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Transportation Planning : Infrastructure Design

TRANSPORT ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT ON THE ENTERPRISE SOUTH LIVERPOOL ACADEMY, HEATH ROAD CAMPUS SITE, LIVERPOOL

REDROW HOMES (NW) LTD.

FEBRUARY 2013

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CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Redrow Homes (NW) Ltd is proposing a residential development of up to 127 dwellings in two phases on land currently occupied by the Enterprise South Liverpool Academy (ESLA) Heath Road Campus on Heath Road, Liverpool.

1.2 SCP has been commissioned to prepare this Transport Assessment (TA) report which will address the variety of transportation matters associated with the proposed residential development and support the planning application for the proposals.

1.3 The Heath Road Campus site is located to the south east of Liverpool city centre within an established residential neighbourhood on the eastern urban fringe of West Allerton.

1.4 The application site covers the entire ESLA Heath Road Campus site, encompassing a number of school buildings of various sizes on the eastern side and sports pitches on the western side.

1.5 The site location is shown on Figures 1.

Figure 1 – Site Location – City Context

Purpose and Structure of the Report

1.6 This TA has been prepared in order to demonstrate to the Local Planning and Highway Authority (Liverpool City Council - LCC) that the development can be satisfactorily accommodated from an access, highway safety and traffic capacity perspective.

1.7 In addition, the TA has been prepared in accordance with the Department for Transports (DfT's) March 2007 "Guidance on Transport Assessment" document and also presents an assessment of the accessibility of the site in relation to the "Minimum Accessibility Standard Assessment" (MASA) criteria within LCC's "Ensuring a Choice of Travel" SPD.

1.8 The structure of this TA is set out below:-

- Chapter 2 – describes the existing highway network in the vicinity of the site;
- Chapter 3 – provides a review of the accessibility of the site in relation to MASA;
- Chapter 4 – provides a description of the proposed development;
- Chapter 5 – estimates the trip generation associated with Phase 1 of the proposed development and its impact on the local highway network;
- Chapter 6 – sets out the impact of Phase 2 of the proposal and assesses the cumulative impact on the local highway network; and
- Chapter 7 – provides the summary and conclusions to the above chapters.

2.0 EXISTING CONDITIONS

General

2.1 As mentioned above, the application site is located within an established residential neighbourhood to the east of West Allerton.

2.2 It is currently occupied by the ESLA Heath Road Campus and is bounded by the B5180 Mather Avenue to the west, a housing estate to the north, Allerton Road to the east and Heath Road to the south.

2.3 An aerial image of the site and surrounding highway network is shown on **Figure 2** below:

Figure 2 – Site Location

Existing Site Accesses

2.4 Presently, there are three main gated vehicular access points into the site from Heath Road that provides only for a left turn in and a left turn out from the site because of the presence of a central reserve.

2.5 There is a secondary gated access point to the east of the site onto Allerton Road.

Description of Local Highway Network

2.6 The site is bordered by three roads as shown on **Figure 2**. These roads are examined below to gauge their suitability for use in relation to the proposed development.

Heath Road

2.7 Heath Road provides the primary highway access points serving the site as mentioned above. It runs in an /east/west direction between Mather Avenue and Allerton Road and is approximately 400m in length.

2.8 Heath Road is a 6m two-lane dual carriageway road with the presence of a central reserve that is approximately 20m wide separating opposing traffic streams. The presence of an extended 20m wide island physically prevents traffic from turning right in and right out of the site. Therefore, access to the site is only possible for traffic travelling in the easterly direction on Heath Road and all traffic out of the site has to turn left onto Heath Road eastbound.

2.9 The easterly direction of Heath Road forms the entire southern boundary of the site while the westerly direction provides frontage to residential properties facing the site. The existing dwellings along the street have direct frontage access to the carriageway from their driveways.

2.10 There are no restrictions on parking along Heath Road and there is heavy on-street parking at the present time; most likely connected with the academy use. It is well lit and is subject to a 20mph speed limit. There are footways of at least 2m wide present on both sides of Heath Road. Traffic calming in the form of road humps is present along the street and this restricts vehicle speeds to generally less than 20mph.

2.11 At the western end, Heath Road forms a signalised crossroads junction with Mather Avenue as Heath Road continues beyond this junction in a westerly direction. At the eastern end, Heath Road joins Allerton Road as a minor arm to form a priority junction. The visibility to the left emerging from Heath Road at this junction is restricted by the existing academy boundary wall while the visibility to the right is good.

Allerton Road

2.12 Allerton Road forms the eastern boundary of the site and at present provides a secondary gated access point for the site.

2.13 It is a local distributor road serving the eastern fringes of West Allerton. Allerton Road forms a link of about 3km running in a north/south direction between the B5180 Mather Avenue near Allerton Library and the B5171 Woolton Road. It joins both Mather Avenue to the north and Woolton Road to the south as a simple priority controlled junction.

2.14 The section of Allerton Road that bounds the site is a single carriageway road circa 6m wide and is subject to a speed limit of 30 mph. Footways of at least 2m wide are present on both sides of Allerton Road and it experiences little or no on-street parking. In the vicinity of the site, it is a relatively quiet road in traffic terms.

2.15 The road is well lit with street lighting columns present at regular intervals.

Mather Avenue

2.16 Mather Avenue is a local distributor and a locally important route that runs in a north/south direction connecting the A5058 to the north and the A561 to the south.

2.17 The B5180 Mather Avenue is a 6.5m - 7.5m two-lane dual carriageway road with the presence of a central reserve that is approximately 8m wide separating opposing traffic streams.

2.18 In the vicinity of the site, the southbound carriageway of Mather Avenue forms the western boundary of the site while the northbound direction provides frontage to residential properties facing the site. The dwellings along Mather Avenue have direct frontage access to the carriageway from their driveways. This section of road is residential in character with mature trees, verge and footways present on both sides

2.19 There are no restrictions on parking along Mather Avenue in the vicinity of the site, it is well lit and is subject to a 40mph speed limit with footways of at least 2m wide present on both sides. In addition, there are verges of up to 2m wide on both sides of the dual carriageway.

Base Year Traffic Condition.

2.20 In order to establish existing traffic flow demand on the local highway network, weekday traffic flow data has been obtained between the hours of 07:30 to 09:30 and 16:00 to 18:00 at the following junctions:-

- Heath Road/Mather Avenue junction; and
- Heath Road/Allerton Road.

2.21 The raw traffic survey data is presented in **Appendix 1** along with a summary of the peak hour traffic flows. From this data, the AM and PM network peak hours have been established as being 08:00 to 09:00 and 16:00 to 17:00.

2.22 The data shows that Heath Road carries 159vph eastbound (towards the site) and 202vph westbound (towards the junction with Mather Avenue) in the calculated AM peak hour (08:00 – 09:00). In the calculated PM peak (16:00 – 17:00), the eastbound and westbound flows were 148vph and 88vph respectively.

2.23 In the calculated AM peak hour (08:00 – 09:00), the data shows that Allerton Road near the site carries 85vph northbound and 67vph southbound towards the Allerton Road/Heath Road junction. In the calculated PM peak hour (16:00 – 17:00), the data shows that Allerton Road near the site carries 70vph northbound and 63vph southbound towards the Allerton Road/Heath Road junction.

2.24 The total junction inflow at the Mather Avenue/Heath Road is 1727vph in the calculated AM peak hour (08:00 – 09:00) and 1504vph in the calculated PM peak hour (16:00 – 17:00).

Baseline Capacity Assessments

2.25 Capacity assessments at the Heath Road/Allerton Road and Heath Road/Mather Avenue junctions have been undertaken using PICADY software and LINSIG software respectively.

2.26 The PICADY model results provide a Ratio of Flow vsCapacity (RFC),along with an estimate of the likely traffic queues. RFC values between 0.00 and 0.85 are generally accepted as representing stable and acceptable operating conditions. Values between 0.85 and one and represents variable operation (i.e. possible queues building up at the junction during the period under consideration and increases in vehicular delay moving through the junction). RFC values in excess of one represents overloaded conditions (i.e. congested conditions).

2.27 LINSIG software presents results as a percentage Degree of Saturation (DoS) and corresponding likely traffic queues for each modelled link at the junction. For traffic signals it is generally accepted that DoS of 90% or less on individual links represents satisfactory signal operation. DoS of between 90% and 100% represent variable operation which warrants further investigation and values in excess of 100% represent overloaded conditions.

2.28 The detailed capacity assessment results are contained in **Appendix 2**

Heath Road/Mather Avenue junction

2.29 LINSIG software has been used for the assessment at this junction and the results are summarised below:-

AM and PM Peaks 2013 Base Year Assessment: Existing Conditions

	Weekday AM Peak (08:00 – 09:00)		Weekday PM Peak (16:00 – 17:00)	
	DoS	Queue	DoS	Queue
Heath Rd (west) - Left/ Right/ Ahead	76.6%	6.5	69.9%	5.7
Mather Ave. (north) - Ahead/ Left	61.0%	5.1	51.9%	4.1
Mather Ave. (north) – Right/ Ahead	74.4%	5.8	61.3%	4.4
Mather Ave (south) – Left/ Ahead	73.4%	6.1	73.2%	6.1
Mather Ave (south) - Ahead /Right	69.5%	5.7	69.3%	5.7
Heath Rd (east) - Ahead /Left	41.9%	2.6	16.3%	0.9
Heath Rd (east) - Right	22.6%	0.8	9.7%	0.3
PRC (%)	17.5		22.9	

2.30 In the AM peak, the highest DoS value was found to be 76.6% on the Heath Road (west) arm. In the PM peak, the DoS was lower at around 73.2% on the Mather Avenue (south) nearside lane. These values are significantly below the desirable minimum value for practical reserve capacity of 90% and therefore suggest that there is no capacity problem at this junction.

Heath Road/Allerton Road

2.31 PICADY software has been used for the assessment at this junction and the results are summarised below:-

AM and PM Peaks 2013 Base Year Assessment: Existing Conditions

	Weekday AM Peak (08:00 – 09:00)		Weekday PM Peak (17:00 – 18:00)	
	RFC	Queue	RFC	Queue
B-C: Heath Road - **left**	0.063	0	0.053	0
B-A: Heath Road - **right**	0.249	0	0.236	0
C-B: Allerton Road - **right**	0.000	0	0.000	0

2.32 During the AM peak period, the highest RFC value was found to be 0.249 on the Heath Road arm. In the PM peak, the RFC was lower at around 0.236 on the Heath Road arm. These values

are significantly below the desirable minimum value for practical reserve capacity of 0.850 and therefore suggest that there is no capacity problem at this junction.

3.0 ACCESSIBILITY

General

3.1 The compliance of the proposed residential development with LCC's adopted policy on accessibility is set out in this chapter. Specifically, the scheme has been assessed in terms of its compliance with the "Minimum Accessibility Standard Assessment" (MASA) criteria within LCC's "Ensuring a Choice of Travel" SPD, as requested by LCC during pre-application scoping discussions.

3.2 The MASA sets out a checklist of accessibility criteria for new schemes and sets a minimum score (by use class) for access by foot, cycle, public transport and vehicles. The format of the MASA for each travel mode is repeated in the sections below, together with the completed scores and accompanying explanatory text, where appropriate.

Pedestrian Accessibility

3.3 The MASA pedestrian accessibility test is shown in the table below:-

Access on Foot			**Points**	**Score**
Safety	Is there Is there safe pedestrian access to and within the site, and for pedestrians passing the site (2m minimum width footpath on both sides of the road)? If no your application must address safe pedestrian access.			**Yes**/~~No~~
Location	Housing Development: Is the development within 500m of a district or local centre (see Accessibility Map 1 in Appendix F)	~~Yes~~	2	**0**
	Other development: Is the density of existing local housing (i.e. within 800m) more than 50 houses per hectare (see Accessibility Map 4 in Appendix F)	**No**	**0**	
Internal Layout	Does 'circulation' and access inside the sites reflect direct, safe and easy to use pedestrian routes for all; with priority given to pedestrians when they have to cross roads or cycle routes?	**Yes**	**1**	**1**
		~~No~~	0	
External Layout	Are there barriers between the site and local facilities or housing which restrict pedestrian access? (see Merseyside Code of Practice on Access and Mobility) e.g: • No dropped kerbs at crossings or on desire lines; • Steep gradients; • A lack of a formal crossing where there is heavy traffic; • Security concerns, e.g. lack of lighting.	There are barriers	-2	**1**
		There are no barriers	**1**	
Other	The development links to identified recreational walking network (see Accessibility Map 1). If not, please provide reasons why not.			**Yes**/~~No~~
			Total (B)	**2**

Summary	Box A: Minimum Standard (from Table 3.1)	**4**	**Comments or action needed to correct any shortfall – NONE** NEEDED. The site is within

	Box B: Actual Score	2	walking distance to local facilities and a high frequency bus corridor which provide regular services to/from Local, District and City Centre within Liverpool.

3.4 The Actual Score in the table above indicates that access to the site by foot to Local centre or district centre is below the minimum MASA criteria. Whilst it is acknowledged that there is a shortfall, this is because the site is not within 500m of the a district or local centre as defined by MASA. However, the Department for Transport publication, Manual for Street (MfS), states that walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. It goes on to state that this is not an upper limit and that walking offers the greatest potential to replace short car trips, particularly those under 2km. On that basis the site is within a conformable walking distance of a range of facilities such as a Allerton Tower Park, Stephens pharmacy at the Heath Road/Mather Avenue junction, Springwood Heath Primary School on Danefield Road, a post office on Greenhill Road/Heath Road junction, Tesco superstore in Woolton, and within easy access of the bus stops on Mather Avenue.

Cycle Accessibility

3.5 The MASA cycle accessibility test is shown in the table below:-

Access by Cycle			**Points**	**Score**
Safety	Are there safety issues for cyclists either turning into or out of the site or at road junctions within 400m of the site (e.g. dangerous right turns for cyclists due to the level of traffic)? If yes, you must address safety issues in your application.			~~Yes~~/No
Cycle Parking	Does the development meet cycle parking standards, in a secure location with natural surveillance, or where appropriate contribute to communal cycle parking facilities? If no, you must address cycle parking standards and cycle parking facilities.			Yes/~~No~~
Location	Housing Development: Is the development within 1 mile of a district or local centre (see Accessibility Map 1)	Yes	2	2
	Other Development: Is the density of local housing (e.g. within 1 mile) more than 50 houses per hectare (see Accessibility Map 4 in Appendix F)	~~No~~	0	
Internal Layout	Does 'circulation' and access inside the site reflect direct and safe cycle routes; with priority given to cyclists where they meet motor vehicles?	Yes	1	1
		~~No~~	0	
External Access	The development is within 400m of an existing or proposed cycle route (see Accessibility Map 1 in Appendix F) and/or proposes to create a link to a cycle route, or develop a route?		1	1
	The development is not within 400m of an existing or proposed cycle route (see Accessibility Map 1 in Appendix F)		-1	

Other	Development includes shower facilities and lockers for cyclists	**Yes**	**1**	**1**
		~~No~~	0	
			Total (B)	**5**

Summary	Box A: Minimum Standard (from Table 3.1)	**5**	**Comments or action needed to correct any shortfall – NONE NEEDED**
	Box B: Actual Score	**5**	

3.6 As demonstrated in the table above, access to the site by cycle meets the minimum MASA criteria and is therefore considered acceptable.

Public Transport Accessibility

3.7 The MASA public transport test is shown in the table below:-

Access by Public Transport			**Points**	**Score**
Location and access to public transport	Is the site within a 200m safe and convenient walking distance of a bus stop, and/or within 400m of a rail station? (See Accessibility Map 2 in Appendix F).	**Yes**	**2**	**2**
		~~No~~	0	
	Are there barriers on direct and safe pedestrian routes to bus stops or rail stations i.e: • A lack of dropped kerbs; • Pavements less than 2m wide; • A lack of a formal crossing where there is heavy traffic; or • Bus access kerbs.	There are barriers	-2	**1**
		There are no barriers	**1**	
Frequency	High (four or more bus services or trains an hour)		**2**	**2**
	Medium (two or three bus services or trains an hour)		1	
	Low (less than two bus services or trains an hour)		0	
Other	The proposal contributes to bus priority measures serving the site		1	
	The proposal contributes to bus stops, bus interchange or bus or rail stations in the vicinity and/or provides bus stops or bus interchange in the site		1	
	The proposal contributes to an existing or new bus service		1	
			Total (B)	**5**

Summary	Box A: Minimum Standard (from Table 3.1)	**5**	**Comments or action needed to correct any shortfall – NONE NEEDED**
	Box B: Actual Score	**5**	

3.8 As demonstrated in the table above, access to the site by public transport accords with the minimum MASA criteria, and is therefore considered acceptable.

3.9 The nearest bus stops to the site are located on Mather Avenue where the high frequency service is provided.

3.10 The stops are served by services 86, 86A and 86D and the bus service frequency are summarised in the table below;

Bus Services and Frequencies

Service No.	Bus Stop Route along Mather Avenue	Frequency		
		Mon-Fri	**Saturday**	**Sunday**
86/86A 86C/86D	Liverpool - Allerton Road or Liverpool South Parkway Liverpool - Allerton Road, Garston or Liverpool John Lennon Airport	High frequency services every 3 minutes as a result of alternating buses between Stagecoach and Arriva From 06:00 – 00.19	High frequency services every 5 minutes as a result of alternating buses between Stagecoach and Arriva From 06:00 – 23.30	Every 7 minutes alternating buses between Stagecoach and Arriva From 06:00 – 23.30

3.11 These bus services provide direct and regular services to the local area, including Liverpool Bus Station, Liverpool John Lennon Airport, Liverpool South Parkway railway station, Mather Avenue Tesco store, Upper Parliament Street, and Queen Square Bus Station.

3.12 Some Stagecoach Route 86 buses change to Route 82 at Liverpool South Parkway, continuing via Woolton Road, Horrocks Avenue, Speke Road, St Mary's Road, Aigburth Road, Dingle Lane, Park Road, Park Place, St James Place, Great George Street, Berry Street, Renshaw Street, Ranelagh Street, Hanover Street to Liverpool Bus Station.

3.13 Access to Liverpool South Parkway railway station is convenient by bus and this station is on the national rail line connecting to Liverpool Lime Street where there are services to Manchester and London. Train services are available at frequent intervals during the daytime and mainly served by trains travelling to Liverpool Lime Street train station.

Vehicle Access and Parking

3.14 The MASA vehicle access and parking test is shown in the table below:-

Vehicle Access and Parking		Points	Score
Vehicle access and circulation	Is there safe access to and from the road? If no, you must address safety issues.		Yes/~~No~~
	Can the site be adequately serviced? If no, you must address service issues.		Yes/~~No~~
	Is the safety and convenience of other users (pedestrians, cyclists and public transport) affected by the proposal? If yes, you must address safety issues.		~~Yes~~/No
	Has access for the emergency services been provided? If no, you must provide emergency service provision.		Yes/~~No~~
	For development which generates significant freight movements, is the site easily accessed from the road or rail freight route networks (i.e. minimising the impact of traffic on local roads and neighbourhoods) (see Accessibility Map 3 in Appendix F)? If no, please provide an explanation.		N/A
Parking	The off-street parking provided is more than advised in Section 4 for that development type. If yes, parking provision must be reassessed.		~~Yes~~/No
	The off-street parking provided is as advised in Section 4 for that development type	1	Yes/~~No~~
	The off-street parking provided is less than 75% of the amount advised in Section 4 for that development type (or shares parking provision with another development)	0	~~Yes~~/No
	For development in controlled parking zones:		
	• Is it a car free development?	0	~~Yes~~/No
	• Supports the control or removal of on-street parking spaces (inc provision of disabled spaces), or contributes to other identified measures in the local parking strategy (including car clubs)	0	~~Yes~~/No
		Total (B)	1

Summary			
	Box A: Minimum Standard (from Table 3.1)	1	Comments or action needed to correct any shortfall. If conditions are appropriate for the reduced level of parking (see section 4), but this has not been provided, please explain why. – NONE NEEDED
	Box B: Actual Score	1	

3.15 As demonstrated in the table above, vehicular access to the site and parking accords with the minimum MASA criteria, and is therefore considered acceptable.

3.16 In summary of the analyses presented above, the application site is well located to offer a reasonable and realistic choice of mode of transport other than the private car.

4.0 PROPOSED DEVELOPMENT

General

4.1 The proposed development is a residential scheme comprising 127 dwellings.

Development Schedule

4.2 The proposals will be delivered in two phases. Phase 1 will comprise of 39 dwellings on the eastern portion that encompasses the current developed area of the site with access onto Allerton Road. Phase 2 will see the construction of 88 dwellings on the western portion presently occupied by sports pitches with accesses off Heath Road and Mather Avenue.

Phase 1

4.3 The Phase 1 proposal comprises of 39 dwellings. The majority of the units will gain access from Allerton Road although some will have direct access to Heath Road.

4.4 The proposed vehicular access onto Allerton Road will take the form of a priority give-way junction close to the existing access point. This is located approximately 100m north east of the Heath Road junction with Allerton Road.

4.5 This access will feature a 5.5m wide access road with 2.0m footway on each side, which is in accordance with the Manual for Streets (MfS) guidance.

4.6 Allerton Road is subject to a 30mph speed limit and a relatively quiet road in traffic terms. Manual for Streets (MfS) sets out the desirable visibility distances for urban streets with recorded speeds of up to 37 mph. The visibility requirement for speeds of up to 37 mph is 56m.

4.7 Visibility splays from the proposed access location of 56m are achievable in both directions along Allerton Road, as measured from a 2.4m minor road setback distance. This is in excess of the minimum requirements in the MfS for a 30mph road that is 40m.

4.8 The Phase 1 site access design and the visibility splay are illustrated on drawing no. SCP/13011/F01 contained at **Appendix 3**.

Phase 2

4.9 Phase 2 will comprise of 88 dwellings. The majority of the units will gain access from Heath Road with some served directly from Mather Avenue.

4.10 The proposed vehicular accesses onto Heath Road will take the form of priority give-way junctions adjacent to Clavell Road and Ravenna Road respectively.

4.11 These accesses will feature a 5.5m wide access road with 2.0m footway on each side, which is in accordance with the MfS guidance.

4.12 Visibility splays from the proposed access locations to the right along Heath Road are 22m, as measured from a 2.4m minor road setback distance. This is in accordance with the minimum requirements in MfS for a 20mph speed limit area.

4.13 The Phase 2 site accesses and the visibility splays are illustrated on drawing no. SCP/13011/F02 contained at **Appendix 3**.

Car Parking and Servicing

4.14 Parking for residential properties in both phases of the development will be 2 spaces per dwelling provided within the curtilage of each property, which is in accordance with LCC's minimum parking standards.

4.15 Phase 2 houses on Mather Avenue will have a turning area within each plot.

4.16 It is not anticipated that servicing of the development will present an issue. Refuse vehicles would be able to easily enter, turn within, and exit the development in a forward gear.

5.0 DEVELOPMENT TRAFFIC FORECASTS

General

5.1 This section provides an indication of the trip generation potential of the proposed Phase 1 development of 39 dwellings

Potential of the Existing Use

5.2 In planning terms, the basis of replacing the current lawful use with the proposed residential development allows for a net peak hour traffic generating potential of the site to be calcuated.

5.3 It should be noted that no attempt has been made to remove the traffic that is associated with the lawful uses on the site and which is already present on the local highway network (and therefore counted in the surveyed flows). This is therefore a robust approach as this traffic will be extinguished from the network as and when the proposed development replaces the existing site uses.

Proposed Phase 1 of the Housing Development

5.4 The trip generation potential of the proposed development has been estimated using data from the TRICS database.

5.5 The TRICS 2013(a) Version 6.11.1 database has been used to derive trip rates for housing from similar existing developments to predict the likely traffic generation of the application site in the morning and evening weekday peak hours.

5.6 Average trip rates have been used in the analysis for the peak hour periods. These are considered to be acceptable on the basis that this is a sustainable site within a major city and where there is good access to public transport. The identified peak periods are 08:00 – 09:00 hours during the AM peak and 17:00 - 18:00 hours during the PM peak.

5.7 The interrogation of the TRICS database resulted in the selection of 25 sites. Sites were selected on the following basis:

- Residential;
- Privately-owned houses;
- UK regions excluding Greater London, NI and Republic of Ireland;
- Developments with 20 to 250 dwellings;
- Date Range 01/01/2007 – 22/09/2012; and

- Weekdays only.

5.8 Details of the TRICS data for the residential development is provided in **Appendix 4**.

5.9 The average trip rates for the proposed development are shown in the table below;

Average Trip Rates for Housing (per dwelling)

	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Vehicles	0.178	0.432	0.610	0.402	0.241	0.643
Pedestrians	0.045	0.182	0.227	0.083	0.067	0.150
Cyclists	0.007	0.021	0.028	0.021	0.012	0.033
Public Transport	0.003	0.023	0.026	0.021	0.007	0.028

Source: TRICS 2013(a)v6.11.1

5.10 The above trip rates equate to the movements summarised in the table below (note totals subject to rounding):

Trip Generation for Housing (39 Units Phase 1)

	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Vehicles	7	17	24	16	9	25
Pedestrians	2	7	9	3	3	6
Cyclists	0	1	1	1	0	1
Public Transport	0	1	1	1	0	1

5.11 In the AM peak hour, the Phase 1 scheme could result in around 24 vehicles being generated. However, it should be remembered that the residential use will be expected to generate car-based traffic that is far less than a potential academy use could generate during the morning school drop off and staff arriving. Seen in this context, the proposed Phase 1 scheme will result in a net improvement to the amenity of the existing residential area on Heath Road, through which the academy vehicle traffic has historically had to pass.

5.12 Furthermore, a trip generation of 25 vehicles in the PM peak hour (which is outside the school afternoon peak hour) equates to an additional vehicle movement once every 2½ minutes, on

average, in the worst case. This small increase in vehicle movements would be imperceptible to local residents and other highway users.

5.13 Having regard to the level of spare operating capacity at the Heath Road/Mather Avenue and the Heath Road/Allerton Road junctions (see the capacity assessment summarised in Chapter 2 earlier), it is concluded that the small increases in traffic generation that would arise in the AM and PM peak hours from the proposed Phase 1 development will not give rise to any issues at these junctions. It should be reiterated that the development related traffic will be off-set by the removal of the existing site traffic.

6.0 IMPACT OF PHASE II

General

6.1 This section provides an indication of the trip generation potential of the proposed Phase 2 development of 88 dwellings. In addition it will also take into account Phase 1 proposals and analyse the cumulative impact on the highway network.

Phase 2 Trip Generation

6.2 The trip rates from Phase 1 has been used to estimate the likely traffic generation of the proposed Phase 2 development in the morning and evening weekday peak hours.

6.3 The average trip rates for the proposed development are shown in paragraph 5.9 above. The trip rates equate to the movements summarised in the table below (note totals subject to rounding):

Trip Generation for Housing (88 Units Phase 2)

	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Vehicles	16	38	54	35	21	57
Pedestrians	4	16	20	7	6	13
Cyclists	1	2	3	2	1	3
Public Transport	0	2	2	2	1	3

6.4 The anticipated year of the completion of both Phases 1 and 2 is in the year 2015. Therefore, the cumulative impact of both phases is analysed for an opening year of 2015 and five years after, 2020.

Tempro Adjusted Growth Factors

6.5 In order to quantify the level of background traffic growth that could occur on the local network, National Traffic Model (NTM) growth factors, modified by TEMPRO local growth factors have been used. The TEMPRO database has been interrogated to obtain growth factors for Liverpool (main) area, based on the default planning assumptions in the software. The growth factors have been derived based on the parameters listed in the table below:

TEMPRO Parameters

TEMPRO (Version 6.2)	Adjusted Local Growth Factor using NTM criteria
• NTEM Dataset 62 • Result Type: Trip ends by time period • Ares Selection: Liverpool (main) • Trip Purpose Group: All purposes • Trip End Type: Origin/Destination • Mode: Car Driver	• NTM dataset AF09 • Area Type: Urban • Road type: Principal • Area Serve: Region

6.6 The table below summarises the TEMPRO adjusted local growth factor using NTM by peak periods;

TEMPRO adjusted factors

	AM Peak Period	PM Period
2013 – 2015	1.0105	1.0100
2013 – 2020	1.0896	1.0883

6.7 Traffic growth factors have been applied to the 2013 traffic flows in **Appendix 1** to obtain 2015 and 2020 future year traffic flows. The resulting future flows are contained in **Appendix 5** for the AM and PM peak hours respectively.

Trip Distribution

6.8 The trips generated by the development have been distributed based on the existing travel patterns along Heath Road and Allerton Road. **Appendix 6** contains the trip distribution proportions. The distribution proportions have been used to assign the development trips as illustrated also in **Appendix 6** for the AM and PM peak hours respectively.

Opening Year and Sensitivity Test Traffic Flows

6.9 The 2015 opening year and 2020 assessment traffic flows have been derived by adding the both phases 1 and 2 development flows from Appendix 7 to the 2015 future year and 2020 traffic flows. The resulting 2015 opening year and 2020 sensitive test traffic flows are presented in **Appendix 7**.

Capacity Analysis

6.10 The traffic impact assessment should be seen in light of its robustness because no attempt has been made to remove the traffic that is associated with the existing lawful use on the site which is already present on the local highway network (and therefore counted in the surveyed flows). This is therefore a robust approach as this traffic will be extinguished from the network as and when the proposed development replaces the existing lawful site use. In addition, it is considered that these developments would account for the majority of traffic growth in the local area. As background traffic growth has also been applied to the surveyed traffic flows this is likely to result in an element of double-counting which also provides a robust assessment.

6.11 The detailed capacity assessment for 2015 opening year and 2020 future assessment have been undertaken and the results are contained in **Appendix 8**.

6.12 Only the capacity assessment results for the five years after opening that is 2020 assessments are summarised below as it is likely to represent the worst case.

Heath Road/Mather Avenue

6.13 LINSIG software has been used for the assessment and the results are summarised below:-

AM and PM Peaks 2020 Future Year Assessment

	Weekday AM Peak (08:00 – 09:00)		**Weekday PM Peak (16:00 – 17:00)**	
	DoS	**Queue**	**DoS**	**Queue**
Heath Rd (west) - Left/ Right/ Ahead	82.2%	7.8	80.6%	7.4
Mather Ave. (north) - Ahead/ Left	71.7%	6.2	57.5%	4.7
Mather Ave. (north) – Right/ Ahead	81.3%	7.0	64.9%	4.9
Mather Ave (south) – Left/ Ahead	86.7%	8.3	80.7%	7.3
Mather Ave (south) - Ahead /Right	82.1%	7.5	76.9%	6.9
Heath Rd (east) - Ahead /Left	43.9%	2.9	18.7%	1.1
Heath Rd (east) - Right	26.2%	0.9	13.9%	0.4
PRC (%)	3.8		11.5	

6.14 In the AM peak hour, the highest DoS value is found to be 86.7% on the Mather Avenue (south) nearside lane. In the PM peak hour, the DoS was lower at 80.7% on the same Mather Avenue (south) nearside lane. These values are below the desirable minimum value for practical reserve capacity of 90% and therefore suggest that there is no capacity problem at this junction.

6.15 The above results indicate that the existing layout of the Mather Avenue/Heath Road junction will operate well within its practical capacity in the future assessment year with the proposed development in place.

Heath Road/Allerton Road

6.16 PICADY software has been used for the assessment and the results are summarised below:-

AM and PM Peaks 2020 Future Year Assessment

	Weekday AM Peak (08:00 – 09:00)		Weekday PM Peak (16:00 – 17:00)	
	RFC	Queue	RFC	Queue
B-C: Heath Road - **left**	0.091	0	0.076	0
B-A: Heath Road - **right**	0.343	0	0.299	0
C-B: Allerton Road - **right**	0.000	0	0.000	0

6.17 During the AM peak period, the highest RFC value was found to be 0.343 on the Heath Road arm. In the PM peak, the RFC was lower at 0.299 on the Heath Road arm. These values are significantly below the desirable minimum value for practical reserve capacity of 0.850 and therefore suggest that there is no capacity problem at this junction.

6.18 The proposed development is not therefore considered to have a material impact on the operation of this junction.

7.0 SUMMARY AND CONCLUSIONS

7.1 SCP has been instructed by Redrow Homes (NW) Limited to provide transport planning and engineering advice in support of a planning application for a residential development of up to 127 dwellings on the current ESLA Heath Road Campus site on Heath Road in West Allerton, Liverpool.

7.2 The housing development will be delivered in two phases. Phase 1 will comprise of 39 dwellings on the eastern portion that encompasses the current academy buildings, with access onto Allerton Road and some direct access to Heath road. Phase 2 will see the construction of 88 dwellings on the western portion presently occupied by the sports pitches with accesses off Heath Road and Mather Avenue.

7.3 The principal accesses are designed with a 5.5m wide carriageway and 2m wide footways on both sides of the access road. The existing standard of Heath Road and Allerton Road have been reviewed and found to be acceptable in terms of carriageway width, footway provision, lighting and levels of visibility to serve the development. Pedestrian and cycle access to the site will be provided at the same location as the main vehicular accesses.

7.4 The development is compliant with the MASA policy as it will promote sustainable modes of travel that could replace some car trips to local facilities. A high frequency bus service is available along Mather Avenue, within acceptable walking distance of the site.

7.5 The impact of the traffic arising from the scheme has been tested in detail at both ends of Heath Road in opening and future assessment years of 2015 and 2020. These assessments are carried out on a robust basis, incorporating traffic growth and without discounting the traffic generation associated with the existing use of the site.

7.6 The assessments show that at both of the junctions there is sufficient spare capacity to accommodate the proposed development with no material impact on the operation of these junctions.

7.7 It is therefore concluded that there is no reason on highway or transport grounds why the development proposals should not be granted planning permission.

S|C|P

APPENDIX 1

Manual Classified Turning Counts, Allerton

LOCATION: MATHER AVENUE/HEATH ROAD

ARM: MATHER AVENUE NORTH

TIME / CLASS	LEFT TO HEATH ROAD EAST								STRAIGHT TO MATHER AVENUE SOUTH								RIGHT TO HEATH ROAD WEST								
	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	
7.30 7.45	0	0	5	1	0	0	0	6	9	0	65	4	1	1	0	80	0	0	2	3	0	0	0	5	91
7.45 8.00	0	0	15	0	0	0	0	16	1	0	152	10	2	0	4	169	0	0	8	3	2	0	0	13	198
8.00 8.15	0	0	6	1	0	0	0	7	0	0	84	12	2	0	5	103	0	0	7	5	0	0	0	12	122
8.15 8.30	0	0	5	0	0	0	0	5	1	0	93	6	2	3	4	111	0	0	13	2	0	0	0	15	131
HOURLY TOTAL	0	0	31	2	0	0	0	34	5	0	394	32	6	4	13	463	0	0	30	13	2	0	0	45	542
8.30 8.45	0	0	6	2	0	0	0	8	0	0	113	9	1	0	6	129	0	0	33	3	0	0	0	36	165
8.45 9.00	0	0	9	0	0	0	0	9	0	0	95	11	1	0	4	110	0	0	25	1	1	0	0	27	146
9.00 9.15	0	0	3	0	0	0	0	3	0	0	74	11	1	0	4	90	0	0	20	0	0	0	0	20	113
9.15 9.30	0	0	7	0	0	0	0	7	0	0	77	9	1	1	4	92	0	0	17	2	0	0	0	19	118
HOURLY TOTAL	0	0	18	2	0	0	0	20	0	0	357	30	4	1	18	410	0	0	95	6	1	0	0	102	536
PERIOD TOTAL	0	0	50	4	0	0	0	54	5	0	751	71	10	4	37	878	0	0	124	19	3	0	0	145	1077

16.00 16.15	0	0	2	1	0	0	0	4	0	0	81	5	1	0	4	91	0	0	14	0	0	0	0	14	109
16.15 16.30	0	0	5	2	0	0	0	5	0	2	87	7	1	1	7	105	0	0	17	1	0	0	0	18	128
16.30 16.45	0	0	8	2	0	0	0	10	0	0	83	7	1	0	4	95	0	0	18	2	0	0	0	20	125
16.45 17.00	0	0	4	0	0	0	0	4	0	0	85	8	0	0	5	98	0	0	17	1	0	0	0	18	120
HOURLY TOTAL	0	0	19	5	0	0	0	23	0	2	334	27	3	1	20	387	0	0	66	4	0	0	0	70	480
17.00 17.15	0	0	4	2	0	0	0	6	0	0	90	7	0	0	5	102	1	0	13	1	0	0	0	15	123
17.15 17.30	0	0	3	2	0	0	0	5	0	0	80	6	0	0	3	89	0	0	15	1	0	0	0	16	110
17.30 17.45	0	0	10	1	0	0	0	11	0	0	83	6	1	0	2	92	0	0	29	1	0	0	0	30	133
17.45 18.00	0	0	7	1	0	0	0	8	0	0	78	7	0	0	3	88	0	0	21	2	0	0	0	23	119
HOURLY TOTAL	0	0	24	6	0	0	0	30	0	0	331	26	1	0	13	371	1	0	78	5	0	0	0	84	485
PERIOD TOTAL	0	0	43	11	0	0	0	53	0	2	665	53	4	1	33	758	1	0	144	9	0	0	0	154	965

Manual Classified Turning Counts, Allerton

LOCATION: MATHER AVENUE/HEATH ROAD

ARM: HEATH ROAD EAST

TIME / CLASS	LEFT TO MATHER AVENUE SOUTH								STRAIGHT TO HEATH ROAD WEST								RIGHT TO MATHER AVENUE NORTH								
	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	
7.30 7.45	0	0	5	0	1	1	0	7	0	0	9	3	0	0	0	12	0	0	5	1	1	0	0	7	26
7.45 8.00	0	0	1	0	0	0	0	1	0	0	10	2	0	0	0	12	0	0	11	0	0	0	0	11	24
8.00 8.15	0	0	7	0	0	0	0	7	0	0	35	5	0	0	1	41	0	0	14	1	0	0	0	15	63
8.15 8.30	0	0	7	0	0	0	0	7	0	0	18	3	1	0	0	22	0	0	10	1	0	0	0	11	40
HOURLY TOTAL	0	0	20	0	1	1	0	22	0	0	72	13	1	0	1	87	0	0	40	3	1	0	0	44	153
8.30 8.45	0	0	12	0	1	0	0	13	0	0	38	2	1	0	0	41	0	0	10	0	0	0	0	10	64
8.45 9.00	0	0	8	0	0	0	0	8	0	0	22	2	0	0	0	24	0	0	9	1	0	0	0	10	42
9.00 9.15	0	0	10	0	0	0	0	10	0	0	14	1	0	0	0	15	0	0	4	0	0	0	0	4	29
9.15 9.30	0	0	8	0	0	0	0	8	0	0	12	0	0	0	0	12	0	0	3	0	0	0	0	3	23
HOURLY TOTAL	0	0	38	0	0	0	0	39	0	0	86	5	1	0	0	92	0	0	26	1	0	0	0	27	158
PERIOD TOTAL	0	0	58	0	1	1	0	61	0	0	158	18	2	0	1	179	0	0	66	4	1	0	0	71	311

16.00 16.15	0	0	3	0	0	0	0	3	0	0	9	1	0	0	0	10	0	0	3	0	0	0	0	3	16
16.15 16.30	0	0	4	0	0	0	0	4	0	0	10	2	0	0	0	12	0	0	4	0	0	0	0	4	20
16.30 16.45	3	0	3	0	0	0	0	4	0	2	8	0	0	0	0	10	0	0	4	1	0	0	0	5	19
16.45 17.00	0	0	2	0	0	0	0	2	1	1	16	1	0	0	0	19	0	0	8	0	0	0	0	8	29
HOURLY TOTAL	3	0	12	0	0	0	0	13	1	3	43	4	0	0	0	51	0	0	19	1	0	0	0	20	84
17.00 17.15	0	1	2	0	0	0	0	3	1	0	10	2	0	0	0	13	0	0	5	0	0	0	0	5	21
17.15 17.30	0	0	3	0	0	0	0	3	0	0	13	2	0	0	0	15	0	0	3	0	0	0	0	3	21
17.30 17.45	4	0	1	0	0	0	0	5	0	2	8	0	0	0	0	10	0	0	3	0	0	0	0	3	18
17.45 18.00	0	0	2	0	0	0	0	2	0	0	6	1	1	0	0	8	0	0	3	0	0	0	0	3	13
HOURLY TOTAL	4	1	11	0	0	0	0	16	1	2	35	5	1	0	0	46	0	0	14	0	0	0	0	14	73
PERIOD TOTAL	7	1	23	0	0	0	0	29	2	5	78	9	1	0	0	97	0	0	33	1	0	0	0	34	157

Manual Classified Turning Counts, Allerton

DATE: TUESDAY 29th JANUARY 2013

LOCATION: MATHER AVENUE/HEATH ROAD

ARM: MATHER AVENUE SOUTH

TIME / CLASS	LEFT TO HEATH AVENUE WEST								STRAIGHT TO MATHER AVENUE NORTH								RIGHT TO HEATH ROAD EAST								TOTAL MOVEMENT FROM ARM
	PEDALCYCLES	MOTORCYCLES	CAR/TAXIS	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXIS	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXIS	LGV	OGV 1	OGV 2	BUSES	TOTAL	
7:30 7:45	0	1	22	0	0	1	0	24	1	1	48	9	0	0	4	63	0	0	3	0	0	0	0	3	90
7:45 8:00	0	0	33	1	1	0	1	36	1	0	90	8	2	0	0	101	0	1	5	0	0	0	0	6	143
8:00 8:15	0	0	29	3	0	0	0	32	0	0	78	9	1	1	0	117	0	0	2	0	0	0	0	2	151
8:15 8:30	0	0	31	4	1	0	0	36	0	0	96	13	2	1	5	117	0	0	9	0	0	0	0	9	162
HOURLY TOTAL	0	1	115	8	2	1	1	128	2	1	312	39	5	2	9	418	0	1	19	0	0	0	0	20	546
8:30 8:45	0	0	37	3	0	0	1	40	0	0	85	8	1	0	1	95	0	0	10	0	0	0	0	10	145
8:45 9:00	0	0	27	4	0	0	2	33	1	0	60	4	2	0	5	72	0	0	15	0	0	0	0	15	120
9:00 9:15	0	0	27	3	1	0	1	32	0	0	71	10	1	0	5	87	0	0	6	2	0	0	0	8	127
9:15 9:30	0	0	21	2	0	0	2	25	0	0	68	6	1	0	5	80	0	0	4	1	0	0	0	5	110
HOURLY TOTAL	0	0	112	12	1	0	6	130	1	0	284	28	5	0	16	334	0	0	35	3	0	0	0	38	502
PERIOD TOTAL	0	1	207	19	3	1	7	258	3	1	610	67	10	2	44	743	0	1	54	3	0	0	0	58	1059

9:30	9:45	0	0	25	2	0	0	0	27	0	0	106	7	1	0	5	119	0	0	5	1	0	0	0	6	152
9:45	10:00	0	0	30	2	0	0	0	32	1	1	119	9	1	0	6	131	0	1	4	0	0	0	0	5	168
10:00	10:15	0	0	27	5	0	0	0	32	0	0	100	8	2	0	4	114	0	0	9	1	0	0	0	10	156
10:15	10:30	0	0	40	2	0	0	1	43	0	1	61	8	0	0	3	73	0	0	5	0	0	0	0	5	121
HOURLY TOTAL		0	0	122	11	0	0	1	134	1	2	386	32	4	0	18	437	0	1	24	2	0	0	0	27	598
10:30	10:45	0	0	39	2	0	0	0	41	0	1	119	6	3	0	3	132	0	0	5	1	0	0	0	6	180
10:45	11:00	0	0	42	5	0	0	0	47	0	1	115	6	0	0	5	127	0	0	8	1	0	0	0	9	183
11:00	11:15	0	0	37	2	0	2	0	39	1	0	80	3	0	0	2	86	0	0	5	0	0	0	0	5	130
11:15	11:30	0	0	38	2	0	0	0	40	0	0	84	4	0	0	3	91	0	0	5	1	0	0	0	6	137
HOURLY TOTAL		0	0	156	11	0	2	0	169	1	2	398	19	3	0	13	436	0	0	24	3	0	0	0	27	630
PERIOD TOTAL		1	0	278	22	0	2	1	303	2	4	784	51	7	0	31	873	0	1	48	5	0	0	0	54	1228

Manual Classified Turning Counts, Allerton

DATE: TUESDAY 29th JANUARY 2013

LOCATION: MATHER AVENUE/HEATH ROAD

ARM: HEATH ROAD WEST

TIME / CLASS	LEFT TO MATHER AVENUE NORTH							STRAIGHT TO HEATH ROAD EAST								RIGHT TO MATHER AVENUE SOUTH								TOTAL MOVEMENT FROM ARM
	PEDALCYCLES	MOTORCYCLES	CAR/TAXIS	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXIS	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXIS	LGV	OGV 1	OGV 2	BUSES	TOTAL	
7:30 7:45	0	0	5	4	0	0	0	9	0	0	10	3	0	0	0	13	0	0	12	1	0	0	0	13	44
7:45 8:00	0	0	14	0	0	0	0	14	0	0	15	0	0	0	0	15	0	0	22	2	0	0	0	24	53
8:00 8:15	0	1	23	3	0	0	0	27	0	0	13	2	0	0	0	21	0	1	15	2	0	0	0	18	66
8:15 8:30	0	0	24	0	1	0	0	25	0	0	34	0	0	0	1	25	0	0	26	2	0	0	0	28	78
HOURLY TOTAL	0	1	66	7	1	0	0	75	0	0	72	5	0	0	1	74	0	1	69	5	0	0	0	75	241
8:30 8:45	0	1	41	1	1	0	0	44	0	0	33	0	0	0	0	33	1	0	31	1	0	0	0	33	110
8:45 9:00	0	0	25	0	0	0	0	25	0	0	14	0	0	0	0	14	0	0	37	2	0	0	0	39	78
9:00 9:15	0	0	14	1	0	0	0	15	0	0	19	0	0	0	0	19	0	0	25	1	0	0	0	26	60
9:15 9:30	0	0	12	1	0	0	0	13	0	0	14	0	0	0	0	14	0	0	18	1	0	0	0	19	46
HOURLY TOTAL	0	1	92	3	1	0	0	97	0	0	80	0	0	0	0	80	1	0	111	5	0	0	0	117	294
PERIOD TOTAL	0	2	148	10	2	0	0	162	0	0	152	5	0	0	1	154	1	1	180	10	0	0	0	192	508

9:30	9:45	0	0	27	1	0	0	0	28	0	0	81	6	0	0	0	81	0	0	18	1	0	0	0	19	128
9:45	10:00	0	0	20	4	0	0	0	24	0	0	70	2	0	0	0	72	0	0	26	2	0	0	0	27	123
10:00	10:15	0	0	25	0	0	0	0	25	0	7	12	1	0	0	0	20	0	0	25	1	0	0	0	26	116
10:15	10:30	0	0	30	1	0	0	0	31	0	0	31	1	0	0	0	32	0	0	10	3	0	0	0	13	76
HOURLY TOTAL		0	0	102	6	0	0	0	108	0	7	94	4	0	0	0	100	0	0	79	7	0	0	0	86	294
10:30	10:45	0	0	19	0	0	0	0	19	0	0	17	1	0	0	0	18	0	0	18	2	0	0	0	20	57
10:45	11:00	0	0	9	0	0	0	0	9	0	0	13	2	0	0	0	15	0	0	18	2	0	0	0	20	44
11:00	11:15	0	0	11	0	0	0	0	11	0	0	30	0	0	0	0	30	1	1	24	0	0	0	0	26	67
11:15	11:30	0	0	8	0	0	0	0	8	0	0	16	1	0	0	0	17	0	0	17	1	0	0	0	18	43
HOURLY TOTAL		0	0	47	0	0	0	0	47	0	0	76	4	0	0	0	80	1	1	77	5	0	0	0	84	211
PERIOD TOTAL		0	0	149	6	0	0	0	155	0	7	170	8	0	0	0	180	1	1	156	12	0	0	0	170	505

Manual Classified Turning Counts, Allerton

LOCATION: ALLERTON ROAD/HEATH ROAD

ARM: ALLERTON ROAD SOUTH

TIME / CLASS	LEFT TO HEATH ROAD								STRAIGHT TO ALLERTON ROAD NORTH								TOTAL MOVEMENT FROM ARM
	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	
7:30 - 7:45	0	0	12	1	0	0	0	13	0	0	8	1	0	0	0	9	22
7:45 - 8:00	0	0	12	2	0	0	0	14	1	0	14	0	0	0	0	15	29
8:00 - 8:15	0	0	31	5	1	0	0	37	0	0	14	4	1	0	0	19	56
8:15 - 8:30	0	0	18	1	0	0	0	19	0	0	10	1	0	0	0	11	30
HOURLY TOTAL	0	0	73	9	1	0	0	83	1	0	46	6	1	0	0	54	137
8:30 - 8:45	0	0	34	0	1	0	0	35	0	0	11	1	0	0	0	12	47
8:45 - 9:00	0	0	19	0	0	0	0	19	0	0	8	2	0	0	0	10	29
9:00 - 9:15	0	1	12	1	0	0	0	14	0	0	9	2	0	0	0	11	25
9:15 - 9:30	0	0	14	0	0	0	0	14	0	0	7	1	0	0	0	8	22
HOURLY TOTAL	0	1	79	1	1	0	0	82	0	0	35	6	0	0	0	41	123
PERIOD TOTAL	0	1	152	10	2	0	0	165	1	0	81	12	1	0	0	95	260
16:00 - 16:15	0	0	12	1	0	0	0	13	0	0	11	2	0	0	0	13	26
16:15 - 16:30	0	0	10	1	0	0	0	11	0	0	7	2	0	0	0	9	20
16:30 - 16:45	0	0	5	0	0	0	0	5	0	0	10	2	0	0	0	12	17
16:45 - 17:00	1	1	9	0	0	0	0	11	0	0	7	2	0	0	0	9	20
HOURLY TOTAL	1	1	36	2	0	0	0	40	0	0	35	8	0	0	0	43	83
17:00 - 17:15	0	0	6	1	0	0	0	7	1	0	11	1	0	0	0	13	20
17:15 - 17:30	0	0	9	1	0	0	0	10	1	0	6	0	0	0	0	7	17
17:30 - 17:45	0	0	4	0	1	0	0	5	0	0	10	0	0	0	0	10	15
17:45 - 18:00	0	0	6	0	0	0	0	6	0	0	8	1	0	0	0	9	15
HOURLY TOTAL	0	0	25	2	1	0	0	28	2	0	35	2	0	0	0	39	67
PERIOD TOTAL	1	1	61	4	1	0	0	68	2	0	70	10	0	0	0	82	150

Manual Classified Turning Counts, Allerton

DATE: TUESDAY 29th JANUARY 2013

LOCATION: ALLERTON ROAD/HEATH ROAD

ARM: HEATH ROAD

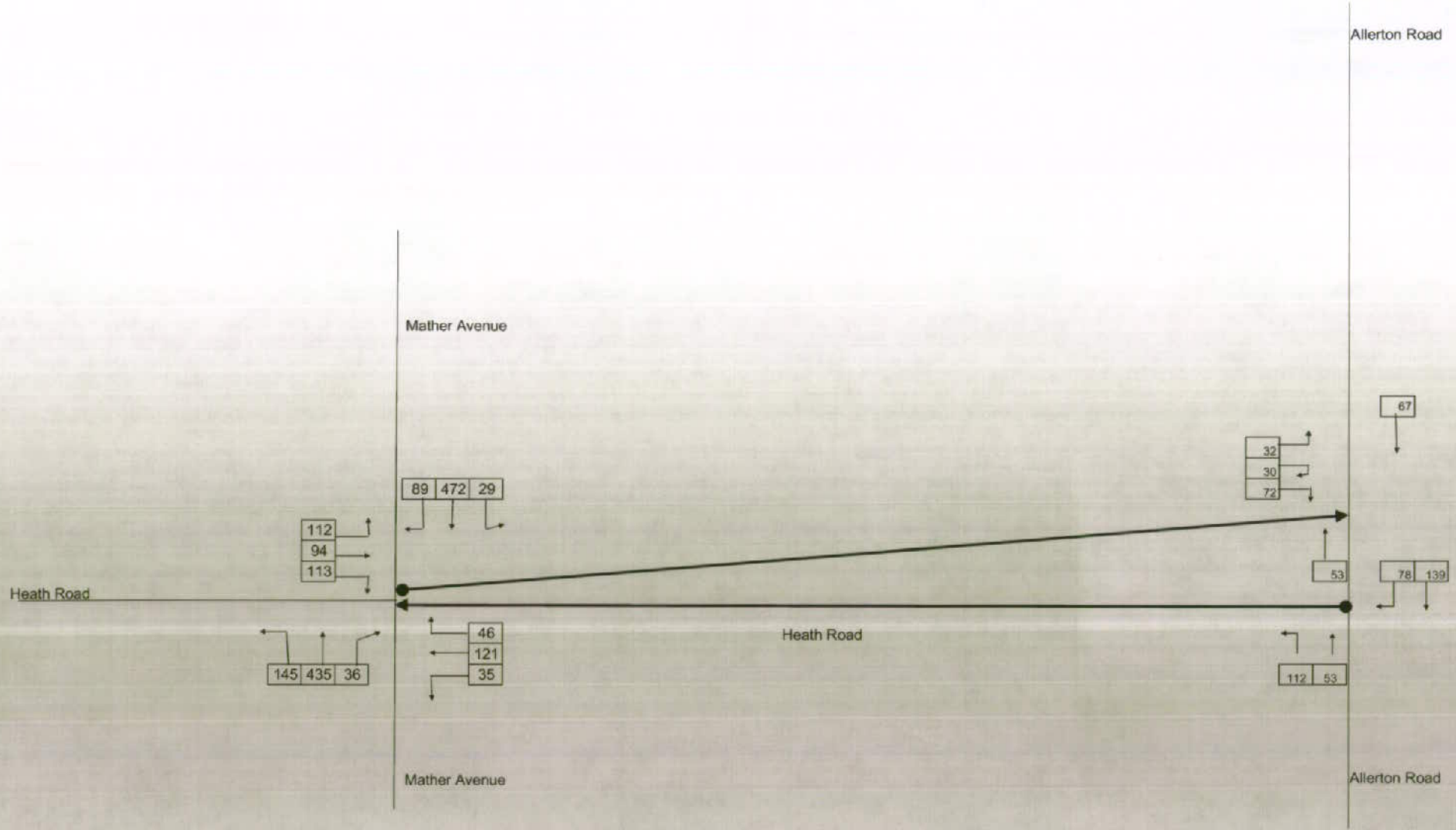
TIME / CLASS	LEFT TO ALLERTON ROAD NORTH								RIGHT TO ALLERTON ROAD SOUTH								U TURN								TOTAL MOVEMENT FROM ARM
	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	
7:30 - 7:45	0	0	6	1	2	0	0	9	0	0	4	3	0	0	0	7	0	0	1	0	0	0	0	1	17
7:45 - 8:00	0	0	2	1	0	0	0	3	0	0	12	1	0	0	0	13	0	0	3	0	0	0	0	3	19
8:00 - 8:15	0	0	7	1	0	0	0	8	0	0	14	2	0	0	0	16	0	0	2	0	0	0	0	2	26
8:15 - 8:30	0	0	13	0	0	0	0	13	0	0	13	1	0	0	0	14	0	0	7	0	0	0	1	8	35
HOURLY TOTAL	0	0	28	3	2	0	0	33	0	0	43	7	0	0	0	50	0	0	13	0	0	0	1	14	97
8:30 - 8:45	0	0	2	1	0	0	0	3	0	0	23	3	0	0	0	26	0	0	9	0	0	0	0	9	38
8:45 - 9:00	0	0	7	1	0	0	0	8	0	0	16	0	0	0	0	16	0	0	10	0	0	0	0	10	34
9:00 - 9:15	0	0	3	1	0	0	0	4	0	0	19	1	0	0	0	20	0	0	8	0	0	0	0	8	32
9:15 - 9:30	0	0	3	1	0	0	0	4	0	0	15	1	0	0	0	16	0	0	5	0	0	0	0	5	25
HOURLY TOTAL	0	0	15	4	0	0	0	19	0	0	73	5	0	0	0	78	0	0	32	0	0	0	0	32	129
PERIOD TOTAL	0	0	43	7	2	0	0	52	0	0	116	12	0	0	0	128	0	0	45	0	0	0	1	46	226
16:00 - 16:15	0	0	9	0	0	0	0	9	0	0	25	0	0	0	0	25	0	0	3	0	0	0	0	3	37
16:15 - 16:30	0	0	4	0	0	0	0	4	0	1	21	0	0	0	0	22	0	0	2	0	0	0	0	2	28
16:30 - 16:45	0	0	5	0	0	0	0	5	0	0	18	1	0	0	1	20	0	0	2	0	0	0	0	2	27
16:45 - 17:00	0	0	7	2	0	0	0	9	0	1	16	1	0	0	0	18	0	0	4	1	0	0	0	5	32
HOURLY TOTAL	0	0	25	2	0	0	0	27	0	2	80	2	0	0	1	85	0	0	11	1	0	0	0	12	124
17:00 - 17:15	1	0	8	0	0	0	0	9	0	0	21	4	0	0	0	25	0	0	2	0	0	0	0	2	36
17:15 - 17:30	0	0	2	1	0	0	0	3	0	0	17	2	0	0	0	19	0	0	1	0	0	0	0	1	23
17:30 - 17:45	0	0	3	0	0	0	0	3	0	0	14	1	0	0	0	15	0	0	1	0	0	0	0	1	19
17:45 - 18:00	0	0	4	0	0	0	0	4	0	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0	14
HOURLY TOTAL	1	0	17	1	0	0	0	19	0	0	62	7	0	0	0	69	0	0	4	0	0	0	0	4	92
PERIOD TOTAL	1	0	42	3	0	0	0	46	0	2	142	9	0	0	1	154	0	0	15	1	0	0	0	16	216

Manual Classified Turning Counts, Allerton

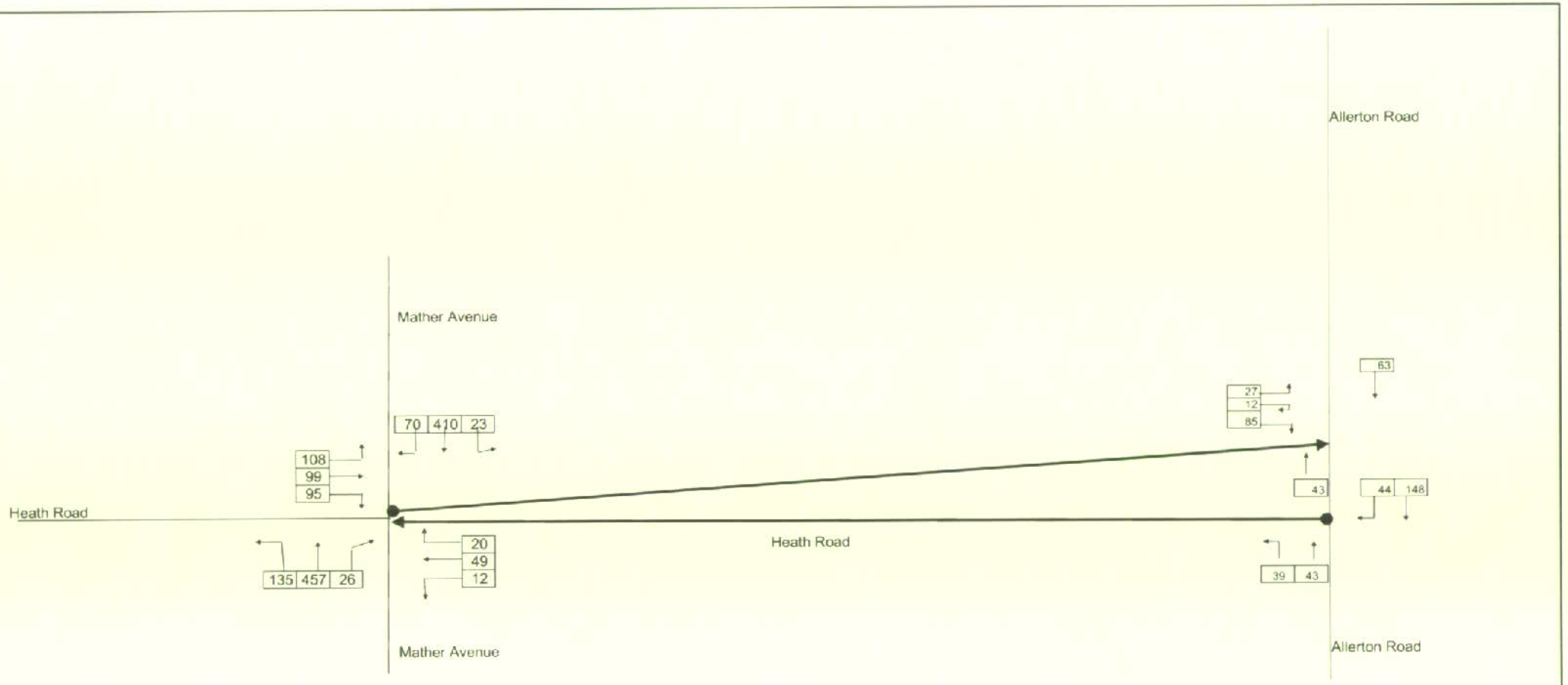
LOCATION: ALLERTON ROAD/HEATH ROAD

ARM: ALLERTON ROAD NORTH

TIME / CLASS	STRAIGHT TO ALLERTON ROAD SOUTH								RIGHT TO HEATH ROAD								TOTAL MOVEMENT FROM ARM
	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	PEDALCYCLES	MOTORCYCLES	CAR/TAXI	LGV	OGV 1	OGV 2	BUSES	TOTAL	
7:30 - 7:45	0	0	11	1	0	0	0	12	0	0	3	0	2	0	0	5	17
7:45 - 8:00	1	0	10	1	0	0	0	12	0	0	3	0	0	0	0	3	15
8:00 - 8:15	0	1	15	0	2	0	0	18	0	0	8	0	0	1	0	9	27
8:15 - 8:30	0	0	10	2	0	0	0	12	0	0	15	1	0	0	0	16	28
HOURLY TOTAL	1	1	46	4	2	0	0	54	0	0	29	1	2	1	0	33	87
8:30 - 8:45	0	0	14	3	0	0	0	17	0	0	11	0	0	0	0	11	28
8:45 - 9:00	0	0	17	0	0	1	0	18	0	0	8	1	1	0	0	10	28
9:00 - 9:15	1	0	9	2	0	0	0	12	0	0	3	1	0	0	0	4	16
9:15 - 9:30	0	1	12	2	0	0	0	15	0	0	4	1	0	0	0	5	20
HOURLY TOTAL	1	1	52	7	0	1	0	62	0	0	26	3	1	0	0	30	92
PERIOD TOTAL	2	2	98	11	2	1	0	116	0	0	55	4	3	1	0	63	179
16:00 - 16:15	0	0	11	2	0	0	0	13	0	0	6	0	0	0	0	6	19
16:15 - 16:30	1	0	9	3	0	0	0	13	0	0	8	0	0	0	0	8	21
16:30 - 16:45	0	0	16	2	0	0	0	18	0	0	7	0	0	0	0	7	25
16:45 - 17:00	1	0	13	4	1	0	0	19	0	0	8	3	0	0	0	11	30
HOURLY TOTAL	2	0	49	11	1	0	0	63	0	0	29	3	0	0	0	32	95
17:00 - 17:15	0	0	13	3	0	0	0	16	1	0	5	1	0	0	0	7	23
17:15 - 17:30	0	0	12	0	0	0	0	12	0	0	7	4	0	0	0	11	23
17:30 - 17:45	0	0	6	3	0	0	0	9	0	0	5	1	0	0	0	6	15
17:45 - 18:00	1	0	8	4	0	0	0	13	0	0	5	1	0	0	0	6	19
HOURLY TOTAL	1	0	39	10	0	0	0	50	1	0	22	7	0	0	0	30	80
PERIOD TOTAL	3	0	88	21	1	0	0	113	1	0	51	10	0	0	0	62	175



APPENDIX 1 (SHEET 1)	Base Year 2013 AM PEAK (08.00-09.00)	S C P Transportation Planning : Infrastructure Design www.scptransport.co.uk
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL	



APPENDIX 1 (SHEET 2)	Base Year 2013 PM PEAK (16.00-17.00)	S | C | P Transportation Planning : Infrastructure Design www.scptransport.co.uk
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL	

S|C|P

APPENDIX 2

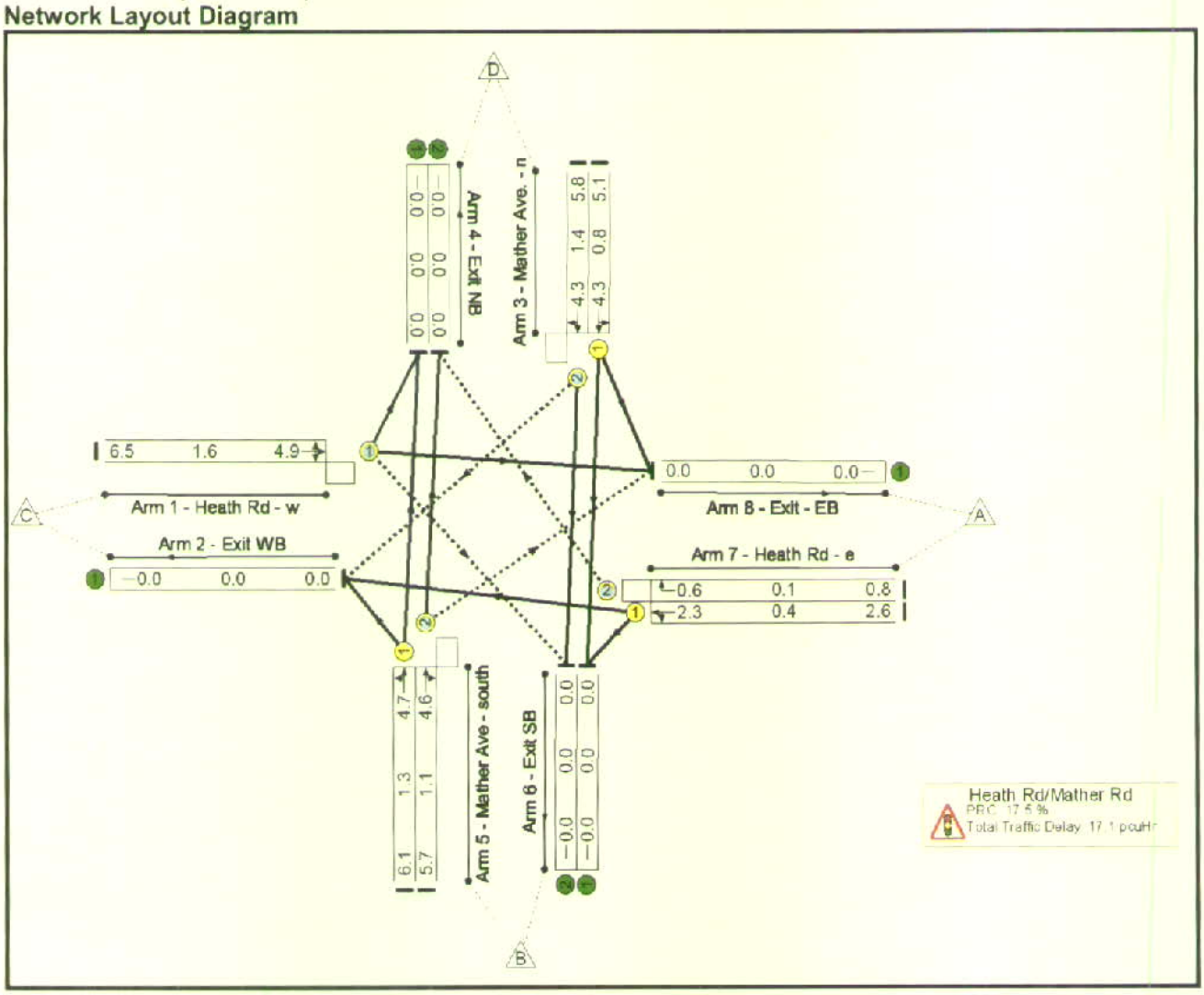
LinSig V1 style report

User and Project Details

Project:	**Proposed Res. Heath Road, Liverpool**
Location:	Mather Avenue / Heath Road
Author:	KM
Company:	SCP
Address:	Mount Street, Manchester

Scenario 1: 'AM peak 2013' (FG1: 'AM Peak 2013', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Pedestrian	1		6	6
F	Pedestrian	1		6	6
G	Pedestrian	1		6	6
H	Pedestrian	1		6	6
I	Pedestrian	1		6	6
J	Pedestrian	1		6	6
K	Pedestrian	1		6	6
L	Pedestrian	1		6	6

Phase Intergreens Matrix

		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A		7	-	7	7	-	7	-	9	-	-	10
	B	7		7	-	-	10	-	7	7	-	-	8
	C	-	7		8	-	10	10	-	-	7	-	7
	D	7	-	7		-	7	10	-	10	-	7	-
	E	10	-	-	-		-	-	-	-	-	-	-
	F	-	8	8	8	-		-	-	-	-	-	-
	G	9	-	9	9	-	-		-	-	-	-	-
	H	-	10	-	-	-	-	-		-	-	-	-
	I	7	7	-	7	-	-	-	-		-	-	-
	J	-	-	7	-	-	-	-	-	-		-	-
	K	-	-	-	9	-	-	-	-	-	-		-
	L	9	9	9	-	-	-	-	-	-	-	-	

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage		
		1	2	3
From Stage	1		10	10
	2	10		10
	3	10	10	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B D E J
1	2	A C H K
1	3	E F G H I J K L

Give-Way Lane Input Data

Junction: Heath Rd/Mather Rd											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Heath Rd - w)	6/2 (Right)	1440	0	7/1	1.09	All	2.00	2.00	0.50	2	2.00
3/2 (Mather Ave. - n)	2/1 (Right)	1440	0	5/1	1.09	All	2.00	2.00	0.50	2	2.00
				5/2	1.09	All					
5/2 (Mather Ave - south)	8/1 (Right)	1440	0	3/1	1.09	All	2.00	2.00	0.50	2	2.00
				3/2	1.09	All					
7/2 (Heath Rd - e)	4/2 (Right)	1440	0	1/1	1.09	To 4/1 (Left) To 8/1 (Ahead)	2.00	-	0.50	2	2.00

Lane Input Data

Junction: Heath Rd/Mather Rd

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Heath Rd - w)	O	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Left	6.00
											Arm 6 Right	10.00
											Arm 8 Ahead	Inf
2/1 (Exit WB)	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (Mather Ave. - n)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
											Arm 8 Left	9.00
3/2 (Mather Ave. - n)	O	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 2 Right	14.00
											Arm 6 Ahead	Inf
4/1 (Exit NB)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Exit NB)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Mather Ave - south)	U	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 2 Left	9.00
											Arm 4 Ahead	Inf
5/2 (Mather Ave - south)	O	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Ahead	Inf
											Arm 8 Right	8.00
6/1 (Exit SB)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2 (Exit SB)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Heath Rd - e)	U	A	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 2 Ahead	Inf
											Arm 6 Left	8.00
7/2 (Heath Rd - e)	O	A	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Right	12.00
8/1 (Exit - EB)	U		2	3	60.0	Inf	-	-	-	-	-	-

Lane Saturation Flows

Scenario 1: 'AM peak 2013' (FG1: 'AM Peak 2013', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	35.1 %	1722	1722
				Arm 6 Right	10.00	35.4 %		
				Arm 8 Ahead	Inf	29.5 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	90.2 %	1933	1933
				Arm 8 Left	9.00	9.8 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	30.2 %	1903	1903
				Arm 6 Ahead	Inf	69.8 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	47.1 %	1799	1799
				Arm 4 Ahead	Inf	52.9 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	88.3 %	1898	1898
				Arm 8 Right	8.00	11.7 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	77.6 %	1862	1862
				Arm 6 Left	8.00	22.4 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'PM Peak 2013' (FG2: 'PM Peak 2013', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	35.8 %	1729	1729
				Arm 6 Right	10.00	31.5 %		
				Arm 8 Ahead	Inf	32.8 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	90.8 %	1935	1935
				Arm 8 Left	9.00	9.2 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	27.8 %	1908	1908
				Arm 6 Ahead	Inf	72.2 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	43.7 %	1808	1808
				Arm 4 Ahead	Inf	56.3 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	91.6 %	1910	1910
				Arm 8 Right	8.00	8.4 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	80.3 %	1871	1871
				Arm 6 Left	8.00	19.7 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2015 AM Assessments' (FG3: 'AM Peak 2015 Assessments', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	34.0 %	1729	1729
				Arm 6 Right	10.00	34.3 %		
				Arm 8 Ahead	Inf	31.6 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	89.3 %	1931	1931
				Arm 8 Left	9.00	10.7 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	30.0 %	1904	1904
				Arm 6 Ahead	Inf	70.0 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	46.8 %	1800	1800
				Arm 4 Ahead	Inf	53.2 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	87.2 %	1895	1895
				Arm 8 Right	8.00	12.8 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	77.4 %	1861	1861
				Arm 6 Left	8.00	22.6 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2015 PM Assessments' (FG4: 'PM Peak 2015 Assessments', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	33.2 %	1744	1744
				Arm 6 Right	10.00	29.3 %		
				Arm 8 Ahead	Inf	37.5 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	88.3 %	1928	1928
				Arm 8 Left	9.00	11.7 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	27.5 %	1909	1909
				Arm 6 Ahead	Inf	72.5 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	42.9 %	1811	1811
				Arm 4 Ahead	Inf	57.1 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	88.9 %	1901	1901
				Arm 8 Right	8.00	11.1 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	80.0 %	1870	1870
				Arm 6 Left	8.00	20.0 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2020 AM Assessments' (FG5: 'AM Peak 2020 Assessments', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	34.1 %	1729	1729
				Arm 6 Right	10.00	34.4 %		
				Arm 8 Ahead	Inf	31.6 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	89.2 %	1930	1930
				Arm 8 Left	9.00	10.8 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	29.9 %	1904	1904
				Arm 6 Ahead	Inf	70.1 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	46.7 %	1800	1800
				Arm 4 Ahead	Inf	53.3 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	87.2 %	1895	1895
				Arm 8 Right	8.00	12.8 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	77.4 %	1861	1861
				Arm 6 Left	8.00	22.6 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2020 PM Assessments' (FG6: 'PM Peak 2020 Assessments', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	33.6 %	1742	1742
				Arm 6 Right	10.00	29.3 %		
				Arm 8 Ahead	Inf	37.0 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	88.4 %	1928	1928
				Arm 8 Left	9.00	11.6 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	27.4 %	1909	1909
				Arm 6 Ahead	Inf	72.6 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	43.1 %	1810	1810
				Arm 4 Ahead	Inf	56.9 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	89.1 %	1901	1901
				Arm 8 Right	8.00	10.9 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	80.0 %	1870	1870
				Arm 6 Left	8.00	20.0 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM Peak 2013'	08:00	09:00	01:00	
2: 'PM Peak 2013'	16:00	17:00	01:00	
3: 'AM Peak 2015 Assessments'	08:00	09:00	01:00	
4: 'PM Peak 2015 Assessments'	16:00	17:00	01:00	
5: 'AM Peak 2020 Assessments'	08:00	09:00	01:00	
6: 'PM Peak 2020 Assessments'	16:00	17:00	01:00	

Traffic Flows, Desired

FG1: 'AM Peak 2013'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	35	121	46	202
	B	36	0	145	435	616
	C	94	113	0	112	319
	D	29	472	89	0	590
	Tot.	159	620	355	593	1727

FG2: 'PM Peak 2013'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	12	49	20	81
	B	26	0	135	457	618
	C	99	95	0	108	302
	D	23	410	70	0	503
	Tot.	148	517	254	585	1504

FG3: 'AM Peak 2015 Assessments'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	37	127	48	212
	B	40	0	147	440	627
	C	105	114	0	113	332
	D	32	477	90	0	599
	Tot.	177	628	364	601	1770

FG4: 'PM Peak 2015 Assessments'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	13	52	21	86
	B	35	0	136	462	633
	C	123	96	0	109	328
	D	30	414	71	0	515
	Tot.	188	523	259	592	1562

FG5: 'AM Peak 2020 Assessments'
Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	40	137	52	229
	B	43	0	158	474	675
	C	113	123	0	122	358
	D	35	515	97	0	647
	Tot.	191	678	392	648	1909

FG6: 'PM Peak 2020 Assessments'
Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	14	56	23	93
	B	37	0	147	498	682
	C	130	103	0	118	351
	D	32	446	76	0	554
	Tot.	199	563	279	639	1680

Stage Timings

Scenario 1: 'AM peak 2013' (FG1: 'AM Peak 2013', Plan 1: 'Network Control Plan 1')
Stage Stream: 1

Stage	1	2	3
Duration	13	11	6
Change Point	0	23	44

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.6%**
Heath Rd/Mather Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.6%**
1/1	Heath Rd - w Left Right Ahead	O	1	N/A	C		1	14	-	319	1722	417	76.6%
2/1	Exit WB	U	N/A	N/A	-		-	-	-	355	Inf	Inf	0.0%
3/1	Mather Ave. - n Ahead Left	U	1	N/A	D		1	14	-	295	1933	483	61.0%
3/2	Mather Ave. - n Right Ahead	O	1	N/A	D		1	14	-	295	1903	396	74.4%
4/1	Exit NB	U	N/A	N/A	-		-	-	-	275	Inf	Inf	0.0%
4/2	Exit NB	U	N/A	N/A	-		-	-	-	318	Inf	Inf	0.0%
5/1	Mather Ave - south Left Ahead	U	1	N/A	B		1	13	-	308	1799	420	73.4%
5/2	Mather Ave - south Ahead Right	O	1	N/A	B		1	13	-	308	1898	443	69.5%
6/1	Exit SB	U	N/A	N/A	-		-	-	-	301	Inf	Inf	0.0%
6/2	Exit SB	U	N/A	N/A	-		-	-	-	319	Inf	Inf	0.0%
7/1	Heath Rd - e Ahead Left	U	1	N/A	A		1	11	-	156	1862	372	41.9%
7/2	Heath Rd - e Right	O	1	N/A	A		1	11	-	46	1724	204	22.6%
8/1	Exit - EB	U	N/A	N/A	-		-	-	-	159	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**211**	**10**	**63**	**9.9**	**6.7**	**0.5**	**17.1**	-	-	-	-
Heath Rd/Mather Rd	-	-	**211**	**10**	**63**	**9.9**	**6.7**	**0.5**	**17.1**	-	-	-	-
1/1	319	319	103	10	0	1.8	1.6	0.1	3.5	39.8	4.9	1.6	6.5
2/1	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	295	295	-	-	-	1.6	0.8	-	2.4	29.4	4.3	0.8	5.1
3/2	295	295	26	0	63	1.6	1.4	0.3	3.3	40.4	4.3	1.4	5.8
4/1	275	275	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	308	308	-	-	-	1.8	1.3	-	3.2	37.0	4.7	1.3	6.1
5/2	308	308	36	0	0	1.8	1.1	0.0	3.0	34.6	4.6	1.1	5.7
6/1	301	301	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	319	319	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	156	156	-	-	-	0.9	0.4	-	1.3	29.3	2.3	0.4	2.6
7/2	46	46	46	0	0	0.3	0.1	0.0	0.4	34.8	0.6	0.1	0.8
8/1	159	159	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 17.5 Total Delay for Signalled Lanes (pcuHr): 17.09 Cycle Time (s): 60
PRC Over All Lanes (%): 17.5 Total Delay Over All Lanes(pcuHr): 17.09

Stage Timings

Scenario 2: 'PM Peak 2013' (FG2: 'PM Peak 2013', Plan 1: 'Network Control Plan 1')

Stage Stream: 1

Stage	1	2	3
Duration	13	11	6
Change Point	0	23	44

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**73.2%**
Heath Rd/Mather Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**73.2%**
1/1	Heath Rd - w Left Right Ahead	O	1	N/A	C		1	14	-	302	1729	432	69.9%
2/1	Exit WB	U	N/A	N/A	-		-	-	-	254	Inf	Inf	0.0%
3/1	Mather Ave. - n Ahead Left	U	1	N/A	D		1	14	-	251	1935	484	51.9%
3/2	Mather Ave. - n Right Ahead	O	1	N/A	D		1	14	-	252	1908	411	61.3%
4/1	Exit NB	U	N/A	N/A	-		-	-	-	282	Inf	Inf	0.0%
4/2	Exit NB	U	N/A	N/A	-		-	-	-	303	Inf	Inf	0.0%
5/1	Mather Ave - south Left Ahead	U	1	N/A	B		1	13	-	309	1808	422	73.2%
5/2	Mather Ave - south Ahead Right	O	1	N/A	B		1	13	-	309	1910	446	69.3%
6/1	Exit SB	U	N/A	N/A	-		-	-	-	240	Inf	Inf	0.0%
6/2	Exit SB	U	N/A	N/A	-		-	-	-	277	Inf	Inf	0.0%
7/1	Heath Rd - e Ahead Left	U	1	N/A	A		1	11	-	61	1871	374	16.3%
7/2	Heath Rd - e Right	O	1	N/A	A		1	11	-	20	1724	206	9.7%
8/1	Exit - EB	U	N/A	N/A	-		-	-	-	148	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**181**	**9**	**21**	**8.5**	**5.1**	**0.2**	**13.8**	-	-	-	-
Heath Rd/Mather Rd	-	-	**181**	**9**	**21**	**8.5**	**5.1**	**0.2**	**13.8**	-	-	-	-
1/1	302	302	86	9	0	1.7	1.1	0.0	2.9	34.4	4.5	1.1	5.7
2/1	254	254	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	251	251	-	-	-	1.4	0.5	-	1.9	27.1	3.6	0.5	4.1
3/2	252	252	49	0	21	1.4	0.8	0.2	2.3	33.3	3.6	0.8	4.4
4/1	282	282	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	303	303	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	309	309	-	-	-	1.8	1.3	-	3.2	36.9	4.7	1.3	6.1
5/2	309	309	26	0	0	1.8	1.1	0.0	2.9	34.2	4.6	1.1	5.7
6/1	240	240	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	277	277	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	61	61	-	-	-	0.3	0.1	-	0.4	25.6	0.8	0.1	0.9
7/2	20	20	20	0	0	0.1	0.1	0.0	0.2	31.8	0.3	0.1	0.3
8/1	148	148	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 22.9 Total Delay for Signalled Lanes (pcuHr): 13.82 Cycle Time (s): 60
PRC Over All Lanes (%): 22.9 Total Delay Over All Lanes(pcuHr): 13.82

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

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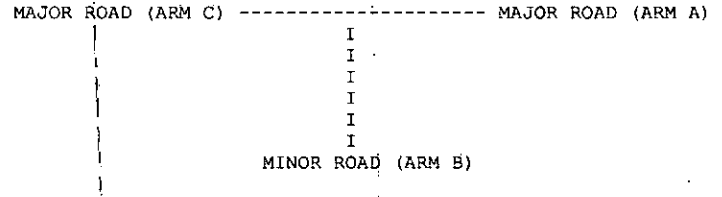
Run with file:-
"Z:\Job Library\2013\13011 - New Hayes School, Liverpool\Traffic Data\Allerton Road.vpi"
(drive-on-the-left) at 10:55:12 on Wednesday, 13 February 2013

RUN INFORMATION

RUN TITLE	: Capacity Assessment at the Heath Road_Allerton Road Junction
LOCATION	: Heath Road_Allerton Road Junction
DATE	: 08/02/13
CLIENT	:
ENUMERATOR	: Kass Mayoua [TRAFFIC15]
JOB NUMBER	:
STATUS	: TIA
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Allerton Rd - south
ARM B IS Heath Road (Exit Only)
ARM C IS Allerton Rd - north

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM A-BC CONTAINS TRAFFIC GOING FROM ARM A TO ARM B AND TO ARM C
ETC.

TRL TRL Viewer 3.2 AG Z:\Job Library\2013\13011 - New Hayes School, Liverpool\Traffic Data\Allerton Roa

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	6.00 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	0.00 M.
- BLOCKS TRAFFIC		YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	20.0 M.
- VISIBILITY TO RIGHT	(VB-A)	50.0 M.
- LANE 1 WIDTH	(WB-C)	2.30 M.
- LANE 2 WIDTH	(WB-A)	2.30 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
609.48	0.24	0.09

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
472.94	0.22	0.09	0.14	0.31

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
573.96	0.22	0.22

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: AM 2013 Base Year

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.66	0.99	0.66
ARM B	15.00	45.00	75.00	1.67	2.51	1.67
ARM C	15.00	45.00	75.00	0.84	1.26	0.84

Demand set: AM 2013 Base Year

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
07.45 - 08.00	ARM A	0.000	0.000	1.000
		0.0	0.0	53.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.761	0.000	0.239
		102.0	0.0	32.0
		(0.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		67.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET AM 2013 Base Year
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	0.40	9.58	0.042		0.00	0.04	0.6		0.11
B-A	1.28	7.62	0.168		0.00	0.20	2.9		0.16
C-AB	0.00	8.56	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.67								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-C	0.48	9.46	0.051		0.04	0.05	0.8		0.11
B-A	1.53	7.57	0.202		0.20	0.25	3.6		0.17
C-AB	0.00	8.54	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.79								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	0.59	9.30	0.063		0.05	0.07	1.0		0.11
B-A	1.87	7.50	0.249		0.25	0.33	4.8		0.18
C-AB	0.00	8.50	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.97								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	0.59	9.30	0.063		0.07	0.07	1.0		0.11
B-A	1.87	7.50	0.249		0.33	0.33	4.9		0.18
C-AB	0.00	8.50	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.97								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-C	0.48	9.46	0.051		0.07	0.05	0.8		0.11
B-A	1.53	7.57	0.202		0.33	0.26	4.0		0.17
C-AB	0.00	8.54	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.79								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-C	0.40	9.58	0.042		0.05	0.04	0.7		0.11
B-A	1.28	7.62	0.168		0.26	0.20	3.1		0.16
C-AB	0.00	8.56	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.67								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.2
08.30	0.3
08.45	0.3
09.00	0.3
09.15	0.2

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	44.0	29.4	4.9	0.11	4.9	0.11
B-A	140.4	93.6	23.3	0.17	23.3	0.17
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	73.0	48.6				
ALL	349.6	233.1	28.2	0.08	28.2	0.08

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
609.48	0.24	0.09

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
472.94	0.22	0.09	0.14	0.31

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
573.96	0.22	0.22

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: PM 2013 Base Year

TIME PERIOD BEGINS 15.45 AND ENDS 17.15

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.54	0.81	0.54
ARM B	15.00	45.00	75.00	1.55	2.32	1.55
ARM C	15.00	45.00	75.00	0.79	1.18	0.79

Demand set: PM 2013 Base Year

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
15.45 - 16.00	ARM A	0.000	0.000	1.000
		0.0	0.0	43.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.782	0.000	0.218
		97.0	0.0	27.0
		(0.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		63.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET PM 2013 Base Year
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.45-16.00									
B-C	0.34	9.63	0.035		0.00	0.04	0.5		0.11
B-A	1.22	7.66	0.159		0.00	0.19	2.7		0.15
C-AB	0.00	8.59	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.54								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.00-16.15									
B-C	0.40	9.52	0.042		0.04	0.04	0.6		0.11
B-A	1.45	7.61	0.191		0.19	0.23	3.4		0.16
C-AB	0.00	8.57	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.64								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
B-C	0.50	9.38	0.053		0.04	0.06	0.8		0.11
B-A	1.78	7.55	0.236		0.23	0.30	4.4		0.17
C-AB	0.00	8.54	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.79								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	0.50	9.38	0.053		0.06	0.06	0.8		0.11
B-A	1.78	7.55	0.236		0.30	0.31	4.6		0.17
C-AB	0.00	8.54	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.79								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	0.40	9.52	0.042		0.06	0.04	0.7		0.11
B-A	1.45	7.61	0.191		0.31	0.24	3.7		0.16
C-AB	0.00	8.57	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.64								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	0.34	9.63	0.035		0.04	0.04	0.6		0.11
B-A	1.22	7.66	0.159		0.24	0.19	2.9		0.16
C-AB	0.00	8.59	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.54								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.0
16.15	0.0
16.30	0.1
16.45	0.1
17.00	0.0
17.15	0.0

QUEUE FOR STREAM B-A

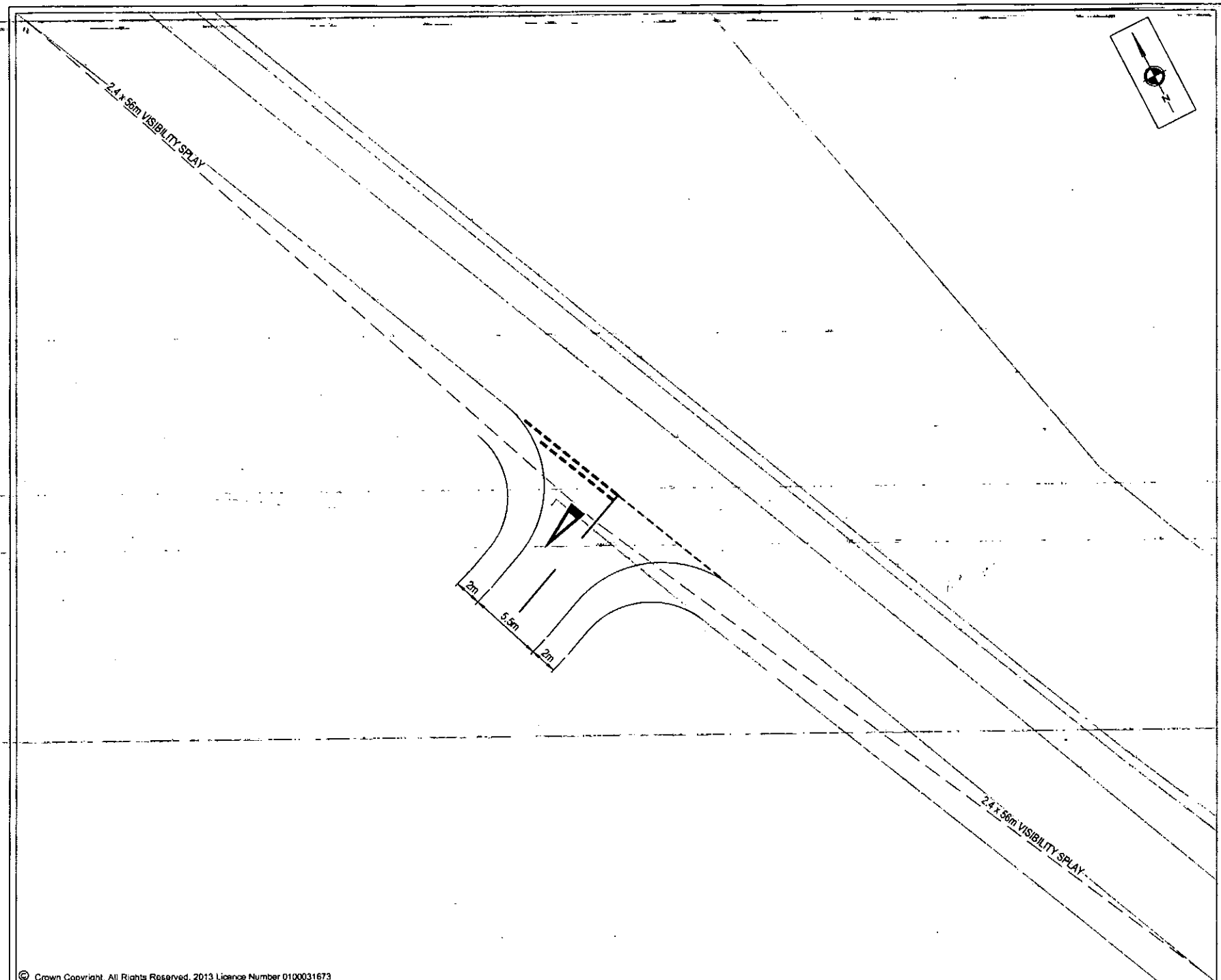
TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.2
16.15	0.2
16.30	0.3
16.45	0.3
17.00	0.2
17.15	0.2

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.0
16.15	0.0
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0

S|C|P

APPENDIX 3



NOTES

REVISIONS

REV	DESCRIPTION	DATE	BY
-	-	-	-

S|C|P

Transportation Planning : Infrastructure Design

3 Mount Street, Manchester, M2 5WQ Tel 0161 872 4430, Fax 0161 872 3111
www.scpltransport.co.uk, E-mail info@scpltransport.co.uk

Client Name

REDROW HOMES (NW) LTD.

Project Title

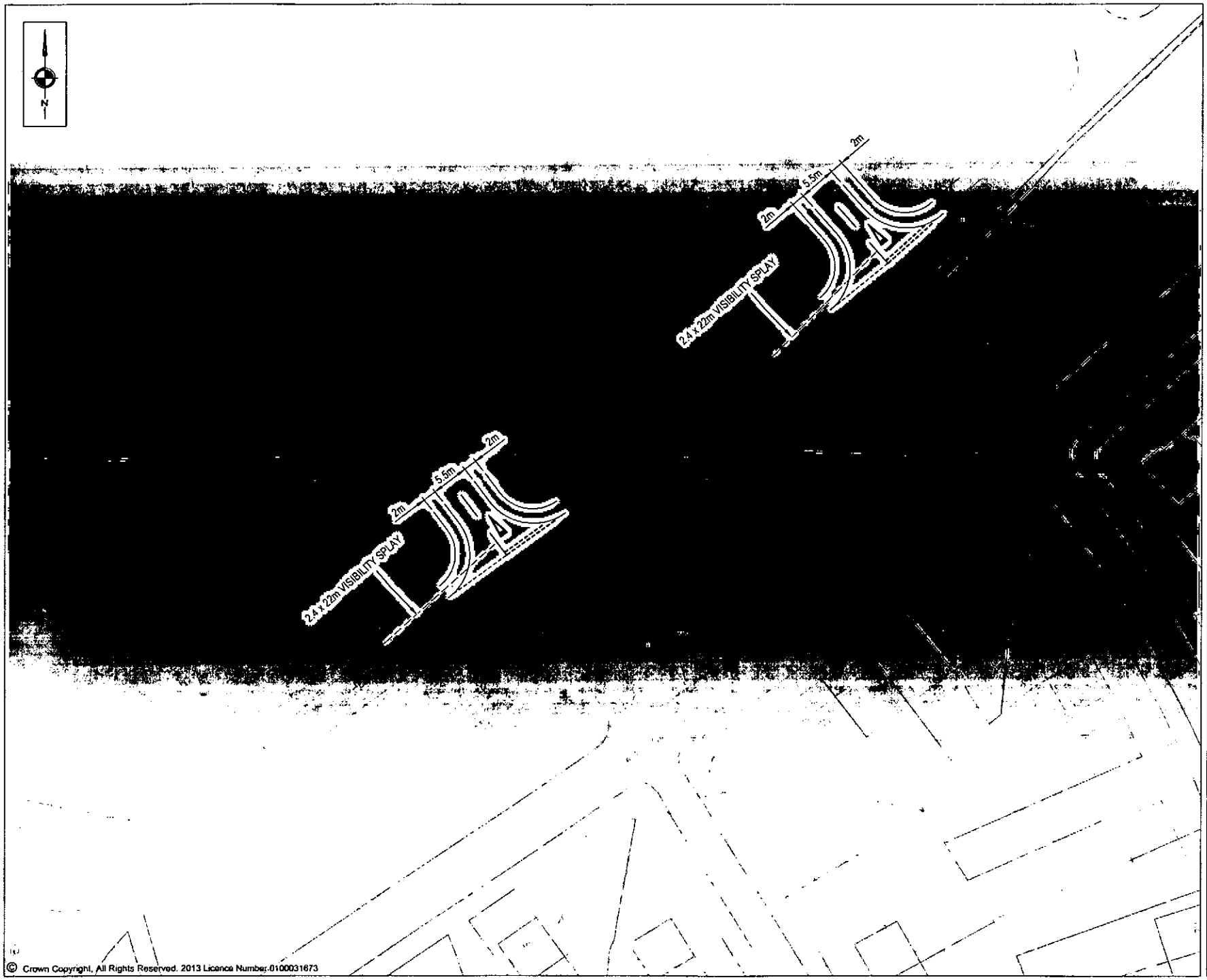
PROPOSED RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

Drawing Title

PROPOSED PRIORITY JUNCTION PHASE ONE

Drawn By	Date
FJT	13.02.2013
Checked	Scale
KM	1:250 @ A3
Status	Approved/Unapproved
PLANNING	-

Drawing No.	Rev
SCP/13011/F01	-



NOTES

REVISIONS

REV	DESCRIPTION	DATE	BY

SCP

Transportation Planning : Infrastructure Design

Client Name
REDROW HOMES (NW) LTD.

Project Title
PROPOSED RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

Drawing Title
PROPOSED PRIORITY JUNCTIONS PHASE TWO

Drawn By	Date
FJT	13.02.2013
Checked	Scale
KM	1:500 @ A3
Status	Approved/Unapproved
PLANNING	-

Drawing No	Rev
SCP/13011/F02	-

S|C|P

APPENDIX 4

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED

MULTI-MODAL VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	ES	EAST SUSSEX	1 days
	EX	ESSEX	1 days
03	**SOUTH WEST**		
	CW	CORNWALL	1 days
04	**EAST ANGLIA**		
	SF	SUFFOLK	2 days
05	**EAST MIDLANDS**		
	LN	LINCOLNSHIRE	3 days
06	**WEST MIDLANDS**		
	SH	SHROPSHIRE	1 days
	WM	WEST MIDLANDS	1 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	NY	NORTH YORKSHIRE	3 days
08	**NORTH WEST**		
	CH	CHESHIRE	1 days
	GM	GREATER MANCHESTER	1 days
09	**NORTH**		
	CB	CUMBRIA	2 days
10	**WALES**		
	CF	CARDIFF	2 days
11	**SCOTLAND**		
	AD	ABERDEEN CITY	1 days
	EA	EAST AYRSHIRE	1 days
	FI	FIFE	1 days
	HI	HIGHLAND	1 days
	PK	PERTH & KINROSS	1 days
	SR	STIRLING	1 days

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

Filtering Stage 2 selection:

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

Parameter:	Number of dwellings
Actual Range:	22 to 237 (units:)
Range Selected by User:	20 to 250 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/07 to 22/09/12

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	6 days
Tuesday	6 days
Wednesday	3 days
Thursday	4 days
Friday	6 days

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

Selected survey types:

Manual count	25 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	13
Edge of Town	12

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

Selected Location Sub Categories:

Residential Zone	21
No Sub Category	4

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

Filtering Stage 3 selection:

Use Class:

C3	25 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Filtering Stage 3 selection (Cont.):

Population within 1 mile:

1,001 to 5,000	2 days
5,001 to 10,000	2 days
10,001 to 15,000	5 days
15,001 to 20,000	11 days
20,001 to 25,000	4 days
25,001 to 50,000	1 days

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

Population within 5 miles:

5,001 to 25,000	3 days
25,001 to 50,000	4 days
50,001 to 75,000	2 days
75,001 to 100,000	5 days
100,001 to 125,000	3 days
125,001 to 250,000	5 days
250,001 to 500,000	2 days
500,001 or More	1 days

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

Car ownership within 5 miles:

0.6 to 1.0	8 days
1.1 to 1.5	17 days

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

Travel Plan:

Yes	1 days
No	24 days

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

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	25	97	0.085	25	97	0.297	25	97	0.382
08:00 - 09:00	25	97	0.178	**25**	**97**	**0.432**	25	97	0.610
09:00 - 10:00	25	97	0.170	25	97	0.215	25	97	0.385
10:00 - 11:00	25	97	0.155	25	97	0.185	25	97	0.340
11:00 - 12:00	25	97	0.179	25	97	0.173	25	97	0.352
12:00 - 13:00	25	97	0.196	25	97	0.179	25	97	0.375
13:00 - 14:00	25	97	0.189	25	97	0.178	25	97	0.367
14:00 - 15:00	25	97	0.188	25	97	0.195	25	97	0.383
15:00 - 16:00	25	97	0.288	25	97	0.208	25	97	0.496
16:00 - 17:00	25	97	0.340	25	97	0.199	25	97	0.539
17:00 - 18:00	**25**	**97**	**0.402**	25	97	0.241	**25**	**97**	**0.643**
18:00 - 19:00	25	97	0.267	25	97	0.199	25	97	0.466
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.637			2.701			5.338

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

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

Parameter summary

Trip rate parameter range selected:	22 - 237 (units:)
Survey date date range:	01/01/07 - 22/09/12
Number of weekdays (Monday-Friday):	25
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL CYCLISTS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	25	97	0.007	25	97	0.014	25	97	0.021
08:00 - 09:00	25	97	0.007	**25**	**97**	**0.021**	25	97	0.028
09:00 - 10:00	25	97	0.005	25	97	0.004	25	97	0.009
10:00 - 11:00	25	97	0.003	25	97	0.006	25	97	0.009
11:00 - 12:00	25	97	0.006	25	97	0.004	25	97	0.010
12:00 - 13:00	25	97	0.007	25	97	0.007	25	97	0.014
13:00 - 14:00	25	97	0.005	25	97	0.005	25	97	0.010
14:00 - 15:00	25	97	0.005	25	97	0.005	25	97	0.010
15:00 - 16:00	25	97	0.020	25	97	0.013	25	97	0.033
16:00 - 17:00	25	97	0.017	25	97	0.017	**25**	**97**	**0.034**
17:00 - 18:00	**25**	**97**	**0.021**	25	97	0.012	25	97	0.033
18:00 - 19:00	25	97	0.014	25	97	0.007	25	97	0.021
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.117			0.115			0.232

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

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

Parameter summary

Trip rate parameter range selected:	22 - 237 (units:)
Survey date date range:	01/01/07 - 22/09/12
Number of weekdays (Monday-Friday):	25
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03:- RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL PEDESTRIANS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	25	97	0.035	25	97	0.063	25	97	0.098
08:00 - 09:00	25	97	0.045	**25**	**97**	**0.182**	25	97	0.227
09:00 - 10:00	25	97	0.057	25	97	0.071	25	97	0.128
10:00 - 11:00	25	97	0.042	25	97	0.057	25	97	0.099
11:00 - 12:00	25	97	0.045	25	97	0.046	25	97	0.091
12:00 - 13:00	25	97	0.040	25	97	0.037	25	97	0.077
13:00 - 14:00	25	97	0.037	25	97	0.038	25	97	0.075
14:00 - 15:00	25	97	0.047	25	97	0.042	25	97	0.089
15:00 - 16:00	**25**	**97**	**0.179**	25	97	0.078	**25**	**97**	**0.257**
16:00 - 17:00	25	97	0.102	25	97	0.064	25	97	0.166
17:00 - 18:00	25	97	0.083	25	97	0.067	25	97	0.150
18:00 - 19:00	25	97	0.078	25	97	0.062	25	97	0.140
19:00 - 20:00	1	29	0.069	1	29	0.034	1	29	0.103
20:00 - 21:00	1	29	0.034	1	29	0.000	1	29	0.034
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.893			0.841			1.734

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

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

Parameter summary

Trip rate parameter range selected:	22 - 237 (units:)
Survey date date range:	01/01/07 - 22/09/12
Number of weekdays (Monday-Friday):	25
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	25	97	0.001	25	97	0.012	25	97	0.013
08:00 - 09:00	25	97	0.003	**25**	**97**	**0.023**	25	97	0.026
09:00 - 10:00	25	97	0.004	25	97	0.011	25	97	0.015
10:00 - 11:00	25	97	0.004	25	97	0.008	25	97	0.012
11:00 - 12:00	25	97	0.007	25	97	0.009	25	97	0.016
12:00 - 13:00	25	97	0.008	25	97	0.010	25	97	0.018
13:00 - 14:00	25	97	0.007	25	97	0.005	25	97	0.012
14:00 - 15:00	25	97	0.009	25	97	0.005	25	97	0.014
15:00 - 16:00	25	97	0.009	25	97	0.007	25	97	0.016
16:00 - 17:00	25	97	0.016	25	97	0.007	25	97	0.023
17:00 - 18:00	**25**	**97**	**0.021**	25	97	0.007	**25**	**97**	**0.028**
18:00 - 19:00	25	97	0.009	25	97	0.000	25	97	0.009
19:00 - 20:00	1	73	0.000	1	73	0.000	1	73	0.000
20:00 - 21:00	1	73	0.000	1	73	0.000	1	73	0.000
21:00 - 22:00	1	73	0.000	1	73	0.000	1	73	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.098			0.104			0.202

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

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

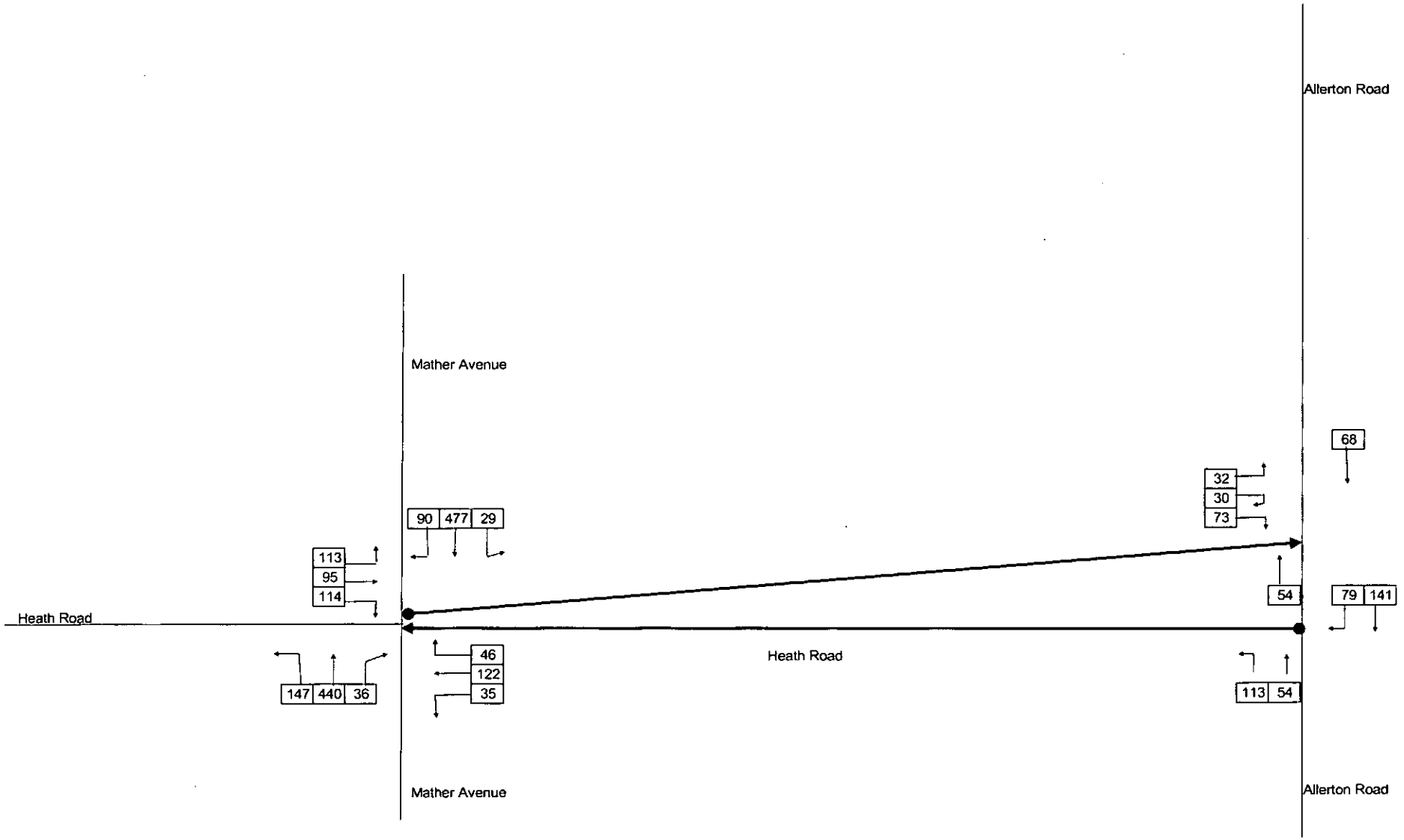
Parameter summary

Trip rate parameter range selected:	22 - 237 (units:)
Survey date date range:	01/01/07 - 22/09/12
Number of weekdays (Monday-Friday):	25
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

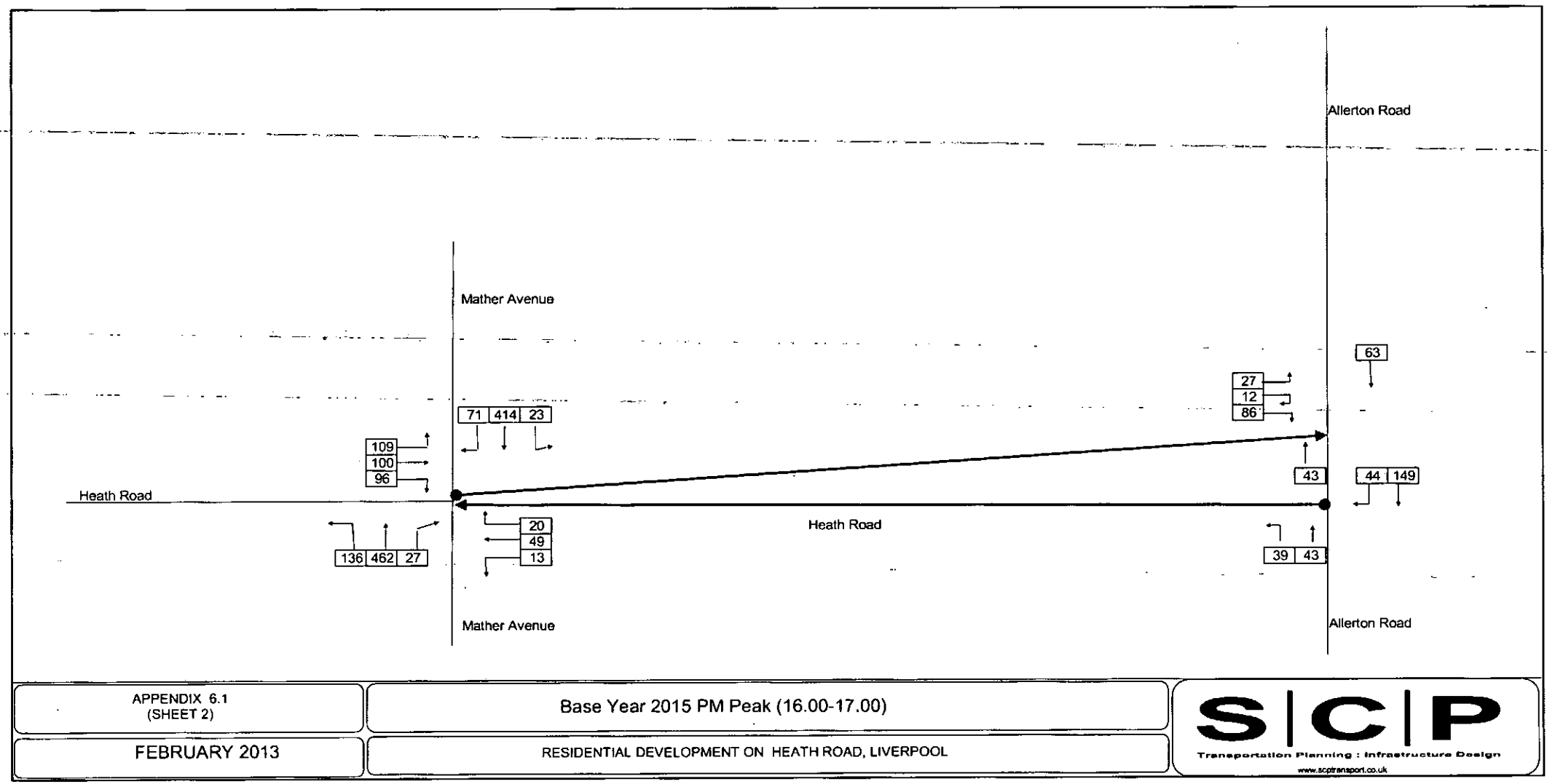
S|C|P

APPENDIX 5

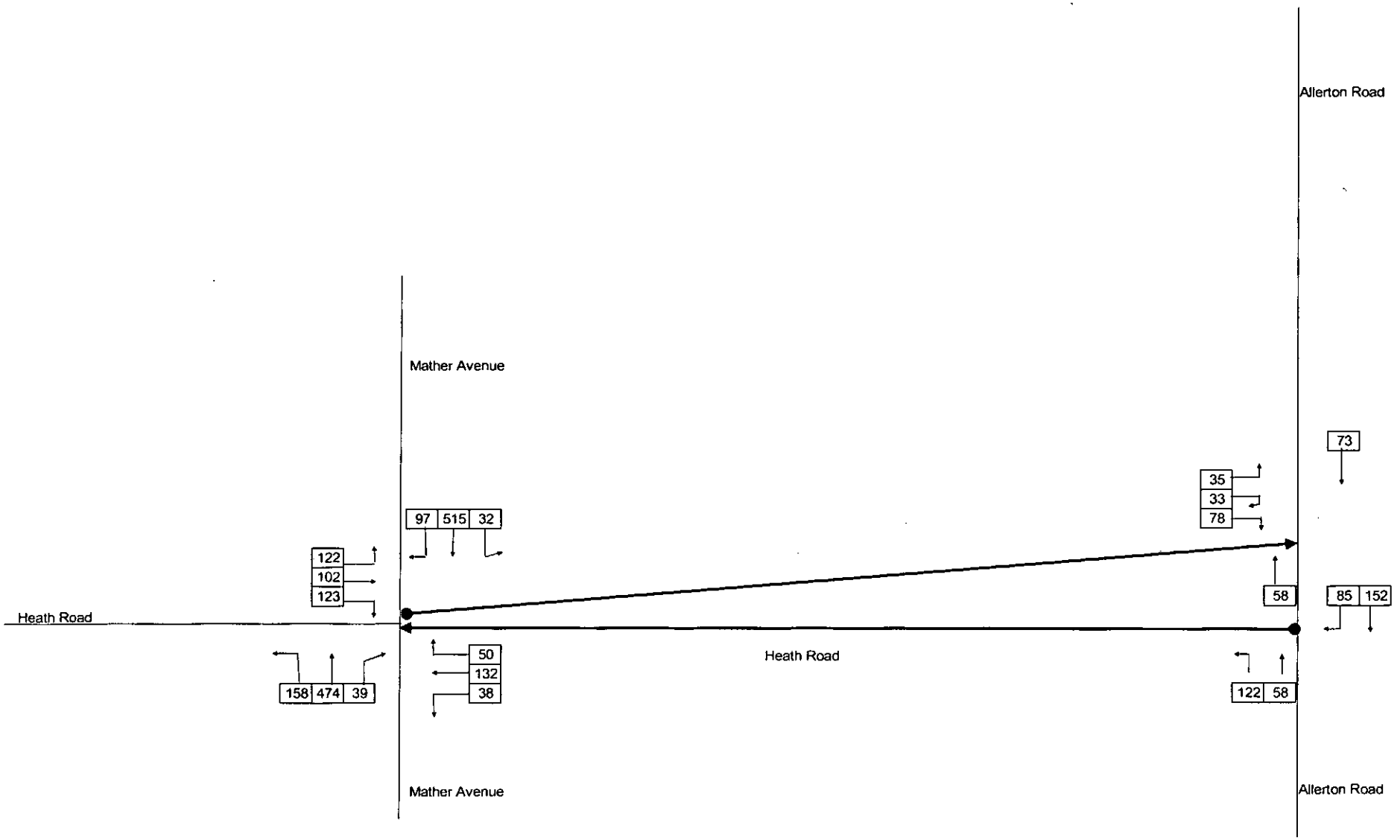


APPENDIX 6.1 (SHEET 1)	Base Year 2015 AM PEAK (08.00-09.00)
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

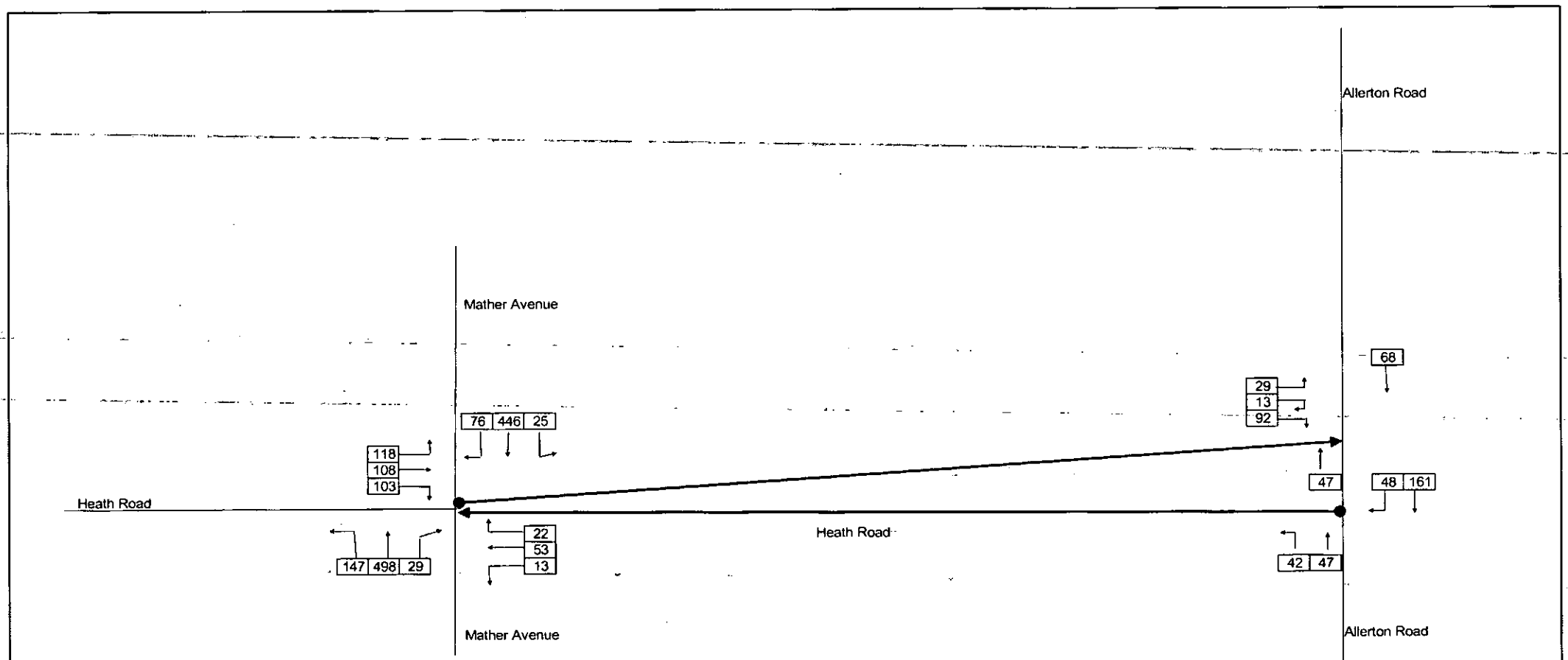
S|C|P
Transportation Planning : Infrastructure Design
www.scptranspon.co.uk



APPENDIX 6.1 (SHEET 2)	Base Year 2015 PM Peak (16.00-17.00)	S|C|P Transportation Planning : Infrastructure Design www.scptransport.co.uk
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL	



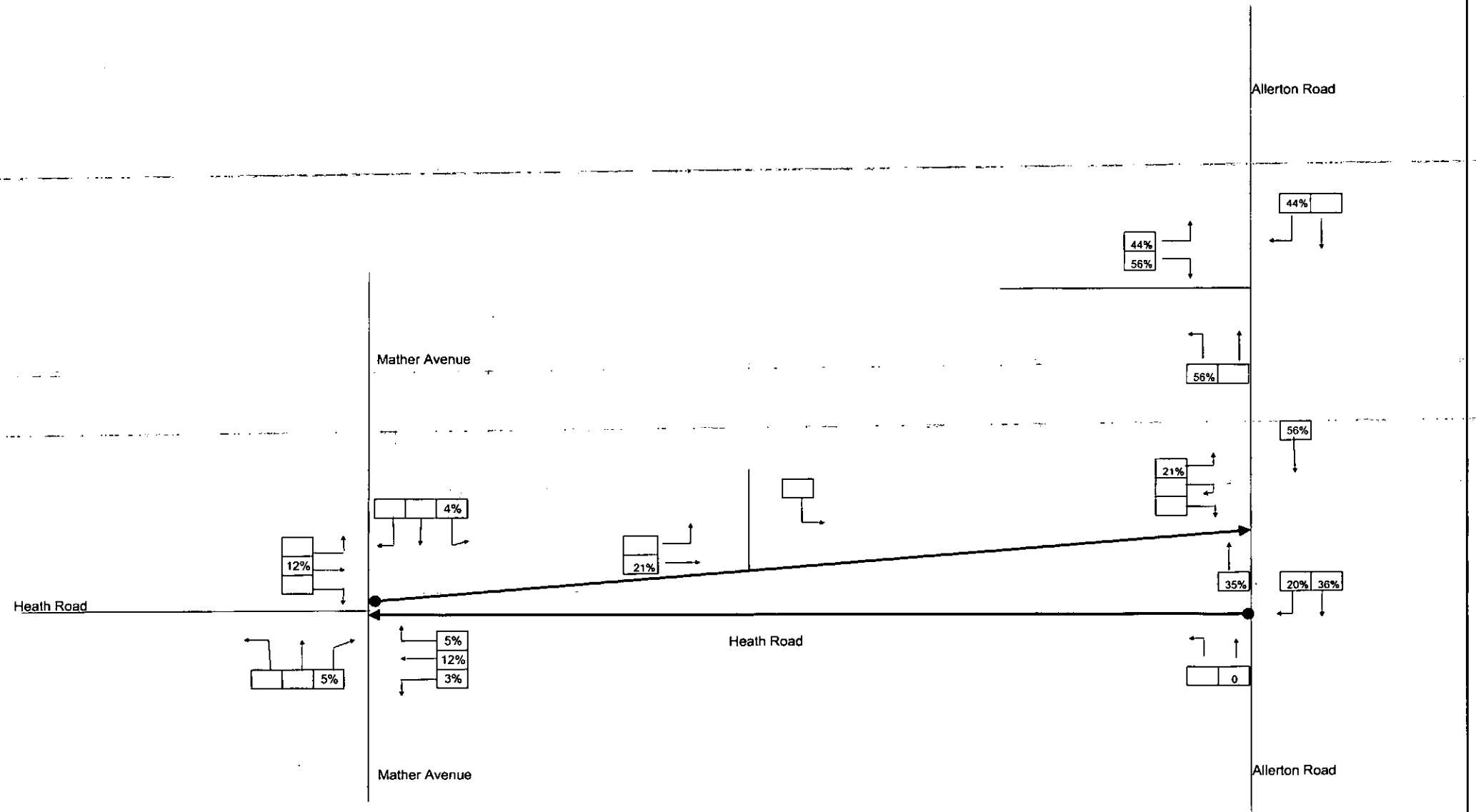
APPENDIX 6.2 (SHEET 1)	Base Year 2020 AM PEAK (08.00-09.00)	S|C|P Transportation Planning : Infrastructure Design www.scptransport.co.uk
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL	



APPENDIX 6.2 (SHEET 2)	Base Year 2020 PM PEAK (16.00-17.00)	S C P Transportation Planning : Infrastructure Design www.scptransport.co.uk
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL	

S|C|P

APPENDIX 6



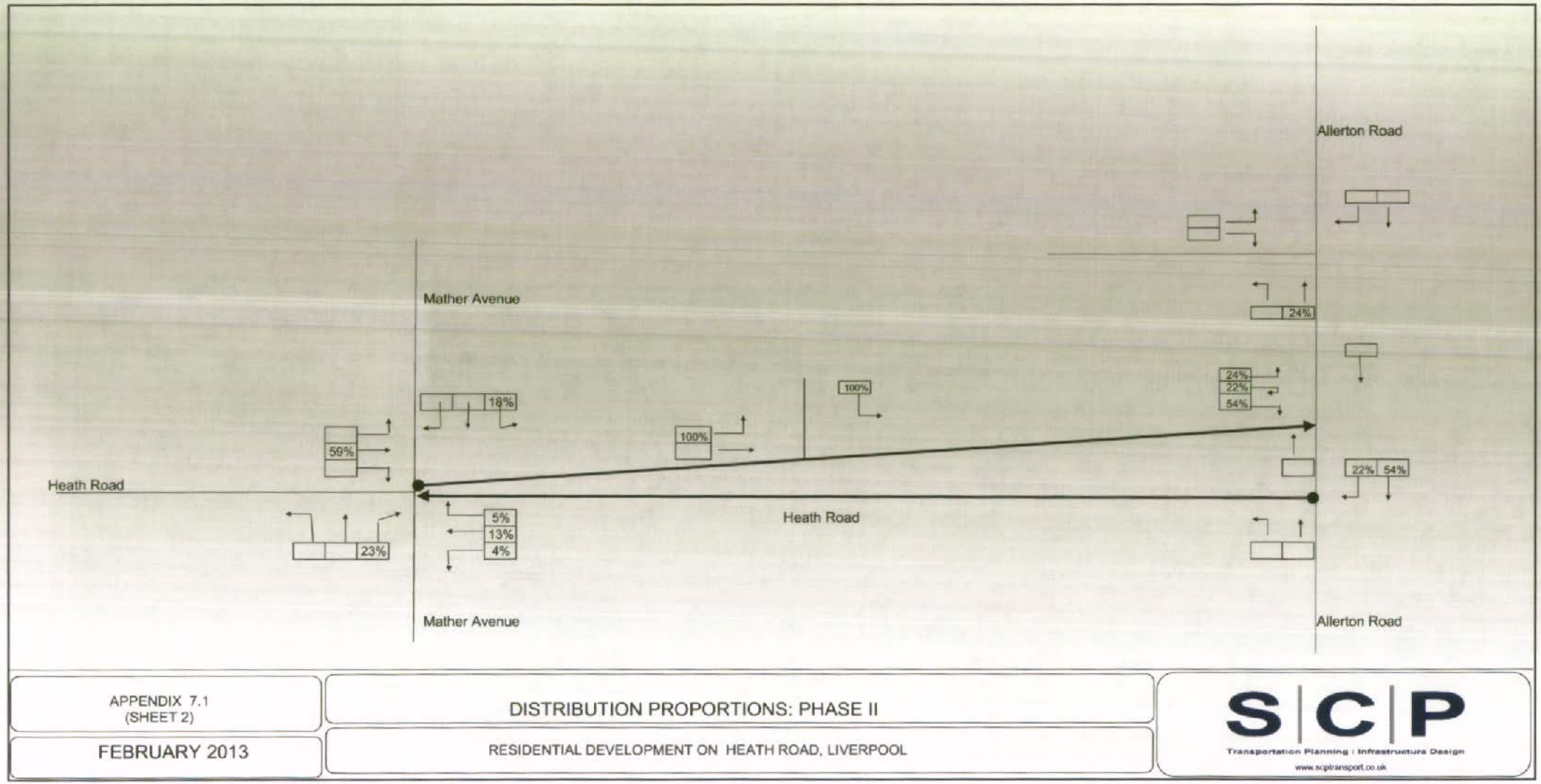
APPENDIX 7.1
(SHEET 1)

DISTRIBUTION PROPORTIONS FOR PHASE 1

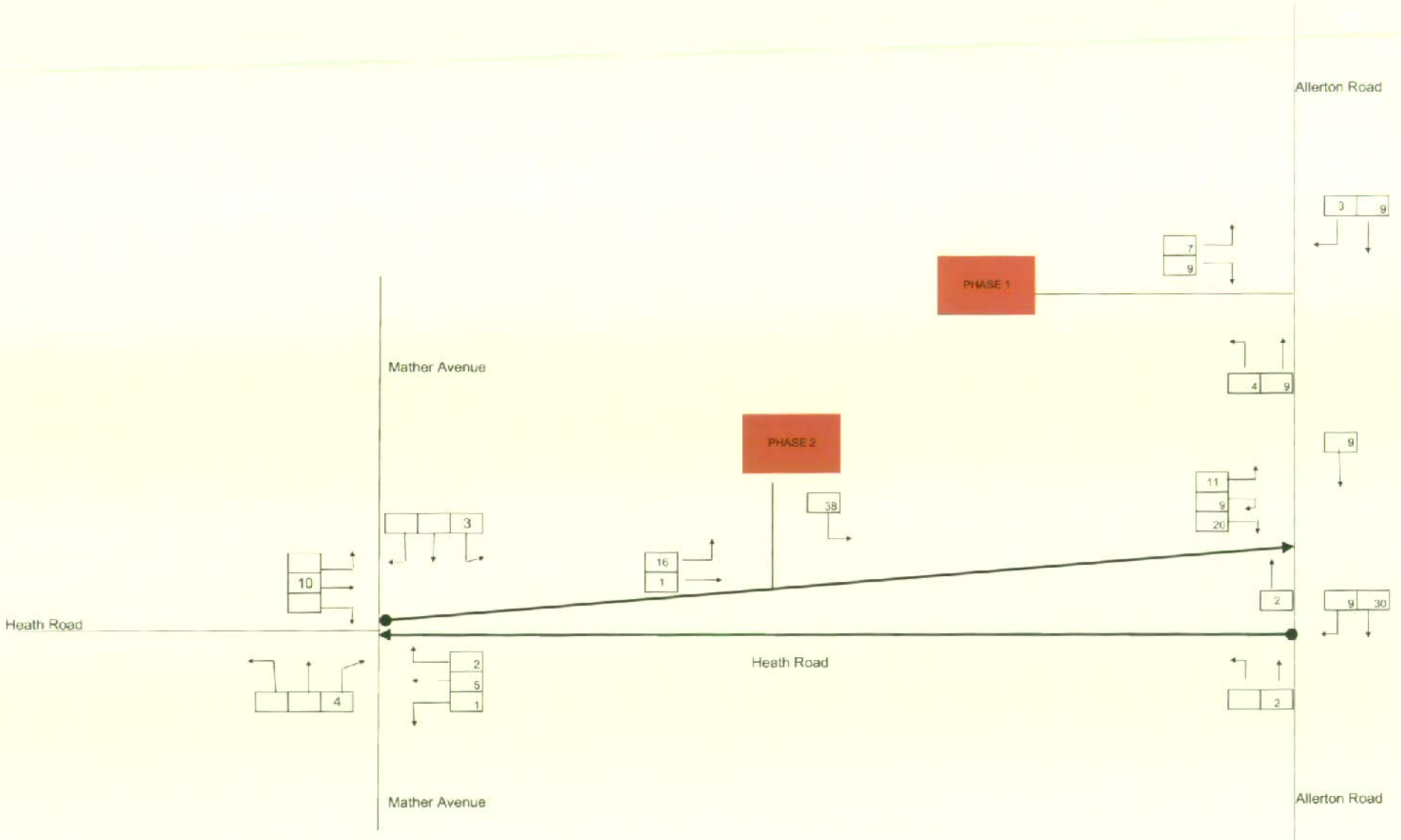
FEBRUARY 2013

RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

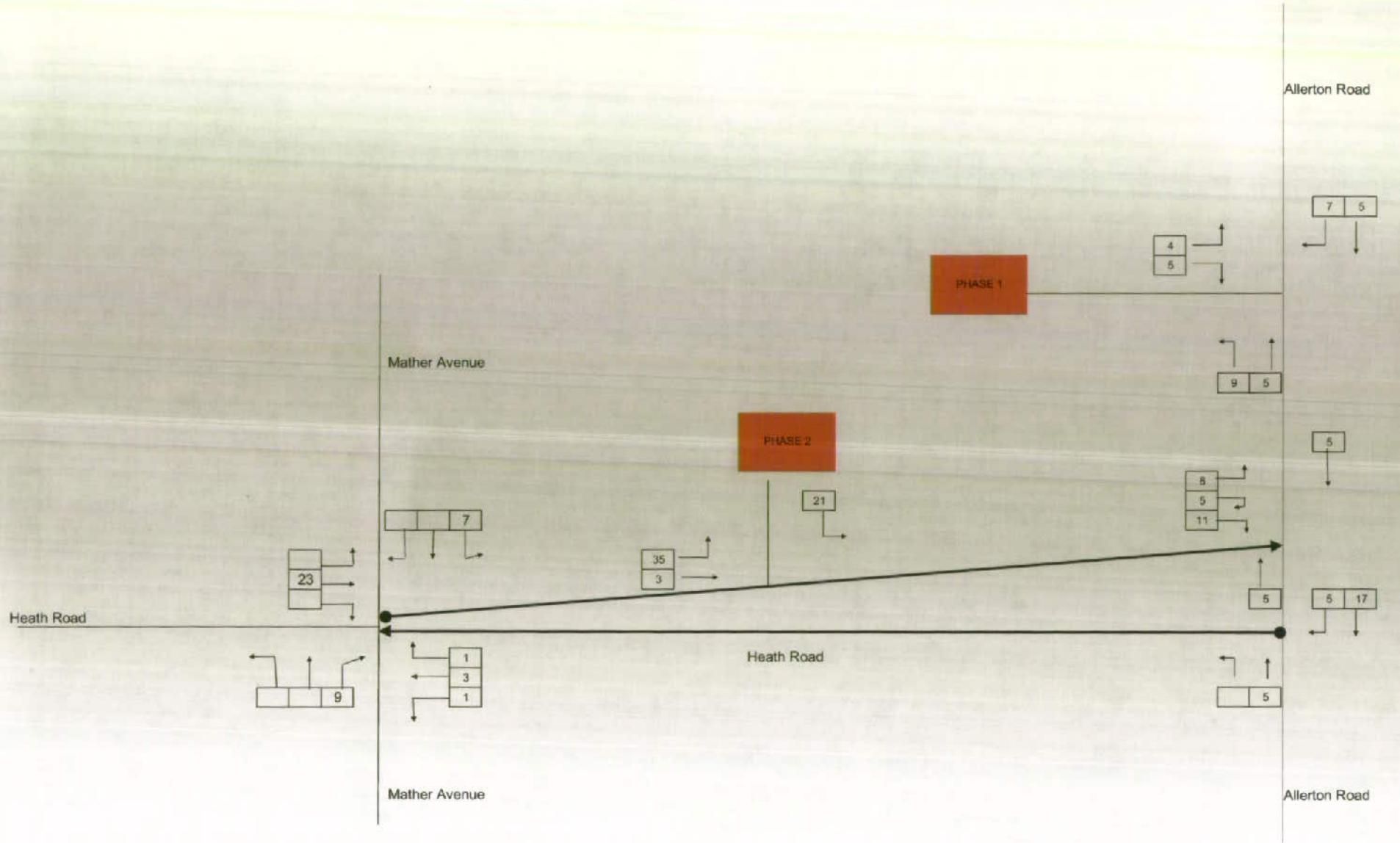
SCP
Transportation Planning : Infrastructure Design
www.scptransport.co.uk



APPENDIX 7.1 (SHEET 2)	DISTRIBUTION PROPORTIONS: PHASE II	S C P Transportation Planning : Infrastructure Design www.scptransport.co.uk
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL	



APPENDIX 7.2 (SHEET 1)	DEVELOPMENT FLOWS AM PEAK (08.00-09.00)	S C P Transportation Planning : Infrastructure Design www.scptransport.co.uk
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL	



APPENDIX 7.2
(SHEET 2)

DEVELOPMENT FLOWS PM PEAK (16.00-17.00)

FEBRUARY 2013

RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

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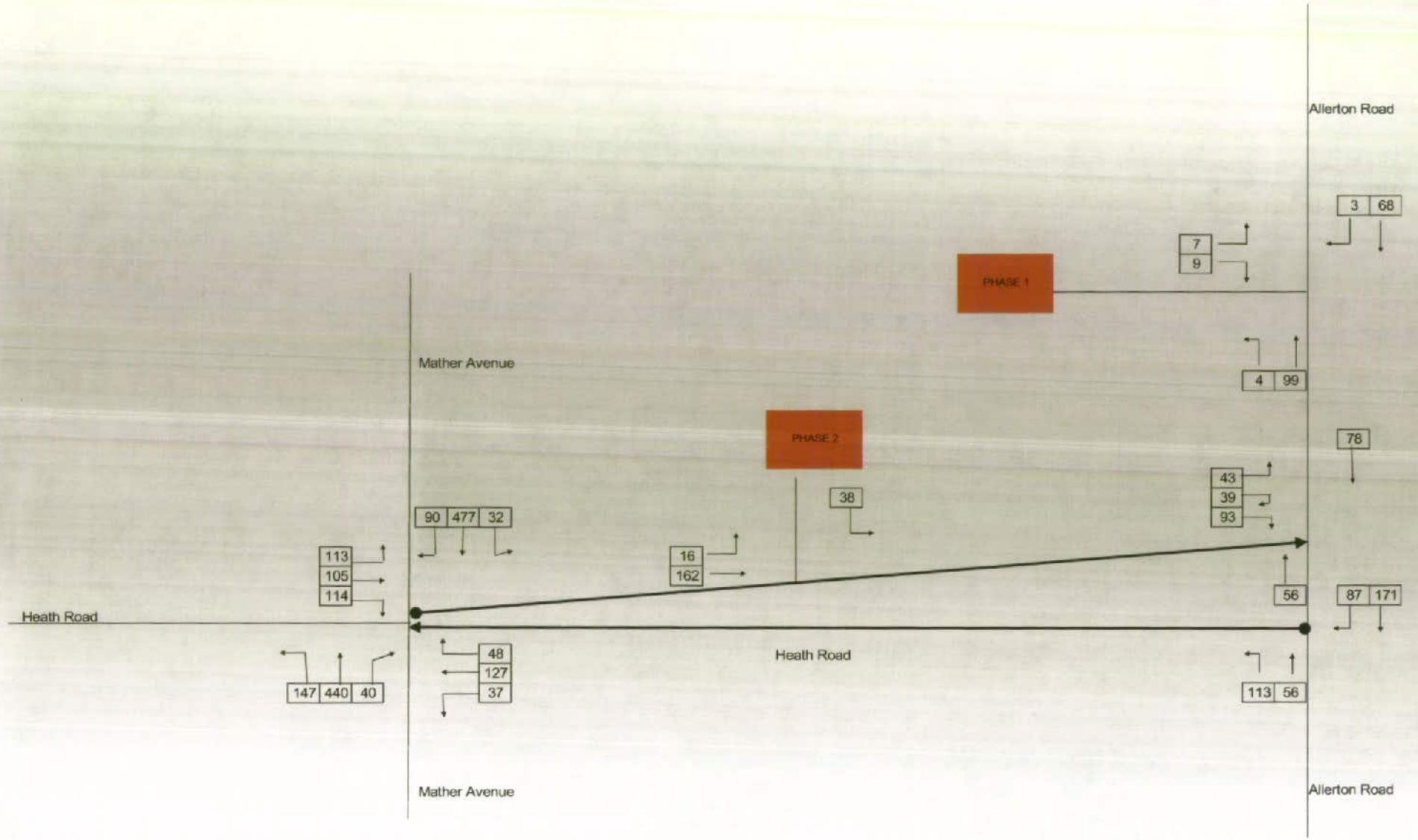
APPENDIX 7



APPENDIX 8.1
(SHEET 1)

2015 ASSESSMENT FLOWS AM PEAK (08.00-09.00)

FEBRUARY 2013

RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

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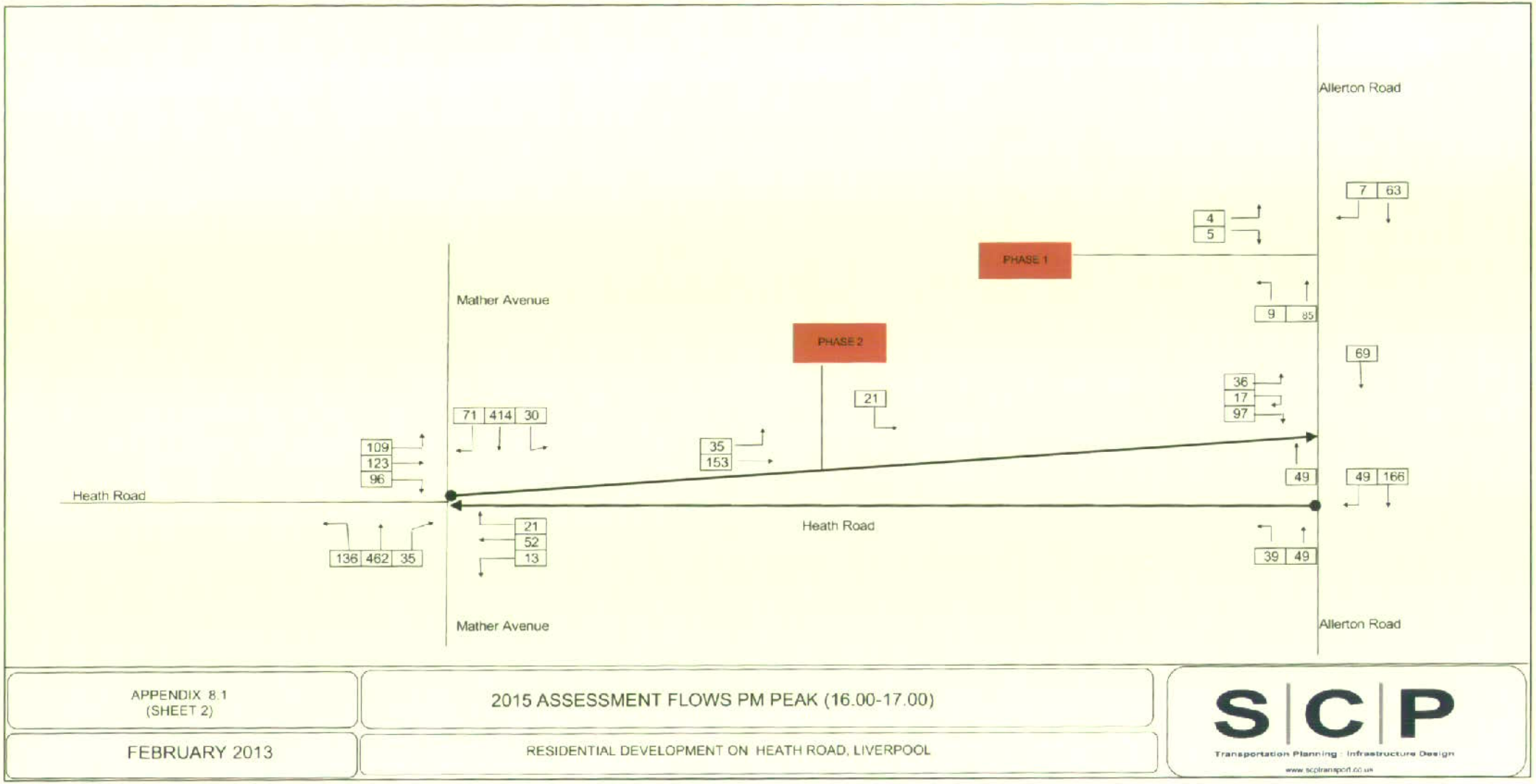

APPENDIX 8.1 (SHEET 2)	2015 ASSESSMENT FLOWS PM PEAK (16.00-17.00)
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

S|C|P
Transportation Planning : Infrastructure Design
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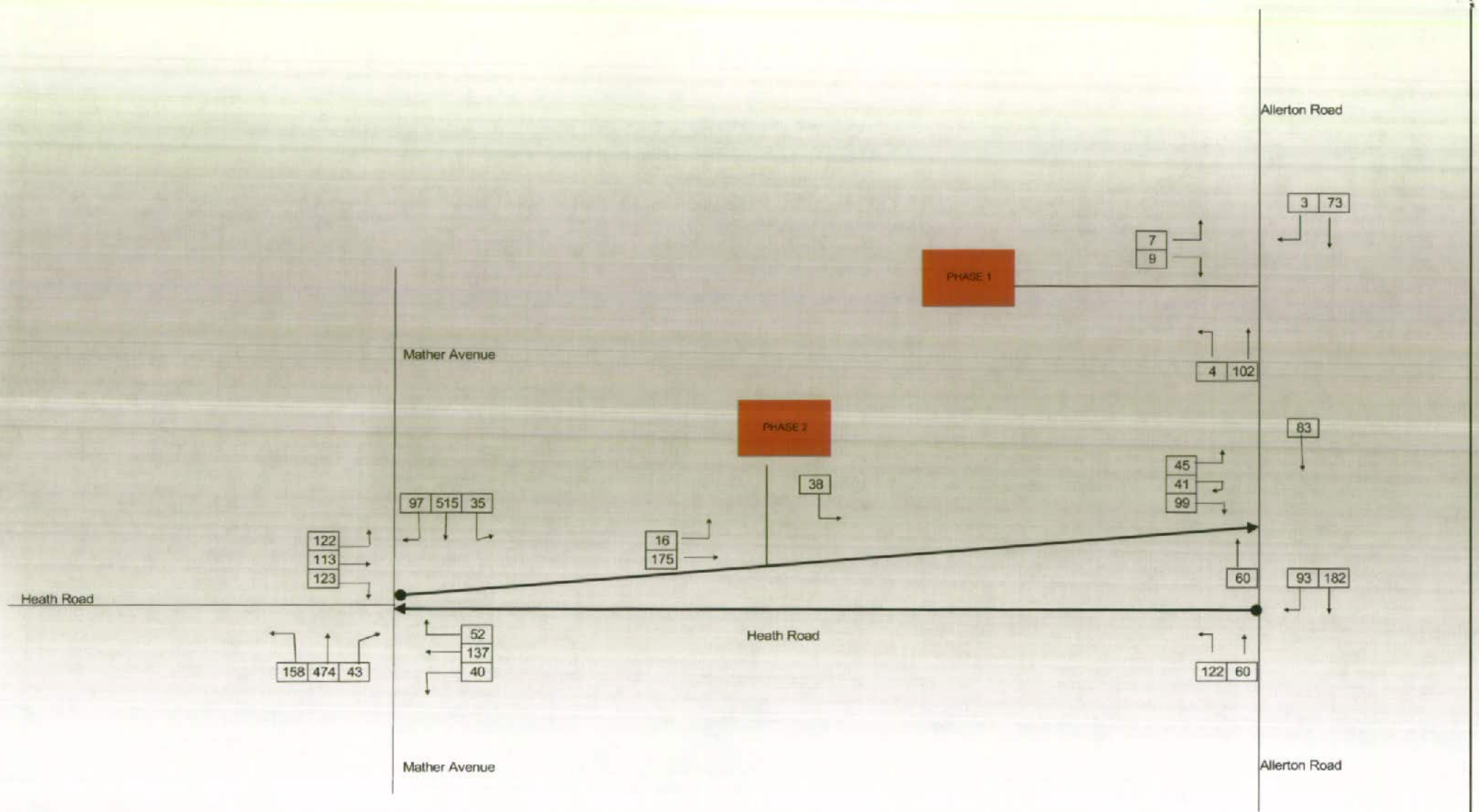

APPENDIX 8.2
(SHEET 1)

2020 ASSESSMENT FLOWS AM PEAK (08.00-09.00)

FEBRUARY 2013

RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

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Transportation Planning : Infrastructure Design
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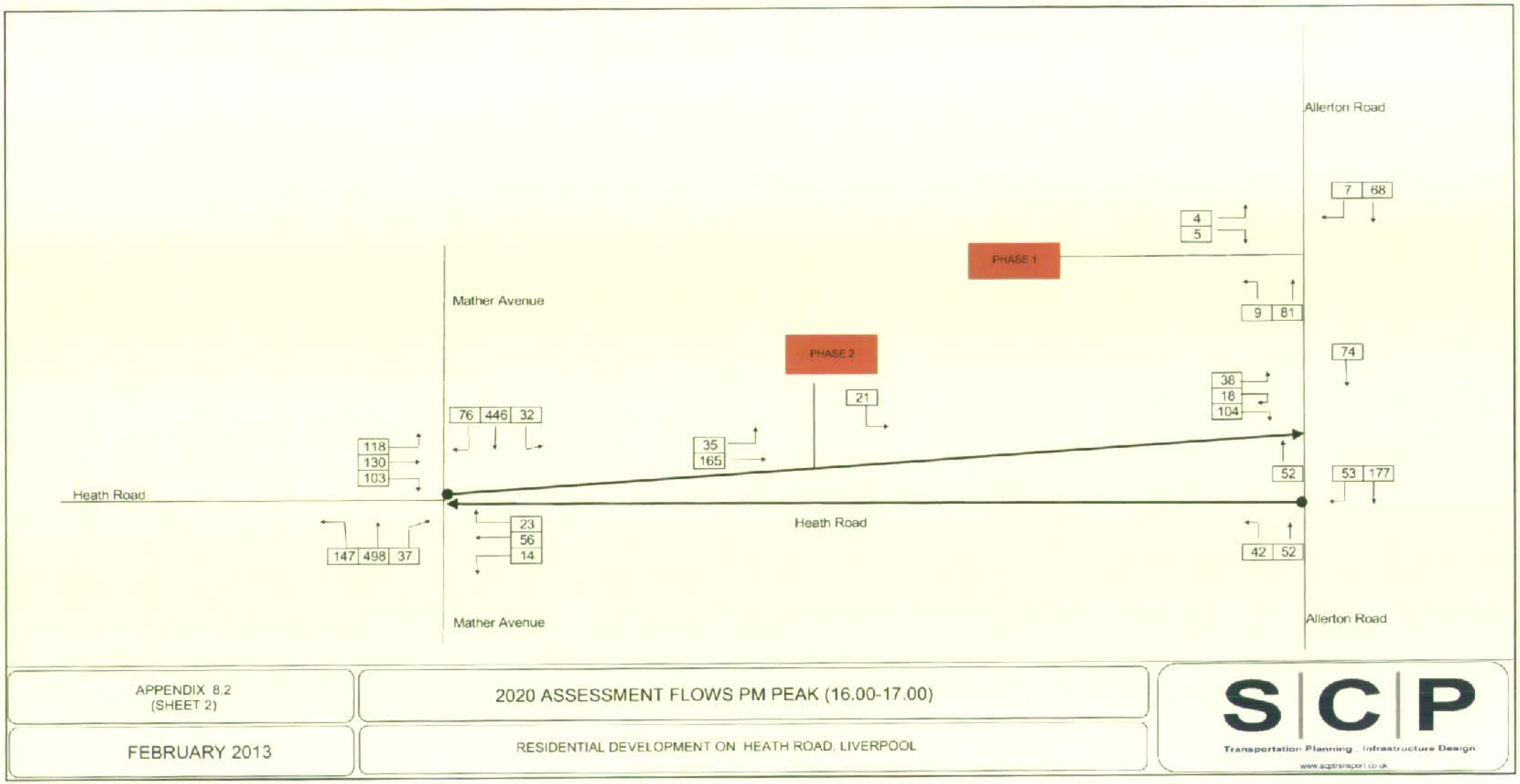

APPENDIX 8.2 (SHEET 2)	2020 ASSESSMENT FLOWS PM PEAK (16.00-17.00)
FEBRUARY 2013	RESIDENTIAL DEVELOPMENT ON HEATH ROAD, LIVERPOOL

S C P

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APPENDIX 8

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.1 ANALYSIS PROGRAM
RELEASE 4.0 (SEPT 2008)

ADAPTED FROM PICADY/3 WHICH IS CROWN COPYRIGHT
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FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770356
EMAIL: Software@trl.co.uk

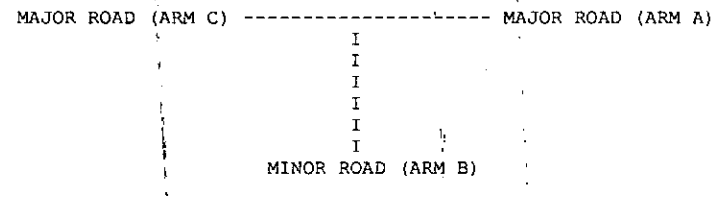
Run with file:-
"Z:\Job Library\2013\13011 - New Hayes School, Liverpool\Traffic Data\Allerton Road.vpi"
(drive-on-the-left) at 12:43:29 on Friday, 15 February 2013

RUN INFORMATION

RUN TITLE	: Capacity Assessment at the Heath Road_Allerton Road Junction
LOCATION	: Heath Road_Allerton Road Junction
DATE	: 08/02/13
CLIENT	:
ENUMERATOR	: Kass Mayoua [TRAFFIC15]
JOB NUMBER	:
STATUS	: TIA
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS Allerton Rd - south
ARM B IS Heath Road (Exit Only)
ARM C IS Allerton Rd - north

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
STREAM A-BC CONTAINS TRAFFIC GOING FROM ARM A TO ARM B AND TO ARM C
ETC.

TRL TRL Viewer 3.2 AG Z:\Job Library\2013\13011 - New Hayes School, Liverpool\Traffic Data\Allerton Roa

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	6.00 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	0.00 M.
- BLOCKS TRAFFIC		YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	20.0 M.
- VISIBILITY TO RIGHT	(VB-A)	50.0 M.
- LANE 1 WIDTH	(WB-C)	2.30 M.
- LANE 2 WIDTH	(WB-A)	2.30 M.

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
609.48	0.24	0.09

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
472.94	0.22	0.09	0.14	0.31

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
573.96	0.22	0.22

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: AM 2020 Assessments

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.75	1.13	0.75
ARM B	15.00	45.00	75.00	2.30	3.45	2.30
ARM C	15.00	45.00	75.00	1.04	1.56	1.04

Demand set: AM 2020 Assessments

TIME	FROM/TO	ARM A	ARM B	ARM C
07.45 - 08.00		TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S)		
	ARM A	0.000 0.0 (0.0)	0.000 0.0 (0.0)	1.000 60.0 (0.0)
	ARM B	0.755 139.0 (0.0)	0.000 0.0 (0.0)	0.245 45.0 (0.0)
	ARM C	1.000 83.0 (0.0)	0.000 0.0 (0.0)	0.000 0.0 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET AND FOR TIME PERIOD: AM 2020 Assessments, 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	0.56	9.41	0.060		0.00	0.06	0.9		0.11
B-A	1.74	7.58	0.230		0.00	0.29	4.2		0.17
C-AB	0.00	8.54	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.75								
08.00-08.15									
B-C	0.67	9.25	0.073		0.06	0.08	1.1		0.12
B-A	2.08	7.52	0.277		0.29	0.38	5.5		0.18
C-AB	0.00	8.51	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.90								
08.15-08.30									
B-C	0.83	9.04	0.091		0.08	0.10	1.5		0.12
B-A	2.55	7.43	0.343		0.38	0.51	7.4		0.20
C-AB	0.00	8.47	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.10								
08.30-08.45									
B-C	0.83	9.04	0.091		0.10	0.10	1.5		0.12
B-A	2.55	7.43	0.343		0.51	0.52	7.7		0.20
C-AB	0.00	8.47	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.10								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-C	0.67	9.25	0.073		0.10	0.08	1.2		0.12
B-A	2.08	7.52	0.277		0.52	0.39	6.0		0.18
C-AB	0.00	8.51	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.90								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-C	0.56	9.40	0.060		0.08	0.06	1.0		0.11
B-A	1.74	7.58	0.230		0.39	0.30	4.7		0.17
C-AB	0.00	8.54	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.75								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.1	
08.15	0.1	
08.30	0.1	
08.45	0.1	
09.00	0.1	
09.15	0.1	

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.00	0.3	
08.15	0.4	
08.30	0.5	*
08.45	0.5	*
09.00	0.4	
09.15	0.3	

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	61.9	41.3	7.2	0.12	7.2	0.12
B-A	191.3	127.5	35.6	0.19	35.6	0.19
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	82.6	55.1				
ALL	450.1	300.1	42.8	0.10	42.8	0.10

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
609.48	0.24	0.09

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
472.94	0.22	0.09	0.14	0.31

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
573.96	0.22	0.22

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: PM 2020 Assessments

TIME PERIOD BEGINS 15.45 AND ENDS 17.15

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

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DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.65	0.97	0.65
ARM B	15.00	45.00	75.00	2.00	3.00	2.00
ARM C	15.00	45.00	75.00	0.93	1.39	0.93

Demand set: PM 2020 Assessments

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
15.45 - 16.00	ARM A	0.000	0.000	1.000
		0.0	0.0	52.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.762	0.000	0.237
		122.0	0.0	38.0
		(0.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		74.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET PM 2020 Assessments
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.45-16.00									
B-C	0.48	9.50	0.050		0.00	0.05	0.8		0.11
B-A	1.53	7.61	0.201		0.00	0.25	3.6		0.16
C-AB	0.00	8.56	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.65								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.00-16.15									
B-C	0.57	9.37	0.061		0.05	0.06	0.9		0.11
B-A	1.83	7.56	0.242		0.25	0.31	4.6		0.17
C-AB	0.00	8.54	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.78								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
B-C	0.70	9.18	0.076		0.06	0.08	1.2		0.12
B-A	2.24	7.49	0.299		0.31	0.42	6.1		0.19
C-AB	0.00	8.50	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.95								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	0.70	9.18	0.076		0.08	0.08	1.2		0.12
B-A	2.24	7.49	0.299		0.42	0.42	6.3		0.19
C-AB	0.00	8.50	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.95								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	0.57	9.36	0.061		0.08	0.07	1.0		0.11
B-A	1.83	7.56	0.242		0.42	0.32	5.0		0.17
C-AB	0.00	8.54	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.78								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	0.48	9.49	0.050		0.07	0.05	0.8		0.11
B-A	1.53	7.61	0.201		0.32	0.25	3.9		0.16
C-AB	0.00	8.56	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.65								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.1
16.15	0.1
16.30	0.1
16.45	0.1
17.00	0.1
17.15	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.2
16.15	0.3
16.30	0.4
16.45	0.4
17.00	0.3
17.15	0.3

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.0
16.15	0.0
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0

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QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	52.3	34.9	5.9	0.11	5.9	0.11
B-A	167.9	111.9	29.5	0.18	29.5	0.18
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	71.6	47.7				
ALL	393.7	262.4	35.4	0.09	35.4	0.09

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
609.48	0.24	0.09

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
472.94	0.22	0.09	0.14	0.31

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
573.96	0.22	0.22

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: AM 2015 Assessments

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	0.70	1.05	0.70
ARM B	15.00	45.00	75.00	2.19	3.28	2.19
ARM C	15.00	45.00	75.00	0.98	1.46	0.98

Demand set: AM 2015 Assessments

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
07.45 - 08.00	ARM A	0.000	0.000	1.000
		0.0	0.0	56.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.754	0.000	0.246
		132.0	0.0	43.0
		(0.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		78.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET AM 2015 Assessments
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-C	0.54	9.45	0.057		0.00	0.06	0.9		0.11
B-A	1.66	7.60	0.218		0.00	0.27	3.9		0.17
C-AB	0.00	8.55	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.70								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-C	0.64	9.30	0.069		0.06	0.07	1.1		0.12
B-A	1.98	7.54	0.262		0.27	0.35	5.1		0.18
C-AB	0.00	8.53	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.84								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	0.79	9.10	0.087		0.07	0.09	1.4		0.12
B-A	2.42	7.46	0.325		0.35	0.47	6.8		0.20
C-AB	0.00	8.49	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.03								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	0.79	9.10	0.087		0.09	0.09	1.4		0.12
B-A	2.42	7.46	0.325		0.47	0.48	7.1		0.20
C-AB	0.00	8.49	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	1.03								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-C	0.64	9.30	0.069		0.09	0.08	1.1		0.12
B-A	1.98	7.54	0.262		0.48	0.36	5.6		0.18
C-AB	0.00	8.53	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.84								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-C	0.54	9.44	0.057		0.08	0.06	0.9		0.11
B-A	1.66	7.60	0.218		0.36	0.28	4.4		0.17
C-AB	0.00	8.55	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.70								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.3
08.15	0.4
08.30	0.5
08.45	0.5
09.00	0.4
09.15	0.3

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	59.2	39.5	6.8	0.12	6.8	0.12
B-A	181.7	121.1	32.9	0.18	33.0	0.18
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	77.1	51.4				
ALL	425.3	283.5	39.8	0.09	39.8	0.09

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

.SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
609.48	0.24	0.09

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
472.94	0.22	0.09	0.14	0.31

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
573.96	0.22	0.22

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

Demand set: PM 2015 Assessments

TIME PERIOD BEGINS 15.45 AND ENDS 17.15

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

TRL TRL Viewer 3.2 AG Z:\Job Library\2013\13011 - New Hayes School, Liverpool\Traffic Data\Allerton Roa

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.61	0.92	0.61
ARM B	15.00	45.00	75.00	1.88	2.81	1.88
ARM C	15.00	45.00	75.00	0.86	1.29	0.86

Demand set: PM 2015 Assessments

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
15.45 - 16.00	ARM A	0.000	0.000	1.000
		0.0	0.0	49.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.760	0.000	0.240
		114.0	0.0	36.0
		(0.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		69.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET PM 2015 Assessments
AND FOR TIME PERIOD 2

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.45-16.00									
B-C	0.45	9.54	0.047		0.00	0.05	0.7		0.11
B-A	1.43	7.63	0.187		0.00	0.23	3.3		0.16
C-AB	0.00	8.57	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.61								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.00-16.15									
B-C	0.54	9.42	0.057		0.05	0.06	0.9		0.11
B-A	1.71	7.58	0.225		0.23	0.29	4.2		0.17
C-AB	0.00	8.55	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.73								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
B-C	0.66	9.25	0.071		0.06	0.08	1.1		0.12
B-A	2.09	7.51	0.278		0.29	0.38	5.5		0.18
C-AB	0.00	8.51	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.90								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-C	0.66	9.24	0.071		0.08	0.08	1.1		0.12
B-A	2.09	7.51	0.278		0.38	0.38	5.7		0.18
C-AB	0.00	8.51	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.90								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-C	0.54	9.41	0.057		0.08	0.06	0.9		0.11
B-A	1.71	7.58	0.225		0.38	0.29	4.6		0.17
C-AB	0.00	8.55	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.73								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-C	0.45	9.54	0.047		0.06	0.05	0.8		0.11
B-A	1.43	7.63	0.187		0.29	0.23	3.6		0.16
C-AB	0.00	8.57	0.000		0.00	0.00	0.0		0.00
A-B	0.00								
A-C	0.61								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.0
16.15	0.1
16.30	0.1
16.45	0.1
17.00	0.1
17.15	0.1

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.2
16.15	0.3
16.30	0.4
16.45	0.4
17.00	0.3
17.15	0.2

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.00	0.0
16.15	0.0
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0

TRL TRL Viewer 3.2 AG Z:\Job Library\2013\13011 - New Hayes School, Liverpool\Traffic Data\Allerton Roa

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	49.6	33.0	5.6	0.11	5.6	0.11
B-A	156.9	104.6	26.9	0.17	26.9	0.17
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
A-B	0.0	0.0				
A-C	67.4	45.0				
ALL	368.9	245.9	32.4	0.09	32.4	0.09

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

*******END OF RUN*******

========== end of file ==========

Printed at 12:43:56 on 15/02/2013]

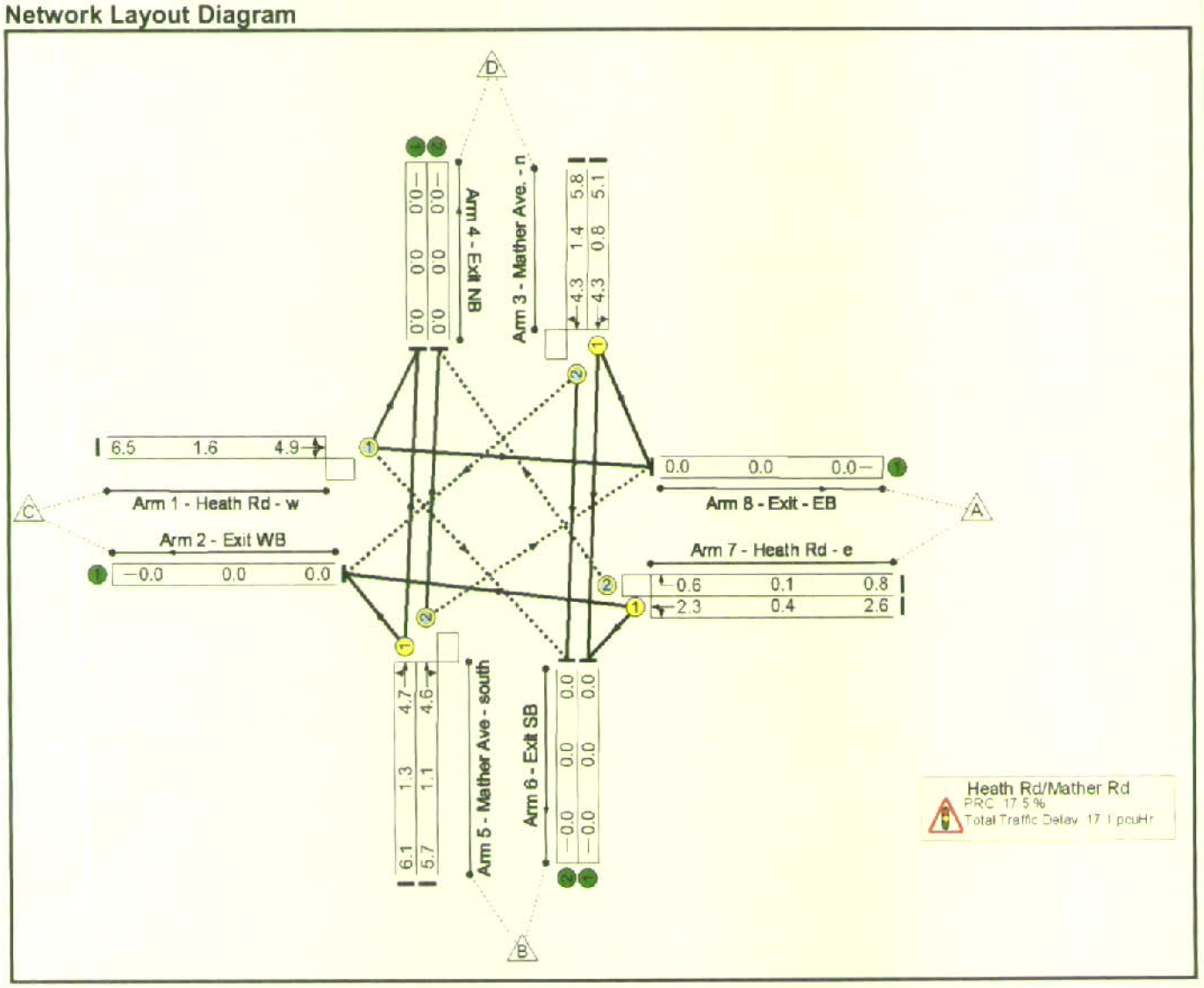
LinSig V1 style report

User and Project Details

Project:	**Proposed Res. Heath Road, Liverpool**
Location:	Mather Avenue / Heath Road
Author:	KM
Company:	SCP
Address:	Mount Street, Manchester

Scenario 1: 'AM peak 2013' (FG1: 'AM Peak 2013', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Traffic	1		7	7
E	Pedestrian	1		6	6
F	Pedestrian	1		6	6
G	Pedestrian	1		6	6
H	Pedestrian	1		6	6
I	Pedestrian	1		6	6
J	Pedestrian	1		6	6
K	Pedestrian	1		6	6
L	Pedestrian	1		6	6

Phase Intergreens Matrix

		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A		7	-	7	7	-	7	-	9	-	-	10
	B	7		7	-	-	10	-	7	7	-	-	8
	C	-	7		8	-	10	10	-	-	7	-	7
	D	7	-	7		-	7	10	-	10	-	7	-
	E	10	-	-	-		-	-	-	-	-	-	-
	F	-	8	8	8	-		-	-	-	-	-	-
	G	9	-	9	9	-	-		-	-	-	-	-
	H	-	10	-	-	-	-	-		-	-	-	-
	I	7	7	-	7	-	-	-	-		-	-	-
	J	-	-	7	-	-	-	-	-	-		-	-
	K	-	-	-	9	-	-	-	-	-	-		-
	L	9	9	9	-	-	-	-	-	-	-	-	

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

		To Stage		
		1	2	3
From Stage	1		10	10
	2	10		10
	3	10	10	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	B D E J
1	2	A C H K
1	3	E F G H I J K L

Give-Way Lane Input Data

Junction: Heath Rd/Mather Rd											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (Heath Rd - w)	6/2 (Right)	1440	0	7/1	1.09	All	2.00	2.00	0.50	2	2.00
3/2 (Mather Ave. - n)	2/1 (Right)	1440	0	5/1	1.09	All	2.00	2.00	0.50	2	2.00
				5/2	1.09	All					
5/2 (Mather Ave - south)	8/1 (Right)	1440	0	3/1	1.09	All	2.00	2.00	0.50	2	2.00
				3/2	1.09	All					
7/2 (Heath Rd - e)	4/2 (Right)	1440	0	1/1	1.09	To 4/1 (Left) To 8/1 (Ahead)	2.00	-	0.50	2	2.00

Lane Input Data

Junction: Heath Rd/Mather Rd

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Heath Rd - w)	O	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Left	6.00
											Arm 6 Right	10.00
											Arm 8 Ahead	Inf
2/1 (Exit WB)	U		2	3	60.0	Inf	-	-	-	-	-	-
3/1 (Mather Ave. - n)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Ahead	Inf
											Arm 8 Left	9.00
3/2 (Mather Ave. - n)	O	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 2 Right	14.00
											Arm 6 Ahead	Inf
4/1 (Exit NB)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Exit NB)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Mather Ave - south)	U	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 2 Left	9.00
											Arm 4 Ahead	Inf
5/2 (Mather Ave - south)	O	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Ahead	Inf
											Arm 8 Right	8.00
6/1 (Exit SB)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2 (Exit SB)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (Heath Rd - e)	U	A	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 2 Ahead	Inf
											Arm 6 Left	8.00
7/2 (Heath Rd - e)	O	A	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Right	12.00
8/1 (Exit - EB)	U		2	3	60.0	Inf	-	-	-	-	-	-

Lane Saturation Flows

Scenario 1: 'AM peak 2013' (FG1: 'AM Peak 2013', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	35.1 %	1722	1722
				Arm 6 Right	10.00	35.4 %		
				Arm 8 Ahead	Inf	29.5 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	90.2 %	1933	1933
				Arm 8 Left	9.00	9.8 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	30.2 %	1903	1903
				Arm 6 Ahead	Inf	69.8 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	47.1 %	1799	1799
				Arm 4 Ahead	Inf	52.9 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	88.3 %	1898	1898
				Arm 8 Right	8.00	11.7 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	77.6 %	1862	1862
				Arm 6 Left	8.00	22.4 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'PM Peak 2013' (FG2: 'PM Peak 2013', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	35.8 %	1729	1729
				Arm 6 Right	10.00	31.5 %		
				Arm 8 Ahead	Inf	32.8 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	90.8 %	1935	1935
				Arm 8 Left	9.00	9.2 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	27.8 %	1908	1908
				Arm 6 Ahead	Inf	72.2 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	43.7 %	1808	1808
				Arm 4 Ahead	Inf	56.3 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	91.6 %	1910	1910
				Arm 8 Right	8.00	8.4 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	80.3 %	1871	1871
				Arm 6 Left	8.00	19.7 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 3: '2015 AM Assessments' (FG3: 'AM Peak 2015 Assessments', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	34.0 %	1729	1729
				Arm 6 Right	10.00	34.3 %		
				Arm 8 Ahead	Inf	31.6 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	89.3 %	1931	1931
				Arm 8 Left	9.00	10.7 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	30.0 %	1904	1904
				Arm 6 Ahead	Inf	70.0 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	46.8 %	1800	1800
				Arm 4 Ahead	Inf	53.2 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	87.2 %	1895	1895
				Arm 8 Right	8.00	12.8 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	77.4 %	1861	1861
				Arm 6 Left	8.00	22.6 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 4: '2015 PM Assessments' (FG4: 'PM Peak 2015 Assessments', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	33.2 %	1744	1744
				Arm 6 Right	10.00	29.3 %		
				Arm 8 Ahead	Inf	37.5 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	88.3 %	1928	1928
				Arm 8 Left	9.00	11.7 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	27.5 %	1909	1909
				Arm 6 Ahead	Inf	72.5 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	42.9 %	1811	1811
				Arm 4 Ahead	Inf	57.1 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	88.9 %	1901	1901
				Arm 8 Right	8.00	11.1 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	80.0 %	1870	1870
				Arm 6 Left	8.00	20.0 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2020 AM Assessments' (FG5: 'AM Peak 2020 Assessments', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	34.1 %	1729	1729
				Arm 6 Right	10.00	34.4 %		
				Arm 8 Ahead	Inf	31.6 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	89.2 %	1930	1930
				Arm 8 Left	9.00	10.8 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	29.9 %	1904	1904
				Arm 6 Ahead	Inf	70.1 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	46.7 %	1800	1800
				Arm 4 Ahead	Inf	53.3 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	87.2 %	1895	1895
				Arm 8 Right	8.00	12.8 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	77.4 %	1861	1861
				Arm 6 Left	8.00	22.6 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 6: '2020 PM Assessments' (FG6: 'PM Peak 2020 Assessments', Plan 1: 'Network Control Plan 1')

Junction: Heath Rd/Mather Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Heath Rd - w)	3.50	0.00	Y	Arm 4 Left	6.00	33.6 %	1742	1742
				Arm 6 Right	10.00	29.3 %		
				Arm 8 Ahead	Inf	37.0 %		
2/1 (Exit WB Lane 1)	Infinite Saturation Flow						Inf	Inf
3/1 (Mather Ave. - n)	3.50	0.00	Y	Arm 6 Ahead	Inf	88.4 %	1928	1928
				Arm 8 Left	9.00	11.6 %		
3/2 (Mather Ave. - n)	3.50	0.00	Y	Arm 2 Right	14.00	27.4 %	1909	1909
				Arm 6 Ahead	Inf	72.6 %		
4/1 (Exit NB Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit NB Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Mather Ave - south)	3.25	0.00	Y	Arm 2 Left	9.00	43.1 %	1810	1810
				Arm 4 Ahead	Inf	56.9 %		
5/2 (Mather Ave - south)	3.25	0.00	Y	Arm 4 Ahead	Inf	89.1 %	1901	1901
				Arm 8 Right	8.00	10.9 %		
6/1 (Exit SB Lane 1)	Infinite Saturation Flow						Inf	Inf
6/2 (Exit SB Lane 2)	Infinite Saturation Flow						Inf	Inf
7/1 (Heath Rd - e)	3.25	0.00	Y	Arm 2 Ahead	Inf	80.0 %	1870	1870
				Arm 6 Left	8.00	20.0 %		
7/2 (Heath Rd - e)	3.25	0.00	Y	Arm 4 Right	12.00	100.0 %	1724	1724
8/1 (Exit - EB Lane 1)	Infinite Saturation Flow						Inf	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM Peak 2013'	08:00	09:00	01:00	
2: 'PM Peak 2013'	16:00	17:00	01:00	
3: 'AM Peak 2015 Assessments'	08:00	09:00	01:00	
4: 'PM Peak 2015 Assessments'	16:00	17:00	01:00	
5: 'AM Peak 2020 Assessments'	08:00	09:00	01:00	
6: 'PM Peak 2020 Assessments'	16:00	17:00	01:00	

Traffic Flows, Desired

FG1: 'AM Peak 2013'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	35	121	46	202
	B	36	0	145	435	616
	C	94	113	0	112	319
	D	29	472	89	0	590
	Tot.	159	620	355	593	1727

FG2: 'PM Peak 2013'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	12	49	20	81
	B	26	0	135	457	618
	C	99	95	0	108	302
	D	23	410	70	0	503
	Tot.	148	517	254	585	1504

FG3: 'AM Peak 2015 Assessments'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	37	127	48	212
	B	40	0	147	440	627
	C	105	114	0	113	332
	D	32	477	90	0	599
	Tot.	177	628	364	601	1770

FG4: 'PM Peak 2015 Assessments'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	13	52	21	86
	B	35	0	136	462	633
	C	123	96	0	109	328
	D	30	414	71	0	515
	Tot.	188	523	259	592	1562

FG5: 'AM Peak 2020 Assessments'
Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	40	137	52	229
	B	43	0	158	474	675
	C	113	123	0	122	358
	D	35	515	97	0	647
	Tot.	191	678	392	648	1909

FG6: 'PM Peak 2020 Assessments'
Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	14	56	23	93
	B	37	0	147	498	682
	C	130	103	0	118	351
	D	32	446	76	0	554
	Tot.	199	563	279	639	1680

Stage Timings

Scenario 1: 'AM peak 2013' (FG1: 'AM Peak 2013', Plan 1: 'Network Control Plan 1')
Stage Stream: 1

Stage	1	2	3
Duration	13	11	6
Change Point	0	23	44

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.6%**
Heath Rd/Mather Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.6%**
1/1	Heath Rd - w Left Right Ahead	O	1	N/A	C		1	14	-	319	1722	417	76.6%
2/1	Exit WB	U	N/A	N/A	-		-	-	-	355	Inf	Inf	0.0%
3/1	Mather Ave. - n Ahead Left	U	1	N/A	D		1	14	-	295	1933	483	61.0%
3/2	Mather Ave. - n Right Ahead	O	1	N/A	D		1	14	-	295	1903	396	74.4%
4/1	Exit NB	U	N/A	N/A	-		-	-	-	275	Inf	Inf	0.0%
4/2	Exit NB	U	N/A	N/A	-		-	-	-	318	Inf	Inf	0.0%
5/1	Mather Ave - south Left Ahead	U	1	N/A	B		1	13	-	308	1799	420	73.4%
5/2	Mather Ave - south Ahead Right	O	1	N/A	B		1	13	-	308	1898	443	69.5%
6/1	Exit SB	U	N/A	N/A	-			-	-	301	Inf	Inf	0.0%
6/2	Exit SB	U	N/A	N/A	-		-	-	-	319	Inf	Inf	0.0%
7/1	Heath Rd - e Ahead Left	U	1	N/A	A		1	11	-	156	1862	372	41.9%
7/2	Heath Rd - e Right	O	1	N/A	A		1	11	-	46	1724	204	22.6%
8/1	Exit - EB	U	N/A	N/A	-		-	-	-	159	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**211**	**10**	**63**	**9.9**	**6.7**	**0.5**	**17.1**	-	-	-	-
Heath Rd/Mather Rd	-	-	**211**	**10**	**63**	**9.9**	**6.7**	**0.5**	**17.1**	-	-	-	-
1/1	319	319	103	10	0	1.8	1.6	0.1	3.5	39.8	4.9	1.6	6.5
2/1	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	295	295	-	-	-	1.6	0.8	-	2.4	29.4	4.3	0.8	5.1
3/2	295	295	26	0	63	1.6	1.4	0.3	3.3	40.4	4.3	1.4	5.8
4/1	275	275	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	308	308	-	-	-	1.8	1.3	-	3.2	37.0	4.7	1.3	6.1
5/2	308	308	36	0	0	1.8	1.1	0.0	3.0	34.6	4.6	1.1	5.7
6/1	301	301	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	319	319	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	156	156	-	-	-	0.9	0.4	-	1.3	29.3	2.3	0.4	2.6
7/2	46	46	46	0	0	0.3	0.1	0.0	0.4	34.8	0.6	0.1	0.8
8/1	159	159	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 17.5 Total Delay for Signalled Lanes (pcuHr): 17.09 Cycle Time (s): 60
PRC Over All Lanes (%): 17.5 Total Delay Over All Lanes(pcuHr): 17.09

Stage Timings

Scenario 2: 'PM Peak 2013' (FG2: 'PM Peak 2013', Plan 1: 'Network Control Plan 1')

Stage Stream: 1

Stage	1	2	3
Duration	13	11	6
Change Point	0	23	44

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**73.2%**
Heath Rd/Mather Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**73.2%**
1/1	Heath Rd - w Left Right Ahead	O	1	N/A	C		1	14		302	1729	432	69.9%
2/1	Exit WB	U	N/A	N/A	-		-	-	-	254	Inf	Inf	0.0%
3/1	Mather Ave. - n Ahead Left	U	1	N/A	D		1	14	-	251	1935	484	51.9%
3/2	Mather Ave. - n Right Ahead	O	1	N/A	D		1	14	-	252	1908	411	61.3%
4/1	Exit NB	U	N/A	N/A	-		-	-	-	282	Inf	Inf	0.0%
4/2	Exit NB	U	N/A	N/A	-		-	-	-	303	Inf	Inf	0.0%
5/1	Mather Ave - south Left Ahead	U	1	N/A	B		1	13	-	309	1808	422	73.2%
5/2	Mather Ave - south Ahead Right	O	1	N/A	B		1	13	-	309	1910	446	69.3%
6/1	Exit SB	U	N/A	N/A	-		-	-	-	240	Inf	Inf	0.0%
6/2	Exit SB	U	N/A	N/A	-		-	-	-	277	Inf	Inf	0.0%
7/1	Heath Rd - e Ahead Left	U	1	N/A	A		1	11	-	61	1871	374	16.3%
7/2	Heath Rd - e Right	O	1	N/A	A		1	11	-	20	1724	206	9.7%
8/1	Exit - EB	U	N/A	N/A	-		-	-	-	148	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	181	9	21	8.5	5.1	0.2	13.8	-	-	-	-
Heath Rd/Mather Rd	-	-	181	9	21	8.5	5.1	0.2	13.8	-	-	-	-
1/1	302	302	86	9	0	1.7	1.1	0.0	2.9	34.4	4.5	1.1	5.7
2/1	254	254	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	251	251	-	-	-	1.4	0.5	-	1.9	27.1	3.6	0.5	4.1
3/2	252	252	49	0	21	1.4	0.8	0.2	2.3	33.3	3.6	0.8	4.4
4/1	282	282	-	-	-	0.0	0.0		0.0	0.0	0.0	0.0	0.0
4/2	303	303	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	309	309	-	-	-	1.8	1.3	-	3.2	36.9	4.7	1.3	6.1
5/2	309	309	26	0	0	1.8	1.1	0.0	2.9	34.2	4.6	1.1	5.7
6/1	240	240			-	0.0	0.0		0.0	0.0	0.0	0.0	0.0
6/2	277	277	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	61	61	-	-	-	0.3	0.1	-	0.4	25.6	0.8	0.1	0.9
7/2	20	20	20	0	0	0.1	0.1	0.0	0.2	31.8	0.3	0.1	0.3
8/1	148	148			-	0.0	0.0		0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 22.9 Total Delay for Signalled Lanes (pcuHr): 13.82 Cycle Time (s): 60
PRC Over All Lanes (%): 22.9 Total Delay Over All Lanes(pcuHr): 13.82

Stage Timings

Scenario 3: '2015 AM Assessments' (FG3: 'AM Peak 2015 Assessments', Plan 1: 'Network Control Plan 1')
Stage Stream: 1

Stage	1	2	3
Duration	13	11	6
Change Point	0	23	44

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.8%**
Heath Rd/Mather Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.8%**
1/1	Heath Rd - w Left Right Ahead	O	1	N/A	C		1	14	-	332	1729	421	78.8%
2/1	Exit WB	U	N/A	N/A	-		-	-	-	364	Inf	Inf	0.0%
3/1	Mather Ave. - n Ahead Left	U	1	N/A	D		1	14	-	299	1931	483	61.9%
3/2	Mather Ave. - n Right Ahead	O	1	N/A	D		1	14	-	300	1904	400	75.0%
4/1	Exit NB	U	N/A	N/A	-		-	-	-	280	Inf	Inf	0.0%
4/2	Exit NB	U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%
5/1	Mather Ave - south Left Ahead	U	1	N/A	B		1	13	-	314	1800	420	74.8%
5/2	Mather Ave - south Ahead Right	O	1	N/A	B		1	13	-	313	1895	442	70.8%
6/1	Exit SB	U	N/A	N/A			-	-	-	304	Inf	Inf	0.0%
6/2	Exit SB	U	N/A	N/A	-		-	-	-	324	Inf	Inf	0.0%
7/1	Heath Rd - e Ahead Left	U	1	N/A	A		1	11	-	164	1861	372	44.1%
7/2	Heath Rd - e Right	O	1	N/A	A		1	11	-	48	1724	192	25.0%
8/1	Exit EB	U	N/A	N/A				-		177	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**209**	**10**	**73**	**10.2**	**7.2**	**0.5**	**17.9**	-	-	-	-
Heath Rd/Mather Rd	-	-	**209**	**10**	**73**	**10.2**	**7.2**	**0.5**	**17.9**	-	-	-	-
1/1	332	332	104	10	0	1.9	1.8	0.1	3.8	41.6	5.1	1.8	6.9
2/1	364	364	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	299	299	-	-	-	1.7	0.8	-	2.5	29.7	4.4	0.8	5.2
3/2	300	300	17	0	73	1.7	1.5	0.3	3.4	40.8	4.4	1.5	5.9
4/1	280	280	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	321	321	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	314	314	-	-	-	1.9	1.4	-	3.3	37.9	4.8	1.4	6.2
5/2	313	313	40	0	0	1.8	1.2	0.0	3.1	35.4	4.8	1.2	6.0
6/1	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	324	324	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	164	164	-	-	-	1.0	0.4	-	1.4	29.7	2.4	0.4	2.8
7/2	48	48	48	0	0	0.3	0.2	0.1	0.5	36.4	0.7	0.2	0.8
8/1	177	177	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 14.2 Total Delay for Signalled Lanes (pcuHr): 17.92 Cycle Time (s): 60

PRC Over All Lanes (%): 14.2 Total Delay Over All Lanes(pcuHr): 17.92

Stage Timings

Scenario 4: '2015 PM Assessments' (FG4: 'PM Peak 2015 Assessments', Plan 1: 'Network Control Plan 1')
Stage Stream: 1

Stage	1	2	3
Duration	13	11	6
Change Point	0	23	44

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.2%**
Heath Rd/Mather Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.2%**
1/1	Heath Rd - w Left Right Ahead	O	1	N/A	C		1	14	-	328	1744	436	75.2%
2/1	Exit WB	U	N/A	N/A	-		-	-	-	259	Inf	Inf	0.0%
3/1	Mather Ave. - n Ahead Left	U	1	N/A	D		1	14	-	257	1928	482	53.3%
3/2	Mather Ave. - n Right Ahead	O	1	N/A	D		1	14	-	258	1909	413	62.5%
4/1	Exit NB	U	N/A	N/A	-		-	-	-	290	Inf	Inf	0.0%
4/2	Exit NB	U	N/A	N/A	-		-	-	-	302	Inf	Inf	0.0%
5/1	Mather Ave - south Left Ahead	U	1	N/A	B		1	13	-	317	1811	423	75.0%
5/2	Mather Ave - south Ahead Right	O	1	N/A	B		1	13	-	316	1901	444	71.2%
6/1	Exit SB	U	N/A	N/A	-		-	-	-	240	Inf	Inf	0.0%
6/2	Exit SB	U	N/A	N/A	-		-	-	-	283	Inf	Inf	0.0%
7/1	Heath Rd - e Ahead Left	U	1	N/A	A		1	11	-	65	1870	374	17.4%
7/2	Heath Rd - e Right	O	1	N/A	A		1	11	-	21	1724	183	11.5%
8/1	Exit - EB	U	N/A	N/A	-		-	-	-	188	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**190**	**9**	**25**	**8.9**	**5.7**	**0.3**	**14.9**	-	-	-	-
Heath Rd/Mather Rd	-	-	**190**	**9**	**25**	**8.9**	**5.7**	**0.3**	**14.9**	-	-	-	-
1/1	328	328	87	9	0	1.9	1.5	0.0	3.4	37.4	5.0	1.5	6.5
2/1	259	259	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	257	257	-	-	-	1.4	0.6	-	2.0	27.4	3.6	0.6	4.2
3/2	258	258	46	0	25	1.4	0.8	0.2	2.4	33.6	3.7	0.8	4.6
4/1	290	290	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	302	302	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	317	317	-	-	-	1.9	1.5	-	3.3	38.0	4.8	1.5	6.3
5/2	316	316	35	0	0	1.9	1.2	0.0	3.1	35.3	4.8	1.2	6.0
6/1	240	240	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	283	283	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	65	65	-	-	-	0.4	0.1	-	0.5	25.8	0.9	0.1	1.0
7/2	21	21	21	0	0	0.1	0.1	0.0	0.2	34.7	0.3	0.1	0.3
8/1	188	188		-		0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 19.6 Total Delay for Signalled Lanes (pcuHr): 14.88 Cycle Time (s): 60
PRC Over All Lanes (%): 19.6 Total Delay Over All Lanes(pcuHr): 14.88

Stage Timings

Scenario 5: '2020 AM Assessments' (FG5:'AM Peak 2020 Assessments', Plan 1: 'Network Control Plan 1')
Stage Stream: 1

Stage	1	2	3
Duration	12	12	6
Change Point	0	22	44

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.7%**
Heath Rd/Mather Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**86.7%**
1/1	Heath Rd - w Left Right Ahead	O	1	N/A	C		1	15	-	358	1729	435	82.2%
2/1	Exit WB	U	N/A	N/A	-		-	-	-	392	Inf	Inf	0.0%
3/1	Mather Ave. - n Ahead Left	U	1	N/A	D		1	13	-	323	1930	450	71.7%
3/2	Mather Ave. - n Right Ahead	O	1	N/A	D		1	13	-	324	1904	398	81.3%
4/1	Exit NB	U	N/A	N/A	-		-	-	-	302	Inf	Inf	0.0%
4/2	Exit NB	U	N/A	N/A	-		-	-	-	346	Inf	Inf	0.0%
5/1	Mather Ave - south Left Ahead	U	1	N/A	B		1	12	-	338	1800	390	86.7%
5/2	Mather Ave - south Ahead Right	O	1	N/A	B		1	12	-	337	1895	411	82.1%
6/1	Exit SB	U	N/A	N/A	-			-	-	328	Inf	Inf	0.0%
6/2	Exit SB	U	N/A	N/A	-		-	-	-	350	Inf	Inf	0.0%
7/1	Heath Rd - e Ahead Left	U	1	N/A	A		1	12	-	177	1861	403	43.9%
7/2	Heath Rd - e Right	O	1	N/A	A		1	12	-	52	1724	198	26.2%
8/1	Exit - EB	U	N/A	N/A	-		-	-	-	191	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**208**	**10**	**97**	**11.3**	**11.1**	**0.5**	**23.0**	-	-	-	-
Heath Rd/Mather Rd	-	-	**208**	**10**	**97**	**11.3**	**11.1**	**0.5**	**23.0**	-	-	-	-
1/1	358	358	113	10	0	2.0	2.2	0.1	4.3	43.7	5.6	2.2	7.8
2/1	392	392	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	323	323	-	-	-	1.9	1.2	-	3.1	35.1	4.9	1.2	6.2
3/2	324	324	0	0	97	1.9	2.1	0.3	4.3	47.2	5.0	2.1	7.0
4/1	302	302	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	346	346	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	338	338	-	-	-	2.1	2.9	-	5.0	53.8	5.4	2.9	8.3
5/2	337	337	43	0	0	2.1	2.2	0.1	4.3	46.2	5.3	2.2	7.5
6/1	328	328	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	350	350	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	177	177	-	-	-	1.0	0.4	-	1.4	28.3	2.5	0.4	2.9
7/2	52	52	52	0	0	0.3	0.2	0.1	0.5	35.6	0.7	0.2	0.9
8/1	191	191	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 3.8 Total Delay for Signalled Lanes (pcuHr): 23.01 Cycle Time (s): 60
PRC Over All Lanes (%): 3.8 Total Delay Over All Lanes(pcuHr): 23.01

Stage Timings

Scenario 6: '2020 PM Assessments' (FG6: 'PM Peak 2020 Assessments', Plan 1: 'Network Control Plan 1')
Stage Stream: 1

Stage	1	2	3
Duration	13	11	6
Change Point	0	23	44

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.7%**
Heath Rd/Mather Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.7%**
1/1	Heath Rd - w Left Right Ahead	O	1	N/A	C		1	14	-	351	1742	435	80.6%
2/1	Exit WB	U	N/A	N/A	-		-	-	-	279	Inf	Inf	0.0%
3/1	Mather Ave. - n Ahead Left	U	1	N/A	D		1	14	-	277	1928	482	57.5%
3/2	Mather Ave. - n Right Ahead	O	1	N/A	D		1	14	-	277	1909	427	64.9%
4/1	Exit NB	U	N/A	N/A	-		-	-	-	312	Inf	Inf	0.0%
4/2	Exit NB	U	N/A	N/A	-		-	-	-	327	Inf	Inf	0.0%
5/1	Mather Ave - south Left Ahead	U	1	N/A	B		1	13	-	341	1810	422	80.7%
5/2	Mather Ave - south Ahead Right	O	1	N/A	B		1	13	-	341	1901	444	76.9%
6/1	Exit SB	U	N/A	N/A	-		-	-	-	259	Inf	Inf	0.0%
6/2	Exit SB	U	N/A	N/A	-		-	-	-	304	Inf	Inf	0.0%
7/1	Heath Rd - e Ahead Left	U	1	N/A	A		1	11	-	70	1870	374	18.7%
7/2	Heath Rd - e Right	O	1	N/A	A		1	11	-	23	1724	166	13.9%
8/1	Exit EB	U	N/A	N/A	-		-	-	-	199	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**186**	**9**	**45**	**9.7**	**7.4**	**0.3**	**17.4**	-	-	-	-
Heath Rd/Mather Rd	-	-	**186**	**9**	**45**	**9.7**	**7.4**	**0.3**	**17.4**	-	-	-	-
1/1	351	351	94	9	0	2.1	2.0	0.0	4.1	41.8	5.5	2.0	7.4
2/1	279	279	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
3/1	277	277	-	-	-	1.5	0.7	-	2.2	28.4	4.0	0.7	4.7
3/2	277	277	31	0	45	1.5	0.9	0.2	2.6	34.4	4.0	0.9	4.9
4/1	312	312	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	327	327	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	341	341	-	-	-	2.1	2.0	-	4.1	42.8	5.3	2.0	7.3
5/2	341	341	37	0	0	2.0	1.6	0.0	3.7	38.8	5.3	1.6	6.9
6/1	259	259		-		0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	304	304	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	70	70	-	-	-	0.4	0.1	-	0.5	25.9	1.0	0.1	1.1
7/2	23	23	23	0	0	0.1	0.1	0.0	0.2	36.6	0.3	0.1	0.4
8/1	199	199	-		-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 11.5 Total Delay for Signalled Lanes (pcuHr): 17.38 Cycle Time (s): 60
PRC Over All Lanes (%): 11.5 Total Delay Over All Lanes(pcuHr): 17.38