REPORT N^{O} 70027022-01

LEE LANE, ROYSTON

TRANSPORT ASSESSMENT

NOVEMBER 2016

WSP | PARSONS BRINCKERHOFF

LEE LANE, ROYSTON

TRANSPORT ASSESSMENT

Barratt Homes

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1 INTRODUCTION

1.1.1 WSP | Parsons Brinckerhoff have been commissioned by Barratt Homes to produce a Transport Assessment (TA) to consider access to, and the potential impact of the proposed development site in Royston, Barnsley for residential use. The application is outline with all matters reserved for access.

1.1.2 The proposed development is for the provision of up to 164 residential units with a new site access junction from Lee Lane, Royston.

1.1.3 The proposed development site includes land to the north of the B6428 Lee Lane and to the west of Applehaigh View. The site is also bounded by open farmland to the north and west. The location of the proposed development site is shown on the plan attached at **Appendix A**.

1.1.4 This Transport Assessment has been prepared with reference to the National Planning Policy Framework (NPPF) and the National Planning Practice Guidance "Travel Plans, Transport Assessments and Statements in Decision-Taking" (DfT March 2014).

1.1.5 The application site has an extent planning permission (Application Reference: 2013/0932) for 200 houses and a retail unit.

1.2 POLICY BACKGROUND

NATIONAL POLICY

1.2.1 The NPPF was published and came into effect in 2012 and applies to England. The document is designed to supersede and simplify previous national planning documents and their policies.

1.2.2 The preparation of this TA is consistent with national transport policy guidance set out in the NPPF which advocates the submission of such documents to accompany applications for new developments, which generate traffic movements.

1.2.3 The NPPF also notes that:

> "In preparing Local Plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport." (paragraph 30)
>
> "Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised." (paragraph 34)

1.2.4 Section 4 of this report highlights the existing sustainable transport provision within the vicinity of the site and demonstrates that the proposed school will be well located in terms of its proximity to key user groups offering the opportunity for those groups to exercise sustainable modes of travel.

LOCAL POLICY

SOUTH YORKSHIRE THIRD LOCAL TRANSPORT PLAN

1.2.5 The South Yorkshire Local Transport Plan (2011 – 2026) (LTP) covers the Sheffield City Region and is produced by the South Yorkshire LTP partnership including Barnsley, Doncaster, Rotherham, Sheffield Councils and South Yorkshire Passenger Transport Executive. The LTP sets out the long term vision for travel in South Yorkshire and has three main components which outline the strategy, implementation and the annual delivery programme.

1.2.6 The Vision is to offer people a great place in which to live, work, invest and visit. The vision has a primary focus on the area's prosperity and growth, aspiring to make a greater contribution to the UK economy by having a local economy less dependent on the public sector, providing conditions for businesses to grow to allow the area to become the prime national centre for advanced manufacturing and low-carbon industries.

1.2.7 The Transport Strategy has four main goals, set out below:

- To support economic growth
- To enhance social inclusion and health
- To reduce emissions
- To maximise safety

1.2.8 In translating the Transport Strategy into action, the following four cross cutting principles will be followed:

- Squeeze more from existing assets
- Make growth sustainable
- Give people choice
- Encourage a change in travel culture

BARNSLEY LOCAL DEVELOPMENT FRAMEWORK & CORE STRATEGY

1.2.9 Barnsley's Local Development Framework and Core Strategy were adopted in 2011 and provide a spatial strategy for Barnsley up to the year 2026. The core strategy discusses reducing the need to travel and encouraging travel by sustainable modes. Relevant Core Policies within these documents include:

- Policy CSP 25 New Development and Sustainable Travel. New development will be expected to:
  - Be located and designed to reduce the need to travel, be accessible to public transport and meet the needs of pedestrians and cyclists; and
  - Should not provide more than the maximum number of car-parking spaces set out in a Supplementary Planning Document.

UNITARY DEVELOPMENT PLAN

1.2.10 The Unitary Development Plan (UDP) is a single, comprehensive plan for the whole Borough. Barnsley's Local Plan is currently under consultation and will replace both the Core Strategy and UDP once adopted. Until all the Local Development Framework documents are in place, some parts of the Unitary Development Plan (UDP) are being "saved" to ensure comprehensive planning policy coverage remains in place.

1.3 TRAVEL PLANNING

1.3.1 A Travel Plan (TP) has been prepared to accompany the detailed planning application in accordance with local and national travel planning guidance. Key benefits of a Travel Plan include the following:

- Less congestion and therefore improved safety on local roads by promoting alternatives to the car;
- Reduced highway capacity problems by promoting sustainable travel choices;
- Local environmental improvements from reduced congestion, carbon emissions, pollution and noise;
- Increased opportunities for active healthy travel, such as walking and cycling; and
- Improved travel choice, quality and affordable access to services for all users.

1.3.2 The TP includes a number of key measures and targets in order to promote sustainable modes as well as reducing trips by private car. The implementation of a site TP is a key tool in order to have a positive influence on ensuring that residents access the site safely by sustainable transport modes.

1.4 PUBLIC CONSULTATION

1.4.1 A public consultation has been undertaken in Royston with members of the public. This Transport Assessment and the development proposals now address the highways issues raised by local residents wherever possible.

1.5 REPORT STRUCTURE

1.5.1 Following the introduction the report includes the following sections:

- Section 2 provides a description of the highway network surrounding the site, details of the existing traffic flows, the results of the baseline capacity assessments within the study area and a review of the personal injury accident record.
- Section 3 examines the accessibility of the site by a number of travel modes and also considers the accessibility of a range of key services and facilities.
- Section 4 describes the site, the development proposals and the proposed means of access to the site.
- Section 5 summarises the trip generation and distribution parameters that have been adopted within this Transport Assessment.
- Section 6 examines the impact of development traffic on the local highway network and presents the results of the future year junction assessments to determine the potential impact of the proposals.
- The report summary and conclusions are drawn together in Section 7.

2 EXISTING CONDITIONS

2.1 INTRODUCTION

2.2 This section of the report sets out the existing conditions on the surrounding highway network in the vicinity of the site for access by a range of non-car modes.

2.3 EXISTING SITE

2.4 The site is a greenfield site. It is bounded by Lee Lane to the south, to the east there is a residential development, and agricultural land to the north and west. The location of the site is shown on the plan at **Appendix A**.

2.5 LOCAL HIGHWAY NETWORK

2.5.1 Lee Lane runs in an east-west direction along the southern boundary of the site. Lee Lane, eastbound, is the main route to the centre of Royston, providing a direct link to local facilities along High Street. It is a single lane two-way carriageway of approximately 7m in width. There is a footway of approximately 2m on both sides of the carriageway.

2.5.2 To the east of the site, Lee Lane is subject to a 30mph speed limit and is street lit. Westbound, Lee Lane is unlit and is subject to the national speed limit. It provides access to A61 Wakefield Road which runs between between Wakefield and Barnsley. The approach to the 30 mph zone is emphasised by ‘dragon’s teeth’ markings, 30 mph roundels and coloured road surfacing.

2.5.3 To the west of the site, Lee Lane forms a staggered crossroad with the A61 and Shaw Lane. Shaw Lane provides direct access to the villages of Staincross and Darton and facilitates access to the M1. The speed limit on Shaw Lane is 30mph. To the north of the junction, the A61 is subject to a 50mph speed limit which reduces to 40mph approximately 400m to the north of the staggered crossroad and extends southbound towards Barnsley. The A61 is street lit and facilitates access to Wakefield to the north and Barnsley to the south.

2.5.4 To the east of the site, Lee Lane facilitates access to the centre of Royston and leads to the traffic signal controlled junction of High Street / Church Street / Midland Road / Station Road. MOVA was recently installed at the junction.

2.6 Church Street provides access to Carlton and Monk Bretton. Church Street is a 30mph residential road with street lighting and footpaths on both sides of the carriageway. Midland Road provides access eastbound towards Ryhill and surrounding areas. This also provides access to local facilities including supermarkets, education facilities and health care. It is street-lit and has footpaths on both sides of the carriageway. The 30mph speed limit on Midland Road reduces to 20mph approximately 200m east of the signals. Station Road provides a primary route northbound between Royston, Milnthorpe and Wakefield. It is a street-lit, single carriageway road with a speed limit of 30mph and footpaths provided on both sides of the carriageway.

2.7 TRAFFIC SURVEY DATA

2.7.1 Details of the existing traffic flows on the surrounding highway network have been derived from traffic count surveys undertaken in October 2016. A copy of the count data is included within **Appendix B**.

2.7.2 The traffic count surveys were undertaken between the hours of 07:30 – 09:30 and 16:00 – 18:00 at the following locations:

- → Lee Lane / Wakefield Road / Shaw Lane – Staggered priority crossroad junction
- → Midland Road / Church Street / High Street / Station Road – Signalised junction

2.7.3 The AM and PM peak hours were derived from the traffic count data and are 08:00 – 09:00 for the AM peak and 16:30 – 17:30 for the PM peak. The 2016 base traffic flows are shown at **Appendix C.**

2.8 EXISTING CAPACITY ANALYSIS

The 2016 traffic survey data has been used to determine the existing capacity of the surrounding highway network. The Junctions 9 software package, which incorporates ARCADY and PICADY and the LinSig software package have been utilised to assess the capacity of the junctions listed above. The full Junctions 9 and LinSig model outputs are included within **Appendix D** and are summarised below in Tables 2-1 to 2-2.

Table 2-1 - Lee Lane / Wakefield Road / Shaw Lane PICADY Results

JUNCTION	ARM/ MOVEMENT	2016 Base AM Peak		2016 Base PM Peak	
		Max RFC	Max Queue	Max RFC	Max Queue
Lee Lane / Wakefield Road / Shaw Lane	Lee Lane	0.32	1	0.64	2
	Wakefield Road (South)	0.18	0	0.30	0
	Shaw Lane	1.04	17	0.97	12
	Wakefield Road (North)	0.21	0	0.03	0

2.8.1 The results in Table 2-1 show that the Lee Lane / Wakefield Road / Shaw Lane staggered crossroad is currently operating well within capacity during the AM and PM peak hours with the exception of the Shaw Lane approach which is at capacity with queues forming back from the junction. The RFC ratio for Shaw Lane is in excess of the threshold value of 0.85 which indicates that continuous queuing is occurring. This has been confirmed by on-site observations.

Table 2-2 - Midland Road / Church Street / High Street / Station Road LinSig Results

JUNCTION	ARM/ MOVEMENT	2016 Base AM Peak		2016 Base PM Peak	
		DOS (%)	Max Queue	DOS (%)	Max Queue
Midland Road / Church Street / High Street / Station Road	Midland Road	79.4	11	94.6	15
	Church Street	79.2	14	97.3	18
	High Street	80.0	7	96.3	21
	Station Road	48.3	7	67.5	8

2.8.2 The results in Table 2-2 show that the Midland Road / Church Street / High Street / Station Road signalised junction is currently operating within capacity during the AM peak hour. However,

during the PM peak hour the Midland Road, Church Street and High Street approaches are shown to be operating close to capacity and as a result there is some queuing. This has been confirmed by on-site observations.

2.9 ACCIDENT DATA

2.9.1 Personal injury accident (PIA) data for the study area surrounding the site has been obtained in order to identify any existing highway safety issues prior to the introduction of the development traffic. The data can be used to establish if the construction of the development site could have any significant adverse effects on road safety. PIA data has been obtained for the 5 year period 2011 to 2015. The locations of the PIA's are included in **Appendix E.**

2.9.2 Accident data for a number of junctions and adjacent links within Royston and the surrounding area has been obtained at the following locations:

- B6428 (Site Access) - Midland Road / Church Street / High Street / Station Road signalised junction link;
- Midland Road / Church Street / High Street / Station Road signalised junction;
- B6428 (Site Access) - Lee Lane / Wakefield Road / Shaw Lane staggered crossroad link; and
- Lee Lane / Wakefield Road / Shaw Lane staggered priority crossroad junction.

2.9.3 There were a total of 19 PIA's recorded at the junctions/ links within the study area. The accidents within the study area being considered as part of the TA are shown at **Appendix E** and show the accidents on Lee Lane and the junctions within the vicinity of the site.

B6428 (Site Access) – Midland Road / Church Street / High Street / Station Road Link

2.9.4 There have been a total of eight accidents recorded on the B6428, to the west of the site between the site access and the Midland Road / Church Street / High Street / Station Road signalised junction during the five year study period. Seven of these accidents have been recorded as slight in severity. One of the accidents has been recorded as serious and occurred at High Street / Oakwood Road priority junction. Based on the distribution of these accidents there is not considered to be an existing issue on this highway link.

Midland Road / Church Street / High Street / Station Road Signalised Junction

2.9.5 There were a total of two PIA's recorded at the Midland Road / Church Street / High Street / Station Road signalised junction during the study period. Of the recorded accidents, both were recorded as slight. The accident rate at this junction has therefore been less than one incident per annum. There is therefore not considered to be an existing accident issue at this location.

B6428 (Site Access) - Lee Lane / Wakefield Road / Shaw Lane Link

2.9.6 To the west of the site access there have been a total of six recorded incidents with four slight and two serious accidents during the study period. The recorded accidents are spread over the length of the link and there is no common link to the cause of the accidents. It is therefore considered that this length of highway does not represent an existing road safety issue.

Lee Lane / Wakefield Road / Shaw Lane Priority Crossroads Junction

2.9.7 There have been three accidents recorded at the Lee Lane / Wakefield Road / Shaw Lane priority crossroad junction during the study period, all of which resulted in slight injury. These accidents equate to less than one accident per year during the study period and are not therefore considered to represent an existing road safety issue at this location.

2.9.8 A review of the accident data therefore identifies no significant road safety issues in the study area.

2.9.9 Overall the existing accident records are not considered to demonstrate any significant road safety issues adjacent to the proposed site access or on the surrounding network. The existing road safety record is therefore unlikely to be affected by the proposed development. The proposed development will not result in a material increase in traffic beyond the study network and therefore it is unlikely to result in any detrimental impact on accident rates or road safety.

3 EXISTING SUSTAINABLE TRANSPORT PROVISION

3.1 PEDESTRIAN / CYCLE ACCESS

3.1.1 Walking is recognised as the most important mode of travel at a local level and that it offers the greatest potential to replace short car trips, particularly under two kilometres. As such, consideration has been given to the existing pedestrian facilities in the vicinity of the proposed development.

3.1.2 Heading eastbound on Lee Lane from the site, there are 2m wide footway on both sides of the carriageway. They provide links to Royston High Street and its local facilities. Controlled pedestrian crossing facilities are provided at the Midland Road / Church Street / High Street / Station Road crossroads junction.

3.1.3 Heading westbound, Lee Lane has a footway on the south side of the carriageway. At the junction with Shaw Lane, there is a pedestrian crossing point with dropped kerbs and tactile paving on the A61 Wakefield Road which links with the footways on the southern of Lee Lane. This provides a link to a footway on the western side of the A61 Wakefield Road. Pedestrians can then continue on to the footway on the southern side of Shaw Lane which provides access to Mapplewell.

3.1.4 "Guidelines for Providing for Journeys on Foot" (IHT) identifies a distance of 800 metres as the preferred maximum distance for walking journeys in town centres, whilst a distance of 2 km is defined as a preferred maximum for commuting on foot.

3.1.5 An 800m walking catchment includes the residential area located east of the site as well as the Royston Summer Fields Primary School which is located approximately 650m to the east of the site on Summer Lane.

3.1.6 **Appendix F** shows the 2 km walking catchment area from the centre of the site, including the key facilities in the locality such as schools, healthcare facilities and food stores. The majority of Royston and its associated residential areas can be accessed within 2km including a number of local schools, retail and recreation facilities.

3.1.7 Cycling has the potential to substitute for short car trips, particularly less than 5km which equates to a journey time of approximately 20 minutes based on an average cycle speed of 14kph. The majority of Royston's facilities can be accessed within a five minute cycle ride. Further afield the villages of Staincross and Carlton are accessible within a 10-15 minute cycle ride. **Appendix G** shows the 5km cycling catchment area.

3.1.8 A number of local and national cycle routes which are readily accessible. Route 67 can be accessed approximately 2.6km to the east of the site and provides a largely off-road link northbound towards Wakefield and southbound towards Barnsley. The cycle networks accessible from the site are shown on **Appendix H.**

3.2 PUBLIC TRANSPORT

3.2.1 The closest bus stop to the site is located on Lee Lane, within a 400m walk from the centre of the site. The bus services available from this stop are outlined in table 3-1.

Table 3-1 - Local Bus Services

SERVICE	ROUTE	DAYTIME		EVENING	
		Mon - Sat	**Sun**	**Mon - Sat**	**Sun**
451	Darton – Holy Trinity School	One Service (school)	No Sunday Service	One Service (school)	No Sunday Service
57	Barnsley - Royston	Four Per Hour	No Sunday Service	Three Per Hour	No Sunday Service

3.2.2 The services on Lee Lane provided four services per hour during the day and three services per hour during the evening, connecting the site with Barnsley town centre in approximately 20 minutes. A plan showing local bus stops is found at **Appendix I**.

3.2.3 The nearest station is Darton Rail Station approximately 4.7km from the development site and Barnsley Rail Station approximately 6.6km from the development site. A summary of the rail services available from each station is outlined in Tables 3-2 and 3-3 respectively.

Table 3-2 - Rail services from Darton Rail Station

ROUTE	**First Train**	**Last Train**	**Frequency**
Leeds	Monday to Saturday: 06:38 Sunday: 09:15	Monday to Saturday: 22:38 Sunday: 23:15	Every 60 minutes
Sheffield	Monday to Saturday: 06:15 Sunday: 09:17	Monday to Saturday: 23.24 Sunday: 23:00	Every 60 minutes

3.2.4 Darton Rail Station provides cycle stands capable of accommodating up to 18 bicycles and 24 car parking spaces.

Table 3-3 - Rail services from Barnsley Rail Station

ROUTE	**First Train**	**Last Train**	**Frequency**
Leeds	Monday to Saturday: 06:10 Sunday: 09:10	Monday to Saturday: 00:51 Sunday: 23:10	Every 15-20 minutes
Sheffield	Monday to Saturday: 06:10 Sunday: 09:24	Monday to Saturday: 00:31 Sunday: 23:12	Every 15-20 minutes
Nottingham	Monday to Saturday: 05:23 Sunday: 09:41	Monday to Saturday: 23:31 Sunday: 23:12	Every 10-25 minutes
Huddersfield	Monday to Saturday: 06:01 Sunday: 10.06	Monday to Saturday: 23.08 Sunday: 21:10	Every 10-50 minutes

3.2.5 Barnsley Rail Station provides 24 sheltered cycle storage spaces and 76 car parking spaces and is staffed.

3.3 LOCAL FACILITIES

- Employment - there are a number of employment areas in the vicinity of the site, including Burton Road Business Park, Carlton Industrial Estate, Davis Industrial Estate, Mapplewell Business Park and Whamcliffe Business Park.
- Education provision - there are a number of primary schools in the local area including Summerfields Primary Academy, Meadstead Primary Academy, Parkside Primary Academy and Royston St John Baptist CE Primary all of which are within reasonable walking distance of the site. The closest Secondary School to the site is Outwood Academy in Carlton which is located off Royston Lane some 3km from the centre of the development site i.e. within an acceptable cycle distance;
- Health facilities - include Craven and Partners, Royston Group Practice, Norwood and Perrin Ltd opticians and 157 Dental Care Ltd which are all located within a reasonable walking distance of the site and are accessible via cycle. Barnsley District Hospital is located to the south;
- Food shopping - There are a number of food retail units near the development site including a Co-operative Food, an Asda and a Sainsbury's Local on High Street and Midland Road. These facilities are within a reasonable walking distance of the site and are accessible via cycle and public transport;
- Recreation – there are a number of recreation facilities in the vicinity of the site including Royston Leisure Centre and Barnsley Golf Course. Some of these facilities are within a reasonable walking distance of the site and all are accessible via cycle.

3.4 SUMMARY

3.4.1 A review of the existing facilities for access to the site by a range of non-car modes has been carried out. This demonstrates that there are adequate facilities to accommodate pedestrian, cycle and public transport trips from the site following development. The existing facilities provide access from the site to a range of existing local services in surrounding areas.

3.4.2 The site is therefore considered to be in a sustainable location for access by non-car modes in line with national planning policy guidance.

4 DEVELOPMENT PROPOSALS

4.1 SITE LAYOUT PROPOSALS

4.1.1 The proposed development site lies to the north of the B6428 Lee Lane and to the west of Applehaigh View.

4.1.2 The proposed development is for the provision of 164 residential units with a new site access junction from Lee Lane.

4.1.3 A copy of the site layout and the red line for the planning application are included at **Appendix J**.

4.1.4 The applicant is prepared to provide funding to extend the 30 mph speed limit so that it starts on Lee Lane at the western end of the site frontage. A new footway will be provided along the northern side of Lee Lane along the full site frontage. The proposed site layout therefore provides a network of footways within the site which connects to extended footway.

4.2 VEHICULAR ACCESS

4.2.1 The proposed junction layout consists of a simple priority junction, providing the development with access onto Lee Lane. Visibility from the site access is shown on drawing SK-002 attached at **Appendix K** and visibility splays of 2.4m x 43m can be achieved. This will therefore accord with requirements of Manual for Streets for an access within the 30 mph speed limit.

4.2.2 The layout of the houses around the simple priority site access has been designed to enable the junction to be upgraded in the future. If the development of the land to the south of Lee Lane were to come forward, a roundabout could be built to upgrade the simple priority junction without impacting on the new houses. A small roundabout could be delivered here which complies with DMRB standards. However, the site layout has been designed to accommodate the delivery of the roundabout designed by Croft Transport Solutions (Drawing No. 255-F01 B) as part of the extant permission on the application site. This roundabout has already been approved by Barnsley Highways and a copy of the approved junction design is attached at **Appendix L**.

4.3 PARKING

4.3.1 Car parking on site for the residential uses is to be provided in accordance with appropriate local guidance. Barnsley's Parking SPD sets out parking thresholds and standards for residential developments which recommend:

- One space for dwellings with one or two bedrooms;
- Two spaces for dwellings with three or more bedrooms.

5 TRAFFIC GENERATION AND DISTRIBUTION

5.1 TRAFFIC GENERATION

5.1.1 The trip generation of the proposed residential development has been assessed based on 164 dwellings.

5.1.2 Trip rates from the TA prepared by Croft Transport Solutions in support of the extant planning permission have been used here. They are considered to be robust for this analysis and have previously been accepted by Barnsley Highways. The peak hour trip rates and forecast trip generation is summarised in Table 5-1.

Table 5-1 - Average Vehicle Trip Rates and Trip Generation

	Daytime		Evening	
200 Units	**Arrivals**	**Departures**	**Arrivals**	**Departures**
Trip Rates	0.151	0.454	0.432	0.256
Trip Generation	25	74	71	42

5.1.3 Based on the above trip rates the proposed residential development is forecast to generate approximately 99 two-way trips during the AM peak hour and approximately 113 two-way trips in the PM peak period.

5.2 TRAFFIC DISTRIBUTION AND ASSIGNMENT

5.2.1 Development traffic distribution has been undertaken based upon existing (2011) travel to work data for the Barnsley 001 Middle Layer Super Output Area (MSOA), in which the site is situated. This method uses Office of National Statistics data and can be considered a robust approach.

5.2.2 The traffic distribution has been applied to the forecast trip generations to estimate the change in traffic flows on the highway network as a result of the development at the site. Consideration of the traffic distribution exercise shows the total change in traffic flows that is forecast on the road network as a result of the development proposals.

5.2.3 The 2011 MSOA census data is summarised in Table 5.2 and from this data it can be seen that 61% of people living within the Barnsley 001 MSOA work in MOSA's within Barnsley. A copy of the 2011 journey to work census data and a plan detailing the location of each MSOA is attached at **Appendix M**.

Table 5-2 - Development Traffic Distribution

	LEE LANE / SHAW LANE / A61			HIGH ST JUNCTION		
	A61 (North)	Shaw Lane	A61 (South)	Church Street	Midland Road	Station Road
Proportion	9%	22%	31%	21%	7%	10%

5.2.4 The resultant arrival and distribution traffic distribution patterns are shown on the diagram at **Appendix N**. These proportions have been applied to the total development traffic generation and the resultant development traffic assignment is shown on the diagram at **Appendix O**.

5.2.5 For robustness, all of the development traffic from the site has been assumed to travel through the Midland Road / Church Street / High Street / Station Road signals, when in reality a percentage of these trips would utilise Summer Lane when heading north.

6 TRAFFIC IMPACT

6.1 ASSESSMENT YEARS

6.1.1 It is anticipated that the application will be submitted in 2016 and therefore a future year assessment for 2021 has been carried out which is five years after submission.

6.2 BACKGROUND TRAFFIC GROWTH

6.2.1 The 2016 surveyed flows have been modelled for the 2021 future year based on NTM factors using the TEMPRO software package. The growth factors are set out below in Table 6-1.

Table 6-1 - Growth Factors

PERIOD	AM PEAK	PM PEAK
2016 - 2021	1.03	1.03

6.2.2 The above growth factors have been applied to the 2016 surveyed flows and the 2021 Base flows are shown on the diagrams attached at **Appendix P**.

6.3 2021 BASE ANALYSIS

6.3.1 Future year junction capacity assessments have been undertaken at the following locations. The site access junction has been assessed as 2021 with predicted development traffic for both the AM and PM peak hours. The staggered crossroad and signalised junction have been assessed under the 2021 base (inclusive of committed development) and the 2021 predicted traffic flow scenarios, for both the AM and PM peak hours:

- → Site Access / Lee Lane – Priority T-Junction
- → Lee Lane / Wakefield Road / Shaw Lane – Staggered priority crossroad junction
- → Midland Road / Church Street / High Street / Station Road – Signalised junction

6.3.2 Full details of the assessment results for the junctions outlined above are set out within **Appendix D** and the results are summarised in Tables 6-2 and Table 6-3.

Table 6-2 - Site Access / Lee Lane PICADY Results

JUNCTION	ARM/ MOVEMENT	2021 Predicted AM Peak		2021 Predicted PM Peak	
		Max RFC	Max Queue	Max RFC	Max Queue
Site Access / Lee Lane	Site Access	0.18	0	0.12	0
	Lee Lane	0.02	0	0.06	0

6.3.3 The results demonstrate that site access junction is predicted to operate with significant spare capacity and minimal queuing in the design year assessments with the addition of development

traffic. The results demonstrate that the site access junction would operate satisfactorily in the design year with the addition of development traffic.

6.3.4 The assessments of the off-site junctions are summarised below.

Table 6-3 - Lee Lane / Wakefield Road / Shaw Lane PICADY Results

JUNCTION	ARM/ MOVEMENT	2021 Base AM Peak		2021 Predicted AM Peak		2021 Base PM Peak		2021 Predicted PM Peak	
		Max RFC	Max Queue	Max RFC	Max Queue	Max RFC	Max Queue	Max RFC	Max Queue
Lee Lane / Wakefield Road / Shaw Lane	Lee Lane	0.36	1	0.46	1	0.72	2	0.81	4
	Wakefield Road (South)	0.20	0	0.22	0	0.33	1	0.39	1
	Shaw Lane	1.15	33	1.19	38	1.06	22	1.12	31
	Wakefield Road (North)	0.23	0	0.24	0	0.03	0	0.03	0

6.3.5 The results outlined in Table 6-2 show that the junction will operate within its theoretical capacity, with the exception of the Shaw Lane approach. Although this arm is forecast to operate over capacity, the additional impacts of the development proposals are negligible. The increase in RFC's is marginal. The predicted increase in queuing in the AM as a result of the additional traffic is 5 vehicles and in the PM it is 9 vehicles. Such an increase is not considered to be 'severe' and hence it is not considered justification to refuse planning permission.

Table 6-4 - Midland Road / Church Street / High Street / Station Road LinSig Results

JUNCTION	ARM/ MOVEMENT	2021 Base AM Peak		2021 Predicted AM Peak		2021 Base PM Peak		2021 Predicted PM Peak	
		DOS (%)	Max Queue	DOS (%)	Max Queue	DOS (%)	Max Queue	DOS (%)	Max Queue
Midland Road / Church Street / High Street / Station Road	Midland Road	88.4	13	91.0	13	103.6	26	105.4	28
	Church Street	86.8	14	87.7	15	102.9	25	103.0	27
	High Street	87.7	8	91.0	10	102.3	31	107.0	47
	Station Road	49.7	7	50.2	7	69.9	8	70.2	10

6.3.6 The results in Table 6-3 show that Midland Road, Church Street and High Street approaches to the junction are approaching capacity in the AM peak and will marginally exceed capacity with the development in place. However, the queues in the AM only increase by 1 or 2 vehicles.

6.3.7 In the PM, three of the approaches to the junction are over capacity but again the development only results in 1 or 2 additional vehicles queuing. It is accepted that the impact on High St is 16 additional vehicles but this cannot considered to be 'severe' given that it occurs on only one arm for part of the PM peak. The impacts of the development would be negligible with a minimal increase in DoS's as a result of the additional traffic. The Station Road approach is forecast to operate within capacity throughout both peaks.

6.3.8 The forecast development flows have a generally negligible impact on all approaches to this junction during both the AM and PM peak hours. It has been noted that MOVA has recently been installed at the junction. The MOVA software works by extending green time on links experiencing delay which often leads to a significant increase in capacity of up to 13%. As the LinSig model does not take account of MOVA, it is accepted that the analysis is robust and that the actual queuing and delay would be lower than the model suggests.

6.4 SUMMARY

6.4.1 The NPPF states that development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe. The impact of the traffic generated by the development on the junctions within the study area is not considered severe even with a number of robust assumptions. In the PM peak which is the most critical period, the highest increase in traffic movements on any approach is less than 1 vehicle per minute. Increases in trips of this scale are not considered detrimental to the operation of the local highway network.

7 SUMMARY AND CONCLUSIONS

7.1.1 WSP | Parsons Brinckerhoff have been commissioned by Barrat Homes to produce a Transport Assessment to consider access to, and the potential impact of, a proposed residential development site in Royston, Barnsley.

7.1.1 The proposed development site includes land to the north of the B6428 Lee Lane and to the west of Applehaigh View.

7.1.2 The proposed development is for the provision of 164 residential units with a new site access junction from Lee Lane.

7.1.3 A Travel Plan has also been prepared which sets out measures to encourage sustainable travel patterns and reduce the reliance on private car use.

7.1.4 The report has shown that the development proposals will be accessible by a range of travel modes and have been developed to accord with current national and local transport policies, including those set out within the Third Local Transport Plan for South Yorkshire and NPPF.

7.1.5 It is concluded that a range of key facilities and services, including employment, retail, health and education uses will be accessible from the site. All of these can be accessed locally.

7.1.6 The development proposals based on 164 dwellings are forecast to generate some 99 and 113 two-way vehicle trips during the AM and PM peak hours respectively.

7.1.7 The purpose built simple priority site access junction will have sufficient capacity to accommodate the forecast development traffic levels.

7.1.8 The layout of the houses around the proposed site access junction has been designed to enable the junction to be upgraded to a roundabout in the future. Although a smaller roundabout could be delivered to accommodate the proposed and future development, the site layout has been designed in order to future proof the delivery of the roundabout designed by Croft Transport Solutions (Drawing No. 255-F01 B) as part of the extant permission on the application site.

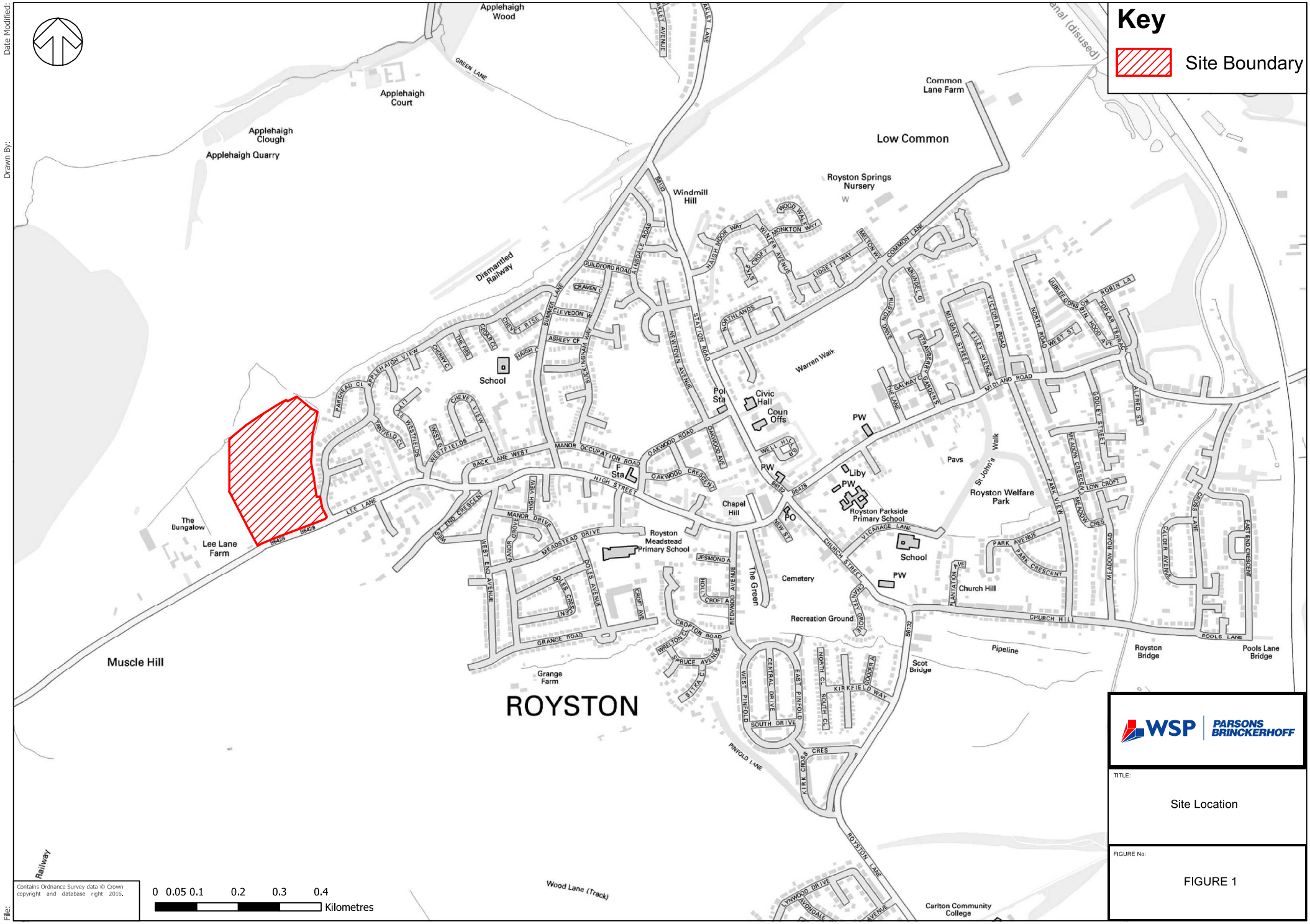
7.1.9 The impact of the development generated traffic on the surrounding area has been shown to be negligible with all junctions experiencing a minimal increase in queuing as a result of the development traffic.

7.1.10 It is therefore concluded that the residential proposals can be accommodated without resulting in a significant detrimental impact upon the network.

7.1.11 Overall it is considered that the site is a suitable location for the proposed development and there are no highways or transport reasons that should prevent the granting of planning consent for the proposals.

Appendix A

SITE LOCATION PLAN


Key
Site Boundary
Date Modified:
Drawn By:
File:
Applehaigh Wood
Applehaigh Court
Applehaigh Clough
Applehaigh Quarry
Common Lane Farm
Low Common
Royston Springs Nursery
Windmill Hill
Dismantled Railway
School
Civic Hall
Coun Offs
Pol Sta
Warren Walk
Pavs
St John's Walk
Royston Welfare Park
Royston Parkside Primary School
Royston Meadstead Primary School
Chapel Hill
PO
Cemetery
The Green
Recreation Ground
Church Hill
Pipeline
Scot Bridge
Royston Bridge
Pools Lane Bridge
The Bungalow
Lee Lane Farm
Muscle Hill
Grange Farm
ROYSTON
Railway
Wood Lane (Track)
Carlton Community College
Contains Ordnance Survey data © Crown copyright and database right 2016.
0 0.05 0.1 0.2 0.3 0.4
Kilometres
WSP | PARSONS BRINCKERHOFF
TITLE:
Site Location
FIGURE No:
FIGURE 1

Appendix B

TRAFFIC SURVEY DATA

Site 2:	**A61 Wakefield Road/B6428 Lee Road/B6428 Shaw Lane**
Day:	**Thursday**
Date:	**13 October 2016**
Weather:	**Cloudy & Showers All Day**

A:	**A61 Wakefield**
B:	**B6428 Lee Road**
C:	**A61 Barnsley**
D:	**B6428 Shaw Lane**

AM		PM		Overall AM		PM	
0730-0830	1743	1600-1700	1569	0730-0	2937	1600-1	3017
0745-0845	1772	1615-1715	1631	0745-0	3033	1615-1	3080
0800-0900	1763	1630-1730	1643	0800-0	3079	1630-1	3135
0815-0915	1588	1645-1745	1638	0815-0	2824	1645-1	3105
0830-0930	1356	1700-1800	1616	0830-09	2527	1700-18	3097

A - B

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	7	2	0	0	0	0	0	9
07:45	6	1	0	0	0	0	0	7
08:00	9	2	0	0	0	0	1	12
08:15	7	3	1	1	0	0	0	12
08:30	8	2	0	0	0	0	1	11
08:45	9	1	0	0	0	0	0	10
Peak Hour	33	8	1	1	0	0	2	45
09:00	7	2	1	0	0	0	0	10
09:15	4	3	0	0	0	0	0	7
Total	90	24	3	2	0	0	4	123
16:00	12	3	0	0	0	0	0	15
16:15	14	5	0	0	0	0	0	19
16:30	12	4	0	0	0	0	0	16
16:45	13	5	0	0	0	0	0	18
17:00	15	4	0	0	0	0	0	19
17:15	16	4	0	0	0	0	0	20
Peak Hour	56	17	0	0	0	0	0	73
17:30	12	3	1	0	0	1	0	17
17:45	13	1	0	0	0	0	0	14
Total	163	46	1	0	0	1	0	211

A - C

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	20	3	1	2	1	0	1	28
07:45	26	4	1	0	0	0	0	31
08:00	24	5	0	0	0	0	0	29
08:15	27	7	1	0	0	0	1	36
08:30	30	6	0	0	1	0	1	38
08:45	28	3	1	3	0	0	0	35
Peak Hour	109	21	2	3	1	0	2	138
09:00	20	2	0	0	0	0	0	22
09:15	10	1	1	3	2	0	0	17
Total	294	52	7	11	5	0	5	374
16:00	40	8	1	0	0	1	0	50
16:15	17	3	0	0	0	1	0	55
16:30	22	5	0	0	0	0	0	59
16:45	23	4	0	0	0	1	0	62
17:00	28	5	0	0	0	0	0	70
17:15	25	2	0	0	0	3	0	62
Peak Hour	98	16	0	0	0	0	0	253
17:30	27	4	0	0	0	0	0	69
17:45	26	2	0	0	0	0	0	70
Total	285	45	0	0	0	0	0	750

A - D

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	12	3	0	0	0	0	0	15
07:45	11	4	0	0	0	0	0	15
08:00	21	6	2	0	0	0	1	30
08:15	16	3	0	0	0	0	1	20
08:30	15	4	1	0	0	0	1	21
08:45	18	5	0	0	0	0	0	23
Peak Hour	72	24	0	0	0	0	0	96
09:00	19	4	0	0	0	0	0	23
09:15	10	2	0	0	0	0	0	12
Total	188	63	1	0	0	0	2	254
16:00	19	4	0	0	0	0	0	23
16:15	17	3	0	0	0	0	0	20
16:30	22	5	0	0	0	0	0	27
16:45	23	4	0	0	0	0	0	27
17:00	28	5	0	0	0	0	0	33
17:15	25	2	0	0	0	0	0	27
Peak Hour	98	16	0	0	0	0	0	114
17:30	27	4	0	0	0	0	0	31
17:45	26	2	0	0	0	0	0	28
Total	285	45	0	0	0	0	0	330

AM	A	B	C	D
A		49	144	96

PM	A	B	C	D
A		73	254	114

AM	A	B	C	D
B		72	88	282

PM	A	B	C	D
B		37	56	159

C - A

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	49	10	2	2	0	3	1	67
07:45	52	12	1	1	0	1	1	68
08:00	69	18	7	5	1	1	0	101
08:15	66	16	3	2	0	1	1	89
08:30	46	8	1	1	0	1	1	58
08:45	40	9	0	0	1	1	0	51
Peak hour	221	51	11	8	2	4	2	299
09:00	33	4	1	1	0	0	0	39
09:15	30	6	2	1	0	0	0	39
Total	606	134	28	21	4	12	6	811
16:00	34	3	4	0	0	0	0	41
16:15	36	5	3	1	0	1	2	48
16:30	38	5	2	2	0	0	0	47
16:45	35	4	1	1	0	0	0	41
17:00	33	5	0	1	0	0	0	39
17:15	34	6	1	1	0	0	0	42
Peak Hour	140	20	4	5	0	0	0	169
17:30	37	3	0	2	1	0	0	43
17:45	32	2	1	0	1	0	0	36
Total	419	53	16	13	2	1	2	506

C - B

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	16	5	1	0	0	0	3	25
07:45	18	4	1	0	0	0	0	23
08:00	21	6	2	0	0	0	1	30
08:15	16	3	0	0	0	0	1	20
08:30	15	4	1	0	0	0	1	21
08:45	18	5	0	0	0	0	0	23
Peak hour	70	18	3	0	0	0	3	94
09:00	16	5	0	0	0	0	0	21
09:15	12	3	1	0	0	0	0	16
Total	202	53	9	0	0	0	9	273
16:00	18	5	0	0	0	0	2	25
16:15	19	5	0	0	0	0	0	24
16:30	22	8	0	0	0	0	0	30
16:45	28	6	0	0	0	0	0	34
17:00	51	5	0	0	0	0	0	56
17:15	30	4	0	0	0	0	0	34
Peak Hour	131	23	0	0	0	0	0	154
17:30	28	3	0	0	0	0	0	31
17:45	20	2	0	0	0	0	0	22
Total	347	61	0	0	0	0	2	410

C - D

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	51	12	2	2	0	0	1	68
07:45	53	13	1	0	0	1	0	68
08:00	45	11	2	3	0	0	1	62
08:15	50	8	1	1	0	0	4	64
08:30	54	13	4	1	0	0	1	73
08:45	42	10	1	1	0	0	0	54
Peak hour	191	42	8	6	0	0	6	253
09:00	21	3	0	0	0	0	0	24
09:15	19	4	2	0	0	0	1	26
Total	526	116	21	14	0	1	14	692
16:00	33	9	2	0	0	0	0	44
16:15	38	8	0	0	0	1	0	47
16:30	44	7	1	0	0	0	0	52
16:45	45	8	0	0	0	0	0	53
17:00	37	6	2	0	1	0	0	46
17:15	38	7	1	0	0	0	1	47
Peak Hour	164	28	4	0	1	0	1	198
17:30	34	3	0	0	1	0	0	38
17:45	31	4	0	0	0	1	0	36
Total	464	80	10	0	3	2	2	561

AM	A	B	C
C	313	99	271

PM	A	B	C
C	178	154	200

AM	A	B	C
D	68	206	133

PM	A	B	C
D	56	327	54

D - A

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	12	4	0	0	0	1	0	17
07:45	11	3	0	0	1	0	0	15
08:00	14	5	0	0	0	1	0	20
08:15	10	3	1	0	0	1	0	15
08:30	12	4	0	0	0	0	0	16
08:45	16	2	0	0	0	0	0	18
Peak Hour	52	14	1	0	0	2	0	69
09:00	12	3	1	0	0	0	0	16
09:15	6	3	0	0	1	0	0	10
Total	145	41	3	0	2	5	0	196
16:00	10	2	1	0	0	1	0	14
16:15	14	3	1	0	0	0	0	18
16:30	16	3	0	0	0	0	0	19
16:45	8	2	0	0	0	0	0	10
17:00	11	3	1	0	0	0	0	15
17:15	9	2	0	0	0	0	0	11
Peak Hour	44	10	1	0	0	0	0	55
17:30	10	3	1	0	0	0	0	14
17:45	8	2	0	0	0	0	0	10
Total	130	30	5	0	0	1	0	166

D - B

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	33	8	1	0	0	0	0	42
07:45	38	8	1	0	0	0	1	48
08:00	45	9	0	0	0	0	0	54
08:15	42	10	1	0	0	0	1	54
08:30	46	8	1	0	0	0	0	55
08:45	36	3	0	1	0	0	0	40
Peak Hour	169	30	2	1	0	0	1	203
09:00	35	6	2	1	0	0	0	44
09:15	33	7	1	0	0	0	1	42
Total	477	89	9	3	0	0	4	582
16:00	59	12	1	0	0	0	1	73
16:15	63	16	1	0	0	1	0	81
16:30	69	14	2	0	0	0	0	85
16:45	70	13	0	1	0	0	0	84
17:00	67	12	0	0	0	0	2	81
17:15	65	8	0	0	0	0	0	73
Peak Hour	271	47	2	1	0	0	2	323
17:30	68	10	1	0	0	0	0	79
17:45	64	9	0	0	0	1	0	74
Total	796	141	7	2	0	2	5	953

D - C

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	21	5	1	0	0	0	0	27
07:45	20	7	0	0	0	0	0	27
08:00	22	8	0	0	0	0	0	30
08:15	27	7	1	0	0	0	0	35
08:30	26	5	0	0	0	0	0	31
08:45	29	4	2	0	0	0	0	35
Peak Hour	104	24	3	0	0	0	0	131
09:00	21	3	0	1	0	0	0	25
09:15	14	3	0	1	0	0	0	18
Total	284	66	7	2	0	0	0	359
16:00	8	3	1	1	0	0	0	13
16:15	6	2	1	0	0	0	0	9
16:30	10	3	0	0	0	0	0	13
16:45	10	4	0	0	0	0	0	14
17:00	10	3	1	0	0	0	0	14
17:15	8	3	1	0	0	0	0	12
Peak Hour	38	13	2	0	0	0	0	53
17:30	10	4	0	0	0	0	0	14
17:45	16	7	1	0	0	0	1	25
Total	116	42	7	1	0	0	1	167

Site 1:	B6132 Station Road/B6428 Midland Rd/Church Street/B6428 High Street	**A:**	B6132 Station Road
Day:	Thursday	**B:**	B6428 Midland Road
Date:	13 October 2016	**C:**	B6132 Church Street
Weather:	Cloudy & Showers All Day	**D:**	B6428 High Street

0730-0830	1194	1600-1700	1448	0730-0	2388	1600-1	2896
0745-0845	1261	1615-1715	1449	0745-0	2522	1615-1	2898
0800-0900	1316	1630-1730	1492	0800-0	2632	1630-1	2984
0815-0915	1236	1645-1745	1467	0815-0	2472	1645-1	2934
0830-0930	1171	1700-1800	1481	0830-093	2342	1700-180	2962

A - B

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	5	5	0	0	0	0	0	10
07:45	6	1	0	0	0	0	1	8
08:00	9	1	0	0	0	0	0	10
08:15	9	2	0	0	0	0	0	11
08:30	16	1	0	0	0	0	0	17
08:45	17	3	0	0	0	0	1	21
Peak Hour	51	7	0	0	0	0	1	59
09:00	15	5	0	0	0	0	1	21
09:15	15	1	0	0	0	0	0	16
Total	143	26	0	0	0	0	4	173
16:00	16	2	1	0	0	0	1	20
16:15	13	2	0	0	0	1	1	17
16:30	13	2	0	0	0	0	0	15
16:45	20	1	0	0	0	0	1	22
17:00	21	2	0	0	0	0	0	23
17:15	24	1	0	0	0	0	1	26
Peak Hour	78	6	0	0	0	0	2	86
17:30	22	4	0	0	0	0	0	26
17:45	15	1	0	0	0	0	1	17
Total	222	21	1	0	0	1	7	252

A - C

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	32	5	3	0	1	0	0	41
07:45	31	2	1	0	0	0	1	35
08:00	42	2	0	0	0	0	0	44
08:15	37	7	0	0	0	0	0	44
08:30	48	3	1	2	0	0	0	54
08:45	36	9	0	0	0	1	0	46
Peak Hour	163	21	1	2	0	1	0	188
09:00	19	7	1	0	0	0	0	27
09:15	21	3	1	0	0	0	0	25
Total	429	59	8	4	1	2	1	504
16:00	23	1	0	0	0	0	0	24
16:15	34	3	0	0	0	0	1	38
16:30	37	2	0	0	0	0	0	39
16:45	41	2	0	0	1	0	0	44
17:00	45	2	0	0	0	0	0	47
17:15	39	4	1	0	0	0	1	45
Peak Hour	162	10	1	0	1	0	1	175
17:30	44	5	0	0	0	0	0	49
17:45	34	4	0	0	0	0	0	38
Total	459	33	2	0	2	0	3	499

A - D

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	8	0	0	0	0	0	0	8
07:45	3	0	0	0	0	0	0	3
08:00	4	0	0	0	0	0	0	4
08:15	4	0	0	0	0	0	0	4
08:30	2	1	0	0	0	0	0	3
08:45	3	1	0	0	0	0	0	4
Peak Hour	13	2	0	0	0	0	0	15
09:00	4	0	0	0	0	0	0	4
09:15	5	1	0	0	0	0	0	6
Total	46	5	0	0	0	0	0	51
16:00	8	3	0	0	0	0	0	11
16:15	4	1	0	0	0	0	0	5
16:30	5	2	1	0	0	0	0	8
16:45	4	1	0	0	0	0	0	5
17:00	2	0	0	0	0	0	0	2
17:15	13	1	1	0	0	0	0	15
Peak Hour	24	4	2	0	0	0	0	30
17:30	9	1	0	0	0	0	0	10
17:45	16	1	0	0	0	0	0	18
Total	132	16	2	0	0	0	0	154

AM	B	C	D
A	60	191	15

PM	B	C	D
A	88	176	31

C - A

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	27	5	0	0	0	0	1	33
07:45	26	5	1	0	0	0	0	32
08:00	35	10	0	1	0	0	0	46
08:15	37	5	0	0	0	0	2	44
08:30	42	2	0	0	0	0	1	45
08:45	42	5	1	0	0	0	1	49
Peak Hour	156	22	1	1	0	0	4	184
09:00	20	10	0	0	0	0	1	31
09:15	31	7	0	0	2	0	2	42
Total	416	71	3	2	2	0	12	506
16:00	40	6	0	0	0	0	3	49
16:15	34	7	0	0	0	2	0	43
16:30	43	8	0	0	0	0	1	52
16:45	50	2	0	0	0	2	0	54
17:00	48	4	0	0	0	0	2	54
17:15	45	5	0	0	0	1	1	52
Peak Hour	186	19	0	0	0	3	4	212
17:30	47	3	0	0	0	1	1	52
17:45	32	4	0	0	0	1	1	38
Total	525	58	0	0	0	10	13	606

C - B

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	24	3	0	0	0	0	0	27
07:45	18	6	0	0	0	0	1	25
08:00	25	1	0	0	0	0	1	27
08:15	27	4	0	1	0	0	0	32
08:30	37	4	1	0	0	0	1	43
08:45	14	0	0	0	0	0	1	15
Peak Hour	103	9	1	1	0	0	3	117
09:00	12	5	1	0	0	0	0	18
09:15	13	3	0	0	0	0	1	17
Total	273	35	3	2	0	0	8	321
16:00	22	5	0	0	0	0	0	27
16:15	22	2	0	1	0	0	3	28
16:30	20	2	0	0	0	0	0	22
16:45	18	3	0	0	0	0	0	21
17:00	15	2	0	0	0	0	0	17
17:15	25	2	0	0	0	0	1	28
Peak Hour	78	9	0	0	0	0	1	88
17:30	13	2	0	0	0	0	0	15
17:45	24	1	0	0	0	0	0	25
Total	237	28	0	1	0	0	5	271

C - D

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	8	4	0	0	0	0	1	13
07:45	10	1	0	0	0	0	0	11
08:00	12	2	0	0	0	0	1	15
08:15	9	2	0	0	0	0	0	11
08:30	9	2	0	0	0	0	0	11
08:45	18	2	0	0	0	0	1	21
Peak Hour	48	8	0	0	0	0	2	58
09:00	11	0	0	0	0	0	0	11
09:15	9	0	0	0	0	0	0	9
Total	134	21	0	0	0	0	5	160
16:00	10	2	0	0	0	0	0	12
16:15	9	0	0	0	0	0	1	10
16:30	8	3	1	0	0	0	0	12
16:45	11	2	0	0	0	0	1	14
17:00	12	1	0	0	0	0	0	13
17:15	13	0	0	0	0	0	0	13
Peak Hour	44	6	1	0	0	0	1	52
17:30	9	1	0	0	0	0	0	10
17:45	16	1	0	0	0	0	1	18
Total	132	16	2	0	0	0	4	154

AM	A	B	D
C	190	122	60

PM	A	B	D
C	214	89	54

B - A

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	8	2	0	0	0	0	0	10
07:45	6	2	0	0	0	0	0	8
08:00	12	2	0	0	0	0	1	15
08:15	9	1	0	0	0	0	0	10
08:30	14	1	0	0	0	0	0	15
08:45	17	4	0	0	0	0	1	22
Peak Hour	52	8	0	0	0	0	2	62
09:00	25	0	0	0	0	0	0	25
09:15	9	0	0	0	0	0	0	9
Total	152	20	0	0	0	0	4	176
16:00	27	2	0	0	0	1	0	30
16:15	20	0	1	0	0	0	0	21
16:30	23	3	0	0	0	0	2	28
16:45	21	1	0	0	0	0	0	22
17:00	18	1	0	0	0	1	0	20
17:15	16	0	0	0	0	0	0	16
Peak Hour	78	5	0	0	0	1	2	86
17:30	17	1	0	0	0	0	1	19
17:45	25	7	0	0	0	0	0	32
Total	245	20	1	0	0	3	5	274

B - C

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	25	4	0	0	0	0	0	29
07:45	21	4	0	0	0	0	0	25
08:00	28	5	2	0	0	0	0	35
08:15	25	5	1	0	0	0	1	32
08:30	24	2	1	0	0	0	0	27
08:45	40	5	1	0	0	0	0	46
Peak Hour	117	17	5	0	0	0	1	140
09:00	17	2	1	0	0	0	0	20
09:15	17	3	0	0	0	0	0	20
Total	314	47	11	0	0	0	2	374
16:00	32	3	0	0	0	1	0	36
16:15	36	2	0	0	0	0	0	38
16:30	32	2	0	0	0	0	0	34
16:45	33	11	1	1	0	0	0	46
17:00	21	5	0	0	0	0	0	26
17:15	21	4	0	0	0	0	0	25
Peak Hour	107	22	1	1	0	0	0	131
17:30	25	2	2	0	0	0	0	29
17:45	45	6	0	0	0	1	0	52
Total	352	57	4	2	0	2	0	417

B - D

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	21	4	0	0	0	0	0	25
07:45	34	4	0	1	0	0	0	41
08:00	39	5	0	0	0	0	0	44
08:15	53	2	1	0	0	0	0	56
08:30	48	4	0	0	0	0	0	52
08:45	26	1	0	0	0	0	0	27
Peak Hour	171	10	1	0	0	0	2	184
09:00	20	3	2	0	0	0	0	25
09:15	27	4	0	0	0	0	1	32
Total	459	38	4	0	0	0	6	507
16:00	31	5	0	0	0	0	0	36
16:15	30	8	0	0	0	0	1	39
16:30	40	7	1	0	0	0	0	48
16:45	26	7	1	0	0	0	0	34
17:00	29	3	0	0	0	0	0	32
17:15	41	6	0	0	0	1	0	48
Peak Hour	136	23	2	0	0	1	0	162
17:30	38	4	0	0	0	0	0	42
17:45	51	7	0	0	0	0	0	58
Total	422	70	4	0	0	2	1	499

AM	A	B	C
D	18	158	187

PM	A	B	C
D	32	335	162

D - A

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	4	0	0	0	0	0	0	4
07:45	4	0	0	0	0	0	0	4
08:00	3	1	0	0	0	0	0	4
08:15	4	0	0	0	0	0	0	4
08:30	3	0	0	0	0	0	0	3
08:45	7	0	0	0	0	0	0	7
Peak Hour	17	1	0	0	0	0	0	18
09:00	8	1	0	0	0	0	0	9
09:15	3	0	0	0	0	0	0	3
Total	53	3	0	0	0	0	0	56
16:00	6	0	0	0	0	0	0	6
16:15	7	2	0	0	0	0	0	9
16:30	11	1	0	0	0	0	0	12
16:45	12	0	0	0	0	0	0	12
17:00	1	0	0	0	0	0	0	1
17:15	7	0	0	0	0	0	0	7
Peak Hour	31	1	0	0	0	0	0	32
17:30	8	0	0	0	0	0	0	8
17:45	7	0	0	0	0	0	0	7
Total	90	4	0	0	0	0	0	94

D - B

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	24	4	1	0	0	0	1	30
07:45	30	4	1	0	0	0	3	38
08:00	35	5	0	0	0	0	0	40
08:15	29	3	0	1	0	0	3	36
08:30	31	5	1	0	0	0	1	38
08:45	31	4	1	0	0	0	1	37
Peak Hour	126	17	2	1	0	0	5	151
09:00	33	5	0	0	0	1	2	41
09:15	41	5	1	0	0	0	1	48
Total	380	52	7	2	0	1	17	459
16:00	57	8	0	0	0	0	3	68
16:15	58	10	0	0	0	0	1	69
16:30	68	11	0	0	0	1	1	81
16:45	66	9	0	0	0	0	0	75
17:00	74	6	1	0	0	0	2	83
17:15	79	9	1	0	0	0	2	91
Peak Hour	287	35	2	0	0	1	5	330
17:30	59	11	0	0	0	1	1	72
17:45	67	5	0	0	0	0	0	72
Total	815	104	4	0	0	3	15	941

D - C

Time	Car	LGV	OGVI	0GV2	P/C	M/C	PSV	Total
07:30	35	5	0	0	0	0	1	41
07:45	35	6	0	0	0	0	0	41
08:00	44	3	0	0	0	0	2	49
08:15	53	2	1	0	0	0	0	56
08:30	48	4	0	0	0	0	0	52
08:45	26	1	0	0	0	0	0	27
Peak Hour	171	10	1	0	0	0	2	184
09:00	20	3	2	0	0	0	0	25
09:15	27	4	0	0	0	0	1	32
Total	459	38	4	0	0	0	6	507
16:00	31	5	0	0	0	0	0	36
16:15	30	8	0	0	0	0	1	39
16:30	40	7	1	0	0	0	0	48
16:45	26	7	1	0	0	0	0	34
17:00	29	3	0	0	0	0	0	32
17:15	41	6	0	0	0	1	0	48
Peak Hour	136	23	2	0	0	1	0	162
17:30	38	4	0	0	0	0	0	42
17:45	51	7	0	0	0	0	0	58
Total	422	70	4	0	0	2	1	499

AM	A	B	C
D	18	158	187

PM	A	B	C
D	32	335	162

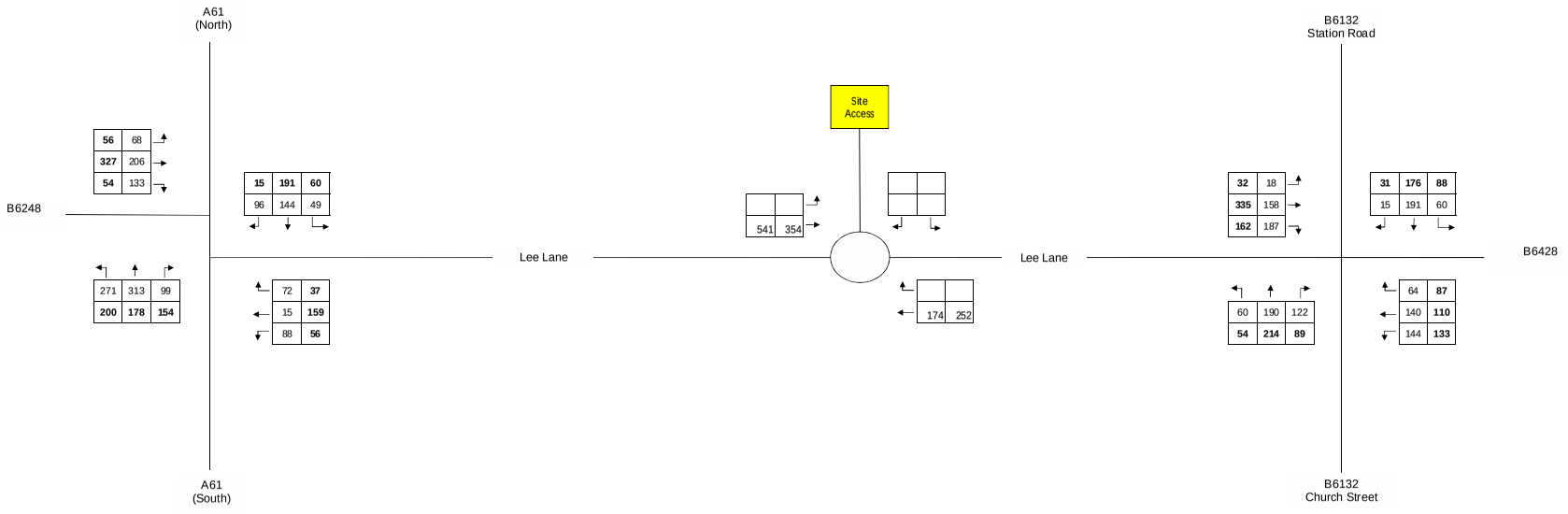
AM	B	C	D
B	64	144	140

PM	A	C	D
B	87	133	110

Appendix C

2016 BASE TRAFFIC FLOWS

AM PM



WSP | PARSONS BRINCKERHOFF	Land at Lee Lane, Royston Base 2016 flows	Appendix C

Appendix D

MODELLING RESULTS

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.0.1.4646 []

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

Filename: A61 Wakefield road - Shaw Lane - Lee Lane Stagger.j9
Path: \\uk.wspgroup.com\central data\Projects\700270xx\70027022 - Lee Lane Royston\D Design and Analysis\Development\PICADY
Report generation date: 09/11/2016 10:31:24

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	2016							
Stream B-C	0.2	8.04	0.18	A	0.2	10.96	0.16	B
Stream B-AD	0.5	17.31	0.32	C	1.7	29.07	0.64	D
Stream A-D	0.3	9.05	0.21	A	0.0	6.99	0.03	A
Stream D-A	5.3	260.93	1.05	F	3.7	217.78	0.90	F
Stream D-BC	17.1	164.14	1.04	F	11.7	104.90	0.97	F
Stream C-B	0.2	7.48	0.18	A	0.4	9.21	0.30	A
	2021							
Stream B-C	0.2	8.56	0.20	A	0.2	13.57	0.20	B
Stream B-AD	0.5	19.92	0.36	C	2.3	38.77	0.72	E
Stream A-D	0.3	9.56	0.23	A	0.0	7.16	0.03	A
Stream D-A	8.1	394.73	1.17	F	5.2	319.18	1.07	F
Stream D-BC	32.9	287.07	1.15	F	22.4	177.28	1.06	F
Stream C-B	0.3	7.93	0.20	A	0.5	10.00	0.33	A
	2021 + Development							
Stream B-C	0.3	9.87	0.26	A	0.5	20.80	0.32	C
Stream B-AD	0.8	24.34	0.46	C	3.5	56.09	0.81	F
Stream A-D	0.3	9.75	0.24	A	0.0	7.23	0.03	A
Stream D-A	8.8	434.27	1.21	F	6.0	370.12	1.12	F
Stream D-BC	38.0	328.48	1.19	F	30.6	228.92	1.11	F
Stream C-B	0.3	8.20	0.22	A	0.6	11.11	0.39	B

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

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	18/10/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	UKWSPGROUP\UKSEC002
Description	

Units

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

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2016	AM	ONE HOUR	07:45	09:15	15	✓
D2	2016	PM	ONE HOUR	16:15	17:45	15	✓
D3	2021	AM	ONE HOUR	07:45	09:15	15	✓
D4	2021	PM	ONE HOUR	16:15	17:45	15	✓
D5	2021 + Development	AM	ONE HOUR	07:45	09:15	15	✓
D6	2021 + Development	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

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

2016, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A61 Wakefield Road - Shaw Lane - Lee Lane	Right-Left Stagger	Two-way	49.69	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A61 Wakefield Road North		Major
B	B6248 Lee Lane		Minor
C	A61 Wakefield Road South		Major
D	B6428 Shaw Lane		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	6.00		✓	3.00	130.0		-
C	6.00		✓	3.00	250.0		-

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	8.00	5.00	4.25	3.50	✓	2.00	40	65
D	One lane plus flare	10.00	9.00	5.60	4.90	4.50	✓	3.00	55	33

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-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	706	-	-	-	0.273	0.273	0.273	-	0.273	-	-
1	B-AD	566	0.103	0.260	-	-	-	0.164	0.372	0.164	0.103	0.260
1	B-C	721	0.111	0.279	-	-	-	-	-	-	0.111	0.279
1	C-B	781	0.303	0.303	-	-	-	-	-	-	0.303	0.303
1	D-A	600	-	-	-	0.232	0.092	0.232	-	0.092	-	-
1	D-BC	588	0.170	0.170	0.387	0.271	0.107	0.271	-	0.107	-	-

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

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2016	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	289	100.000
B		ONE HOUR	✓	175	100.000
C		ONE HOUR	✓	683	100.000
D		ONE HOUR	✓	407	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	49	144	96
	B	72	0	88	15
	C	313	99	0	271
	D	68	206	133	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.18	8.04	0.2	A	81	121
B-AD	0.32	17.31	0.5	C	80	120
A-B					45	67
A-C					132	198
A-D	0.21	9.05	0.3	A	88	132
D-A	1.05	260.93	5.3	F	62	94
D-BC	1.04	164.14	17.1	F	311	467
C-D					249	373
C-A					287	431
C-B	0.18	7.48	0.2	A	91	136

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	66	17	615	0.108	66	0.0	0.1	6.555	A
B-AD	65	16	392	0.167	65	0.0	0.2	10.983	B
A-B	37	9			37				
A-C	108	27			108				
A-D	72	18	568	0.127	72	0.0	0.1	7.252	A
D-A	51	13	412	0.124	51	0.0	0.1	9.936	A
D-BC	255	64	434	0.588	250	0.0	1.4	19.026	C
C-D	204	51			204				
C-A	236	59			236				
C-B	75	19	660	0.113	74	0.0	0.1	6.137	A

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	79	20	589	0.134	79	0.1	0.2	7.050	A
B-AD	78	20	357	0.219	78	0.2	0.3	12.886	B
A-B	44	11			44				
A-C	129	32			129				
A-D	86	22	541	0.160	86	0.1	0.2	7.915	A
D-A	61	15	314	0.195	61	0.1	0.2	14.188	B
D-BC	305	76	404	0.755	299	1.4	2.7	32.847	D
C-D	244	61			244				
C-A	281	70			281				
C-B	89	22	635	0.140	89	0.1	0.2	6.591	A

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	97	24	552	0.176	97	0.2	0.2	7.905	A
B-AD	96	24	309	0.310	95	0.3	0.4	16.770	C
A-B	54	13			54				
A-C	159	40			159				
A-D	106	26	503	0.210	105	0.2	0.3	9.038	A
D-A	75	19	71	1.048	59	0.2	4.3	195.261	F
D-BC	373	93	362	1.031	339	2.7	11.2	97.095	F
C-D	298	75			298				
C-A	345	86			345				
C-B	109	27	601	0.181	109	0.2	0.2	7.314	A

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	97	24	544	0.178	97	0.2	0.2	8.042	A
B-AD	96	24	304	0.316	96	0.4	0.5	17.314	C
A-B	54	13			54				
A-C	159	40			159				
A-D	106	26	503	0.210	106	0.3	0.3	9.054	A
D-A	75	19	79	0.945	71	4.3	5.3	260.929	F
D-BC	373	93	360	1.037	350	11.2	17.1	164.143	F
C-D	298	75			298				
C-A	345	86			345				
C-B	109	27	590	0.185	109	0.2	0.2	7.477	A

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	79	20	577	0.137	79	0.2	0.2	7.240	A
B-AD	78	20	347	0.226	79	0.5	0.3	13.468	B
A-B	44	11			44				
A-C	129	32			129				
A-D	86	22	540	0.160	87	0.3	0.2	7.938	A
D-A	61	15	178	0.344	80	5.3	0.6	43.395	E
D-BC	305	76	401	0.760	357	17.1	3.9	95.913	F
C-D	244	61			244				
C-A	281	70			281				
C-B	89	22	616	0.145	89	0.2	0.2	6.840	A

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	66	17	611	0.109	66	0.2	0.1	6.618	A
B-AD	65	16	389	0.168	66	0.3	0.2	11.147	B
A-B	37	9			37				
A-C	108	27			108				
A-D	72	18	567	0.127	72	0.2	0.1	7.279	A
D-A	51	13	399	0.128	53	0.6	0.1	10.454	B
D-BC	255	64	434	0.588	265	3.9	1.5	22.421	C
C-D	204	51			204				
C-A	236	59			236				
C-B	75	19	655	0.114	75	0.2	0.1	6.204	A

2016, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A61 Wakefield Road - Shaw Lane - Lee Lane	Right-Left Stagger	Two-way	40.35	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2016	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	266	100.000
B		ONE HOUR	✓	252	100.000
C		ONE HOUR	✓	532	100.000
D		ONE HOUR	✓	437	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	60	191	15
	B	37	0	56	159
	C	178	154	0	200
	D	56	327	54	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.16	10.96	0.2	B	51	77
B-AD	0.64	29.07	1.7	D	180	270
A-B					55	83
A-C					175	263
A-D	0.03	6.99	0.0	A	14	21
D-A	0.90	217.78	3.7	F	51	77
D-BC	0.97	104.90	11.7	F	350	524
C-D					184	275
C-A					163	245
C-B	0.30	9.21	0.4	A	141	212

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	42	11	533	0.079	42	0.0	0.1	7.327	A
B-AD	148	37	428	0.345	145	0.0	0.5	12.678	B
A-B	45	11			45				
A-C	144	36			144				
A-D	11	3	588	0.019	11	0.0	0.0	6.245	A
D-A	42	11	424	0.099	42	0.0	0.1	9.410	A
D-BC	287	72	484	0.593	281	0.0	1.4	17.332	C
C-D	151	38			151				
C-A	134	34			134				
C-B	116	29	637	0.182	115	0.0	0.2	6.882	A

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	50	13	491	0.103	50	0.1	0.1	8.166	A
B-AD	176	44	391	0.450	175	0.5	0.8	16.558	C
A-B	54	13			54				
A-C	172	43			172				
A-D	13	3	564	0.024	13	0.0	0.0	6.537	A
D-A	50	13	335	0.150	50	0.1	0.2	12.631	B
D-BC	343	86	462	0.741	338	1.4	2.6	27.861	D
C-D	180	45			180				
C-A	160	40			160				
C-B	138	35	608	0.228	138	0.2	0.3	7.662	A

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	62	15	401	0.154	61	0.1	0.2	10.588	B
B-AD	216	54	342	0.631	213	0.8	1.6	27.181	D
A-B	66	17			66				
A-C	210	53			210				
A-D	17	4	532	0.031	16	0.0	0.0	6.981	A
D-A	62	15	71	0.863	52	0.2	2.6	149.316	F
D-BC	419	105	432	0.971	395	2.6	8.7	70.045	F
C-D	220	55			220				
C-A	196	49			196				
C-B	170	42	568	0.299	169	0.3	0.4	9.022	A

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	62	15	390	0.158	62	0.2	0.2	10.957	B
B-AD	216	54	338	0.638	215	1.6	1.7	29.065	D
A-B	66	17			66				
A-C	210	53			210				
A-D	17	4	531	0.031	17	0.0	0.0	6.993	A
D-A	62	15	68	0.904	57	2.6	3.7	217.781	F
D-BC	419	105	431	0.974	408	8.7	11.7	104.903	F
C-D	220	55			220				
C-A	196	49			196				
C-B	170	42	560	0.303	170	0.4	0.4	9.215	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	50	13	481	0.105	51	0.2	0.1	8.377	A
B-AD	176	44	386	0.457	179	1.7	0.9	17.718	C
A-B	54	13			54				
A-C	172	43			172				
A-D	13	3	563	0.024	14	0.0	0.0	6.553	A
D-A	50	13	264	0.191	64	3.7	0.2	19.178	C
D-BC	343	86	460	0.745	376	11.7	3.4	52.289	F
C-D	180	45			180				
C-A	160	40			160				
C-B	138	35	595	0.233	139	0.4	0.3	7.899	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	42	11	529	0.080	42	0.1	0.1	7.398	A
B-AD	148	37	425	0.347	149	0.9	0.5	13.081	B
A-B	45	11			45				
A-C	144	36			144				
A-D	11	3	587	0.019	11	0.0	0.0	6.256	A
D-A	42	11	412	0.102	43	0.2	0.1	9.748	A
D-BC	287	72	484	0.593	294	3.4	1.5	19.653	C
C-D	151	38			151				
C-A	134	34			134				
C-B	116	29	633	0.183	116	0.3	0.2	6.969	A

2021, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A61 Wakefield Road - Shaw Lane - Lee Lane	Right-Left Stagger	Two-way	82.67	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2021	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	309	100.000
B		ONE HOUR	✓	185	100.000
C		ONE HOUR	✓	728	100.000
D		ONE HOUR	✓	434	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	52	154	103
	B	76	0	93	16
	C	334	105	0	289
	D	73	220	141	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.20	8.56	0.2	A	85	128
B-AD	0.36	19.92	0.5	C	84	127
A-B					48	72
A-C					141	212
A-D	0.23	9.56	0.3	A	95	142
D-A	1.17	394.73	8.1	F	67	100
D-BC	1.15	287.07	32.9	F	331	497
C-D					265	398
C-A					306	460
C-B	0.20	7.93	0.3	A	96	145

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	70	18	607	0.115	69	0.0	0.1	6.692	A
B-AD	69	17	380	0.182	68	0.0	0.2	11.507	B
A-B	39	10			39				
A-C	116	29			116				
A-D	78	19	559	0.139	77	0.0	0.2	7.465	A
D-A	55	14	388	0.141	54	0.0	0.2	10.753	B
D-BC	272	68	424	0.642	265	0.0	1.7	21.895	C
C-D	218	54			218				
C-A	251	63			251				
C-B	79	20	652	0.121	79	0.0	0.1	6.271	A

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	84	21	579	0.144	83	0.1	0.2	7.256	A
B-AD	83	21	343	0.241	82	0.2	0.3	13.782	B
A-B	47	12			47				
A-C	138	35			138				
A-D	93	23	530	0.175	92	0.2	0.2	8.227	A
D-A	66	16	251	0.261	65	0.2	0.3	19.267	C
D-BC	325	81	391	0.830	316	1.7	3.8	43.392	E
C-D	260	65			260				
C-A	300	75			300				
C-B	94	24	625	0.151	94	0.1	0.2	6.781	A

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	102	26	536	0.191	102	0.2	0.2	8.286	A
B-AD	101	25	292	0.347	100	0.3	0.5	18.744	C
A-B	57	14			57				
A-C	170	42			170				
A-D	113	28	490	0.231	113	0.2	0.3	9.537	A
D-A	80	20	69	1.171	59	0.3	5.6	239.739	F
D-BC	397	99	347	1.146	336	3.8	19.1	147.847	F
C-D	318	80			318				
C-A	368	92			368				
C-B	116	29	588	0.197	115	0.2	0.2	7.618	A

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	102	26	523	0.196	102	0.2	0.2	8.557	A
B-AD	101	25	282	0.360	101	0.5	0.5	19.923	C
A-B	57	14			57				
A-C	170	42			170				
A-D	113	28	490	0.231	113	0.3	0.3	9.560	A
D-A	80	20	75	1.073	71	5.6	8.1	394.729	F
D-BC	397	99	345	1.152	343	19.1	32.9	287.070	F
C-D	318	80			318				
C-A	368	92			368				
C-B	116	29	569	0.203	116	0.2	0.3	7.935	A

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	84	21	555	0.151	84	0.2	0.2	7.645	A
B-AD	83	21	323	0.256	83	0.5	0.4	15.095	C
A-B	47	12			47				
A-C	138	35			138				
A-D	93	23	529	0.175	93	0.3	0.2	8.255	A
D-A	66	16	83	0.786	76	8.1	5.5	312.586	F
D-BC	325	81	389	0.834	378	32.9	19.6	253.297	F
C-D	260	65			260				
C-A	300	75			300				
C-B	94	24	587	0.161	95	0.3	0.2	7.310	A

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	70	18	592	0.118	70	0.2	0.1	6.907	A
B-AD	69	17	368	0.188	70	0.4	0.2	12.108	B
A-B	39	10			39				
A-C	116	29			116				
A-D	78	19	558	0.139	78	0.2	0.2	7.498	A
D-A	55	14	279	0.197	76	5.5	0.3	19.536	C
D-BC	272	68	421	0.645	342	19.6	2.0	70.741	F
C-D	218	54			218				
C-A	251	63			251				
C-B	79	20	628	0.126	79	0.2	0.1	6.557	A

2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A61 Wakefield Road - Shaw Lane - Lee Lane	Right-Left Stagger	Two-way	64.20	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2021	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	282	100.000
B		ONE HOUR	✓	267	100.000
C		ONE HOUR	✓	564	100.000
D		ONE HOUR	✓	464	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	64	202	16
	B	39	0	59	169
	C	188	164	0	212
	D	59	348	57	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.20	13.57	0.2	B	54	81
B-AD	0.72	38.77	2.3	E	191	286
A-B					59	88
A-C					185	278
A-D	0.03	7.16	0.0	A	15	22
D-A	1.07	319.18	5.2	F	54	81
D-BC	1.06	177.28	22.4	F	372	557
C-D					195	292
C-A					173	259
C-B	0.33	10.00	0.5	A	150	226

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	44	11	522	0.085	44	0.0	0.1	7.535	A
B-AD	157	39	417	0.376	154	0.0	0.6	13.607	B
A-B	48	12			48				
A-C	152	38			152				
A-D	12	3	581	0.021	12	0.0	0.0	6.331	A
D-A	44	11	403	0.110	44	0.0	0.1	10.016	B
D-BC	305	76	478	0.639	298	0.0	1.7	19.435	C
C-D	160	40			160				
C-A	142	35			142				
C-B	123	31	628	0.196	122	0.0	0.2	7.103	A

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	53	13	472	0.112	53	0.1	0.1	8.591	A
B-AD	187	47	378	0.495	186	0.6	0.9	18.555	C
A-B	58	14			58				
A-C	182	45			182				
A-D	14	4	556	0.026	14	0.0	0.0	6.650	A
D-A	53	13	285	0.186	53	0.1	0.2	15.485	C
D-BC	364	91	454	0.801	357	1.7	3.4	34.601	D
C-D	191	48			191				
C-A	169	42			169				
C-B	147	37	597	0.247	147	0.2	0.3	8.001	A

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	65	16	352	0.184	65	0.1	0.2	12.490	B
B-AD	229	57	325	0.704	224	0.9	2.1	34.141	D
A-B	70	18			70				
A-C	222	56			222				
A-D	18	4	522	0.034	18	0.0	0.0	7.140	A
D-A	65	16	61	1.072	49	0.2	4.1	220.074	F
D-BC	446	111	423	1.055	403	3.4	14.2	100.403	F
C-D	233	58			233				
C-A	207	52			207				
C-B	181	45	554	0.326	180	0.3	0.5	9.621	A

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	65	16	330	0.197	65	0.2	0.2	13.571	B
B-AD	229	57	319	0.717	228	2.1	2.3	38.766	E
A-B	70	18			70				
A-C	222	56			222				
A-D	18	4	520	0.034	18	0.0	0.0	7.159	A
D-A	65	16	68	0.954	61	4.1	5.2	319.176	F
D-BC	446	111	420	1.061	413	14.2	22.4	177.284	F
C-D	233	58			233				
C-A	207	52			207				
C-B	181	45	540	0.334	180	0.5	0.5	9.997	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	53	13	451	0.118	53	0.2	0.1	9.075	A
B-AD	187	47	367	0.510	192	2.3	1.1	21.139	C
A-B	58	14			58				
A-C	182	45			182				
A-D	14	4	554	0.026	14	0.0	0.0	6.676	A
D-A	53	13	73	0.723	60	5.2	3.5	242.437	F
D-BC	364	91	452	0.806	429	22.4	6.1	127.712	F
C-D	191	48			191				
C-A	169	42			169				
C-B	147	37	572	0.258	148	0.5	0.4	8.511	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	44	11	515	0.086	45	0.1	0.1	7.649	A
B-AD	157	39	413	0.379	158	1.1	0.6	14.247	B
A-B	48	12			48				
A-C	152	38			152				
A-D	12	3	579	0.021	12	0.0	0.0	6.347	A
D-A	44	11	381	0.117	58	3.5	0.1	11.619	B
D-BC	305	76	474	0.643	322	6.1	1.9	25.818	D
C-D	160	40			160				
C-A	142	35			142				
C-B	123	31	621	0.199	124	0.4	0.3	7.249	A

2021 + Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A61 Wakefield Road - Shaw Lane - Lee Lane	Right-Left Stagger	Two-way	91.96	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2021 + Development	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	311	100.000
B		ONE HOUR	✓	233	100.000
C		ONE HOUR	✓	736	100.000
D		ONE HOUR	✓	440	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	54	154	103
	B	83	0	117	33
	C	334	113	0	289
	D	73	226	141	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.26	9.87	0.3	A	107	161
B-AD	0.46	24.34	0.8	C	106	160
A-B					50	74
A-C					141	212
A-D	0.24	9.75	0.3	A	95	142
D-A	1.21	434.27	8.8	F	67	100
D-BC	1.19	328.48	38.0	F	337	505
C-D					265	398
C-A					306	460
C-B	0.22	8.20	0.3	A	104	156

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	88	22	598	0.147	87	0.0	0.2	7.047	A
B-AD	87	22	377	0.231	86	0.0	0.3	12.310	B
A-B	41	10			41				
A-C	116	29			116				
A-D	78	19	554	0.140	77	0.0	0.2	7.542	A
D-A	55	14	380	0.145	54	0.0	0.2	11.032	B
D-BC	276	69	421	0.657	269	0.0	1.8	22.812	C
C-D	218	54			218				
C-A	251	63			251				
C-B	85	21	650	0.131	84	0.0	0.1	6.356	A

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	105	26	566	0.186	105	0.2	0.2	7.806	A
B-AD	104	26	339	0.307	104	0.3	0.4	15.234	C
A-B	49	12			49				
A-C	138	35			138				
A-D	93	23	524	0.177	92	0.2	0.2	8.342	A
D-A	66	16	229	0.287	65	0.2	0.4	21.858	C
D-BC	330	82	388	0.851	320	1.8	4.3	47.229	E
C-D	260	65			260				
C-A	300	75			300				
C-B	102	25	623	0.163	101	0.1	0.2	6.904	A

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	129	32	511	0.252	128	0.2	0.3	9.397	A
B-AD	128	32	286	0.446	126	0.4	0.8	22.299	C
A-B	59	15			59				
A-C	170	42			170				
A-D	113	28	483	0.235	113	0.2	0.3	9.726	A
D-A	80	20	67	1.207	58	0.4	6.0	256.551	F
D-BC	404	101	342	1.180	334	4.3	21.8	165.273	F
C-D	318	80			318				
C-A	368	92			368				
C-B	124	31	584	0.213	124	0.2	0.3	7.815	A

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	129	32	494	0.261	129	0.3	0.3	9.866	A
B-AD	128	32	275	0.465	127	0.8	0.8	24.339	C
A-B	59	15			59				
A-C	170	42			170				
A-D	113	28	482	0.235	113	0.3	0.3	9.754	A
D-A	80	20	72	1.111	69	6.0	8.8	434.271	F
D-BC	404	101	341	1.186	339	21.8	38.0	328.481	F
C-D	318	80			318				
C-A	368	92			368				
C-B	124	31	563	0.221	124	0.3	0.3	8.200	A

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	105	26	536	0.196	106	0.3	0.2	8.374	A
B-AD	104	26	316	0.330	106	0.8	0.5	17.227	C
A-B	49	12			49				
A-C	138	35			138				
A-D	93	23	523	0.177	93	0.3	0.2	8.375	A
D-A	66	16	81	0.813	75	8.8	6.4	359.172	F
D-BC	330	82	386	0.856	376	38.0	26.6	309.714	F
C-D	260	65			260				
C-A	300	75			300				
C-B	102	25	579	0.176	102	0.3	0.2	7.554	A

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	88	22	577	0.153	88	0.2	0.2	7.377	A
B-AD	87	22	360	0.242	88	0.5	0.3	13.266	B
A-B	41	10			41				
A-C	116	29			116				
A-D	78	19	553	0.140	78	0.2	0.2	7.579	A
D-A	55	14	197	0.280	79	6.4	0.4	36.690	E
D-BC	276	69	419	0.660	373	26.6	2.3	117.319	F
C-D	218	54			218				
C-A	251	63			251				
C-B	85	21	618	0.138	85	0.2	0.2	6.758	A

2021 + Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A61 Wakefield Road - Shaw Lane - Lee Lane	Right-Left Stagger	Two-way	81.39	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2021 + Development	PM	ONE HOUR	16:15	17:45	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	288	100.000
B		ONE HOUR	✓	295	100.000
C		ONE HOUR	✓	586	100.000
D		ONE HOUR	✓	479	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	70	202	16
	B	43	0	73	179
	C	188	186	0	212
	D	59	363	57	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.32	20.80	0.5	C	67	100
B-AD	0.81	56.09	3.5	F	204	306
A-B					64	96
A-C					185	278
A-D	0.03	7.23	0.0	A	15	22
D-A	1.12	370.12	6.0	F	54	81
D-BC	1.11	228.92	30.6	F	385	578
C-D					195	292
C-A					173	259
C-B	0.39	11.11	0.6	B	171	256

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	55	14	514	0.107	54	0.0	0.1	7.826	A
B-AD	167	42	407	0.411	164	0.0	0.7	14.709	B
A-B	53	13			53				
A-C	152	38			152				
A-D	12	3	578	0.021	12	0.0	0.0	6.363	A
D-A	44	11	389	0.114	44	0.0	0.1	10.413	B
D-BC	316	79	476	0.665	309	0.0	1.9	20.768	C
C-D	160	40			160				
C-A	142	35			142				
C-B	140	35	624	0.225	139	0.0	0.3	7.411	A

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	66	16	454	0.144	65	0.1	0.2	9.253	A
B-AD	200	50	366	0.545	198	0.7	1.1	21.109	C
A-B	63	16			63				
A-C	182	45			182				
A-D	14	4	552	0.026	14	0.0	0.0	6.693	A
D-A	53	13	250	0.212	52	0.1	0.3	18.184	C
D-BC	378	94	452	0.835	369	1.9	4.1	39.450	E
C-D	191	48			191				
C-A	169	42			169				
C-B	167	42	591	0.283	167	0.3	0.4	8.482	A

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	80	20	295	0.273	80	0.2	0.4	16.669	C
B-AD	244	61	311	0.787	237	1.1	3.0	44.881	E
A-B	77	19			77				
A-C	222	56			222				
A-D	18	4	517	0.034	18	0.0	0.0	7.204	A
D-A	65	16	58	1.123	48	0.3	4.5	241.958	F
D-BC	462	116	420	1.102	406	4.1	18.2	121.241	F
C-D	233	58			233				
C-A	207	52			207				
C-B	205	51	546	0.375	204	0.4	0.6	10.508	B

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	80	20	253	0.318	80	0.4	0.5	20.802	C
B-AD	244	61	303	0.807	242	3.0	3.5	56.092	F
A-B	77	19			77				
A-C	222	56			222				
A-D	18	4	515	0.034	18	0.0	0.0	7.233	A
D-A	65	16	65	1.005	59	4.5	6.0	370.116	F
D-BC	462	116	417	1.109	413	18.2	30.6	228.916	F
C-D	233	58			233				
C-A	207	52			207				
C-B	205	51	529	0.387	205	0.6	0.6	11.106	B

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	66	16	418	0.157	67	0.5	0.2	10.270	B
B-AD	200	50	351	0.569	208	3.5	1.4	26.555	D
A-B	63	16			63				
A-C	182	45			182				
A-D	14	4	549	0.026	14	0.0	0.0	6.736	A
D-A	53	13	69	0.768	58	6.0	4.6	294.014	F
D-BC	378	94	449	0.841	435	30.6	16.3	199.300	F
C-D	191	48			191				
C-A	169	42			169				
C-B	167	42	556	0.301	168	0.6	0.4	9.295	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-C	55	14	500	0.110	55	0.2	0.1	8.091	A
B-AD	167	42	397	0.421	170	1.4	0.7	15.986	C
A-B	53	13			53				
A-C	152	38			152				
A-D	12	3	576	0.021	12	0.0	0.0	6.381	A
D-A	44	11	303	0.147	62	4.6	0.2	16.084	C
D-BC	316	79	472	0.669	373	16.3	2.2	50.785	F
C-D	160	40			160				
C-A	142	35			142				
C-B	140	35	604	0.232	141	0.4	0.3	7.780	A

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Site Access - Lee Lane.j9
Path: \\uk.wspgroup.com\central data\Projects\700270xx\70027022 - Lee Lane Royston\D Design and Analysis\Development\PICADY
Report generation date: 10/11/2016 14:33:31

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
	Future Year							
Stream B-AC	0.2	9.78	0.18	A	0.1	10.88	0.12	B
Stream C-AB	0.0	6.86	0.02	A	0.1	7.83	0.06	A

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

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

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	19/10/2016
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	UKWSPGROUP\UKSEC002
Description	

Units

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

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	Future Year	AM	ONE HOUR	07:45	09:15	15
D2	Future Year	PM	ONE HOUR	16:15	17:45	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

Future Year, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	1.19	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Lee Lane (West)		Major
B	Site Access		Minor
C	Lee Lane (East)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.00			100.0	✓	1.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.65	30	20

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	529	0.092	0.233	0.147	0.333
1	B-C	678	0.099	0.251	-	-
1	C-B	632	0.234	0.234	-	-

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

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

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

Traffic Demand

Demand Set Details

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

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	392	100.000
B		✓	74	100.000
C		✓	195	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	15	377
	B	46	0	28
	C	186	9	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.18	9.78	0.2	A
C-AB	0.02	6.86	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	56	490	0.114	55	0.1	8.264	A
C-AB	7	564	0.012	7	0.0	6.454	A
C-A	140			140			
A-B	11			11			
A-C	284			284			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	67	473	0.141	66	0.2	8.844	A
C-AB	8	552	0.015	8	0.0	6.620	A
C-A	167			167			
A-B	13			13			
A-C	339			339			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	81	450	0.181	81	0.2	9.766	A
C-AB	10	535	0.019	10	0.0	6.860	A
C-A	205			205			
A-B	17			17			
A-C	415			415			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	81	450	0.181	81	0.2	9.778	A
C-AB	10	535	0.019	10	0.0	6.860	A
C-A	205			205			
A-B	17			17			
A-C	415			415			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	67	473	0.141	67	0.2	8.859	A
C-AB	8	552	0.015	8	0.0	6.623	A
C-A	167			167			
A-B	13			13			
A-C	339			339			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	56	490	0.114	56	0.1	8.288	A
C-AB	7	564	0.012	7	0.0	6.457	A
C-A	140			140			
A-B	11			11			
A-C	284			284			

Future Year, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs.

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.70	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	Future Year	PM	ONE HOUR	16:15	17:45	15

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

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	619	100.000
B		✓	42	100.000
C		✓	295	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	44	575
	B	26	0	16
	C	268	27	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.12	10.88	0.1	B
C-AB	0.06	7.83	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	32	442	0.072	31	0.1	8.766	A
C-AB	21	531	0.039	20	0.0	7.055	A
C-A	201			201			
A-B	33			33			
A-C	433			433			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	38	415	0.091	38	0.1	9.544	A
C-AB	25	513	0.048	25	0.1	7.370	A
C-A	240			240			
A-B	40			40			
A-C	517			517			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	46	377	0.123	46	0.1	10.866	B
C-AB	31	491	0.063	31	0.1	7.825	A
C-A	294			294			
A-B	48			48			
A-C	633			633			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	46	377	0.123	46	0.1	10.875	B
C-AB	31	491	0.063	31	0.1	7.828	A
C-A	294			294			
A-B	48			48			
A-C	633			633			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	38	415	0.091	38	0.1	9.558	A
C-AB	25	513	0.048	25	0.1	7.372	A
C-A	240			240			
A-B	40			40			
A-C	517			517			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	32	442	0.072	32	0.1	8.785	A
C-AB	21	531	0.039	21	0.0	7.062	A
C-A	201			201			
A-B	33			33			
A-C	433			433			

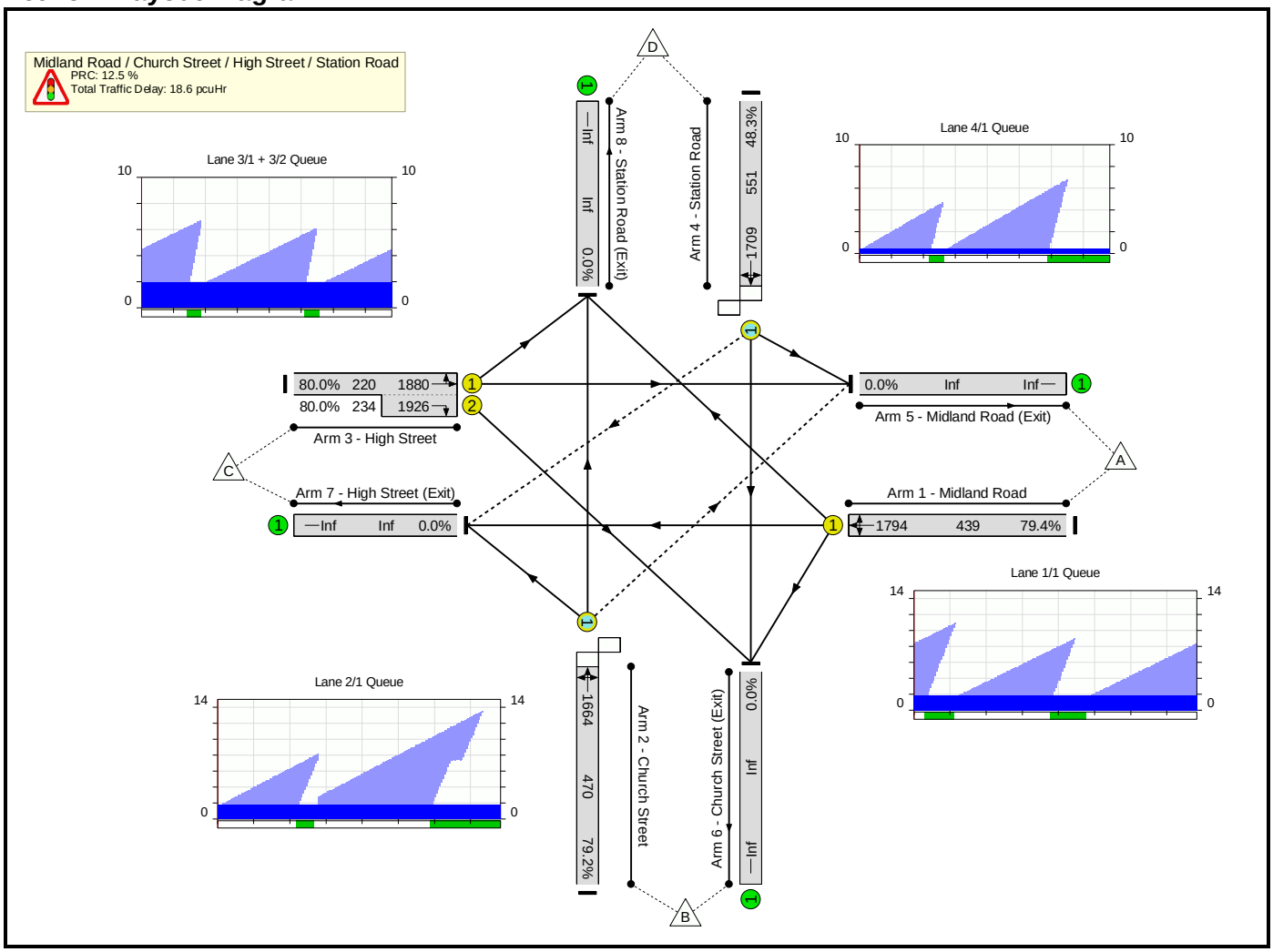
Basic Results Summary

User and Project Details

Project:	**Lee Lane, Royston**
Title:	**Midland Road / Church Street / High Street / Station Road Junction**
Location:	
File name:	Midland Road - Church Street - High Street - Station Road.lsg3x
Author:	Sam Chapman
Company:	WSP | Parsons Brinckerhoff
Address:	
Notes:	

Scenario 1: 'Base 2016' (FG6: 'PM Base 2021 + Development', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Midland Road / Church Street / High Street / Station Road Junction	-	-	-		-	-	-	-	-	-	**80.0%**	**116**	**0**	**21**	**18.6**	-	-
Midland Road / Church Street / High Street / Station Road	-	-	-		-	-	-	-	-	-	**80.0%**	**116**	**0**	**21**	**18.6**	-	-
1/1	Midland Road Left Ahead Right	U	A		2	42	-	348	1794	439	79.4%	-	-	-	5.0	51.4	10.9
2/1	Church Street Right Left Ahead	O	B		2	56	-	372	1664	470	79.2%	101	0	21	5.5	53.2	13.6
3/1+3/2	High Street Ahead Right Left	U	C		2	21	-	363	1880:1926	220+234	80.0 : 80.0%	-	-	-	5.8	57.1	6.7
4/1	Station Road Left Ahead Right	O	D		2	56	-	266	1709	551	48.3%	15	0	0	2.3	31.8	6.8

C1

PRC for Signalled Lanes (%): 12.5
PRC Over All Lanes (%): 12.5

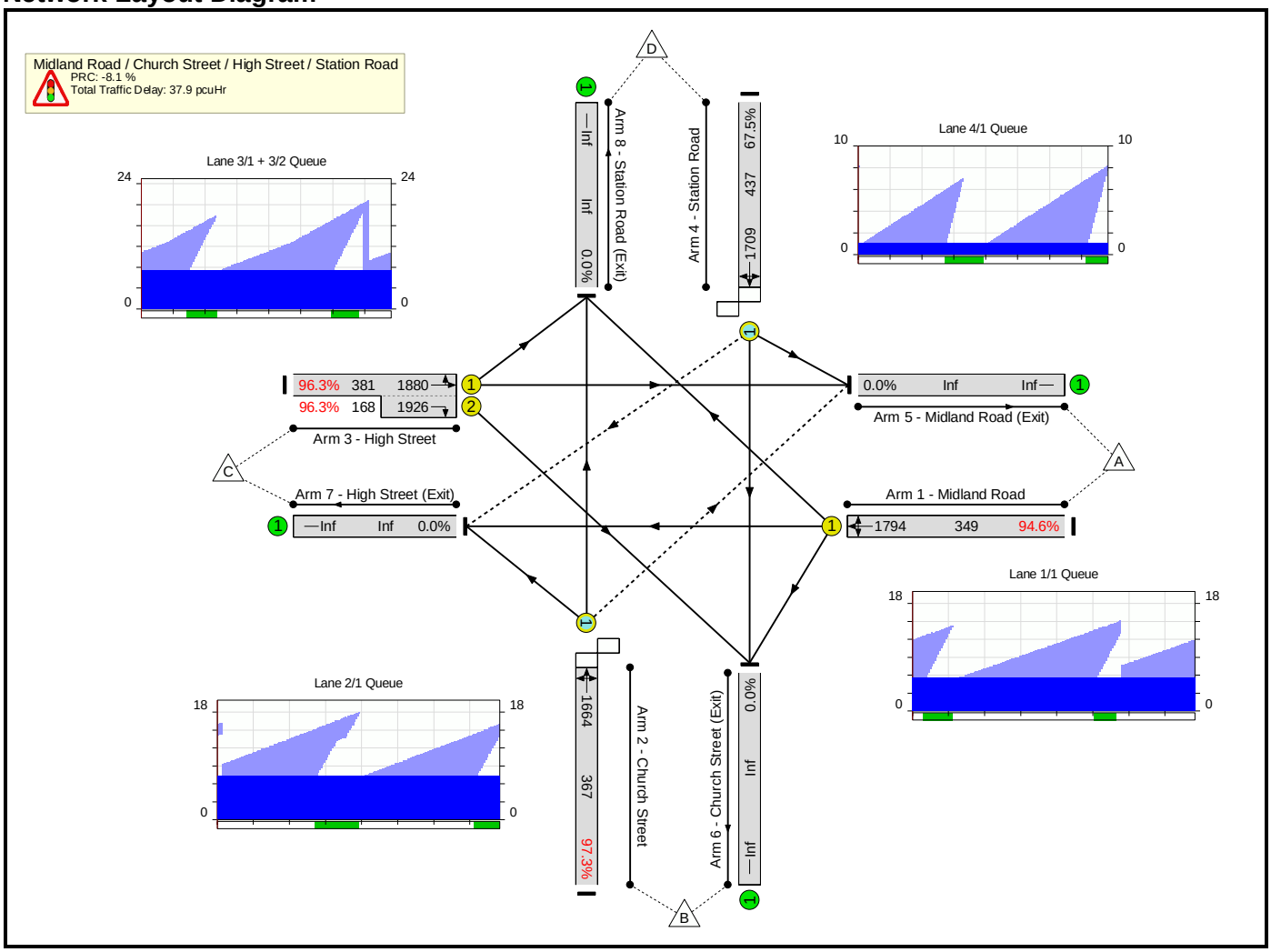
Total Delay for Signalled Lanes (pcuHr): 18.57
Total Delay Over All Lanes(pcuHr): 18.57

Cycle Time (s): 180

Basic Results Summary

Scenario 2: 'Base 2016' (FG2: 'PM Base 2016', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Midland Road / Church Street / High Street / Station Road Junction	-	-	-		-	-	-	-	-	-	**97.3%**	**94**	**0**	**26**	**37.9**	-	-
Midland Road / Church Street / High Street / Station Road	-	-	-		-	-	-	-	-	-	**97.3%**	**94**	**0**	**26**	**37.9**	-	-
1/1	Midland Road Left Ahead Right	U	A		2	33	-	330	1794	349	94.6%	-	-	-	9.8	106.4	15.1
2/1	Church Street Right Left Ahead	O	B		2	44	-	357	1664	367	97.3%	64	0	25	11.6	116.6	18.0
3/1+3/2	High Street Ahead Right Left	U	C		2	42	-	529	1880:1926	381+168	96.3 : 96.3%	-	-	-	13.1	88.9	20.8
4/1	Station Road Left Ahead Right	O	D		2	44	-	295	1709	437	67.5%	30	0	1	3.5	43.1	8.2

C1

PRC for Signalled Lanes (%): -8.1
PRC Over All Lanes (%): -8.1

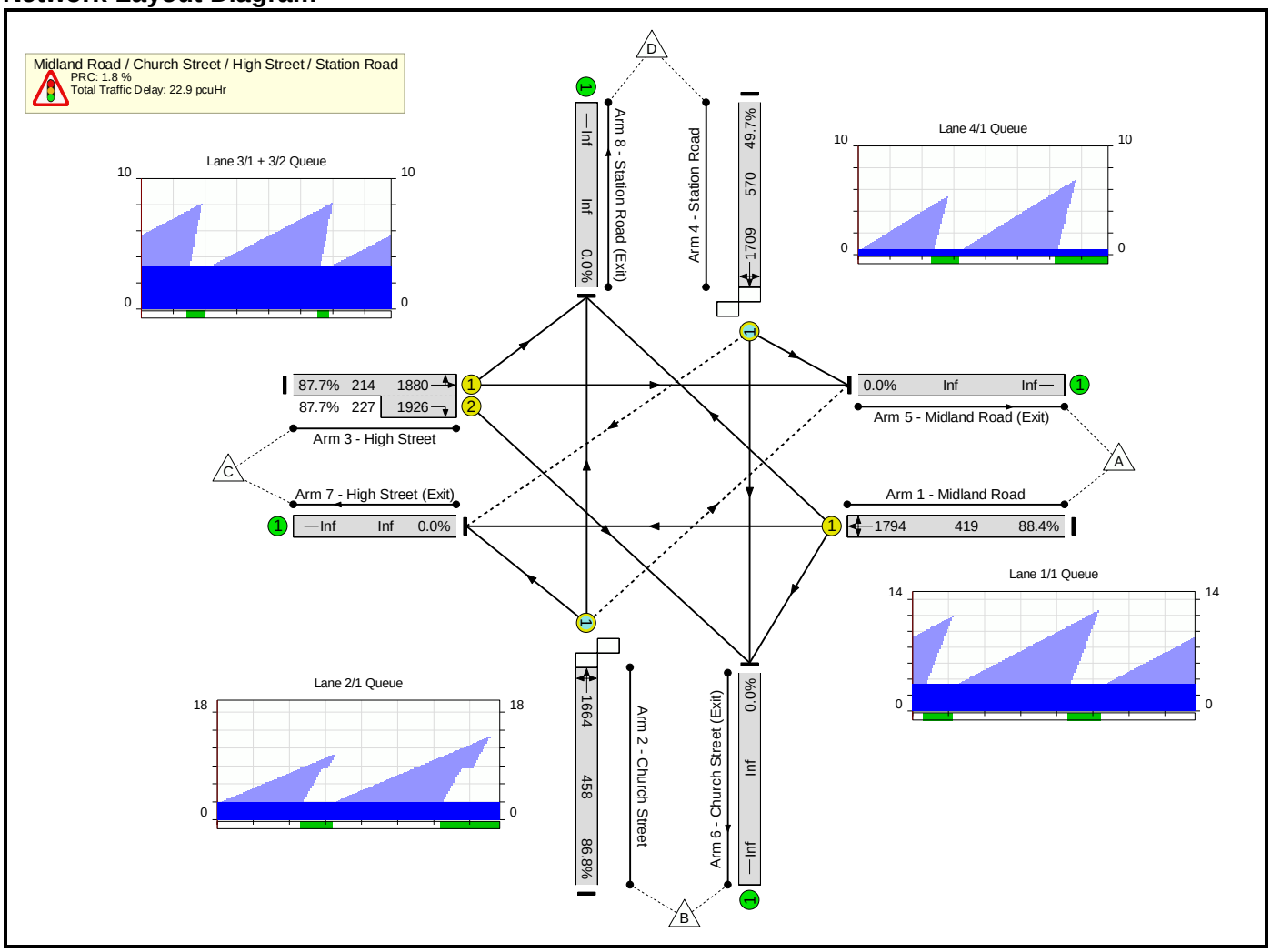
Total Delay for Signalled Lanes (pcuHr): 37.93
Total Delay Over All Lanes(pcuHr): 37.93

Cycle Time (s): 180

Basic Results Summary

Scenario 3: 'Base 2021' (FG3: 'AM Base 2021', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Midland Road / Church Street / High Street / Station Road Junction	-	-	-		-	-	-	-	-	-	**88.4%**	**142**	**0**	**4**	**22.9**	-	-
Midland Road / Church Street / High Street / Station Road	-	-	-		-	-	-	-	-	-	**88.4%**	**142**	**0**	**4**	**22.9**	-	-
1/1	Midland Road Left Ahead Right	U	A		2	40	-	370	1794	419	88.4%	-	-	-	6.8	65.9	12.6
2/1	Church Street Right Left Ahead	O	B		2	58	-	397	1664	458	86.8%	126	0	4	6.3	57.5	13.9
3/1+3/2	High Street Ahead Right Left	U	C		2	21	-	387	1880:1926	214+227	87.7 : 87.7%	-	-	-	7.3	68.3	8.1
4/1	Station Road Left Ahead Right	O	D		2	58	-	283	1709	570	49.7%	16	0	0	2.4	30.7	6.9

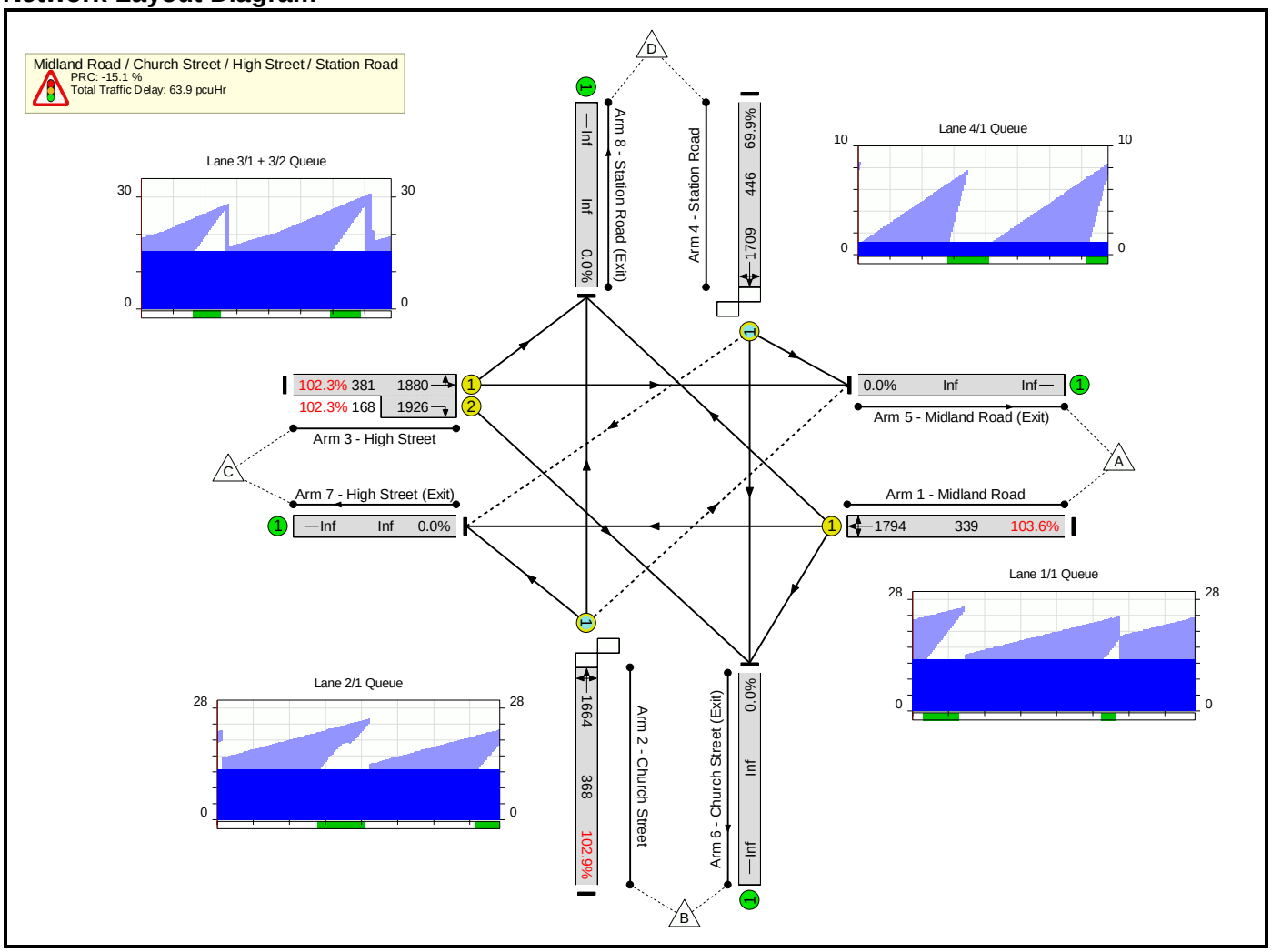
C1 PRC for Signalled Lanes (%): 1.8 Total Delay for Signalled Lanes (pcuHr): 22.87 Cycle Time (s): 180

PRC Over All Lanes (%): 1.8 Total Delay Over All Lanes(pcuHr): 22.87

Basic Results Summary

Scenario 4: 'Base 2021' (FG4: 'PM Base 2021', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Midland Road / Church Street / High Street / Station Road Junction	-	-	-		-	-	-	-	-	-	**103.6%**	**96**	**0**	**29**	**63.9**	-	-
Midland Road / Church Street / High Street / Station Road	-	-	-		-	-	-	-	-	-	**103.6%**	**96**	**0**	**29**	**63.9**	-	-
1/1	Midland Road Left Ahead Right	U	A		2	32	-	351	1794	339	103.6%	-	-	-	19.6	200.8	26.1
2/1	Church Street Right Left Ahead	O	B		2	45	-	379	1664	368	102.9%	65	0	27	18.2	173.0	25.3
3/1+3/2	High Street Ahead Right Left	U	C		2	42	-	562	1880:1926	381+168	102.3 : 102.3%	-	-	-	22.4	143.3	31.0
4/1	Station Road Left Ahead Right	O	D		2	45	-	312	1709	446	69.9%	31	0	2	3.8	43.6	8.5

C1

PRC for Signalled Lanes (%): -15.1
PRC Over All Lanes (%): -15.1

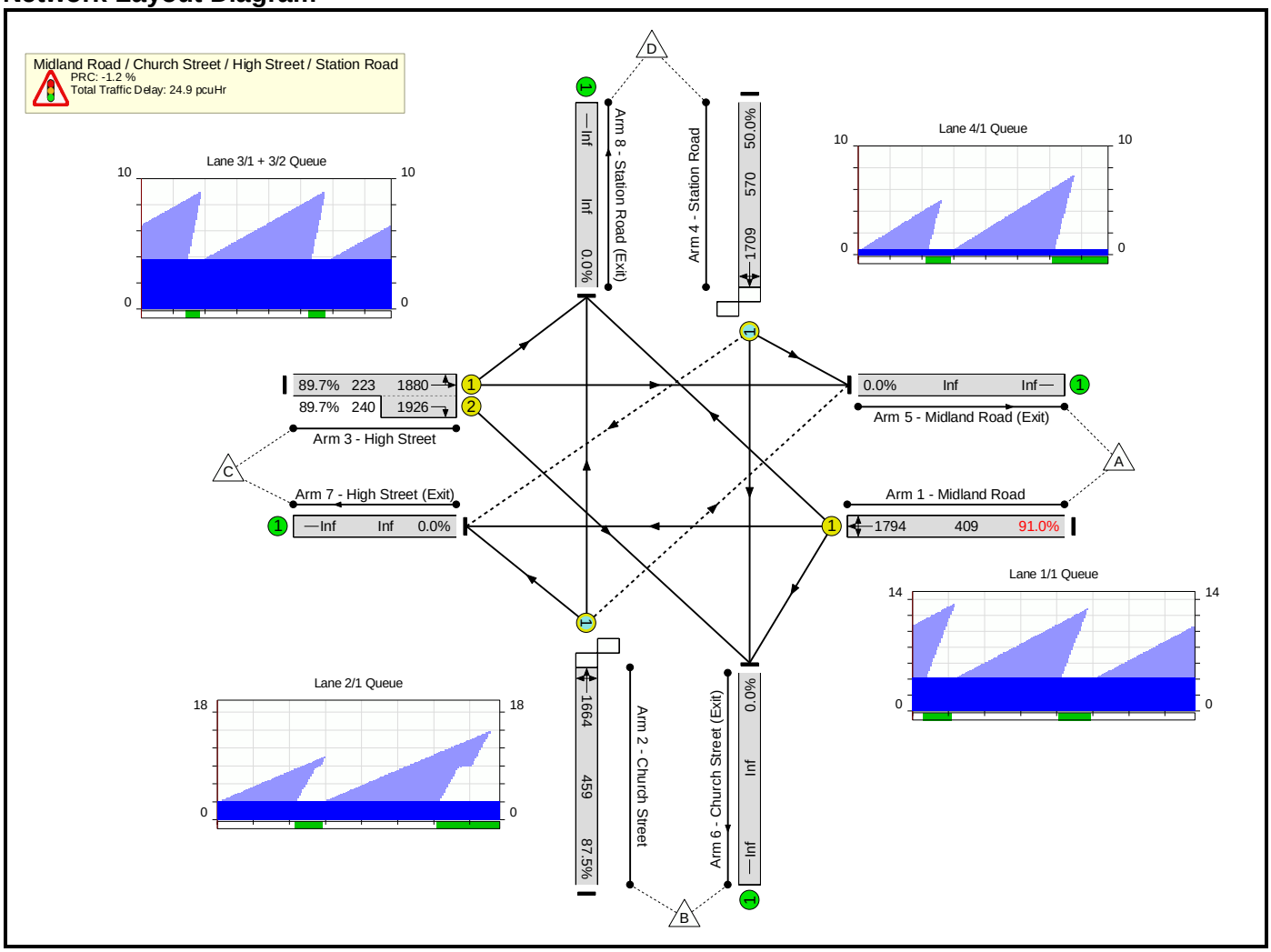
Total Delay for Signalled Lanes (pcuHr): 63.93
Total Delay Over All Lanes(pcuHr): 63.93

Cycle Time (s): 180

Basic Results Summary

Scenario 5: 'Base 2021 + Development' (FG5: 'AM Base 2021 + Development', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

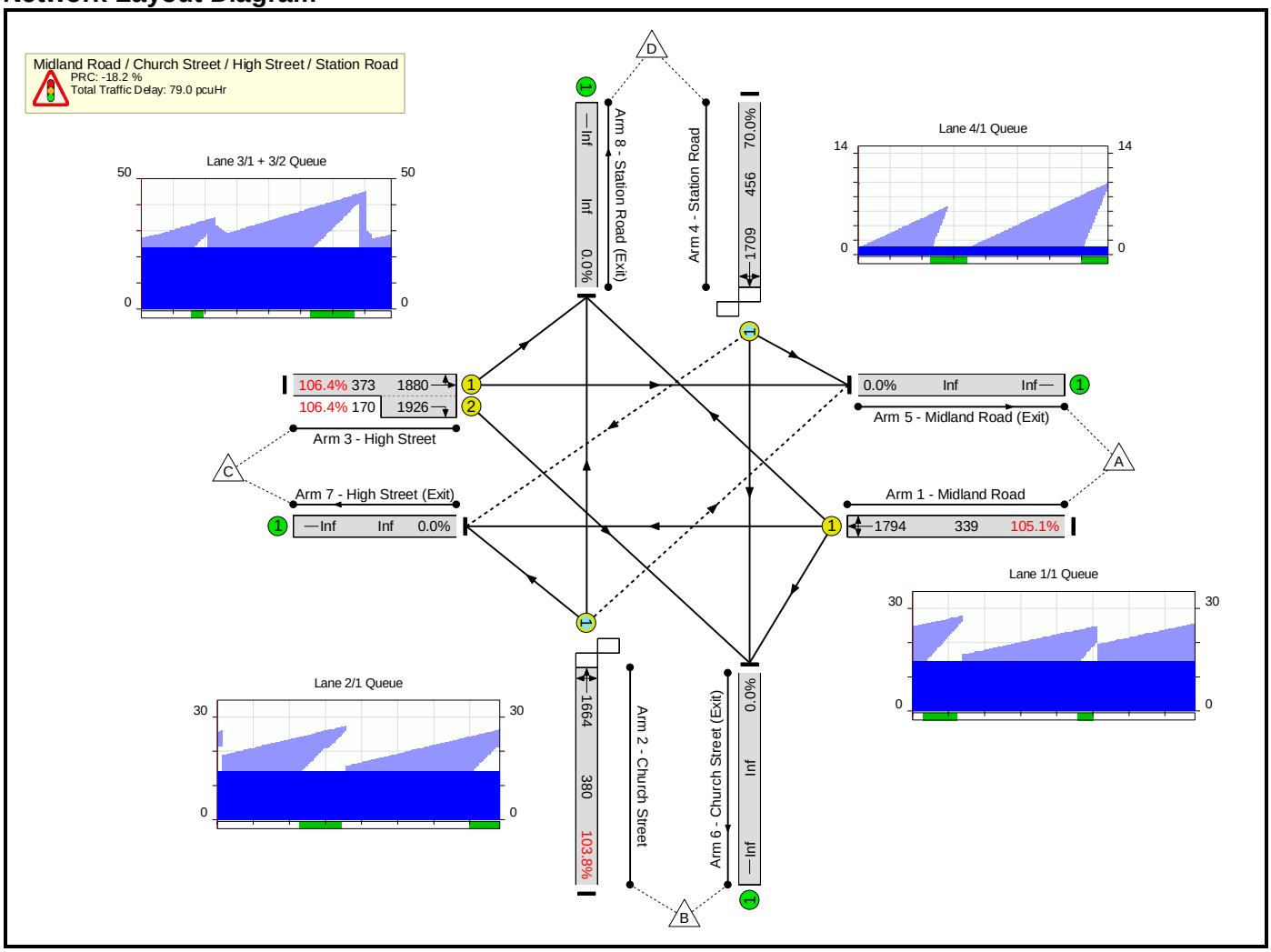
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Midland Road / Church Street / High Street / Station Road Junction	-	-	-		-	-	-	-	-	-	**91.0%**	**144**	**0**	**4**	**24.9**	-	-
Midland Road / Church Street / High Street / Station Road	-	-	-		-	-	-	-	-	-	**91.0%**	**144**	**0**	**4**	**24.9**	-	-
1/1	Midland Road Left Ahead Right	U	A		2	39	-	372	1794	409	91.0%	-	-	-	7.6	74.0	13.4
2/1	Church Street Right Left Ahead	O	B		2	58	-	402	1664	459	87.5%	126	0	4	6.6	59.3	14.8
3/1+3/2	High Street Ahead Right Left	U	C		2	22	-	415	1880:1926	223+240	89.7 : 89.7%	-	-	-	8.1	70.6	9.1
4/1	Station Road Left Ahead Right	O	D		2	58	-	285	1709	570	50.0%	18	0	0	2.5	31.3	7.3

C1 PRC for Signalled Lanes (%): -1.2 Total Delay for Signalled Lanes (pcuHr): 24.89 Cycle Time (s): 180
PRC Over All Lanes (%): -1.2 Total Delay Over All Lanes(pcuHr): 24.89

Basic Results Summary

Scenario 6: 'Base 2021 + Development' (FG6: 'PM Base 2021 + Development', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

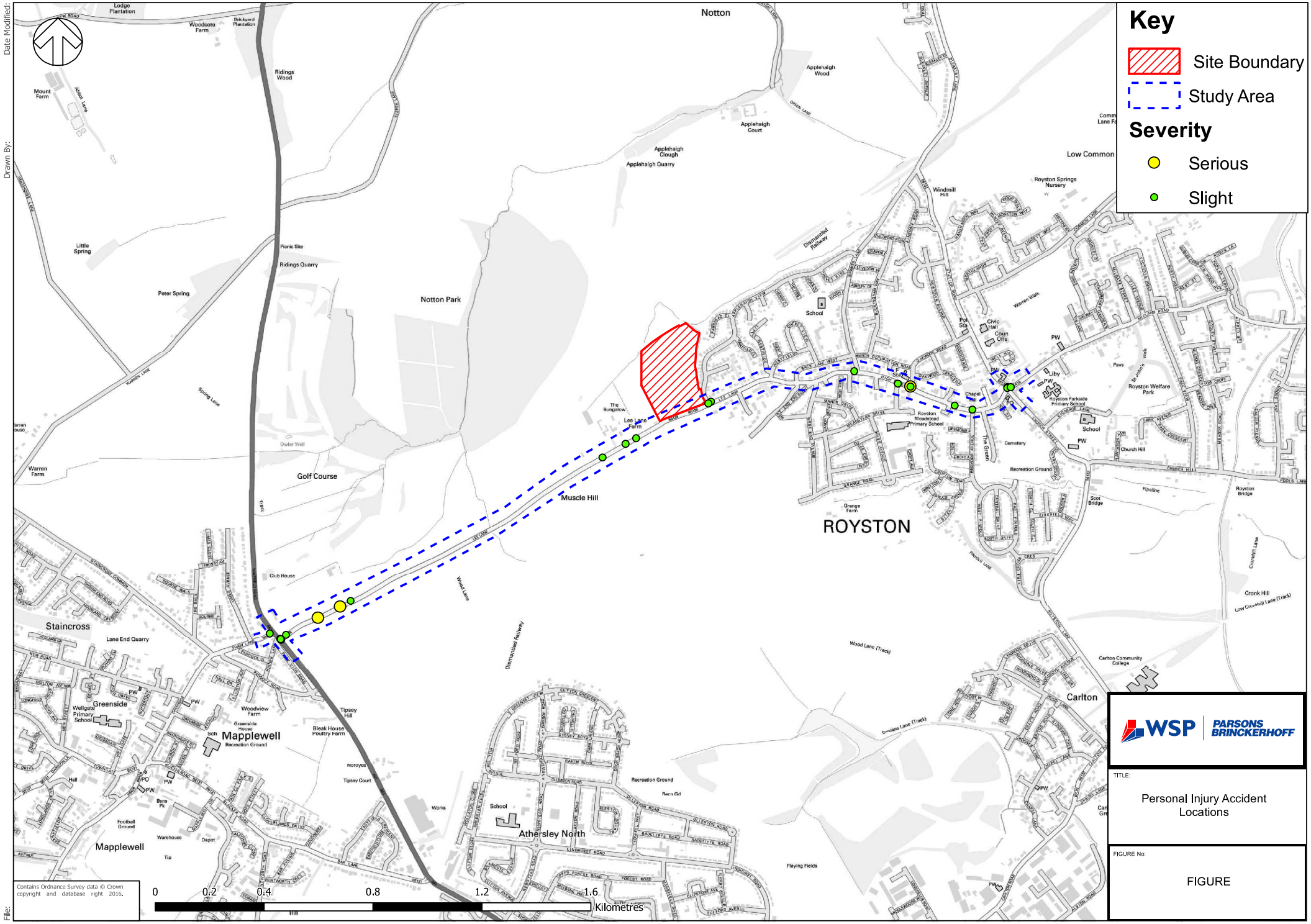
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Midland Road / Church Street / High Street / Station Road Junction	-	-	-		-	-	-	-	-	-	**106.4%**	**103**	**0**	**28**	**79.0**	-	-
Midland Road / Church Street / High Street / Station Road	-	-	-		-	-	-	-	-	-	**106.4%**	**103**	**0**	**28**	**79.0**	-	-
1/1	Midland Road Left Ahead Right	U	A		2	32	-	356	1794	339	105.1%	-	-	-	21.3	215.9	27.8
2/1	Church Street Right Left Ahead	O	B		2	46	-	394	1664	380	103.8%	64	0	27	20.7	189.1	27.4
3/1+3/2	High Street Ahead Right Left	U	C		2	41	-	578	1880:1926	373+170	106.4 : 106.4%	-	-	-	33.0	205.5	45.0
4/1	Station Road Left Ahead Right	O	D		2	46	-	319	1709	456	70.0%	39	0	1	4.0	44.6	9.9

C1 PRC for Signalled Lanes (%): -18.2 Total Delay for Signalled Lanes (pcuHr): 78.99 Cycle Time (s): 180

PRC Over All Lanes (%): -18.2 Total Delay Over All Lanes(pcuHr): 78.99

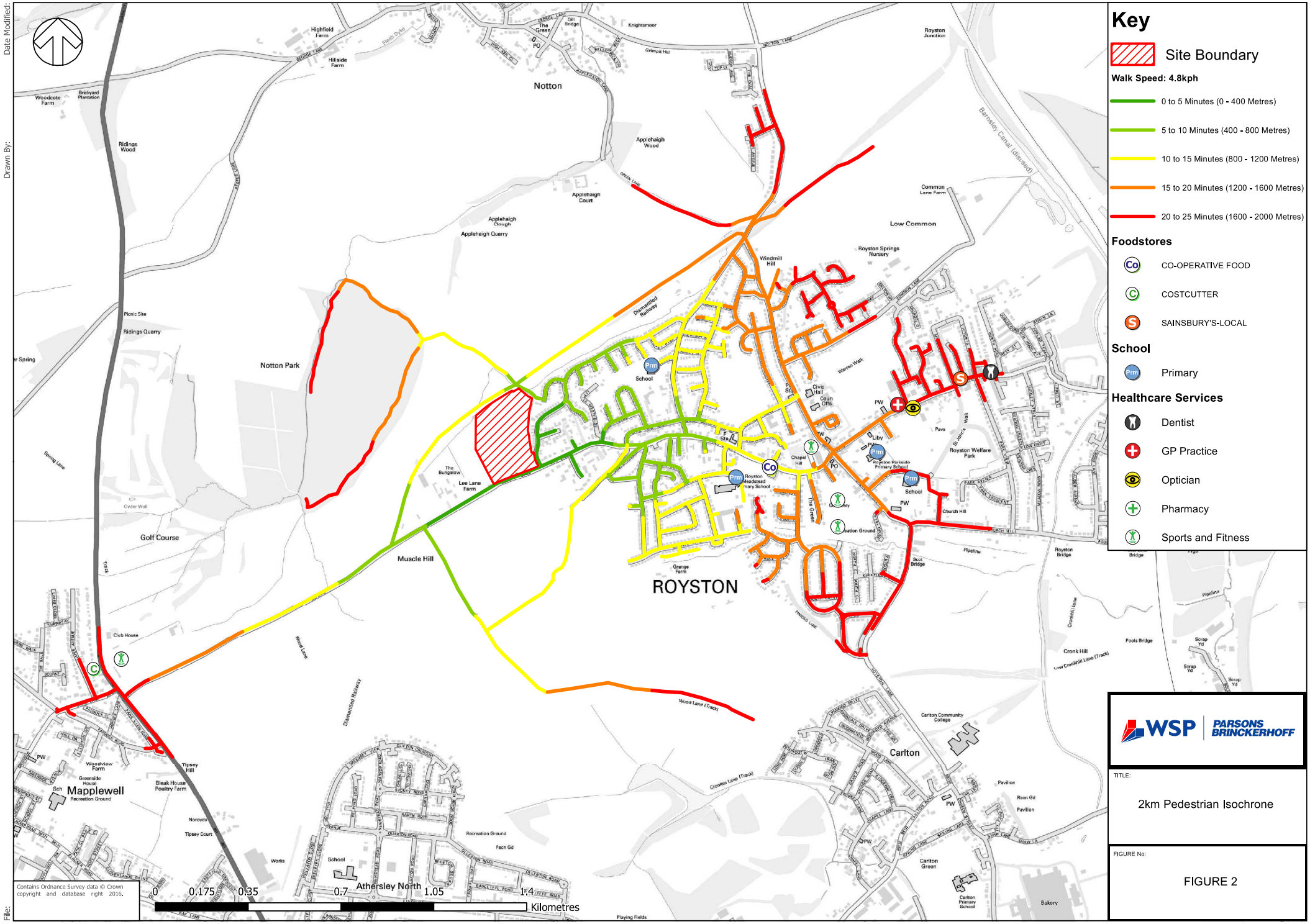
Appendix E

PIA LOCATIONS


Key
Site Boundary
Study Area
Severity
Serious
Slight
Notton
Royston
Low Common
Royston Springs Nursery
Windmill Hill
Dismantled Railway
Ridings Wood
Applehaigh Wood
Applehaigh Court
Applehaigh Clough
Applehaigh Quarry
Mount Farm
Little Spring
Peter Spring
Picnic Site
Ridings Quarry
Notton Park
Golf Course
Muscle Hill
Warren Farm
Owler Well
Log Lane Farm
The Bungalow
Civic Hall
Coun Offs
Royston Parkside Primary School
Royston Meadstead Primary School
Royston Welfare Park
Cemetery
Church Hill
Recreation Ground
Grange Farm
Scot Bridge
Royston Bridge
Pipeline
Cronk Hill
Low Cronkhill Lane (Track)
Wood Lane
Wood Lane (Track)
Brookdale Lane (Track)
Carlton
Carlton Community College
Staincross
Lane End Quarry
Greenside
Wellgate Primary School
Greenside House
Woodview Farm
Mapplewell
Mapplewell Recreation Ground
Bleak House Poultry Farm
Tipsey Hill
Tipsey Court
Noroyds
Athersley North
Recreation Ground
Playing Fields
Works
Club House
Contains Ordnance Survey data © Crown copyright and database right 2016.
0
0.2
0.4
0.8
1.2
1.6
Kilometres
WSP | PARSONS BRINCKERHOFF
TITLE:
Personal Injury Accident Locations
FIGURE No:
FIGURE
Date Modified:
Drawn By:
File:

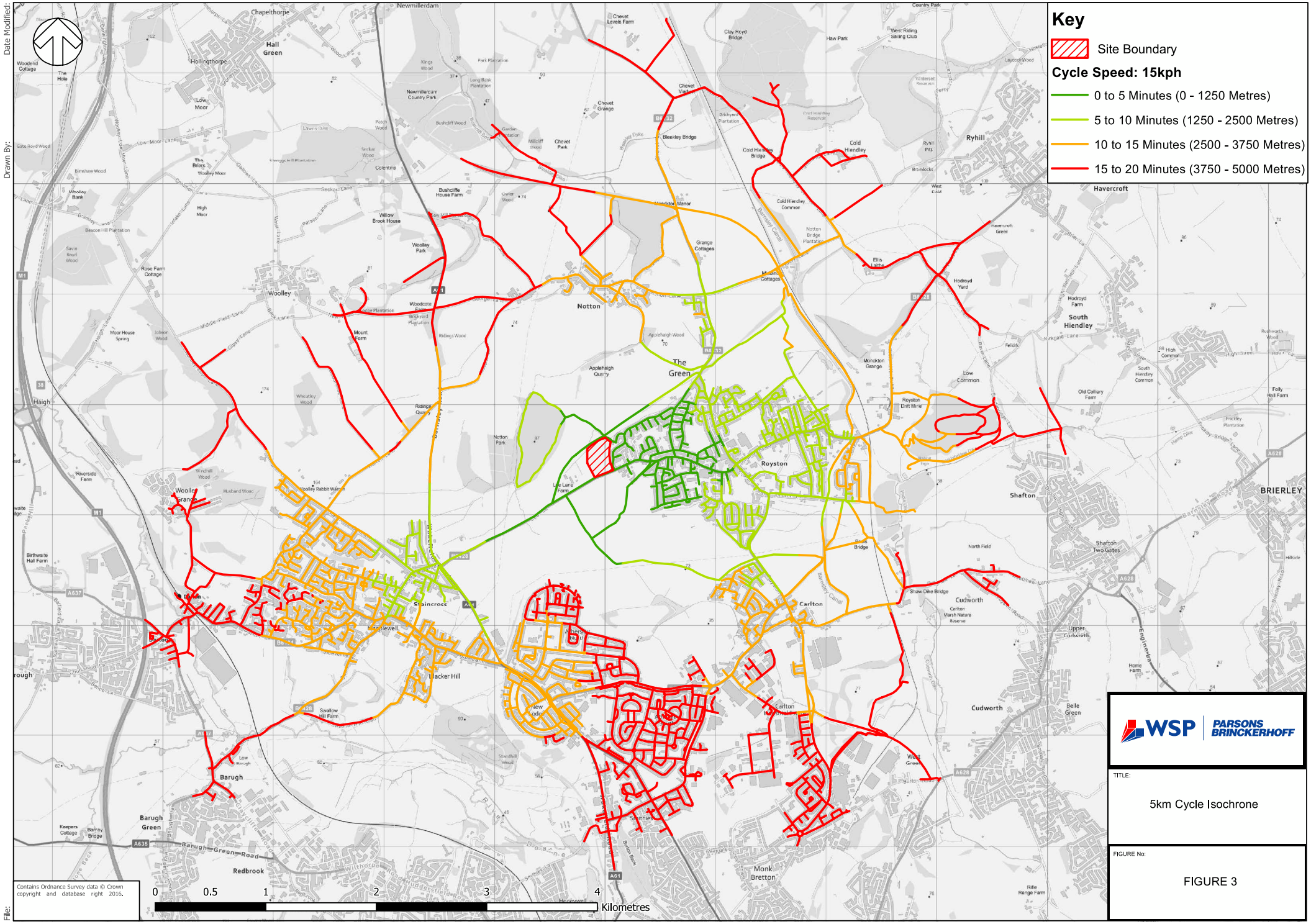
Appendix F

WALKING CATCHMENT PLAN


Key
Site Boundary
Walk Speed: 4.8kph
0 to 5 Minutes (0 - 400 Metres)
5 to 10 Minutes (400 - 800 Metres)
10 to 15 Minutes (800 - 1200 Metres)
15 to 20 Minutes (1200 - 1600 Metres)
20 to 25 Minutes (1600 - 2000 Metres)
Foodstores
CO-OPERATIVE FOOD
COSTCUTTER
SAINSBURY'S-LOCAL
School
Primary
Healthcare Services
Dentist
GP Practice
Optician
Pharmacy
Sports and Fitness
ROYSTON
Notton
Low Common
Carlton
Mapplewell
Athersley North
Muscle Hill
Golf Course
Notton Park
Contains Ordnance Survey data © Crown copyright and database right 2016.
0
0.175
0.35
0.7
1.05
1.4
Kilometres
WSP | PARSONS BRINCKERHOFF
TITLE:
2km Pedestrian Isochrone
FIGURE No:
FIGURE 2
Date Modified:
Drawn By:
File:

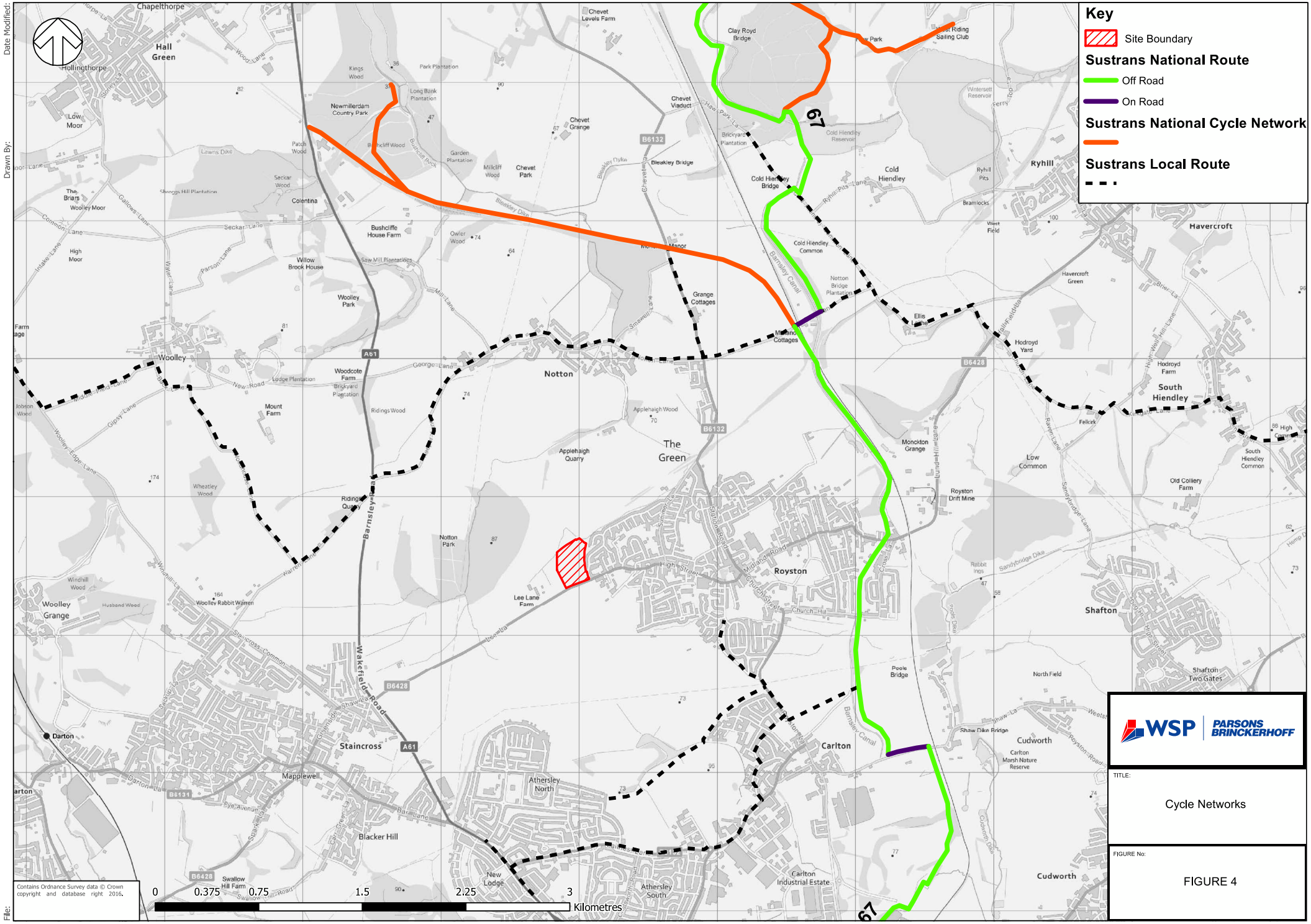
Appendix G

CYCLING CATCHMENT PLAN


Key
Site Boundary
Cycle Speed: 15kph
0 to 5 Minutes (0 - 1250 Metres)
5 to 10 Minutes (1250 - 2500 Metres)
10 to 15 Minutes (2500 - 3750 Metres)
15 to 20 Minutes (3750 - 5000 Metres)
Date Modified:
Drawn By:
File:
Contains Ordnance Survey data © Crown copyright and database right 2016.
0 0.5 1 2 3 4
Kilometres
WSP | PARSONS BRINCKERHOFF
TITLE:
5km Cycle Isochrone
FIGURE No:
FIGURE 3

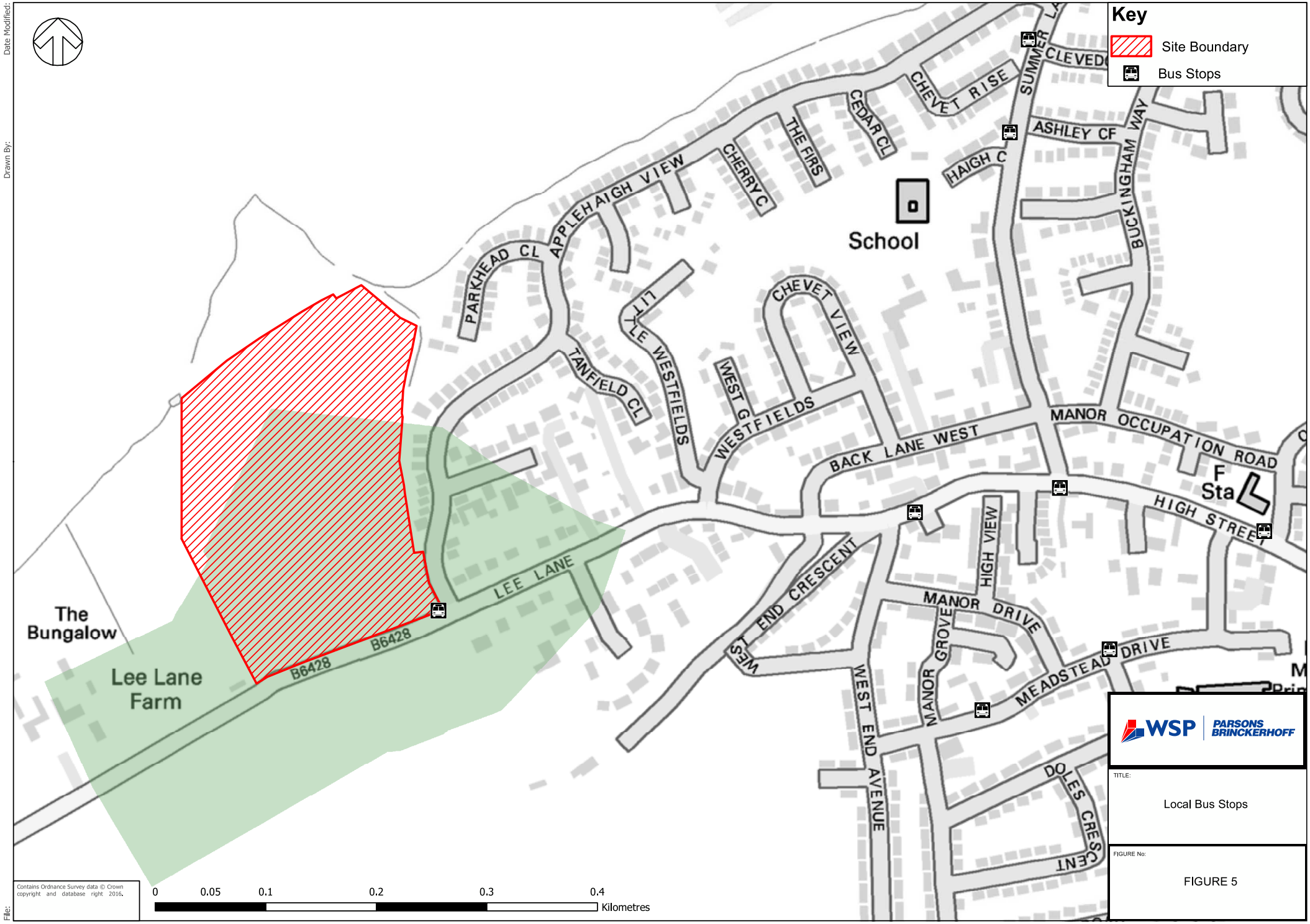
Appendix H

CYCLE NETWORKS


Key
Site Boundary
Sustrans National Route
Off Road
On Road
Sustrans National Cycle Network
Sustrans Local Route
Date Modified:
Drawn By:
File:
Contains Ordnance Survey data © Crown copyright and database right 2016.
0
0.375
0.75
1.5
2.25
3
Kilometres
WSP | PARSONS BRINCKERHOFF
TITLE:
Cycle Networks
FIGURE No:
FIGURE 4

Appendix I

LOCAL BUS STOPS


Key
Site Boundary
Bus Stops
School
The Bungalow
Lee Lane Farm
LEE LANE
B6428
B6428
PARKHEAD CL
APPLEHAIGH VIEW
CHERRY C
THE FIRS
CEDAR CL
CHEVET RISE
SUMMER L
CLEVED
ASHLEY CF
HAIGH C
BUCKINGHAM WAY
TANFIELD CL
LITTLE WESTFIELDS
WEST G
WESTFIELDS
CHEVET VIEW
BACK LANE WEST
MANOR OCCUPATION ROAD
HIGH STREET
F
Sta
WEST END CRESCENT
HIGH VIEW
MANOR DRIVE
MANOR GROVE
MEADSTEAD DRIVE
WEST END AVENUE
DOLES CRESCENT
Contains Ordnance Survey data © Crown copyright and database right 2016.
0
0.05
0.1
0.2
0.3
0.4
Kilometres
WSP | PARSONS BRINCKERHOFF
TITLE:
Local Bus Stops
FIGURE No:
FIGURE 5
Date Modified:
Drawn By:
File:

Appendix J

SITE LAYOUT PROPOSALS

Lee Lane, Royston
Planning Layout

Schedule of accommodation

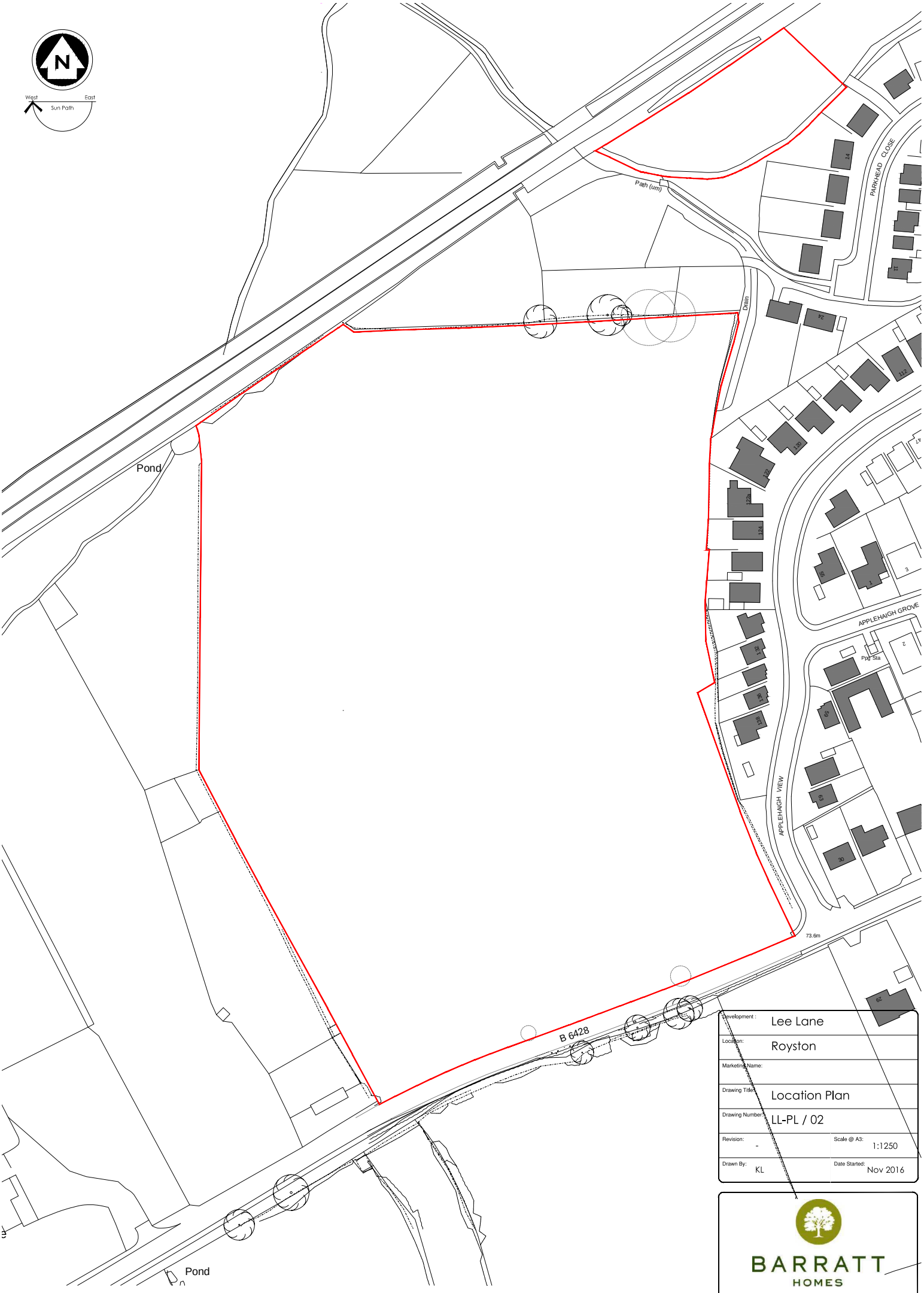
	House Type	Sq. Ft.	No.
3 bed semi-detached			
Pm	Palmerston	776	12
Ma	Maidstone	830	22
En	Ennerdale	916	2
3 bed detached			
Cn	Collaton	863	10
En	Ennerdale	916	18
Ed	Eskdale	1058	3
4 bed town house			
W	Woodcote end	1206	14
W	Woodcote mid	1206	1
4 bed detached			
Wm	Windermere	1074	18
Kg	Kingsley	1079	17
Rn	Ripon	1120	22
Ald	Alderney	1225	9
Affordable Properties			
Ky	Kenley end	614	8
Ky	Kenley mid	614	2
Bn	Barton	705	6
	Total:		**164**

Legend

- Existing Dwellings
- Proposed Dwellings
- Primary Street
- Secondary Street
- Private Drive
- 1.8m high timber screen fence
- 1.2m high timber post and rail fence
- Front entrance door
- Bin collection points on private drives
- Affordable housing
- Indicative Landscaping
- Existing trees removed / pruned
- Existing trees to remain.
- Proposed public open space

Development:	Lee Lane
Location:	Royston
Marketing Name:	
Drawing Title:	Planning Layout
Drawing Number:	LL-PL / 01
Revision:	-
Scale @ A1:	1:500
Drawn By:	KL
Date Started:	Nov 2016

BARRATT HOMES
Raynham House, 2 Capitol Park, Morley, Leeds LS27 0WH
Tel: 0113 307 6850

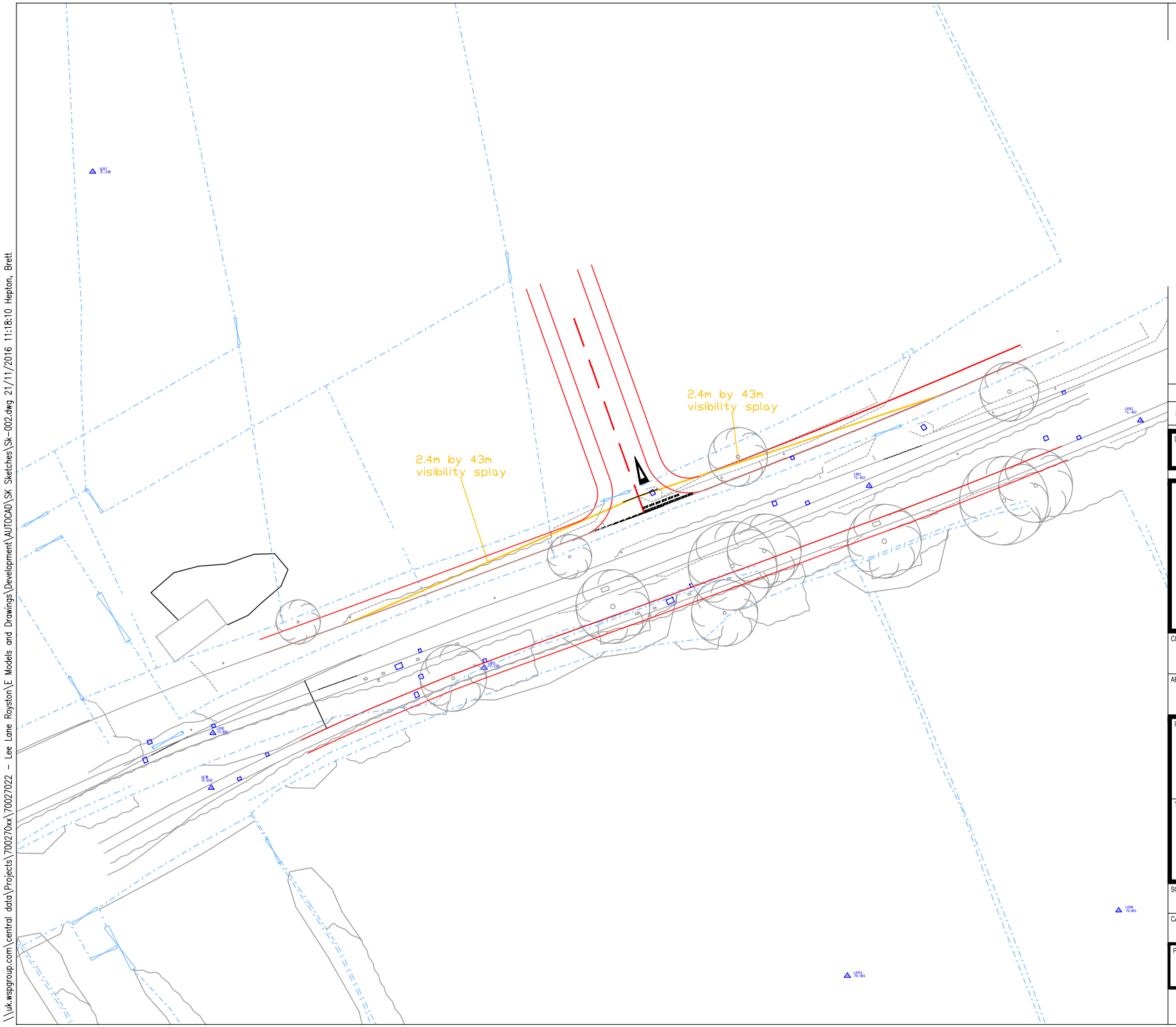


Development :	Lee Lane
Location:	Royston
Marketing Name:	
Drawing Title:	Location Plan
Drawing Number:	LL-PL / 02
Revision: -	Scale @ A3: 1:1250
Drawn By: KL	Date Started: Nov 2016

BARRATT HOMES
Raynham House, 2 Capitol Park, Morley, Leeds LS27 0WH
Tel: 0113 307 6850

Appendix K

VISIBILITY SPLAYS



DO NOT SCALE

REV	DATE	BY	DESCRIPTION	CHK	APD
A	11/11/2016	BCH	FIRST ISSUE	GB	GB

DRAWING STATUS:
FOR INFORMATION ONLY

WSP | PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane, Leeds LS11 0DT
Tel: +44 (0)113 395 6200 Fax: +44 (0)113 395 6201
www.wspgroup.com www.pbworld.com

CLIENT:
BARRATT HOMES

ARCHITECT:

PROJECT:
LEE LANE, ROYSTON

TITLE:
VISIBILITY SPLAYS

SCALE @ A3:	CHECKED:	APPROVED:
Custom	GB	GB
CAD FILE:	DESIGN-DRAWN:	DATE:
SK-002	BCH	November 2016

PROJECT No:	DRAWING No:	REV:
70027022	SK-002	A

Appendix L

APPROVED ROUNDABOUT DESIGN BY CROFT TRANSPORT SOLUTIONS (DRAWING NO. 255 F01 B)

NORTH SOUTH AERIAL VIEW LEE LANE, ROYSTON

NOTES

PLAN 3

REV.	DETAILS	DRAWN	CHECKED	DATE

CLIENT:

STRATEGIC LAND GROUP

PROJECT:

LEE LANE, ROYSTON

DRAWING TITLE:

PROPOSED 40M ICD ROUNDABOUT ACCESS

SCALES:

1:500 @ A1

DRAWN:	CHECKED:	DATE:
MC	MC	JUL.2013

6th Floor, Quay House
Quay Street
Manchester, M3 3JE

Email: info@croftts.co.uk
Tel: 0161 827 1740
Web: www.croftts.co.uk

croft Transport Solutions

DRAWING NUMBER: 255-F01

REVISION: B

Z:\projects\0255 Lee Lane, Royston\CAD\Croft Drawings\0255-F01_B.dwg

Appendix M

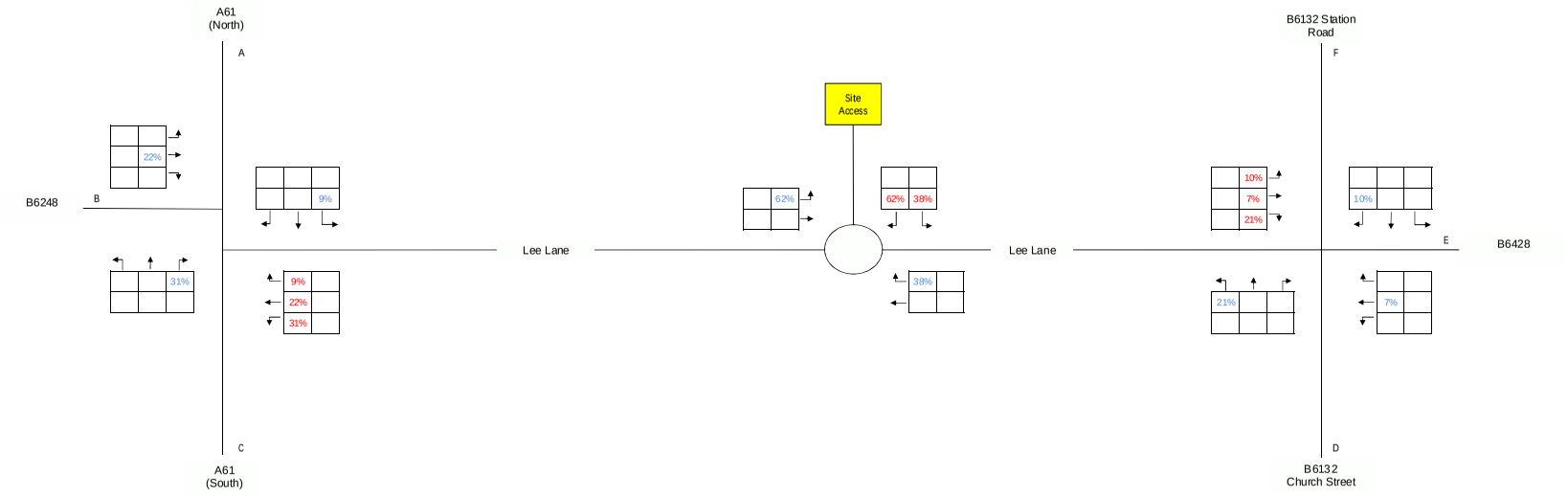
CENSUS DATA

Place of Work	Number of Residents working in MSOA	%age
E02001521 : Barnsley 013	160	11%
E02001510 : Barnsley 002	100	7%
E02001523 : Barnsley 015	94	6%
E02001509 : Barnsley 001	81	6%
E02001520 : Barnsley 012	78	5%
E02002454 : Wakefield 017	61	4%
E02001515 : Barnsley 007	59	4%
E02001512 : Barnsley 004	41	3%
E02001518 : Barnsley 010	37	3%
E02002456 : Wakefield 019	37	3%
E02002467 : Wakefield 030	34	2%
E02001579 : Rotherham 002	28	2%
E02006876 : Leeds 112	27	2%
E02001513 : Barnsley 005	22	2%
E02002475 : Wakefield 038	22	2%
E02001519 : Barnsley 011	21	1%
E02002451 : Wakefield 014	21	1%
E02001514 : Barnsley 006	20	1%
E02001525 : Barnsley 017	19	1%
E02002465 : Wakefield 028	19	1%
E02001628 : Sheffield 018	18	1%
E02002450 : Wakefield 013	18	1%
E02002470 : Wakefield 033	15	1%
E02001527 : Barnsley 019	14	1%
E02001531 : Barnsley 023	14	1%
E02001578 : Rotherham 001	14	1%
E02002473 : Wakefield 036	14	1%
E02001536 : Barnsley 028	13	1%
E02006875 : Leeds 111	13	1%
E02002481 : Wakefield 044	13	1%
E02001517 : Barnsley 009	12	1%
E02001522 : Barnsley 014	12	1%
E02001534 : Barnsley 026	11	1%
E02002480 : Wakefield 043	11	1%
E02001516 : Barnsley 008	10	1%
E02001535 : Barnsley 027	10	1%
E02001614 : Sheffield 004	10	1%
E02006843 : Sheffield 073	10	1%
E02001529 : Barnsley 021	9	1%
E02001632 : Sheffield 022	9	1%
E02002439 : Wakefield 002	9	1%
E02002442 : Wakefield 005	9	1%
E02002443 : Wakefield 006	9	1%
E02001511 : Barnsley 003	8	1%
E02001524 : Barnsley 016	8	1%
E02001532 : Barnsley 024	8	1%
E02002441 : Wakefield 004	8	1%
E02006013 : Shropshire 034	8	1%
E02005818 : Selby 010	7	0%
E02001526 : Barnsley 018	7	0%
E02001530 : Barnsley 022	7	0%
E02002458 : Wakefield 021	7	0%
E02002459 : Wakefield 022	7	0%
E02002468 : Wakefield 031	7	0%
E02002472 : Wakefield 035	7	0%
E02002477 : Wakefield 040	7	0%
E02002239 : Bradford 057	6	0%
E02002287 : Kirklees 017	6	0%
E02002422 : Leeds 093	6	0%
E02002452 : Wakefield 015	6	0%
E02002463 : Wakefield 026	6	0%
E02005812 : Selby 004	5	0%
E02001528 : Barnsley 020	5	0%
E02001580 : Rotherham 003	5	0%
E02001642 : Sheffield 032	5	0%
E02002294 : Kirklees 024	5	0%
E02002327 : Kirklees 057	5	0%
E02002384 : Leeds 055	5	0%
E02002393 : Leeds 064	5	0%
E02002445 : Wakefield 008	5	0%
E02002446 : Wakefield 009	5	0%
E02002461 : Wakefield 024	5	0%
E02002462 : Wakefield 025	5	0%
E02002474 : Wakefield 037	5	0%
E02002479 : Wakefield 042	5	0%
	1,454	100%

Appendix N

DEVELOPMENT TRAFFIC DISTRIBUTION

AM PM

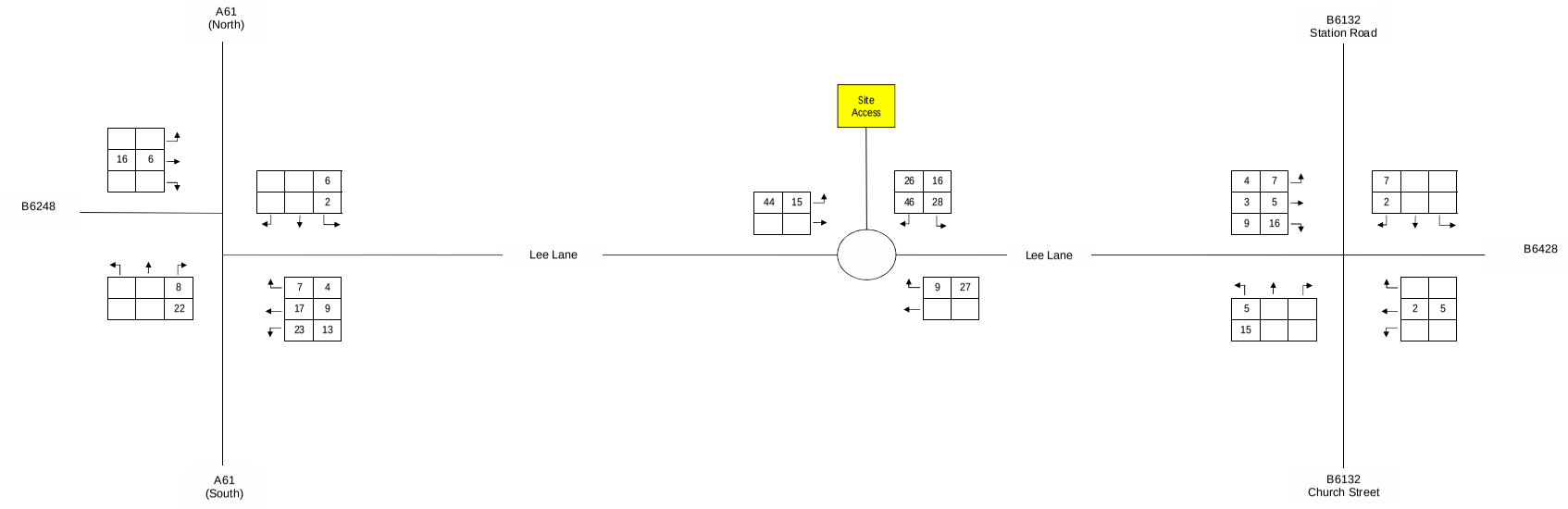


WSP | PARSONS BRINCKERHOFF	Land at Lee Lane, Royston Development Traffic Distribution	Appendix N

Appendix O

DEVELOPMENT TRAFFIC ASSIGNMENT

AM PM

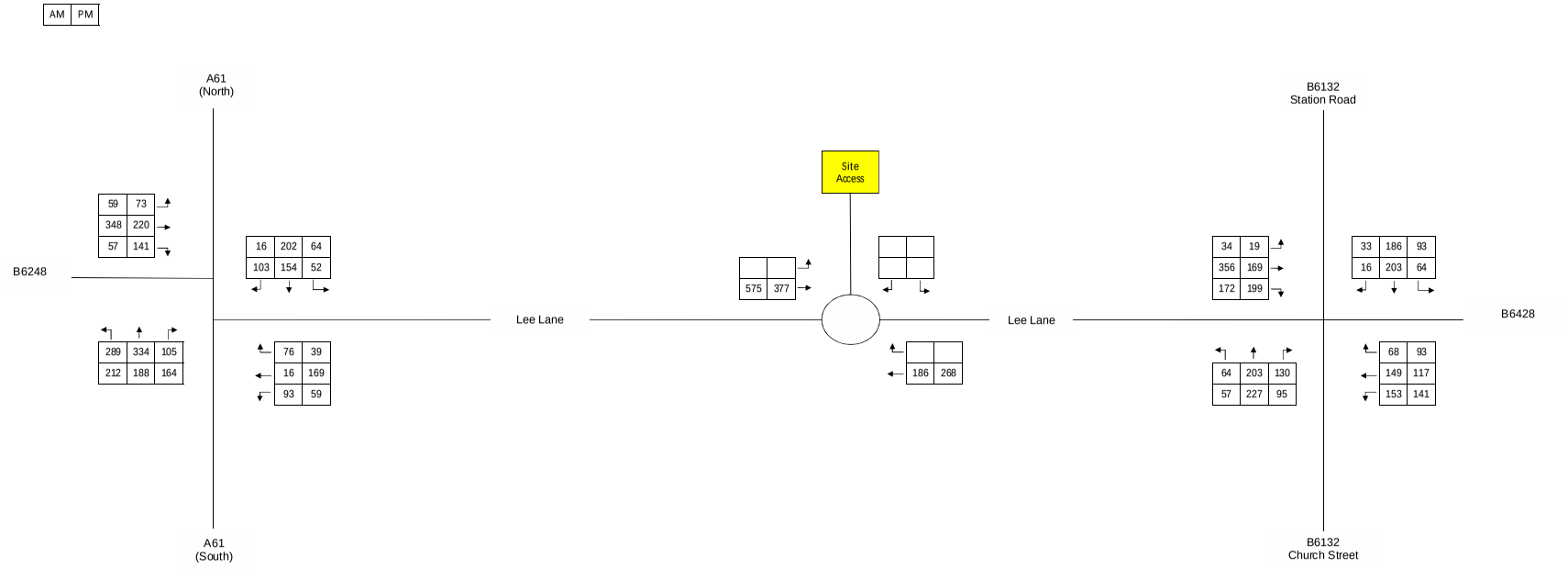


WSP | PARSONS BRINCKERHOFF	Land at Lee Lane, Roystyon Development Traffic Assignment	Appendix O

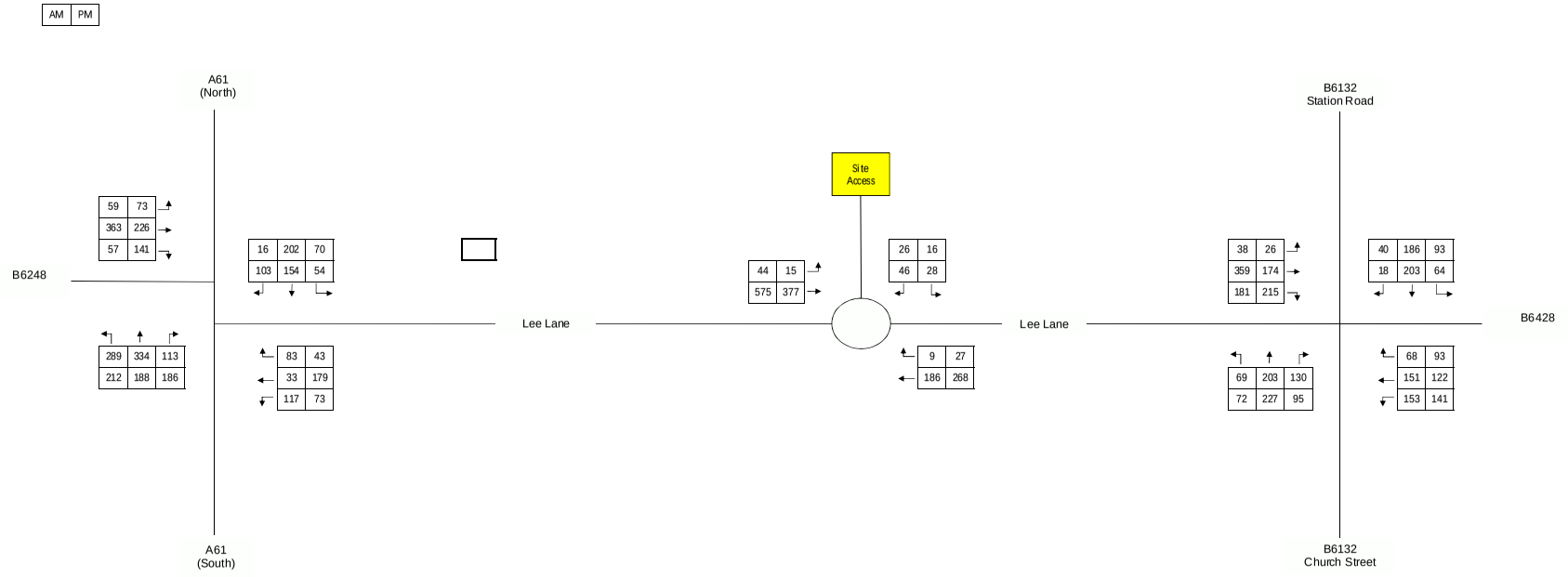
Appendix P

2021 BASE FLOWS

Growth Factor	
AM	1.0673
PM	1.0619



WSP | PARSONS BRINCKERHOFF	Land at Lee Lane, Royston Base 2021 flows	Appendix P



WSP | PARSONS BRINCKERHOFF	Land at Lee Lane, Royston Base 2021 flows + Development	Appendix P