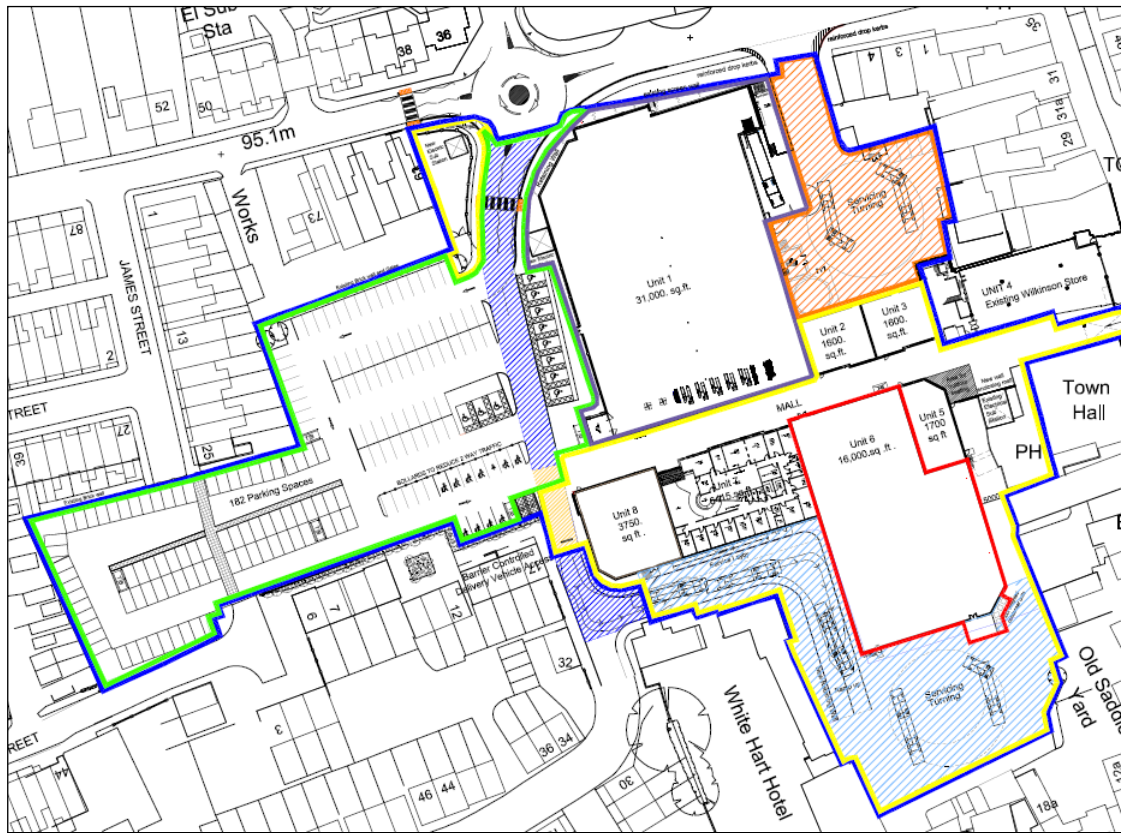
7.3 The South Yard will be used to service the proposed PCT Medical Centre and retail units on the south side of the mall, the largest of which is Unit 6. Earlier schemes which have planning approval were agreed on the assumption that service access to retail units located on the south of the shopping mall would be from an existing rear access road via the recently completed Drovers Close residential development. The now completed Drovers Close scheme includes an access to this service road which also provides access to the rear of a residential property (17 High Street).

7.4 Drovers Close is however only suitable for smaller service vehicles and as already stated, earlier schemes for the development of Carter's Square which relied on smaller shop units, are not commercially viable. In order to deliver a scheme which will attract household names to Uttoxeter it is essential that larger format retail units are incorporated into the scheme. The proposed Unit 6 which has a GFA of 1,486 sqm will require servicing by larger articulated HGVs.

7.5 In developing the proposed scheme for Carter's Square, Lingfield (Uttoxeter) Ltd has acquired additional land to the rear of the garage on Carter Street in order to create a service yard which will accommodate the largest (16.5 metre) articulated HGV. A scheme to allow controlled access for HGVs via Smithfield Road and the Carter's Square car park to the northern end of Drovers Close has also been devised.

7.6 The necessary agreement for this has also been secured in the form of car park lease (with ASDA) which includes provision that there is a right of way reserved for the occupier of Unit 6 to pass over the car park, along the designated route, with or without vehicles, at all times of the day and night. Figure 7.2 overleaf is an extract from Nicol Thomas's Estate Plan which shows the designated route referred to in this agreement.

Figure 7.2 - Extract from Nichol Thomas Demise Plan: Drawing B4965-(LG)BH - 01 Rev G



7.7 The prospective occupier of Unit 6 has provided information on stock deliveries; these take place outside of store trading periods which are Monday to Saturday between 08:00 and 18:00 and 10:00 to 16:00 on Sundays, with one delivery taking place each evening.

7.8 In discussions SCC has indicated that a strict control regime for HGV access is required with details of traffic orders and traffic management devices to be agreed and conditioned as part of any planning approval. The plans in Appendix D show the proposed access arrangements and the swept path analysis of a 16.5 metre HGV and, at the request of SCC, a 15.5 metre HGV entering and leaving the yard. The following is a description of the components of the scheme to be provided as part of a planning approval. The scheme plan showing the arrangement of these components is included in Appendix D:

- The link between the car park and northern end of Drivers Close is to be designed as a flush shared space with the mall and adjacent footways. The area for vehicles is to be defined in a contrasting paving material (details to be agreed with the planning authority).

- Signs are to be provided at the entrance to the link: “Service Vehicles Only”. Although not on the public highway it is proposed that these signs will conform to the Traffic Signs Manual Chapter 7 with ‘Transport Medium’ white text on a red background.
- A rising arm barrier is to be installed along with a call point for use by drivers to alert store staff of their arrival.
- The kerb on the north east corner of the existing Drovers Close turning head is to be set back to accommodate an articulated HGV. A minimum 2 metre wide footway is to be maintained.
- CCTV is to be provided so that store staff can monitor activities at the barrier and on the service road and control the exit for HGVs. It is also proposed that this system is linked to the Borough Council’s control system so that access can be monitored in a similar manner to the existing controlled access to High Street.
- Signs are to be provided on the exit from the service road instructing: “All Vehicles over 7.5 Tonnes Turn Right”. As stated above, although not on the public highway these signs will be white text on a red background designed in accordance with Chapter 7 of the Traffic Signs Manual.
- A Traffic Regulation Order and signs in accordance with Chapter 5 of the Traffic Signs Manual, Diagram 662.1 are to be provided on Drovers Close at the junction with Carter Street to restrict access for vehicles exceeding 7.5 tonnes. The traffic order is to extend the full length of Drovers Close up to the start of the existing turning head.
- A Traffic Regulation Order and double yellow lines are to be provided around the turning head at the end of Drovers Close.

7.9 In practice the proposed traffic management will ensure that all HGVs exceeding 7.5 tonnes will access the South Yard via Smithfield Road and the Carter’s Square car park. On leaving the South Yard the driver will wait on the service road (off the highway) until the barrier has been raised. Vehicles will then turn right to Smithfield Road via the car park. The CCTV and call point will link directly to Unit 6. Subject to discussions with ESBC the CCTV will also be linked to existing town centre security cameras.

7.10 The access time from arrival at the barrier to passing through to the Service yard should be no more than one and a half minutes assuming 30 seconds to announce arrival, 5 seconds for barrier to rise and around 30 seconds to pass through Drovers Close.

7.11 The following traffic orders are proposed:

- Weight restriction along Drovers Close for vehicles exceeding 7.5 tonnes; and
- Parking restrictions for the whole of the public highway within the Drovers Close turning head. The Traffic Order is to be “at any time” and the double yellow line road markings, although not enforceable off the highway, will be continued into the proposed South Yard access road to ensure that this is kept clear at all times.

7.12 All service vehicles up to 7.5 tonnes will access the South Yard via Drovers Close, as currently proposed and accepted by SCC.

7.13 In order to provide an enforceable regime for service access it is proposed that the Traffic Management Plan, included in Appendix D, will be the subject of a planning condition. This document contains all details of routing, route restrictions and the control and management of the South Yard. The document has been designed as a distributable instruction to all managers of units within Carter’s Square including the PCT surgery, and to delivery companies/drivers.

### **North Yard**

7.14 There are no formal agreements for access or use of the existing yard which is utilised by existing commercial premises on High Street (principally the Wilkinson’s store fronting high street), and Smithfield Road. The space is currently disorganised and it is understood that this can lead to disagreements between those currently using it..

7.15 The proposed scheme includes a reorganisation and formalisation of the space resulting in a neater appearance (there are open views from Smithfield Road), and a more organised regime for the premises using the space. Overall the space will be tidier in both physical and legal aspects, benefiting existing users of this space as well as the proposed Carter’s Square development.

7.16 Information has been provided by ASDA on the number of vehicles servicing stores ranging in size from just over 1,000 sqm to 7,500 sqm. Using this data an aggregated service vehicle trip rate of 0.285 deliveries per day per 100 sqm has been derived. Applying this to the proposed store of 2,800 sqm gives an estimated number of deliveries of 8 per day or 16 two-way movements.

Using the same data and methodology it is estimated there will also be up to 2 deliveries of the 'George' clothing range per week, or 4 two-way movements per week.

7.17 Not all deliveries will be made by large articulated vehicles with smaller units likely to use smaller vehicles.

7.18 Deliveries to ASDA stores are timed throughout a 24 hour period with fresh foods delivered between 22:00 and 08:00 (2 deliveries, 4 two-way movements) and others timed over the day between 08:00 and 21:00.

7.19 No special arrangements are required for access into the North Yard which, as is the case with the existing, will remain open at all times. It is proposed to retain the existing footway crossing arrangement with the dropped kerb extended to fully accommodate HGV access and the footway crossing reconstructed to a standard suitable for use by HGVs.

7.20 Swept path analysis has been carried out to establish that the space can accommodate existing parking with the yard along with other vehicles. Plans showing the arrangements and swept path analysis are included in Appendix D.

7.21 The Traffic Management Plan, included in Appendix D also describes the advised approach routes for HGV drivers, to avoid the narrower part of Smithfield Road.

### **Summary of The traffic management plan**

- The TMP is applicable to all service vehicles drivers, store/PCT managers and staff involved in servicing;
- Compliance and implementation of the TMP is to be monitored by the individual store managers;
- Approach and departure routes for all HGVs exceeding 7.5 tonnes must be from the east via Smithfield Road and A522/A518. HGV routes defined in the document are to be complied with.
- Approach and departure for HGVs exceeding 7.5 tonnes must be through the Carter's Square car park and the controlled access across shared space into the north end of Drivers Close; and
- All light service vehicles (up to 7.5 tonnes) accessing the South Yard must do so via Carter's Street and Drivers Close.



## 8 TRAFFIC IMPACT

8.1 SCCs current guidance on Transport Assessment advises that an assessment should be tailored to the location of the site and its surroundings. As stated elsewhere in this TA, as an extension to the existing town centre retail offer, in traffic terms neither ASDA nor other proposed retail units are likely to attract significant new visits to the town beyond the existing visits to Uttoxeter as a local shopping centre.

8.2 The Carter's Square development will however significantly enhance the overall shopping experience within the town and provide a food store close to many of the existing residential areas to the north and west of the centre. This is a more convenient location than the existing food stores to the east of the A518 and some trips to the store for day to day provisions could be undertaken by walking or cycling.

8.3 The estimated trip generations for the committed redevelopment of the Bamford site have also been taken into account, as directed by SCC. The data in the publicly available 2010 TA prepared by Sanderson Ltd has been reviewed. Some of the assumptions with regards to the assignment of trips to Stone Road and Smithfield Road are considered questionable and there are some anomalies within the data; however, the figures have been taken at face value. The following traffic generations and distribution patterns are therefore considered to represent maximum potential for traffic growth along Smithfield Road. Diagrams showing the calculation of traffic flows are included in Appendix E.

### Traffic Generation

8.4 Vehicle trip rates have been discussed with SCC and it was agreed early in the process that the trip rates for non-food would be based on the original PBA assessment and TRICS for the doctors' surgery.

8.5 TRICS sites for food stores of similar size and location to the Carter's Square ASDA are limited. In order to provide some consistency with the data in the Bamford TA which has been agreed with SCC, a selection of the food retail sites identified by Sanderson and which equate to an average GFA similar to that of the proposed store have been isolated. SCC has agreed an average trip rate derived from these sites for this TA. The resulting trip rates and rates for the food, non-food and doctors surgery are set out in the Table 8.1 overleaf:

**Table 8.1 – Carter’s Square, Proposed Vehicle Trip Rates**

Use	AM Peak Hour			PM Peak Hour			Sat Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way	Arr	Dep	2-Way
Non-Food Retail	1.044	0.048	1.092	0.141	0.848	0.989	0.665	0.635	1.300
Food Retail	3.550	1.853	5.403	7.692	7.894	15.586	5.597	5.700	11.297
Doctors	5.356	2.111	7.467	3.044	4.267	7.311	0	0	0

Trip Rates for Retail and per 100 sqm GFA and per doctor

8.6 As generally accepted, many of the trips to the food store will be made up of vehicles already passing the site as part of a regular journey. The TRICS Research Report 95.2 *Pass-by and Diverted Trips* identifies that only a small percentage of trips to a new store are likely to be primary trips with the overall conclusion that this is likely to be 10% or less. The research also concludes that pass by could be around 30% of total trips to a new store and that this could be higher at smaller size developments.

8.7 To summarise; the vehicle trip generations have been based on the following assumptions:

- Non-food: although it is likely that the majority of these trips will be diverted from other parts of the town, for consistency with the PBA report all trips are assumed to be new within the TA network;
- Doctors: All trips are diverted from the existing surgery to the Smithfield Road car park and therefore assumed new within the TA network; and
- Foodstore:
  - 10% of the trips are assumed to be new to the Uttoxeter network;
  - 30% are assumed to be cars already passing the site (divert); and
  - 60% are assumed to result from people changing their choice of shopping from other food retail within the town. In this case the Lidle and Tesco stores and car parking areas to the east of the A518/town centre. All trips are assumed to be new to the TA network.

8.8 The following Table 8.2 shows the calculated make up of trips to the proposed 2,800 sqm GFA food store based on the above assumptions.

**Table 8.2 – Food Store Vehicle Trips by Type**

Trip Type	AM Peak Hour			PM Peak Hour			Sat Peak Hour		
	Arr	Dep	2-way	Arr	Dep	2-way	Arr	Dep	2-way
Total Trips	102	53	156	222	227	449	161	164	325
10% New Trips	10	5	16	22	23	45	16	16	33
30% Pass-by	31	16	47	66	68	135	48	49	98
60% Transfer	61	32	93	133	136	269	97	98	195

8.9 For the assessment of the junctions considered in this TA new and transfer trips have been combined and are assumed to be new trips within the study network and pass-by will be taken from existing and committed development traffic flows, reassigned to enter and leave the car park within each period. The following Table shows the combined vehicle trips assessed as additional traffic within the study network:

**Table 8.3 – Carter’s Square Vehicle Trips Excluding Pass-by**

Use	AM Peak Hour			PM Peak Hour			Sat Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way	Arr	Dep	2-Way
Non-Food Retail	24	1	25	3	19	22	15	14	29
Food Retail	71	37	109	155	159	314	113	114	228
Doctors	21	8	30	12	17	29	0	0	0
<b>TOTAL</b>	<b>116</b>	<b>46</b>	<b>164</b>	<b>170</b>	<b>195</b>	<b>365</b>	<b>128</b>	<b>128</b>	<b>257</b>

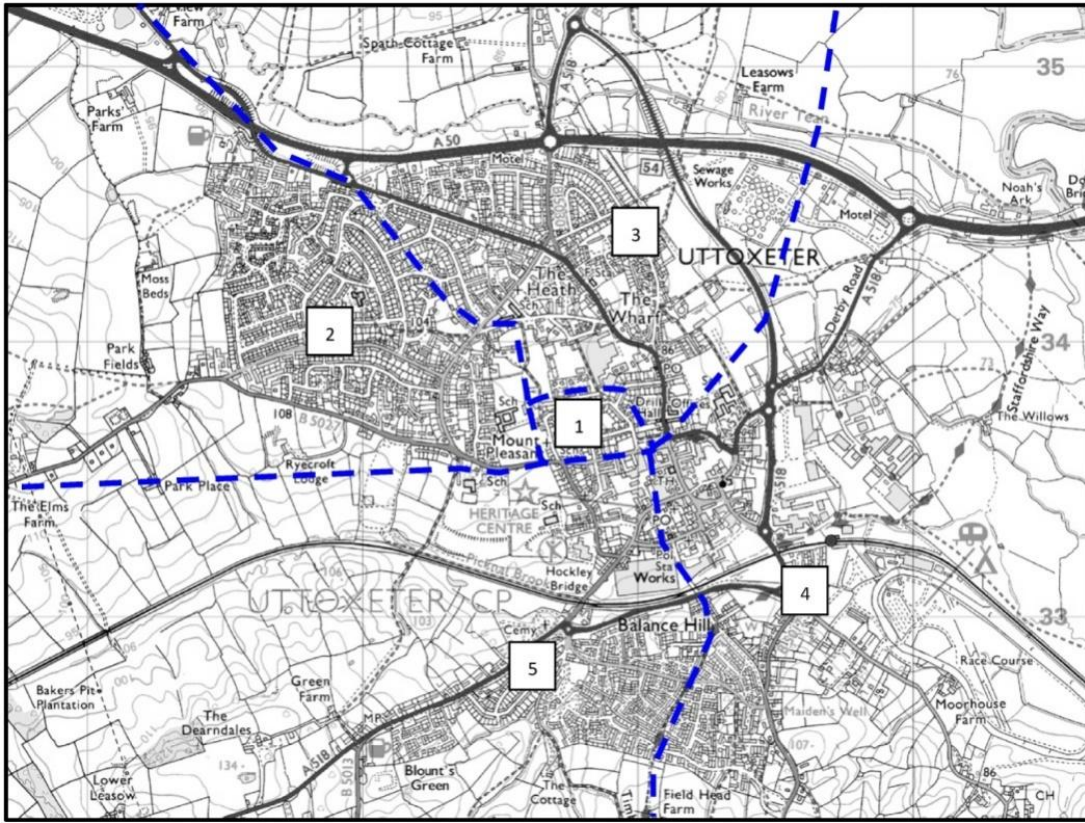
8.10 The assumed 30% of pass-by trips to the proposed ASDA store have been reassigned proportionally from the existing traffic passing the site.

### Trip Distribution

8.11 The location of the proposed ASDA store is however more convenient for many residential areas surrounding Uttoxeter than the existing food stores to the east of the A518.

8.12 The trip distribution has been based on 5 zones derived from census population data. The zone assumptions are shown in Figure 8.1 overleaf followed by the percentage population distribution.

Figure 8.1 - Carter's Square Traffic Distribution



8.13 The resulting population distribution is:

- Zone 1 - 4%
- Zone 2 - 35%
- Zone 3 - 25%
- Zone 4 - 15%
- Zone 5 - 21%

8.14 For the purposes of this TA this distribution has been applied to all vehicle trip estimations for Carter's Square apart from the 30% of trips to the ASDA which are assumed to be diverted from trips already on Smithfield Road.

#### Committed Development

8.15 A scheme for the redevelopment of the Bamford site has considered a mixed use development comprising:

- up to 257 residential units;
- up to 4,200 sqm food retail ;
- up to 5,000 sqm offices; and
- Primary Care Trust building

8.16 As a mixed residential, employment and retail development the distribution of traffic was based on several sources of data including the 2001 Census, a retail impact study and data from the former occupiers of the site. The resulting distribution is complex and, as this has been agreed with SCC the data from Sanderson Associates TA have been assumed without question. Committed development traffic flows included in Appendix E are from Sanderson Associates TA, Figures 9, 10 and 11.

8.17 This does however show an assignment of 200 and 150 additional two-way vehicle movements in the AM and PM peak hours respectively to Smithfield Road and around 100 additional two-way movements during the Saturday peak hour. The majority of this traffic passes through the Bradley Street/High Street/Smithfield Road junction and to the A518 via Silver Street. Given the location of the site, adjacent to the A518, the convenience of this as a route to/from the site to strategic routes in and around Uttoxeter may be questionable.

8.18 The assignment also assumes that around 50% of the development traffic assigned to Smithfield Road will use New Street, a shorter route between Stone Road and Smithfield Road. For consistency this assumption has also been applied to the assignment of Carter's Square trips.

### **Base Traffic Flows**

8.19 An assessment horizon of five years after registration of the planning application has been agreed for capacity assessments. In this case the TA exceeds this slightly and has considered an assessment horizon of 2018.

8.20 The flows for the Stone Road/Smithfield Road/Springfield Road junction assessment are taken from Sanderson Associates TA Figures 1, 2 and 3. This data, from 2009, has been adjusted to represent 2012 traffic flows using factors derived from TEMPRO. The diagrams in Appendix E, which combines this data with the 2012 counts carried out by PJA at the Bradley Street and Short Street junctions, show the Sanderson estimated traffic flows are comparable (marginally higher) with the new survey data.

8.21 This data has then been factored to represent 2018 traffic flows, and increase of 6% derived from TEMPRO (See Appendix E).

8.22 As set out in Paragraph 8.17, the traffic distribution assumed for the Bamford development and volume of traffic assigned to Smithfield Road is questionable. The addition of this traffic as well as Temprow traffic growth does, in our opinion, include some double counting as traffic growth trends are close to flat and a high proportion of any growth will stem from proposed developments. This point should be noted when reading the following summary of the capacity analysis.

## Capacity Models

8.23 Capacity modelling has been carried out using the latest version (Ver 8) of PICADY and ARCADY modelling software. The results from the models are summarised in the following Tables and full model outputs are included in Appendix F.

8.24 The **proposed site access** has been assessed assuming 2018 plus committed Bamford Development traffic and traffic from the proposed Carter's Square development. The results are set out in Table 7.4:

**Table 8.4 – Site Access ARCADY: 2018 Base + Committed + Development**

Arm	AM Peak (08:00 - 09:00)			PM Peak (17:00 – 18:00)			Sat Peak (12:00 - 13:00)		
	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)
Smithfield Road East	0.35	1	6	0.58	1	10	0.43	1	7
Site Access	0.33	1	8	0.52	1	13	0.35	1	9
Smithfield Road West	0.47	1	9	0.63	2	14	0.52	1	10
Short Street	0.11	0	10	0.12	0	12	0.12	0	11

8.25 The model predicts that the proposed site access will operate without any capacity issues.

8.26 Two scenarios have been considered at the **Smithfield Road/Stone Road** staggered crossroads and the Bradley Street roundabout; 2018 base plus committed Bamford development traffic and 2018 base plus committed plus proposed Carter's Square traffic. The junction geometry and other parameters used by Sanderson in the assessment of the Bamford development proposals have been adopted for this assessment:

**Table 8.5 - Smithfield Road/Stone Road/Springfield Road PICADY: 2018 Base + Committed**

Arm	AM Peak (08:00 - 09:00)			PM Peak (17:00 – 18:00)			Sat Peak (12:00 - 13:00)		
	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)
Stone Road South Right/Ahead	0.53	1	13	0.81	4	35	0.76	3	28
Stone Road South Left	0.3	0	13	0.42	1	35	0.4	1	27
Smithfield Road Ahead/Right	0.13	0	4	0.09	0	4	0.08	0	4
Springfield Road	0.08	0	9	0.07	0	10	0.06	0	10
Stone Road West Ahead/Right	0.66	1	8	0.53	1	11	0.47	1	10

**Table 8.6 - 2018 Base + Committed + Development**

Arm	AM Peak (08:00 - 09:00)			PM Peak (17:00 – 18:00)			Sat Peak (12:00 - 13:00)		
	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)
Stone Road South Right/Ahead	0.55	1	15	0.92	8	68	0.81	4	38
Stone Road South Left	0.36	1	20	0.81	3	116	0.54	1	41
Smithfield Road Ahead/Right	0.13	0	5	0.11	0	4	0.09	0	4
Springfield Road	0.09	0	10	0.08	0	11	0.07	0	10
Stone Road West Ahead/Right	0.69	3	15	0.58	2	12	0.5	1	10

8.27 The junction is predicted to work within theoretical capacity with the addition of the Carter’s Square development and the Bamford traffic assumed by Sanderson to use this route.

8.28 SCC has provided drawings of the recently completed mini roundabout scheme at **Bradely Street/Smithfield Road/High Street**. The scheme replaced a priority junction where Bradley Street was the minor arm, and includes zebra crossings on the Bradley Street and High Street north arms, approximately 20 metres back from the give-way lines.

8.29 From surveys the existing peak hour traffic flows through the junction follow a reasonably flat profile over the hour. Further observations of the peak hour operation of this junction were undertaken on Friday 20<sup>th</sup> April and this information, summarised below, has been used to calibrate the 2012 base ARCADY model:

- AM Peak - Max accumulation from the give-way line of 9 vehicles observed on High Street around 08:30 with vehicles moving slowly through the junction (not technically a queue). The delay at the give-way line was estimated at about 10 seconds. There were periods when there was no traffic on any of the arms. For around 20 minutes there were a high number of school age pedestrians (some accompanied).
- PM Peak – Traffic flows were steady and there were frequent pedestrians crossing, creating 3 to 4 vehicle queues at the crossings, clearing within around 30 seconds. The maximum observed queue at the Bradley Street give-way line was 2 to 3 vehicles and delays of no more than 5 seconds. There was evidence of some platoons of traffic on Bradley Street, around 10 vehicles longest which moved steadily through the junction relatively quickly (not technically a queue).

8.30 The results of the ARCADY assessment are set out in the following Tables 8.7 to 8.9:

**Table 8.7 - 2012 Base**

Arm	AM Peak (08:00 - 09:00)			PM Peak (17:00 – 18:00)			Sat Peak (12:00 - 13:00)		
	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)
Bradley Street	0.49	1	10	0.67	2	12	0.67	2	15
Smithfield Road West	0.39	1	6	0.34	1	7	0.29	0	6
High Street North	0.63	2	14	0.54	1	12	0.59	1	14

8.31 The intercept values have been adjusted on High Street and Bradley Street to get a better representation of the observed queue whilst retaining some queuing on the approaches. As can be seen in Table 8.7, delays are still higher than those observed at the give-way lines. It is therefore concluded that the model is giving a slightly more pessimistic view of the junction's current performance.

**Table 8.8 - 2018 Base + Committed**

Arm	AM Peak (08:00 - 09:00)			PM Peak (17:00 – 18:00)			Sat Peak (12:00 - 13:00)		
	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)
Bradley Street	0.56	1	12	0.84	5	23	0.83	4	30
Smithfield Road West	0.53	1	9	0.43	1	9	0.38	1	7
High Street North	0.78	4	27	0.66	2	17	0.72	3	22

8.32 The results with addition of traffic growth and traffic from the committed Bamford development assumed to use Smithfield Road suggest that the junction will be close to theoretical capacity (RFC approaching 0.85) in both the Am (High Street north) and PM (Bradley Street). However, as set out in Paragraph 8.17, the feasibility of traffic from the redeveloped Bamford site is questionable.

**Table 8.9 - 2018 Base + Committed + Development**

Arm	AM Peak (08:00 - 09:00)			PM Peak (17:00 – 18:00)			Sat Peak (12:00 - 13:00)		
	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)	RFC	Queue (PCUs)	Delay (Secs/PCU)
Bradley Street	0.60	2	14	0.90	8	37	0.87	6	40
Smithfield Road West	0.55	1	9	0.54	1	11	0.44	1	8
High Street North	0.82	5	32	0.75	3	24	0.78	3	28



8.33 With the addition of the proposed Carter's Square development the theoretical capacity of Bradley Street is shown to be exceeded slightly in the estimated 2018 evening and Saturday peak hours. However, it is considered that the assumptions used in the model represent a hypothetical worst case as the traffic flows include both background traffic growth and traffic from the committed Bamford development. As set out in Paragraph 8.17, it is considered that the assignment of a high number of trips from this site to Smithfield Road is unlikely to occur in practice and there may also be an element of double counting by adding background traffic growth which is mainly due to new development. Recent statistics show background growth to be relatively flat.

8.34 Furthermore, although the theoretical capacity of the junction is predicted to be slightly exceeded, the practical capacity indicators of queues and delays are considered to be acceptable.

## 9 SUMMARY AND CONCLUSIONS

9.1 The form of the proposed access to Carter's Square and the scope of this TA have evolved over a number of years and represents a new and more commercially viable scheme than former proposals which have planning approval. The redevelopment of the site is in line with current local and national planning policy.

9.2 Through discussions with SCC, ASDA and other potential operators the form of the changes to the access roundabout, control regimes for service traffic access and the scope of this TA have been largely agreed.

9.3 The following summarise the issues covered and conclusions of the Assessment:

- As requested by SCC, the TA has considered the predicted traffic generations from the approved redevelopment of the former Bamford site on the south side of Uttoxeter.
- Reference has also been made to earlier proposals for a mixture of residential, employment and retail development on this site which have planning approval. The principle of additional traffic and changes in traffic movements within this part of the town centre has therefore been accepted.
- Trip rates and assessment years have been agreed with SCC and an assessment horizon of 2018 has been assumed.
- Uttoxeter Town Centre is compact with many residential areas within walking and cycle distance. There are regular bus services to surrounding villages and towns and a regular town centre service all of which use the adjacent bus station. There are also hourly trains between Crewe and Derby and all stations between. Overall it can be concluded that there are ample and frequent opportunities to travel by sustainable modes of transport.
- The proposed Carter's Square mini-roundabout access includes pedestrian crossing facilities on Smithfield Road and on the car park access. A Stage 1 RSA of the scheme has not revealed any fundamental issues and all suggested changes have been incorporated into the scheme.
- The Carter's Square scheme is designed to integrate with the existing town centre and has pedestrian links to the High Street shopping area and links to housing on Drovers Close, Colin Street and James Street.
- The Existing Carter's Square car park is to become part of the development and will provide 182 spaces. As an extension to the town centre this level of parking is considered appropriate and complimentary to Uttoxeter's public parking provision.

- The development will be serviced from two yards, North Yard off Smithfield Road and South Yard off Drovers Close. Access to South Yard for HGVs is to be through the Carter's Square car park. Agreements to secure this route are in place and a strict control and routing regime is proposed to control the movements of HGVs. A service traffic management plan is included in this TA.
- Assumptions on traffic growth and the inclusion of the estimated traffic from a redevelopment of the Bamford site are considered to represent a high-end estimate of the potential traffic growth on the Smithfield Road Corridor.
- The capacity analysis carried out for this TA has been based on new traffic surveys and traffic data from approved TA submitted in support of the Bamford site redevelopment. The analysis shows that the proposed site access and existing Stone Road/Smithfield Road junction can accommodate the estimated development traffic in addition to the committed development traffic and estimated growth in background traffic.
- The predicted queues and delays at the new Bradley Street mini-roundabout are considered to be acceptable although unlikely to occur in practice in view of the criteria applied to the model.

9.4 Smithfield Road is considered to be a secondary route within the town, linking residential areas and outlying settlements to the west. The Carter's Square development will be the main reason for increased traffic movements on this corridor with the currently underutilised car park becoming a destination for those visiting the proposed development and existing town centre facilities.

9.5 This TA demonstrates that with significant increases in traffic assumed in this TA, resulting from background traffic growth and committed developments (Bamford site) effects of the proposed Carter's Square development can be accommodated within the town and that the service access arrangements can be managed through proposals put forward in this TA. There are therefore no highway or transport reasons why the development should not proceed.

**Phil Jones Associates Ltd**



## Appendix A

### Personal Injury Accident Records





**AccsMap - Accident Analysis System**
**Accidents between dates 01/10/2008 and 30/09/2011 (36) months**
**Selection:**

Selected using Manual Selection

**Notes:**

<b>Acc. Ref. No:</b> 10002651	<b>Road:</b> A 522	<b>Grid Reference:</b> 409120 333650
<b>District Council:</b> East Staffordshire	<b>Time:</b> 1600	<b>Wednesday</b> 21-April-2010
<b>Lighting:</b> Daylight:street lights present	<b>Weather:</b> Fine without high winds	<b>Speed limit:</b> 30
<b>Severity:</b> SLIGHT	<b>Road surface:</b> Dry	
<b>Location:</b> HIIGH ST J/W BRADLEY ST UTTOXETER		

The accident occurred at a T or staggered junction on the A522, a single carriageway at its junction with the Unclassified530 controlled by a give way or uncontrolled. There was a pelican/puffin/toucan within 50 metres..

**Special conditions and hazards:** None

**Vehicle 1** Car, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was mid junction - on roundabout or main road and collided with vehicle 2. The male driver aged 29 lived in PN7 .

**Vehicle 2** Car, travelling from SE to NW was going ahead but held up on the main carriageway. The vehicle was mid junction - on roundabout or main road and collided with vehicle 1. The male driver aged 64 lived in ST10 had regularly travelled through the site before.

**Casualty 1** (Vehicle 2) A male driver aged 64 suffered a slight injury.

**Contributory Factors**

Vehicle 1 Following too close

Vehicle 1 Travelling too fast for conditions

<b>Acc. Ref. No:</b> 10003051	<b>Road:</b> D 530	<b>Grid Reference:</b> 409130 333620
<b>District Council:</b> East Staffordshire	<b>Time:</b> 1640	<b>Saturday</b> 08-May-2010
<b>Lighting:</b> Daylight:street lights present	<b>Weather:</b> Fine without high winds	<b>Speed limit:</b> 30
<b>Severity:</b> SLIGHT	<b>Road surface:</b> Dry	
<b>Location:</b> HIGH ST UTTOXETER APPROX 10 MTRS STH J/W SMITHFIELD RD		

The accident occurred at a T or staggered junction on the D530, at its junction with the C351 controlled by a give way or uncontrolled..

**Special conditions and hazards:** None

**Vehicle 1** Motor Cycle over 50 cc and up to 125cc, travelling from NW to SE was going ahead other on the main carriageway. The vehicle cleared junction or waiting/parked at junction exit. The male driver aged 22 lived in ST14 had regularly travelled through the site before.

**Casualty 1** (Vehicle 1) A male rider aged 22 suffered a slight injury.

**Contributory Factors**

Vehicle 1 Failed to look properly

<b>Acc. Ref. No:</b> 10003748	<b>Road:</b> C 351	<b>Grid Reference:</b> 408852 333567
<b>District Council:</b> East Staffordshire	<b>Time:</b> 1800	<b>Sunday</b> 13-June-2010
<b>Lighting:</b> Daylight:street lights present	<b>Weather:</b> Raining without high winds	<b>Speed limit:</b> 30
<b>Severity:</b> SLIGHT	<b>Road surface:</b> Wet/Damp	
<b>Location:</b> SMITHFIELD RD UTTOXETER J/W FAIRFIELD RD		

The accident occurred at a crossroads on the C351, a single carriageway at its junction with the Unclassified536 controlled by a give way or uncontrolled..

**Special conditions and hazards:** None

**Vehicle 1** Car, travelling from N to W was turning right on the main carriageway. The vehicle was entering main road and collided with vehicle 2. The female driver aged 35 lived in ST14 had regularly travelled through the site before.

**Vehicle 2** Car, travelling from W to E was going ahead other on the main carriageway. The vehicle was mid junction - on roundabout or main road and collided with vehicle 1. The male driver aged 35 lived in ST15 had occasionally travelled through the site before.

**Casualty 1** (Vehicle 1) A female driver aged 35 suffered a slight injury.

**Contributory Factors**

Vehicle 1 Failed to look properly

**Accidents between dates 01/10/2008 and 30/09/2011 (36) months**
**Selection:**

Selected using Manual Selection

**Notes:**


---

<b>Acc. Ref. No:</b>	10004014	<b>Road:</b>	C 351	<b>Grid Reference:</b>	409012	333601
<b>District Council:</b>	East Staffordshire	<b>Time:</b>	1505		Monday	21-June-2010
<b>Lighting:</b>	Daylight:street lights present	<b>Weather:</b>	Fine without high winds		<b>Speed limit:</b>	30
<b>Severity:</b>	SLIGHT	<b>Road surface</b>	Dry			
<b>Location:</b>	SMITHFIELD RD UTTOXETER R'BT J/W SHORT ST					

The accident occurred at a roundabout on the C351, at its junction with the Unclassified536 controlled by a give way or uncontrolled..

**Special conditions and hazards:** None

**Vehicle 1** Car, travelling from E to W was going ahead other on the main carriageway. The vehicle was entering roundabout and collided with vehicle 2. The male driver aged 75 lived in ST14 had regularly travelled through the site before.

**Vehicle 2** Car, travelling from W to S was turning right on the main carriageway. The vehicle was mid junction - on roundabout or main road and collided with vehicle 1. The female driver aged 27 lived in ST14 had regularly travelled through the site before.

**Casualty 1** (Vehicle 2) A female driver aged 27 suffered a slight injury.

**Contributory Factors**

Vehicle 2 Failed to signal/Misleading signal  
 Vehicle 1 Failed to look properly  
 Vehicle 1 Dazzling sun  
 Vehicle 2 Dazzling sun

---

<b>Acc. Ref. No:</b>	11000961	<b>Road:</b>	A 522	<b>Grid Reference:</b>	409134	333650
<b>District Council:</b>	East Staffordshire	<b>Time:</b>	1409		Friday	18-February-2011
<b>Lighting:</b>	Daylight:street lights present	<b>Weather:</b>	Fine without high winds		<b>Speed limit:</b>	30
<b>Severity:</b>	SLIGHT	<b>Road surface</b>	Dry			
<b>Location:</b>	BRADLEY ST.UTTOXETER APPROX.10MTS.EAST J/W HIGH ST.					

The accident occurred at a T or staggered junction on the A522, a single carriageway at its junction with the A522 controlled by a give way or uncontrolled. There was a zebra crossing within 50 metres..

**Special conditions and hazards:** None

**Vehicle 1** Car, travelling from W to E was going ahead other on the main carriageway. The vehicle cleared junction or waiting/parked at junction exit and collided with vehicle 2. The male driver aged 19 lived in ST14.

**Vehicle 2** Car, travelling from W to E was going ahead but held up on the main carriageway. The vehicle cleared junction or waiting/parked at junction exit and collided with vehicle 1. The female driver aged 64 lived in ST14.

**Casualty 1** (Vehicle 2) A female driver aged 64 suffered a slight injury.

**Casualty 2** (Vehicle 2) A female vehicle or pillion passenger aged 34 suffered a slight injury.

**Contributory Factors**

Vehicle 1 Failed to look properly  
 Vehicle 1 Failed to judge other persons path or speed  
 Vehicle 1 Distraction in vehicle

---

<b>Acc. Ref. No:</b>	11001481	<b>Road:</b>	C 351	<b>Grid Reference:</b>	408847	333566
<b>District Council:</b>	East Staffordshire	<b>Time:</b>	0835		Wednesday	16-March-2011
<b>Lighting:</b>	Daylight:street lights present	<b>Weather:</b>	Fine without high winds		<b>Speed limit:</b>	30
<b>Severity:</b>	SLIGHT	<b>Road surface</b>	Dry			
<b>Location:</b>	SMITHFIELD RD UTTOXETER J/W NEW STREET					

The accident occurred at a crossroads on the C351, a single carriageway at its junction with the Unclassified533 controlled by a give way or uncontrolled..

**Special conditions and hazards:** None

**Vehicle 1** Car, travelling from S to N was going ahead other on the main carriageway. The vehicle was entering main road and collided with vehicle 2. The female driver aged 28 lived in WV8 had regularly travelled through the site before.

**Vehicle 2** Car, travelling from W to NE was going ahead on a left bend on the main carriageway. The vehicle was mid junction - on roundabout or main road and collided with vehicle 1. The female driver aged 36 lived in ST14 had regularly travelled through the site before.

**Casualty 1** (Vehicle 2) A female driver aged 36 suffered a slight injury.

**Casualty 2** (Vehicle 1) A female driver aged 28 suffered a slight injury.

**Contributory Factors**

Vehicle 1 Failed to look properly  
 Vehicle 1 Failed to judge other persons path or speed  
 Vehicle 1 Stationary or parked vehicle



**Accidents between dates 01/10/2008 and 30/09/2011 (36) months**
**Selection:**

Selected using Manual Selection

**Notes:**


---

<b>Acc. Ref. No:</b>	11002481	<b>Road:</b>	C 351	<b>Grid Reference:</b>	409102 333624
<b>District Council:</b>	East Staffordshire	<b>Time:</b>	0840		Thursday 28-April-2011
<b>Lighting:</b>	Daylight:street lights present	<b>Weather:</b>	Fine without high winds	<b>Speed limit:</b>	30
<b>Severity:</b>	SLIGHT	<b>Road surface</b>	Dry		
<b>Location:</b>	SMITHFIELD ROAD UTTOXETER APPROX 28 MTRS WEST J/W HIGH STREET				

The accident occurred on the C351, a single carriageway There was a zebra crossing within 50 metres..

**Special conditions and hazards:** None

**Vehicle 1** Car, travelling from SW to NE was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction. The male driver aged 86 lived in ST14.

**Casualty 1** (Vehicle 1) A female pedestrian aged 15 suffered a slight injury crossing from driver's nearside1.

**Contributory Factors**

Vehicle 1 Failed to look properly

---

<b>Acc. Ref. No:</b>	11002501	<b>Road:</b>	A 522	<b>Grid Reference:</b>	409135 333651
<b>District Council:</b>	East Staffordshire	<b>Time:</b>	1401		Thursday 28-April-2011
<b>Lighting:</b>	Daylight:street lights present	<b>Weather:</b>	Fine without high winds	<b>Speed limit:</b>	30
<b>Severity:</b>	SLIGHT	<b>Road surface</b>	Dry		
<b>Location:</b>	BRADLEY ST UTTOXETER APPROX 10MTS EAST HIGH ST				

The accident occurred at a T or staggered junction on the A522, a single carriageway at its junction with the A522 controlled by a give way or uncontrolled. There was a zebra crossing within 50 metres..

**Special conditions and hazards:** None

**Vehicle 1** Car, travelling from N to E was turning left on the main carriageway. The vehicle cleared junction or waiting/parked at junction exit and collided with vehicle 2. The male driver aged 18 lived in ST14 had regularly travelled through the site before.

**Vehicle 2** Car, travelling from W to E was going ahead but held up on the main carriageway. The vehicle cleared junction or waiting/parked at junction exit and collided with vehicle 1. The male driver aged 31 lived in ST14 had regularly travelled through the site before.

**Casualty 1** (Vehicle 2) A male driver aged 31 suffered a slight injury.

**Contributory Factors**

Vehicle 1 Distraction in vehicle

---

<b>Acc. Ref. No:</b>	11003809	<b>Road:</b>	A 522	<b>Grid Reference:</b>	409149 333654
<b>District Council:</b>	East Staffordshire	<b>Time:</b>	1250		Tuesday 05-July-2011
<b>Lighting:</b>	Daylight:street lights present	<b>Weather:</b>	Fine without high winds	<b>Speed limit:</b>	30
<b>Severity:</b>	SLIGHT	<b>Road surface</b>	Dry		
<b>Location:</b>	BRADLEY ST UTTOXETER				

The accident occurred on the A522, a single carriageway There was a zebra crossing within 50 metres..

**Special conditions and hazards:** None

**Vehicle 1** Car, travelling from E to W was reversing on the main carriageway. The vehicle was not at, or within 20M of a junction. The male driver aged 82 lived in ST14 had regularly travelled through the site before.

**Casualty 1** (Vehicle 1) A female pedestrian aged 25 suffered a slight injury9.

**Casualty 2** (Vehicle 1) A male pedestrian aged 02 suffered a slight injury9.

**Contributory Factors**

Vehicle 1 Failed to look properly



## Appendix B

### Carter's Square Car Park Access Roundabout

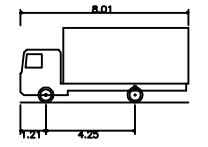
Existing Roundabout Swept Path Analysis

Proposed Roundabout Layout

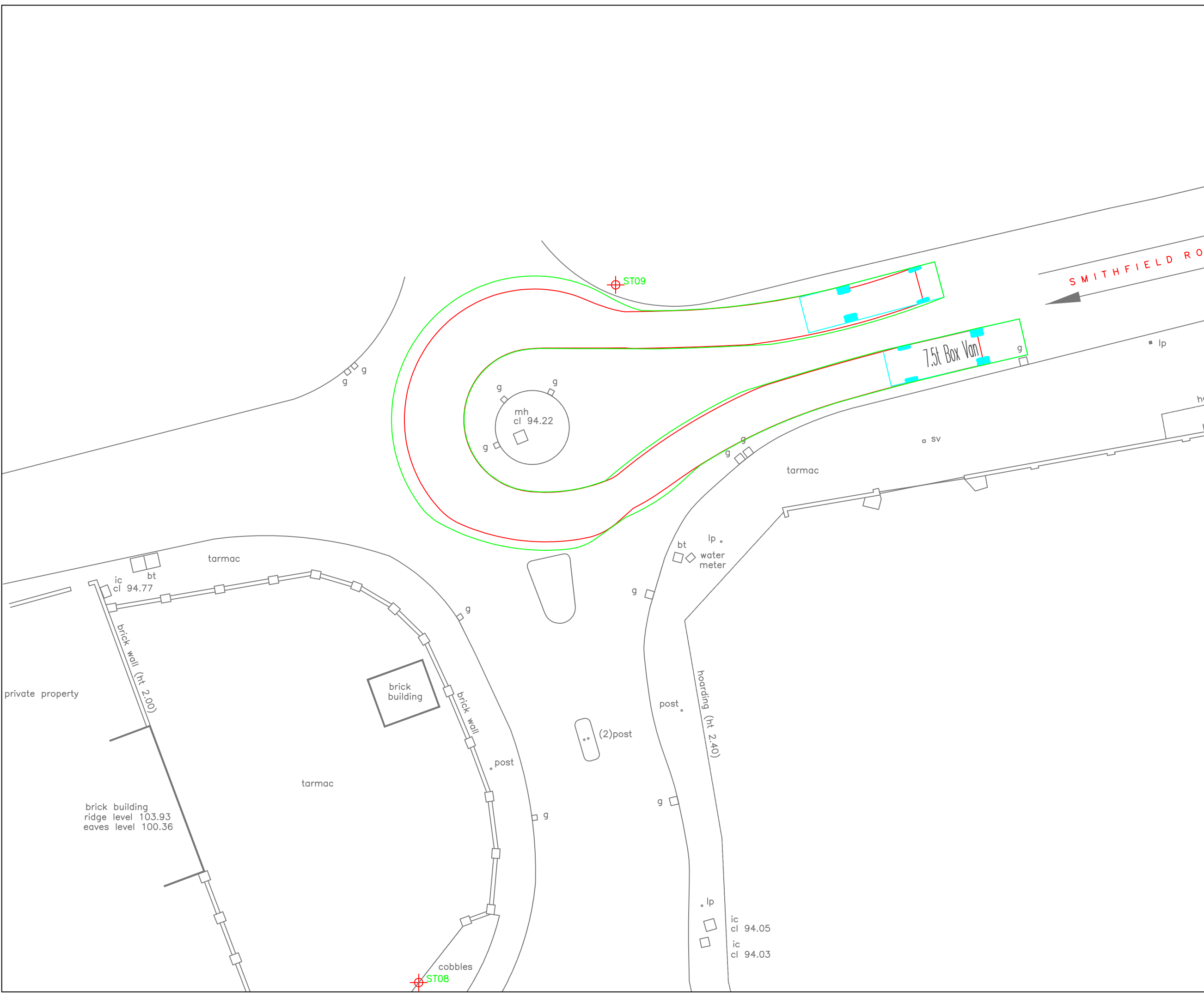
Proposed Roundabout – Refuse Vehicle Swept Path Analysis

Proposed Roundabout Layout – Articulated HGV Access Swept Path Analysis

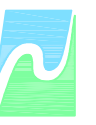




7.5t Box Van	8.010m
Overall Length	2.100m
Overall Width	3.550m
Overall Body Height	0.351m
Min Body Ground Clearance	2.064m
Track Width	4.00 sec
Lock to Lock Time	7.400m
Kerb to Kerb Turning Radius	



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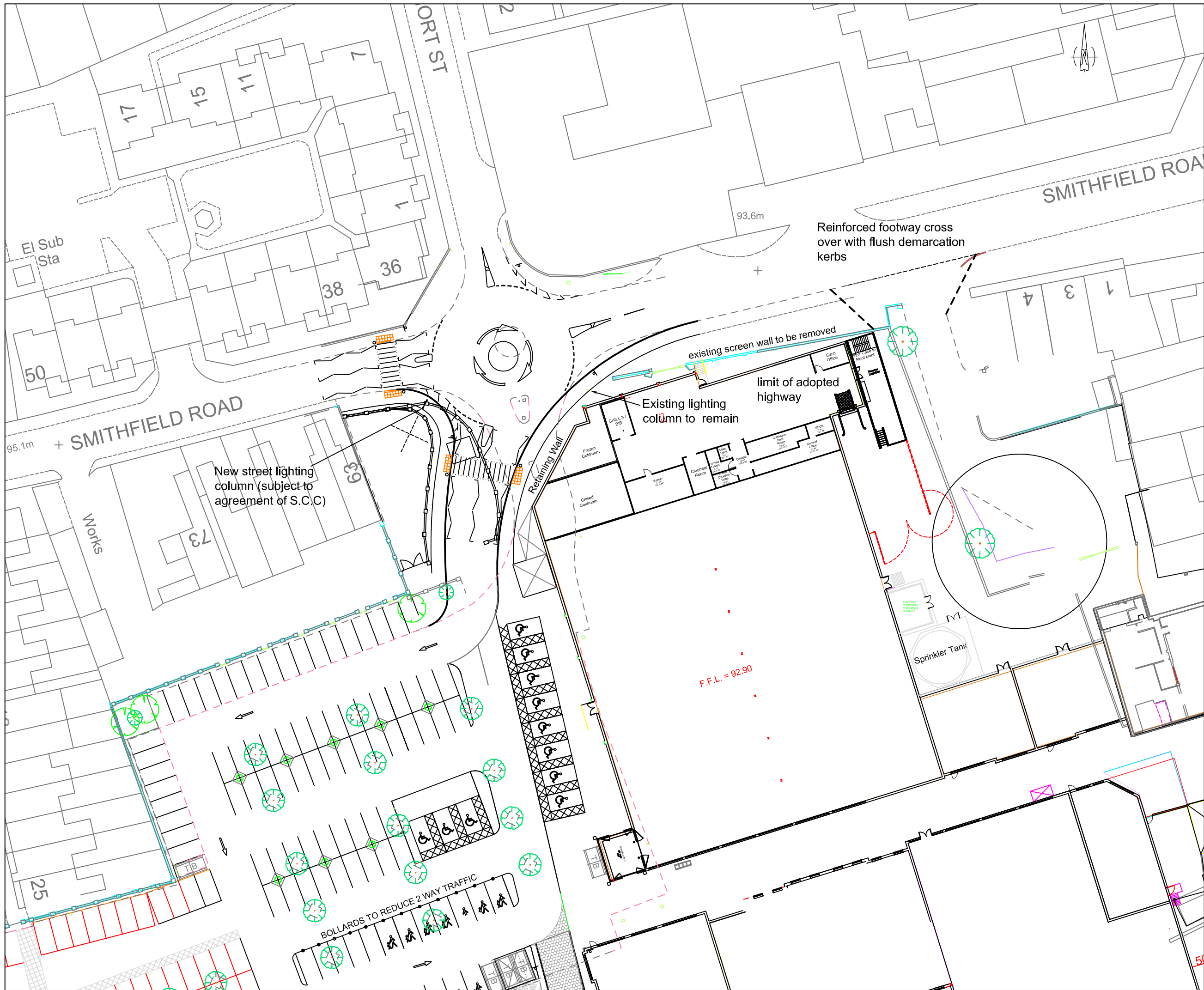
**Client**  
 -

**Project**  
 Uttoxeter Cattle Market

**Drawing**  
 Existing Roundabout  
 Swept path Analysis  
 7.5 ton Box Van

**Drawn by** JL **Date:** March 11 **Scale:** 1:500 @ A1

**Drawing No.** 722-10 **Revision**



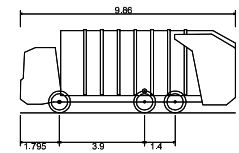
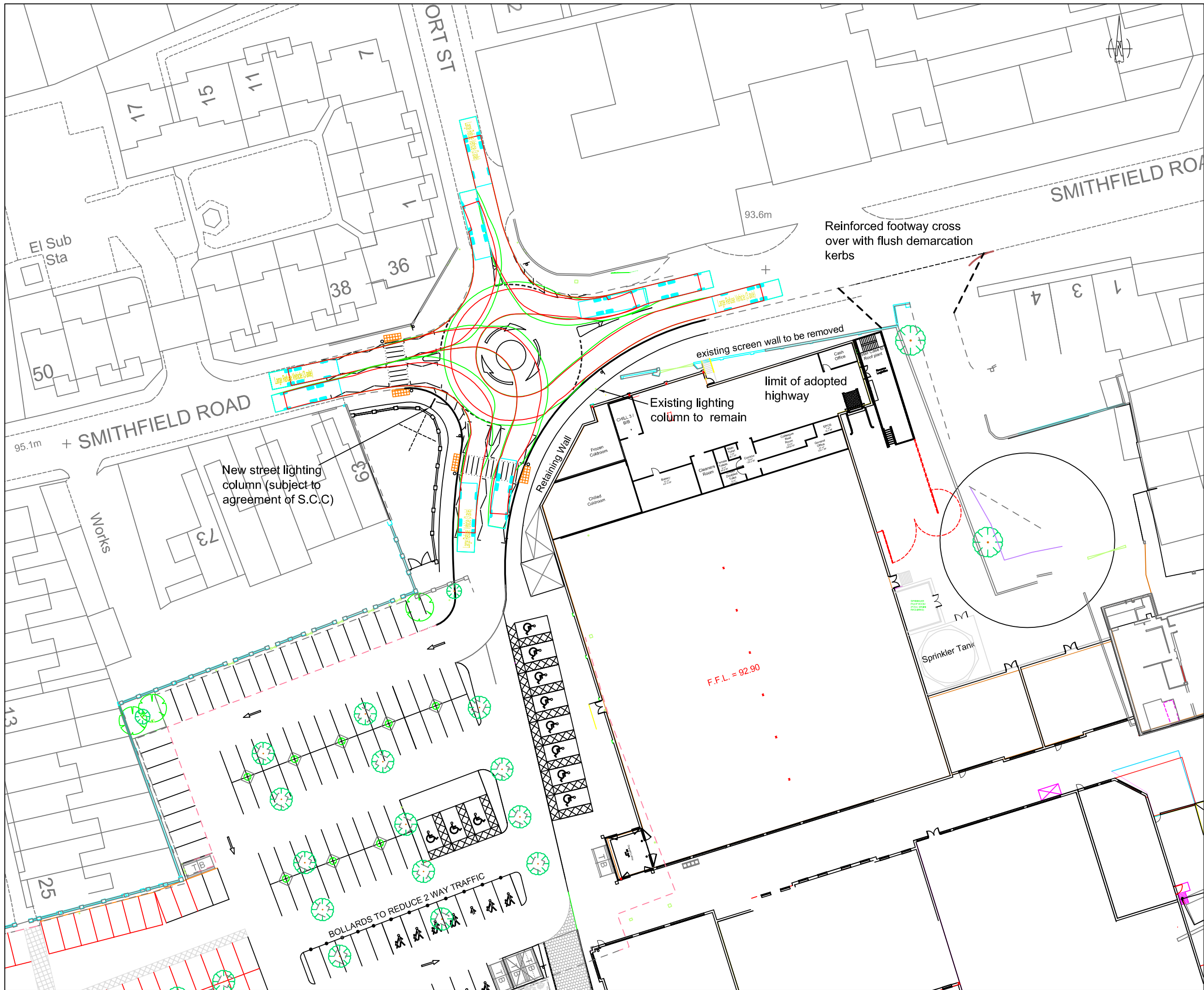
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Client  
**Lingfield (Uttoxeter)**

Project  
**Carter's Square, Uttoxeter**

Drawing  
**Proposed Car Park  
 Entrance -  
 Mini-Roundabout**

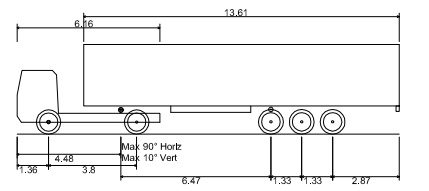
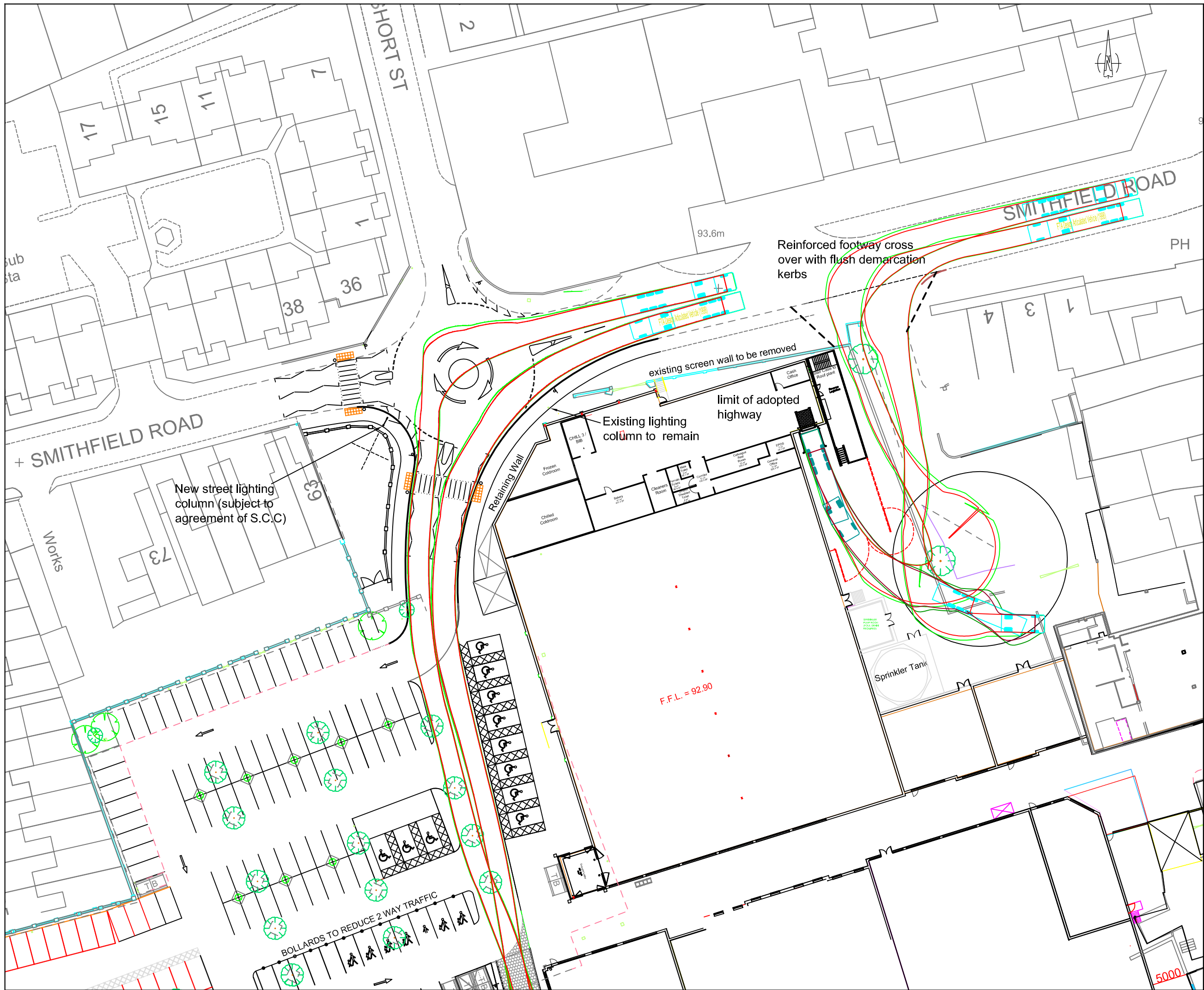
Drawn by JL	Date: March 11	Scale: 1:500 @ A3
Drawing No. 722-101	Revision	



Large Refuse Vehicle (3 axle)  
 Overall Length 9.860m  
 Overall Width 3.814m  
 Overall Body Height 3.814m  
 Min Body Ground Clearance 0.366m  
 Track Width 2.450m  
 Lock to Lock Time 4.00s  
 Kerb to Kerb Turning Radius 9.500m

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Client	Lingfield (Uttoxeter)		
Project	Carter's Square, Uttoxeter		
Drawing	Proposed Mini Swept Path Analysis Large Refuse Vehicle		
Drawn by	JL	Date:	Jan 11
Scale:	1:500 @ A3		
Drawing No.	722-102	Revision	



FTA Design Articulated Vehicle (1998)

Overall Length	16.480m
Overall Width	2.550m
Overall Body Height	3.870m
Min Body Ground Clearance	0.515m
Max Track Width	2.470m
Lock to Lock Time	3.00s
Kerb to Kerb Turning Radius	6.550m

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**Client**  
 Lingfield (Uttoxeter)

**Project**  
 Carter's Square, Uttoxeter

**Drawing**  
 Proposed Mini Swept Path Analysis  
 16.5m Artic

Drawn by JL	Date: Jan 11	Scale: 1:500 @ A3
Drawing No. 722-103	Revision	



## Appendix C

### Carter's Square Access Roundabout – Stage 1 Road Safety Audit

Road Safety Audit  
Designers Response





**safer roads for everyone**

**Smithfield Road, Uttoxeter**

**Road Safety Audit Stage 1**

**on behalf of Phil Jones Associates**

**TMS reference no: 10313**

Vanguard Centre, University of Warwick Science Park,  
Sir William Lyons Road, Coventry CV4 7EZ

---

## Smithfield Road, Uttoxeter

### Road Safety Audit Stage 1

---

#### 1. Introduction

- 1.1 This report describes a Stage 1 Road Safety Audit carried out on modifications to an exiting mini roundabout on Smithfield Road, Uttoxeter, on behalf of Phil Jones Associates. The audit was carried out on the 3<sup>rd</sup> of April 2012 in the offices of TMS Consultancy.
- 1.2 The audit team members were as follows:-
- Darren Newbold - BSc (Hons), MCIHT, MSoRSA  
Engineer, TMS Consultancy
- Robert Cycles - BSc (Hons), MCIHT, MSoRSA  
Senior Road Safety Consultant, TMS Consultancy
- 1.3 The audit comprised an examination of the drawing and other information relating to the scheme supplied by the design office, which is listed in **Appendix A**. The site was visited by the Audit Team on the 3<sup>rd</sup> of April 2012. The weather was cloudy and dry. Traffic flows were light. Pedestrian and cycle flows were moderate.
- 1.4 The terms of reference of the audit are as described in HD 19/03. The team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria.
- 1.5 All of the problems described in this report are considered by the audit team to require action in order to improve the safety of the scheme and minimise accident occurrence. The locations of specific problems are referenced on the plan in **Appendix B**.
- 1.6 The scheme consists of modifications to an exiting mini roundabout on Smithfield Road, Uttoxeter, including the provision of two zebra crossings across on two of the arms.

## 2. Items resulting from this Stage 1 Audit

### 2.1 PROBLEM

#### Location – Smithfield Road (W) – Zebra Crossing

#### Summary: Potential hazard to pedestrians

The south side of the zebra crossing is adjacent to a narrowing in the footway (where a property boundary wall protrudes into the footway). Pedestrians congregating at the crossing point may restrict footway width for passing pedestrians, a problem in particular to those with visual and mobility impairments.

In addition, inter-visibility to and from the southern side of the proposed zebra crossing (particularly between pedestrians and drivers exiting from the car park) is restricted due to the boundary wall. Poor inter-visibility may lead to vehicle to pedestrian conflict.



#### RECOMMENDATION

The zebra crossing should be relocated eastwards towards the mini roundabout so that it is as far away from the footway pinch-point and creates greater inter-visibility with road users at the car park give way line.

## 2.2 PROBLEM

### **Location – Smithfield Road (W) – Zebra Crossing**

#### **Summary: Potential darkness related vehicle to pedestrian conflict**

There is no existing street lighting in the vicinity of the proposed zebra crossing on Smithfield Road (W). Poor illumination during darkness and adverse weather conditions of the crossing may result in vehicle to pedestrian conflict.

#### **RECOMMENDATION**

At detailed design stage, lighting should be reviewed and improved as necessary at the zebra crossing.

## 2.3 PROBLEM

### Location – Smithfield Road (W) – Zebra Crossing

#### Summary: Potential vehicle to pedestrian conflict

There is existing high friction anti-skid surfacing (HFS) on Smithfield Road eastbound approach to the mini-roundabout. The HFS is deteriorating and will pass straight through the zebra crossing. If the buff coloured surfacing is to be retained, the stop line of the zebra crossing will be inconspicuous to drivers and the quality of the HFS may reduce braking efficiency for vehicle on approach. Both issues may result in vehicle overshoot conflicts with pedestrians.



## RECOMMENDATION

At detailed design stage it should be confirmed if the HFS is to be retained and renewed. If so, the buff coloured surfacing should be terminated at the zebra crossing stop line and a charcoal coloured surface provided between the stop line and the zebra crossing. Charcoal HFS should then be provided beyond the crossing to the roundabout to differentiate the two features to drivers.

## 2.4 PROBLEM

### Location – Car Park Access – Zebra Crossing

#### Summary: Potential vehicle to pedestrian conflict

There is an existing uncontrolled pedestrian crossing point over the car park access that utilises the splitter island and it is uncertain whether this is to be removed. Pedestrians who use this crossing point regularly are unlikely to use the zebra crossing as it deviates some distance off their desire line.

In addition, inter-visibility to and from the eastern side of the proposed zebra crossing (particularly between pedestrians and drivers entering the car park from Smithfield Road (E)) may be restricted if a high wall is provided at the Asda boundary. Poor inter-visibility may lead to vehicle to pedestrian conflict.



## RECOMMENDATION

The zebra crossing should be relocated northwards towards the mini roundabout (closer to the natural pedestrians' desire line) where inter-visibility will also be improved. If the zebra crossing is to be relocated, the existing uncontrolled crossing should be removed and full footway reinstated.



## 2.5 OBSERVATION 1

There appears to be a pedestrian desire line to cross Smithfield Road to the east of the mini roundabout. As part of the works, an uncontrolled pedestrian crossing point should be provided on the eastern arm to cater for the demand (unless pedestrian flows are such that a controlled crossing is justified).

## 2.6 OBSERVATION 2

Visibility to the right for drivers at the give way of Short Street is restricted by the property boundary wall of Nos. 36 and 38 Smithfield Road. Poor visibility may lead to failure to give way, overshoot and pull out type vehicle conflicts at the roundabout. Although acknowledged that this is an existing issue, the feasibility of pulling forward the give way line to improve visibility should be assessed.



## 2.7 OBSERVATION 3

The parking restrictions on Short Street apply only on Wednesdays. On all other days there is the potential that vehicle parking on Short Street may restrict inter-visibility between pedestrians at the uncontrolled crossing point and southbound drivers on Short Street. Poor inter-visibility may result in vehicle to pedestrian conflict. Although acknowledged that this is an existing issue, the presence of the Asda store may increase the likelihood of vehicle parking on Short Street and may also increase pedestrian movement to the store, making these potential conflicts more likely. The feasibility of extending the double yellow lines on Short Street should be assessed to increase inter-visibility to and from the crossing point.



## 2.8 OTHER ISSUE

At detailed design stage the zebra crossings should be designed with 'L' shaped tactile paving to represent a controlled crossing facility.

### 3. Audit Team Statement

I certify that the terms of reference of the audit are as described in HD 19/03.

#### **Audit Team Leader**

Darren Newbold - BSc (Hons), MCIHT, MSoRSA  
Engineer, TMS Consultancy

Signed .....  .....

Date .....3<sup>rd</sup> April 2012.....

#### **Audit Team Member**

Robert Cycles - BSc (Hons), MCIHT, MSoRSA  
Senior Road Safety Consultant, TMS Consultancy

#### **TMS Consultancy**

Vanguard Centre  
University of Warwick Science Park  
Sir William Lyons Road  
Coventry  
CV4 7EZ



## Appendix A

### List of Drawing Examined:

- Drawing No. Unnumbered Drawing

### Other Information Provided:

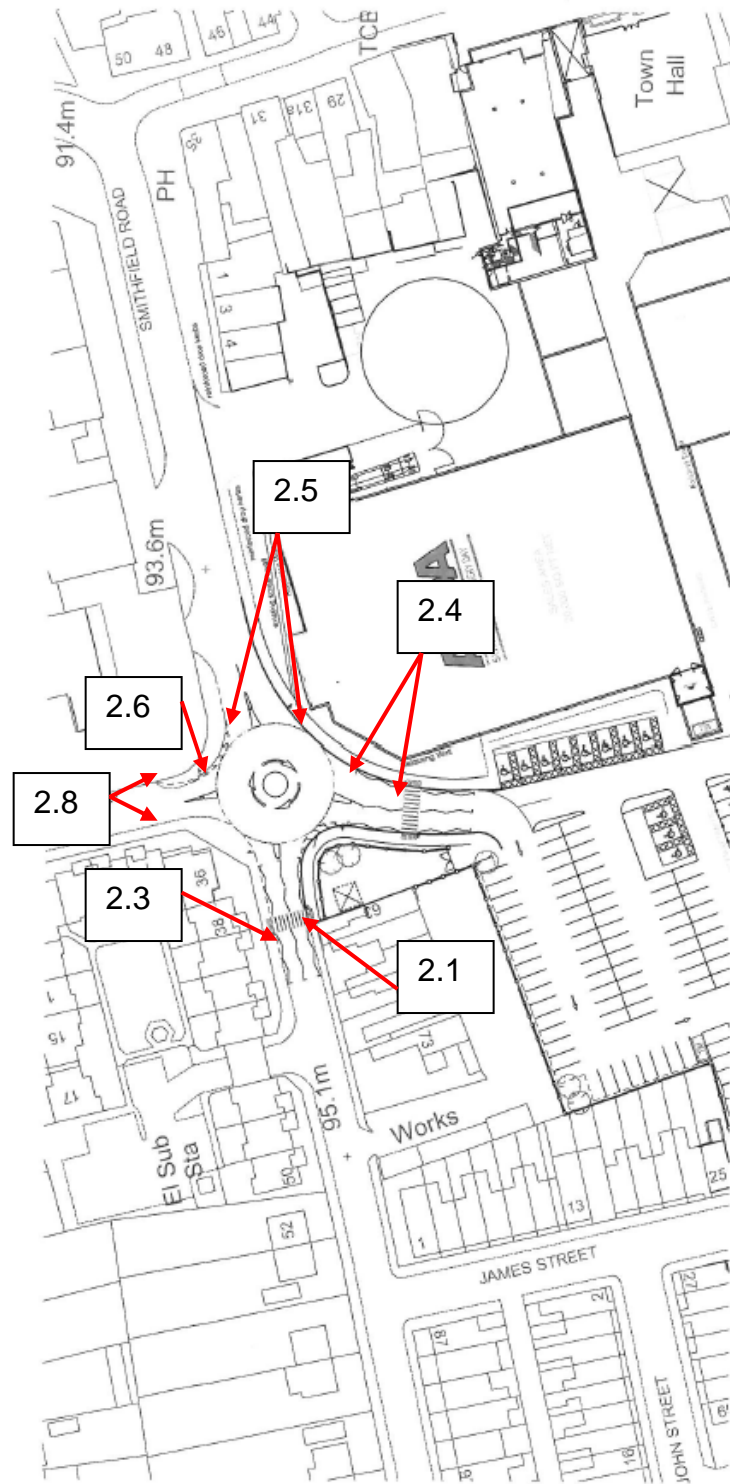
- Road Safety Audit Brief
- Swept Path Analysis



---

## Appendix B

Please refer to the following page for a plan illustrating the locations of the problems identified as part of this audit (location numbers refer to paragraph numbers in the report).



# SAFETY AUDIT FORM – ROAD SAFETY AUDIT STAGE 1

**Audit No: 10313**

**Auditors: DN/RC**

**Scheme: Smithfield Rpad, Uttoxeter**

**Date Audit Completed : 4 April 2012**

Paragraph No. in Safety Audit Report	Problem Accepted (yes/no)	Recommended Measure accepted (yes/no)	Alternative measure (describe)
2.1	Yes	Yes - Crossing is moved closer to ICD.	
2.2	Yes	Yes - See Comment	A lighting column can be provided on the southern side of Smithfield Road adjacent to crossing. A wider review of lighting should not be req'd
2.3	Yes	Yes - See Comment	The extent of resurfacing req'd as part of the scheme is to be agreed with SCC at detailed design.
2.4	Yes	Yes - Crossing moved - scheme will remove existing	

Signed.....  ..... Project Manager

Date..... 10 APRIL 12 .....

Please complete and return to :-

TMS Consultancy  
 Vanguard Centre  
 University of Warwick Science Park  
 Sir William Lyons Road  
 Coventry  
 CV4 7EZ

Please note: the purpose of this form is to provide TMS Consultancy with information from which they can monitor their RSA reports. As such it does not constitute an Exception Report. However, it may be used by the designer as a designer's response to audit, and form part of the Client's process leading to the production of an Exception Report.





## Appendix D

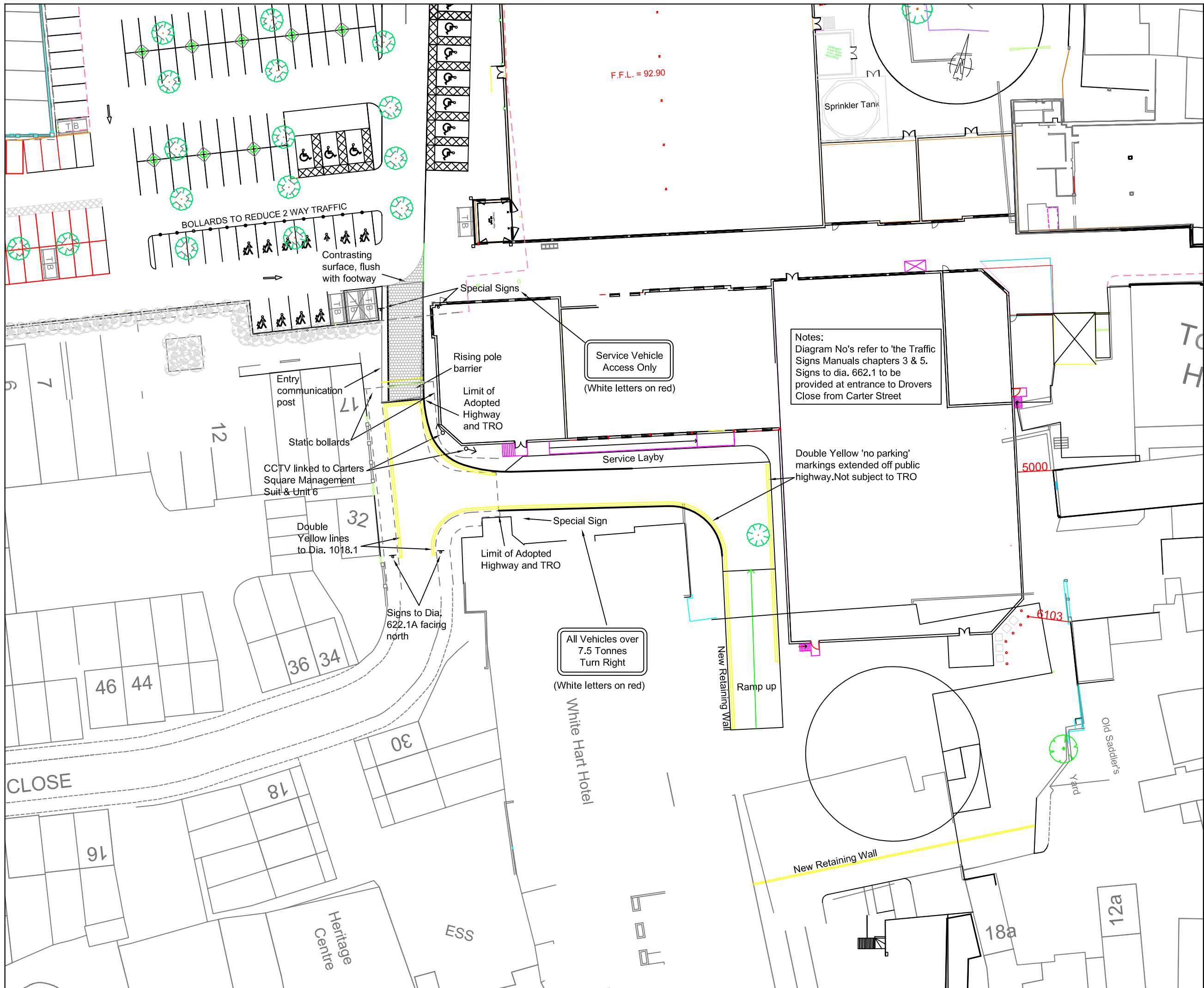
### Servicing Arrangements

Traffic Management Plan

South Yard Plan with Swept Path Analysis 16.5 metre Articulated Lorry

South Yard Swept Path Analysis 15 metre Articulated Lorry





Notes

Diagram No's refer to 'the Traffic Signs Manuals chapters 3 & 5.  
Signs to dia. 622.1A to be provided at entrance to Drivers Close from Carter Street

Notes:  
Diagram No's refer to 'the Traffic Signs Manuals chapters 3 & 5.  
Signs to dia. 662.1 to be provided at entrance to Drivers Close from Carter Street

Double Yellow 'no parking' markings extended off public highway. Not subject to TRO

All Vehicles over 7.5 Tonnes Turn Right  
(White letters on red)

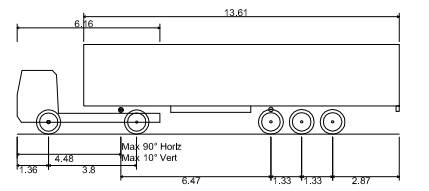
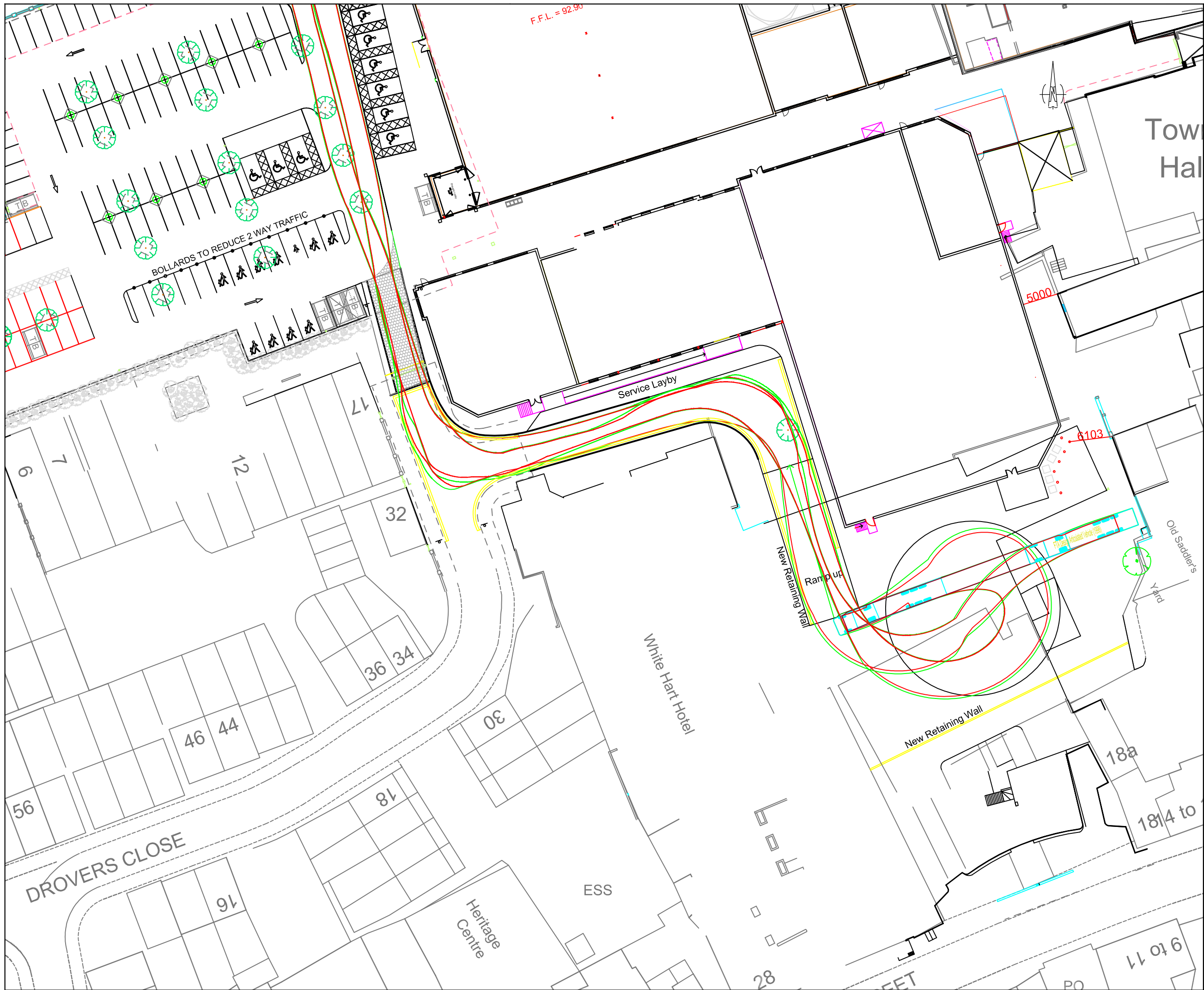
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Client  
**Lingfield (Uttoxeter)**

Project  
**Carter's Square, Uttoxeter**

Drawing  
**Traffic Management of Southern Service Yard**

Drawn by JL	Date: March 11	Scale: 1:500 @ A3
Drawing No. 722-18	Revision A	



FTA Design Articulated Vehicle (1998)	16.480m
Overall Length	2.550m
Overall Width	3.870m
Overall Body Height	0.515m
Min Body Ground Clearance	2.470m
Max Track Width	3.00s
Lock to Lock Time	6.550m
Kerb to Kerb Turning Radius	

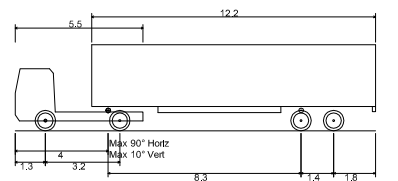
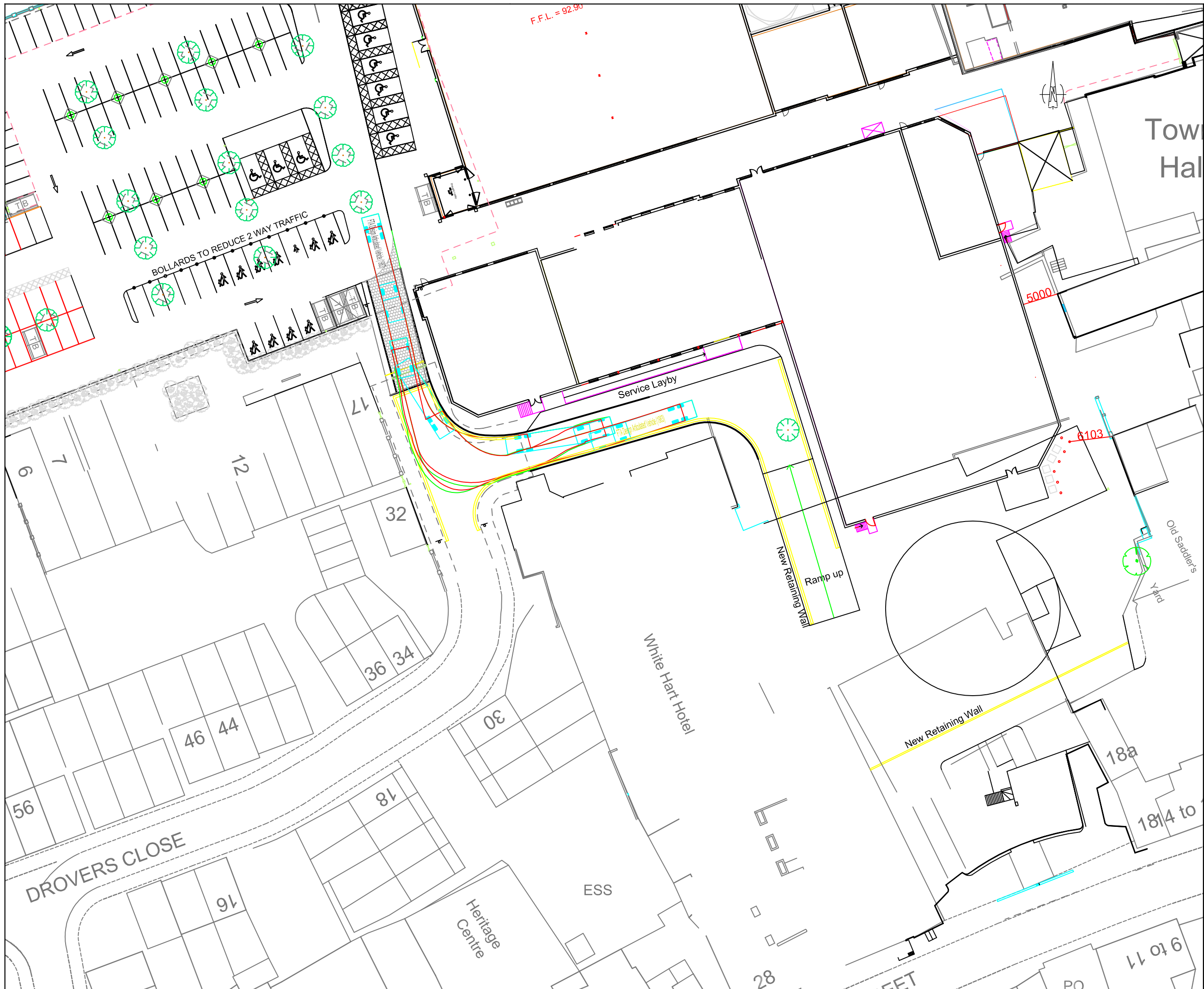
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 www.philjonesassociates.co.uk

**Client**  
 Lingfield (Uttoxeter)

**Project**  
 Carter's Square, Uttoxeter

**Drawing**  
 Proposed Southern Delivery Area. Swept Path Analysis  
 16.5m Artic

Drawn by JL	Date: Jan 11	Scale: 1:500 @ A3
Drawing No. 722-105	Revision	



FTA Design Articulated Vehicle (1983)	15.500m
Overall Length	2.500m
Overall Width	3.695m
Overall Body Height	0.427m
Min Body Ground Clearance	2.500m
Track Width	6.00s
Lock to Lock Time	6.750m
Kerb to Kerb Turning Radius	

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 acmh@philjonesassociates.co.uk  
 www.philjonesassociates.co.uk

**Client**  
 Lingfield (Uttoxeter)

**Project**  
 Carter's Square, Uttoxeter

**Drawing**  
 Proposed Southern Delivery Area. Swept Path Analysis  
 15.5m Artic (FTA 1983)

Drawn by JL	Date: Jan 11	Scale: 1:500 @ A3
Drawing No. 722-106	Revision	





## **Carter's Square, Uttoxeter**

### **North and South Service Yards - Traffic Management Plan**

**Date: April 2012**

#### **1. STATUS OF THE PLAN**

1.1 This traffic management plan (TMP) sets out the arrangements for the management of access by vehicles servicing the Carter's Square development. In addition to instructions designed to manage service vehicle traffic associated with the Carter's Square development this document also describes traffic management devices within the development and on the public highway, which have been devised to ensure that the impact of service traffic on residents and users of Carter's Square is minimised.

1.2 The TMP is applicable to all service vehicles and service operatives. All direct suppliers are also to be made aware of the measures and controls within the TMP.

1.3 Compliance and implementation of the TMP will be monitored by the individual store managers.

1.4 The Table in Appendix B sets out the responsibilities for the use and management of the service yards. This TMP is to be made available to all store managers and store staff involved in servicing, and to delivery vehicle drivers.

## 2. ACCESS ROUTES

2.1 There are two Service Yards:

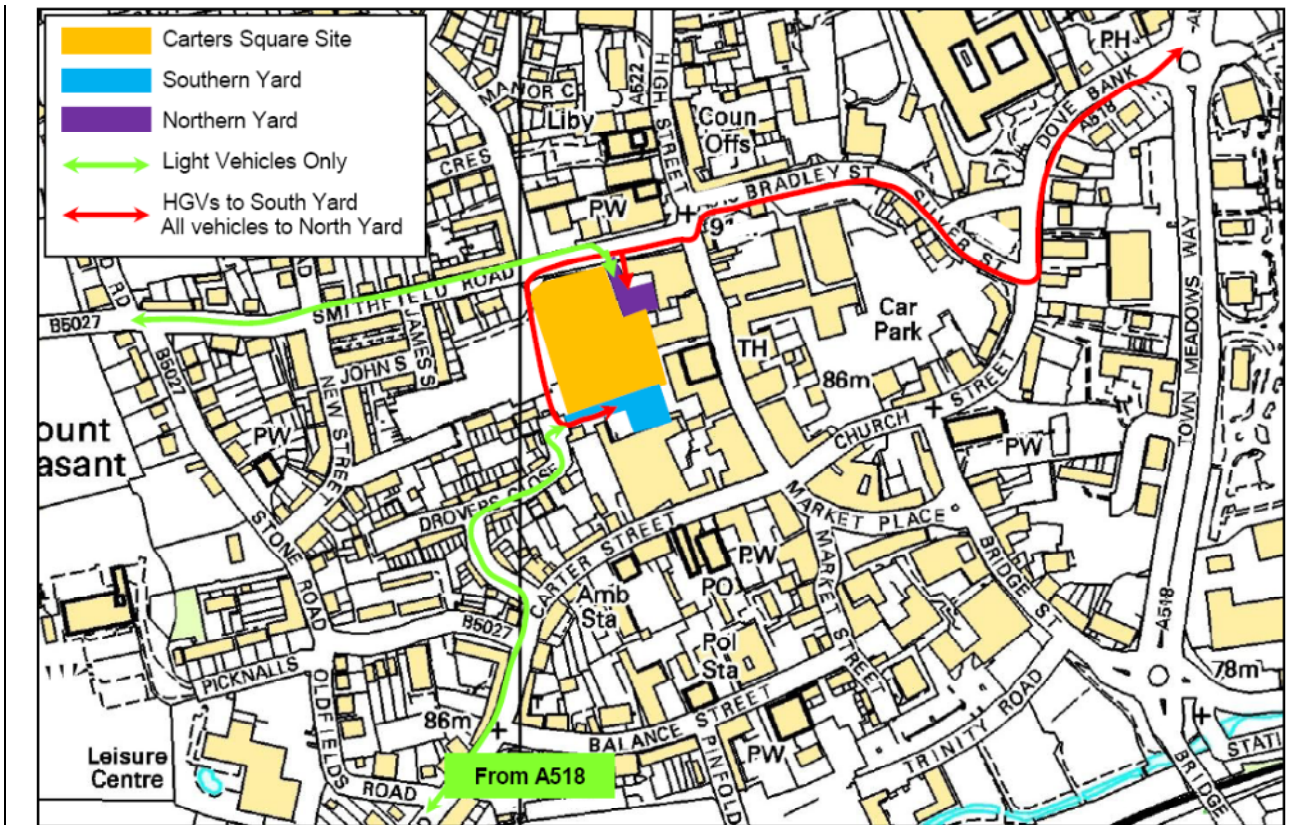
- South Yard, serving the Primary Care Trust's medical centre and retail units on the southern side of the shopping mall and the White Hart Hotel.
- North Yard serves the food store and shops on the northern side of the shopping mall and businesses on High Street and Smithfield Road.

2.2 Figure 2.1 shows the approach and departure routes to be used by all vehicles servicing the Carter's Square development. Routes shown in red apply to all vehicles over 7.5 tonnes gross weight and must be complied with.

2.3 Routes in green are indicative approaches to the North and South Yards a for light service vehicles (less than 7.5 tonnes gross weight).

Note: While other approach routes for light vehicles are permissible, all light vehicles accessing the South Yard must do so via Carter Street and Drivers Close.

**Figure 2.1 – Access Routes for Service Vehicles**





### 3. SOUTH YARD

3.1 South Yard is situated on land between Carter Street and Carter's Square with access via a short service road from the end of Drovers Close. There are separate routes to South Yard for HGVs and for light vehicles.

- **HGVs:** Approach and depart the site from the east via the A518. The approach route is to be from A522 Dove Bank, Silver Street and Bradley Street to the mini roundabout junction with High Street (Note: access to High Street south is restricted). Taking the second exit from the roundabout, to Smithfield Road, vehicles are to access the site via the mini roundabout approximately 130 metres beyond (access through the Carter's Square car park). This is the only access route to South Yard for service vehicles exceeding 7.5 tonnes gross weight.

In the car park, service vehicles are to pass along the car park frontage of the food store and approach the barrier at the southern end of the car park, signed "Service Vehicle Access Only".

Using the communication point on the right hand side, drivers must announce their arrival to the controller to gain access. Once through the barrier access to South Yard is on the immediate left via a short service road.

On leaving the site HGV drivers are to wait at the end of the service road until the bollards have been lowered by the store staff. Proceeding with caution, all HGVs must turn right and cross into the car park to regain Smithfield Road.

At the mini roundabout all HGVs are to turn right towards the A522/A518.

**Note: Drovers Close is not physically or environmentally suitable for articulated HGVs and is subject to a TRO restricting vehicles exceeding 7.5 tonnes from Carter's Street.**

**Note: The access through the car park crosses a controlled space at the end of the Carter's Square shopping mall, shared with pedestrians and cyclists. The maximum speed for service vehicles through the car park and access into the South Yard is 5 mph and all drivers are to exercise caution whilst using the access.**

**Note: The service road access to the South Yard is from a public highway. All traffic orders are enforceable and must be complied with.**

**Note: All vehicle movements between the car park and South Yard are monitored by CCTV.**

3.2 The plan in Appendix A of this document shows the layout of the access to South Yard and the location of control points for access along with signs and traffic orders on the public highway which restrict vehicles over 7.5 tonnes (gross weight).

- **Light Vehicles:** All service vehicles of less than 7.5 tonnes Gross Weight are to approach and depart the South Yard from Carter Street and Drovers Close (cul-de-sac). Drivers are to note that Drovers Close is a residential cul-de-sac and a through pedestrian and cycle route between Carter Street, Carter's Square and Smithfield Road.

**Note: Light service vehicles are not permitted to access the South Yard from the Smithfield Road access to the car park.**

#### 4. NORTH YARD

4.1 Access to North Yard is off Smithfield Road. The approach route has been devised to minimise the volume of traffic using the section of Smithfield Road between the Carter's Square development and the junction with the B5027 Stone Road. The carriageway on this section of road is narrow, with narrow and no footway in places.

- **HGVs:** Approach and depart the site from the east via the A518. The approach route is to be from the A522 Dove Bank, Silver Street and Bradley Street, to the mini roundabout junction with High Street (Note: access to High Street south is restricted). Taking the second exit from the roundabout, to Smithfield Road, the access to the North Yard is approximately 50 metres beyond, on the left.
- **Light Vehicles:** In addition to the above route, light vehicles may approach the site from the west via the B5027 and Springfield Road.

## **5. SUMMARY OF THE TRAFFIC MANAGEMENT PLAN**

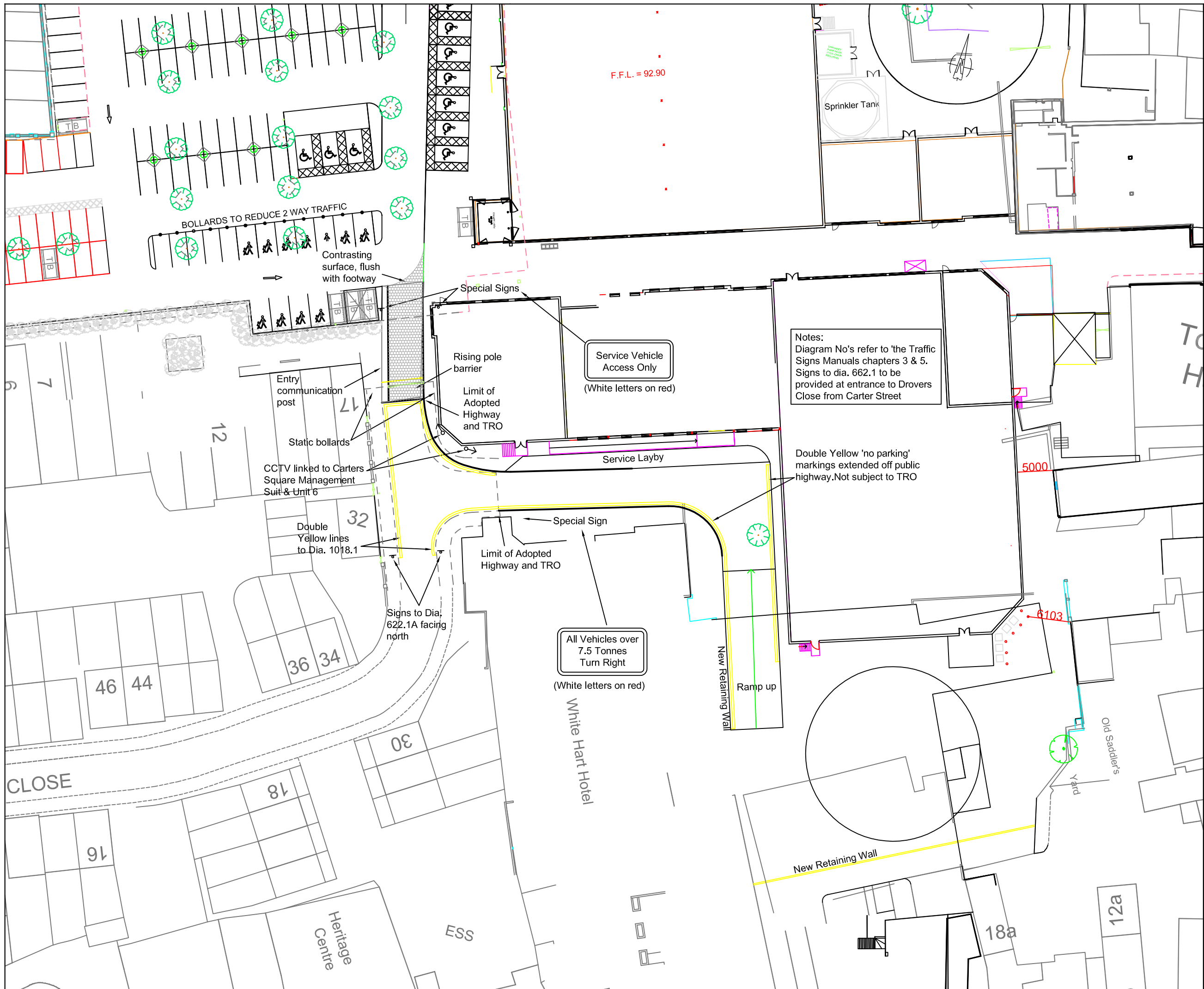
- The TMP is applicable to all service vehicle drivers, Carter's Square store managers and staff involved in servicing;
- Compliance and implementation of the TMP is to be monitored by the individual store managers;
- Approach and departure routes for all HGVs is to be from the east via Smithfield Road and A522/A518. HGV routes shown in Figure 2.1 are to be complied with;
- Approach and departure for HGVs using South Yard is to be through the Carter's Square car park and the controlled access across shared space to the north end of Drovers Close; and
- All light vehicles accessing the South Yard must do so via Carter's Street and Drovers Close.

## **Appendix A**

### **South Yard Access Arrangements**







Notes

Diagram No's refer to 'the Traffic Signs Manuals chapters 3 & 5.  
Signs to dia. 622.1A to be provided at entrance to Drivers Close from Carter Street

Notes:  
Diagram No's refer to 'the Traffic Signs Manuals chapters 3 & 5.  
Signs to dia. 662.1 to be provided at entrance to Drivers Close from Carter Street

Double Yellow 'no parking' markings extended off public highway. Not subject to TRO

All Vehicles over 7.5 Tonnes Turn Right  
(White letters on red)

Service Vehicle Access Only  
(White letters on red)

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Transport Planning Consultants  
The Innovation Centre, 1 Devon Way,  
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Client  
**Lingfield (Uttoxeter)**

Project  
**Carter's Square, Uttoxeter**

Drawing  
**Traffic Management of Southern Service Yard**

Drawn by JL	Date: March 11	Scale: 1:500 @ A3
Drawing No. 722-18	Revision A	





**Appendix B**  
**Table of Actions and Responsibilities**

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**Carter's Square Uttoxeter**  
**Actions and Responsibilities for Management of Servicing**

<b>Actions</b>	<b>Responsible</b>
On the approach to South Yard vehicle radios are to be switched off and are to remain off until loading/unloading has been completed and the vehicle has left Carter's Square/Drovers Close. Radios are not to be operated whilst vehicles are within either North or South Yards.	Service Vehicle Drivers.
Whilst waiting within Carter's Square for access through to Drovers Close and South Yard vehicle engines are to be switched off.	Service Vehicle Drivers.
Reversing alarms are not to be used in either yard during night time servicing (After 23:00 and before 07:00).	Service vehicle drivers.
All loading and unloading of vehicles is to be done with minimal noise.	Carter's Square Store Managers and Service Vehicle Drivers.
In house training on the operation of the access system to the South Yard is to be provided to all Store Managers and Staff of the the units serviced off the South Yard.	Selected Store Managers and Staff.
Instructions on the access to the Carter's Square service yards and the access routine for South Yard are to be provided to all companies and drivers delivering to the site.	Selected Store Managers and Staff .
Regular checks on the operation of the servicing arrangements are to be carried out to ensure that the TMP is being adhered to.	Carter's Square Store Managers.
Quarterly servicing and maintenance checks are to be carried out to ensure that all equipment and signage controlling service access to both yards are in good order.	Carter's Square Store Managers.



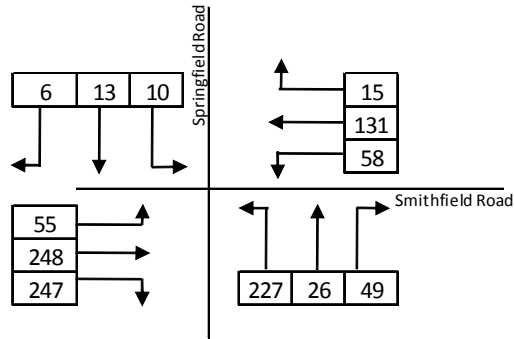
Appendix E  
Traffic Flow Diagrams



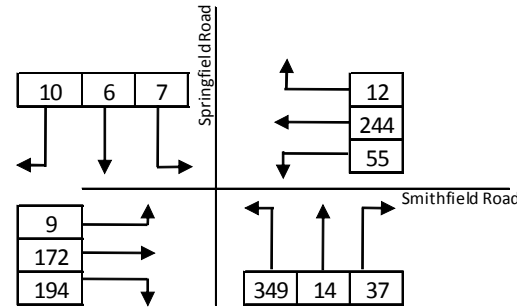
# Carter's Square, Uttoxeter

## Sanderson Traffic Flows - Smithfield Road / Springfield Road Jct

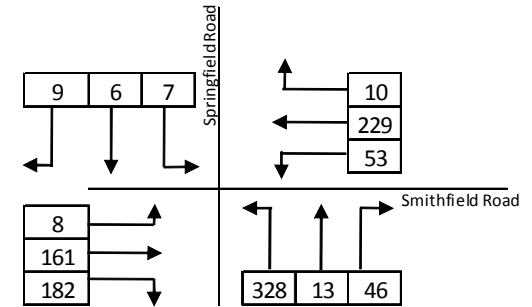
AM Peak Hour 2009



PM Peak Hour 2009



Sat Peak Hour 2009

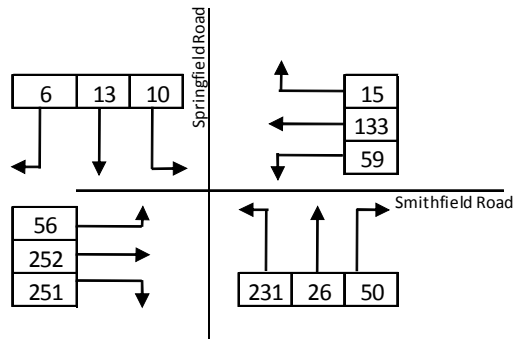


1.017 AM Tempo Growth Factor 2009-2012

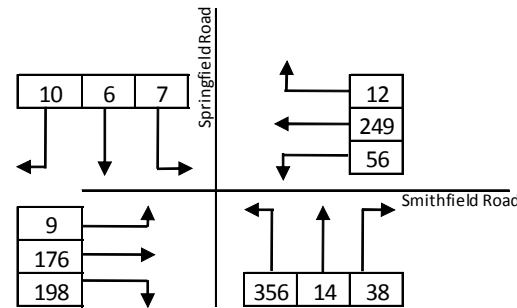
1.021 PM Tempo Growth Factor 2009-2012

1.022 Sat Tempo Growth Factor 2009-2012

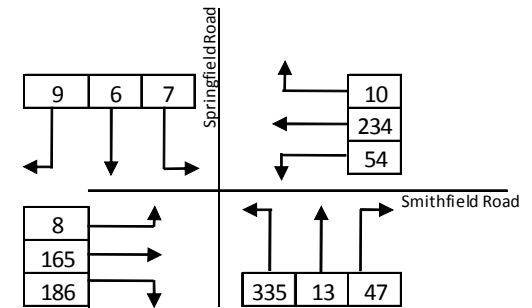
AM Peak Hour 2012



PM Peak Hour 2012

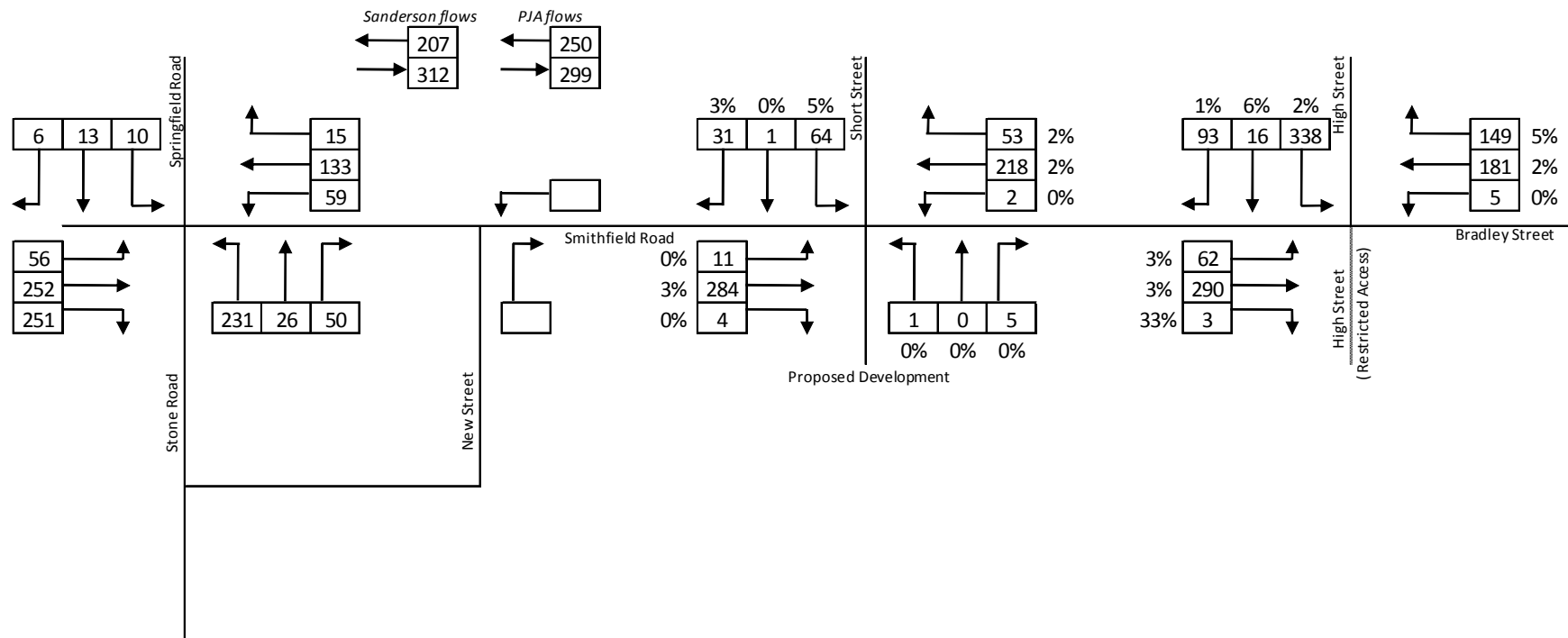


Sat Peak Hour 2012



# Carter's Square, Uttoxeter

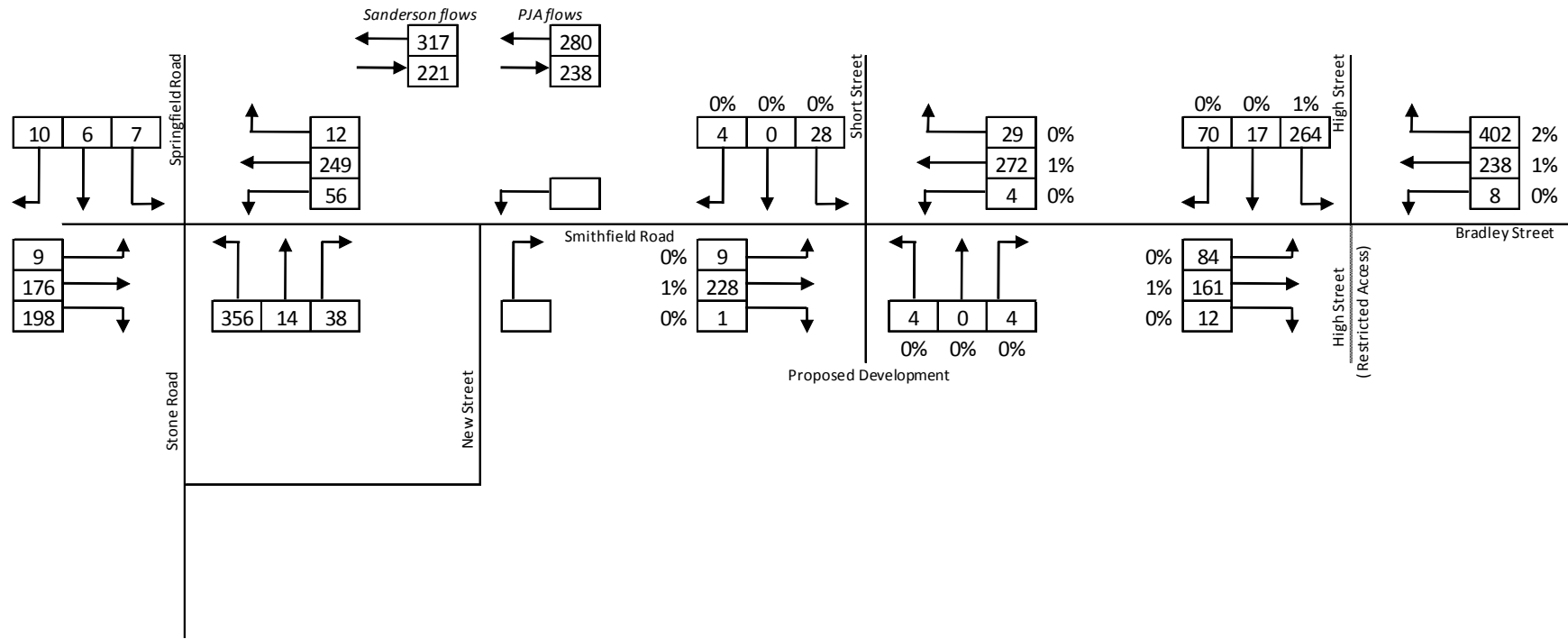
2012 Friday AM Peak Hour (08:15-09:15)





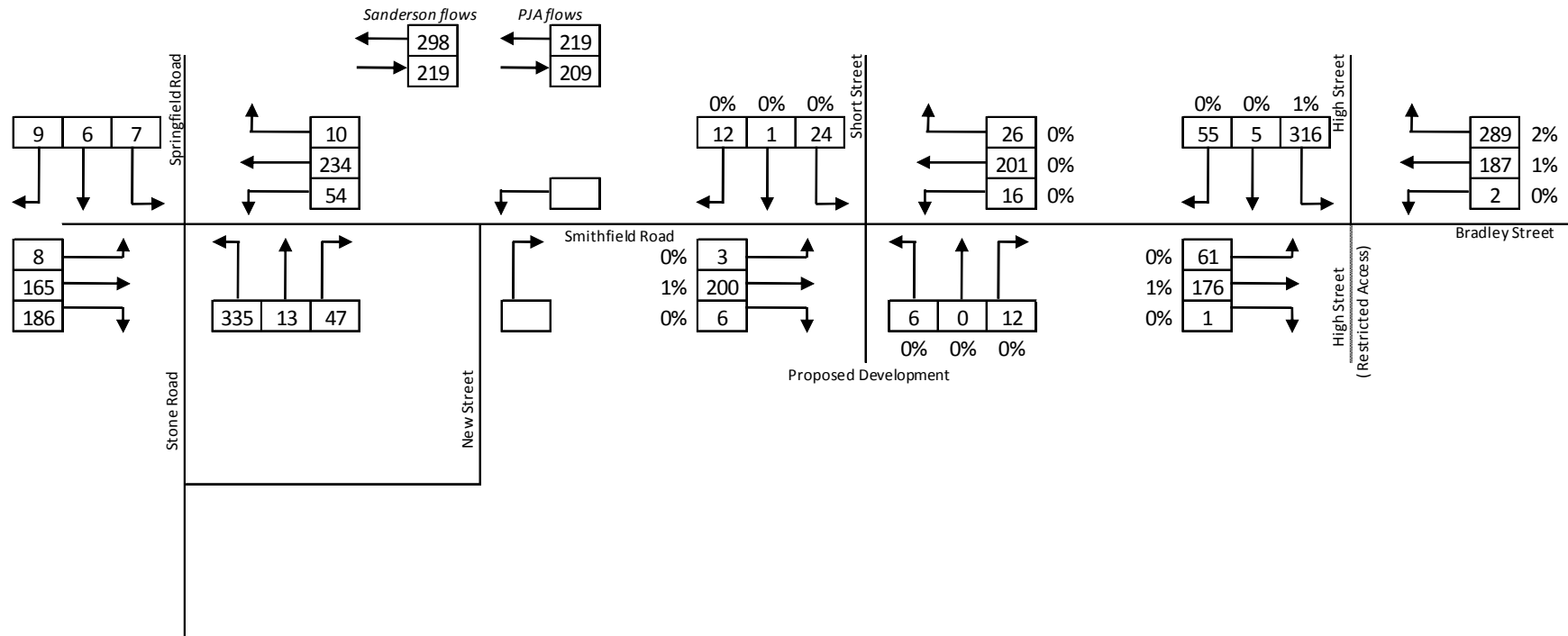
# Carter's Square, Uttoxeter

2012 Friday PM Peak Hour (17:00 - 18:00)



# Carter's Square, Uttoxeter

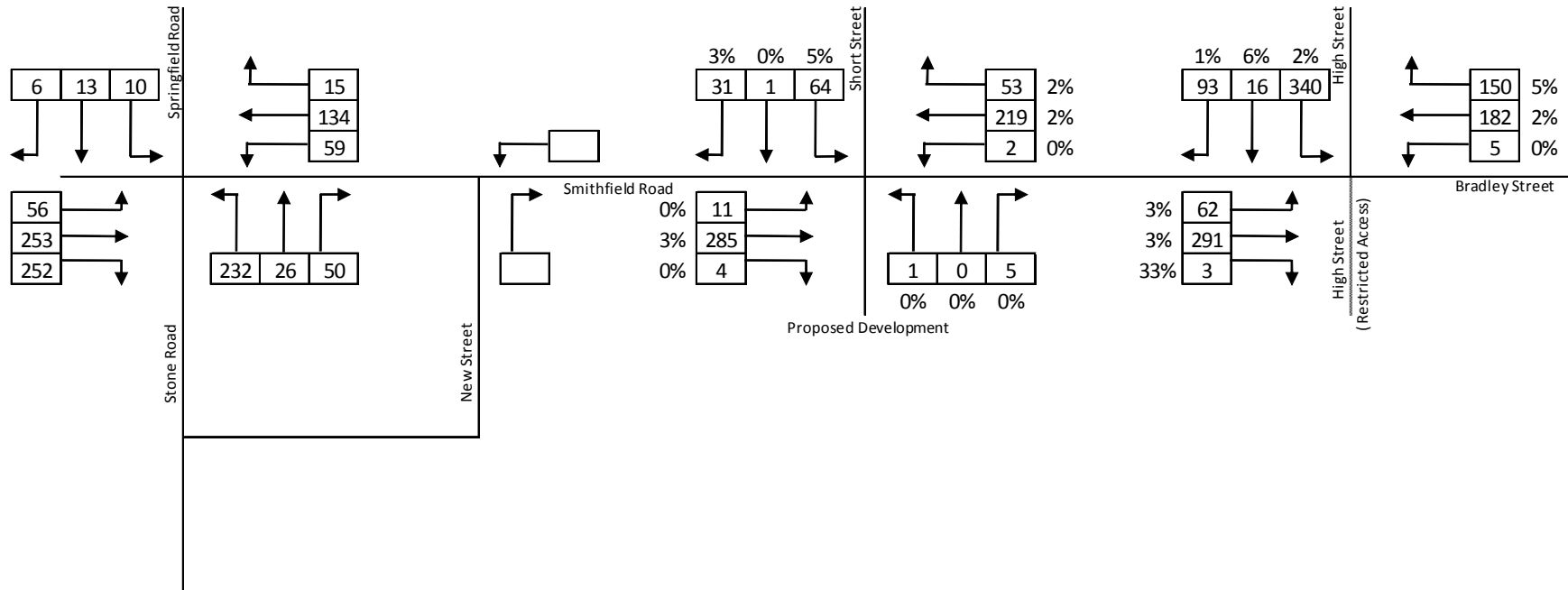
2012 Saturday Peak Hour (12:00 - 13:00)



# Carter's Square, Uttoxeter

2013 Friday AM Peak Hour (08:15-09:15)

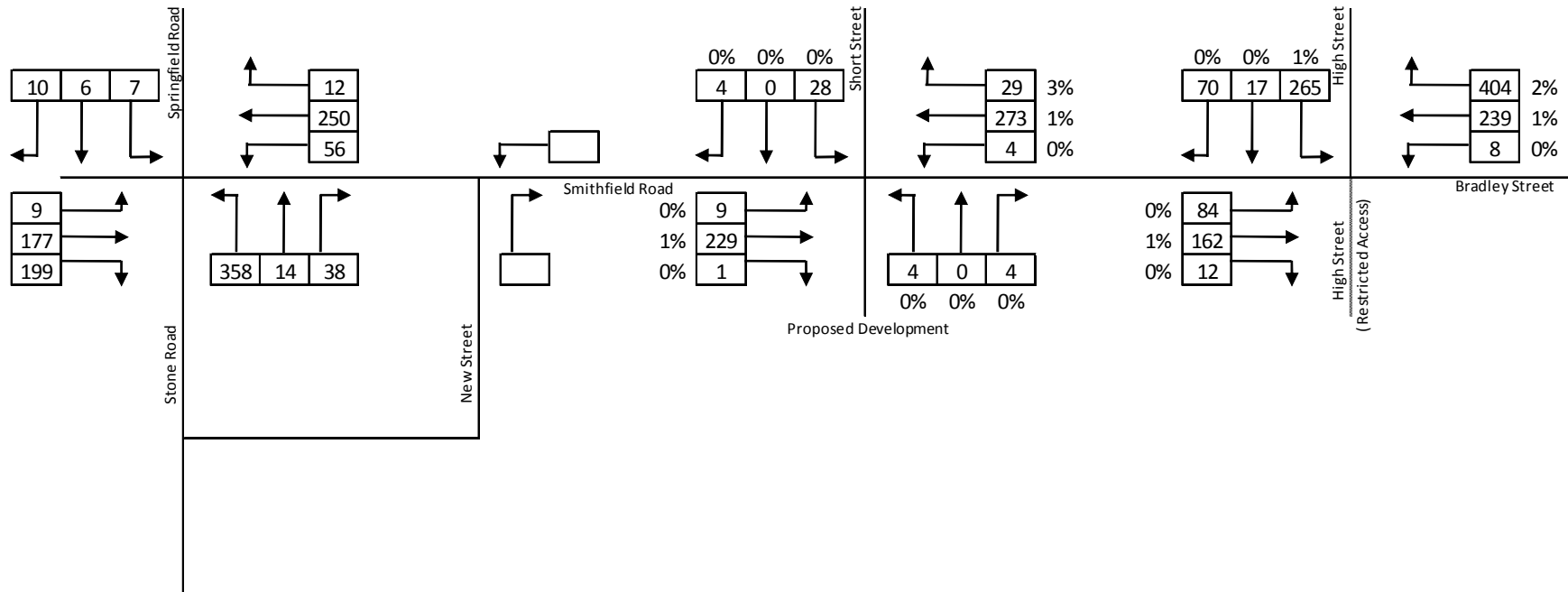
1.00 2012 - 2013 TEMPRO Growth Factor AM Peak



# Carter's Square, Uttoxeter

2013 Friday PM Peak Hour (17:00 - 18:00)

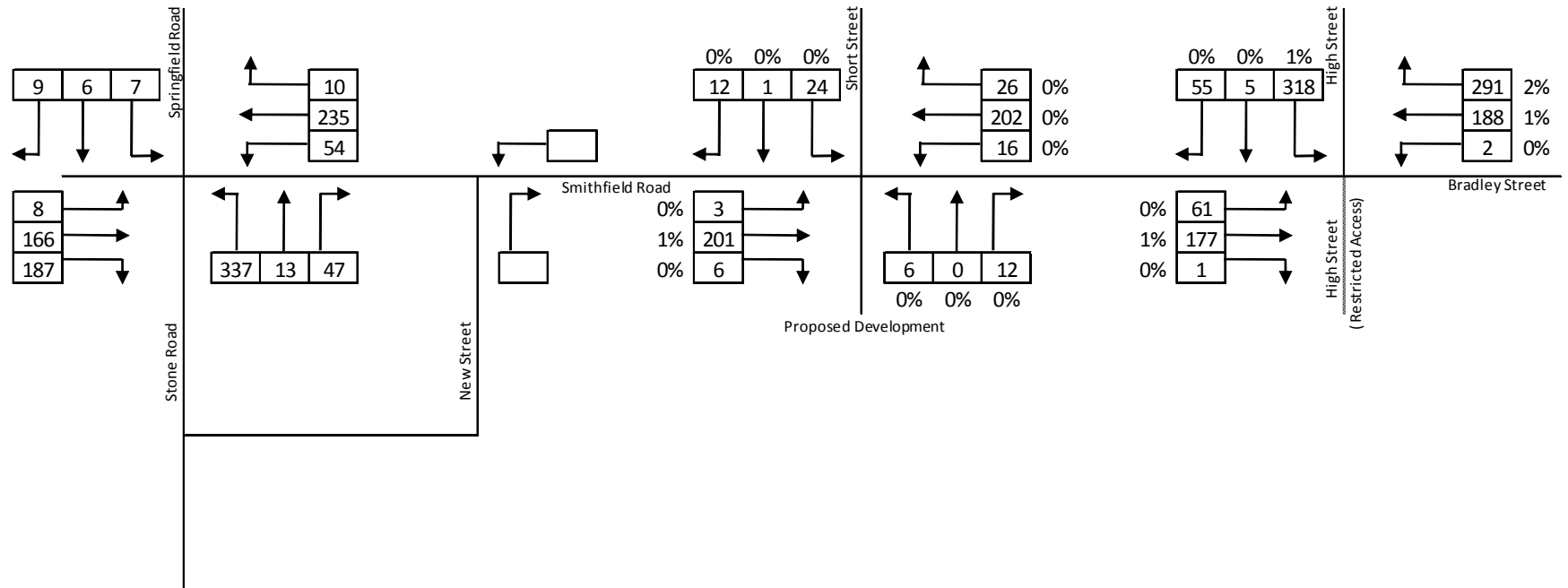
1.01 2012 - 2013 TEMPRO Growth Factor PM Peak



# Carter's Square, Uttoxeter

2013 Saturday Peak Hour (12:00 - 13:00)

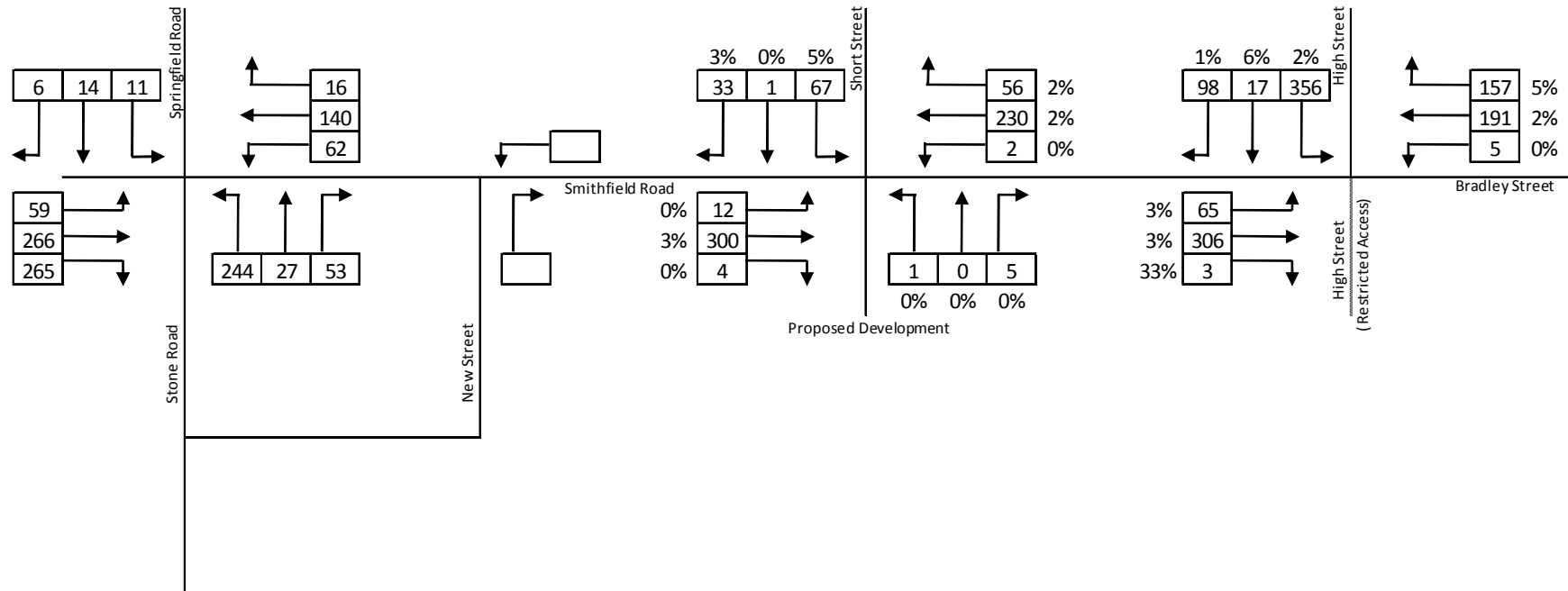
1.01 2012 - 2013 TEMPRO Growth Factor Sat Peak



# Carter's Square, Uttoxeter

2018 Friday AM Peak Hour (08:15-09:15)

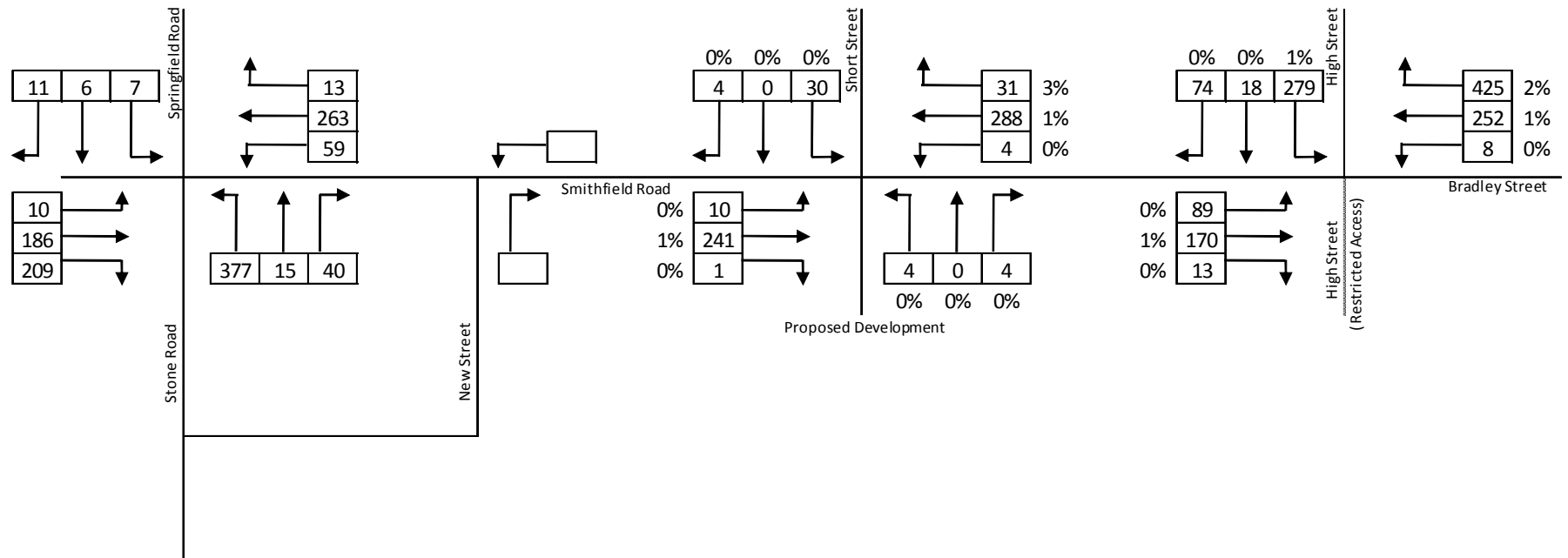
1.05 2013 - 2018 TEMPRO Growth Factor AM Peak



# Carter's Square, Uttoxeter

2018 Friday PM Peak Hour (17:00 - 18:00)

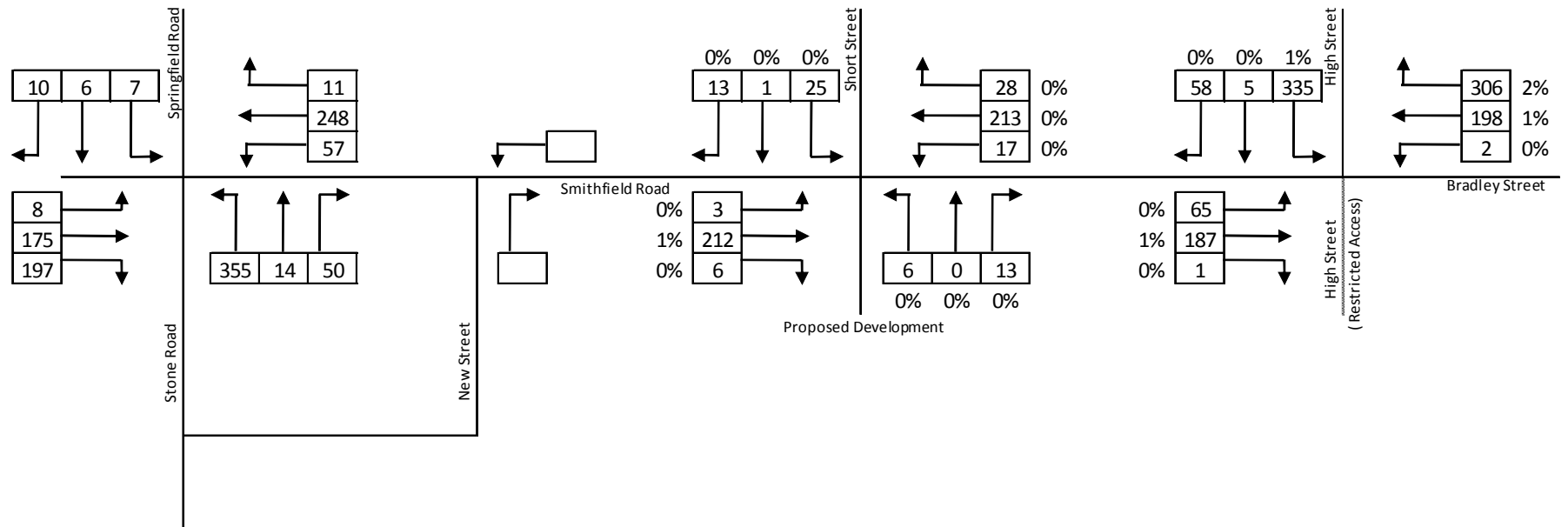
1.06 2012 - 2013 TEMPRO Growth Factor PM Peak



# Carter's Square, Uttoxeter

2018 Saturday Peak Hour (12:00 - 13:00)

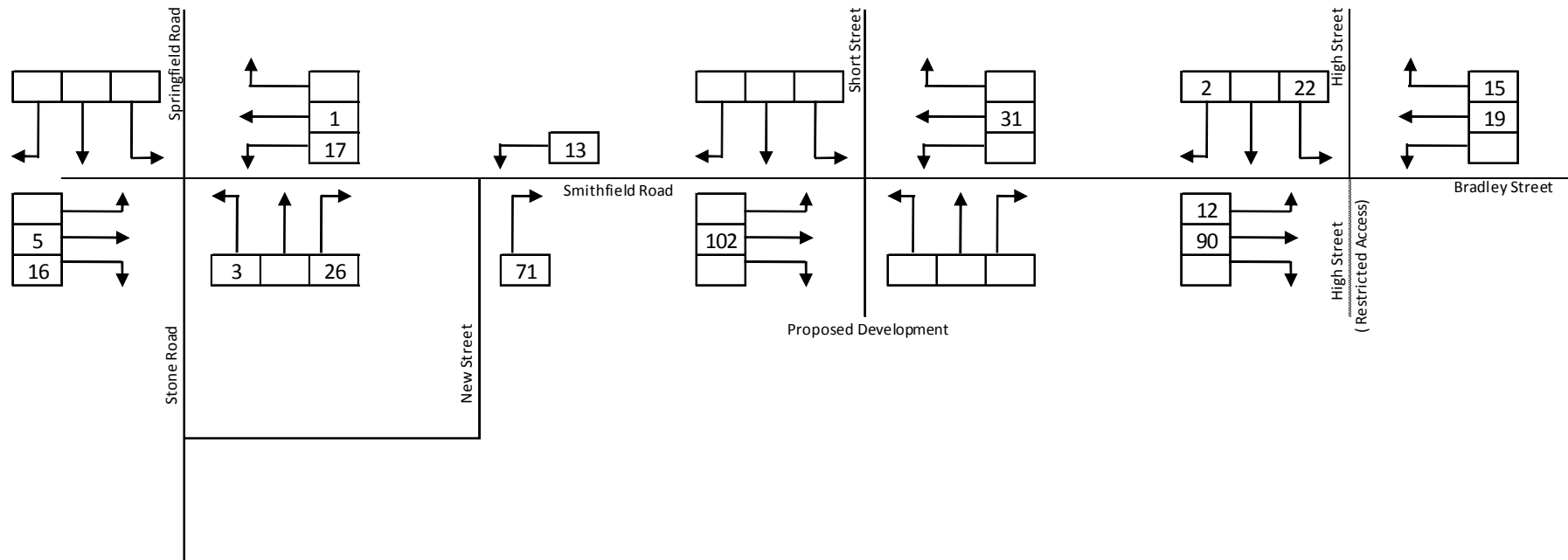
1.06 2012 - 2013 TEMPRO Growth Factor Sat Peak





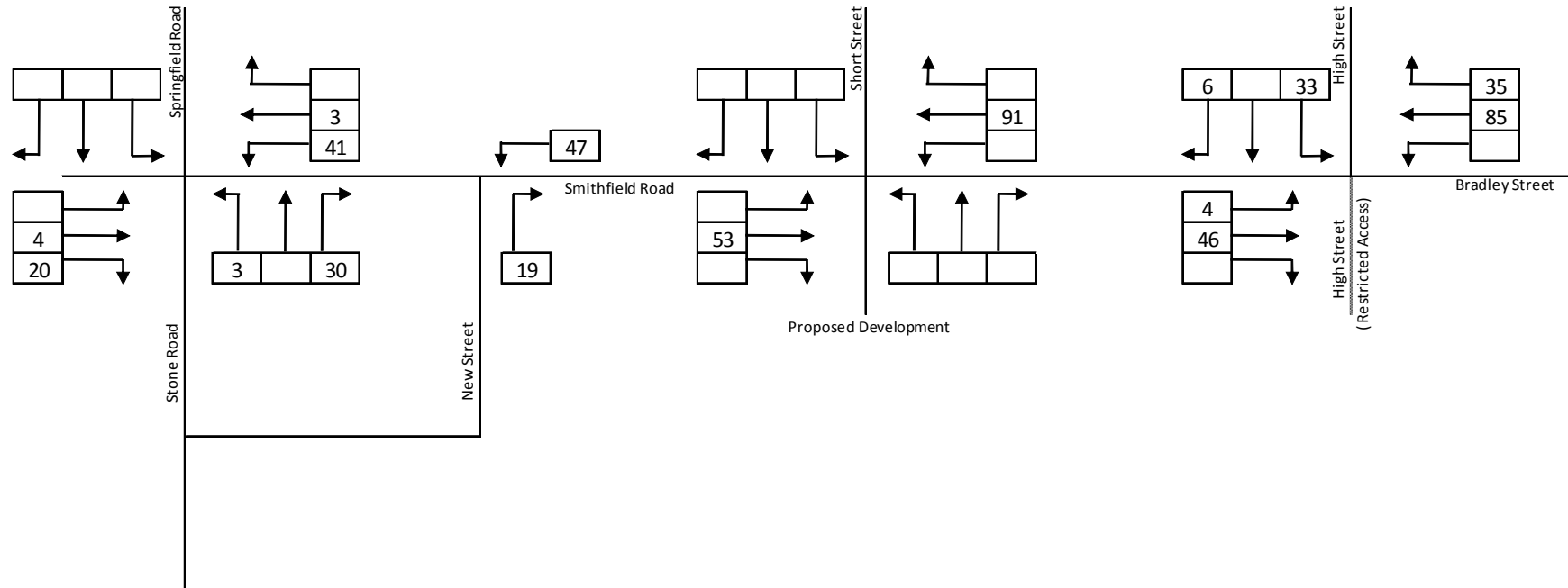
# Carter's Square, Uttoxeter

## Bamford Site Committed Development Traffic - AM Peak



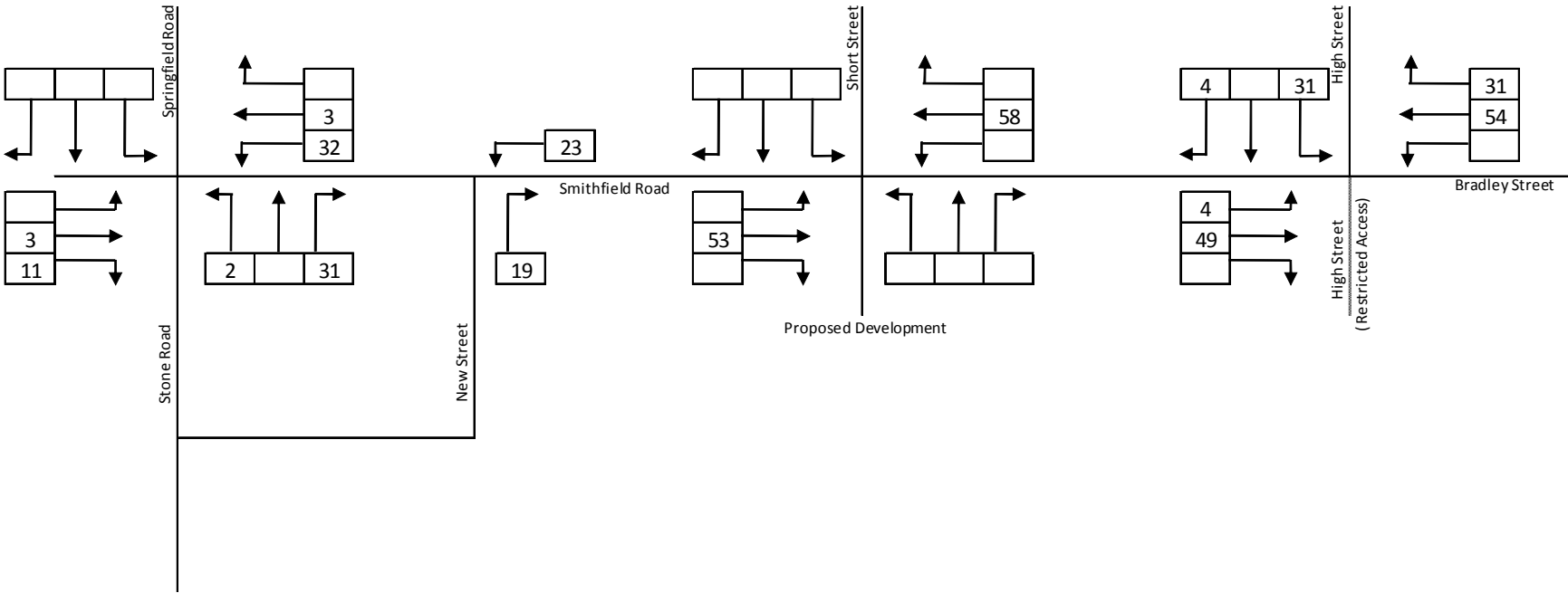
# Carter's Square, Uttoxeter

## Bamford Site Committed Development Traffic - PM Peak



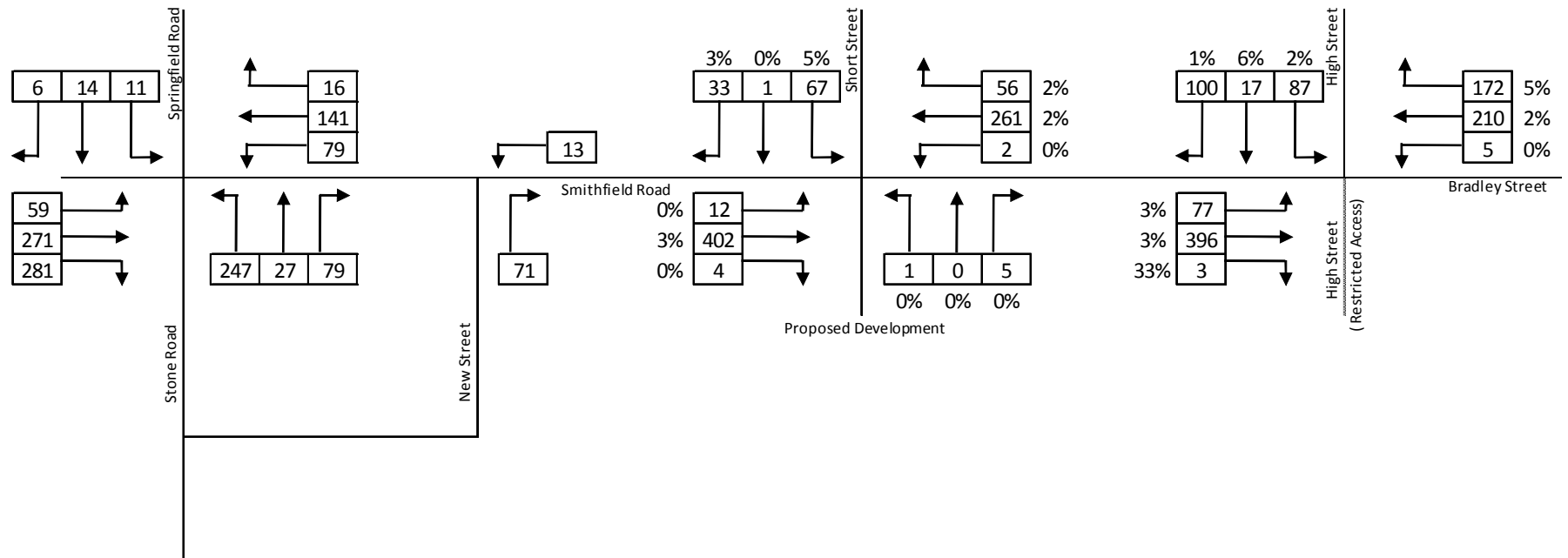
# Carter's Square, Uttoxeter

## Bamford Site Committed Development Traffic - Sat Peak



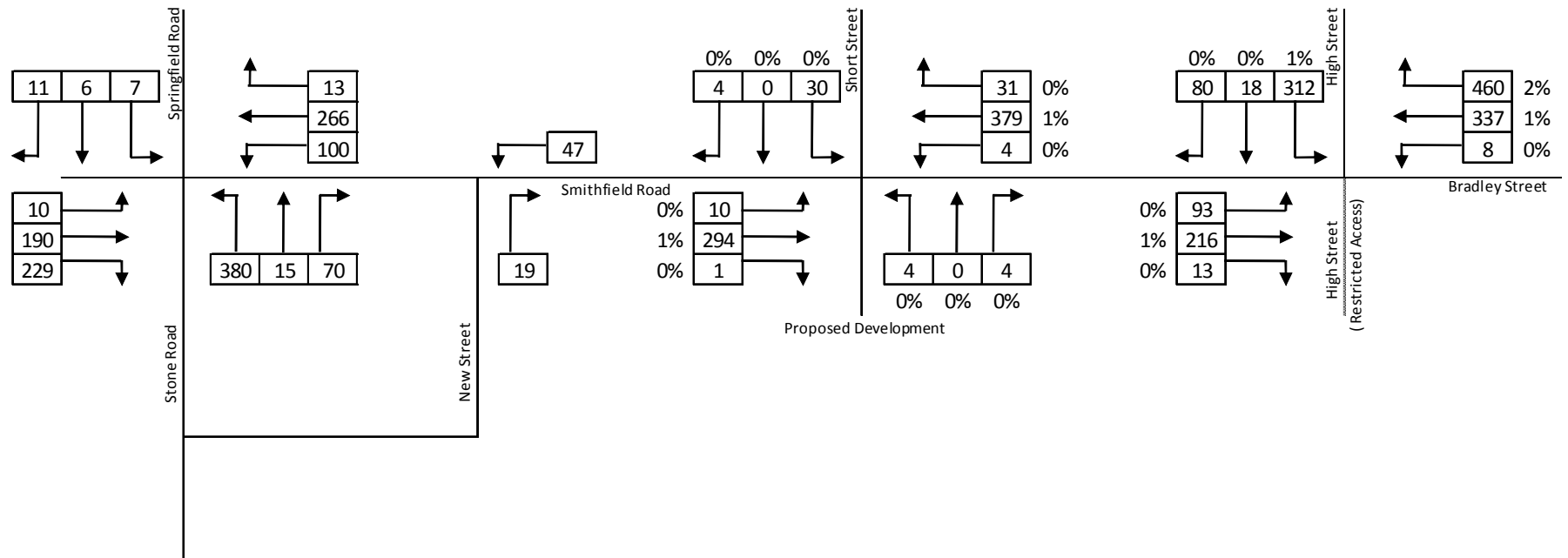
# Carter's Square, Uttoxeter

2018 Base + Committed Development Friday AM Peak Hour (08:15-09:15)



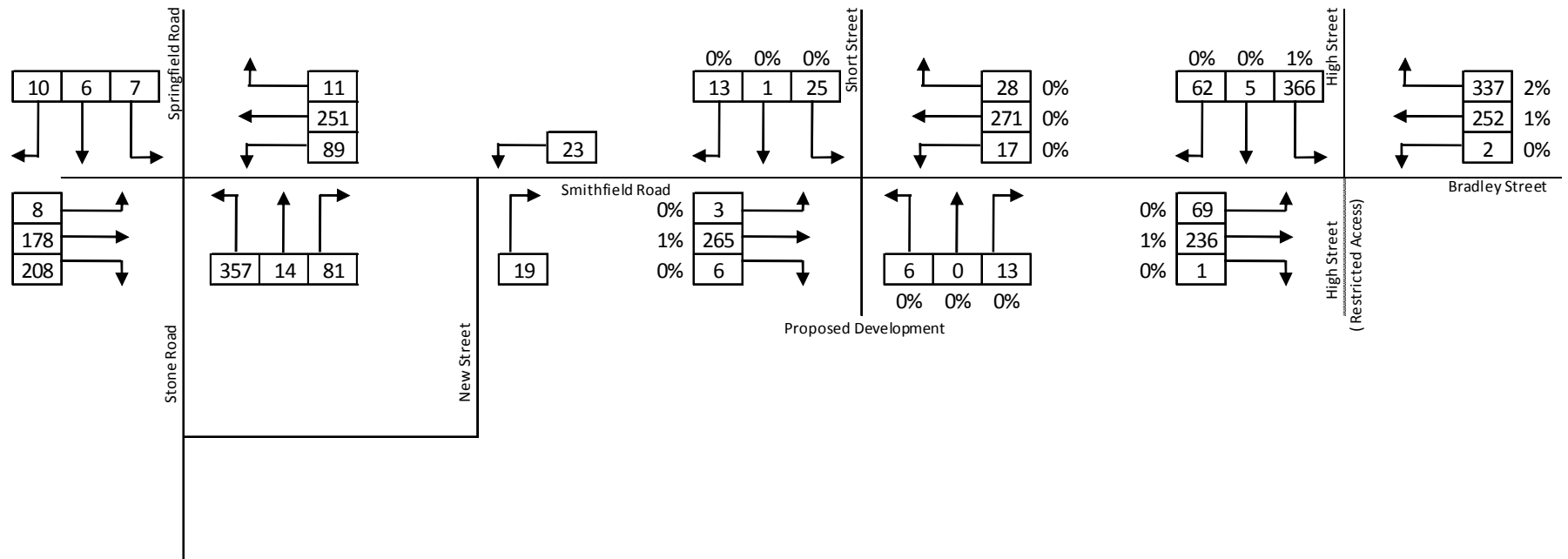
# Carter's Square, Uttoxeter

2018 Base + Committed Development Friday PM Peak Hour (17:00 - 18:00)



# Carter's Square, Uttoxeter

2018 Base + Committed Development Saturday Peak Hour (12:00 - 13:00)



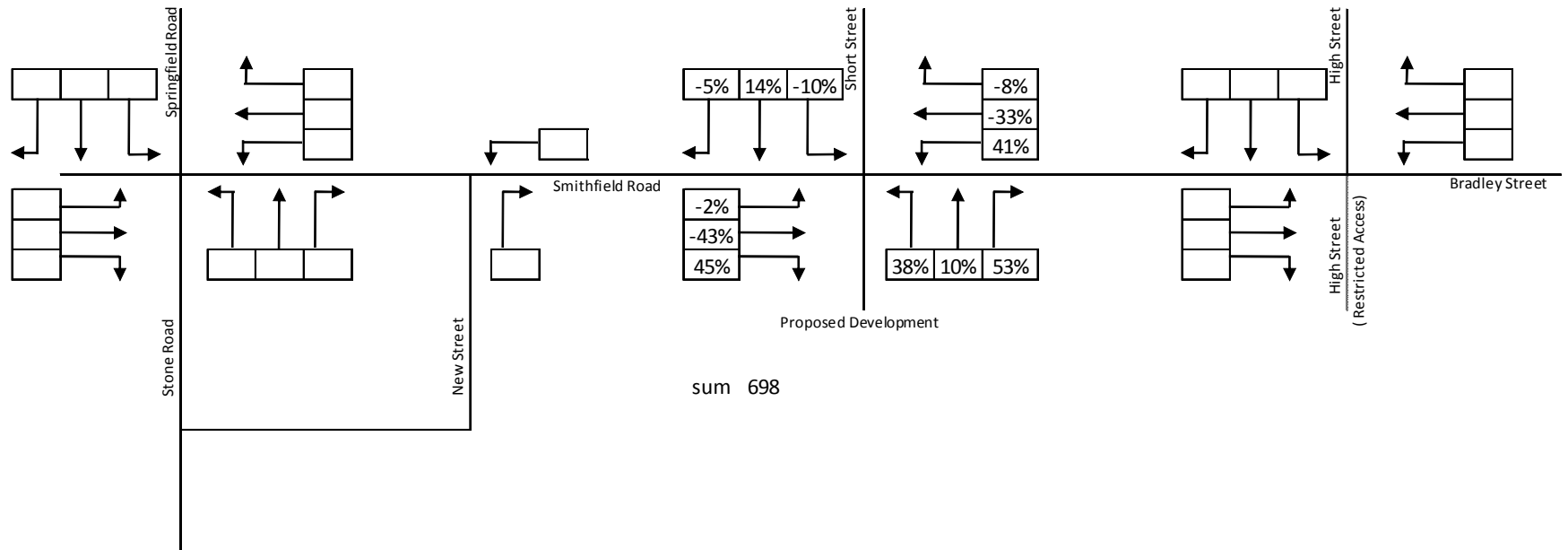
# Carter's Square, Uttoxeter

## Development Traffic Distribution



# Carter's Square, Uttoxeter

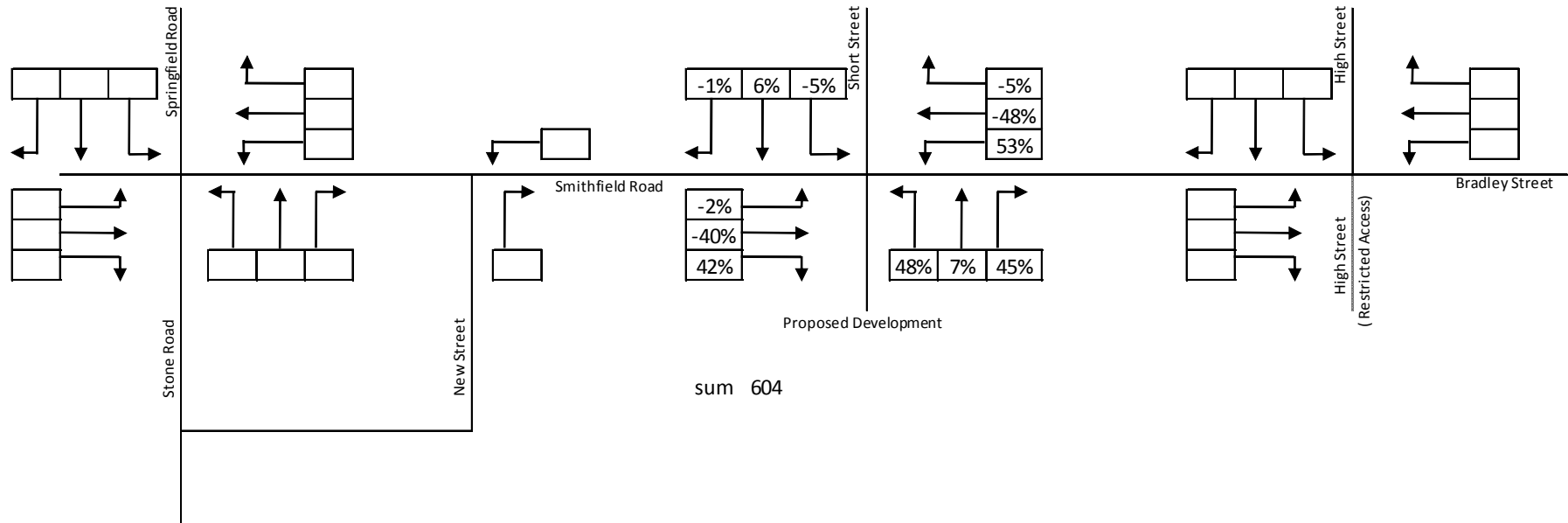
## Development Pass-by Traffic Distribution - AM Peak





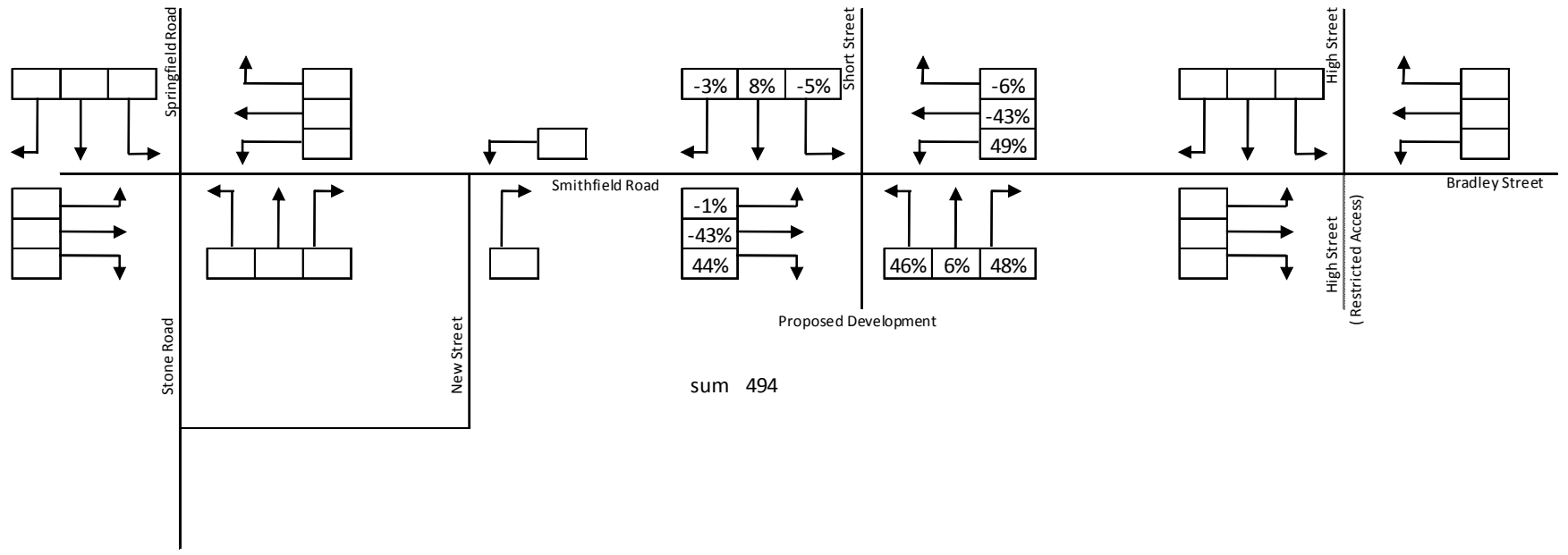
# Carter's Square, Uttoxeter

## Development Pass-by Traffic Distribution - PM Peak



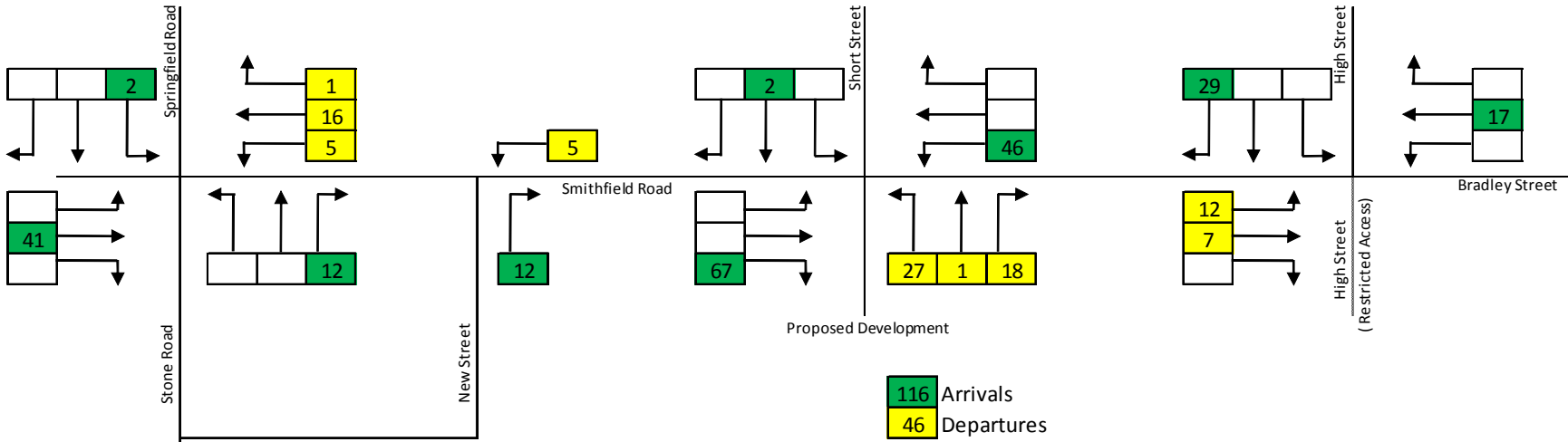
# Carter's Square, Uttoxeter

## Development Pass-by Traffic Distribution - Sat Peak



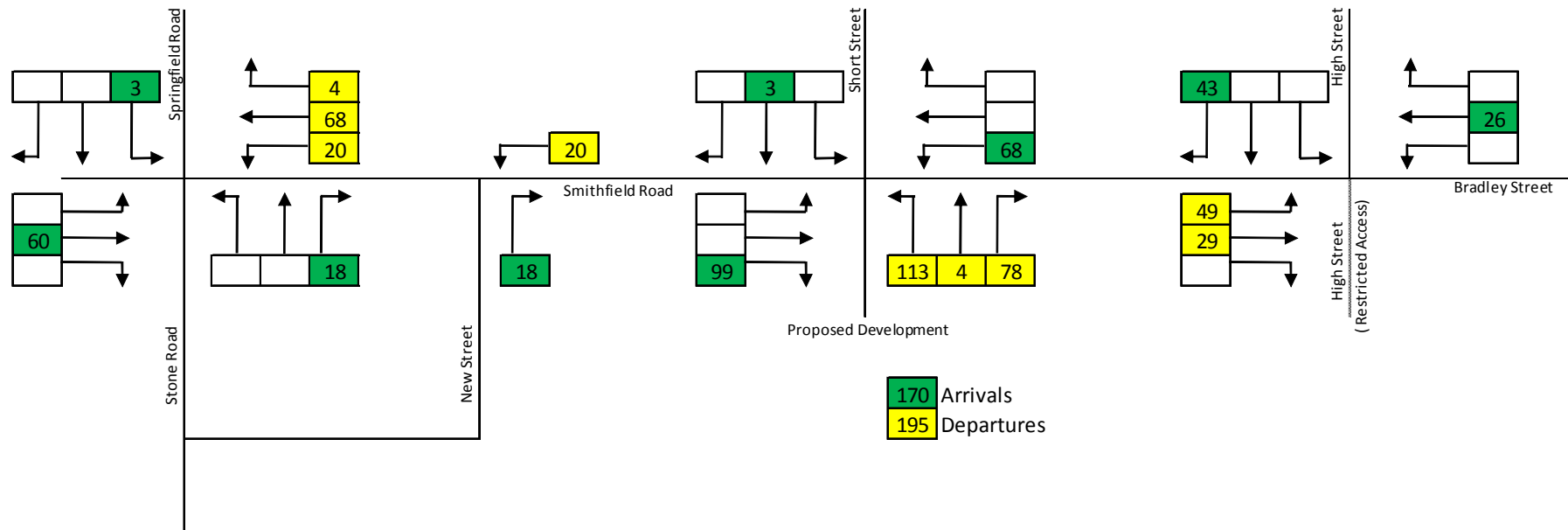
# Carter's Square, Uttoxeter

## Development Traffic - Weekday AM Peak



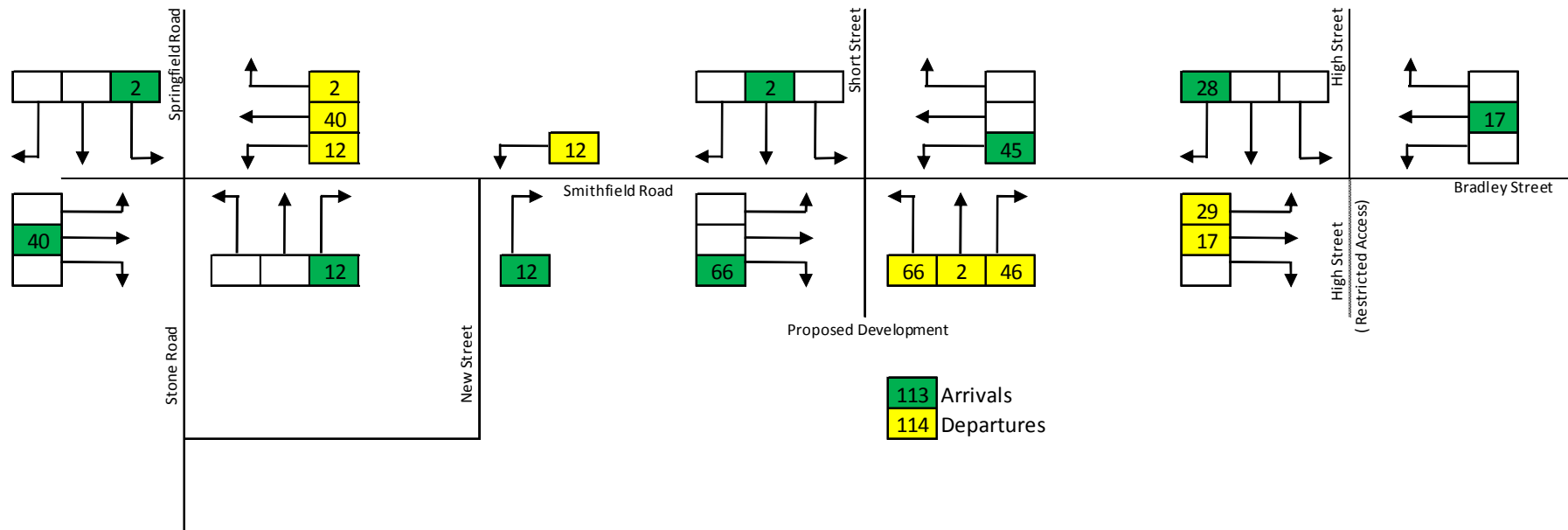
# Carter's Square, Uttoxeter

Development Traffic - Weekday PM Peak



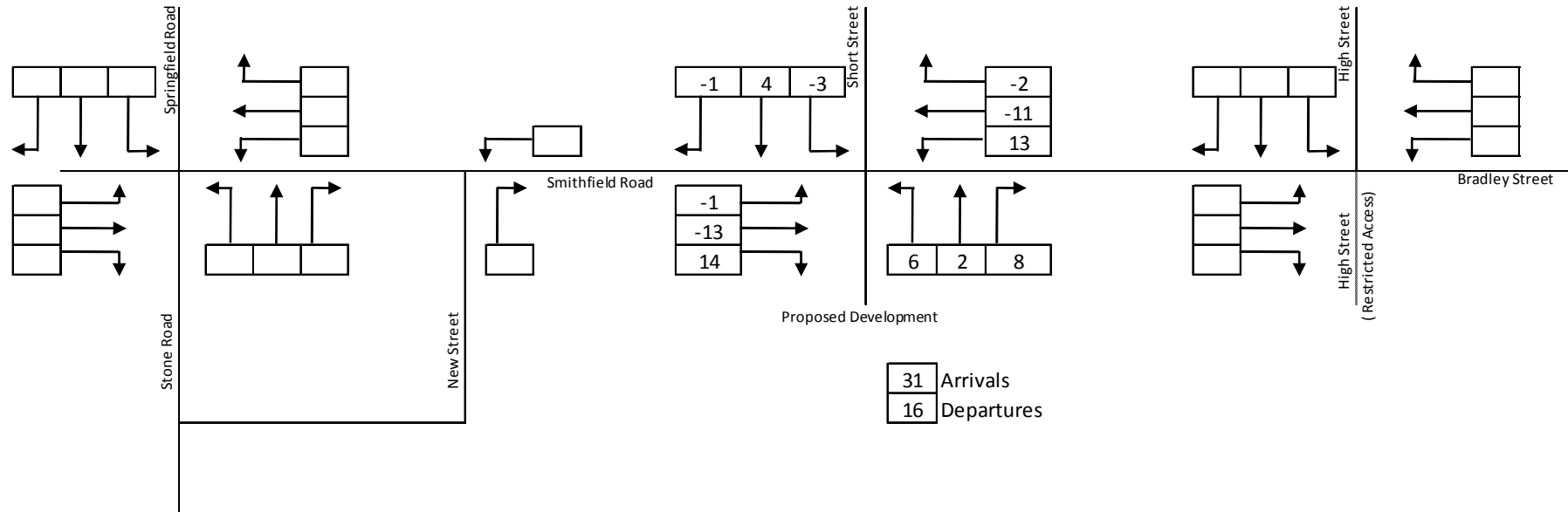
# Carter's Square, Uttoxeter

## Development Traffic - Saturday Peak



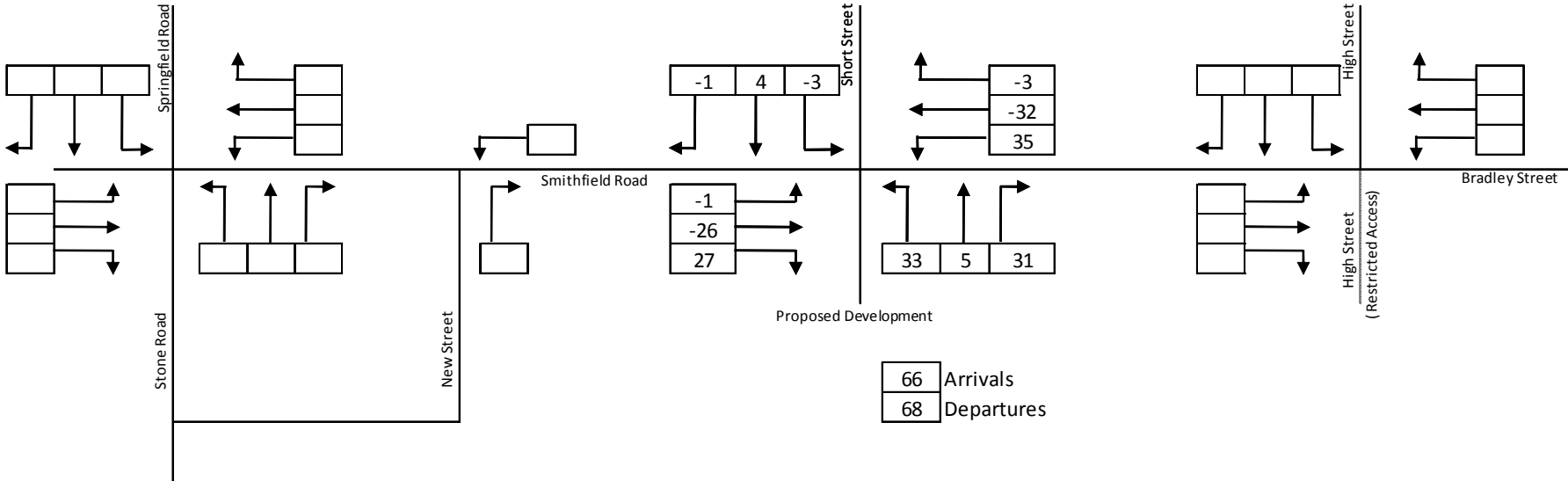
# Carter's Square, Uttoxeter

## Development Pass-by Traffic - Weekday AM Peak



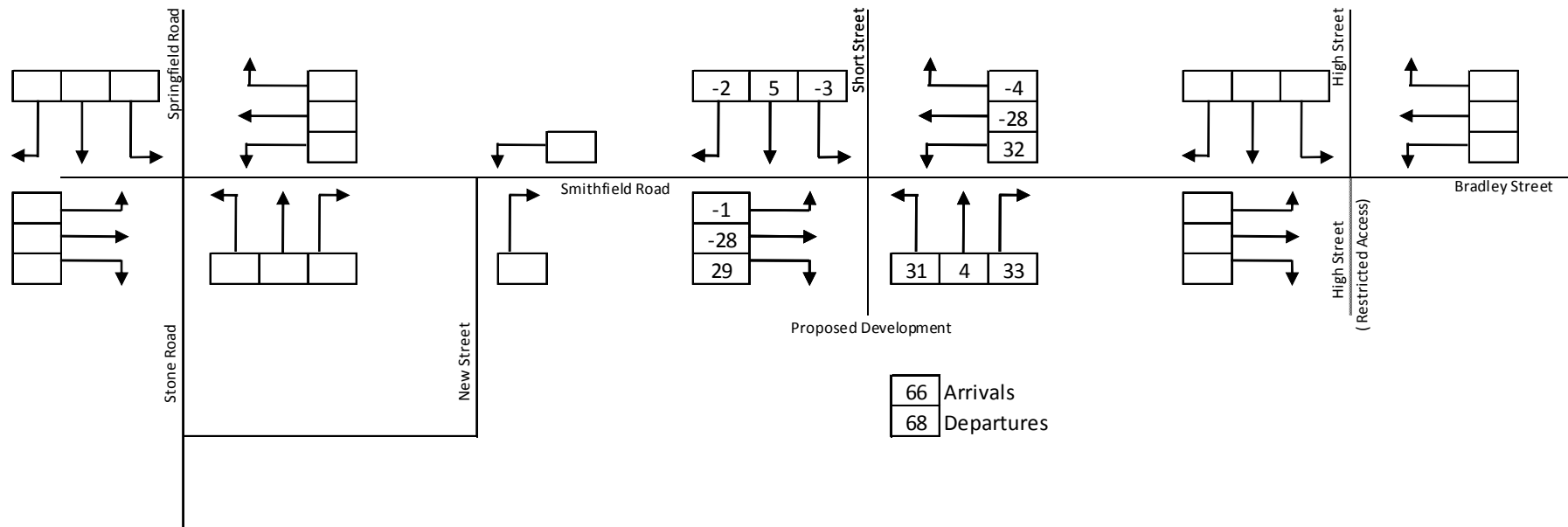
# Carter's Square, Uttoxeter

## Development Pass-by Traffic - Weekday PM Peak



# Carter's Square, Uttoxeter

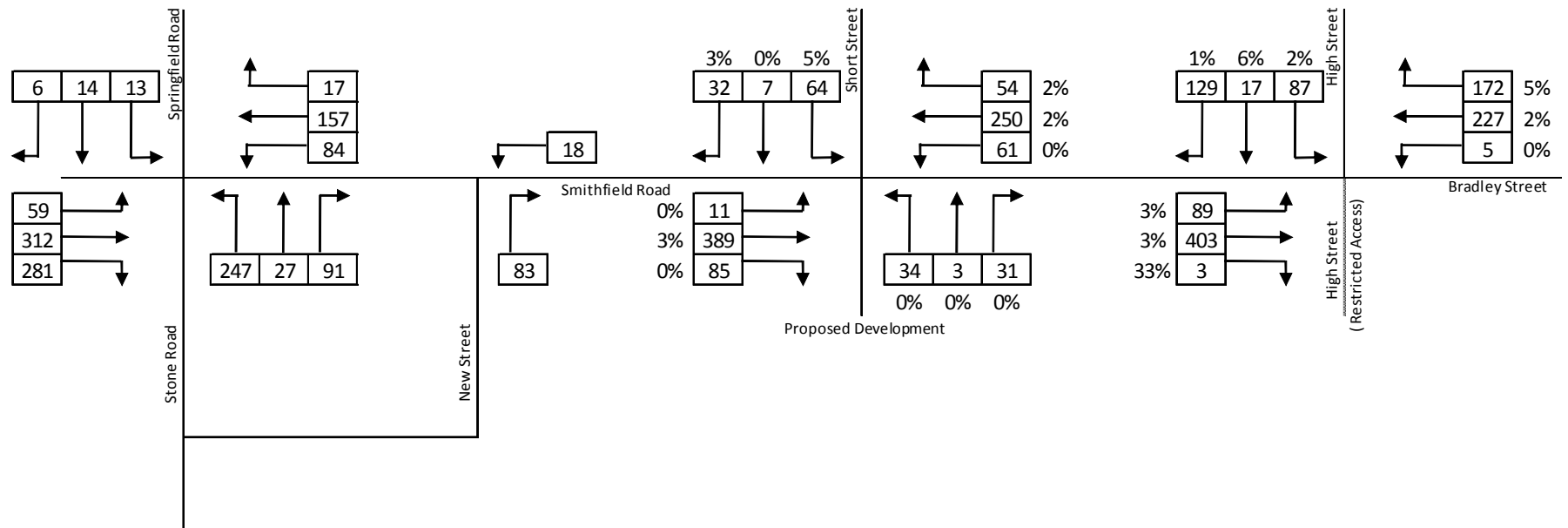
## Development Pass-by Traffic - Saturday Peak





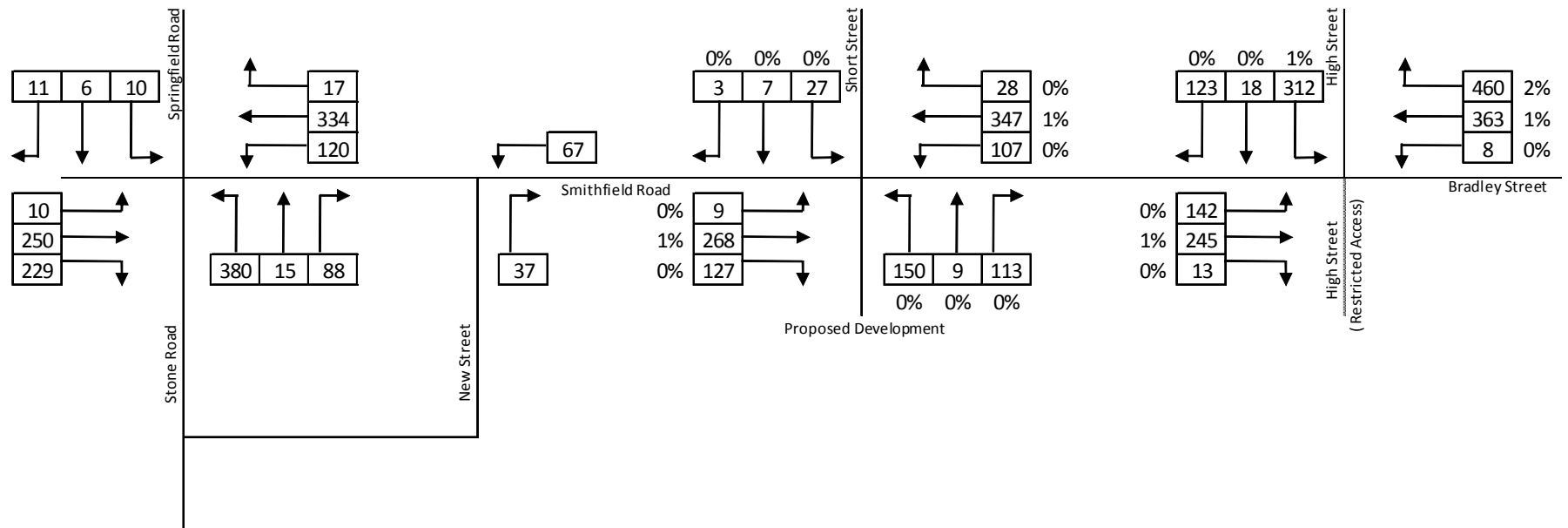
# Carter's Square, Uttoxeter

2018 Base + Committed + Development Traffic Friday AM Peak Hour (08:15-09:15)



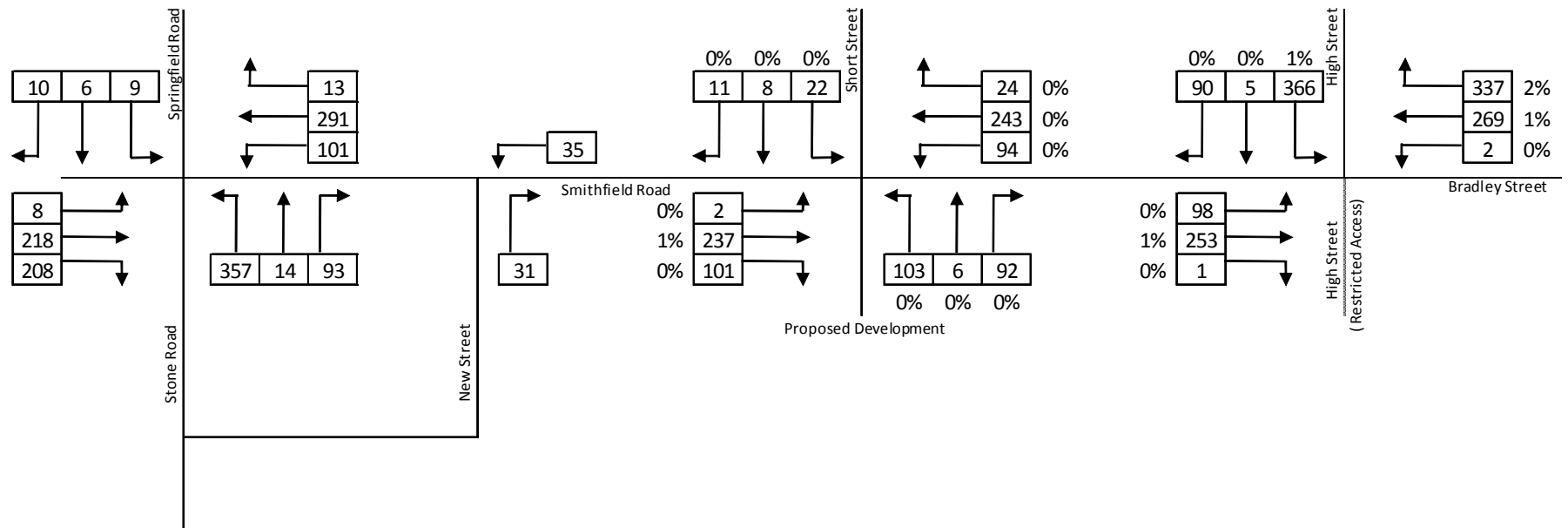
# Carter's Square, Uttoxeter

2018 Base + Committed + Development Traffic - Friday PM Peak Hour (17:00 - 18:00)



# Carter's Square, Uttoxeter

2018 Base + Committed + Development Traffic - Saturday Peak Hour (12:00 - 13:00)





Appendix F  
PICADY & ARCADY Output



# ARCADY 8

Version: 8.0.0.296 [27 Feb 2012]  
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For sales and distribution information, program advice and maintenance, contact TRL:  
 Tel: +44 (0)1344 770758 E-mail: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

**Filename:** Site Access.arc8

**Path:** T:\Projects Current\#700\772 Uttoxeter Cattle Market (Lingfield)\2012 TA\Data\Junction Models\Site Access

**Report generation date:** 02/04/2012 15:34:37

- » Proposed Access Roundabout - 2018 Base+Com+Dev, AM
- » Proposed Access Roundabout - 2018 Base+Com+Dev, PM
- » Proposed Access Roundabout - 2018 Base+Com+Dev, Sat

## Summary of junction performance

AM					
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
Proposed Access Roundabout - 2018 Base+Com+Dev					
<b>Arm 1</b>	0.75	6.86	0.43	A	57% [Arm 3]
<b>Arm 2</b>	0.53	8.61	0.35	A	
<b>Arm 3</b>	1.06	10.35	0.52	B	
<b>Arm 4</b>	0.14	10.89	0.12	B	

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

"D1 - 2018 Base+Com+Dev, AM " model duration: 07:45 - 09:15

"D2 - 2018 Base+Com+Dev, PM" model duration: 16:45 - 18:15

"D3 - 2018 Base+Com+Dev, Sat" model duration: 11:45 - 13:15

Run using ARCADY 8.0.0.296 at 02/04/2012 15:34:10

## File summary

### File Description

<b>Title</b>	(untitled)
<b>Location</b>	
<b>Site Number</b>	
<b>Date</b>	30/03/2012
<b>Version</b>	
<b>Status</b>	(new file)
<b>Identifier</b>	
<b>Client</b>	
<b>Jobnumber</b>	
<b>Enumerator</b>	PJA\matt franklin
<b>Description</b>	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75		✓	Delay	0.85	36.00	20.00

## 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

# Proposed Access Roundabout - 2018 Base+Com+Dev, AM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Proposed Access Roundabout	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship
2018 Base+Com+Dev, AM	2018 Base+Com+Dev	AM		ONE HOUR	07:45	09:15	90	15				✓	

# Junction Network

## Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Site Access Roundabout	Mini-roundabout	1,2,3,4	12.98	B

## Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		19	Arm 3

# Arms

## Arms

Arm	Name	Description
1	Smithfield Road East	
2	Site Access	
3	Smithfield Road West	
4	Short Street	

## Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00



3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

## Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	2.80	2.80	5.30	9.00	16.80	14.70	0.00	
2	3.60	3.60	3.80	1.00	12.00	7.50	0.00	
3	2.80	2.80	3.50	7.20	12.30	9.10	0.00	
4	2.60	2.60	3.30	1.50	12.00	8.70	0.00	

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

## Pedestrian Crossings

Arm	Crossing Type
1	None
2	Zebra
3	Zebra
4	None

## Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queueing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
2	2.00	2.00		Distance	7.90	5.64				
3	2.00	2.00		Distance	5.80	4.14				

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.601	1002.635
2		(calculated)	(calculated)	0.541	807.169
3		(calculated)	(calculated)	0.523	795.215
4		(calculated)	(calculated)	0.500	612.401

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

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

# Entry Flows

## General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	365.00	100.000
2	ONE HOUR	✓	68.00	100.000

3	ONE HOUR	✓	485.00	100.000
4	ONE HOUR	✓	103.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	-	-
2	ONE HOUR	120.00
3	ONE HOUR	120.00
4	-	-

## Direct/Resultant Flows

### Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
07:45-08:00	1	274.79	274.79	N/A	N/A
07:45-08:00	2	51.19	51.19	N/A	90.34
07:45-08:00	3	365.13	365.13	N/A	90.34
07:45-08:00	4	77.54	77.54	N/A	N/A
08:00-08:15	1	328.13	328.13	N/A	N/A
08:00-08:15	2	61.13	61.13	N/A	107.88
08:00-08:15	3	436.01	436.01	N/A	107.88
08:00-08:15	4	92.59	92.59	N/A	N/A
08:15-08:30	1	401.87	401.87	N/A	N/A
08:15-08:30	2	74.87	74.87	N/A	132.12
08:15-08:30	3	533.99	533.99	N/A	132.12
08:15-08:30	4	113.41	113.41	N/A	N/A
08:30-08:45	1	401.87	401.87	N/A	N/A
08:30-08:45	2	74.87	74.87	N/A	132.12
08:30-08:45	3	533.99	533.99	N/A	132.12
08:30-08:45	4	113.41	113.41	N/A	N/A
08:45-09:00	1	328.13	328.13	N/A	N/A
08:45-09:00	2	61.13	61.13	N/A	107.88
08:45-09:00	3	436.01	436.01	N/A	107.88
08:45-09:00	4	92.59	92.59	N/A	N/A
09:00-09:15	1	274.79	274.79	N/A	N/A
09:00-09:15	2	51.19	51.19	N/A	90.34
09:00-09:15	3	365.13	365.13	N/A	90.34
09:00-09:15	4	77.54	77.54	N/A	N/A

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
1	0.000	61.000	250.000	54.000	

From	2	31.000	0.000	34.000	3.000
	3	389.000	85.000	0.000	11.000
	4	64.000	7.000	32.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.17	0.68	0.15
	2	0.46	0.00	0.50	0.04
	3	0.80	0.18	0.00	0.02
	4	0.62	0.07	0.31	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.020	1.020
	2	1.000	1.000	1.000	1.000
	3	1.030	1.000	1.000	1.000
	4	1.050	1.000	1.030	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	0.000	2.000	2.000
	2	0.000	0.000	0.000	0.000
	3	3.000	0.000	0.000	0.000
	4	5.000	0.000	3.000	0.000

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.44	7.06	0.78	A	334.93	502.40	51.94	6.20	0.58	51.95	6.20
2	0.12	6.78	0.14	A	62.40	93.60	9.79	6.27	0.11	9.79	6.27
3	0.72	17.46	2.52	C	445.04	667.57	141.86	12.75	1.58	141.90	12.75
4	0.34	16.93	0.53	C	94.51	141.77	32.08	13.58	0.36	32.09	13.58

### Main Results for each time segment

#### Main results: (07:45-08:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS

1	274.79	68.70	273.14	360.69	92.36	0.00	947.07	883.91	0.290	0.00	0.41	5.417	A
2	51.19	12.80	50.87	114.20	251.30	90.34	670.66	350.76	0.076	0.00	0.08	5.806	A
3	365.13	91.28	361.42	236.32	65.84	90.34	760.58	634.95	0.480	0.00	0.93	9.153	A
4	77.54	19.39	76.63	50.85	376.42	0.00	424.17	222.12	0.183	0.00	0.23	10.747	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	328.13	82.03	327.60	433.43	111.02	0.00	935.79	883.81	0.351	0.41	0.54	6.012	A
2	61.13	15.28	61.04	137.12	301.50	107.88	643.14	350.03	0.095	0.08	0.10	6.184	A
3	436.01	109.00	434.25	283.56	78.99	107.88	753.59	635.09	0.579	0.93	1.37	11.476	B
4	92.59	23.15	92.22	61.01	452.23	0.00	386.26	222.22	0.240	0.23	0.32	12.718	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	401.87	100.47	400.94	528.88	135.48	0.00	920.95	883.66	0.436	0.54	0.78	7.024	A
2	74.87	18.72	74.73	167.49	368.93	132.12	605.93	348.97	0.124	0.10	0.14	6.775	A
3	533.99	133.50	529.67	346.97	96.68	132.12	744.13	635.26	0.718	1.37	2.45	16.842	C
4	113.41	28.35	112.63	74.63	551.72	0.00	336.50	222.38	0.337	0.32	0.51	16.668	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	401.87	100.47	401.85	532.64	136.46	0.00	920.35	883.66	0.437	0.78	0.78	7.057	A
2	74.87	18.72	74.87	168.40	369.91	132.12	605.38	348.97	0.124	0.14	0.14	6.785	A
3	533.99	133.50	533.71	347.89	96.89	132.12	744.02	635.26	0.718	2.45	2.52	17.461	C
4	113.41	28.35	113.36	74.86	555.73	0.00	334.50	222.38	0.339	0.51	0.53	16.927	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	328.13	82.03	329.04	439.08	112.51	0.00	934.89	883.81	0.351	0.78	0.56	6.049	A
2	61.13	15.28	61.27	138.50	303.05	107.88	642.29	350.03	0.095	0.14	0.11	6.196	A
3	436.01	109.00	440.30	285.00	79.31	107.88	753.42	635.09	0.579	2.52	1.45	11.927	B
4	92.59	23.15	93.35	61.37	458.24	0.00	383.25	222.22	0.242	0.53	0.34	12.949	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	274.79	68.70	275.33	366.22	93.84	0.00	946.17	883.90	0.290	0.56	0.42	5.459	A
2	51.19	12.80	51.28	115.64	253.53	90.34	669.44	350.76	0.076	0.11	0.08	5.823	A
3	365.13	91.28	367.07	238.44	66.38	90.34	760.30	634.95	0.480	1.45	0.96	9.419	A
4	77.54	19.39	77.94	51.32	382.12	0.00	421.31	222.12	0.184	0.34	0.24	10.917	B

**Queueing Delay Results for each time segment**
**Queueing Delay results: (07:45-08:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.99	0.40	5.417	A	A
2	1.20	0.08	5.806	A	A
3	13.13	0.88	9.153	A	A

4	3.28	0.22	10.747	B	B
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**Queueing Delay results: (08:00-08:15)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	7.96	0.53	6.012	A	A
2	1.53	0.10	6.184	A	A
3	19.49	1.30	11.476	B	B
4	4.66	0.31	12.718	B	B

**Queueing Delay results: (08:15-08:30)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	11.29	0.75	7.024	A	A
2	2.05	0.14	6.775	A	A
3	33.64	2.24	16.842	C	B
4	7.33	0.49	16.668	C	B

**Queueing Delay results: (08:30-08:45)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	11.70	0.78	7.057	A	A
2	2.10	0.14	6.785	A	A
3	37.37	2.49	17.461	C	B
4	7.82	0.52	16.927	C	B

**Queueing Delay results: (08:45-09:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.56	0.57	6.049	A	A
2	1.62	0.11	6.196	A	A
3	23.11	1.54	11.927	B	B
4	5.29	0.35	12.949	B	B

**Queueing Delay results: (09:00-09:15)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.44	0.43	5.459	A	A
2	1.27	0.08	5.823	A	A
3	15.11	1.01	9.419	A	A
4	3.70	0.25	10.917	B	B

# Proposed Access Roundabout - 2018 Base+Com+Dev, PM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Proposed Access Roundabout	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship
2018 Base+Com+Dev, FM	2018 Base+Com+Dev	FM		ONE HOUR	16:45	18:15	90	15				✓	

# Junction Network

## Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Site Access Roundabout	Mini-roundabout	1,2,3,4	11.83	B

## Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold
Left	Normal/unknown	Normal/unknown		31	Arm 3

# Arms

## Arms

Arm	Name	Description
1	Smithfield Road East	
2	Site Access	
3	Smithfield Road West	
4	Short Street	

## Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

## Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	2.80	2.80	5.30	9.00	16.80	14.70	0.00	
2	3.60	3.60	3.80	1.00	12.00	7.50	0.00	
3	2.80	2.80	3.50	7.20	12.30	9.10	0.00	
4	2.60	2.60	3.30	1.50	12.00	8.70	0.00	

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

## Pedestrian Crossings

Arm	Crossing Type
1	None
2	Zebra
3	Zebra
4	None

## Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queueing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
2	2.00	2.00		Distance	7.90	5.64				
3	2.00	2.00		Distance	5.80	4.14				

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.601	1002.635
2		(calculated)	(calculated)	0.541	807.169
3		(calculated)	(calculated)	0.523	795.215
4		(calculated)	(calculated)	0.500	612.401

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	482.00	100.000
2	ONE HOUR	✓	272.00	100.000
3	ONE HOUR	✓	404.00	100.000
4	ONE HOUR	✓	37.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	-	-
2	ONE HOUR	120.00
3	ONE HOUR	120.00
4	-	-

## Direct/Resultant Flows

### Direct Flows Data

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Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
16:45-17:00	1	362.87	362.87	N/A	N/A
16:45-17:00	2	204.78	204.78	N/A	90.34
16:45-17:00	3	304.15	304.15	N/A	90.34
16:45-17:00	4	27.86	27.86	N/A	N/A
17:00-17:15	1	433.31	433.31	N/A	N/A
17:00-17:15	2	244.52	244.52	N/A	107.88
17:00-17:15	3	363.19	363.19	N/A	107.88
17:00-17:15	4	33.26	33.26	N/A	N/A
17:15-17:30	1	530.69	530.69	N/A	N/A
17:15-17:30	2	299.48	299.48	N/A	132.12
17:15-17:30	3	444.81	444.81	N/A	132.12
17:15-17:30	4	40.74	40.74	N/A	N/A
17:30-17:45	1	530.69	530.69	N/A	N/A
17:30-17:45	2	299.48	299.48	N/A	132.12
17:30-17:45	3	444.81	444.81	N/A	132.12
17:30-17:45	4	40.74	40.74	N/A	N/A
17:45-18:00	1	433.31	433.31	N/A	N/A
17:45-18:00	2	244.52	244.52	N/A	107.88
17:45-18:00	3	363.19	363.19	N/A	107.88
17:45-18:00	4	33.26	33.26	N/A	N/A
18:00-18:15	1	362.87	362.87	N/A	N/A
18:00-18:15	2	204.78	204.78	N/A	90.34
18:00-18:15	3	304.15	304.15	N/A	90.34
18:00-18:15	4	27.86	27.86	N/A	N/A

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	107.000	347.000	28.000
	2	113.000	0.000	150.000	9.000
	3	268.000	127.000	0.000	9.000
	4	27.000	7.000	3.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.22	0.72	0.06
	2	0.42	0.00	0.55	0.03
	3	0.66	0.31	0.00	0.02
	4	0.73	0.19	0.08	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4



From	1	1.000	1.000	1.010	1.000
	2	1.000	1.000	1.000	1.000
	3	1.010	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	0.000	1.000	0.000
	2	0.000	0.000	0.000	0.000
	3	1.000	0.000	0.000	0.000
	4	0.000	0.000	0.000	0.000

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU/min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.58	9.54	1.39	A	442.29	663.44	85.85	7.76	0.95	85.86	7.76
2	0.52	13.03	1.07	B	249.59	374.39	64.19	10.29	0.71	64.20	10.29
3	0.63	13.72	1.66	B	370.72	556.08	99.50	10.74	1.11	99.52	10.74
4	0.12	12.33	0.14	B	33.95	50.93	9.02	10.62	0.10	9.02	10.62

### Main Results for each time segment

#### Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	362.87	90.72	360.37	304.36	102.19	0.00	940.90	837.73	0.386	0.00	0.63	6.220	A
2	204.78	51.19	202.97	179.95	282.61	90.34	652.66	421.40	0.314	0.00	0.45	7.974	A
3	304.15	76.04	301.36	373.61	111.97	90.34	736.48	670.76	0.413	0.00	0.70	8.276	A
4	27.86	6.96	27.58	34.36	378.97	0.00	422.89	196.90	0.066	0.00	0.07	9.100	A

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	433.31	108.33	432.33	365.62	122.77	0.00	928.23	837.41	0.467	0.63	0.87	7.296	A
2	244.52	61.13	243.77	216.05	339.05	107.88	620.65	420.63	0.394	0.45	0.64	9.533	A
3	363.19	90.80	362.01	448.37	134.45	107.88	724.64	670.89	0.501	0.70	0.99	9.960	A
4	33.26	8.32	33.17	41.25	455.22	0.00	384.76	197.00	0.086	0.07	0.09	10.237	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	530.69	132.67	528.68	446.70	149.99	0.00	911.18	836.94	0.582	0.87	1.37	9.428	A
2	299.48	74.87	297.83	264.06	414.61	132.12	576.44	419.53	0.520	0.64	1.05	12.845	B

3	444.81	111.20	442.24	548.14	164.30	132.12	708.88	671.03	0.627	0.99	1.63	13.456	B
4	40.74	10.18	40.56	50.42	556.12	0.00	334.30	197.16	0.122	0.09	0.14	12.248	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	530.69	132.67	530.62	449.10	150.80	0.00	910.67	836.94	0.583	1.37	1.39	9.536	A
2	299.48	74.87	299.41	265.29	416.13	132.12	575.53	419.53	0.520	1.05	1.07	13.030	B
3	444.81	111.20	444.69	550.42	165.12	132.12	708.45	671.03	0.628	1.63	1.66	13.720	B
4	40.74	10.18	40.73	50.64	559.17	0.00	332.78	197.16	0.122	0.14	0.14	12.326	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	433.31	108.33	435.28	369.25	124.00	0.00	927.47	837.41	0.467	1.39	0.90	7.398	A
2	244.52	61.13	246.14	217.91	341.36	107.88	619.32	420.63	0.395	1.07	0.66	9.689	A
3	363.19	90.80	365.71	451.81	135.69	107.88	723.99	670.89	0.502	1.66	1.04	10.183	B
4	33.26	8.32	33.43	41.58	459.82	0.00	382.46	197.00	0.087	0.14	0.10	10.318	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	362.87	90.72	363.90	308.40	103.56	0.00	940.06	837.73	0.386	0.90	0.64	6.306	A
2	204.78	51.19	205.57	182.08	285.38	90.34	651.10	421.40	0.315	0.66	0.46	8.096	A
3	304.15	76.04	305.41	377.61	113.34	90.34	735.77	670.76	0.413	1.04	0.72	8.446	A
4	27.86	6.96	27.95	34.75	384.01	0.00	420.37	196.90	0.066	0.10	0.07	9.177	A

**Queueing Delay Results for each time segment**
**Queueing Delay results: (16:45-17:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.02	0.60	6.220	A	A
2	6.48	0.43	7.974	A	A
3	9.96	0.66	8.276	A	A
4	1.01	0.07	9.100	A	A

**Queueing Delay results: (17:00-17:15)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	12.62	0.84	7.296	A	A
2	9.26	0.62	9.533	A	A
3	14.26	0.95	9.960	A	A
4	1.36	0.09	10.237	B	B

**Queueing Delay results: (17:15-17:30)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	19.61	1.31	9.428	A	A
2	14.93	1.00	12.845	B	B
3	22.97	1.53	13.456	B	B
4	1.98	0.13	12.248	B	B

**Queueing Delay results: (17:30-17:45)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	19.61	1.31	9.428	A	A
2	14.93	1.00	12.845	B	B
3	22.97	1.53	13.456	B	B
4	1.98	0.13	12.248	B	B

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	20.73	1.38	9.536	A	A
2	15.93	1.06	13.030	B	B
3	24.78	1.65	13.720	B	B
4	2.07	0.14	12.326	B	B

### Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	13.97	0.93	7.398	A	A
2	10.40	0.69	9.689	A	A
3	16.32	1.09	10.183	B	B
4	1.49	0.10	10.318	B	B

### Queueing Delay results: (18:00-18:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	9.89	0.66	6.306	A	A
2	7.20	0.48	8.096	A	A
3	11.21	0.75	8.446	A	A
4	1.11	0.07	9.177	A	A

# Proposed Access Roundabout - 2018 Base+Com+Dev, Sat

## Data Errors and Warnings

*No errors or warnings*

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Proposed Access Roundabout	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship
2018 Base+Com+Dev, Sat	2018 Base+Com+Dev	Sat		ONE HOUR	11:45	13:15	90	15				✓	

# Junction Network

## Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Site Access Roundabout	Mini-roundabout	1,2,3,4	8.66	A

## Junction Network Options

Driving Side	Lighting	Road Surface	In London	Network Residual Capacity (%)	First Arm Reaching Threshold

Left	Normal/unknown	Normal/unknown		57	Arm 3
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## Arms

### Arms

Arm	Name	Description
1	Smithfield Road East	
2	Site Access	
3	Smithfield Road West	
4	Short Street	

### Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00
4	0.00	99999.00		0.00

### Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	2.80	2.80	5.30	9.00	16.80	14.70	0.00	
2	3.60	3.60	3.80	1.00	12.00	7.50	0.00	
3	2.80	2.80	3.50	7.20	12.30	9.10	0.00	
4	2.60	2.60	3.30	1.50	12.00	8.70	0.00	

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

### Pedestrian Crossings

Arm	Crossing Type
1	None
2	Zebra
3	Zebra
4	None

### Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queueing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
2	2.00	2.00		Distance	7.90	5.64				
3	2.00	2.00		Distance	5.80	4.14				

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.601	1002.635
2		(calculated)	(calculated)	0.541	807.169
3		(calculated)	(calculated)	0.523	795.215
4		(calculated)	(calculated)	0.500	612.401

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

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

# Entry Flows

## General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	361.00	100.000
2	ONE HOUR	✓	201.00	100.000
3	ONE HOUR	✓	340.00	100.000
4	ONE HOUR	✓	41.00	100.000

# Pedestrian Flows

## General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	-	-
2	ONE HOUR	120.00
3	ONE HOUR	120.00
4	-	-

# Direct/Resultant Flows

## Direct Flows Data

Time Segment	Arm	Direct Demand Entry Flow (PCU/hr)	DirectDemandEntryFlowInPCU (PCU/hr)	Direct Demand Exit Flow (PCU/hr)	Direct Demand Pedestrian Flow (Ped/hr)
11:45-12:00	1	271.78	271.78	N/A	N/A
11:45-12:00	2	151.32	151.32	N/A	90.34
11:45-12:00	3	255.97	255.97	N/A	90.34
11:45-12:00	4	30.87	30.87	N/A	N/A
12:00-12:15	1	324.53	324.53	N/A	N/A
12:00-12:15	2	180.69	180.69	N/A	107.88
12:00-12:15	3	305.65	305.65	N/A	107.88
12:00-12:15	4	36.86	36.86	N/A	N/A
12:15-12:30	1	397.47	397.47	N/A	N/A
12:15-12:30	2	221.31	221.31	N/A	132.12
12:15-12:30	3	374.35	374.35	N/A	132.12
12:15-12:30	4	45.14	45.14	N/A	N/A
12:30-12:45	1	397.47	397.47	N/A	N/A
12:30-12:45	2	221.31	221.31	N/A	132.12
12:30-12:45	3	374.35	374.35	N/A	132.12
12:30-12:45	4	45.14	45.14	N/A	N/A

12:45-13:00	1	324.53	324.53	N/A	N/A
12:45-13:00	2	180.69	180.69	N/A	107.88
12:45-13:00	3	305.65	305.65	N/A	107.88
12:45-13:00	4	36.86	36.86	N/A	N/A
13:00-13:15	1	271.78	271.78	N/A	N/A
13:00-13:15	2	151.32	151.32	N/A	90.34
13:00-13:15	3	255.97	255.97	N/A	90.34
13:00-13:15	4	30.87	30.87	N/A	N/A

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	94.000	243.000	24.000
	2	92.000	0.000	103.000	6.000
	3	237.000	101.000	0.000	2.000
	4	22.000	8.000	11.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.26	0.67	0.07
	2	0.46	0.00	0.51	0.03
	3	0.70	0.30	0.00	0.01
	4	0.54	0.20	0.27	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.000	1.000
	3	1.010	1.000	1.000	1.000
	4	1.000	1.000	1.000	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	0.000	0.000	0.000
	2	0.000	0.000	0.000	0.000
	3	1.000	0.000	0.000	0.000
	4	0.000	0.000	0.000	0.000

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.43	6.86	0.75	A	331.26	496.89	50.05	6.04	0.56	50.06	6.04
2	0.35	8.61	0.53	A	184.44	276.66	34.86	7.56	0.39	34.86	7.56
3	0.52	10.35	1.06	B	311.99	467.98	68.12	8.73	0.76	68.13	8.73
4	0.12	10.89	0.14	B	37.62	56.43	9.08	9.65	0.10	9.08	9.65

## Main Results for each time segment

### Main results: (11:45-12:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	271.78	67.94	270.19	262.15	89.59	0.00	948.62	826.24	0.287	0.00	0.40	5.295	A
2	151.32	37.83	150.22	151.74	208.04	90.34	694.02	427.85	0.218	0.00	0.28	6.606	A
3	255.97	63.99	253.90	267.05	91.20	90.34	747.34	657.24	0.343	0.00	0.52	7.315	A
4	30.87	7.72	30.58	23.94	321.16	0.00	451.80	187.74	0.068	0.00	0.07	8.542	A

### Main results: (12:00-12:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	324.53	81.13	324.03	314.82	107.62	0.00	937.61	825.87	0.346	0.40	0.52	5.862	A
2	180.69	45.17	180.34	182.13	249.52	107.88	671.10	427.18	0.269	0.28	0.36	7.331	A
3	305.65	76.41	304.92	320.39	109.47	107.88	737.69	657.36	0.414	0.52	0.70	8.362	A
4	36.86	9.21	36.77	28.72	385.67	0.00	419.54	187.83	0.088	0.07	0.10	9.403	A

### Main results: (12:15-12:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	397.47	99.37	396.58	385.11	131.63	0.00	922.79	825.35	0.431	0.52	0.75	6.830	A
2	221.31	55.33	220.68	222.83	305.38	132.12	639.81	426.21	0.346	0.36	0.52	8.576	A
3	374.35	93.59	372.95	392.10	133.96	132.12	724.72	657.51	0.517	0.70	1.05	10.262	B
4	45.14	11.29	44.99	35.15	471.76	0.00	376.49	187.98	0.120	0.10	0.13	10.855	B

### Main results: (12:30-12:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	397.47	99.37	397.45	386.42	132.11	0.00	922.50	825.35	0.431	0.75	0.75	6.855	A
2	221.31	55.33	221.29	223.49	306.07	132.12	639.43	426.21	0.346	0.52	0.53	8.609	A
3	374.35	93.59	374.30	393.04	134.32	132.12	724.53	657.51	0.517	1.05	1.06	10.347	B
4	45.14	11.29	45.14	35.23	473.38	0.00	375.68	187.98	0.120	0.13	0.14	10.890	B

### Main results: (12:45-13:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	324.53	81.13	325.40	316.85	108.35	0.00	937.17	825.87	0.346	0.75	0.53	5.892	A
2	180.69	45.17	181.30	183.15	250.60	107.88	670.51	427.18	0.269	0.53	0.37	7.370	A
3	305.65	76.41	307.01	321.87	110.03	107.88	737.40	657.36	0.415	1.06	0.72	8.449	A
4	36.86	9.21	37.01	28.85	388.19	0.00	418.28	187.83	0.088	0.14	0.10	9.447	A

**Main results: (13:00-13:15)**

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	271.78	67.94	272.30	265.00	90.61	0.00	948.00	826.24	0.287	0.53	0.41	5.331	A
2	151.32	37.83	151.69	153.21	209.70	90.34	693.11	427.85	0.218	0.37	0.28	6.652	A
3	255.97	63.99	256.74	269.33	92.06	90.34	746.89	657.24	0.343	0.72	0.53	7.406	A
4	30.87	7.72	30.96	24.14	324.66	0.00	450.05	187.74	0.069	0.10	0.07	8.593	A

**Queueing Delay Results for each time segment**
**Queueing Delay results: (11:45-12:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	5.79	0.39	5.295	A	A
2	4.00	0.27	6.606	A	A
3	7.45	0.50	7.315	A	A
4	1.05	0.07	8.542	A	A

**Queueing Delay results: (12:00-12:15)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	7.68	0.51	5.862	A	A
2	5.33	0.36	7.331	A	A
3	10.20	0.68	8.362	A	A
4	1.39	0.09	9.403	A	A

**Queueing Delay results: (12:15-12:30)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	10.87	0.72	6.830	A	A
2	7.57	0.50	8.576	A	A
3	15.09	1.01	10.262	B	B
4	1.96	0.13	10.855	B	B

**Queueing Delay results: (12:30-12:45)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	11.25	0.75	6.855	A	A
2	7.86	0.52	8.609	A	A
3	15.89	1.06	10.347	B	B
4	2.03	0.14	10.890	B	B

**Queueing Delay results: (12:45-13:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	8.24	0.55	5.892	A	A
2	5.76	0.38	7.370	A	A
3	11.27	0.75	8.449	A	A
4	1.51	0.10	9.447	A	A

**Queueing Delay results: (13:00-13:15)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	6.21	0.41	5.331	A	A





2	4.33	0.29	6.652	A	A
3	8.21	0.55	7.406	A	A
4	1.14	0.08	8.593	A	A



<h1>ARCADY 8</h1>
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**Filename:** Smithfield Rd - Stone Rd.arc8

**Path:** T:\Projects Current\#700\772 Uttoxeter Cattle Market (Lingfield)\2012 TA\Data\Junction Models\Smithfield Road - Stone Road

**Report generation date:** 02/04/2012 14:45:30

- » **Smithfield Rd/Stone Rd Existing - 2018 Base+Com+Dev, AM**
- » **Smithfield Rd/Stone Rd Existing - 2018 Base+Com+Dev, PM**
- » **Smithfield Rd/Stone Rd Existing - 2018 Base+Com+Dev, Sat**
- » **Smithfield Rd/Stone Rd Existing - 2018 Base+Com, AM**
- » **Smithfield Rd/Stone Rd Existing - 2018 Base+Com, PM**
- » **Smithfield Rd/Stone Rd Existing - 2018 Base+Com, Sat**

## Summary of junction performance

	AM			
	Queue (PCU)	Delay (s)	RFC	LOS
<b>Smithfield Rd/Stone Rd Existing - 2018 Base+Com+Dev</b>				
Stream B-CD	3.08	28.45	0.76	D
Stream B-A	0.66	27.34	0.40	D
Stream A-B	-	-	-	-
Stream A-C	-	-	-	-
Stream A-D	-	-	-	-
Stream AB-CD	0.14	4.40	0.08	A
Stream AB-C	-	-	-	-
Stream D-ABC	0.07	9.85	0.06	A
Stream C-D	-	-	-	-
Stream C-A	-	-	-	-
Stream C-B	-	-	-	-
Stream CD-AB	1.14	10.06	0.47	B
Stream CD-A	-	-	-	-

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

- "D1 - 2018 Base+Com+Dev, AM" model duration: 07:45 - 09:15
- "D2 - 2018 Base+Com+Dev, PM" model duration: 16:45 - 18:15
- "D3 - 2018 Base+Com+Dev, Sat" model duration: 11:45 - 13:15
- "D4 - 2018 Base+Com, AM" model duration: 07:45 - 09:15
- "D5 - 2018 Base+Com, PM" model duration: 16:45 - 18:15
- "D6 - 2018 Base+Com, Sat" model duration: 11:45 - 13:15

Run using ARCADY 8.0.0.296 at 02/04/2012 14:45:21

## File summary

### File Description

<b>Title</b>	(untitled)
<b>Location</b>	
<b>Site Number</b>	

Date	30/03/2012
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PJA\matt franklin
Description	

## Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

## 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

# Smithfield Rd/Stone Rd Existing - 2018 Base+Com+Dev, AM

## Data Errors and Warnings

*No errors or warnings*

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Smithfield Rd/Stone Rd Existing	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship
2018 Base+Com+Dev, AM	2018 Base+Com+Dev	AM		ONE HOUR	07:45	09:15	90	15				✓	

# Junction Network

## Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
Stone Rd / Smithfield Rd / Springfield Rd	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		14.41	B

## Junction Network Options

Driving Side	Lighting	Road Surface
Left	Normal/unknown	(Mini-roundabouts only)



Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	258.00	100.000
B	ONE HOUR	✓	365.00	100.000
C	ONE HOUR	✓	652.00	100.000
D	ONE HOUR	✓	33.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	84.000	157.000	17.000
	B	91.000	0.000	247.000	27.000
	C	312.000	281.000	0.000	59.000
	D	13.000	14.000	6.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.33	0.61	0.07
	B	0.25	0.00	0.68	0.07
	C	0.48	0.43	0.00	0.09
	D	0.39	0.42	0.18	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.030	1.030	1.030	1.030
	B	1.030	1.030	1.030	1.030
	C	1.030	1.030	1.030	1.030
	D	1.030	1.030	1.030	1.030

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	3.000	3.000	3.000	3.000
	B	3.000	3.000	3.000	3.000
	C	3.000	3.000	3.000	3.000

D	3.000	3.000	3.000	3.000
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# 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)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-CD	0.55	15.08	1.24	C	251.43	377.14	73.61	11.71	0.82	73.62	11.71
B-A	0.36	20.93	0.57	C	83.50	125.25	32.66	15.64	0.36	32.66	15.64
A-B	-	-	-	-	77.08	115.62	-	-	-	-	-
A-C	-	-	-	-	144.07	216.10	-	-	-	-	-
A-D	-	-	-	-	15.60	23.40	-	-	-	-	-
AB-CD	0.13	5.36	0.33	A	78.63	117.94	20.34	10.35	0.23	20.34	10.35
AB-C	-	-	-	-	332.11	498.16	-	-	-	-	-
D-ABC	0.09	9.63	0.10	A	30.28	45.42	6.63	8.76	0.07	6.63	8.76
C-D	-	-	-	-	54.14	81.21	-	-	-	-	-
C-A	-	-	-	-	286.30	429.44	-	-	-	-	-
C-B	-	-	-	-	257.85	386.78	-	-	-	-	-
CD-AB	0.69	14.74	3.03	B	440.35	660.53	165.57	15.04	1.84	165.61	15.04
CD-A	-	-	-	-	128.54	192.81	-	-	-	-	-

## Main Results for each time segment

### Main results: (07:45-08:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	206.28	51.57	204.22	0.00	612.48	0.337	0.00	0.52	9.038	A
B-A	68.51	17.13	67.64	0.00	388.84	0.176	0.00	0.22	11.513	B
A-B	63.24	15.81	63.24	0.00	-	-	-	-	-	-
A-C	118.20	29.55	118.20	0.00	-	-	-	-	-	-
A-D	12.80	3.20	12.80	0.00	-	-	-	-	-	-
AB-CD	54.95	13.74	54.41	0.00	746.73	0.074	0.00	0.13	5.355	A
AB-C	280.27	70.07	280.27	0.00	-	-	-	-	-	-
D-ABC	24.84	6.21	24.63	0.00	487.88	0.051	0.00	0.05	8.001	A
C-D	44.42	11.10	44.42	0.00	-	-	-	-	-	-
C-A	234.89	58.72	234.89	0.00	-	-	-	-	-	-
C-B	211.55	52.89	211.55	0.00	-	-	-	-	-	-
CD-AB	323.86	80.97	320.13	0.00	772.30	0.419	0.00	0.93	8.163	A
CD-A	142.73	35.68	142.73	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
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B-CD	246.32	61.58	245.48	0.00	589.99	0.418	0.52	0.72	10.736	B
B-A	81.81	20.45	81.42	0.00	345.32	0.237	0.22	0.31	14.029	B
A-B	75.51	18.88	75.51	0.00	-	-	-	-	-	-
A-C	141.14	35.28	141.14	0.00	-	-	-	-	-	-
A-D	15.28	3.82	15.28	0.00	-	-	-	-	-	-
AB-CD	73.88	18.47	73.62	0.00	768.71	0.096	0.13	0.20	5.337	A
AB-C	328.02	82.01	328.02	0.00	-	-	-	-	-	-
D-ABC	29.67	7.42	29.60	0.00	460.35	0.064	0.05	0.07	8.607	A
C-D	53.04	13.26	53.04	0.00	-	-	-	-	-	-
C-A	280.48	70.12	280.48	0.00	-	-	-	-	-	-
C-B	252.61	63.15	252.61	0.00	-	-	-	-	-	-
CD-AB	420.11	105.03	417.98	0.00	796.61	0.527	0.93	1.47	9.805	A
CD-A	137.21	34.30	137.21	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	301.68	75.42	299.72	0.00	548.76	0.550	0.72	1.22	14.768	B
B-A	100.19	25.05	99.22	0.00	279.63	0.358	0.31	0.56	20.442	C
A-B	92.49	23.12	92.49	0.00	-	-	-	-	-	-
A-C	172.86	43.22	172.86	0.00	-	-	-	-	-	-
A-D	18.72	4.68	18.72	0.00	-	-	-	-	-	-
AB-CD	105.81	26.45	105.29	0.00	799.09	0.132	0.20	0.33	5.350	A
AB-C	385.49	96.37	385.49	0.00	-	-	-	-	-	-
D-ABC	36.33	9.08	36.23	0.00	421.40	0.086	0.07	0.10	9.625	A
C-D	64.96	16.24	64.96	0.00	-	-	-	-	-	-
C-A	343.52	85.88	343.52	0.00	-	-	-	-	-	-
C-B	309.39	77.35	309.39	0.00	-	-	-	-	-	-
CD-AB	573.25	143.31	567.42	0.00	830.08	0.691	1.47	2.92	14.106	B
CD-A	109.29	27.32	109.29	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	301.68	75.42	301.57	0.00	546.98	0.552	1.22	1.24	15.081	C
B-A	100.19	25.05	100.13	0.00	277.14	0.362	0.56	0.57	20.932	C
A-B	92.49	23.12	92.49	0.00	-	-	-	-	-	-
A-C	172.86	43.22	172.86	0.00	-	-	-	-	-	-
A-D	18.72	4.68	18.72	0.00	-	-	-	-	-	-
AB-CD	106.56	26.64	106.54	0.00	800.36	0.133	0.33	0.33	5.356	A
AB-C	386.59	96.65	386.59	0.00	-	-	-	-	-	-
D-ABC	36.33	9.08	36.33	0.00	421.21	0.086	0.10	0.10	9.633	A
C-D	64.96	16.24	64.96	0.00	-	-	-	-	-	-
C-A	343.52	85.88	343.52	0.00	-	-	-	-	-	-
C-B	309.39	77.35	309.39	0.00	-	-	-	-	-	-
CD-AB	575.93	143.98	575.49	0.00	831.97	0.692	2.92	3.03	14.736	B
CD-A	106.70	26.68	106.70	0.00	-	-	-	-	-	-



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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	246.32	61.58	248.26	0.00	588.42	0.419	1.24	0.76	10.963	B
B-A	81.81	20.45	82.77	0.00	342.15	0.239	0.57	0.33	14.349	B
A-B	75.51	18.88	75.51	0.00	-	-	-	-	-	-
A-C	141.14	35.28	141.14	0.00	-	-	-	-	-	-
A-D	15.28	3.82	15.28	0.00	-	-	-	-	-	-
AB-CD	74.78	18.70	75.28	0.00	770.60	0.097	0.33	0.21	5.344	A
AB-C	329.90	82.48	329.90	0.00	-	-	-	-	-	-
D-ABC	29.67	7.42	29.77	0.00	460.09	0.064	0.10	0.07	8.620	A
C-D	53.04	13.26	53.04	0.00	-	-	-	-	-	-
C-A	280.48	70.12	280.48	0.00	-	-	-	-	-	-
C-B	252.61	63.15	252.61	0.00	-	-	-	-	-	-
CD-AB	423.01	105.75	428.86	0.00	799.27	0.529	3.03	1.57	10.245	B
CD-A	134.44	33.61	134.44	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	206.28	51.57	207.18	0.00	611.44	0.337	0.76	0.53	9.192	A
B-A	68.51	17.13	68.93	0.00	386.30	0.177	0.33	0.23	11.698	B
A-B	63.24	15.81	63.24	0.00	-	-	-	-	-	-
A-C	118.20	29.55	118.20	0.00	-	-	-	-	-	-
A-D	12.80	3.20	12.80	0.00	-	-	-	-	-	-
AB-CD	55.78	13.95	56.07	0.00	748.68	0.075	0.21	0.14	5.358	A
AB-C	282.39	70.60	282.39	0.00	-	-	-	-	-	-
D-ABC	24.84	6.21	24.91	0.00	487.62	0.051	0.07	0.06	8.014	A
C-D	44.42	11.10	44.42	0.00	-	-	-	-	-	-
C-A	234.89	58.72	234.89	0.00	-	-	-	-	-	-
C-B	211.55	52.89	211.55	0.00	-	-	-	-	-	-
CD-AB	325.94	81.49	328.30	0.00	773.85	0.421	1.57	0.98	8.399	A
CD-A	140.88	35.22	140.88	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**
**Queueing Delay results: (07:45-08:00)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	7.36	0.49	9.038	A	A
B-A	3.09	0.21	11.513	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.98	0.13	5.355	A	A
AB-C	-	-	-	-	-
D-ABC	0.79	0.05	8.001	A	A
C-D	-	-	-	-	-

C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	13.72	0.91	8.163	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (08:00-08:15)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	10.45	0.70	10.736	B	B
B-A	4.52	0.30	14.029	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	3.03	0.20	5.337	A	A
AB-C	-	-	-	-	-
D-ABC	1.03	0.07	8.607	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	22.16	1.48	9.805	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (08:15-08:30)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	17.13	1.14	14.768	B	B
B-A	7.83	0.52	20.442	C	C
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	4.96	0.33	5.350	A	A
AB-C	-	-	-	-	-
D-ABC	1.40	0.09	9.625	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	43.76	2.92	14.106	B	B
CD-A	-	-	-	-	-

**Queueing Delay results: (08:30-08:45)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	18.48	1.23	15.081	C	B
B-A	8.49	0.57	20.932	C	C
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	5.08	0.34	5.356	A	A
AB-C	-	-	-	-	-

D-ABC	1.45	0.10	9.633	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	46.80	3.12	14.736	B	B
CD-A	-	-	-	-	-

**Queueing Delay results: (08:45-09:00)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	11.91	0.79	10.963	B	B
B-A	5.21	0.35	14.349	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	3.18	0.21	5.344	A	A
AB-C	-	-	-	-	-
D-ABC	1.10	0.07	8.620	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	24.32	1.62	10.245	B	B
CD-A	-	-	-	-	-

**Queueing Delay results: (09:00-09:15)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	8.27	0.55	9.192	A	A
B-A	3.51	0.23	11.698	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.11	0.14	5.358	A	A
AB-C	-	-	-	-	-
D-ABC	0.86	0.06	8.014	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	14.81	0.99	8.399	A	A
CD-A	-	-	-	-	-

## Smithfield Rd/Stone Rd Existing - 2018 Base+Com+Dev, PM

**Data Errors and Warnings**

*No errors or warnings*

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Smithfield Rd/Stone Rd Existing	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship
2018 Base+Com+Dev, FM	2018 Base+Com+Dev	FM		ONE HOUR	16:45	18:15	90	15				✓	

# Junction Network

## Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
Stone Rd / Smithfield Rd / Springfield Rd	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		44.11	E

## Junction Network Options

Driving Side	Lighting	Road Surface
Left	Normal/unknown	(Mini-roundabouts only)

# Arms

## Arms

Arm	Name	Description	Arm Type
A	Smithfield Rd		Major
B	Stone Road South		Minor
C	Stone Road West		Major
D	Springfield Road		Minor

## Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	6.00		0.00		2.20	150.00	✓	0.00
C	6.00		0.00		2.20	150.00	✓	0.00

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

## Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				9.60	4.20	3.60	3.25	3.25		1.00	12	14
D	One lane	3.30										20	20

## Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
1	AB-D	660.830	-	-	-	-	-	0.256	0.256	0.256	-	-
1	B-A	566.677	0.103	0.261	0.261	-	-	0.164	0.373	-	0.164	0.373
1	B-CD	687.230	0.105	0.266	0.266	-	-	-	-	-	-	-
1	CD-B	660.830	0.256	0.256	0.256	-	-	-	-	-	-	-
1	D-AB	655.645	-	-	-	-	-	0.254	0.254	0.101	-	-
1	D-C	508.758	-	0.147	0.335	0.147	0.335	0.234	0.234	0.093	-	-

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

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

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	471.00	100.000
B	ONE HOUR	✓	483.00	100.000
C	ONE HOUR	✓	489.00	100.000
D	ONE HOUR	✓	27.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	120.000	334.000	17.000
	B	88.000	0.000	380.000	15.000
	C	250.000	229.000	0.000	10.000

	D	10.000	6.000	11.000	0.000
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### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.25	0.71	0.04
	B	0.18	0.00	0.79	0.03
	C	0.51	0.47	0.00	0.02
	D	0.37	0.22	0.41	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.030	1.030	1.030	1.030
	B	1.030	1.030	1.030	1.030
	C	1.030	1.030	1.030	1.030
	D	1.030	1.030	1.030	1.030

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	3.000	3.000	3.000	3.000
	B	3.000	3.000	3.000	3.000
	C	3.000	3.000	3.000	3.000
	D	3.000	3.000	3.000	3.000

## 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)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-CD	0.92	68.40	7.70	F	362.46	543.69	277.28	30.60	3.08	277.35	30.61
B-A	0.81	116.49	2.87	F	80.75	121.13	81.14	40.19	0.90	81.14	40.19
A-B	-	-	-	-	110.11	165.17	-	-	-	-	-
A-C	-	-	-	-	306.48	459.73	-	-	-	-	-
A-D	-	-	-	-	15.60	23.40	-	-	-	-	-
AB-CD	0.11	4.25	0.27	A	84.49	126.73	15.46	7.32	0.17	15.46	7.32
AB-C	-	-	-	-	599.29	898.93	-	-	-	-	-
D-ABC	0.08	11.11	0.09	B	24.78	37.16	6.11	9.86	0.07	6.11	9.86
C-D	-	-	-	-	9.18	13.76	-	-	-	-	-
C-A	-	-	-	-	229.40	344.11	-	-	-	-	-
C-B	-	-	-	-	210.13	315.20	-	-	-	-	-
CD-AB	0.58	12.33	1.91	B	329.25	493.87	109.69	13.33	1.22	109.71	13.33
CD-A	-	-	-	-	124.96	187.43	-	-	-	-	-

## Main Results for each time segment

### Main results: (16:45-17:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	297.38	74.34	293.07	0.00	573.59	0.518	0.00	1.08	13.030	B
B-A	66.25	16.56	65.28	0.00	343.17	0.193	0.00	0.24	13.300	B
A-B	90.34	22.59	90.34	0.00	-	-	-	-	-	-
A-C	251.45	62.86	251.45	0.00	-	-	-	-	-	-
A-D	12.80	3.20	12.80	0.00	-	-	-	-	-	-
AB-CD	54.09	13.52	53.70	0.00	925.33	0.058	0.00	0.10	4.254	A
AB-C	503.23	125.81	503.23	0.00	-	-	-	-	-	-
D-ABC	20.33	5.08	20.13	0.00	441.82	0.046	0.00	0.05	8.790	A
C-D	7.53	1.88	7.53	0.00	-	-	-	-	-	-
C-A	188.21	47.05	188.21	0.00	-	-	-	-	-	-
C-B	172.40	43.10	172.40	0.00	-	-	-	-	-	-
CD-AB	244.63	61.16	241.91	0.00	703.59	0.348	0.00	0.68	8.004	A
CD-A	127.92	31.98	127.92	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	355.10	88.77	351.99	0.00	541.56	0.656	1.08	1.85	19.237	C
B-A	79.11	19.78	78.42	0.00	270.09	0.293	0.24	0.41	19.275	C
A-B	107.88	26.97	107.88	0.00	-	-	-	-	-	-
A-C	300.26	75.06	300.26	0.00	-	-	-	-	-	-
A-D	15.28	3.82	15.28	0.00	-	-	-	-	-	-
AB-CD	75.95	18.99	75.76	0.00	979.60	0.078	0.10	0.15	4.105	A
AB-C	591.58	147.89	591.58	0.00	-	-	-	-	-	-
D-ABC	24.27	6.07	24.21	0.00	410.65	0.059	0.05	0.06	9.594	A
C-D	8.99	2.25	8.99	0.00	-	-	-	-	-	-
C-A	224.74	56.19	224.74	0.00	-	-	-	-	-	-
C-B	205.87	51.47	205.87	0.00	-	-	-	-	-	-
CD-AB	314.10	78.52	312.73	0.00	714.59	0.440	0.68	1.02	9.236	A
CD-A	130.86	32.72	130.86	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	434.90	108.73	418.27	0.00	482.86	0.901	1.85	6.01	48.321	E
B-A	96.89	24.22	91.48	0.00	142.48	0.680	0.41	1.77	67.080	F
A-B	132.12	33.03	132.12	0.00	-	-	-	-	-	-
A-C	367.74	91.94	367.74	0.00	-	-	-	-	-	-
A-D	18.72	4.68	18.72	0.00	-	-	-	-	-	-
AB-CD	118.62	29.65	118.17	0.00	1058.84	0.112	0.15	0.26	3.944	A

AB-C	686.11	171.53	686.11	0.00	-	-	-	-	-	-
D-ABC	29.73	7.43	29.62	0.00	365.76	0.081	0.06	0.09	11.027	B
C-D	11.01	2.75	11.01	0.00	-	-	-	-	-	-
C-A	275.26	68.81	275.26	0.00	-	-	-	-	-	-
C-B	252.13	63.03	252.13	0.00	-	-	-	-	-	-
CD-AB	426.99	106.75	423.64	0.00	731.11	0.584	1.02	1.86	12.065	B
CD-A	117.95	29.49	117.95	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	434.90	108.73	428.13	0.00	473.47	0.919	6.01	7.70	68.401	F
B-A	96.89	24.22	92.49	0.00	120.03	0.807	1.77	2.87	116.486	F
A-B	132.12	33.03	132.12	0.00	-	-	-	-	-	-
A-C	367.74	91.94	367.74	0.00	-	-	-	-	-	-
A-D	18.72	4.68	18.72	0.00	-	-	-	-	-	-
AB-CD	121.63	30.41	121.59	0.00	1065.10	0.114	0.26	0.27	3.935	A
AB-C	692.96	173.24	692.96	0.00	-	-	-	-	-	-
D-ABC	29.73	7.43	29.72	0.00	363.53	0.082	0.09	0.09	11.107	B
C-D	11.01	2.75	11.01	0.00	-	-	-	-	-	-
C-A	275.26	68.81	275.26	0.00	-	-	-	-	-	-
C-B	252.13	63.03	252.13	0.00	-	-	-	-	-	-
CD-AB	428.33	107.08	428.15	0.00	732.22	0.585	1.86	1.91	12.328	B
CD-A	116.68	29.17	116.68	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	355.10	88.77	376.97	0.00	530.56	0.669	7.70	2.23	26.984	D
B-A	79.11	19.78	88.56	0.00	246.29	0.321	2.87	0.51	24.792	C
A-B	107.88	26.97	107.88	0.00	-	-	-	-	-	-
A-C	300.26	75.06	300.26	0.00	-	-	-	-	-	-
A-D	15.28	3.82	15.28	0.00	-	-	-	-	-	-
AB-CD	81.03	20.26	81.45	0.00	994.67	0.081	0.27	0.16	4.064	A
AB-C	611.48	152.87	611.48	0.00	-	-	-	-	-	-
D-ABC	24.27	6.07	24.37	0.00	407.45	0.060	0.09	0.07	9.681	A
C-D	8.99	2.25	8.99	0.00	-	-	-	-	-	-
C-A	224.74	56.19	224.74	0.00	-	-	-	-	-	-
C-B	205.87	51.47	205.87	0.00	-	-	-	-	-	-
CD-AB	315.55	78.89	318.86	0.00	716.13	0.441	1.91	1.08	9.455	A
CD-A	129.51	32.38	129.51	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	297.38	74.34	301.72	0.00	571.90	0.520	2.23	1.15	13.932	B
B-A	66.25	16.56	67.25	0.00	337.43	0.196	0.51	0.26	13.774	B
A-B	90.34	22.59	90.34	0.00	-	-	-	-	-	-
A-C	251.45	62.86	251.45	0.00	-	-	-	-	-	-



A-D	12.80	3.20	12.80	0.00	-	-	-	-	-	-
AB-CD	55.60	13.90	55.83	0.00	930.76	0.060	0.16	0.10	4.241	A
AB-C	510.37	127.59	510.37	0.00	-	-	-	-	-	-
D-ABC	20.33	5.08	20.39	0.00	440.75	0.046	0.07	0.05	8.821	A
C-D	7.53	1.88	7.53	0.00	-	-	-	-	-	-
C-A	188.21	47.05	188.21	0.00	-	-	-	-	-	-
C-B	172.40	43.10	172.40	0.00	-	-	-	-	-	-
CD-AB	245.87	61.47	247.35	0.00	704.59	0.349	1.08	0.71	8.157	A
CD-A	126.82	31.71	126.82	0.00	-	-	-	-	-	-

## Queueing Delay Results for each time segment

### Queueing Delay results: (16:45-17:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	14.95	1.00	13.030	B	B
B-A	3.43	0.23	13.300	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.43	0.10	4.254	A	A
AB-C	-	-	-	-	-
D-ABC	0.71	0.05	8.790	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	10.01	0.67	8.004	A	A
CD-A	-	-	-	-	-

### Queueing Delay results: (17:00-17:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	25.59	1.71	19.237	C	B
B-A	5.87	0.39	19.275	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.19	0.15	4.105	A	A
AB-C	-	-	-	-	-
D-ABC	0.94	0.06	9.594	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	15.44	1.03	9.236	A	A
CD-A	-	-	-	-	-

### Queueing Delay results: (17:15-17:30)

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Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	70.07	4.67	48.321	E	D
B-A	21.46	1.43	67.080	F	E
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	3.87	0.26	3.944	A	A
AB-C	-	-	-	-	-
D-ABC	1.31	0.09	11.027	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	27.99	1.87	12.065	B	B
CD-A	-	-	-	-	-

#### Queueing Delay results: (17:30-17:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	104.63	6.98	68.401	F	E
B-A	36.59	2.44	116.486	F	F
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	4.03	0.27	3.935	A	A
AB-C	-	-	-	-	-
D-ABC	1.36	0.09	11.107	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	29.16	1.94	12.328	B	B
CD-A	-	-	-	-	-

#### Queueing Delay results: (17:45-18:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	43.61	2.91	26.984	D	C
B-A	9.74	0.65	24.792	C	C
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.41	0.16	4.064	A	A
AB-C	-	-	-	-	-
D-ABC	1.02	0.07	9.681	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	16.43	1.10	9.455	A	A

CD-A	-	-	-	-	-
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### Queueing Delay results: (18:00-18:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	18.44	1.23	13.932	B	B
B-A	4.05	0.27	13.774	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.53	0.10	4.241	A	A
AB-C	-	-	-	-	-
D-ABC	0.77	0.05	8.821	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	10.65	0.71	8.157	A	A
CD-A	-	-	-	-	-

## Smithfield Rd/Stone Rd Existing - 2018 Base+Com+Dev, Sat

### Data Errors and Warnings

*No errors or warnings*

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Smithfield Rd/Stone Rd Existing	ARCADY		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship
2018 Base+Com+Dev, Sat	2018 Base+Com+Dev	Sat		ONE HOUR	11:45	13:15	90	15				✓	

## Junction Network

### Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
Stone Rd / Smithfield Rd / Springfield Rd	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		25.08	D

### Junction Network Options

Driving Side	Lighting	Road Surface
Left	Normal/unknown	(Mini-roundabouts only)

## Arms

### Arms

Arm	Name	Description	Arm Type
A	Smithfield Rd		Major
B	Stone Road South		Minor
C	Stone Road West		Major
D	Springfield Road		Minor

### Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	6.00		0.00		2.20	150.00	✓	0.00
C	6.00		0.00		2.20	150.00	✓	0.00

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

### Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				9.60	4.20	3.60	3.25	3.25		1.00	12	14
D	One lane	3.30										20	20

### Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

### Slope / Intercept / Capacity

#### Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
1	AB-D	660.830	-	-	-	-	-	0.256	0.256	0.256	-	-
1	B-A	566.677	0.103	0.261	0.261	-	-	0.164	0.373	-	0.164	0.373
1	B-CD	687.230	0.105	0.266	0.266	-	-	-	-	-	-	-
1	CD-B	660.830	0.256	0.256	0.256	-	-	-	-	-	-	-
1	D-AB	655.645	-	-	-	-	-	0.254	0.254	0.101	-	-
1	D-C	508.758	-	0.147	0.335	0.147	0.335	0.234	0.234	0.093	-	-

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

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

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

## Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	405.00	100.000
B	ONE HOUR	✓	464.00	100.000
C	ONE HOUR	✓	434.00	100.000
D	ONE HOUR	✓	25.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	101.000	291.000	13.000
	B	93.000	0.000	357.000	14.000
	C	218.000	208.000	0.000	8.000
	D	9.000	6.000	10.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.25	0.72	0.03
	B	0.20	0.00	0.77	0.03
	C	0.50	0.48	0.00	0.02
	D	0.36	0.24	0.40	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.030	1.030	1.030	1.030
	B	1.030	1.030	1.030	1.030
	C	1.030	1.030	1.030	1.030
	D	1.030	1.030	1.030	1.030

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
A	3.000	3.000	3.000	3.000	

From	B	3.000	3.000	3.000	3.000
	C	3.000	3.000	3.000	3.000
	D	3.000	3.000	3.000	3.000

## 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)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-CD	0.81	38.02	4.06	E	340.44	510.65	182.10	21.40	2.02	182.15	21.40
B-A	0.54	41.13	1.11	E	85.34	128.01	48.44	22.71	0.54	48.45	22.71
A-B	-	-	-	-	92.68	139.02	-	-	-	-	-
A-C	-	-	-	-	267.03	400.54	-	-	-	-	-
A-D	-	-	-	-	11.93	17.89	-	-	-	-	-
AB-CD	0.09	4.36	0.17	A	61.99	92.99	10.30	6.64	0.11	10.30	6.65
AB-C	-	-	-	-	556.75	835.13	-	-	-	-	-
D-ABC	0.07	10.15	0.08	B	22.94	34.41	5.28	9.21	0.06	5.28	9.21
C-D	-	-	-	-	7.34	11.01	-	-	-	-	-
C-A	-	-	-	-	200.04	300.06	-	-	-	-	-
C-B	-	-	-	-	190.86	286.30	-	-	-	-	-
CD-AB	0.50	10.36	1.33	B	281.84	422.75	80.91	11.48	0.90	80.92	11.48
CD-A	-	-	-	-	122.82	184.22	-	-	-	-	-

### Main Results for each time segment

#### Main results: (11:45-12:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	279.31	69.83	275.63	0.00	584.36	0.478	0.00	0.92	11.876	B
B-A	70.02	17.50	69.08	0.00	371.79	0.188	0.00	0.24	12.212	B
A-B	76.04	19.01	76.04	0.00	-	-	-	-	-	-
A-C	219.08	54.77	219.08	0.00	-	-	-	-	-	-
A-D	9.79	2.45	9.79	0.00	-	-	-	-	-	-
AB-CD	39.44	9.86	39.17	0.00	888.43	0.044	0.00	0.07	4.365	A
AB-C	465.06	116.27	465.06	0.00	-	-	-	-	-	-
D-ABC	18.82	4.71	18.65	0.00	459.82	0.041	0.00	0.04	8.398	A
C-D	6.02	1.51	6.02	0.00	-	-	-	-	-	-
C-A	164.12	41.03	164.12	0.00	-	-	-	-	-	-
C-B	156.59	39.15	156.59	0.00	-	-	-	-	-	-
CD-AB	213.03	53.26	210.83	0.00	698.20	0.305	0.00	0.55	7.587	A
CD-A	118.88	29.72	118.88	0.00	-	-	-	-	-	-

#### Main results: (12:00-12:15)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	333.52	83.38	331.27	0.00	555.73	0.600	0.92	1.48	16.349	C
B-A	83.61	20.90	83.06	0.00	309.35	0.270	0.24	0.37	16.344	C
A-B	90.80	22.70	90.80	0.00	-	-	-	-	-	-
A-C	261.60	65.40	261.60	0.00	-	-	-	-	-	-
A-D	11.69	2.92	11.69	0.00	-	-	-	-	-	-
AB-CD	58.60	14.65	58.45	0.00	951.31	0.062	0.07	0.10	4.153	A
AB-C	545.96	136.49	545.96	0.00	-	-	-	-	-	-
D-ABC	22.47	5.62	22.43	0.00	432.66	0.052	0.04	0.06	9.037	A
C-D	7.19	1.80	7.19	0.00	-	-	-	-	-	-
C-A	195.98	48.99	195.98	0.00	-	-	-	-	-	-
C-B	186.99	46.75	186.99	0.00	-	-	-	-	-	-
CD-AB	270.58	67.64	269.61	0.00	707.48	0.382	0.55	0.79	8.473	A
CD-A	125.84	31.46	125.84	0.00	-	-	-	-	-	-

**Main results: (12:15-12:30)**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	408.48	102.12	399.71	0.00	505.10	0.809	1.48	3.68	32.737	D
B-A	102.39	25.60	99.93	0.00	201.29	0.509	0.37	0.99	35.752	E
A-B	111.20	27.80	111.20	0.00	-	-	-	-	-	-
A-C	320.40	80.10	320.40	0.00	-	-	-	-	-	-
A-D	14.31	3.58	14.31	0.00	-	-	-	-	-	-
AB-CD	85.70	21.42	85.45	0.00	1014.16	0.085	0.10	0.17	3.993	A
AB-C	648.72	162.18	648.72	0.00	-	-	-	-	-	-
D-ABC	27.53	6.88	27.44	0.00	393.91	0.070	0.06	0.08	10.116	B
C-D	8.81	2.20	8.81	0.00	-	-	-	-	-	-
C-A	240.02	60.01	240.02	0.00	-	-	-	-	-	-
C-B	229.01	57.25	229.01	0.00	-	-	-	-	-	-
CD-AB	360.71	90.18	358.64	0.00	720.87	0.500	0.79	1.31	10.242	B
CD-A	124.79	31.20	124.79	0.00	-	-	-	-	-	-

**Main results: (12:30-12:45)**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	408.48	102.12	406.95	0.00	501.29	0.815	3.68	4.06	38.022	E
B-A	102.39	25.60	101.89	0.00	191.23	0.535	0.99	1.11	41.125	E
A-B	111.20	27.80	111.20	0.00	-	-	-	-	-	-
A-C	320.40	80.10	320.40	0.00	-	-	-	-	-	-
A-D	14.31	3.58	14.31	0.00	-	-	-	-	-	-
AB-CD	87.30	21.83	87.29	0.00	1018.46	0.086	0.17	0.17	3.984	A
AB-C	654.36	163.59	654.36	0.00	-	-	-	-	-	-
D-ABC	27.53	6.88	27.52	0.00	392.81	0.070	0.08	0.08	10.150	B
C-D	8.81	2.20	8.81	0.00	-	-	-	-	-	-
C-A	240.02	60.01	240.02	0.00	-	-	-	-	-	-
C-B	229.01	57.25	229.01	0.00	-	-	-	-	-	-
CD-AB	361.41	90.35	361.33	0.00	721.49	0.501	1.31	1.33	10.357	B

CD-A	124.14	31.03	124.14	0.00	-	-	-	-	-	-
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**Main results: (12:45-13:00)**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	333.52	83.38	343.18	0.00	552.24	0.604	4.06	1.64	18.477	C
B-A	83.61	20.90	86.42	0.00	299.90	0.279	1.11	0.41	17.586	C
A-B	90.80	22.70	90.80	0.00	-	-	-	-	-	-
A-C	261.60	65.40	261.60	0.00	-	-	-	-	-	-
A-D	11.69	2.92	11.69	0.00	-	-	-	-	-	-
AB-CD	60.66	15.16	60.89	0.00	958.63	0.063	0.17	0.11	4.132	A
AB-C	555.81	138.95	555.81	0.00	-	-	-	-	-	-
D-ABC	22.47	5.62	22.55	0.00	431.22	0.052	0.08	0.06	9.074	A
C-D	7.19	1.80	7.19	0.00	-	-	-	-	-	-
C-A	195.98	48.99	195.98	0.00	-	-	-	-	-	-
C-B	186.99	46.75	186.99	0.00	-	-	-	-	-	-
CD-AB	271.40	67.85	273.41	0.00	708.37	0.383	1.33	0.82	8.591	A
CD-A	125.10	31.27	125.10	0.00	-	-	-	-	-	-

**Main results: (13:00-13:15)**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	279.31	69.83	282.00	0.00	583.10	0.479	1.64	0.97	12.421	B
B-A	70.02	17.50	70.66	0.00	367.88	0.190	0.41	0.25	12.501	B
A-B	76.04	19.01	76.04	0.00	-	-	-	-	-	-
A-C	219.08	54.77	219.08	0.00	-	-	-	-	-	-
A-D	9.79	2.45	9.79	0.00	-	-	-	-	-	-
AB-CD	40.26	10.06	40.42	0.00	892.05	0.045	0.11	0.07	4.357	A
AB-C	470.61	117.65	470.61	0.00	-	-	-	-	-	-
D-ABC	18.82	4.71	18.87	0.00	459.07	0.041	0.06	0.04	8.425	A
C-D	6.02	1.51	6.02	0.00	-	-	-	-	-	-
C-A	164.12	41.03	164.12	0.00	-	-	-	-	-	-
C-B	156.59	39.15	156.59	0.00	-	-	-	-	-	-
CD-AB	213.89	53.47	214.91	0.00	698.87	0.306	0.82	0.57	7.691	A
CD-A	118.15	29.54	118.15	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**
**Queueing Delay results: (11:45-12:00)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	12.88	0.86	11.876	B	B
B-A	3.34	0.22	12.212	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	0.99	0.07	4.365	A	A
AB-C	-	-	-	-	-
D-ABC	0.63	0.04	8.398	A	A



C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	8.10	0.54	7.587	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (12:00-12:15)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	20.78	1.39	16.349	C	B
B-A	5.32	0.35	16.344	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.56	0.10	4.153	A	A
AB-C	-	-	-	-	-
D-ABC	0.82	0.05	9.037	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	11.94	0.80	8.473	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (12:15-12:30)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	46.75	3.12	32.737	D	C
B-A	13.18	0.88	35.752	E	D
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.49	0.17	3.993	A	A
AB-C	-	-	-	-	-
D-ABC	1.12	0.07	10.116	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	19.70	1.31	10.242	B	B
CD-A	-	-	-	-	-

**Queueing Delay results: (12:30-12:45)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	58.56	3.90	38.022	E	D
B-A	16.06	1.07	41.125	E	D
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-

AB-CD	2.56	0.17	3.984	A	A
AB-C	-	-	-	-	-
D-ABC	1.15	0.08	10.150	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	20.21	1.35	10.357	B	B
CD-A	-	-	-	-	-

**Queueing Delay results: (12:45-13:00)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	27.72	1.85	18.477	C	B
B-A	6.67	0.44	17.586	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.66	0.11	4.132	A	A
AB-C	-	-	-	-	-
D-ABC	0.88	0.06	9.074	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	12.45	0.83	8.591	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (13:00-13:15)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	15.41	1.03	12.421	B	B
B-A	3.86	0.26	12.501	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.04	0.07	4.357	A	A
AB-C	-	-	-	-	-
D-ABC	0.68	0.05	8.425	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	8.52	0.57	7.691	A	A
CD-A	-	-	-	-	-

# Smithfield Rd/Stone Rd Existing - 2018 Base+Com, AM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Smithfield Rd/Stone Rd Existing	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relation
2018 Base+Com, AM	2018 Base+Com	AM		ONE HOUR	07:45	09:15	90	15				✓		

# Junction Network

## Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
Stone Rd / Smithfield Rd / Springfield Rd	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		13.29	B

## Junction Network Options

Driving Side	Lighting	Road Surface
Left	Normal/unknown	(Mini-roundabouts only)

# Arms

## Arms

Arm	Name	Description	Arm Type
A	Smithfield Rd		Major
B	Stone Road South		Minor
C	Stone Road West		Major
D	Springfield Road		Minor

## Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	6.00		0.00		2.20	150.00	✓	0.00
C	6.00		0.00		2.20	150.00	✓	0.00

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

## Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				9.60	4.20	3.60	3.25	3.25		1.00	12	14
D	One lane	3.30										20	20

## Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
1	AB-D	660.830	-	-	-	-	-	0.256	0.256	0.256	-	-
1	B-A	566.677	0.103	0.261	0.261	-	-	0.164	0.373	-	0.164	0.373
1	B-CD	687.230	0.105	0.266	0.266	-	-	-	-	-	-	-
1	CD-B	660.830	0.256	0.256	0.256	-	-	-	-	-	-	-
1	D-AB	655.645	-	-	-	-	-	0.254	0.254	0.101	-	-
1	D-C	508.758	-	0.147	0.335	0.147	0.335	0.234	0.234	0.093	-	-

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

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

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	236.00	100.000
B	ONE HOUR	✓	353.00	100.000
C	ONE HOUR	✓	611.00	100.000
D	ONE HOUR	✓	31.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	79.000	141.000	16.000
	B	79.000	0.000	247.000	27.000
	C	271.000	281.000	0.000	59.000

	D	11.000	14.000	6.000	0.000
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### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.33	0.60	0.07
	B	0.22	0.00	0.70	0.08
	C	0.44	0.46	0.00	0.10
	D	0.35	0.45	0.19	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.030	1.030	1.030	1.030
	B	1.030	1.030	1.030	1.030
	C	1.030	1.030	1.030	1.030
	D	1.030	1.030	1.030	1.030

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	3.000	3.000	3.000	3.000
	B	3.000	3.000	3.000	3.000
	C	3.000	3.000	3.000	3.000
	D	3.000	3.000	3.000	3.000

## 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)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-CD	0.53	13.78	1.14	B	251.43	377.14	69.54	11.06	0.77	69.55	11.07
B-A	0.30	17.94	0.43	C	72.49	108.74	25.47	14.06	0.28	25.48	14.06
A-B	-	-	-	-	72.49	108.74	-	-	-	-	-
A-C	-	-	-	-	129.38	194.08	-	-	-	-	-
A-D	-	-	-	-	14.68	22.02	-	-	-	-	-
AB-CD	0.13	5.37	0.31	A	73.85	110.77	18.61	10.08	0.21	18.61	10.08
AB-C	-	-	-	-	321.30	481.95	-	-	-	-	-
D-ABC	0.08	9.34	0.09	A	28.45	42.67	6.09	8.56	0.07	6.09	8.56
C-D	-	-	-	-	54.14	81.21	-	-	-	-	-
C-A	-	-	-	-	248.67	373.01	-	-	-	-	-
C-B	-	-	-	-	257.85	386.78	-	-	-	-	-
CD-AB	0.66	13.85	2.57	B	412.22	618.33	144.98	14.07	1.61	145.01	14.07
CD-A	-	-	-	-	117.21	175.82	-	-	-	-	-

## Main Results for each time segment

### Main results: (07:45-08:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	206.28	51.57	204.27	0.00	621.96	0.332	0.00	0.50	8.836	A
B-A	59.48	14.87	58.76	0.00	398.36	0.149	0.00	0.18	10.896	B
A-B	59.48	14.87	59.48	0.00	-	-	-	-	-	-
A-C	106.15	26.54	106.15	0.00	-	-	-	-	-	-
A-D	12.05	3.01	12.05	0.00	-	-	-	-	-	-
AB-CD	51.00	12.75	50.52	0.00	741.32	0.069	0.00	0.12	5.366	A
AB-C	271.46	67.87	271.46	0.00	-	-	-	-	-	-
D-ABC	23.34	5.83	23.14	0.00	493.66	0.047	0.00	0.05	7.877	A
C-D	44.42	11.10	44.42	0.00	-	-	-	-	-	-
C-A	204.02	51.01	204.02	0.00	-	-	-	-	-	-
C-B	211.55	52.89	211.55	0.00	-	-	-	-	-	-
CD-AB	308.21	77.05	304.75	0.00	754.82	0.408	0.00	0.87	8.201	A
CD-A	126.02	31.50	126.02	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	246.32	61.58	245.55	0.00	603.55	0.408	0.50	0.70	10.334	B
B-A	71.02	17.75	70.73	0.00	357.23	0.199	0.18	0.25	12.929	B
A-B	71.02	17.75	71.02	0.00	-	-	-	-	-	-
A-C	126.76	31.69	126.76	0.00	-	-	-	-	-	-
A-D	14.38	3.60	14.38	0.00	-	-	-	-	-	-
AB-CD	70.04	17.51	69.78	0.00	766.30	0.091	0.12	0.19	5.326	A
AB-C	316.65	79.16	316.65	0.00	-	-	-	-	-	-
D-ABC	27.87	6.97	27.81	0.00	467.76	0.060	0.05	0.06	8.427	A
C-D	53.04	13.26	53.04	0.00	-	-	-	-	-	-
C-A	243.62	60.91	243.62	0.00	-	-	-	-	-	-
C-B	252.61	63.15	252.61	0.00	-	-	-	-	-	-
CD-AB	394.08	98.52	392.27	0.00	774.80	0.509	0.87	1.32	9.700	A
CD-A	124.59	31.15	124.59	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	301.68	75.42	300.00	0.00	571.44	0.528	0.70	1.12	13.572	B
B-A	86.98	21.75	86.31	0.00	295.58	0.294	0.25	0.42	17.663	C
A-B	86.98	21.75	86.98	0.00	-	-	-	-	-	-
A-C	155.24	38.81	155.24	0.00	-	-	-	-	-	-
A-D	17.62	4.40	17.62	0.00	-	-	-	-	-	-
AB-CD	99.46	24.86	99.00	0.00	795.66	0.125	0.19	0.30	5.329	A

AB-C	373.40	93.35	373.40	0.00	-	-	-	-	-	-
D-ABC	34.13	8.53	34.04	0.00	431.22	0.079	0.06	0.09	9.333	A
C-D	64.96	16.24	64.96	0.00	-	-	-	-	-	-
C-A	298.38	74.59	298.38	0.00	-	-	-	-	-	-
C-B	309.39	77.35	309.39	0.00	-	-	-	-	-	-
CD-AB	531.55	132.89	526.84	0.00	803.21	0.662	1.32	2.50	13.398	B
CD-A	103.67	25.92	103.67	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	301.68	75.42	301.60	0.00	570.39	0.529	1.12	1.14	13.784	B
B-A	86.98	21.75	86.95	0.00	293.57	0.296	0.42	0.43	17.939	C
A-B	86.98	21.75	86.98	0.00	-	-	-	-	-	-
A-C	155.24	38.81	155.24	0.00	-	-	-	-	-	-
A-D	17.62	4.40	17.62	0.00	-	-	-	-	-	-
AB-CD	100.08	25.02	100.06	0.00	796.75	0.126	0.30	0.31	5.333	A
AB-C	374.38	93.60	374.38	0.00	-	-	-	-	-	-
D-ABC	34.13	8.53	34.13	0.00	431.05	0.079	0.09	0.09	9.341	A
C-D	64.96	16.24	64.96	0.00	-	-	-	-	-	-
C-A	298.38	74.59	298.38	0.00	-	-	-	-	-	-
C-B	309.39	77.35	309.39	0.00	-	-	-	-	-	-
CD-AB	533.45	133.36	533.14	0.00	804.62	0.663	2.50	2.57	13.852	B
CD-A	101.84	25.46	101.84	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	246.32	61.58	247.97	0.00	602.56	0.409	1.14	0.73	10.506	B
B-A	71.02	17.75	71.68	0.00	354.60	0.200	0.43	0.26	13.137	B
A-B	71.02	17.75	71.02	0.00	-	-	-	-	-	-
A-C	126.76	31.69	126.76	0.00	-	-	-	-	-	-
A-D	14.38	3.60	14.38	0.00	-	-	-	-	-	-
AB-CD	70.79	17.70	71.24	0.00	767.93	0.092	0.31	0.19	5.332	A
AB-C	318.31	79.58	318.31	0.00	-	-	-	-	-	-
D-ABC	27.87	6.97	27.96	0.00	467.53	0.060	0.09	0.07	8.438	A
C-D	53.04	13.26	53.04	0.00	-	-	-	-	-	-
C-A	243.62	60.91	243.62	0.00	-	-	-	-	-	-
C-B	252.61	63.15	252.61	0.00	-	-	-	-	-	-
CD-AB	396.15	99.04	400.83	0.00	776.76	0.510	2.57	1.40	10.045	B
CD-A	122.63	30.66	122.63	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	206.28	51.57	207.11	0.00	621.20	0.332	0.73	0.52	8.973	A
B-A	59.48	14.87	59.79	0.00	396.03	0.150	0.26	0.18	11.037	B
A-B	59.48	14.87	59.48	0.00	-	-	-	-	-	-
A-C	106.15	26.54	106.15	0.00	-	-	-	-	-	-

A-D	12.05	3.01	12.05	0.00	-	-	-	-	-	-
AB-CD	51.72	12.93	51.99	0.00	743.08	0.070	0.19	0.13	5.369	A
AB-C	273.58	68.40	273.58	0.00	-	-	-	-	-	-
D-ABC	23.34	5.83	23.40	0.00	493.40	0.047	0.07	0.05	7.889	A
C-D	44.42	11.10	44.42	0.00	-	-	-	-	-	-
C-A	204.02	51.01	204.02	0.00	-	-	-	-	-	-
C-B	211.55	52.89	211.55	0.00	-	-	-	-	-	-
CD-AB	309.90	77.47	311.88	0.00	756.04	0.410	1.40	0.91	8.413	A
CD-A	124.54	31.14	124.54	0.00	-	-	-	-	-	-

### Queueing Delay Results for each time segment

#### Queueing Delay results: (07:45-08:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	7.20	0.48	8.836	A	A
B-A	2.55	0.17	10.896	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.80	0.12	5.366	A	A
AB-C	-	-	-	-	-
D-ABC	0.73	0.05	7.877	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	12.74	0.85	8.201	A	A
CD-A	-	-	-	-	-

#### Queueing Delay results: (08:00-08:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	10.08	0.67	10.334	B	B
B-A	3.64	0.24	12.929	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.80	0.19	5.326	A	A
AB-C	-	-	-	-	-
D-ABC	0.95	0.06	8.427	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	19.95	1.33	9.700	A	A
CD-A	-	-	-	-	-

#### Queueing Delay results: (08:15-08:30)

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Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	15.86	1.06	13.572	B	B
B-A	5.95	0.40	17.663	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	4.54	0.30	5.329	A	A
AB-C	-	-	-	-	-
D-ABC	1.28	0.09	9.333	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	37.50	2.50	13.398	B	B
CD-A	-	-	-	-	-

#### Queueing Delay results: (08:30-08:45)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	16.95	1.13	13.784	B	B
B-A	6.36	0.42	17.939	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	4.63	0.31	5.333	A	A
AB-C	-	-	-	-	-
D-ABC	1.32	0.09	9.341	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	39.58	2.64	13.852	B	B
CD-A	-	-	-	-	-

#### Queueing Delay results: (08:45-09:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	11.39	0.76	10.506	B	B
B-A	4.12	0.27	13.137	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.93	0.20	5.332	A	A
AB-C	-	-	-	-	-
D-ABC	1.01	0.07	8.438	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	21.55	1.44	10.045	B	B

CD-A	-	-	-	-	-
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### Queueing Delay results: (09:00-09:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	8.06	0.54	8.973	A	A
B-A	2.87	0.19	11.037	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.91	0.13	5.369	A	A
AB-C	-	-	-	-	-
D-ABC	0.79	0.05	7.889	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	13.66	0.91	8.413	A	A
CD-A	-	-	-	-	-

## Smithfield Rd/Stone Rd Existing - 2018 Base+Com, PM

### Data Errors and Warnings

No errors or warnings

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Smithfield Rd/Stone Rd Existing	ARCADY		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relation
2018 Base+Com, PM	2018 Base+Com	PM		ONE HOUR	16:45	18:15	90	15				✓		

## Junction Network

### Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
Stone Rd / Smithfield Rd / Springfield Rd	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		23.25	C

### Junction Network Options

Driving Side	Lighting	Road Surface
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Left	Normal/unknown (Mini-roundabouts only)
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## Arms

### Arms

Arm	Name	Description	Arm Type
A	Smithfield Rd		Major
B	Stone Road South		Minor
C	Stone Road West		Major
D	Springfield Road		Minor

### Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	6.00		0.00		2.20	150.00	✓	0.00
C	6.00		0.00		2.20	150.00	✓	0.00

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

### Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				9.60	4.20	3.60	3.25	3.25		1.00	12	14
D	One lane	3.30										20	20

### Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None
D	None

### Slope / Intercept / Capacity

#### Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
1	AB-D	660.830	-	-	-	-	-	0.256	0.256	0.256	-	-
1	B-A	566.677	0.103	0.261	0.261	-	-	0.164	0.373	-	0.164	0.373
1	B-CD	687.230	0.105	0.266	0.266	-	-	-	-	-	-	-
1	CD-B	660.830	0.256	0.256	0.256	-	-	-	-	-	-	-
1	D-AB	655.645	-	-	-	-	-	0.254	0.254	0.101	-	-
1	D-C	508.758	-	0.147	0.335	0.147	0.335	0.234	0.234	0.093	-	-

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

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

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	379.00	100.000
B	ONE HOUR	✓	465.00	100.000
C	ONE HOUR	✓	429.00	100.000
D	ONE HOUR	✓	24.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	100.000	266.000	13.000
	B	70.000	0.000	380.000	15.000
	C	190.000	229.000	0.000	10.000
	D	7.000	6.000	11.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.26	0.70	0.03
	B	0.15	0.00	0.82	0.03
	C	0.44	0.53	0.00	0.02
	D	0.29	0.25	0.46	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.030	1.030	1.030	1.030
	B	1.030	1.030	1.030	1.030
	C	1.030	1.030	1.030	1.030
	D	1.030	1.030	1.030	1.030

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	3.000	3.000	3.000	3.000
	B	3.000	3.000	3.000	3.000
	C	3.000	3.000	3.000	3.000

	D	3.000	3.000	3.000	3.000
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## 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)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-CD	0.81	35.06	4.00	E	362.46	543.69	187.12	20.65	2.08	187.17	20.66
B-A	0.42	34.69	0.71	D	64.23	96.35	32.80	20.42	0.36	32.80	20.42
A-B	-	-	-	-	91.76	137.64	-	-	-	-	-
A-C	-	-	-	-	244.09	366.13	-	-	-	-	-
A-D	-	-	-	-	11.93	17.89	-	-	-	-	-
AB-CD	0.09	4.37	0.18	A	64.04	96.07	10.81	6.75	0.12	10.81	6.75
AB-C	-	-	-	-	553.73	830.60	-	-	-	-	-
D-ABC	0.07	10.49	0.08	B	22.02	33.03	5.22	9.48	0.06	5.22	9.48
C-D	-	-	-	-	9.18	13.76	-	-	-	-	-
C-A	-	-	-	-	174.35	261.52	-	-	-	-	-
C-B	-	-	-	-	210.13	315.20	-	-	-	-	-
CD-AB	0.53	11.29	1.44	B	294.89	442.34	87.36	11.85	0.97	87.37	11.85
CD-A	-	-	-	-	101.50	152.26	-	-	-	-	-

### Main Results for each time segment

#### Main results: (16:45-17:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	297.38	74.34	293.42	0.00	598.99	0.496	0.00	0.99	11.988	B
B-A	52.70	13.17	52.02	0.00	369.05	0.143	0.00	0.17	11.672	B
A-B	75.29	18.82	75.29	0.00	-	-	-	-	-	-
A-C	200.26	50.06	200.26	0.00	-	-	-	-	-	-
A-D	9.79	2.45	9.79	0.00	-	-	-	-	-	-
AB-CD	40.77	10.19	40.49	0.00	888.12	0.046	0.00	0.07	4.373	A
AB-C	462.70	115.67	462.70	0.00	-	-	-	-	-	-
D-ABC	18.07	4.52	17.90	0.00	448.06	0.040	0.00	0.04	8.613	A
C-D	7.53	1.88	7.53	0.00	-	-	-	-	-	-
C-A	143.04	35.76	143.04	0.00	-	-	-	-	-	-
C-B	172.40	43.10	172.40	0.00	-	-	-	-	-	-
CD-AB	225.36	56.34	223.00	0.00	687.57	0.328	0.00	0.59	7.956	A
CD-A	99.78	24.95	99.78	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
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B-CD	355.10	88.77	352.73	0.00	576.41	0.616	0.99	1.58	16.395	C
B-A	62.93	15.73	62.55	0.00	304.00	0.207	0.17	0.26	15.332	C
A-B	89.90	22.47	89.90	0.00	-	-	-	-	-	-
A-C	239.13	59.78	239.13	0.00	-	-	-	-	-	-
A-D	11.69	2.92	11.69	0.00	-	-	-	-	-	-
AB-CD	60.54	15.14	60.38	0.00	950.89	0.064	0.07	0.11	4.164	A
AB-C	543.00	135.75	543.00	0.00	-	-	-	-	-	-
D-ABC	21.58	5.39	21.53	0.00	420.34	0.051	0.04	0.06	9.296	A
C-D	8.99	2.25	8.99	0.00	-	-	-	-	-	-
C-A	170.81	42.70	170.81	0.00	-	-	-	-	-	-
C-B	205.87	51.47	205.87	0.00	-	-	-	-	-	-
CD-AB	283.90	70.98	282.86	0.00	694.48	0.409	0.59	0.85	9.011	A
CD-A	104.43	26.11	104.43	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	434.90	108.73	426.49	0.00	538.66	0.807	1.58	3.68	30.931	D
B-A	77.07	19.27	75.53	0.00	192.85	0.400	0.26	0.65	31.209	D
A-B	110.10	27.53	110.10	0.00	-	-	-	-	-	-
A-C	292.87	73.22	292.87	0.00	-	-	-	-	-	-
A-D	14.31	3.58	14.31	0.00	-	-	-	-	-	-
AB-CD	88.58	22.14	88.32	0.00	1013.91	0.087	0.11	0.17	4.008	A
AB-C	645.10	161.27	645.10	0.00	-	-	-	-	-	-
D-ABC	26.42	6.61	26.34	0.00	380.98	0.069	0.06	0.08	10.453	B
C-D	11.01	2.75	11.01	0.00	-	-	-	-	-	-
C-A	209.19	52.30	209.19	0.00	-	-	-	-	-	-
C-B	252.13	63.03	252.13	0.00	-	-	-	-	-	-
CD-AB	374.25	93.56	371.99	0.00	704.46	0.531	0.85	1.41	11.147	B
CD-A	101.35	25.34	101.35	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	434.90	108.73	433.64	0.00	536.57	0.811	3.68	4.00	35.061	E
B-A	77.07	19.27	76.81	0.00	183.26	0.421	0.65	0.71	34.691	D
A-B	110.10	27.53	110.10	0.00	-	-	-	-	-	-
A-C	292.87	73.22	292.87	0.00	-	-	-	-	-	-
A-D	14.31	3.58	14.31	0.00	-	-	-	-	-	-
AB-CD	90.19	22.55	90.17	0.00	1018.15	0.089	0.17	0.18	3.999	A
AB-C	650.64	162.66	650.64	0.00	-	-	-	-	-	-
D-ABC	26.42	6.61	26.42	0.00	379.87	0.070	0.08	0.08	10.490	B
C-D	11.01	2.75	11.01	0.00	-	-	-	-	-	-
C-A	209.19	52.30	209.19	0.00	-	-	-	-	-	-
C-B	252.13	63.03	252.13	0.00	-	-	-	-	-	-
CD-AB	374.94	93.73	374.84	0.00	705.06	0.532	1.41	1.44	11.295	B
CD-A	100.70	25.18	100.70	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	355.10	88.77	364.11	0.00	574.45	0.618	4.00	1.75	18.312	C
B-A	62.93	15.73	64.64	0.00	294.63	0.214	0.71	0.29	16.236	C
A-B	89.90	22.47	89.90	0.00	-	-	-	-	-	-
A-C	239.13	59.78	239.13	0.00	-	-	-	-	-	-
A-D	11.69	2.92	11.69	0.00	-	-	-	-	-	-
AB-CD	62.54	15.63	62.79	0.00	957.88	0.065	0.18	0.12	4.146	A
AB-C	552.39	138.10	552.39	0.00	-	-	-	-	-	-
D-ABC	21.58	5.39	21.66	0.00	418.85	0.052	0.08	0.06	9.338	A
C-D	8.99	2.25	8.99	0.00	-	-	-	-	-	-
C-A	170.81	42.70	170.81	0.00	-	-	-	-	-	-
C-B	205.87	51.47	205.87	0.00	-	-	-	-	-	-
CD-AB	284.72	71.18	286.92	0.00	695.34	0.409	1.44	0.89	9.154	A
CD-A	103.68	25.92	103.68	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	297.38	74.34	300.18	0.00	598.16	0.497	1.75	1.04	12.559	B
B-A	52.70	13.17	53.14	0.00	364.70	0.145	0.29	0.18	11.916	B
A-B	75.29	18.82	75.29	0.00	-	-	-	-	-	-
A-C	200.26	50.06	200.26	0.00	-	-	-	-	-	-
A-D	9.79	2.45	9.79	0.00	-	-	-	-	-	-
AB-CD	41.65	10.41	41.82	0.00	891.95	0.047	0.12	0.07	4.363	A
AB-C	468.58	117.14	468.58	0.00	-	-	-	-	-	-
D-ABC	18.07	4.52	18.12	0.00	447.20	0.040	0.06	0.04	8.642	A
C-D	7.53	1.88	7.53	0.00	-	-	-	-	-	-
C-A	143.04	35.76	143.04	0.00	-	-	-	-	-	-
C-B	172.40	43.10	172.40	0.00	-	-	-	-	-	-
CD-AB	226.18	56.54	227.29	0.00	688.21	0.329	0.89	0.61	8.079	A
CD-A	99.08	24.77	99.08	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**
**Queueing Delay results: (16:45-17:00)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	13.83	0.92	11.988	B	B
B-A	2.41	0.16	11.672	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.03	0.07	4.373	A	A
AB-C	-	-	-	-	-
D-ABC	0.62	0.04	8.613	A	A
C-D	-	-	-	-	-

C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	8.69	0.58	7.956	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (17:00-17:15)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	22.16	1.48	16.395	C	B
B-A	3.78	0.25	15.332	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.64	0.11	4.164	A	A
AB-C	-	-	-	-	-
D-ABC	0.81	0.05	9.296	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	12.84	0.86	9.011	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (17:15-17:30)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	47.27	3.15	30.931	D	C
B-A	8.84	0.59	31.209	D	C
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.62	0.17	4.008	A	A
AB-C	-	-	-	-	-
D-ABC	1.11	0.07	10.453	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	21.33	1.42	11.147	B	B
CD-A	-	-	-	-	-

**Queueing Delay results: (17:30-17:45)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	58.08	3.87	35.061	E	D
B-A	10.40	0.69	34.691	D	C
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.70	0.18	3.999	A	A
AB-C	-	-	-	-	-



D-ABC	1.14	0.08	10.490	B	B
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	21.93	1.46	11.295	B	B
CD-A	-	-	-	-	-

**Queueing Delay results: (17:45-18:00)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	29.18	1.95	18.312	C	B
B-A	4.60	0.31	16.236	C	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.73	0.12	4.146	A	A
AB-C	-	-	-	-	-
D-ABC	0.87	0.06	9.338	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	13.42	0.89	9.154	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (18:00-18:15)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	16.60	1.11	12.559	B	B
B-A	2.76	0.18	11.916	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.09	0.07	4.363	A	A
AB-C	-	-	-	-	-
D-ABC	0.67	0.04	8.642	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	9.16	0.61	8.079	A	A
CD-A	-	-	-	-	-

## Smithfield Rd/Stone Rd Existing - 2018 Base+Com, Sat

### Data Errors and Warnings

*No errors or warnings*

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Smithfield Rd/Stone Rd Existing	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relation
2018 Base+Com, Sat	2018 Base+Com	Sat		ONE HOUR	11:45	13:15	90	15				✓		

# Junction Network

## Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
Stone Rd / Smithfield Rd / Springfield Rd	NS-OS Stagger (UK LR Stagger)	Two-way	A,B,C,D		19.67	C

## Junction Network Options

Driving Side	Lighting	Road Surface
Left	Normal/unknown	(Mini-roundabouts only)

# Arms

## Arms

Arm	Name	Description	Arm Type
A	Smithfield Rd		Major
B	Stone Road South		Minor
C	Stone Road West		Major
D	Springfield Road		Minor

## Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	6.00		0.00		2.20	150.00	✓	0.00
C	6.00		0.00		2.20	150.00	✓	0.00

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

## Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				9.60	4.20	3.60	3.25	3.25		1.00	12	14
D	One lane	3.30										20	20

## Pedestrian Crossings

Arm	Crossing Type

A	None
B	None
C	None
D	None

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
1	AB-D	660.830	-	-	-	-	-	0.256	0.256	0.256	-	-
1	B-A	566.677	0.103	0.261	0.261	-	-	0.164	0.373	-	0.164	0.373
1	B-CD	687.230	0.105	0.266	0.266	-	-	-	-	-	-	-
1	CD-B	660.830	0.256	0.256	0.256	-	-	-	-	-	-	-
1	D-AB	655.645	-	-	-	-	-	0.254	0.254	0.101	-	-
1	D-C	508.758	-	0.147	0.335	0.147	0.335	0.234	0.234	0.093	-	-

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

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

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	351.00	100.000
B	ONE HOUR	✓	452.00	100.000
C	ONE HOUR	✓	394.00	100.000
D	ONE HOUR	✓	23.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	89.000	251.000	11.000
	B	81.000	0.000	357.000	14.000
	C	178.000	208.000	0.000	8.000
	D	7.000	6.000	10.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.25	0.72	0.03
	B	0.18	0.00	0.79	0.03
	C	0.45	0.53	0.00	0.02
	D	0.30	0.26	0.43	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.030	1.030	1.030	1.030
	B	1.030	1.030	1.030	1.030
	C	1.030	1.030	1.030	1.030
	D	1.030	1.030	1.030	1.030

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	3.000	3.000	3.000	3.000
	B	3.000	3.000	3.000	3.000
	C	3.000	3.000	3.000	3.000
	D	3.000	3.000	3.000	3.000

## 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)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-CD	0.76	28.45	3.08	D	340.44	510.65	153.82	18.07	1.71	153.86	18.08
B-A	0.40	27.34	0.66	D	74.33	111.49	33.01	17.77	0.37	33.02	17.77
A-B	-	-	-	-	81.67	122.50	-	-	-	-	-
A-C	-	-	-	-	230.32	345.48	-	-	-	-	-
A-D	-	-	-	-	10.09	15.14	-	-	-	-	-
AB-CD	0.08	4.40	0.14	A	54.14	81.21	8.68	6.42	0.10	8.68	6.42
AB-C	-	-	-	-	526.10	789.14	-	-	-	-	-
D-ABC	0.06	9.85	0.07	A	21.11	31.66	4.76	9.02	0.05	4.76	9.02
C-D	-	-	-	-	7.34	11.01	-	-	-	-	-
C-A	-	-	-	-	163.34	245.00	-	-	-	-	-
C-B	-	-	-	-	190.86	286.30	-	-	-	-	-
CD-AB	0.47	10.06	1.14	B	262.80	394.21	71.04	10.81	0.79	71.05	10.81
CD-A	-	-	-	-	103.31	154.96	-	-	-	-	-

## Main Results for each time segment

### Main results: (11:45-12:00)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	279.31	69.83	275.80	0.00	599.78	0.466	0.00	0.88	11.328	B
B-A	60.98	15.25	60.22	0.00	387.52	0.157	0.00	0.19	11.303	B
A-B	67.00	16.75	67.00	0.00	-	-	-	-	-	-
A-C	188.97	47.24	188.97	0.00	-	-	-	-	-	-
A-D	8.28	2.07	8.28	0.00	-	-	-	-	-	-
AB-CD	35.09	8.77	34.86	0.00	876.76	0.040	0.00	0.06	4.403	A
AB-C	437.96	109.49	437.96	0.00	-	-	-	-	-	-
D-ABC	17.32	4.33	17.16	0.00	463.15	0.037	0.00	0.04	8.311	A
C-D	6.02	1.51	6.02	0.00	-	-	-	-	-	-
C-A	134.01	33.50	134.01	0.00	-	-	-	-	-	-
C-B	156.59	39.15	156.59	0.00	-	-	-	-	-	-
CD-AB	201.94	50.48	199.93	0.00	686.48	0.294	0.00	0.50	7.600	A
CD-A	98.36	24.59	98.36	0.00	-	-	-	-	-	-

### Main results: (12:00-12:15)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	333.52	83.38	331.58	0.00	576.81	0.578	0.88	1.36	14.996	B
B-A	72.82	18.20	72.43	0.00	329.77	0.221	0.19	0.29	14.387	B
A-B	80.01	20.00	80.01	0.00	-	-	-	-	-	-
A-C	225.64	56.41	225.64	0.00	-	-	-	-	-	-
A-D	9.89	2.47	9.89	0.00	-	-	-	-	-	-
AB-CD	51.29	12.82	51.17	0.00	935.10	0.055	0.06	0.09	4.195	A
AB-C	515.82	128.96	515.82	0.00	-	-	-	-	-	-
D-ABC	20.68	5.17	20.63	0.00	438.02	0.047	0.04	0.05	8.882	A
C-D	7.19	1.80	7.19	0.00	-	-	-	-	-	-
C-A	160.02	40.00	160.02	0.00	-	-	-	-	-	-
C-B	186.99	46.75	186.99	0.00	-	-	-	-	-	-
CD-AB	253.41	63.35	252.60	0.00	692.93	0.366	0.50	0.71	8.422	A
CD-A	105.26	26.31	105.26	0.00	-	-	-	-	-	-

### Main results: (12:15-12:30)

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	408.48	102.12	402.29	0.00	538.18	0.759	1.36	2.91	26.142	D
B-A	89.18	22.30	87.85	0.00	230.92	0.386	0.29	0.62	25.681	D
A-B	97.99	24.50	97.99	0.00	-	-	-	-	-	-
A-C	276.36	69.09	276.36	0.00	-	-	-	-	-	-
A-D	12.11	3.03	12.11	0.00	-	-	-	-	-	-
AB-CD	74.49	18.62	74.29	0.00	995.79	0.075	0.09	0.14	4.026	A
AB-C	616.27	154.07	616.27	0.00	-	-	-	-	-	-
D-ABC	25.32	6.33	25.25	0.00	402.45	0.063	0.05	0.07	9.830	A

C-D	8.81	2.20	8.81	0.00	-	-	-	-	-	-
C-A	195.98	49.00	195.98	0.00	-	-	-	-	-	-
C-B	229.01	57.25	229.01	0.00	-	-	-	-	-	-
CD-AB	332.21	83.05	330.55	0.00	702.24	0.473	0.71	1.12	9.975	A
CD-A	107.06	26.76	107.06	0.00	-	-	-	-	-	-

**Main results: (12:30-12:45)**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	408.48	102.12	407.78	0.00	536.41	0.762	2.91	3.08	28.450	D
B-A	89.18	22.30	89.03	0.00	224.40	0.397	0.62	0.66	27.336	D
A-B	97.99	24.50	97.99	0.00	-	-	-	-	-	-
A-C	276.36	69.09	276.36	0.00	-	-	-	-	-	-
A-D	12.11	3.03	12.11	0.00	-	-	-	-	-	-
AB-CD	75.59	18.90	75.58	0.00	999.08	0.076	0.14	0.14	4.016	A
AB-C	620.65	155.16	620.65	0.00	-	-	-	-	-	-
D-ABC	25.32	6.33	25.32	0.00	401.67	0.063	0.07	0.07	9.852	A
C-D	8.81	2.20	8.81	0.00	-	-	-	-	-	-
C-A	195.98	49.00	195.98	0.00	-	-	-	-	-	-
C-B	229.01	57.25	229.01	0.00	-	-	-	-	-	-
CD-AB	332.69	83.17	332.62	0.00	702.66	0.473	1.12	1.14	10.064	B
CD-A	106.62	26.65	106.62	0.00	-	-	-	-	-	-

**Main results: (12:45-13:00)**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	333.52	83.38	339.95	0.00	575.14	0.580	3.08	1.48	16.166	C
B-A	72.82	18.20	74.23	0.00	323.47	0.225	0.66	0.31	14.959	B
A-B	80.01	20.00	80.01	0.00	-	-	-	-	-	-
A-C	225.64	56.41	225.64	0.00	-	-	-	-	-	-
A-D	9.89	2.47	9.89	0.00	-	-	-	-	-	-
AB-CD	52.62	13.15	52.81	0.00	940.27	0.056	0.14	0.09	4.181	A
AB-C	522.87	130.72	522.87	0.00	-	-	-	-	-	-
D-ABC	20.68	5.17	20.75	0.00	436.98	0.047	0.07	0.05	8.909	A
C-D	7.19	1.80	7.19	0.00	-	-	-	-	-	-
C-A	160.02	40.00	160.02	0.00	-	-	-	-	-	-
C-B	186.99	46.75	186.99	0.00	-	-	-	-	-	-
CD-AB	253.99	63.50	255.60	0.00	693.55	0.366	1.14	0.73	8.516	A
CD-A	104.74	26.19	104.74	0.00	-	-	-	-	-	-

**Main results: (13:00-13:15)**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-CD	279.31	69.83	281.53	0.00	598.92	0.466	1.48	0.92	11.762	B
B-A	60.98	15.25	61.41	0.00	384.11	0.159	0.31	0.20	11.505	B
A-B	67.00	16.75	67.00	0.00	-	-	-	-	-	-
A-C	188.97	47.24	188.97	0.00	-	-	-	-	-	-
A-D	8.28	2.07	8.28	0.00	-	-	-	-	-	-
AB-CD	35.77	8.94	35.90	0.00	880.03	0.041	0.09	0.06	4.393	A

AB-C	443.01	110.75	443.01	0.00	-	-	-	-	-	-
D-ABC	17.32	4.33	17.36	0.00	462.46	0.037	0.05	0.04	8.331	A
C-D	6.02	1.51	6.02	0.00	-	-	-	-	-	-
C-A	134.01	33.50	134.01	0.00	-	-	-	-	-	-
C-B	156.59	39.15	156.59	0.00	-	-	-	-	-	-
CD-AB	202.59	50.65	203.45	0.00	686.98	0.295	0.73	0.52	7.692	A
CD-A	97.82	24.46	97.82	0.00	-	-	-	-	-	-

### Queueing Delay Results for each time segment

#### Queueing Delay results: (11:45-12:00)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	12.32	0.82	11.328	B	B
B-A	2.71	0.18	11.303	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	0.86	0.06	4.403	A	A
AB-C	-	-	-	-	-
D-ABC	0.57	0.04	8.311	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	7.41	0.49	7.600	A	A
CD-A	-	-	-	-	-

#### Queueing Delay results: (12:00-12:15)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	19.21	1.28	14.996	B	B
B-A	4.12	0.27	14.387	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.33	0.09	4.195	A	A
AB-C	-	-	-	-	-
D-ABC	0.74	0.05	8.882	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	10.66	0.71	8.422	A	A
CD-A	-	-	-	-	-

#### Queueing Delay results: (12:15-12:30)

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	38.39	2.56	26.142	D	C

B-A	8.57	0.57	25.681	D	C
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.07	0.14	4.026	A	A
AB-C	-	-	-	-	-
D-ABC	1.00	0.07	9.830	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	16.90	1.13	9.975	A	A
CD-A	-	-	-	-	-

**Queueing Delay results: (12:30-12:45)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	45.22	3.01	28.450	D	C
B-A	9.67	0.64	27.336	D	C
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	2.12	0.14	4.016	A	A
AB-C	-	-	-	-	-
D-ABC	1.03	0.07	9.852	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	17.25	1.15	10.064	B	B
CD-A	-	-	-	-	-

**Queueing Delay results: (12:45-13:00)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	24.12	1.61	16.166	C	B
B-A	4.87	0.32	14.959	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	1.39	0.09	4.181	A	A
AB-C	-	-	-	-	-
D-ABC	0.80	0.05	8.909	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	11.04	0.74	8.516	A	A
CD-A	-	-	-	-	-



**Queueing Delay results: (13:00-13:15)**

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-CD	14.55	0.97	11.762	B	B
B-A	3.08	0.21	11.505	B	B
A-B	-	-	-	-	-
A-C	-	-	-	-	-
A-D	-	-	-	-	-
AB-CD	0.90	0.06	4.393	A	A
AB-C	-	-	-	-	-
D-ABC	0.62	0.04	8.331	A	A
C-D	-	-	-	-	-
C-A	-	-	-	-	-
C-B	-	-	-	-	-
CD-AB	7.76	0.52	7.692	A	A
CD-A	-	-	-	-	-

<b>ARCADY 8</b>
Version: 8.0.0.296 [27 Feb 2012] © Copyright Transport Research Laboratory 2012
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**Filename:** Smithfield Rd - High St - Bradley St - Flat Profile AM.arc8  
**Path:** T:\Projects Current\#700\772 Uttoxeter Cattle Market (Lingfield)\2012 TA\Data\Junction Models\Smithfield Rd - Bradley St - High St  
**Report generation date:** 25/04/2012 16:55:51

- » Existing Mini Roundabout Layout - 2018 Base + Com + Dev, AM
- » Existing Mini Roundabout Layout - 2018 Base + Com, AM
- » Existing Mini Roundabout Layout - 2012 Base, AM

### Summary of junction performance

	AM			
	Queue (PCU)	Delay (s)	RFC	LOS
	Existing Mini Roundabout Layout - 2018 Base + Com + Dev			
Arm 1	1.55	13.95	0.60	B
Arm 2	1.26	9.30	0.55	A
Arm 3	4.56	32.49	0.82	D

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

"D1 - 2018 Base + Com + Dev, AM " model duration: 08:00 - 09:00  
 "D4 - 2018 Base + Com, AM" model duration: 08:00 - 09:00  
 "D7 - 2012 Base, AM" model duration: 08:00 - 09:00

Run using ARCADY 8.0.0.296 at 25/04/2012 16:55:47

### File summary

#### File Description

<b>Title</b>	Smithfield Rd - Bradley St - High Street AM
<b>Location</b>	Uttoxeter
<b>Site Number</b>	
<b>Date</b>	04/04/2012
<b>Version</b>	
<b>Status</b>	
<b>Identifier</b>	
<b>Client</b>	
<b>Jobnumber</b>	
<b>Enumerator</b>	PJA\matt franklin
<b>Description</b>	

### Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

## 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

# Existing Mini Roundabout Layout - 2018 Base + Com + Dev, AM

## Data Errors and Warnings

*No errors or warnings*

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2018 Base + Com + Dev, AM	2018 Base + Com + Dev	AM		FLAT	08:00	09:00	60	15				✓		

# Junction Network

## Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Smithfield Rd - Bradley St - High St	Mini-roundabout	1,2,3	19.18	C

## Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

# Arms

## Arms

Arm	Name	Description
1	Bradley Street	
2	Smithfield Road	
3	High Street	

## Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)

1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

## Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.50	10.00	14.00	11.00	0.00	
2	3.50	3.50	4.20	12.00	14.50	13.00	0.00	
3	3.00	3.00	3.50	6.00	8.50	4.00	0.00	

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

## Pedestrian Crossings

Arm	Crossing Type
1	Zebra
2	Zebra
3	Zebra

## Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queuing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
1	2.00	2.00		Distance	9.00	6.43				
2	2.00	2.00		Distance	7.50	5.36				
3	2.00	2.00		Distance	6.00	4.29				

## Slope / Intercept / Capacity

### Arm Intercept Adjustments

Arm	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
1	None			
2	None			
3	Percentage			120.00

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	751.130
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	896.995

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

## General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT		404.00	100.000
2	FLAT		492.00	100.000
3	FLAT		524.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	60.00
2	FLAT	60.00
3	FLAT	60.00

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	232.000	172.000
	2	403.000	0.000	89.000
	3	378.000	146.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.57	0.43
	2	0.82	0.00	0.18
	3	0.72	0.28	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.020	1.050
	2	1.030	1.000	1.030
	3	1.020	1.020	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	2.000	5.000
	2	3.000	0.000	3.000
	3	2.000	2.000	0.000

# Results

## Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.60	13.95	1.55	B	404.00	404.00	89.69	13.32	1.49	89.79	13.34
2	0.55	9.30	1.26	A	492.00	492.00	73.99	9.02	1.23	74.04	9.03
3	0.82	32.49	4.56	D	524.00	524.00	245.46	28.11	4.09	246.45	28.22

## Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	404.00	101.00	398.02	765.60	141.62	60.00	672.73	674.71	0.601	0.00	1.50	13.261	B
2	492.00	123.00	487.05	370.18	169.45	60.00	892.25	820.96	0.551	0.00	1.24	9.044	A
3	524.00	131.00	508.28	257.56	398.94	60.00	640.20	455.88	0.819	0.00	3.93	25.455	D

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	404.00	101.00	403.85	779.77	145.55	60.00	670.46	674.72	0.603	1.50	1.53	13.924	B
2	492.00	123.00	491.93	377.46	171.94	60.00	890.79	820.96	0.552	1.24	1.26	9.292	A
3	524.00	131.00	522.38	260.92	402.94	60.00	635.42	455.88	0.825	3.93	4.34	31.553	D

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	404.00	101.00	403.95	780.55	145.83	60.00	670.30	674.72	0.603	1.53	1.54	13.946	B
2	492.00	123.00	491.98	377.81	171.98	60.00	890.77	820.96	0.552	1.26	1.26	9.296	A
3	524.00	131.00	523.40	260.98	402.98	60.00	635.25	455.88	0.825	4.34	4.49	32.237	D

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	404.00	101.00	403.98	780.77	145.91	60.00	670.26	674.72	0.603	1.54	1.55	13.951	B
2	492.00	123.00	491.99	377.90	171.99	60.00	890.76	820.96	0.552	1.26	1.26	9.298	A
3	524.00	131.00	523.69	260.99	402.99	60.00	635.20	455.88	0.825	4.49	4.56	32.489	D

## Queueing Delay Results for each time segment

### Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	20.58	1.37	13.261	B	B
2	17.45	1.16	9.044	A	A
3	48.62	3.24	25.455	D	C

**Queueing Delay results: (08:15-08:30)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	22.79	1.52	13.924	B	B
2	18.73	1.25	9.292	A	A
3	62.63	4.18	31.553	D	C

**Queueing Delay results: (08:30-08:45)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	23.10	1.54	13.946	B	B
2	18.88	1.26	9.296	A	A
3	66.30	4.42	32.237	D	C

**Queueing Delay results: (08:45-09:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	23.22	1.55	13.951	B	B
2	18.93	1.26	9.298	A	A
3	67.91	4.53	32.489	D	C

# Existing Mini Roundabout Layout - 2018 Base + Com, AM

**Data Errors and Warnings**

*No errors or warnings*

**Analysis Set Details**

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

**Demand Set Details**

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2018 Base + Com, AM	2018 Base + Com	AM		FLAT	08:00	09:00	60	15				✓		

## Junction Network

**Junctions**

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Smithfield Rd - Bradley St - High St	Mini-roundabout	1,2,3	16.43	C

**Junction Network Options**

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

## Arms

### Arms

Arm	Name	Description
1	Bradley Street	
2	Smithfield Road	
3	High Street	

### Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

### Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.50	10.00	14.00	11.00	0.00	
2	3.50	3.50	4.20	12.00	14.50	13.00	0.00	
3	3.00	3.00	3.50	6.00	8.50	4.00	0.00	

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

### Pedestrian Crossings

Arm	Crossing Type
1	Zebra
2	Zebra
3	Zebra

### Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queueing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
1	2.00	2.00		Distance	9.00	6.43				
2	2.00	2.00		Distance	7.50	5.36				
3	2.00	2.00		Distance	6.00	4.29				

### Slope / Intercept / Capacity

#### Arm Intercept Adjustments

Arm	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
1	None			
2	None			
3	Percentage			120.00

#### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	751.130
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	896.995



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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	387.00	100.000
2	FLAT	✓	473.00	100.000
3	FLAT	✓	495.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	120.00
2	FLAT	120.00
3	FLAT	120.00

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	215.000	172.000
	2	396.000	0.000	77.000
	3	378.000	117.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.56	0.44
	2	0.84	0.00	0.16
	3	0.76	0.24	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

--

		To		
		1	2	3
From	1	1.000	1.020	1.050
	2	1.030	1.000	1.030
	3	1.020	1.020	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	2.000	5.000
	2	3.000	0.000	3.000
	3	2.000	2.000	0.000

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.56	12.45	1.33	B	387.00	387.00	77.21	11.97	1.29	77.29	11.98
2	0.53	8.90	1.16	A	473.00	473.00	68.21	8.65	1.14	68.25	8.66
3	0.78	26.76	3.58	D	495.00	495.00	196.84	23.86	3.28	197.44	23.93

### Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	387.00	96.75	381.84	760.42	113.98	120.00	687.45	687.28	0.563	0.00	1.29	11.979	B
2	473.00	118.25	468.43	326.11	169.71	120.00	891.09	809.22	0.531	0.00	1.14	8.683	A
3	495.00	123.75	482.22	245.96	392.18	120.00	636.12	435.06	0.778	0.00	3.20	22.340	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	387.00	96.75	386.90	773.18	116.76	120.00	685.85	687.28	0.564	1.29	1.32	12.429	B
2	473.00	118.25	472.94	331.71	171.96	120.00	889.77	809.22	0.532	1.14	1.16	8.893	A
3	495.00	123.75	493.99	248.95	395.95	120.00	631.34	435.06	0.784	3.20	3.45	26.315	D

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	387.00	96.75	386.97	773.72	116.92	120.00	685.77	687.28	0.564	1.32	1.32	12.443	B
2	473.00	118.25	472.98	331.90	171.99	120.00	889.76	809.22	0.532	1.16	1.16	8.895	A
3	495.00	123.75	494.65	248.98	395.98	120.00	631.20	435.06	0.784	3.45	3.54	26.643	D

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
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Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	387.00	96.75	386.98	773.86	116.96	120.00	685.74	687.28	0.564	1.32	1.33	12.446	B
2	473.00	118.25	472.99	331.95	171.99	120.00	889.75	809.22	0.532	1.16	1.16	8.897	A
3	495.00	123.75	494.83	248.99	395.99	120.00	631.16	435.06	0.784	3.54	3.58	26.756	D

## Queueing Delay Results for each time segment

### Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	17.93	1.20	11.979	B	B
2	16.15	1.08	8.683	A	A
3	40.71	2.71	22.340	C	C

### Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	19.59	1.31	12.429	B	B
2	17.26	1.15	8.893	A	A
3	50.27	3.35	26.315	D	C

### Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	19.80	1.32	12.443	B	B
2	17.38	1.16	8.895	A	A
3	52.47	3.50	26.643	D	C

### Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	19.88	1.33	12.446	B	B
2	17.43	1.16	8.897	A	A
3	53.39	3.56	26.756	D	C

# Existing Mini Roundabout Layout - 2012 Base, AM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
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2012 Base, AM	2012 Base	AM		FLAT	08:00	09:00	60	15						✓	
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## Junction Network

### Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Smithfield Rd - Bradley St - High St	Mini-roundabout	1,2,3	10.63	B

### Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

## Arms

### Arms

Arm	Name	Description
1	Bradley Street	
2	Smithfield Road	
3	High Street	

### Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

### Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.50	10.00	14.00	11.00	0.00	
2	3.50	3.50	4.20	12.00	14.50	13.00	0.00	
3	3.00	3.00	3.50	6.00	8.50	4.00	0.00	

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

### Pedestrian Crossings

Arm	Crossing Type
1	Zebra
2	Zebra
3	Zebra

### Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queueing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
1	2.00	2.00		Distance	9.00	6.43				
2	2.00	2.00		Distance	7.50	5.36				
3	2.00	2.00		Distance	6.00	4.29				

### Slope / Intercept / Capacity

### Arm Intercept Adjustments

Arm	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
1	None			
2	None			
3	Percentage			120.00

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	751.130
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	896.995

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	335.00	100.000
2	FLAT	✓	352.00	100.000
3	FLAT	✓	447.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	120.00
2	FLAT	120.00
3	FLAT	120.00

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	186.000	149.000
	2	290.000	0.000	62.000
	3	338.000	109.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.56	0.44
	2	0.82	0.00	0.18
	3	0.76	0.24	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.020	1.050
	2	1.030	1.000	1.030
	3	1.020	1.020	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	2.000	5.000
	2	3.000	0.000	3.000
	3	2.000	2.000	0.000

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.49	10.45	0.97	B	335.00	335.00	56.69	10.15	0.94	56.73	10.16
2	0.39	6.73	0.66	A	352.00	352.00	38.76	6.61	0.65	38.77	6.61
3	0.63	13.84	1.70	B	447.00	447.00	98.33	13.20	1.64	98.45	13.21

### Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	335.00	83.75	331.20	620.90	107.40	120.00	691.62	684.45	0.484	0.00	0.95	10.216	B
2	352.00	88.00	349.41	291.29	147.31	120.00	904.24	809.43	0.389	0.00	0.65	6.653	A
3	447.00	111.75	440.44	208.85	287.86	120.00	714.31	442.37	0.626	0.00	1.64	13.116	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
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1	335.00	83.75	334.95	627.86	108.96	120.00	690.73	684.45	0.485	0.95	0.96	10.450	B
2	352.00	88.00	351.98	294.93	148.98	120.00	903.27	809.43	0.390	0.65	0.65	6.725	A
3	447.00	111.75	446.83	210.97	289.98	120.00	712.14	442.37	0.628	1.64	1.68	13.818	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	335.00	83.75	334.98	627.96	108.99	120.00	690.71	684.45	0.485	0.96	0.97	10.453	B
2	352.00	88.00	351.99	294.98	148.99	120.00	903.26	809.43	0.390	0.65	0.65	6.725	A
3	447.00	111.75	446.95	210.99	290.00	120.00	712.12	442.37	0.628	1.68	1.70	13.836	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	335.00	83.75	334.99	627.98	108.99	120.00	690.71	684.45	0.485	0.97	0.97	10.455	B
2	352.00	88.00	352.00	294.99	149.00	120.00	903.26	809.43	0.390	0.65	0.66	6.725	A
3	447.00	111.75	446.97	211.00	290.00	120.00	712.11	442.37	0.628	1.70	1.70	13.841	B

**Queueing Delay Results for each time segment**
**Queueing Delay results: (08:00-08:15)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	13.38	0.89	10.216	B	B
2	9.34	0.62	6.653	A	A
3	22.51	1.50	13.116	B	B

**Queueing Delay results: (08:15-08:30)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	14.35	0.96	10.450	B	B
2	9.77	0.65	6.725	A	A
3	25.00	1.67	13.818	B	B

**Queueing Delay results: (08:30-08:45)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	14.46	0.96	10.453	B	B
2	9.81	0.65	6.725	A	A
3	25.34	1.69	13.836	B	B

**Queueing Delay results: (08:45-09:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	14.50	0.97	10.455	B	B
2	9.83	0.66	6.725	A	A
3	25.48	1.70	13.841	B	B

<b>ARCADY 8</b>
Version: 8.0.0.296 [27 Feb 2012] © Copyright Transport Research Laboratory 2012
For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 E-mail: software@trl.co.uk Web: http://www.trlsoftware.co.uk
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**Filename:** Smithfield Rd - High St - Bradley St - Flat Profile PM.arc8

**Path:** T:\Projects Current\#700\772 Uttoxeter Cattle Market (Lingfield)\2012 TA\Data\Junction Models\Smithfield Rd - Bradley St - High St

**Report generation date:** 25/04/2012 16:54:23

- » Existing Mini Roundabout Layout - 2018 Base + Com + Dev, PM
- » Existing Mini Roundabout Layout - 2018 Base + Com, PM
- » Existing Mini Roundabout Layout - 2012 Base, PM

### Summary of junction performance

	PM			
	Queue (PCU)	Delay (s)	RFC	LOS
	Existing Mini Roundabout Layout - 2012 Base			
Arm 1	2.33	13.08	0.70	B
Arm 2	0.52	7.29	0.34	A
Arm 3	1.18	12.16	0.54	B

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

"D2 - 2018 Base + Com + Dev, PM" model duration: 17:00 - 18:00

"D5 - 2018 Base + Com, PM" model duration: 17:00 - 18:00

"D8 - 2012 Base, PM" model duration: 17:00 - 18:00

Run using ARCADY 8.0.0.296 at 25/04/2012 16:54:20

### File summary

#### File Description

<b>Title</b>	Smithfield Rd - Bradley St - High Street PM
<b>Location</b>	Uttoxeter
<b>Site Number</b>	
<b>Date</b>	04/04/2012
<b>Version</b>	
<b>Status</b>	
<b>Identifier</b>	
<b>Client</b>	
<b>Jobnumber</b>	
<b>Enumerator</b>	PJA\matt franklin
<b>Description</b>	

### Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00



## 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

# Existing Mini Roundabout Layout - 2018 Base + Com + Dev, PM

## Data Errors and Warnings

*No errors or warnings*

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2018 Base + Com + Dev, PM	2018 Base + Com + Dev	PM		FLAT	17:00	18:00	60	15				✓		

# Junction Network

## Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Smithfield Rd - Bradley St - High St	Mini-roundabout	1,2,3	36.66	E

## Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

# Arms

## Arms

Arm	Name	Description
1	Bradley Street	
2	Smithfield Road	
3	High Street	

## Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)

1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

## Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.50	10.00	14.00	11.00	0.00	
2	3.50	3.50	4.20	12.00	14.50	13.00	0.00	
3	3.00	3.00	3.50	6.00	8.50	4.00	0.00	

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

## Pedestrian Crossings

Arm	Crossing Type
1	Zebra
2	Zebra
3	Zebra

## Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queuing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
1	2.00	2.00		Distance	9.00	6.43				
2	2.00	2.00		Distance	7.50	5.36				
3	2.00	2.00		Distance	6.00	4.29				

## Slope / Intercept / Capacity

### Arm Intercept Adjustments

Arm	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
1	Percentage	Site Observation		130.00
2	None			
3	None			

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	976.469
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	747.496

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

## General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	831.00	100.000
2	FLAT	✓	387.00	100.000
3	FLAT	✓	453.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	120.00
2	FLAT	120.00
3	FLAT	120.00

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	371.000	460.000
	2	245.000	0.000	142.000
	3	312.000	141.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.45	0.55
	2	0.63	0.00	0.37
	3	0.69	0.31	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.010	1.020
	2	1.010	1.000	1.000
	3	1.010	1.000	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	1.000	2.000
	2	1.000	0.000	0.000
	3	1.000	0.000	0.000

# Results

## Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.94	55.31	12.05	F	831.00	831.00	581.40	41.98	9.69	586.31	42.33
2	0.54	11.06	1.18	B	387.00	387.00	68.13	10.56	1.14	68.19	10.57
3	0.75	24.34	2.99	C	453.00	453.00	167.16	22.14	2.79	167.61	22.20

## Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	831.00	207.75	796.63	546.58	137.57	120.00	890.77	880.60	0.933	0.00	8.59	31.868	D
2	387.00	96.75	382.52	493.23	440.97	120.00	725.87	684.55	0.533	0.00	1.12	10.420	B
3	453.00	113.25	441.99	581.33	242.16	120.00	603.63	479.37	0.750	0.00	2.75	21.195	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	831.00	207.75	823.53	556.46	140.80	120.00	887.90	880.60	0.936	8.59	10.46	48.401	E
2	387.00	96.75	386.84	508.47	455.87	120.00	716.27	684.55	0.540	1.12	1.16	10.986	B
3	453.00	113.25	452.37	597.81	244.90	120.00	601.26	479.37	0.753	2.75	2.91	24.103	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	831.00	207.75	827.09	556.82	140.93	120.00	887.70	880.60	0.936	10.46	11.44	52.858	F
2	387.00	96.75	386.95	510.19	457.84	120.00	715.01	684.55	0.541	1.16	1.17	11.037	B
3	453.00	113.25	452.78	599.82	244.97	120.00	601.19	479.37	0.754	2.91	2.97	24.280	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	831.00	207.75	828.54	556.91	140.97	120.00	887.63	880.60	0.936	11.44	12.05	55.306	F
2	387.00	96.75	386.98	510.87	458.64	120.00	714.50	684.55	0.542	1.17	1.18	11.058	B
3	453.00	113.25	452.89	600.63	244.99	120.00	601.17	479.37	0.754	2.97	2.99	24.343	C

## Queueing Delay Results for each time segment

### Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	95.29	6.35	31.868	D	C
2	15.73	1.05	10.420	B	B
3	35.55	2.37	21.195	C	C

**Queueing Delay results: (17:15-17:30)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	144.77	9.65	48.401	E	D
2	17.23	1.15	10.986	B	B
3	42.75	2.85	24.103	C	C

**Queueing Delay results: (17:30-17:45)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	164.87	10.99	52.858	F	D
2	17.53	1.17	11.037	B	B
3	44.14	2.94	24.280	C	C

**Queueing Delay results: (17:45-18:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	176.47	11.76	55.306	F	E
2	17.64	1.18	11.058	B	B
3	44.72	2.98	24.343	C	C

# Existing Mini Roundabout Layout - 2018 Base + Com, PM

**Data Errors and Warnings**

*No errors or warnings*

**Analysis Set Details**

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

**Demand Set Details**

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2018 Base + Com, PM	2018 Base + Com	PM		FLAT	17:00	18:00	60	15				✓		

## Junction Network

**Junctions**

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Smithfield Rd - Bradley St - High St	Mini-roundabout	1,2,3	22.39	C

**Junction Network Options**

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

## Arms

### Arms

Arm	Name	Description
1	Bradley Street	
2	Smithfield Road	
3	High Street	

### Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

### Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.50	10.00	14.00	11.00	0.00	
2	3.50	3.50	4.20	12.00	14.50	13.00	0.00	
3	3.00	3.00	3.50	6.00	8.50	4.00	0.00	

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

### Pedestrian Crossings

Arm	Crossing Type
1	Zebra
2	Zebra
3	Zebra

### Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queuing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
1	2.00	2.00		Distance	9.00	6.43				
2	2.00	2.00		Distance	7.50	5.36				
3	2.00	2.00		Distance	6.00	4.29				

### Slope / Intercept / Capacity

#### Arm Intercept Adjustments

Arm	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
1	Percentage	Site Observation		130.00
2	None			
3	None			

#### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	976.469
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	747.496

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	797.00	100.000
2	FLAT	✓	309.00	100.000
3	FLAT	✓	410.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	120.00
2	FLAT	120.00
3	FLAT	120.00

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	337.000	460.000
	2	216.000	0.000	93.000
	3	312.000	98.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.42	0.58
	2	0.70	0.00	0.30
	3	0.76	0.24	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

--

		To		
		1	2	3
From	1	1.000	1.010	1.020
	2	1.010	1.000	1.000
	3	1.010	1.000	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	1.000	2.000
	2	1.000	0.000	0.000
	3	1.000	0.000	0.000

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.87	30.22	6.44	D	797.00	797.00	344.33	25.92	5.74	345.69	26.02
2	0.43	8.88	0.76	A	309.00	309.00	44.39	8.62	0.74	44.41	8.62
3	0.66	17.35	1.95	C	410.00	410.00	111.71	16.35	1.86	111.90	16.38

### Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	797.00	199.25	774.81	520.28	96.22	120.00	916.71	905.88	0.869	0.00	5.55	23.060	C
2	309.00	77.25	306.06	423.84	447.20	120.00	724.86	666.72	0.426	0.00	0.74	8.597	A
3	410.00	102.50	402.56	539.31	213.94	120.00	620.48	454.87	0.661	0.00	1.86	16.144	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	797.00	199.25	794.81	527.77	97.94	120.00	915.26	905.88	0.871	5.55	6.09	29.212	D
2	309.00	77.25	308.93	434.02	458.74	120.00	717.60	666.72	0.431	0.74	0.75	8.868	A
3	410.00	102.50	409.76	551.72	215.95	120.00	618.77	454.87	0.663	1.86	1.92	17.304	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	797.00	199.25	796.11	527.93	97.98	120.00	915.21	905.88	0.871	6.09	6.32	29.925	D
2	309.00	77.25	308.98	434.60	459.49	120.00	717.13	666.72	0.431	0.75	0.76	8.881	A
3	410.00	102.50	409.92	552.48	215.99	120.00	618.74	454.87	0.663	1.92	1.94	17.342	C

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
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Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	797.00	199.25	796.52	527.97	97.99	120.00	915.19	905.88	0.871	6.32	6.44	30.220	D
2	309.00	77.25	308.99	434.79	459.72	120.00	716.98	666.72	0.431	0.76	0.76	8.885	A
3	410.00	102.50	409.96	552.72	216.00	120.00	618.73	454.87	0.663	1.94	1.95	17.355	C

## Queueing Delay Results for each time segment

### Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	67.29	4.49	23.060	C	C
2	10.49	0.70	8.597	A	A
3	25.07	1.67	16.144	C	B

### Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	88.05	5.87	29.212	D	C
2	11.21	0.75	8.868	A	A
3	28.47	1.90	17.304	C	B

### Queueing Delay results: (17:30-17:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	93.26	6.22	29.925	D	C
2	11.33	0.76	8.881	A	A
3	28.98	1.93	17.342	C	B

### Queueing Delay results: (17:45-18:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	95.72	6.38	30.220	D	C
2	11.37	0.76	8.885	A	A
3	29.19	1.95	17.355	C	B

# Existing Mini Roundabout Layout - 2012 Base, PM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
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### Arm Intercept Adjustments

Arm	Type	Reason	Direct Intercept Adjustment (PCU/hr)	Percentage Intercept Adjustment (%)
1	Percentage	Site Observation		130.00
2	None			
3	None			

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	976.469
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	747.496

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	648.00	100.000
2	FLAT	✓	257.00	100.000
3	FLAT	✓	351.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	60.00
2	FLAT	60.00
3	FLAT	60.00

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	246.000	402.000
	2	173.000	0.000	84.000
	3	264.000	87.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.38	0.62
	2	0.67	0.00	0.33
	3	0.75	0.25	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.010	1.020
	2	1.010	1.000	1.000
	3	1.010	1.000	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	1.000	2.000
	2	1.000	0.000	0.000
	3	1.000	0.000	0.000

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.70	13.08	2.33	B	648.00	648.00	134.31	12.44	2.24	134.49	12.45
2	0.34	7.29	0.52	A	257.00	257.00	30.59	7.14	0.51	30.60	7.14
3	0.54	12.16	1.18	B	351.00	351.00	68.61	11.73	1.14	68.67	11.74

### Main Results for each time segment

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	648.00	162.00	639.01	432.17	85.86	60.00	928.09	905.21	0.698	0.00	2.25	12.305	B
2	257.00	64.25	254.96	328.45	396.43	60.00	757.75	642.73	0.339	0.00	0.51	7.179	A
3	351.00	87.75	346.41	479.76	171.63	60.00	650.27	481.23	0.540	0.00	1.15	11.768	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	648.00	162.00	639.01	432.17	85.86	60.00	928.09	905.21	0.698	0.00	2.25	12.305	B
2	257.00	64.25	254.96	328.45	396.43	60.00	757.75	642.73	0.339	0.00	0.51	7.179	A
3	351.00	87.75	346.41	479.76	171.63	60.00	650.27	481.23	0.540	0.00	1.15	11.768	B

1	648.00	162.00	647.78	436.93	86.98	60.00	927.39	905.21	0.699	2.25	2.30	13.057	B
2	257.00	64.25	256.98	332.90	401.86	60.00	754.42	642.73	0.341	0.51	0.52	7.285	A
3	351.00	87.75	350.92	485.86	172.98	60.00	649.32	481.24	0.541	1.15	1.17	12.148	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	648.00	162.00	647.93	436.98	86.99	60.00	927.38	905.21	0.699	2.30	2.32	13.075	B
2	257.00	64.25	256.99	332.97	401.95	60.00	754.36	642.73	0.341	0.52	0.52	7.285	A
3	351.00	87.75	350.98	485.95	173.00	60.00	649.31	481.24	0.541	1.17	1.17	12.153	B

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

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	648.00	162.00	647.96	436.99	87.00	60.00	927.38	905.21	0.699	2.32	2.33	13.080	B
2	257.00	64.25	257.00	332.98	401.98	60.00	754.35	642.73	0.341	0.52	0.52	7.286	A
3	351.00	87.75	350.99	485.98	173.00	60.00	649.31	481.24	0.541	1.17	1.18	12.155	B

**Queueing Delay Results for each time segment**
**Queueing Delay results: (17:00-17:15)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	30.58	2.04	12.305	B	B
2	7.35	0.49	7.179	A	A
3	16.01	1.07	11.768	B	B

**Queueing Delay results: (17:15-17:30)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	34.19	2.28	13.057	B	B
2	7.71	0.51	7.285	A	A
3	17.40	1.16	12.148	B	B

**Queueing Delay results: (17:30-17:45)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	34.67	2.31	13.075	B	B
2	7.76	0.52	7.285	A	A
3	17.56	1.17	12.153	B	B

**Queueing Delay results: (17:45-18:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	34.87	2.32	13.080	B	B
2	7.77	0.52	7.286	A	A
3	17.63	1.18	12.155	B	B

<b>ARCADY 8</b>
Version: 8.0.0.296 [27 Feb 2012] © Copyright Transport Research Laboratory 2012
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**Filename:** Smithfield Rd - High St - Bradley St - Flat Profile Sat.arc8  
**Path:** T:\Projects Current\#700\772 Uttoxeter Cattle Market (Lingfield)\2012 TA\Data\Junction Models\Smithfield Rd - Bradley St - High St  
**Report generation date:** 25/04/2012 16:58:05

- » Existing Mini Roundabout Layout - 2018 Base + Com + Dev, Sat
- » Existing Mini Roundabout Layout - 2018 Base + Com, Sat
- » Existing Mini Roundabout Layout - 2012 Base, Sat

### Summary of junction performance

Sat				
	Queue (PCU)	Delay (s)	RFC	LOS
Existing Mini Roundabout Layout - 2012 Base				
<b>Arm 1</b>	4.71	29.62	0.83	D
<b>Arm 2</b>	0.63	7.43	0.38	A
<b>Arm 3</b>	2.55	21.58	0.72	C

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

"D3 - 2018 Base + Com + Dev, Sat" model duration: 12:00 - 13:00  
 "D6 - 2018 Base + Com, Sat" model duration: 12:00 - 13:00  
 "D7 - 2012 Base, Sat " model duration: 12:00 - 13:00

Run using ARCADY 8.0.0.296 at 25/04/2012 16:58:03

### File summary

#### File Description

<b>Title</b>	Smithfield Rd - Bradley St - High Street SAT
<b>Location</b>	Uttoxeter
<b>Site Number</b>	
<b>Date</b>	04/04/2012
<b>Version</b>	
<b>Status</b>	
<b>Identifier</b>	
<b>Client</b>	
<b>Jobnumber</b>	
<b>Enumerator</b>	PJA\matt franklin
<b>Description</b>	

### Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

## 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

# Existing Mini Roundabout Layout - 2018 Base + Com + Dev, Sat

## Data Errors and Warnings

*No errors or warnings*

## Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2018 Base + Com + Dev, Sat	2018 Base + Com + Dev	Sat		FLAT	12:00	13:00	60	15				✓		

# Junction Network

## Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Smithfield Rd - Bradley St - High St	Mini-roundabout	1,2,3	27.63	D

## Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

# Arms

## Arms

Arm	Name	Description
1	Bradley Street	
2	Smithfield Road	
3	High Street	

## Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)

1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

## Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.50	10.00	14.00	11.00	0.00	
2	3.50	3.50	4.20	12.00	14.50	13.00	0.00	
3	3.00	3.00	3.50	6.00	8.50	4.00	0.00	

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

## Pedestrian Crossings

Arm	Crossing Type
1	Zebra
2	Zebra
3	Zebra

## Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queuing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
1	2.00	2.00		Distance	9.00	6.43				
2	2.00	2.00		Distance	7.50	5.36				
3	2.00	2.00		Distance	6.00	4.29				

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	751.130
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	747.496

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

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

# Entry Flows

## General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT		608.00	100.000
2	FLAT		351.00	100.000
3	FLAT		461.00	100.000



# Pedestrian Flows

## General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	60.00
2	FLAT	60.00
3	FLAT	60.00

# Turning Proportions

## Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	271.000	337.000
	2	253.000	0.000	98.000
	3	366.000	95.000	0.000

## Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.45	0.55
	2	0.72	0.00	0.28
	3	0.79	0.21	0.00

# Vehicle Mix

## Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.010	1.020
	2	1.010	1.000	1.000
	3	1.010	1.000	1.000

## Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	1.000	2.000
	2	1.000	0.000	0.000
	3	1.000	0.000	0.000

# Results

## Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)

1	0.87	39.25	6.34	E	608.00	608.00	332.81	32.84	5.55	334.53	33.01
2	0.44	8.19	0.80	A	351.00	351.00	46.61	7.97	0.78	46.64	7.97
3	0.78	27.11	3.38	D	461.00	461.00	186.97	24.33	3.12	187.55	24.41

## Main Results for each time segment

### Main results: (12:00-12:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	608.00	152.00	586.84	607.03	92.47	60.00	699.51	702.11	0.869	0.00	5.29	28.597	D
2	351.00	87.75	347.90	354.04	325.27	60.00	800.35	755.90	0.439	0.00	0.77	7.961	A
3	461.00	115.25	448.74	422.41	250.77	60.00	596.29	414.34	0.773	0.00	3.07	23.009	C

### Main results: (12:15-12:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	608.00	152.00	605.48	618.31	94.83	60.00	698.02	702.11	0.871	5.29	5.92	37.438	E
2	351.00	87.75	350.94	364.71	335.60	60.00	794.11	755.90	0.442	0.77	0.79	8.179	A
3	461.00	115.25	460.18	433.58	252.96	60.00	593.99	414.34	0.776	3.07	3.27	26.740	D

### Main results: (12:30-12:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	608.00	152.00	606.93	618.76	94.94	60.00	697.94	702.11	0.871	5.92	6.19	38.696	E
2	351.00	87.75	350.98	365.46	336.40	60.00	793.63	755.90	0.442	0.79	0.79	8.191	A
3	461.00	115.25	460.71	434.40	252.99	60.00	593.92	414.34	0.776	3.27	3.34	27.009	D

### Main results: (12:45-13:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	608.00	152.00	607.40	618.88	94.97	60.00	697.92	702.11	0.871	6.19	6.34	39.245	E
2	351.00	87.75	350.99	365.70	336.67	60.00	793.47	755.90	0.442	0.79	0.80	8.194	A
3	461.00	115.25	460.85	434.67	253.00	60.00	593.91	414.34	0.776	3.34	3.38	27.105	D

## Queueing Delay Results for each time segment

### Queueing Delay results: (12:00-12:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	62.82	4.19	28.597	D	C
2	11.06	0.74	7.961	A	A
3	39.01	2.60	23.009	C	C

### Queueing Delay results: (12:15-12:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	84.90	5.66	37.438	E	D
2	11.77	0.78	8.179	A	A
3	47.84	3.19	26.740	D	C

### Queueing Delay results: (12:30-12:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	91.05	6.07	38.696	E	D
2	11.88	0.79	8.191	A	A
3	49.67	3.31	27.009	D	C

### Queueing Delay results: (12:45-13:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	94.05	6.27	39.245	E	D
2	11.91	0.79	8.194	A	A
3	50.45	3.36	27.105	D	C

## Existing Mini Roundabout Layout - 2018 Base + Com, Sat

### Data Errors and Warnings

No errors or warnings

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2018 Base + Com, Sat	2018 Base + Com	Sat		FLAT	12:00	13:00	60	15				✓		

## Junction Network

### Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Smithfield Rd - Bradley St - High St	Mini-roundabout	1,2,3	21.91	C

### Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

## Arms

## Arms

Arm	Name	Description
1	Bradley Street	
2	Smithfield Road	
3	High Street	

## Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

## Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.50	10.00	14.00	11.00	0.00	
2	3.50	3.50	4.20	12.00	14.50	13.00	0.00	
3	3.00	3.00	3.50	6.00	8.50	4.00	0.00	

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

## Pedestrian Crossings

Arm	Crossing Type
1	Zebra
2	Zebra
3	Zebra

## Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queuing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
1	2.00	2.00		Distance	9.00	6.43				
2	2.00	2.00		Distance	7.50	5.36				
3	2.00	2.00		Distance	6.00	4.29				

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	751.130
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	747.496

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

# Traffic Flows

## Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

# Entry Flows

## General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	591.00	100.000
2	FLAT	✓	305.00	100.000
3	FLAT	✓	433.00	100.000

# Pedestrian Flows

## General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	120.00
2	FLAT	120.00
3	FLAT	120.00

# Turning Proportions

## Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	254.000	337.000
	2	236.000	0.000	69.000
	3	366.000	67.000	0.000

## Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.43	0.57
	2	0.77	0.00	0.23
	3	0.85	0.15	0.00

# Vehicle Mix

## Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.010	1.020
	2	1.010	1.000	1.000
	3	1.010	1.000	1.000

## Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	1.000	2.000
	2	1.000	0.000	0.000
	3	1.000	0.000	0.000

# Results

## Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.83	29.62	4.71	D	591.00	591.00	256.36	26.03	4.27	257.29	26.12
2	0.38	7.43	0.63	A	305.00	305.00	36.91	7.26	0.62	36.93	7.26
3	0.72	21.58	2.55	C	433.00	433.00	143.75	19.92	2.40	144.08	19.96

## Main Results for each time segment

### Main results: (12:00-12:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	591.00	147.75	574.27	592.05	65.53	120.00	713.69	715.49	0.828	0.00	4.18	23.965	C
2	305.00	76.25	302.54	312.33	327.46	120.00	798.78	744.93	0.382	0.00	0.61	7.277	A
3	433.00	108.25	423.48	395.90	234.10	120.00	602.86	385.32	0.718	0.00	2.38	19.341	C

### Main results: (12:15-12:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	591.00	147.75	589.69	601.60	66.93	120.00	712.79	715.49	0.829	4.18	4.51	28.992	D
2	305.00	76.25	304.96	320.37	336.25	120.00	793.50	744.93	0.384	0.61	0.62	7.425	A
3	433.00	108.25	432.56	405.24	235.97	120.00	600.78	385.32	0.721	2.38	2.49	21.445	C

### Main results: (12:30-12:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	591.00	147.75	590.49	601.87	66.98	120.00	712.76	715.49	0.829	4.51	4.64	29.432	D
2	305.00	76.25	304.99	320.76	336.71	120.00	793.23	744.93	0.385	0.62	0.63	7.429	A
3	433.00	108.25	432.85	405.71	235.99	120.00	600.73	385.32	0.721	2.49	2.53	21.546	C

### Main results: (12:45-13:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	591.00	147.75	590.73	601.93	66.99	120.00	712.75	715.49	0.829	4.64	4.71	29.623	D
2	305.00	76.25	305.00	320.87	336.84	120.00	793.15	744.93	0.385	0.63	0.63	7.430	A
3	433.00	108.25	432.93	405.84	236.00	120.00	600.72	385.32	0.721	2.53	2.55	21.579	C

## Queueing Delay Results for each time segment

### Queueing Delay results: (12:00-12:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	51.81	3.45	23.965	C	C
2	8.82	0.59	7.277	A	A

3	31.26	2.08	19.341	C	B
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### Queueing Delay results: (12:15-12:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	65.68	4.38	28.992	D	C
2	9.31	0.62	7.425	A	A
3	36.73	2.45	21.445	C	C

### Queueing Delay results: (12:30-12:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	68.73	4.58	29.432	D	C
2	9.38	0.63	7.429	A	A
3	37.69	2.51	21.546	C	C

### Queueing Delay results: (12:45-13:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	70.13	4.68	29.623	D	C
2	9.40	0.63	7.430	A	A
3	38.08	2.54	21.579	C	C

## Existing Mini Roundabout Layout - 2012 Base, Sat

### Data Errors and Warnings

No errors or warnings

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Mini Roundabout Layout	ARCADY		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2012 Base, Sat	2012 Base	Sat		FLAT	12:00	13:00	60	15				✓		

## Junction Network

### Junctions

Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
Smithfield Rd - Bradley St - High St	Mini-roundabout	1,2,3	12.72	B

### Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

# Arms

## Arms

Arm	Name	Description
1	Bradley Street	
2	Smithfield Road	
3	High Street	

## Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

## Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.50	10.00	14.00	11.00	0.00	
2	3.50	3.50	4.20	12.00	14.50	13.00	0.00	
3	3.00	3.00	3.50	6.00	8.50	4.00	0.00	

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

## Pedestrian Crossings

Arm	Crossing Type
1	Zebra
2	Zebra
3	Zebra

## Zebra Crossings

Arm	Space between crossing and junction entry (PCU)	Vehicles queuing on exit (PCU)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
1	2.00	2.00		Distance	9.00	6.43				
2	2.00	2.00		Distance	7.50	5.36				
3	2.00	2.00		Distance	6.00	4.29				

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.532	751.130
2		(calculated)	(calculated)	0.576	990.888
3		(calculated)	(calculated)	0.524	747.496

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

# Traffic Flows

## Demand Set Data Options

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Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	478.00	100.000
2	FLAT	✓	237.00	100.000
3	FLAT	✓	376.00	100.000

## Pedestrian Flows

### General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	120.00
2	FLAT	120.00
3	FLAT	120.00

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	189.000	289.000
	2	176.000	0.000	61.000
	3	316.000	60.000	0.000

### Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.40	0.60
	2	0.74	0.00	0.26
	3	0.84	0.16	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.010	1.020
	2	1.010	1.000	1.000
	3	1.010	1.000	1.000

### Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	1.000	2.000
	2	1.000	0.000	0.000
	3	1.000	0.000	0.000

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.67	15.25	2.00	C	478.00	478.00	115.28	14.47	1.92	115.45	14.49
2	0.29	6.20	0.41	A	237.00	237.00	24.10	6.10	0.40	24.11	6.10
3	0.59	13.62	1.41	B	376.00	376.00	81.85	13.06	1.36	81.94	13.08

### Main Results for each time segment

#### Main results: (12:00-12:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	478.00	119.50	470.29	486.20	59.13	120.00	718.08	713.34	0.666	0.00	1.93	14.353	B
2	237.00	59.25	235.39	245.08	284.34	120.00	824.56	728.59	0.287	0.00	0.40	6.140	A
3	376.00	94.00	370.52	344.92	174.80	120.00	643.40	405.73	0.584	0.00	1.37	13.057	B

#### Main results: (12:15-12:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	478.00	119.50	477.81	491.90	59.98	120.00	717.58	713.34	0.666	1.93	1.98	15.221	C
2	237.00	59.25	236.99	248.91	288.88	120.00	821.86	728.59	0.288	0.40	0.41	6.200	A
3	376.00	94.00	375.89	349.88	175.99	120.00	642.34	405.73	0.585	1.37	1.40	13.610	B

#### Main results: (12:30-12:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	478.00	119.50	477.93	491.97	59.99	120.00	717.57	713.34	0.666	1.98	1.99	15.245	C
2	237.00	59.25	237.00	248.97	288.96	120.00	821.82	728.59	0.288	0.41	0.41	6.200	A
3	376.00	94.00	375.96	349.96	176.00	120.00	642.33	405.73	0.585	1.40	1.41	13.621	B

#### Main results: (12:45-13:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	478.00	119.50	477.97	491.98	60.00	120.00	717.57	713.34	0.666	1.99	2.00	15.251	C
2	237.00	59.25	237.00	248.98	288.98	120.00	821.81	728.59	0.288	0.41	0.41	6.200	A
3	376.00	94.00	375.98	349.98	176.00	120.00	642.32	405.73	0.585	1.41	1.41	13.624	B

### Queueing Delay Results for each time segment

**Queueing Delay results: (12:00-12:15)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	26.15	1.74	14.353	B	B
2	5.83	0.39	6.140	A	A
3	18.89	1.26	13.057	B	B

**Queueing Delay results: (12:15-12:30)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	29.37	1.96	15.221	C	B
2	6.07	0.40	6.200	A	A
3	20.80	1.39	13.610	B	B

**Queueing Delay results: (12:30-12:45)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	29.79	1.99	15.245	C	B
2	6.10	0.41	6.200	A	A
3	21.03	1.40	13.621	B	B

**Queueing Delay results: (12:45-13:00)**

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	29.97	2.00	15.251	C	B
2	6.11	0.41	6.200	A	A
3	21.13	1.41	13.624	B	B