

October 2012

# Lansett Consulting

## Final Report

Lock Street Residential Development – Transport Assessment (REF: LC-12-0065-RP1)

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Reviewed by: AE/FS  
LC-12-0042-RP1



## Project Sheet

### Issue

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## 1. INTRODUCTION

### 1.1 Introduction

Lansett Consulting Limited has been commissioned by Blackmore's (D) Limited to prepare a Transport Assessment in support of a Planning Application to determine and analyse the transport implications arising from the development of 109 residential at Lock Street site, WF12 Dewsbury, West Yorkshire. A transport assessment is required as part of the planning application submission for the redevelopment.

The purpose of this Transport Assessment is to appraise Kirklees Metropolitan Council as the Local Planning Authority (LPA). Further discussions have taken place with the LPA and LHA regarding the proposed development and comments made from the officers have been taken into account during the preparation of this report.

The TA proposal is for the development of the residential dwellings.

This report details the full transport assessment of the proposal and has been carried out in accordance to local and national policies and guidance.

### 1.2 Scope

The scope of services relates to the preparation of supporting information to enable a planning application for the development of the site to be considered by the highway department of the Local Authority.

This report will assess and consider the existing and proposed site conditions and surrounding highway infrastructure; and also in operational terms justify the proposed level of parking provision.

This report will provide support as part of the planning application submission for the proposed development and to enable Kirklees Metropolitan Council, to assess the proposals and make an appropriate recommendation.

This report has been prepared with reference to the Guidance on Transport Assessment published by the Department for Transport in March 2007 and the National Planning Policy Framework March 2012.

## 2. POLICY FRAMEWORK

### 2.1 Introduction

There is a range of national, regional and local policy documents that outline the transport policy framework for developments. They aim to encourage long-term sustainable development, investment in transport, and improved accessibility to non-car modes.

Local planning policy of relevance to the proposed development is detailed in the Kirklees Council Unitary Development Plan – UDP 2007 amended written statement; West Yorkshire Local Transport Plan and the 2012 National Planning Policy Framework that replaced the Planning Policy Guidance 13 for Transport.

The Kirklees Metropolitan Council UDP was prepared in 1999 and subsequently updated in September 2007. The UDP now forms the Development Plan Kirklees Metropolitan Council. Further to local policies; for transport purposes 'National Planning Policy Framework' represents national policy guidance.

### 2.2 National Planning Policy Framework

The National Planning Policy Framework was published in March 2012 to replaced Planning Policy Guidance: Transport (PPG 13). The aim of this document is to integrate planning and transport at the national, regional, strategic and local level and to promote more sustainable transport choices. The following paragraphs of this document broadly sets out the requirements of suitable development in terms of transport implications.

34 - 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.

35 - Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore, developments should be located and designed where practical to

- *accommodate the efficient delivery of goods and supplies;*
- *give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;*
- *create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;*
- *incorporate facilities for charging plug-in and other ultra-low emission vehicles; and*
- *Consider the needs of people with disabilities by all modes of transport.*

### 2.3 West Yorkshire Local Transport Plan 2011 – 2026

The West Yorkshire Local Transport Plan 3 was adopted in April 2011 and sets out the West Yorkshire Transport needs and ambitions until 2026. The strategic approach for LTP3 has been developed based on the key transport objectives which are;

- *Economy – to improve connectivity to support economic activity and growth in West Yorkshire and Leeds City Region*

- *Low Carbon – to make substantial progress towards a low carbon, sustainable transport system for West Yorkshire while recognising the transport contribution to national carbon reduction plans*
- *Quality of life – to enhance the quality of life of people living, working in and visiting West Yorkshire*

The key transport priorities for the LTP 3 are to;

- **Transport Assets** – *to ensure effective management of transport assets to gain maximum value for money and meet the Plan's objectives.*
- **Travel Choices** – *to encourage more sustainable travel choices by managing demand for car travel and enabling people to make informed choices that meet their needs.*
- **Connectivity** – *to deliver an integrated, reliable transport system that enables people and goods to move around as efficiently and safely.*
- **Enhancements** – *to make targeted technological and structural enhancements to the transport system for greater capacity and performance.*

## 2.4 Unitary Development Plan – 2007

The Kirklees Metropolitan Council Unitary Development Plan of 1999 sets out the council policies and proposals for land and buildings and with the discretion of the Secretary of State, these policies was amended with an updated version in September 2007 - written ministerial statement that sets out the saved policies of the document. The relevant saved policies to this document are as follows;

### Policy T1

Policy T1 states that priority will be given to

- Satisfying the travel needs of all sections of the community through an effectively integrated systems, with emphasis on improving public transport and encouraging a modal shift away from travel by private car*
- Promoting a transport network on which it is safe to travel and which causes minimal disturbance through danger, noise and air pollution; and*
- Co-ordinating land use change with transport provision so as to minimise the need to travel and locating new development where it can be best be served by public transport and where it minimises the need for expansion of the highway network.*

### Policy T2

Policy T2 states that highway improvements will be directed towards

*Improving the worst problems of personal accessibility with special emphasis on improvements which assist public transport, pedestrian and cyclist*

### Policy H1

Policy H1 states that housing needs of the district will be met by

- Improving existing housing particularly through the designation of renewal areas and areas for housing improvement;*
- Providing land to meet the requirement for a range of house types by allocating sites of various sizes and in different locations having regard to local patterns of demand;*
- The provision of houses affordable to those least able to compete in the housing market; and*

**Policy T14**

Policy T14 states that, *the safety, convenience and attractiveness of pedestrian routes will be improved and new routes created; and priority will be given to linked urban schemes which improved accessibility to community facilities and public transport.*

**Policy T16**

Policy T16 states that new development should make provision for safe, convenient and pleasant pedestrian routes, consistent with crime prevention measures with the aim of providing attractive links between homes.

**Policy T17**

Policy T17 states *that new development schemes and highway improvements should have regard to the needs of cyclist through the provision of cycle tracks, cycle crossing on main roads, and cycle parking facilities*

**Policy T18**

Policy T18 states that the strategic routes for pedestrian and cyclist are identified on the proposals map at:

- i. Dewsbury town centre to Kirklees boundary – (Ossett, Wakefield); and
- ii. Dewsbury to Batley

**Policy T19**

Policy T19 states that, *the provision of off-street parking will be required in new development in accordance with the standards as sets out in Table 1 below. And proposals for development which will attract or generate a significant number of journeys and which are to be located where accessibility to public transport is poor should include arrangements for the improvement of public transport provision, in addition to meeting parking standards.*

**TABLE 1: KIRKLEES METROPOLITAN COUNCIL RESIDENTIAL PARKING STANDARDS**

<b>Class C3 – Residential</b>		
<b>Car Parking</b>	<b>Spaces per unit</b>	
House < 140 sq.m	2	Conversion in town centres, e.g. above shops, should provide parking at the operational minimum level.
Houses > 140 sq.m	3	
Affordable housing;		Development served by informal roads should include 1 space for visitor parking per 4 units.
houses < 110sq.m	1	
houses >110sq.m	2	
Flats		
Bedsits	0.5	
1 bedroom	1	
2 bedroom or > 70sq.m	1.5	
Sheltered housing	0.25 plus 1 per resident staff	
Cycle Parking	1	

### 3. SITE LOCATION AND CONTEXT

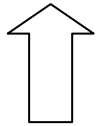
#### 3.1 Site Location and Context

The site location as shown in Figure 1 is located to the south eastern part of Dewsbury town centre, West Yorkshire. It is located on the edge of Lock Street/Headfield Road junction at approximately 2km to the Dewsbury town centre. The site is bounded to the west and south west by Headfield Road/Residential buildings, to the north by Lock Street, to the south by residential buildings, and to the east by farmlands and a river passing through the eastern boundary of the development site.

The development site is accessed via the Lock Street and Headfield Road, to the north and north east respectively. There is a disused viaduct that connects the site southern boundary to the development site. The site principal environs are representative of a 'agricultural farmlands, industrial and residential neighbourhood.

The site is currently being used as a garage for vehicle repairs and MOT centre.

Figure 1 below displays the approximate boundary of the development site in its own residential context.



**FIGURE 1: APPROXIMATE SITE BOUNDARY**

**LC-12-0082-RP1**

**Figure No.1**

### 3.2 Existing Site Conditions

The existing site is dominated by vehicles repairs and MOT centre. The remainder of the site and adjoining areas are gentle sloppy in nature and includes residential building which are defined by Lock Street towards the northern boundary. The existing development site is on Lock Street.

### 3.3 Existing Site Infrastructures

The development site is characteristic of a residential and industrial location; there are a number of land uses and transport infrastructures in close proximity to the site. The following paragraphs describe in detail the land use and engineering profile of the surrounding streets and infrastructure that accommodate the existing site and that of the surrounding residential area.

#### 3.3.1 Lock Street

Lock Street is a single carriageway of approximately 6.5m wide. It extends in easterly direction off Headfield Road to the north of the development site, and meanders in a north easterly direction.

Further to the east, it passes through a river via a narrow bridge of approximately 4m wide and continues eastwards about 4.0m wide and terminates at the end of the road.

#### 3.3.2 Headfield Road

Headfield Road is located approximately 50metres North West to the development site, and at priority junction west of Lock Street. Headfield Road is a two-way carriageway, approximately 7.0 metres wide with a speed limit of 30mph and provides a link between the Lock Street and other parts of the Dewsbury.

Headfield Road starts at B6409-Savile Road priority junction and extends southwards and at priority junction with Bretton Street and continues in a south westerly direction with a bridge over a railway track, passes through the Lock Street to the west. A further 0.3km to the south of Lock Street forms a priority junction with Slaithwaite Road/B6117.

There are visible footways on both sides of the carriageway, hence makes it easy for pedestrian access. Vehicle flows, typically private cars have been observed to be quite high especially during the peak periods.

Headfield Road is used by a proportion of public buses and private vehicles and there are, therefore, many bus stops along its length.

Headfield Road provides access to numerous residential roads and properties on both sides of the carriageway.

### 3.3.3 Vehicle Access

There is a right turn access into Lock Street from the eastbound side of Headfield Road. The site can also be accessed from the north via the northbound Headfield Road and Bretton Street priority junction with a left turn access into Lock Street. The B6117- Slaithwaite Road can be reached from the southbound Headfield Road and the B6409-Savile Road from the northbound Headfield Road.

This extensive network of major routes passing so close to the site means that it can be easily be reached by car.

## 3.4 Accessibility by Sustainable Transport

The Lock Street is accessible locations in Dewsbury and is well served by bus and rail services.

### 3.4.1 Bus

As mentioned previously, the Headfield Road west and east bound bus stop provides access for bus services. The bus stop is located approximately 100-150m on Headfield Road to the North West and South West of the development site. The buses are operated by Arriva. The bus services that operate along this route are listed in Table 2. The daytime frequencies are also listed in the table below.

**TABLE 2: HEADFIELD ROAD BUS STOPS**

Stops	Bus Numbers	Direction	Frequencies
Thornhill Lees Brewery Lane, Victoria Road - 45015268	283	Thornhill Edge – Bradford	Twice every hour until 1730, then once every hour until 2302
	281	Thornhill – Fieldehead estate – Thronhill	Twice every hour until 1742
	282		Once every hour until 2232
Thornhill Lees, Headfield Road, Headfield View - 45015274	128	Dewsbury – Wakefield – Dewsbury	Once every hour until 1746

The frequency of buses arriving at these stops is shown above with buses arriving twice every hour. These buses do not, however, provide equal levels of service to all parts of the Borough. Schedule of bus services are included in **Appendix C**.

### 3.4.2 Rail

The nearest train stations to development site are Dewsbury and Ravensthorpe Stations which are approximately 1-2 mile away. This station provides frequent and direct rail links to Leeds, York, Huddersfield and Manchester.

## 4. PROPOSED DEVELOPMENT

### 4.1 Introduction

This chapter provides a general description of the proposed development and associated transport infrastructure and examines the potential modes of travel to the site.

### 4.2 Background

The development proposal relates to the development of 109 units residential dwellings as illustrated on the Site Layout Plan in **Appendix A**. The proposal is to demolish the existing vehicle repair garage on the site and construct new residential dwellings.

### 4.3 Development Proposals

The development proposals broadly consists of the following

1. 23 units of 860sq.ft Mews Houses
2. 18 units of 920sq.ft Mews Houses
3. 21 units of 980sq.ft Semi detached
4. 28 units of 1,100sq.ft Semi detached
5. 15 units of 1,200sq.ft Semi detached
6. 4 units of 1,450sq.ft Detached Houses

### 4.4 Accessibility

#### 4.4.1 Vehicle Access

It is proposed that vehicular access to the development site will be taken from the existing Lock Street which will be retained to provide principal vehicular access to the development via Headfield Road north west of the site.

The junction would provide visibility well in excess of the 43 metres required by Manual for Streets.

It is expected that the existing character of shared route spaces between traffic and pedestrians and the informal character of the area will be retained. There are proposals of the shared spaces for a number of private drive ways serving individual dwellings parking areas. And as the shared surfaces progresses through the development areas it is expected that the number of vehicular traffic will decrease.

An access and egress is also proposed to the northwest and northeast section of the development site as shown in the layout plan in **Appendix A**.

#### 4.4.2 Pedestrians

The design of the pedestrian access is from the north western part of the development via Headfield Road as shown in site layout in Appendix A. The proposal is to form a shared pedestrian/cycle link route to connect the west to the south of the development site; these connections will ensure good cycle and pedestrian access for future residents to other parts of the town.

#### 4.4.3 **Cycling**

As stated earlier there are proposal to provide a shared cycling and pedestrian route. An average of one cycle space per dwelling is also proposed for the residential development

#### 4.4.4 **Parking Strategy**

The proposal for parking involves the provision of a total 164 allocated parking spaces with an average of 1.5 spaces per dwelling which is consistent with the Kirklees Metropolitan Council maximum car parking standards for residential accommodation.

#### 4.4.5 **Public Transport**

Given the location of the proposed development accessibility by public transport will be broadly as described in Section 3.4. Headfield Road will remain the primary area from which the residents can access bus services. The nearest stops to the development site are within 100-150m walking distance.

## 5. TRAFFIC GENERATION AND IMPACT

### 5.1 Introduction

The following chapter concisely considers the impact resulting from the development and determines the level of detail required to aid the Kirklees Metropolitan Council - KMC Highway Authority, to formulate a recommendation upon the planning submission.

### 5.2 Traffic Surveys

Traffic counts was undertaken at the Headfield Road/Lock Street junction on the 4<sup>th</sup> of October between the hours of 07:00 to 09:00 (AM Peak) and 16:00 to 18:00 (PM Peak). Table 3 and 4 summarises the Lock Street traffic counts for the AM and PM Peak.

**TABLE 3: LOCK STREET SITE ACCESS – AM PEAK 07:00 TO 09:00**

Period	Arr.	Dep.	Total
07:00-08:00	12	11	23
07:15-08:15	12	10	22
07:30-08:30	16	13	29
07:45-08:45	17	17	34
08:00-09:00	22	20	42
<b>08:00-09:00</b>	<b>22</b>	<b>20</b>	<b>42</b>

**TABLE 4: LOCK STREET SITE ACCESS – PM PEAK 16:00 TO 18:00**

Period	Arr.	Dep.	Total
16:00-17:00	34	35	69
16:15-17:15	30	35	65
16:30-17:30	29	36	65
16:45-17:45	28	30	58
17:00-18:00	18	21	39
<b>08:00-09:00</b>	<b>34</b>	<b>35</b>	<b>69</b>

### 5.3 Sources of Information - TRICS

TRICS is a national (UK and Ireland) trip generation and analysis database that contains trip generation data for over 2800 sites. Based on the observed numbers of trips to/from these sites the number of trips generated by similar residential development can be calculated. TRICS was used to identify the peak periods of travel to development site and to examine the proportion of trips occurring during the peak periods.

The TRICS database has been interrogated based on survey information of privately owned residential development.

#### 5.4 Trip Generation

In order to estimate the potential trip generation attributable to the proposed development, the TRICS database has been interrogated. The 'Residential – Privately Owned' sub-category for multi modal vehicles has been used to derive trip rates for 109 units proposed for the site. The sites selected are England only excluding Greater London, and with between 9 and 491 units have been selected from the database and the resulting TRICS output is included at **Appendix B** and summarised below in **Table 6**.

##### 5.4.1 Arrivals and Departures

When examining the peak demand placed on the network the peak times for arrivals and departures to the development site need to be determined. More importantly, however, when considering the impact of the development on traffic in the area is the number of trips being generated during the peak times of usage of the highway network.

These highway peaks, based on the TRICS output are assumed to be 08:00 – 09:00 (AM) and 17:00 – 18:00 (PM) and are caused primarily by trips made by the potential residents.

The obtained vehicle trip rates and vehicle trips for the proposed development are summarised below;

**Table 6** shows the resultant trip generation for the residential development.

**TABLE 5: VEHICLE TRIP RATES FOR THE PROPOSED RESIDENTIAL DEVELOPMENT (PER DWELLING)**

Land Use	Arr.	Dep.	Total
Residential – Mixed Privately Owned			
AM Peak	0.154	0.447	0.601
PM Peak	0.429	0.231	0.66

**TABLE 6: VEHICLE TRIPS FOR (109 UNITS) PRIVATELY OWNED RESIDENTIAL DEVELOPMENT**

Land Use	Arr.	Dep.	Total
Residential – Mixed Privately Owned			
AM Peak	17	49	66
PM Peak	47	25	72
Total	64	74	138

Evidently from table 6 the proposed residential development will generate a maximum two way trips of 72 vehicles in the PM Peak compared to the AM Peak.

#### 5.4.2 Traffic Distribution and Assignment

In order to determine the traffic impact of the proposals on the local road network, the vehicular trip generation of the site has been calculated as sets out in Table 6 above.

The vehicular trips as set out in Table 6 were distributed as shown in Appendix E.

#### 5.4.3 Traffic Impact - Junction Assessment

In order to demonstrate the impact of the proposed Lock street residential development, on the surrounding highway network, an assessment of Lock Street/Headfield Road capacity was undertaken.

As state previously a traffic count was undertaken on Thursday the 4<sup>th</sup> of October, 2012. These traffic flows have been converted into passenger car units (PCU) based on the following assumptions;

- Cars and Light Goods Vehicles – 1.0 PCU
- Medium Goods Vehicles – 1.5 PCU
- Heavy Goods Vehicles – 2.3 PCU
- Bus and Coaches – 2.0 PCU.

The assumed opening year for the development is 2014 with a completion year of 2017. The existing 2012 AM and PM peak hour traffic flows have been growthed up to 2017 flows using TEMPRO/NTM growth factors. The resultant 2017 Base AM and PM peak hour traffic flows are as shown in **Appendix D**.

The proposed development generated trips have been added to the 2017 Base flows to estimate the 2017 AM and PM peak hour traffic flows with development as shown in **Appendix D**.

The impact of the proposed development traffic has been assessed at the Lock Street/Headfield Road access junction where traffic data has been obtained.

#### 5.4.4 Lock street/Headfield Junction

The assessment of Lock Street/Headfield Road was undertaken using the TRL modelling software – PICADY 8.0. PICADY is a computer program for predicting capacities, queues delays and LOS-level of service at major/minor priority junctions. The results of this assessment are summarised using the following:

- Ratio of Flow to Capacity (RFC) - where the RFC is 0.85, the approach is nearing capacity and queues will begin to form. Where the RFC exceeds 1.00, the approach is at capacity and significant queues will form;
- Queue - measured in PCUs (as stated in section 5.4.3);
- Delay - measured in minutes per vehicle; and
- LOS – level of service

The model used the ODTAB peaked flow profile and the Google Earth as the junction geometry.

### Base Year 2012

The PICADY outputs for the 2012 base year is summarised in **Appendix E**. Table 7 summarises the junction geometry and results for the morning and evening peak periods.

**TABLE 7: LOCK STREET/HEADFIELD ROAD PICADY RESULTS - 2012 AM & PM PEAK RESULTS**

Movements	AM Peak				PM Peak			
	RFC.	Queue	Delay	LOS	RFC	Queue	Delay	LOS
Lock Street	0.04	0.05	7.69	A	0.09	0.10	9.09	A
Right turn into Lock Street	0.03	0.04	4.64	A	0.03	0.03	5.63	A

The result in Table 7 shows that there are no existing capacity problems at this junction. For both peak periods, RFCs are significantly below 0.85 and queues are less than one.

### Base Year 2017 without development traffic

The PICADY outputs for the 2017 base year with and without development traffic is summarised in **Appendix E**. Table 8 and 9 summarises the junction geometry and results for the morning and evening peak periods.

**TABLE 8: LOCK STREET/HEADFIELD ROAD PICADY RESULTS - BASE 2017 AM & PM PEAK RESULTS**

Movements	AM Peak				PM Peak			
	RFC.	Queue	Delay	LOS	RFC	Queue	Delay	LOS
Lock Street	0.07	0.07	8.54	A	0.15	0.18	11.90	B
Right turn into Lock Street	0.05	0.08	4.35	A	0.28	0.58	7.28	A

### Base Year 2017 with development traffic

**TABLE 9: LOCK STREET/HEADFIELD ROAD PICADY RESULTS – 2017 BASE PLUS DEV AM & PM PEAK RESULTS**

Movements	AM Peak				PM Peak			
	RFC.	Queue	Delay	LOS	RFC	Queue	Delay	LOS
Lock Street	0.19	0.23	9.95	A	0.22	0.28	12.35	B
Right turn into	0.08	0.15	0.08	A	0.08	0.15	5.76	A

Lock Street								
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The results in table 8 and 9 show that there are no existing capacity problems at this junction. The busiest period is the evening peak- 2017 without development scenarios, where the highest predicted RFC is 0.28 on the Headfield Road right turn movement into Lock Street and the corresponding queue is 0.58.

The results show that the impact of the development traffic is negligible and there are no existing capacity problems at this junction.

## 6. CONCLUSION

This report considers the traffic impact related to the proposals for the construction of 109 units of residential development at Lock Street, Dewsbury, West Yorkshire. It is proposed that vehicular access to the site will be via Lock Street/Headfield Road junction.

Cycle and pedestrian access is also proposed to provide more direct connections to the development. These connections will ensure good cycle and pedestrian access for future residents to retail, employment and education facilities as well the bus stops on Headfield Road and the Dewsbury rail station.

This report also concludes that there is a good public transport access to the development site including access to public buses and the national rail network. There is no significant accident problem on the surrounding road network that can be attributed to the existing school operations. The junction capacity assessments indicate that Lock Street/Headfield Road junction operate within capacity.

In conclusion, in operational and road safety terms the development proposals will not generate a significant level of traffic that would be detrimental to the capacity of the local highway network.

## APPENDIX A: SITE LAYOUT PLAN

11031(Fe)001 Sketch layout, 1:1000 @ A3  
lock street, dewsbury



calderpeel

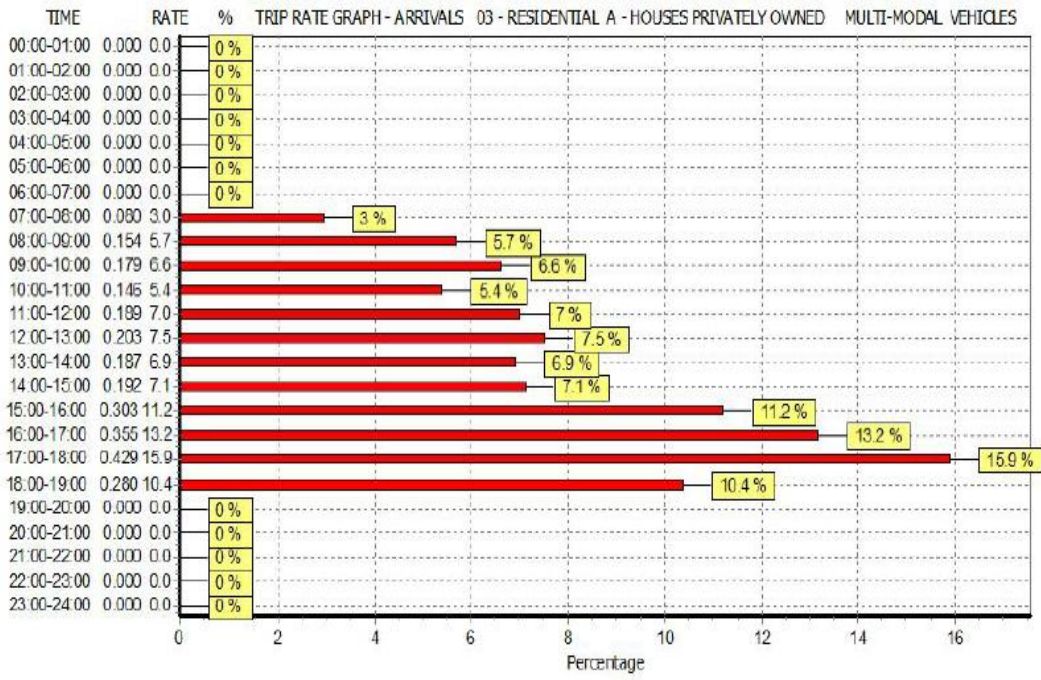


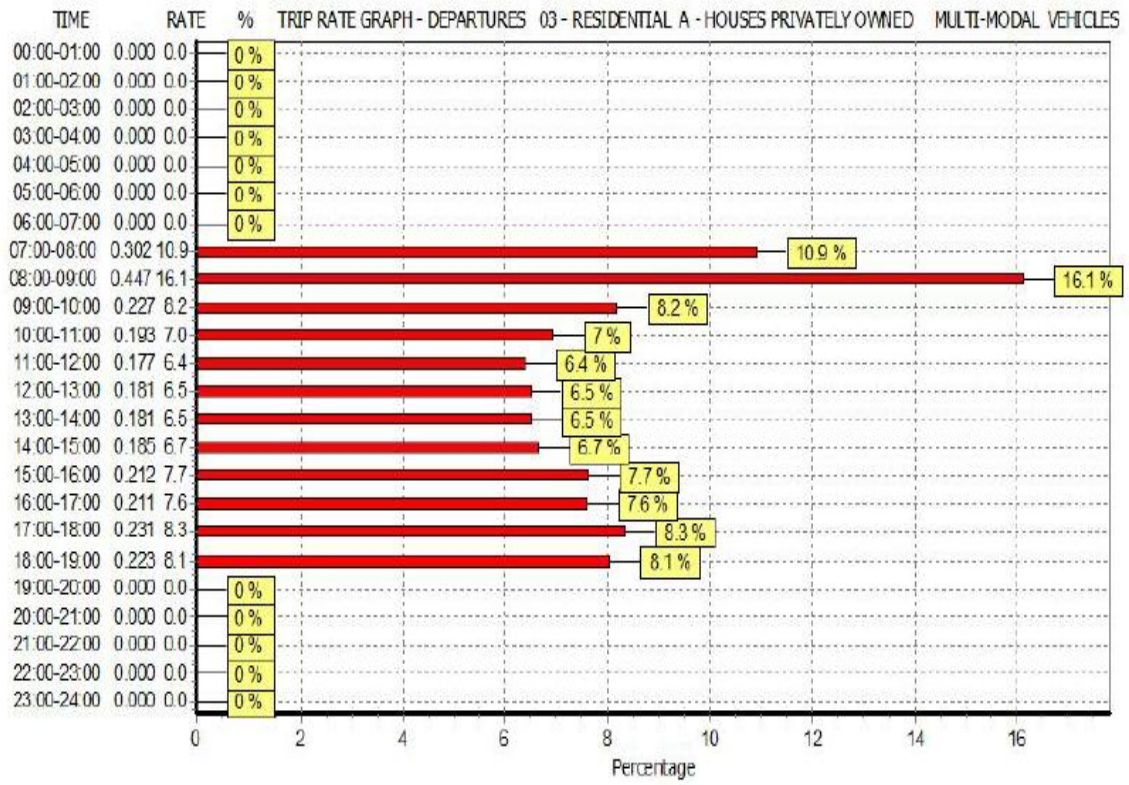
**SITE LAYOUT PLAN**

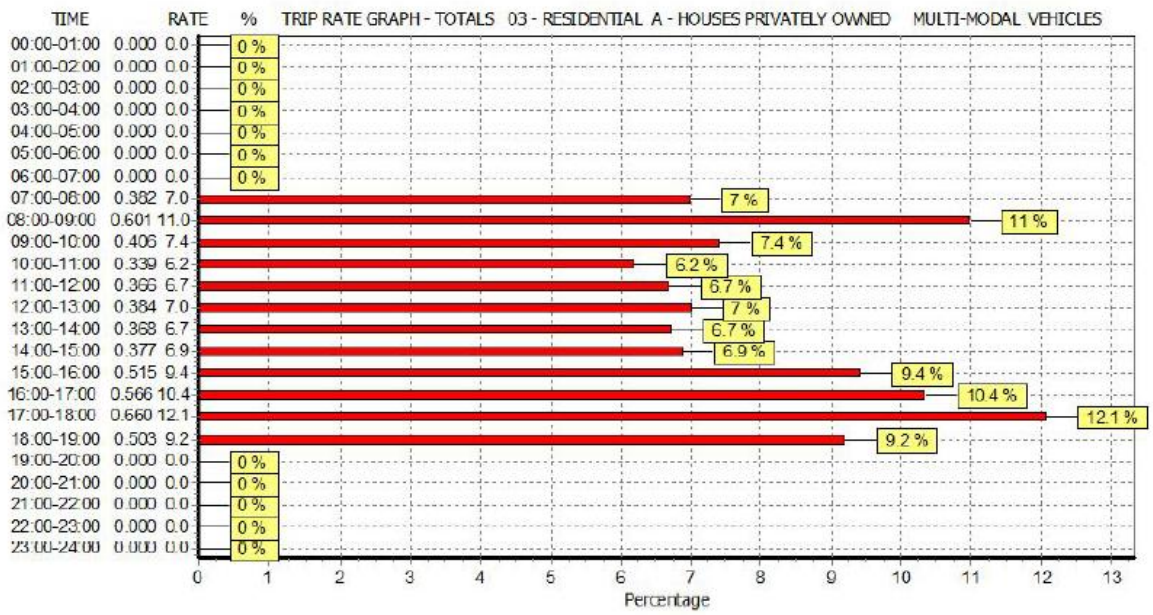
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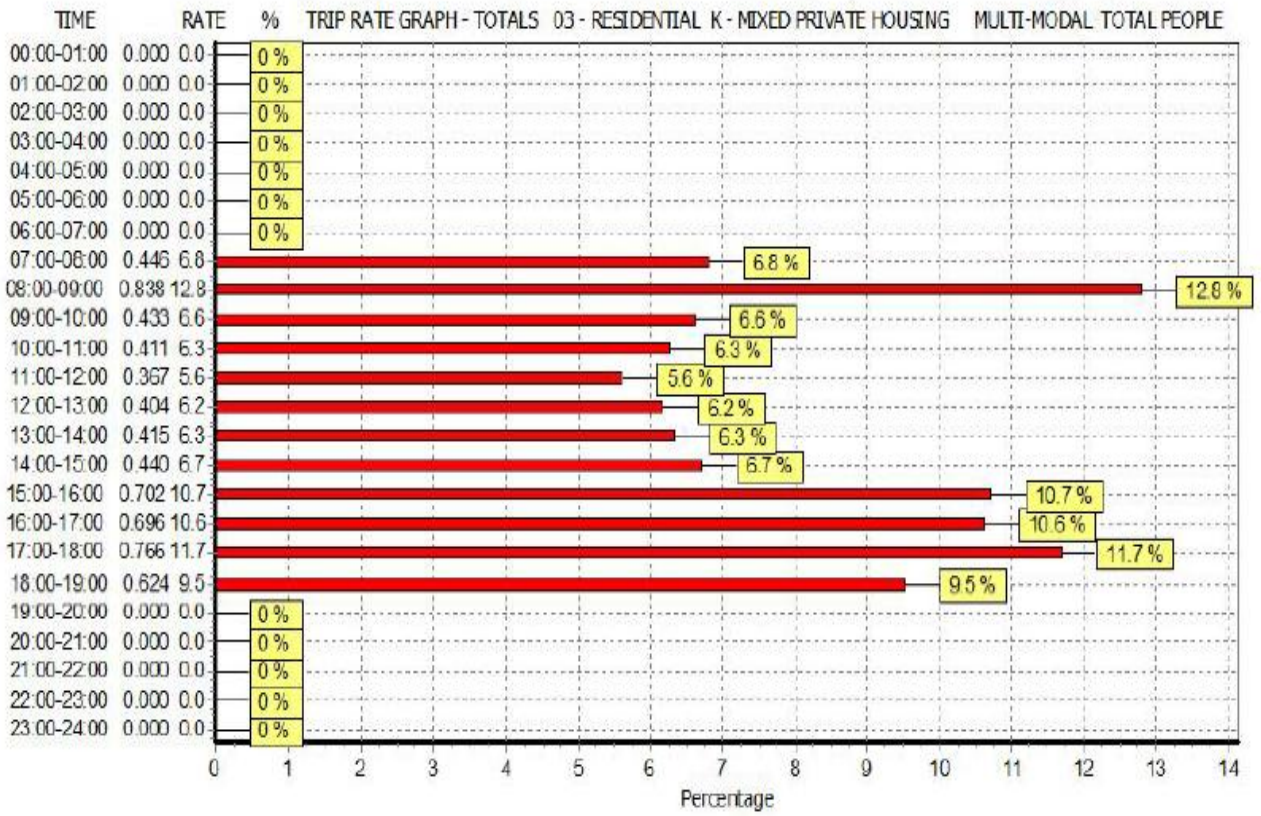
**Figure 2**

## APPENDIX B: TRICS OUTPUT









## APPENDIX C: ARRIVA BUS TIMETABLE

## Wakefield - Dewsbury

**128**

### via Horbury, Overton & Thornhill

From Wakefield Bus Stn via Union St, Bull Ring, Westgate, Quebec St, Charlesworth Way, Denby Dale Rd, Thornes Rd, Horbury Rd, Wakefield Rd, New Rd, High St, Highfield Rd, Quarry Hill, Bridge Rd, New Rd, Green Ln, Old Rd, Cross Rd, New Rd, Wakefield Rd, Grange Moor, Liley Ln, Back Ln, Wellfield Ave, Bristfield Rd, Fixby Ln, Fallhouse Ln, Whitley Rd, Edge Top Rd, Chapel Ln, Frank Ln, Church Ln, The Combs, The Common, Slaithwaite Rd, Ingham Rd, Lees Hall Rd, Ouzelwell Est, Lees Hall Rd, Forge Ln, Station Rd, Slaithwaite Rd, Bretton St, Headfield Rd, Savile Rd, Wilton St, Aldams Rd, Church St, South St to Dewsbury Bus Stn.

From Dewsbury Bus Stn via Wilton St then reverse of route to Fixby Ln, Back Ln, Wellfield Ave, Bristfield Rd, Liley Ln then reverse of route to Wakefield Rd, Green Ln, Old Rd, Cross Rd then reverse of route to Charlesworth Way, Ings Rd, Westgate, Bull Ring, Union St to Wakefield Bus Stn.

Operated by Arriva.

☎ 0844 8004411

Arriva Customer Services, Freepost ANG7624, Luton, LU4 8BR.

## Monday to Friday

### To Dewsbury

**128**

												SH	Sch
Wakefield Bus Station													
Thornes Bon Bon													
Lupset Hotel													
Horbury High School													1448
Horbury Highfield Road	0637												1452
Overton Black Swan	0646												1501
Grange Moor Jubilee Way	0654	0821	0906	1006	1106	1206	1306	1406	1506	1511			
Whitley Woolpack Inn	0659	0826	0911	1011	1111	1211	1311	1411	1511	1516			
Black Horse Inn	0703	0830	0916	1016	1116	1216	1316	1416	1516	1521			
Ouzelwell Estate	0712	0839	0925	1025	1125	1225	1325	1425	1525	1530			
Headfield View			0930	1030	1130	1230	1330	1430					
Dewsbury Bus Station	0721	0848	0938	1038	1138	1238	1338	1438	1534	1539			

**Code:** Sch Schooldays only

SH School holidays only

**Monday to Friday****To Dewsbury****128**

Wakefield Bus Station	1530	1630	1730	
Thornes Bon Bon	1540	1640	1740	
Lupset Hotel	1547	1647	1747	
<b>Horbury Highfield Road</b>	1555	1655	1755	
<b>Overton Black Swan</b>	1606	1709	1809	
<b>Grange Moor Jubilee Way</b>	1616	1717	1817	1933
Whitley Woolpack Inn	1621	1722	1822	1938
Black Horse Inn	1626	1726	1826	1942
Ouzelwell Estate	1635	1735	1835	1951
<b>Dewsbury Bus Station</b>	1644	1744	1844	2000

**Monday to Friday****To Wakefield****128**

Dewsbury Bus Station	0615	0705	0815	Then	15	Until	1415	1540	1615	1740
Headfield View	0621	0711	0821	at	21		1421	1546	1621	1746
Ouzelwell Estate	0627	0717	0827		27		1427	1552	1627	1752
Black Horse Inn	0638	0728	0838		38		1438		1638	1803
Whitley Woolpack Inn	0643	0733	0843		43		1443		1643	1808
<b>Grange Moor Jubilee Way</b>	0650	0740	0850		50		1450		1650	1815
<b>Overton Black Swan</b>	0657	0747	0857		57		1457		1657	1822
<b>Middlestown White Swan</b>										1824
<b>Horbury Highfield Road</b>	0707	0801	0907		07		1507		1707	
Lupset Hotel	0712	0808	0912		12		1512		1712	
Thornes Bon Bon	0717	0813	0917		17		1517		1717	
<b>Wakefield Bus Station</b>	0725	0825	0925		25		1525		1725	
<b>Dewsbury Bus Station</b>	1905									
Ouzelwell Estate	1913									
Black Horse Inn	1922									
Whitley Woolpack Inn	1926									
<b>Grange Moor Jubilee Way</b>	1932									

**Saturday****To Dewsbury****128**

Wakefield Bus Station	0830	Then	30	Until	1530	1630	1730
Thornes Bon Bon	0837	at	37		1537	1637	1737
Lupset Hotel	0842		42		1542	1642	1742
Horbury Highfield Road	0847		47		1547	1647	1747
Overton Black Swan	0856		56		1556	1656	1756
Grange Moor Jubilee Way	0806	0906	06		1606	1706	1806 1933
Whitley Woolpack Inn	0811	0911	11		1611	1711	1811 1938
Black Horse Inn	0816	0916	16		1616	1716	1816 1942
Ouzelwell Estate	0825	0925	25		1625	1725	1825 1951
Headfield View		0930	30		1630		
Dewsbury Bus Station	0834	0938	38		1638	1734	1834 2000

**Saturday****To Wakefield****128**

Dewsbury Bus Station	0715	Then	15	Until	1615	1715	1905
Headfield View	0721	at	21		1621	1721	
Ouzelwell Estate	0727		27		1627	1727	1913
Black Horse Inn	0738		38		1638	1738	1922
Whitley Woolpack Inn	0743		43		1643	1743	1926
Grange Moor Jubilee Way	0750		50		1650	1750	1932
Overton Black Swan	0757		57		1657	1757	
Middlestown White Swan						1759	
Horbury Highfield Road	0807		07		1707		
Lupset Hotel	0812		12		1712		
Thornes Bon Bon	0817		17		1717		
Wakefield Bus Station	0825		25		1725		

**Sunday****To Dewsbury 128**

Grange Moor Jubilee Way	0943	1143	1343	1543	1743	1943
Whitley Woolpack Inn	0948	1148	1348	1548	1748	1948
Black Horse Inn	0952	1152	1352	1552	1752	1952
Ouzelwell Estate	1001	1201	1401	1601	1801	2001
Dewsbury Bus Station	1010	1210	1410	1610	1810	2010

**Sunday****To Grange Moor 128**

Dewsbury Bus Station	0915	1115	1315	1515	1715	1915
Ouzelwell Estate	0923	1123	1323	1523	1723	1923
Black Horse Inn	0932	1132	1332	1532	1732	1932
Whitley Woolpack Inn	0936	1136	1336	1536	1736	1936
Grange Moor Jubilee Way	0942	1142	1342	1542	1742	1942

**Fieldhead Estate - Dewsbury - Thornhill 281****via Howden Clough & Batley****Fieldhead Estate - Dewsbury - Thornhill 282****via Howden Clough, Batley & Dewsbury District Hospital****Bradford - Dewsbury - Thornhill Edge 283****via Batley**

**Service 281:** From Fieldhead Estate via Lowood Ln, Rochester Rd, Branwell Ave, Lowood Ln, Field Head Ln, Middlegate, Low Ln, Birstall Market Pl, Nelson St, Leeds Rd, Windsor Rd, Windmill Ln, Upper Batley Ln, Intake Ln, Brookroyd Ln, Bradford Rd, Centenary Way, Cross Bank Rd, Blakeridge Ln, Stocks Ln, Bradford Rd, Batley Bus Stn, Branch Rd, Commercial St, Cross St, Wellington St, Purlwell Ln, Hyrstlands Rd, Town St, Bradford Rd, Northgate, Foundry St, Corporation St, Westgate, Church St, South St, Dewsbury Bus Stn, Aldams Rd, Mill Street West, Savile Rd, Station Rd, Brewery Ln, Lees Hall Rd, Ingham Rd, Slaithwaite Rd, Overthorpe Rd, Chapel Ln, Frank Ln, Valley Rd, Partridge Cres, Valley Dr, Edge Ln, Edge Ave to Thornhill Edge.

From Thornhill Edge Avenue via reverse of outward route to Frank Ln, The Town, Overthorpe Rd then as reverse of outward route to Dewsbury Bus Stn, Aldams Rd, Vicarage Rd, Longcauseway, Crackenedge Ln, Corporation St, Northgate, Bradford Rd then as reverse of outward route to Commercial St, Upper Commercial St, Stocks Ln, Bradford Rd, Batley Bus Stn, Branch Rd, Upper Commercial St, Blakeridge Ln then as reverse of outward route to Lowood Ln.

**Service 282:** From Fieldhead Estate as service 281 to Wellington St, Clerk Green St, Dark Ln, Manor Way, Chestnut Ave, Woodfield Ave, Staincliffe Hall Rd, Halifax Rd, Dewsbury District Hospital, Halifax Rd, Dewsbury Gate Rd, Staincliffe Rd, Green Ln, Birkdale Rd, Halifax Rd, Northgate, Foundry St, Corporation St, Westgate, Church St, South St, Dewsbury Bus Stn, Aldams Rd then as service 281 to Thornhill Edge.

From Thornhill Edge via reverse of outward route to Upper Commercial St, Stocks Ln, Bradford Rd, Batley Bus Stn, Branch Rd, Upper Commercial St, Stocks Ln, Bradford Rd then as reverse of outward route to Fieldhead Estate.

**Service 283:** From Bradford Interchange via Wakefield Rd, Tong St, Toftshaw Ln, Raikes Ln, South View Rd, Bradford Rd, Town St, Old Ln, Birkenshaw Ln, Moor Ln, Bradford Rd, Kirkgate, Low Ln, Birstall Market Pl, Smithies Ln, Bradford Rd, Batley Bus Stn, then as service 281 to Thornhill Edge.

From Thornhill Edge via reverse of outward route to Upper Commercial St, Stocks Ln, Bradford Rd, Batley Bus Stn, Branch Rd, Upper Commercial St, Stocks Ln, Bradford Rd then as reverse of outward route to Bradford Interchange.

Operated by Arriva.

☎ 08448 004411

Arriva Customer Services, Freepost ANG7624, Luton, LU4 8BR.

**Monday to Friday**

**To Dewsbury & Thornhill**

**281 282 283**

Service Number	281	281	282	281	283	282	281	282	281	282	281
Bradford Interchange					0615					0640	
East Bierley Green					0630					0655	
Fieldhead Estate	0546			0616		0631	0646			0701	0716
Birstall Market Place	0552			0622	0645	0637	0652	0710		0707	0722
Howden Clough School	0557			0627		0642	0657			0712	0727
Batley Bus Station	0607			0637	0654	0652	0707	0719		0722	0737
Batley Bus Station	0611	0615		0641	0656	0652	0710	0720		0722	0741
Dewsbury District Hospital				0628		0711	0707			0737	
Dewsbury Bus Station (arr)	0626	0642				0722	0725	0735		0752	0756
Dewsbury Bus Station (dep)	0614	0629	0644	0659	0714		0728	0740		0752	0804
Thornhill Lees, Post Office	0622	0637	0652	0707	0722		0736	0748		0800	0812
Thornhill Edge Avenue	0636	0651	0706	0721	0736		0750	0802		0814	0826

Service Number	283	282	281	283	282	281	282	283	281	283	
Bradford Interchange	0715			0735						0825	0855
East Bierley Green	0730			0757						0840	0910
Fieldhead Estate		0731	0751		0811	0826	0841			0856	
Birstall Market Place	0745	0737	0757	0820	0817	0832	0847	0855		0902	0925
Howden Clough School		0742	0802		0822	0837	0852			0907	
Batley Bus Station	0754	0752	0812	0829	0832	0847	0902	0904		0917	0934
Batley Bus Station	0756	0752	0816	0831	0832	0850	0902	0905		0920	0935
Dewsbury District Hospital		0807			0847		0917				
Dewsbury Bus Station (arr)	0811	0822	0831	0846	0902	0905	0932	0920		0935	0950
Dewsbury Bus Station (dep)	0816	0828	0840	0852	0904	0916		0928		0940	0952
Thornhill Lees, Post Office	0824	0836	0848	0900	0912	0924		0936		0948	1000
Thornhill Edge Avenue	0838	0850	0902	0914	0926	0938		0950		1002	1014

Service Number	282	281	282	283	281	283	282	281	Then at	282
Bradford Interchange				0925		0955				
East Bierley Green				0940		1010				
Fieldhead Estate	0911	0930	0941		0956		1011	1026		41
Birstall Market Place	0917	0936	0947	0955	1002	1025	1017	1032		47
Howden Clough School	0922	0941	0952		1007		1022	1037		52
Batley Bus Station	0932	0951	1002	1004	1017	1034	1032	1047		02
Batley Bus Station	0932	0955	1002	1005	1020	1035	1032	1050		02
Dewsbury District Hospital	0947		1017				1047			17
Dewsbury Bus Station (arr)	1002	1010	1032	1020	1035	1050	1102	1105		32
Dewsbury Bus Station (dep)	1004	1016		1028	1040	1052	1104	1116		
Thornhill Lees, Post Office	1012	1024		1036	1048	1100	1112	1124		
Thornhill Edge Avenue	1026	1038		1050	1102	1114	1126	1138		

Code: ➡ Adjoining or near Railway Station

**Monday to Friday**

**To Dewsbury & Thornhill**

**281 282 283**

Service Number	283	281	283	282	281	283	282	281	283
Bradford Interchange	25		55						1425
East Bierley Green	40		10						1440
Fieldhead Estate		56		11	26	Until		1441	1456
Birstall Market Place	55	02	25	17	32		1455	1447	1502
Howden Clough School		07		22	37			1452	1507
Batley Bus Station	04	17	34	32	47			1504	1502
Batley Bus Station	05	20	35	32	50			1505	1502
Dewsbury District Hospital								1517	1520
Dewsbury Bus Station (arr)	20	35	50	02	05			1520	1532
Dewsbury Bus Station (dep)	28	40	52	04	16			1528	1540
Thornhill Lees, Post Office	36	48	00	12	24			1536	1548
Thornhill Edge Avenue	50	02	14	26	38			1550	1602

Service Number	282	281	283	282	281	283	282	281	283	282
Bradford Interchange				1525		1555				1625
East Bierley Green				1540		1610				1640
Fieldhead Estate	1511	1526		1541	1556		1611	1626		1641
Birstall Market Place	1517	1532	1555	1547	1602	1625	1617	1632	1655	1647
Howden Clough School	1522	1537		1552	1607		1622	1637		1652
Batley Bus Station	1532	1547	1604	1602	1617	1634	1632	1647	1704	1702
Batley Bus Station	1532	1550	1605	1602	1620	1635	1632	1650	1705	1702
Dewsbury District Hospital	1547		1617				1647			1717
Dewsbury Bus Station (arr)	1602	1605	1620	1632	1635	1650	1702	1705	1720	1732
Dewsbury Bus Station (dep)	1604	1616	1628		1640	1652	1704	1714	1724	
Thornhill Lees, Post Office	1612	1624	1636		1648	1700	1712	1722	1732	
Thornhill Edge Avenue	1626	1638	1650		1702	1714	1726	1736	1746	

Service Number	281	283	282	281	283	282	281	283	282	282
Bradford Interchange		1655			1725					1755
East Bierley Green		1715			1745					1810
Fieldhead Estate	1656		1711	1726		1741	1756			1811
Birstall Market Place	1702	1733	1717	1732	1803	1747	1802	1825		1817
Howden Clough School	1707		1722	1737		1752	1807			1822
Batley Bus Station	1717	1742	1732	1747	1812	1802	1817	1834		1832
Batley Bus Station	1721	1744	1732	1754	1814	1802	1820	1836		1832
Dewsbury District Hospital			1747				1817			1846
Dewsbury Bus Station (arr)	1736	1759	1802	1809	1829	1832	1836	1851		1900
Dewsbury Bus Station (dep)	1744	1804		1824				1855		1901
Thornhill Lees, Post Office	1852	1812		1832				1901		
Thornhill Edge Avenue	1806	1826		1846				1915		

Code: ➡ Adjoining or near Railway Station

**Monday to Friday****To Dewsbury & Thornhill****282 283**

<i>Service Number</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>
<b>Bradford Interchange</b>	1825	1905	Then	05	until	2305	
East Bierley Green	1840	1918	at	18		2318	
Fieldhead Estate		1856		34		2234	
<b>Birstall Market Place</b>	1855	1902	1930	40	30	2240	2330
Howden Clough School		1907		45		2245	
<b>Batley Bus Station</b>	1904	1917	1939	55	39	2255	2239
<b>Batley Bus Station</b>	1906	1918	1939	56	39	2256	2239
Dewsbury District Hospital		1931		09		2309	
<b>Dewsbury Bus Station (arr)</b>	1921	1945	1954	23	54	2323	2354
<b>Dewsbury Bus Station (dep)</b>	1928	1958		28	58	2323	
Thornhill Lees, Post Office		1934		34	04	2329	
Thornhill Edge Avenue		1948		48	18	2343	

**Monday to Friday****To Fieldhead Estate & Bradford****281 282 283**

<i>Service Number</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>281</i>	<i>282</i>	<i>283</i>	<i>281</i>
Thornhill, Edge Avenue		0530		0555	0610	0625	0640			0655
Thornhill Lees, Post Office		0543		0608	0623	0638	0653			0708
<b>Dewsbury Bus Station (arr)</b>		0551		0616	0631	0646	0701			0716
<b>Dewsbury Bus Station (dep)</b>	0524	0541	0554	0611	0624	0636	0651	0706	0654	0724
Dewsbury District Hospital		0539		0609		0639				0709
<b>Batley Bus Station (arr)</b>	0554	0556	0624	0626	0654	0651	0706	0721	0724	0739
<b>Batley Bus Station (dep)</b>	0555	0558	0625	0628	0655	0653	0710	0723	0725	0740
Howden Clough School		0605		0635		0705		0720		0735
<b>Birstall Market Place</b>	0611	0608	0641	0638	0711	0703	0726	0733	0741	0801
Fieldhead Estate		0615		0645		0715		0730		0745
East Bierley Green		0623		0653		0718		0748		
<b>Bradford Interchange</b>		0638		0708		0733		0803		

*Code:* Adjoining or near Railway Station**Monday to Friday****To Fieldhead Estate & Bradford****281 282 283**

<i>Service Number</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>282</i>	<i>283</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>282</i>
Thornhill, Edge Avenue	0710		0729	0741	0753	0805	0817			0829
Thornhill Lees, Post Office	0723		0742	0754	0806	0818	0830			0842
<b>Dewsbury Bus Station (arr)</b>	0731		0750	0802	0814	0826	0838			0850
<b>Dewsbury Bus Station (dep)</b>	0736	0729	0756	0804	0816	0831	0846	0834	0901	0904
Dewsbury District Hospital		0744		0819				0849		0919
<b>Batley Bus Station (arr)</b>	0751	0759	0811	0834	0831	0846	0901	0904	0916	0934
<b>Batley Bus Station (dep)</b>	0753	0800	0815	0835	0833	0850	0903	0905	0920	0935
Howden Clough School		0810	0825	0845		0900		0915	0930	0945
<b>Birstall Market Place</b>	0803	0816	0831	0851	0843	0906	0913	0921	0936	0951
Fieldhead Estate		0820	0835	0855		0910		0925	0940	0955
East Bierley Green		0818				0858		0928		
<b>Bradford Interchange</b>		0833				0913		0943		


<i>Service Number</i>	<i>283</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>282</i>	<i>283</i>	<i>281</i>	<i>283</i>	<i>282</i>
Thornhill, Edge Avenue	0853	0905	0917		0931	0941	0953	1005	1017	
Thornhill Lees, Post Office	0906	0918	0930		0944	0954	1006	1018	1030	
<b>Dewsbury Bus Station (arr)</b>	0914	0926	0938		0952	1002	1014	1026	1038	
<b>Dewsbury Bus Station (dep)</b>	0916	0931	0946	0934	1001	1004	1016	1031	1046	1034
Dewsbury District Hospital				0949		1019				1049
<b>Batley Bus Station (arr)</b>	0931	0946	1001	1004	1016	1034	1031	1046	1101	1104
<b>Batley Bus Station (dep)</b>	0933	0950	1003	1005	1020	1035	1033	1050	1103	1105
Howden Clough School		1000		1015	1030	1045		1100		1115
<b>Birstall Market Place</b>	0943	1006	1013	1021	1036	1051	1043	1106	1113	1121
Fieldhead Estate		1010		1025	1040	1055		1110		1125
East Bierley Green		0958		1028				1058		1128
<b>Bradford Interchange</b>		1013		1043				1113		1143

*Code:* Adjoining or near Railway Station

**Monday to Friday****To Fieldhead Estate & Bradford 281 282 283**


<i>Service Number</i>	<i>281</i>	<i>282</i>	<i>283</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>282</i>	<i>283</i>	<i>281</i>
Thornhill, Edge Avenue	1029	1041	1053	1105	1117		1129	1141	1153	1205
Thornhill Lees, Post Office	1042	1054	1106	1118	1130		1142	1154	1206	1218
Dewsbury Bus Station (arr)	1050	1102	1114	1126	1138		1150	1202	1214	1226
Dewsbury Bus Station (dep)	1101	1104	1116	1131	1146	1134	1201	1204	1216	1231
Dewsbury District Hospital		1119				1149			1219	
Batley Bus Station (arr)	1116	1134	1131	1146	1201	1204	1216	1234	1231	1246
Batley Bus Station (dep)	1120	1135	1133	1150	1203	1205	1220	1235	1233	1250
Howden Clough School	1130	1145		1200		1215	1230	1245		1300
Birstall Market Place	1136	1151	1143	1206	1213	1221	1236	1251	1243	1306
Fieldhead Estate	1140	1155		1210		1225	1240	1255		1310
East Bierley Green			1158		1228				1258	
Bradford Interchange			1213		1243				1313	

<i>Service Number</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>282</i>	<i>283</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>283</i>	<i>282</i>
Thornhill, Edge Avenue	1217		Then	29	41	53	05	17		Until	
Thornhill Lees, Post Office	1230		at	42	54	06	18	30			
Dewsbury Bus Station (arr)	1238			50	02	14	26	38			
Dewsbury Bus Station (dep)	1246	1234		01	04	16	31	46	34		
Dewsbury District Hospital		1249			19				49		
Batley Bus Station (arr)	1301	1304		16	34	31	46	01	04		
Batley Bus Station (dep)	1303	1305		20	35	33	50	03	05		
Howden Clough School		1315		30	45		00		15		
Birstall Market Place	1313	1321		36	51	43	06	13	21		
Fieldhead Estate		1325		40	55		10		25		
East Bierley Green		1328				58			28		
Bradford Interchange		1343				13			43		

Code:  Adjoining or near Railway Station**Monday to Friday****To Bradford****281 282 283**

<i>Service Number</i>	<i>282</i>	<i>283</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>282</i>	<i>283</i>	<i>281</i>	<i>283</i>	<i>282</i>
Thornhill, Edge Avenue	1541	1553	1605	1617		1629	1641	1653	1705	1717	
Thornhill Lees, Post Office	1554	1606	1618	1630		1642	1654	1706	1718	1730	
Dewsbury Bus Station (arr)	1602	1614	1626	1638		1650	1702	1714	1726	1738	
Dewsbury Bus Station (dep)	1604	1616	1631	1646	1634	1701	1704	1716	1731	1746	
Dewsbury District Hospital		1619			1649				1719		
Batley Bus Station (arr)	1634	1631	1646	1701	1704	1716	1734	1731	1746	1801	
Batley Bus Station (dep)	1635	1633	1650	1703	1705	1720	1735	1733	1750	1803	
Howden Clough School		1645	1700		1715	1730	1745		1800		
Birstall Market Place	1651	1643	1706	1713	1721	1736	1751	1743	1806	1813	
Fieldhead Estate	1655		1710		1725	1740	1755		1810		
East Bierley Green			1658	1728					1758		
Bradford Interchange			1713	1743					1813		

<i>Service Number</i>	<i>282</i>	<i>281</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>281</i>	<i>283</i>	<i>282</i>
Thornhill, Edge Avenue	1729	1741	1750	1820	1850		1920	1950	2020		
Thornhill Lees, Post Office	1742	1754	1802	1832	1902		1932	2002	2032		
Dewsbury Bus Station (arr)	1750	1802	1810	1840	1910		1940	2010	2040		
Dewsbury Bus Station (dep)	1734	1801	1804	1813	1845	1913	1915	1945	2013	2045	
Dewsbury District Hospital	1749		1819		1858		1928	1958		2058	
Batley Bus Station (arr)	1804	1816	1834	1828	1911	1928	1941	2011	2028	2111	
Batley Bus Station (dep)	1805		1835	1828	1913	1928		2013	2028	2113	
Howden Clough School	1815		1845		1922			2022		2122	
Birstall Market Place	1821		1851	1836	1928	1936		2028	2036	2128	
Fieldhead Estate	1825		1855		1932			2032		2132	
East Bierley Green				1849		1949			2049		
Bradford Interchange				1902		2002			2102		

Code:  Adjoining or near Railway Station.

**Monday to Friday**

**To Bradford**

**282 283**

Service Number	283	282	283	282	283
	<b>L</b>				
Thornhill, Edge Avenue	2050	2120	2150	2220	2250
Thornhill Lees, Post Office	2102	2132	2202	2232	2302
Dewsbury Bus Station (arr)	2110	2140	2210	2240	2310
Dewsbury Bus Station (dep)	2113	2145	2213	2245	2313
Dewsbury District Hospital		2158		2258	
Batley Bus Station (arr)	2128	2211	2228	2311	2328
Batley Bus Station (dep)	2128	2213	2228	2313	2328
Howden Clough School		2222		2322	
Birstall Market Place	2136	2228	2236	2328	2336
Fieldhead Estate		2232		2332	
East Bierley Green	2149		2249		
Bradford Interchange	2202		2302		

**Saturday**

**To Dewsbury & Thornhill**

**281 282 283**

Service Number	283	282	281	283	282	281	282	283	282	281
Bradford Interchange				0655				0755		
East Bierley Green				0710				0810		
Fieldhead Estate		0611	0641		0711	0741			0811	0841
Birstall Market Place		0617	0647	0725	0717	0747		0825	0817	0847
Howden Clough School		0622	0652		0722	0752			0822	0852
Batley Bus Station		0632	0702	0734	0732	0802		0834	0832	0902
Batley Bus Station	0636	0632	0706	0736	0732	0806	0802	0836	0832	0906
Dewsbury District Hospital		0647		0747				0817		0847
Dewsbury Bus Station (arr)	0651	0702	0721	0751	0802	0821	0832	0851	0902	0921
Dewsbury Bus Station (dep)	0654	0709	0724	0754	0809	0824	0839	0854	0909	0924
Thornhill Lees, Post Office	0702	0717	0732	0802	0817	0832	0847	0902	0917	0932
Thornhill, Edge Avenue	0716	0731	0746	0816	0831	0846	0901	0916	0931	0946

Code: Adjoining or near Railway Station. L Terminates at Lowood Lane 2333.

**Saturday**

**To Dewsbury & Thornhill**

**281 282 283**

Service Number	282	281	283	282	281	283	282	281	283	282
Bradford Interchange			0855			0925			0955	
East Bierley Green			0910			0940			1010	
Fieldhead Estate		0856		0911	0926		0941	0956		1011
Birstall Market Place		0902	0925	0917	0932	0955	0947	1002	1025	1017
Howden Clough School		0907		0922	0937		0952	1007		1022
Batley Bus Station		0917	0934	0932	0947	1004	1002	1017	1034	1032
Batley Bus Station	0902	0921	0936	0932	0951	1006	1002	1021	1036	1032
Dewsbury District Hospital		0917		0947			1017		1047	
Dewsbury Bus Station (arr)	0932	0936	0951	1002	1006	1021	1032	1036	1051	1102
Dewsbury Bus Station (dep)		0939	0954		1009	1024		1039	1054	
Thornhill Lees, Post Office		0947	1002		1017	1032		1047	1102	
Thornhill, Edge Avenue		1001	1016		1031	1046		1101	1116	

Service Number	281	283	282	281	283	282	281	283
Bradford Interchange	Then		25		55		until	1625
East Bierley Green	at		40		10			1640
Fieldhead Estate		26		41	56		11	1626
Birstall Market Place		32	55	47	02	25	17	1632 1655
Howden Clough School		37		52	07		22	1637
Batley Bus Station		47	04	02	17	34	32	1647 1704
Batley Bus Station		51	06	02	21	36	32	1651 1706
Dewsbury District Hospital				17			47	
Dewsbury Bus Station (arr)		06	21	32	36	51	02	1706 1721
Dewsbury Bus Station (dep)		09	24		39	54		1709 1724
Thornhill Lees, Post Office		17	32		47	02		1717 1732
Thornhill, Edge Avenue		31	46		01	06		1731 1746

Service Number	282	281	283	282	281	283	282	281	283	283
Bradford Interchange			1655			1725			1755	1825
East Bierley Green			1710			1740			1810	1840
Fieldhead Estate	1641	1656		1711	1726		1741	1756		
Birstall Market Place	1647	1702	1725	1717	1732	1755	1747	1802	1825	1855
Howden Clough School	1652	1707		1722	1737		1752	1807		
Batley Bus Station	1702	1717	1734	1732	1747	1804	1802	1817	1834	1904
Batley Bus Station	1702	1721	1736	1732	1751	1806	1802	1821	1836	1906
Dewsbury District Hospital		1717		1747			1817			
Dewsbury Bus Station (arr)	1732	1736	1751	1802	1806	1821	1832	1836	1851	1921
Dewsbury Bus Station (dep)			1755			1825			1855	
Thornhill Lees, Post Office			1801			1831			1901	
Thornhill, Edge Avenue			1815			1845			1915	

Code: Adjoining or near Railway Station

**Saturday**

<b>To Dewsbury &amp; Thornhill</b>										<b>282 283</b>		
<i>Service Number</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>		
Bradford Interchange		1905		2005		2105		2205		2305		
East Bierley Green		1918		2018		2118		2218		2318		
Fieldhead Estate	1834		1934		2034		2134		2234			
Birstall Market Place	1840	1930	1940	2030	2040	2130	2140	2230	2240	2330		
Howden Clough School	1845		1945		2045		2145		2245			
Batley Bus Station	1855	1939	1955	2039	2055	2139	2155	2239	2255	2339		
Batley Bus Station	1856	1939	1956	2039	2056	2139	2156	2239	2256	2339		
Dewsbury District Hospital	1909		2009		2109		2209		2309			
Dewsbury Bus Station (arr)	1923	1954	2023	2054	2123	2154	2223	2254	2323	2354		
Dewsbury Bus Station (dep)	1928	1958	2028	2058	2128	2158	2228	2258	2323			
Thornhill Lees, Post Office	1934	2004	2034	2104	2134	2204	2234	2304	2329			
Thornhill, Edge Avenue	1948	2018	2048	2118	2148	2218	2248	2318	2343			

**Saturday**

<b>To Fieldhead Estate &amp; Bradford</b>										<b>282 283</b>		
<i>Service Number</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>		
Thornhill, Edge Avenue	0525		0625		0655	0720	0735	0750	0805	0820		
Thornhill Lees, Post Office	0539		0639		0709	0734	0749	0804	0819	0834		
Dewsbury Bus Station (arr)	0547	0556	0647	0656	0717	0742	0757	0812	0827	0842		
Dewsbury Bus Station (dep)	0549		0649		0719	0746	0804	0816	0834	0846		
Dewsbury District Hospital	0604		0704		0734		0819		0849			
Batley Bus Station (arr)	0619	0611	0719	0711	0749	0801	0834	0831	0904	0901		
Batley Bus Station (dep)	0620	0613	0720	0713	0750	0803	0835	0833	0905	0903		
Howden Clough School	0630		0730		0800		0845		0915			
Birstall Market Place	0636	0623	0736	0723	0806	0813	0851	0843	0921	0913		
Fieldhead Estate	0640		0740		0810		0855		0925			
East Bierley Green		0638		0738		0828		0858		0928		
Bradford Interchange		0653		0753		0843		0913		0943		

Code: Adjoining or near Railway Station

**Saturday**

<b>To Fieldhead Estate &amp; Bradford</b>										<b>281 282 283</b>		
<i>Service Number</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>		
Thornhill, Edge Avenue	0835	0850		0905	0920		Then	35	50			
Thornhill Lees, Post Office	0849	0904		0919	0934		at	49	04			
Dewsbury Bus Station (arr)	0857	0912		0927	0942			57	12			
Dewsbury Bus Station (dep)	0901	0916	0904	0931	0946	0934		01	16	04		
Dewsbury District Hospital		0919			0949					19		
Batley Bus Station (arr)	0916	0931	0934	0946	1001	1004		16	31	34		
Batley Bus Station (dep)	0920	0933	0935	0950	1003	1005		20	33	35		
Howden Clough School	0930		0945	1000		1015		30		45		
Birstall Market Place	0936	0943	0951	1006	1013	1021		36	43	51		
Fieldhead Estate	0940		0955	1010		1025		40		55		
East Bierley Green		0958			1028				58			
Bradford Interchange		1013			1043					13		

<i>Service Number</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>281</i>	<i>283</i>	<i>282</i>	<i>281</i>	
Thornhill, Edge Avenue	05	20		Until	1550		1605	1620	1635	
Thornhill Lees, Post Office	19	34			1604		1619	1634	1649	
Dewsbury Bus Station (arr)	27	42			1612		1627	1642	1657	
Dewsbury Bus Station (dep)	31	46	34		1616	1604	1631	1646	1634	1701
Dewsbury District Hospital			49			1619			1649	
Batley Bus Station (arr)	46	01	04		1631	1634	1646	1701	1704	1716
Batley Bus Station (dep)	50	03	05		1633	1635	1650	1703	1705	1720
Howden Clough School	00		15			1645	1700		1715	1730
Birstall Market Place	06	13	21		1643	1651	1706	1713	1721	1736
Fieldhead Estate	10		25			1655	1710		1725	1740
East Bierley Green		28			1658			1728		
Bradford Interchange		43			1713			1743		

Code: Adjoining or near Railway Station

**Saturday****To Fieldhead Estate & Bradford 281 282 283**

Service Number	283	282	281	282	283	282	283	282
Thornhill, Edge Avenue	1650		1705	1720	1750	1820	Then	50 20
Thornhill Lees, Post Office	1704		1719	1734	1802	1832	at	02 32
Dewsbury Bus Station (arr)	1712		1727	1742	1810	1840		10 40
Dewsbury Bus Station (dep)	1716	1704	1736	1745	1813	1845		13 45
Dewsbury District Hospital		1719		1759		1858		58
Batley Bus Station (arr)	1731	1734	1751	1811	1828	1911		28 11
Batley Bus Station (dep)	1733	1735	1755	1813	1828	1913		28 13
Howden Clough School		1745	1805	1822		1922		22
Birstall Market Place	1743	1751	1811	1828	1836	1928		36 28
Fieldhead Estate		1755	1815	1832		1932		32
East Bierley Green	1758				1849			49
Bradford Interchange	1813				1902			02

Service Number 282 283

Service Number	282	283
Thornhill, Edge Avenue	2220	2250
Thornhill Lees, Post Office	2232	2302
Dewsbury Bus Station (arr)	2240	2310
Dewsbury Bus Station (dep)	2245	2313
Dewsbury District Hospital	2258	
Batley Bus Station (arr)	2311	2328
Batley Bus Station (dep)	2313	2328
Howden Clough School	2322	
Birstall Market Place	2328	2336
Fieldhead Estate	2332	

Code: Adjoining or near Railway Station. L Terminates at Lowood Lane 2333.

**Sunday****To Dewsbury & Thornhill 282 283**

Service Number	282	283	282	283	283	282	283
Bradford Interchange		0905	Then	05	Until	2205	2305
East Bierley Green		0918	at	18		2218	2318
Fieldhead Estate	0834			34			2234
Birstall Market Place	0840	0930		40 30		2230	2240 2330
Howden Clough School	0845			45			2245
Batley Bus Station	0855			55			2255
Batley Bus Station	0856	0939		56 39		2239	2256 2339
Dewsbury District Hospital	0909			09			2309
Dewsbury Bus Station (arr)	0923	0954		23 54		2254	2354
Dewsbury Bus Station (dep)	0928	0958		28 58		2258	2323
Thornhill Lees, Post Office	0934	1004		34 04		2304	2329
Thornhill, Edge Avenue	0948	1018		48 18		2318	2343

**Sunday****To Fieldhead Estate & Bradford 282 283**

Service Number	283	282	283	282	283	282	282	283
Thornhill, Edge Avenue			0850	0920	Then	50 20	Until	1820 1850
Thornhill Lees, Post Office			0902	0932	at	02 32		1832 1902
Dewsbury Bus Station (arr)			0910	0940		10 40		1840 1910
Dewsbury Bus Station (dep)	0813	0845	0913	0945		13 45		1845 1913
Dewsbury District Hospital		0858		0958		58		1858
Batley Bus Station (arr)		0911		1011		28 11		1911
Batley Bus Station (dep)	0828	0913	0928	1013		28 13		1913 1928
Howden Clough School		0922		1022		22		1922
Birstall Market Place	0836	0928	0936	1028		36 28		1928 1936
Fieldhead Estate		0932		1032		32		1932
East Bierley	0849		0949			49		1949
Bradford Interchange	0902		1002			02		2002

Code: Adjoining or near Railway Station

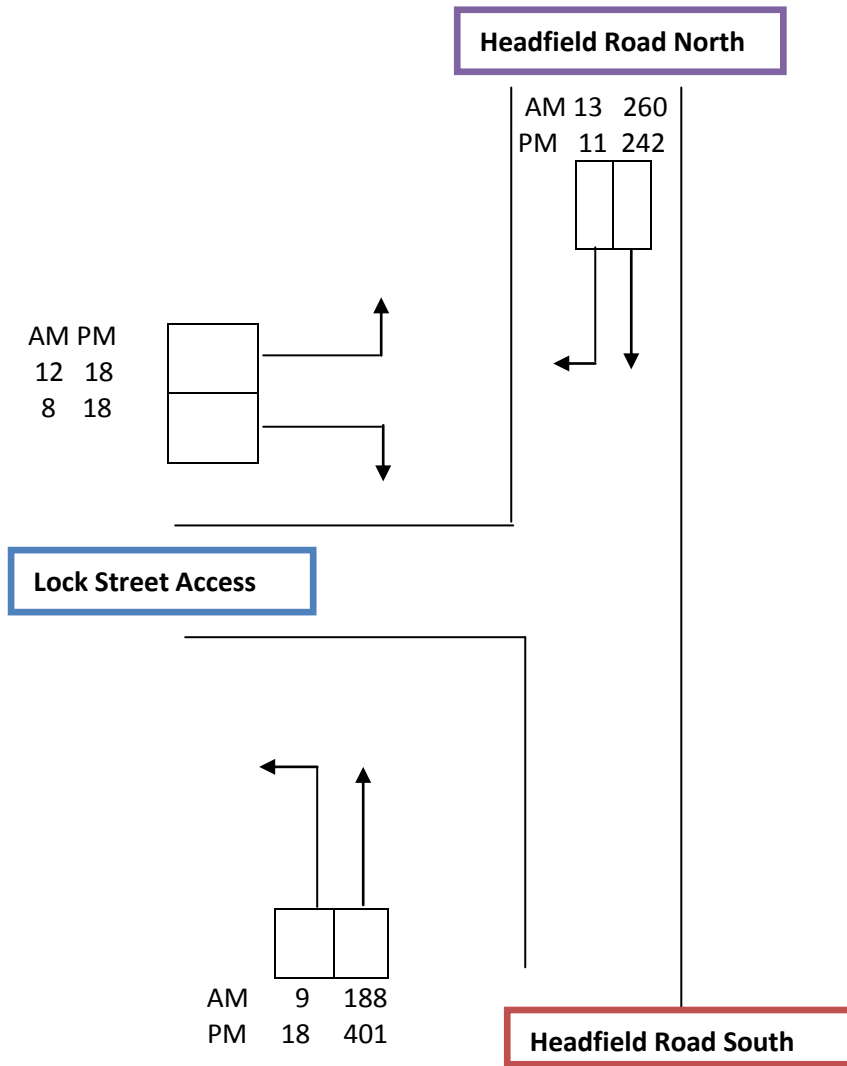
<b>Sunday</b>
---------------

### To Fieldhead Estate & Bradford 282 283

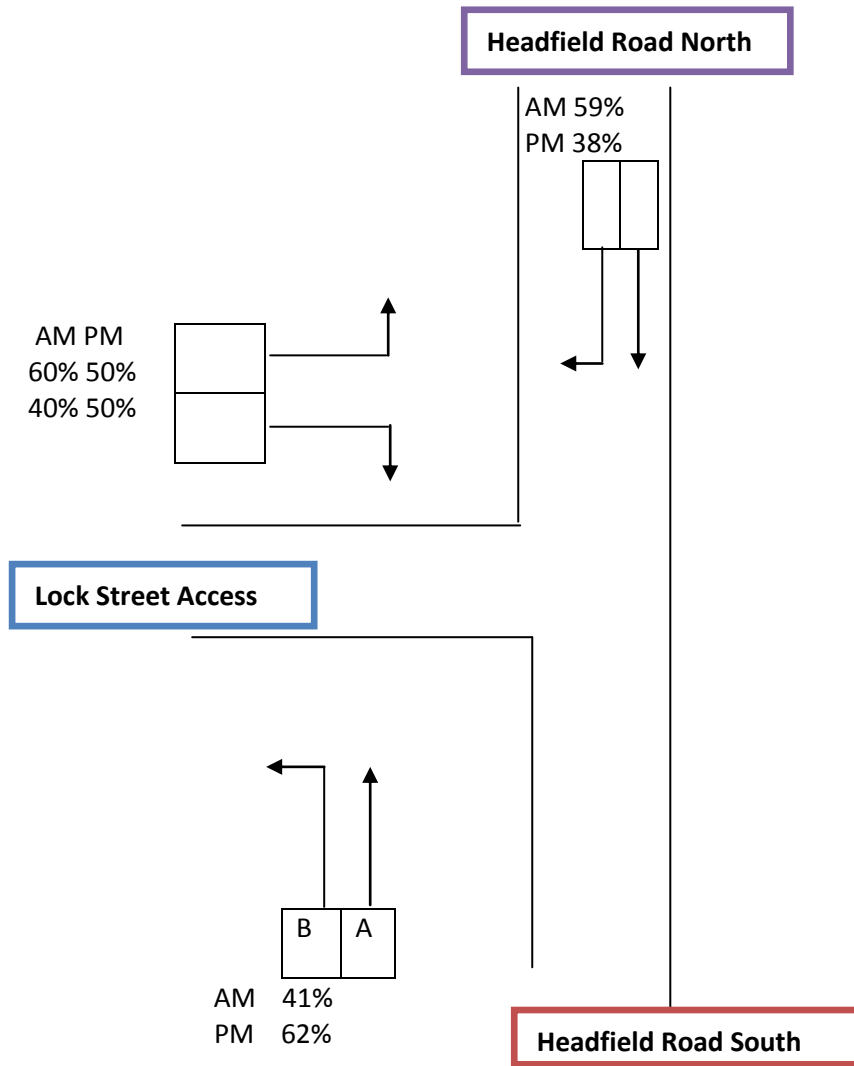
<i>Service Number</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>	<i>282</i>	<i>283</i>
							<b>L</b>	
<b>Thornhill, Edge Avenue</b>	1920	1950	2020	2050	2120	2150	2220	2250
Thornhill Lees, Post Office	1932	2002	2032	2102	2132	2202	2232	2302
<b>Dewsbury Bus Station (arr)</b>	1940	2010	2040	2110	2140	2210	2240	2310
<b>Dewsbury Bus Station (dep)</b>	1945	2013	2045	2113	2145	2213	2245	2313
Dewsbury District Hospital	1958		2058		2158		2258	
<b>Batley Bus Station (arr)</b>	2011	2028	2111	2128	2211	2228	2311	2328
<b>Batley Bus Station (dep)</b>	2011	2028	2113	2128	2213	2228	2313	2328
Howden Clough School	2022		2122		2222		2322	
Birstall Market Place	2028	2036	2128	2136	2228	2236	2328	2336
Fieldhead Estate	2032		2132		2232		2332	
East Bierley		2049		2149		2249		
<b>Bradford Interchange</b>		2102		2202		2302		

*Code:* **R** Adjoining or near Railway Station. **L** Terminates at Lowood Lane 2333.

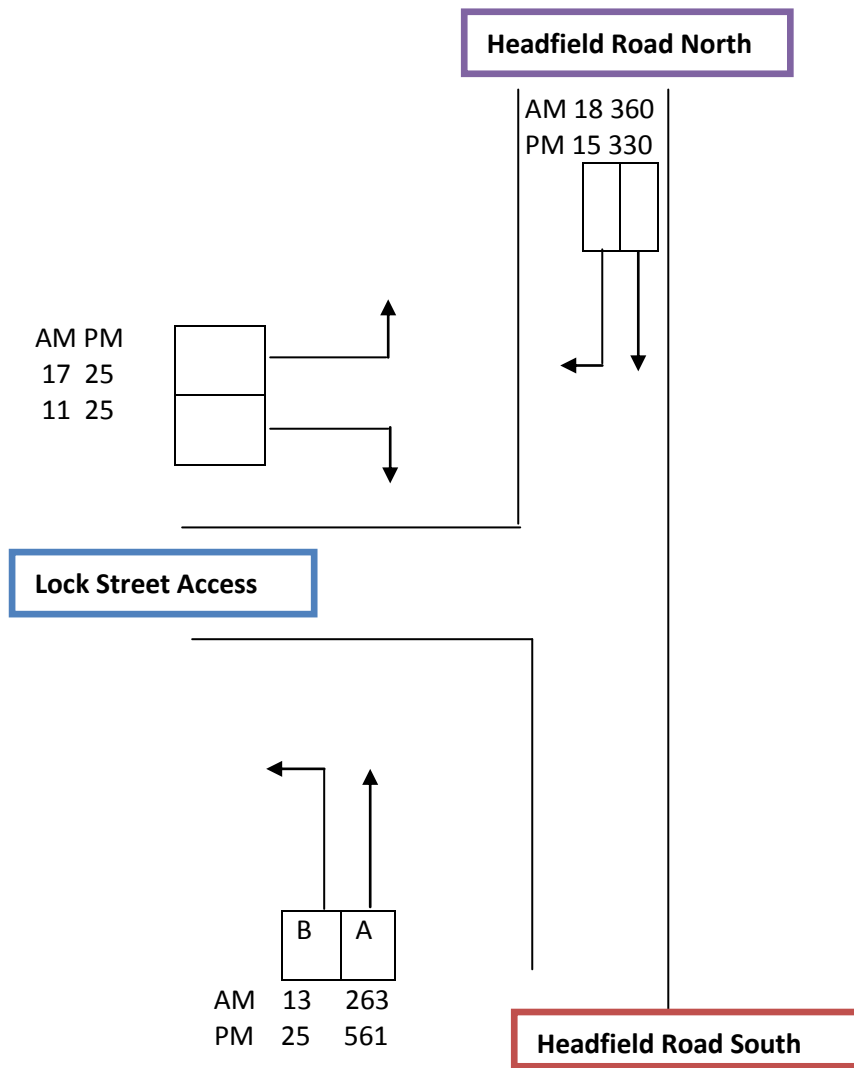
## APPENDIX D: TRAFFIC FLOWS



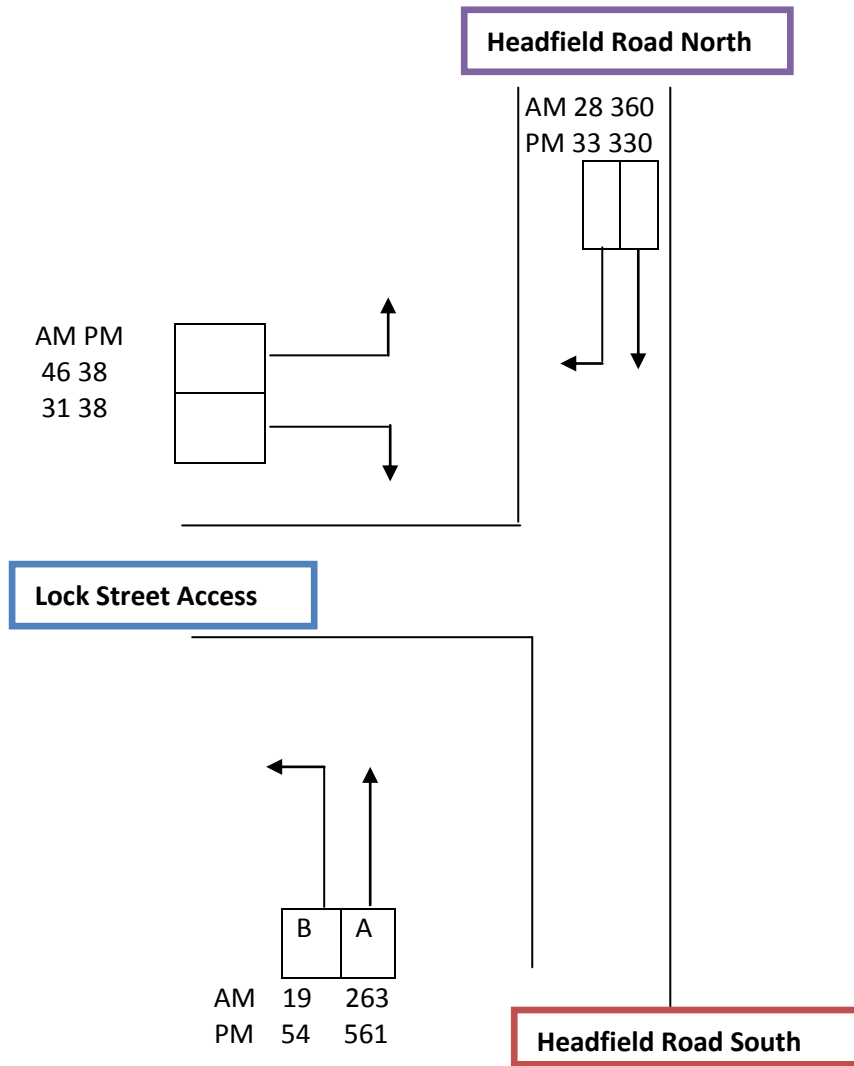
Lock Street/Headfield Road Priority Junction – Base Year 2012 Traffic



Lock Street/Headfield Road Priority Junction – Development Trips Distribution



Lock Street/Headfield Road Priority Junction – Base Year 2017 without development traffic



Lock Street/Headfield Road Priority Junction – Base Year 2017 with development traffic

## APPENDIX E: LOCK STREET/HEADFIELD ROAD PICADY ASSESSMENT



Generated on 15/10/2012 17:42:57 using Junctions 8 (8.0.1.305)

## Junctions 8

### PICADY 8 - Priority Intersection Module

Version: 8.0.1.305 (25 May 2012)

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

Filename: (new file)

Path:

Report generation date: 15/10/2012 17:42:45

- » (Default Analysis 8of) - 2012 Base, AM
- » (Default Analysis 8of) - 2012 Base, PM
- » (Default Analysis 8of) - 2017 Base, AM
- » (Default Analysis 8of) - 2017 Base, PM
- » (Default Analysis 8of) - 2017 Base + Development, AM
- » (Default Analysis 8of) - 2017 Base + Development, PM

### Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
<b>A1 - 2012 Base</b>								
Stream B-AC	0.05	7.69	0.04	A	0.10	9.09	0.09	A
Stream C-AB	0.04	4.64	0.03	A	0.03	5.63	0.03	A
Stream C-A	"	"	"	"	"	"	"	"
Stream A-B	"	"	"	"	"	"	"	"
Stream A-C	"	"	"	"	"	"	"	"
<b>A1 - 2017 Base</b>								
Stream B-AC	0.07	8.54	0.07	A	0.18	11.90	0.15	B
Stream C-AB	0.08	4.35	0.05	A	0.58	7.28	0.28	A
Stream C-A	"	"	"	"	"	"	"	"
Stream A-B	"	"	"	"	"	"	"	"
Stream A-C	"	"	"	"	"	"	"	"
<b>A1 - 2017 Base + Development</b>								
Stream B-AC	0.23	9.95	0.19	A	0.28	12.35	0.22	B
Stream C-AB	0.15	4.42	0.08	A	0.15	5.76	0.08	A
Stream C-A	"	"	"	"	"	"	"	"
Stream A-B	"	"	"	"	"	"	"	"
Stream A-C	"	"	"	"	"	"	"	"

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

T1 - 2012 Base, AM\* model duration: 07:45 - 08:15  
 T2 - 2012 Base, PM\* model duration: 16:45 - 18:15  
 T3 - 2017 Base, AM\* model duration: 07:45 - 08:15  
 T4 - 2017 Base, PM\* model duration: 16:45 - 18:15  
 T5 - 2017 Base + Development, AM\* model duration: 07:45 - 08:15  
 T6 - 2017 Base + Development, PM\* model duration: 16:45 - 18:15

File using Junctions 8.0 r.305-d (15/10/2012 17:42:41)

### File summary

#### File Description



Generated on 15/10/2012 17:42:57 using Junctions 8 (8.0.1.305)

Title	Headfield Rd / Lock St
Location	Dewsbury
Site Number	
Date	15/10/2012
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	Andrew Lillington
Description	

### Analysis Options

Vehicle Length (M)	Co-Queue Variations	Calculate Forecast Capacity	Residual Capacity Criteria TQM	RFC Threshold	Average Delay Threshold (M)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

### Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate of Delay Units
m	kph	PCU	PCU	perhour	s	-Min	perMin

## (Default Analysis Set) - 2012 Base, AM

### Data Errors and Warnings

No errors or warnings

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include in Report	Use Specific Demand Set (M)	Specific Demand Set (M)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:MM)	Model Finish Time (HH:MM)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relativisticly	Relationship
2012 Base, AM	2012 Base	AM		ONE HOUR	07:45	08:15	90	15				✓		

## Junction Network

### Junctions

Name	Junction Type	Major Road Direction	Arm Order	Co-Queueing Delay	Junction Delay (M)	Junction LOS
Headfield Rd Lock St	T-Junction	Two-way	A,B,C		6.06	A

### Junction Network Options

Driving Side	Lighting
Left	Normal/Unknown



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## Arms

### Arms

Name	Name	Description	Arm Type
Headfield Road (N)	Headfield Road (N)		Major
Lock St	Lock St		Minor
Headfield Rd (S)	Headfield Rd (S)		Major

### Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Stops?	Stopping Queue (PCU)
Headfield Rd (S)	6.20		0.00		2.20	95.00	✓	0.00

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

### Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width of give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Staggered Lane Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Lock St	One lane	3.25										22	14

### Pedestrian Crossings

Name	Crossing Type
Headfield Road (N)	None
Lock St	None
Headfield Rd (S)	None

### 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	503.596	0.091	0.230	0.145	0.329
1	B-C	646.567	0.099	0.249	-	-
1	C-B	628.979	0.242	0.242	-	-

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

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

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Subsets from 40% split counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Time	Turning Proportions Vary Over Entry
		✓	✓	PCU Factors	2.00				✓	✓

## Entry Flows



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## General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Headfield Road (N)	ONE HOUR	✓	197.00	100.000
Lock St	ONE HOUR	✓	20.00	100.000
Headfield Rd (S)	ONE HOUR	✓	414.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Headfield Rd Lock St (for whole period)

From	To		
	A	B	C
A	0.000	9.000	188.000
B	8.000	0.000	12.000
C	401.000	13.000	0.000

### Turning Proportions (PCU) - Headfield Rd Lock St (for whole period)

From	To		
	A	B	C
A	0.00	0.05	0.95
B	0.40	0.00	0.60
C	0.97	0.03	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Headfield Rd Lock St (for whole period)

From	To		
	A	B	C
A	1.000	1.000	1.000
B	1.000	1.000	1.000
C	1.000	1.000	1.000

### Heavy Vehicle Percentages - Headfield Rd Lock St (for whole period)

From	To		
	A	B	C
A	0.000	0.000	0.000
B	0.000	0.000	0.000
C	0.000	0.000	0.000

## Results

### Results Summary for whole modelled period

Stream	Max WPC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queuing Delay (PCU-min)	Average Queuing Delay (s)	Rate of Queuing Delay (PCU-min/min)	Inclusive Total Queuing Delay (PCU-min)	Inclusive Average Queuing Delay (s)
B-AC	0.04	7.69	0.05	?	A	18.35	27.53	3.38	7.37	0.04	3.38	7.37
C-AB	0.03	4.64	0.04	?	A	20.57	30.85	2.81	5.47	0.03	2.81	5.47
C-A	-	-	-	-	-	350.33	538.99	-	-	-	-	-
A-B	-	-	-	-	-	8.28	12.39	-	-	-	-	-



A-C	-	-	-	-	-	172.51	258.77	-	-	-	-	-
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Main Results for each time segment

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	15.06	3.78	14.94	0.00	520.00	0.029	0.00	0.03	7.125	A
C-AB	15.24	3.81	15.15	0.00	790.80	0.019	0.00	0.02	4.641	A
C-A	296.44	74.11	296.44	0.00	-	-	-	-	-	-
A-B	6.78	1.69	6.78	0.00	-	-	-	-	-	-
A-C	141.54	35.38	141.54	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	17.98	4.49	17.96	0.00	507.55	0.035	0.03	0.04	7.352	A
C-AB	19.70	4.92	19.67	0.00	821.45	0.024	0.02	0.03	4.489	A
C-A	352.48	88.12	352.48	0.00	-	-	-	-	-	-
A-B	8.09	2.02	8.09	0.00	-	-	-	-	-	-
A-C	189.01	42.25	189.01	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	22.02	5.51	21.96	0.00	490.03	0.045	0.04	0.05	7.691	A
C-AB	26.73	6.68	26.69	0.00	862.88	0.031	0.03	0.04	4.305	A
C-A	429.09	107.27	429.09	0.00	-	-	-	-	-	-
A-B	9.91	2.48	9.91	0.00	-	-	-	-	-	-
A-C	206.99	51.75	206.99	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	22.02	5.51	22.02	0.00	490.02	0.045	0.05	0.05	7.692	A
C-AB	26.75	6.69	26.75	0.00	862.88	0.031	0.04	0.04	4.305	A
C-A	429.07	107.27	429.07	0.00	-	-	-	-	-	-
A-B	9.91	2.48	9.91	0.00	-	-	-	-	-	-
A-C	206.99	51.75	206.99	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	17.98	4.49	18.02	0.00	507.54	0.035	0.05	0.04	7.356	A
C-AB	19.72	4.93	19.76	0.00	821.47	0.024	0.04	0.03	4.492	A
C-A	352.46	88.12	352.46	0.00	-	-	-	-	-	-
A-B	8.09	2.02	8.09	0.00	-	-	-	-	-	-
A-C	189.01	42.25	189.01	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	15.06	3.78	15.06	0.00	520.00	0.029	0.04	0.03	7.132	A



C-AB	15.28	3.82	15.30	0.00	790.83	0.019	0.03	0.02	4.643	A
C-A	296.40	74.10	296.40	0.00	-	-	-	-	-	-
A-B	6.78	1.69	6.78	0.00	-	-	-	-	-	-
A-C	141.54	35.38	141.54	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalized Level Of Service	Signalized Level Of Service
B-AC	0.43	0.03	7.125	A	A
C-AB	0.34	0.02	4.641	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalized Level Of Service	Signalized Level Of Service
B-AC	0.54	0.04	7.352	A	A
C-AB	0.45	0.03	4.489	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalized Level Of Service	Signalized Level Of Service
B-AC	0.69	0.05	7.691	A	A
C-AB	0.61	0.04	4.305	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalized Level Of Service	Signalized Level Of Service
B-AC	0.70	0.05	7.692	A	A
C-AB	0.61	0.04	4.305	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalized Level Of Service	Signalized Level Of Service
B-AC	0.57	0.04	7.356	A	A
C-AB	0.45	0.03	4.492	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalized Level Of Service	Signalized Level Of Service
B-AC	0.46	0.03	7.132	A	A
C-AB	0.35	0.02	4.643	A	A



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C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

## (Default Analysis Set) - 2012 Base, PM

### Data Errors and Warnings

No errors or warnings

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include in Report	Use Specific Demand Set(s)	Specific Demand Set ID	Locked	Network First Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (decimal)	Model Finish Time (decimal)	Model Time Period Length (min)	Time Segment Length (min)	Results For Control Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2012 Base, PM	2012 Base	PM		ONE HOUR	16:45	18:15	90	15				✓		

## Junction Network

### Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Demands Delay	Junction Delay (s)	Junction LOS
Headfield Rd Lock St	T-Junction	Two-way	A,B,C		8.08	A

### Junction Network Options

Driving Side	Lighting
Left	Normal/Unknown

## Arms

### Arms

Name	Name	Description	Arm Type
Headfield Road (N)	Headfield Road (N)		Major
Lock St	Lock St		Minor
Headfield Rd (S)	Headfield Rd (S)		Major

### Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserves	Width of kerbed central reserves (m)	Has right turn bay	Width Per Right Turn (m)	Yieldity Per Right Turn (s)	Speed?	Stopping Queue (PCU)
Headfield Rd (S)	8.20		0.00		2.20	95.00	✓	0.00

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



### Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (L40) (m)	Lane Width (Right) (m)	Width at driveway (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)
Lock St	One lane	3.25										22	14

### Pedestrian Crossings

Name	Crossing Type
Headfield Road (M)	None
Lock St	None
Headfield Rd (S)	None

### 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	553.938	0.091	0.230	0.145	0.329
1	B-C	548.567	0.089	0.349	-	-
1	C-B	628.979	0.242	0.242	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments. Streams may be combined, in which case capacity will be adjusted. Values are shown for the first time segment only; they may differ for subsequent time segments.

## Traffic Flows

### Demand Set Data Options

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

## Entry Flows

### General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Loading Factor (%)
Headfield Road (M)	ONE HOUR	✓	419.00	100.000
Lock St	ONE HOUR	✓	35.00	100.000
Headfield Rd (S)	ONE HOUR	✓	199.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.000	18.000	401.000
	B	18.000	0.000	18.000
	C	188.000	11.000	0.000



### Turning Proportions (PCU) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.00	0.04	0.96
	B	0.50	0.50	0.50
	C	0.94	0.68	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

### Heavy Vehicle Percentages - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.000	0.000	0.000
	B	0.000	0.000	0.000
	C	0.000	0.000	0.000

## Results

### Results Summary for whole modelled period

From	Max RVC	Max Delay (s)	Max Queue (PCU)	Max 85th percentile Queue (PCU)	Max LOS	Average Demand (PCUs/hr)	Total Junction Arrivals (PCU)	Total Queuing Delay (PCU-min)	Average Queuing Delay (s)	Rate Of Queuing Delay (PCU-min/min)	Includes Total Queuing Delay (PCU-min)	Includes Average Queuing Delay (s)
B-AC	0.09	9.09	0.10	?	A	33.03	49.55	7.01	8.48	0.08	7.01	8.48
C-AB	0.03	5.83	0.03	?	A	13.89	20.53	2.28	6.67	0.03	2.28	6.67
C-A	-	-	-	-	-	188.92	253.38	-	-	-	-	-
A-B	-	-	-	-	-	18.52	24.78	-	-	-	-	-
A-C	-	-	-	-	-	367.98	651.95	-	-	-	-	-

### Main Results for each time segment

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

From	Total Demand (PCUs/hr)	Junction Arrivals (PCU)	Entry Flow (PCUs/hr)	Pre-emption Demand (Peds/hr)	Capacity (PCUs/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	27.10	6.78	26.88	0.00	477.71	0.057	0.00	0.08	7.981	A
C-AB	10.81	2.63	10.43	0.00	660.29	0.016	0.00	0.02	5.628	A
C-A	139.31	34.83	139.31	0.00	-	-	-	-	-	-
A-B	13.55	3.39	13.55	0.00	-	-	-	-	-	-
A-C	301.89	75.47	301.89	0.00	-	-	-	-	-	-



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

Stage	Total Demand (PCUs/hr)	Junction Arrivals (PCU)	Entry Flow (PCUs/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCUs/hr)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	32.36	8.09	32.30	0.00	460.11	0.070	0.06	0.07	8.414	A
C-AB	13.20	3.30	13.18	0.00	665.54	0.020	0.02	0.02	5.603	A
C-A	165.70	41.42	165.70	0.00	-	-	-	-	-	-
A-B	16.16	4.05	16.16	0.00	-	-	-	-	-	-
A-C	380.49	90.12	380.49	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCUs/hr)	Junction Arrivals (PCU)	Entry Flow (PCUs/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCUs/hr)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	39.64	9.91	39.54	0.00	435.65	0.091	0.07	0.10	9.096	A
C-AB	17.34	4.33	17.30	0.00	663.30	0.026	0.02	0.03	5.572	A
C-A	201.77	50.44	201.77	0.00	-	-	-	-	-	-
A-B	19.82	4.95	19.82	0.00	-	-	-	-	-	-
A-C	441.51	110.38	441.51	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCUs/hr)	Junction Arrivals (PCU)	Entry Flow (PCUs/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCUs/hr)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	39.64	9.91	39.63	0.00	435.64	0.091	0.10	0.10	9.090	A
C-AB	17.35	4.34	17.35	0.00	663.31	0.026	0.03	0.03	5.572	A
C-A	201.76	50.44	201.76	0.00	-	-	-	-	-	-
A-B	19.82	4.95	19.82	0.00	-	-	-	-	-	-
A-C	441.51	110.38	441.51	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCUs/hr)	Junction Arrivals (PCU)	Entry Flow (PCUs/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCUs/hr)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	32.36	8.09	32.48	0.00	460.10	0.070	0.10	0.08	8.421	A
C-AB	13.21	3.30	13.25	0.00	665.56	0.020	0.03	0.02	5.606	A
C-A	165.69	41.42	165.69	0.00	-	-	-	-	-	-
A-B	16.16	4.05	16.16	0.00	-	-	-	-	-	-
A-C	380.49	90.12	380.49	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCUs/hr)	Junction Arrivals (PCU)	Entry Flow (PCUs/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCUs/hr)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	27.10	6.78	27.17	0.00	477.69	0.057	0.08	0.06	7.593	A
C-AB	10.53	2.63	10.55	0.00	660.30	0.016	0.02	0.02	5.626	A
C-A	139.29	34.82	139.29	0.00	-	-	-	-	-	-
A-B	13.55	3.39	13.55	0.00	-	-	-	-	-	-
A-C	301.69	75.47	301.69	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/hr)	Average Delay Per Arriving Vehicle (s)	Designated Level Of Service	Signified Level Of Service
B-AC	0.05	0.05	7.981	A	A
C-AB	0.28	0.02	5.628	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-



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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.10	0.07	8.414	A	A
C-AB	0.36	0.02	5.603	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.45	0.10	9.088	A	A
C-AB	0.49	0.03	5.572	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.49	0.10	9.090	A	A
C-AB	0.50	0.03	5.572	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.17	0.08	8.421	A	A
C-AB	0.37	0.02	5.606	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	0.93	0.06	7.993	A	A
C-AB	0.26	0.02	5.626	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

**(Default Analysis Set) - 2017 Base, AM**

**Data Errors and Warnings**

No errors or warnings

**Analysis Set Details**

Name	Roundabout Capacity Model	Description	Include In Report	Use Specifics Default Set(s)	Specific Default Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis)	N/A		✓				100.000	100.000	



Set)														
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### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (minutes)	Model Finish Time (minutes)	Model Time Period Length (mins)	Time Segment Length (mins)	Results For Control Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Base_Alt	2017 Base	AM		ONE HOUR	07:45	09:15	90	15				✓		

## Junction Network

### Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Secondary Delay	Junction Delay (s)	Junction LOS
Headfield Rd Lock St	T-Junction	Two-way	A,B,C		6.00	A

### Junction Network Options

Driving Side	Lighting
Left	Normal/Unknown

## Arms

### Arms

Name	Name	Description	Arm Type
Headfield Road (N) Lock St	Headfield Road (N)		Major
	Lock St		Minor
Headfield Rd (S)	Headfield Rd (S)		Major

### Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Median	Stopping Space (PCU)
Headfield Rd (S)	6.20		0.00		2.20	95.00	✓	0.00

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

### Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Widths (Left) (m)	Lane Widths (Right) (m)	Width of driveway (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Substrate Floor Length	Floor Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Lock St	One lane	3.25										22	14

### Pedestrian Crossings

Name	Crossing Type
Headfield Road (N) Lock St	None
Headfield Rd (S)	None

### 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	503.936	0.091	0.230	0.145	0.329
1	B-C	546.567	0.099	0.249	-	-
1	C-B	528.979	0.242	0.242	-	-

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

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

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

## Traffic Flows

### Demand Set Data Options

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

## Entry Flows

### General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Loading Factor (%)
Headfield Road (N)	ONE HOUR	✓	278.00	100.000
Lock St	ONE HOUR	✓	28.00	100.000
Headfield Rd (S)	ONE HOUR	✓	579.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.000	13.000	253.000
	B	11.000	0.000	17.000
	C	561.000	18.000	0.000

### Turning Proportions (PCU) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.00	0.05	0.95
	B	0.39	0.00	0.61
	C	0.97	0.03	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Headfield Rd Lock St (for whole period)

		To		
		A	B	C



From	A	1,000	1,000	1,000
	B	1,000	1,000	1,000
	C	1,000	1,000	1,000

Heavy Vehicle Percentages - Headfield Rd Lock St (for whole period)

From	To			
		A	B	C
	A	0.000	0.000	0.000
	B	0.000	0.000	0.000
C	0.000	0.000	0.000	

## Results

### Results Summary for whole modelled period

From	Max RFC	Max Delay (s)	Max Queue (PCUs)	Max 85th Percentile Queue (PCUs)	Max LOS	Average Demand (PCUs/h)	Total Junction Arrivals (PCUs)	Total Queuing Delay (PCUs-h)	Average Queuing Delay (s)	Rate of Queuing Delay (PCUs-seconds)	Inclusive Total Queuing Delay (PCUs-h)	Inclusive Average Queuing Delay (s)
B-AC	0.07	8.54	0.07	?	A	25.89	38.54	5.15	8.01	0.06	5.15	8.01
C-AB	0.05	4.35	0.08	?	A	38.05	54.07	5.06	5.62	0.06	5.06	5.62
C-A	-	-	-	-	-	485.25	742.88	-	-	-	-	-
A-B	-	-	-	-	-	11.93	17.89	-	-	-	-	-
A-C	-	-	-	-	-	241.33	362.00	-	-	-	-	-

### Main Results for each time segment

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

From	Total Demand (PCUs/h)	Junction Arrivals (PCUs)	Entry Flow (PCUs/h)	Pedestrian Demand (Ped/h)	Capacity (PCUs/h)	RFC	Start Queue (PCUs)	End Queue (PCUs)	Delay (s)	LOS
B-AC	21.08	5.27	20.90	0.00	485.78	0.043	0.00	0.04	7.580	A
C-AB	24.86	6.17	24.51	0.00	853.09	0.029	0.00	0.04	4.345	A
C-A	411.24	102.81	411.24	0.00	-	-	-	-	-	-
A-B	9.79	2.45	9.79	0.00	-	-	-	-	-	-
A-C	198.00	49.50	198.00	0.00	-	-	-	-	-	-

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

From	Total Demand (PCUs/h)	Junction Arrivals (PCUs)	Entry Flow (PCUs/h)	Pedestrian Demand (Ped/h)	Capacity (PCUs/h)	RFC	Start Queue (PCUs)	End Queue (PCUs)	Delay (s)	LOS
B-AC	25.17	6.29	25.13	0.00	477.81	0.053	0.04	0.06	7.951	A
C-AB	32.63	8.16	32.58	0.00	894.04	0.037	0.04	0.05	4.178	A
C-A	487.88	121.97	487.88	0.00	-	-	-	-	-	-
A-B	11.89	2.92	11.89	0.00	-	-	-	-	-	-
A-C	236.43	59.11	236.43	0.00	-	-	-	-	-	-

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

From	Total Demand (PCUs/h)	Junction Arrivals (PCUs)	Entry Flow (PCUs/h)	Pedestrian Demand (Ped/h)	Capacity (PCUs/h)	RFC	Start Queue (PCUs)	End Queue (PCUs)	Delay (s)	LOS
B-AC	30.83	7.71	30.78	0.00	462.30	0.068	0.06	0.07	8.539	A
C-AB	50.78	12.69	50.64	0.00	971.17	0.052	0.05	0.08	3.911	A
C-A	586.73	146.68	586.73	0.00	-	-	-	-	-	-
A-B	14.31	3.58	14.31	0.00	-	-	-	-	-	-



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A-C	269.57	72.39	269.57	0.00	-	-	-	-	-	-
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**Main results: (08:30-08:45)**

Phase	Total Demand (PCU/s)	Junction Arrivals (PCU)	Entry Flow (PCU/s)	Pedestrian Demand (Ped/s)	Capacity (PCU/s)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	30.83	7.71	30.83	0.00	452.29	0.068	0.07	0.07	8.541	A
C-AB	50.81	12.70	50.80	0.00	971.23	0.052	0.08	0.08	3.911	A
C-A	586.68	146.67	586.68	0.00	-	-	-	-	-	-
A-B	14.31	3.58	14.31	0.00	-	-	-	-	-	-
A-C	269.57	72.39	269.57	0.00	-	-	-	-	-	-

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

Phase	Total Demand (PCU/s)	Junction Arrivals (PCU)	Entry Flow (PCU/s)	Pedestrian Demand (Ped/s)	Capacity (PCU/s)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	25.17	6.29	25.24	0.00	477.79	0.053	0.07	0.06	7.957	A
C-AB	32.67	8.17	32.79	0.00	894.12	0.037	0.08	0.05	4.180	A
C-A	487.84	121.96	487.84	0.00	-	-	-	-	-	-
A-B	11.89	2.92	11.89	0.00	-	-	-	-	-	-
A-C	236.43	59.11	236.43	0.00	-	-	-	-	-	-

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

Phase	Total Demand (PCU/s)	Junction Arrivals (PCU)	Entry Flow (PCU/s)	Pedestrian Demand (Ped/s)	Capacity (PCU/s)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	21.08	5.27	21.13	0.00	495.73	0.043	0.06	0.04	7.567	A
C-AB	24.74	6.19	24.79	0.00	853.16	0.029	0.05	0.04	4.347	A
C-A	411.16	102.79	411.16	0.00	-	-	-	-	-	-
A-B	9.79	2.45	9.79	0.00	-	-	-	-	-	-
A-C	198.00	49.50	198.00	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**

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

Phase	Queueing Total Delay (PCU-min)	Queueing Rate of Delay (PCU-min/s)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level of Service	Signalised Level of Service
B-AC	0.84	0.04	7.580	A	A
C-AB	0.55	0.04	4.345	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Phase	Queueing Total Delay (PCU-min)	Queueing Rate of Delay (PCU-min/s)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level of Service	Signalised Level of Service
B-AC	0.81	0.05	7.951	A	A
C-AB	0.75	0.05	4.178	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Phase	Queueing Total Delay (PCU-min)	Queueing Rate of Delay (PCU-min/s)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level of Service	Signalised Level of Service
B-AC	1.06	0.07	8.539	A	A
C-AB	1.21	0.08	3.911	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-



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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.09	0.07	8.541	A	A
C-AB	1.22	0.08	3.911	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	0.98	0.08	7.957	A	A
C-AB	0.78	0.05	4.180	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	0.89	0.05	7.587	A	A
C-AB	0.57	0.04	4.347	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

**(Default Analysis Set) - 2017 Base, PM**

**Data Errors and Warnings**

No errors or warnings

**Analysis Set Details**

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

**Demand Set Details**

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:MM)	Model Finish Time (HH:MM)	Model Time Period Length (min)	Time Segment Length (min)	Results For Control Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2017 Base, PM	2017 Base	PM		ONE HOUR	18:45	18:15	90	15				✓		

**Junction Network**

**Junctions**

Name	Junction Type	Major Road Direction	Axis Order	Do Defaults Delay	Junction Delay (s)	Junction LOS
Headfield Rd Lock St	T-Junction	Two-way	A,B,C		8.30	A



### Junction Network Options

Driving Side	Lighting
Left	Normal/Unknown

## Arms

### Arms

Name	Name	Description	Arm Type
Headfield Road (N)	Headfield Road (N)		Major
Lock St	Lock St		Minor
Headfield Rd (S)	Headfield Rd (S)		Major

### Major Arm Geometry

Name	Width of carriageway (m)	Has barbed central reserve	Width of barbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocked	Blocking Curve (PCU)
Headfield Rd (S)	6.20		0.00		2.20	95.00	✓	0.00

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

### Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width of pavement (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Pavement Length	Pavement Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Lock St	One lane	3.25										22	14

### Pedestrian Crossings

Name	Crossing Type
Headfield Road (N)	None
Lock St	None
Headfield Rd (S)	None

### 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	503.906	0.091	0.230	0.145	0.329
1	B-C	646.567	0.090	0.249	-	-
1	C-B	626.979	0.242	0.242	-	-

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

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

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Values Over Time	Vehicle Mix Values Over Turn	Vehicle Mix Values Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from employment counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
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		✓	✓	HV Percentages	2.00			✓	✓
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## Entry Flows

### General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (F)
Headfield Road (M)	ONE HOUR	✓	586.00	100.000
Lock St	ONE HOUR	✓	80.00	100.000
Headfield Rd (S)	ONE HOUR	✓	263.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.000	25.000	581.000
	B	25.000	0.000	25.000
	C	263.000	100.000	0.000

### Turning Proportions (PCU) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.00	0.04	0.96
	B	0.50	0.00	0.50
	C	0.72	0.28	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

### Heavy Vehicle Percentages - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.000	0.000	0.000
	B	0.000	0.000	0.000
	C	0.000	0.000	0.000

## Results

### Results Summary for whole modelled period

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Stream	Max RFC	Max Delay (s)	Max Queue (PCUs)	Max 95th percentile Queue (PCUs)	Max LOS	Average Demand (PCUs/s)	Total Junction Arrivals (PCUs)	Total Queueing Delay (PCUs/s)	Average Queueing Delay (s)	Rate of Queueing Delay (PCUs/s/mile)	Inclusive Total Queueing Delay (PCUs/s)	Inclusive Average Queueing Delay (s)
B-AC	0.15	11.90	0.18	?	B	45.88	68.62	12.02	10.48	0.13	12.03	10.48
C-AB	0.28	7.28	0.58	?	A	145.51	218.27	37.08	10.19	0.41	37.06	10.19
C-A	-	-	-	-	-	187.58	281.37	-	-	-	-	-
A-B	-	-	-	-	-	22.94	34.41	-	-	-	-	-
A-C	-	-	-	-	-	514.78	772.18	-	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (PCUs/s)	Junction Arrivals (PCUs)	Entry Flow (PCUs/s)	Pedestrian Demand (Ped/s)	Capacity (PCUs/s)	sFC	Start Queue (PCUs)	End Queue (PCUs)	Delay (s)	LOS
B-AC	37.64	9.41	37.28	0.00	428.45	0.088	0.00	0.10	9.243	A
C-AB	107.18	28.79	106.11	0.00	682.77	0.162	0.00	0.27	6.463	A
C-A	186.11	41.53	186.11	0.00	-	-	-	-	-	-
A-B	18.82	4.71	18.82	0.00	-	-	-	-	-	-
A-C	422.35	105.59	422.35	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCUs/s)	Junction Arrivals (PCUs)	Entry Flow (PCUs/s)	Pedestrian Demand (Ped/s)	Capacity (PCUs/s)	sFC	Start Queue (PCUs)	End Queue (PCUs)	Delay (s)	LOS
B-AC	44.95	11.24	44.83	0.00	397.84	0.113	0.10	0.13	10.195	B
C-AB	138.70	34.67	138.27	0.00	672.14	0.206	0.27	0.37	6.751	A
C-A	187.63	46.91	187.63	0.00	-	-	-	-	-	-
A-B	22.47	5.62	22.47	0.00	-	-	-	-	-	-
A-C	504.33	128.08	504.33	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCUs/s)	Junction Arrivals (PCUs)	Entry Flow (PCUs/s)	Pedestrian Demand (Ped/s)	Capacity (PCUs/s)	sFC	Start Queue (PCUs)	End Queue (PCUs)	Delay (s)	LOS
B-AC	55.05	13.76	54.84	0.00	357.64	0.154	0.13	0.18	11.880	B
C-AB	180.13	47.53	180.31	0.00	686.21	0.277	0.37	0.58	7.256	A
C-A	209.54	52.38	209.54	0.00	-	-	-	-	-	-
A-B	27.53	6.88	27.53	0.00	-	-	-	-	-	-
A-C	617.67	154.42	617.67	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCUs/s)	Junction Arrivals (PCUs)	Entry Flow (PCUs/s)	Pedestrian Demand (Ped/s)	Capacity (PCUs/s)	sFC	Start Queue (PCUs)	End Queue (PCUs)	Delay (s)	LOS
B-AC	55.05	13.76	55.05	0.00	357.49	0.154	0.18	0.18	11.902	B
C-AB	180.42	47.60	180.39	0.00	686.53	0.277	0.58	0.58	7.277	A
C-A	209.25	52.31	209.25	0.00	-	-	-	-	-	-
A-B	27.53	6.88	27.53	0.00	-	-	-	-	-	-
A-C	617.67	154.42	617.67	0.00	-	-	-	-	-	-

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

Stream	Total Demand (PCUs/s)	Junction Arrivals (PCUs)	Entry Flow (PCUs/s)	Pedestrian Demand (Ped/s)	Capacity (PCUs/s)	sFC	Start Queue (PCUs)	End Queue (PCUs)	Delay (s)	LOS
B-AC	44.95	11.24	45.16	0.00	397.61	0.113	0.18	0.13	10.219	B
C-AB	139.04	34.76	139.83	0.00	672.62	0.207	0.58	0.39	6.778	A
C-A	187.29	46.82	187.29	0.00	-	-	-	-	-	-



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A-B	22.47	5.62	22.47	0.00	-	-	-	-	-	-
A-C	504.33	128.08	504.33	0.00	-	-	-	-	-	-

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

Block	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	#PC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	37.64	9.41	37.77	0.00	426.15	0.008	0.13	0.10	9.273	A
C-AB	107.61	28.90	108.05	0.00	663.16	0.162	0.39	0.27	6.499	A
C-A	165.68	41.42	165.68	0.00	-	-	-	-	-	-
A-B	18.82	4.71	18.82	0.00	-	-	-	-	-	-
A-C	422.35	105.59	422.35	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**

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

Block	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.38	0.09	9.243	A	A
C-AB	3.94	0.28	6.463	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Block	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.84	0.12	10.195	B	B
C-AB	5.63	0.38	6.751	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Block	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.60	0.17	11.660	B	B
C-AB	8.72	0.58	7.266	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Block	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.70	0.18	11.902	B	B
C-AB	8.85	0.59	7.277	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Block	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.00	0.13	10.219	B	B
C-AB	5.80	0.39	6.778	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-



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

Issue	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.51	0.10	9.273	A	A
C-AB	4.11	0.27	6.489	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

## (Default Analysis Set) - 2017 Base + Development, AM

### Data Errors and Warnings

No errors or warnings

### Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Default Set(s)	Specific Default Set (s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

### Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:MM)	Model Finish Time (HH:MM)	Model Time Period Length (min)	Time Segment Length (min)	Results Per Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Retained
2017 Base + Development, AM	2017 Base + Development	AM		ONE HOUR	07:45	09:15	90	15				✓	

## Junction Network

### Junctions

Name	Junction Type	Major Road Direction	Arm Order	Dr. Sequence Delay	Junction Delay (s)	Junction LOS
Headfield Rd Lock St	T-Junction	Two-way	A,B,C		7.47	A

### Junction Network Options

Driving Side	Lighting
Left	Normal/Unknown

## Arms

### Arms

Name	Name	Description	Arm Type
Headfield Road (N) Lock St	Headfield Road (N)		Major
	Lock St		Minor
Headfield Rd (S)	Headfield Rd (S)		Major



### Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width Per Right Turn (m)	Visibility Per Right Turn (m)	Shoulder?	Stopping Distance (PCU)
Headfield Rd (S)	6.20		0.00		2.20	95.00	✓	0.00

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

### Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at driveway (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Stable Lane Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
Lock St	One lane	3.25										22	14

### Pedestrian Crossings

Name	Crossing Type
Headfield Road (N)	None
Lock St	None
Headfield Rd (S)	None

### Slope / Intercept / Capacity

#### Priority Interaction 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	503.936	0.091	0.230	0.145	0.329
1	B-C	648.567	0.069	0.249	-	-
1	C-B	628.979	0.242	0.242	-	-

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

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

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

## Traffic Flows

### Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Over Time	Vehicle Mix Over Time	Vehicle Mix Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Override from highlighted counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

## Entry Flows

### General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Headfield Road (N)	ONE HOUR	✓	262.00	100.000
Lock St	ONE HOUR	✓	77.00	100.000
Headfield Rd (S)	ONE HOUR	✓	569.00	100.000



## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.000	19.000	283.000
	B	31.000	0.000	48.000
	C	581.000	28.000	0.000

### Turning Proportions (PCU) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.00	0.07	0.93
	B	0.40	0.00	0.60
	C	0.95	0.05	0.00

## Vehicle Mix

### Average PCU Per Vehicle - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
	C	1.000	1.000	1.000

### Heavy Vehicle Percentages - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.000	0.000	0.000
	B	0.000	0.000	0.000
	C	0.000	0.000	0.000

## Results

### Results Summary for whole modelled period

Stage	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Ratio Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
B-AC	0.19	9.95	0.23	?	A	70.66	105.98	15.99	9.05	0.18	15.99	9.05
C-AB	0.08	4.42	0.15	?	A	57.52	88.26	9.58	6.68	0.11	9.58	6.68
C-A	-	-	-	-	-	482.96	724.43	-	-	-	-	-
A-B	-	-	-	-	-	17.43	28.15	-	-	-	-	-
A-C	-	-	-	-	-	241.33	382.00	-	-	-	-	-

### Main Results for each time segment



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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Steady Flow (PCU/h)	Pedestrian Demand (Ped/h)	Capacity (PCU/h)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (h)	LOS
B-AC	57.97	14.49	57.44	0.00	491.84	0.118	0.00	0.13	8.261	A
C-AB	38.40	9.60	38.13	0.00	852.25	0.045	0.00	0.07	4.421	A
C-A	405.03	101.26	405.03	0.00	-	-	-	-	-	-
A-B	14.30	3.58	14.30	0.00	-	-	-	-	-	-
A-C	198.00	49.50	198.00	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Steady Flow (PCU/h)	Pedestrian Demand (Ped/h)	Capacity (PCU/h)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (h)	LOS
B-AC	69.22	17.31	69.07	0.00	473.07	0.146	0.13	0.17	8.908	A
C-AB	54.84	13.71	54.71	0.00	907.57	0.060	0.07	0.10	4.223	A
C-A	474.66	118.67	474.66	0.00	-	-	-	-	-	-
A-B	17.08	4.27	17.08	0.00	-	-	-	-	-	-
A-C	236.43	59.11	236.43	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Steady Flow (PCU/h)	Pedestrian Demand (Ped/h)	Capacity (PCU/h)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (h)	LOS
B-AC	84.78	21.19	84.53	0.00	446.67	0.190	0.17	0.23	9.933	A
C-AB	79.15	19.79	78.93	0.00	970.17	0.062	0.10	0.15	4.041	A
C-A	589.35	142.34	589.35	0.00	-	-	-	-	-	-
A-B	20.92	5.23	20.92	0.00	-	-	-	-	-	-
A-C	289.57	72.39	289.57	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Steady Flow (PCU/h)	Pedestrian Demand (Ped/h)	Capacity (PCU/h)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (h)	LOS
B-AC	84.78	21.19	84.77	0.00	446.64	0.190	0.23	0.23	9.948	A
C-AB	79.24	19.81	79.24	0.00	970.27	0.062	0.15	0.15	4.043	A
C-A	589.26	142.31	589.26	0.00	-	-	-	-	-	-
A-B	20.92	5.23	20.92	0.00	-	-	-	-	-	-
A-C	289.57	72.39	289.57	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Steady Flow (PCU/h)	Pedestrian Demand (Ped/h)	Capacity (PCU/h)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (h)	LOS
B-AC	69.22	17.31	69.48	0.00	473.02	0.146	0.23	0.17	8.927	A
C-AB	54.95	13.74	55.16	0.00	907.74	0.061	0.15	0.10	4.226	A
C-A	474.55	118.64	474.55	0.00	-	-	-	-	-	-
A-B	17.08	4.27	17.08	0.00	-	-	-	-	-	-
A-C	236.43	59.11	236.43	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Steady Flow (PCU/h)	Pedestrian Demand (Ped/h)	Capacity (PCU/h)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (h)	LOS
B-AC	57.97	14.49	58.12	0.00	491.58	0.118	0.17	0.14	8.309	A
C-AB	38.55	9.64	38.68	0.00	852.38	0.045	0.10	0.07	4.425	A
C-A	404.68	101.22	404.68	0.00	-	-	-	-	-	-
A-B	14.30	3.58	14.30	0.00	-	-	-	-	-	-
A-C	198.00	49.50	198.00	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**



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**Queuing Delay results: (07:45-08:00)**

Route	Queuing Total Delay (PCU-min)	Queuing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	1.91	0.13	8.281	A	A
C-AB	0.98	0.07	4.421	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Route	Queuing Total Delay (PCU-min)	Queuing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.48	0.17	8.908	A	A
C-AB	1.48	0.10	4.223	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Route	Queuing Total Delay (PCU-min)	Queuing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	3.37	0.22	9.933	A	A
C-AB	2.29	0.15	4.041	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Route	Queuing Total Delay (PCU-min)	Queuing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	3.48	0.23	9.948	A	A
C-AB	2.31	0.15	4.043	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Route	Queuing Total Delay (PCU-min)	Queuing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.87	0.18	8.927	A	A
C-AB	1.51	0.10	4.228	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Route	Queuing Total Delay (PCU-min)	Queuing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.08	0.14	8.309	A	A
C-AB	1.01	0.07	4.425	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

**(Default Analysis Set) - 2017 Base +**



# Development, PM

## Data Errors and Warnings

No errors or warnings

## Analysis Set Details

Name	Roundabout Capacity/Model	Description	Include in Report	Use Specific Demand Set(s)	Specific Demand Set ID	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
(Default Analysis Set)	N/A		✓				100.000	100.000	

## Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:MM)	Model Finish Time (HH:MM)	Model Time Period Length (min)	Time Segment Length (min)	Results For Control Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Retained
2017 Base + Development, PM	2017 Base + Development	PM		ONE HOUR	16:45	17:15	30	15				✓	

# Junction Network

## Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do-Overwrite Delay	Junction Delay (s)	Junction LOS
Headfield Rd Lock St	T-Junction	Two-way	A,B,C		9.93	A

## Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

# Arms

## Arms

Name	Name	Description	Arm Type
Headfield Road (N)	Headfield Road (N)		Major
Lock St	Lock St		Minor
Headfield Rd (S)	Headfield Rd (S)		Major

## Major Arm Geometry

Name	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn slip	Width Per Right Turn (m)	Visibility Per Right Turn (m)	Blocked?	Blocking Cause (PCU)
Headfield Rd (S)	6.20		0.00		2.20	95.00	✓	0.00

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

## Minor Arm Geometry

Name	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width of shoulder (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)
Lock St	One lane	3.25										22	14



### Pedestrian Crossings

Name	Crossing Type
Headfield Road (N)	None
Lock St	None
Headfield Rd (S)	None

### 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	503.938	0.091	0.230	0.145	0.329
1	B-C	648.567	0.099	0.249	-	-
1	C-B	628.979	0.242	0.242	-	-

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 line segment only; they may differ for subsequent line segments.

## Traffic Flows

### Demand Set Data Options

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

## Entry Flows

### General Flows Data

Name	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
Headfield Road (N)	ONE HOUR	✓	615.00	100.000
Lock St	ONE HOUR	✓	75.00	100.000
Headfield Rd (S)	ONE HOUR	✓	291.00	100.000

## Turning Proportions

### Turning Counts or Proportions (PCU/hr) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C
From	A	0.000	54.000	581.000
	B	38.000	0.000	38.000
	C	283.000	28.000	0.000

### Turning Proportions (PCU) - Headfield Rd Lock St (for whole period)

		To		
		A	B	C



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From	A	0.00	0.00	0.91
	B	0.50	0.00	0.50
	C	0.90	0.10	0.00

## Vehicle Mix

Average PCU Per Vehicle - Headfield Rd Lock St (for whole period)

From	To			
		A	B	C
	A	1.000	1.000	1.000
	B	1.000	1.000	1.000
C	1.000	1.000	1.000	

Heavy Vehicle Percentages - Headfield Rd Lock St (for whole period)

From	To			
		A	B	C
	A	0.000	0.000	0.000
	B	0.000	0.000	0.000
C	0.000	0.000	0.000	

## Results

Results Summary for whole modelled period

Stage	Max sPC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS	Average Demand (PCU/s)	Total Junction Arrivals (PCU)	Total Queuing Delay (PCU/s)	Average Queuing Delay (s)	Rate Of Queuing Delay (PCU/s/minute)	Inclusive Total Queuing Delay (PCU/s)	Inclusive Average Queuing Delay (s)
B-AC	0.22	12.35	0.28	?	B	69.74	104.61	18.83	10.80	0.21	18.83	10.80
C-AB	0.08	5.76	0.15	?	A	40.57	60.85	9.16	9.03	0.10	9.16	9.03
C-A	-	-	-	-	-	226.46	339.69	-	-	-	-	-
A-B	-	-	-	-	-	40.55	74.33	-	-	-	-	-
A-C	-	-	-	-	-	514.76	772.16	-	-	-	-	-

Main Results for each time segment

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

Stage	Total Demand (PCU/s)	Junction Arrivals (PCU)	Entry Flow (PCU/s)	Pedestrian Demand (Ped/s)	Capacity (PCU/s)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	57.22	14.30	56.62	0.00	437.17	0.131	0.00	0.15	9.446	A
C-AB	29.71	7.43	29.45	0.00	696.72	0.045	0.00	0.07	5.736	A
C-A	189.37	47.34	189.37	0.00	-	-	-	-	-	-
A-B	40.65	10.16	40.65	0.00	-	-	-	-	-	-
A-C	422.35	105.59	422.35	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/s)	Junction Arrivals (PCU)	Entry Flow (PCU/s)	Pedestrian Demand (Ped/s)	Capacity (PCU/s)	sPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
B-AC	68.32	17.08	68.13	0.00	411.31	0.166	0.15	0.20	10.465	B



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C-AB	38.28	9.57	38.17	0.00	664.25	0.058	0.07	0.09	5.752	A
C-A	223.33	55.83	223.33	0.00	-	-	-	-	-	-
A-B	48.54	12.14	48.54	0.00	-	-	-	-	-	-
A-C	504.33	128.08	504.33	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Entry Flow (PCU/h)	Pedestrian Demand (P/h/m)	Capacity (PCU/h)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOB
B-AC	63.68	20.92	63.33	0.00	375.15	0.223	0.20	0.28	12.321	B
C-AB	53.58	13.40	53.37	0.00	679.44	0.079	0.09	0.14	5.751	A
C-A	285.81	68.70	285.81	0.00	-	-	-	-	-	-
A-B	59.46	14.86	59.46	0.00	-	-	-	-	-	-
A-C	617.87	154.42	617.87	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Entry Flow (PCU/h)	Pedestrian Demand (P/h/m)	Capacity (PCU/h)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOB
B-AC	63.68	20.92	63.67	0.00	375.11	0.223	0.28	0.28	12.351	B
C-AB	53.65	13.41	53.65	0.00	679.53	0.079	0.14	0.15	5.757	A
C-A	285.75	68.69	285.75	0.00	-	-	-	-	-	-
A-B	59.46	14.86	59.46	0.00	-	-	-	-	-	-
A-C	617.87	154.42	617.87	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Entry Flow (PCU/h)	Pedestrian Demand (P/h/m)	Capacity (PCU/h)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOB
B-AC	68.32	17.08	68.65	0.00	411.25	0.166	0.28	0.20	10.519	B
C-AB	38.35	9.59	38.56	0.00	664.37	0.058	0.15	0.09	5.756	A
C-A	223.25	55.81	223.25	0.00	-	-	-	-	-	-
A-B	48.54	12.14	48.54	0.00	-	-	-	-	-	-
A-C	504.33	128.08	504.33	0.00	-	-	-	-	-	-

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

Stage	Total Demand (PCU/h)	Junction Arrivals (PCU)	Entry Flow (PCU/h)	Pedestrian Demand (P/h/m)	Capacity (PCU/h)	SPC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOB
B-AC	57.22	14.30	57.41	0.00	437.10	0.131	0.20	0.15	9.466	A
C-AB	29.82	7.45	29.92	0.00	656.81	0.045	0.09	0.07	5.746	A
C-A	189.26	47.32	189.26	0.00	-	-	-	-	-	-
A-B	40.65	10.16	40.65	0.00	-	-	-	-	-	-
A-C	422.35	105.59	422.35	0.00	-	-	-	-	-	-

**Queueing Delay Results for each time segment**

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.14	0.14	9.446	A	A
C-AB	0.98	0.07	5.738	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stage	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.06	0.19	10.485	B	B
C-AB	1.38	0.09	5.752	A	A



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C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queuing Total Delay (FCU-min)	Queuing Rate Of Delay (FCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	4.08	0.27	12.321	B	B
C-AB	2.17	0.14	5.751	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queuing Total Delay (FCU-min)	Queuing Rate Of Delay (FCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	4.28	0.28	12.351	B	B
C-AB	2.20	0.15	5.757	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queuing Total Delay (FCU-min)	Queuing Rate Of Delay (FCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	3.13	0.21	10.519	B	B
C-AB	1.42	0.09	5.755	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-

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

Stream	Queuing Total Delay (FCU-min)	Queuing Rate Of Delay (FCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
B-AC	2.35	0.16	9.485	A	A
C-AB	1.01	0.07	5.745	A	A
C-A	-	-	-	-	-
A-B	-	-	-	-	-
A-C	-	-	-	-	-