

Transport Assessment

Butterfly Park Redevelopment at Long Sutton

Moor Solar Ltd

05 November 2012
Final Report
9X0917 A

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Enhancing Society

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CONTENTS

			Page
1	INTRODUCTION		1
	1.1	Background	1
	1.2	Scoping	1
	1.3	Structure of Transport Assessment	1
2	NATIONAL AND LOCAL POLICY FRAMEWORK		2
	2.1	National Policy	2
	2.2	Local Policy	3
3	EXISTING SITUATION		5
	3.1	The Site	5
	3.2	Site Access	5
	3.3	Local Highways Network	5
	3.4	Sustainability	6
4	HIGHWAY SAFETY		8
	4.1	Personal Injury Collision Analysis	8
5	PROPOSED DEVELOPMENT		10
	5.1	Proposed Development	10
	5.2	Site Access	10
	5.3	Internal Road Layout and Servicing	10
	5.4	Parking Provision	10
	5.5	Travel Plan	11
6	TRIP GENERATION AND ASSESSMENT		12
	6.1	Introduction	12
	6.2	Existing Traffic Flows	12
	6.3	Development Trips Attractions	12
	6.4	Existing Development Trip Generation	13
	6.5	Cumulative Development	13
7	JUNCTION CAPACITY ASSESSMENT		14
	7.1	Scope of Assessment	14
	7.2	Methodology	14
	7.3	Summary	14
8	SUMMARY AND CONCLUSION		17
	8.1	Summary	17
	8.2	Conclusion	17

FIGURES

FIGURE 1: Site location plan, and the local highway network;
FIGURE 2: Walk & Cycle Isochrones and local bus stops;
FIGURE 3: Personal Injury Collisions;
FIGURE 4: Observed traffic flows 2012 (London Road – Roman Bank);
FIGURE 5: Development traffic flows;
FIGURE 6: Observed + development traffic flows 2012;
FIGURE 7: Observed traffic flows growthed to 2017; and
FIGURE 8: Observed + development traffic flows 2017.

APPENDICES

APPENDIX A: Proposed development layout;
APPENDIX B: Junction visibility;
APPENDIX C: Swept path analysis;
APPENDIX D: Traffic Survey data (London Road – Roman Bank junction);
APPENDIX E: TRICS output files; and
APPENDIX F: PICADY output files.

1 INTRODUCTION

1.1 Background

1.1.1 Royal Haskoning have been commissioned by Moor Solar Ltd to produce a Transport Assessment in support of an outline application for a residential development and renewable energy project in Long Sutton, Lincolnshire.

1.1.2 The site occupies 6.4ha of land off Little London in Long Sutton, Lincolnshire and currently trades as a Butterfly & Wildlife Park.

1.1.3 The development proposal comprises a residential development of 87 homes and a new access from Little London.

1.2 Scoping

1.2.1 A preliminary scoping opinion in regard to highways matters was provided by Lincolnshire County Council (LCC) which confirmed that a Transport Assessment would be required and that the scope should include for the assessment of the London Road – Roman Bank junction. Further to the scoping opinion discussion, LCC also confirmed that the scale of the development would require the production of a full Travel Plan.

1.3 Structure of Transport Assessment

1.3.1 The Transport Assessment has been prepared to comply with the Department for Transports (DfT) Guidance on Transport Assessments.

1.3.2 Following this introduction this report will be structured as follows:

- Chapter 2, provides information regarding the developments policy fit;
- Chapter 3, describes the existing situation;
- Chapter 4, examines the existing highway safety;
- Chapter 5, describes the proposed development;
- Chapter 6, examines the proposed and existing site trip generation;
- Chapter 7, examines the capacity of the London Road Roman Bank junction; and
- Chapter 8, provides a summary and conclusion.

2 NATIONAL AND LOCAL POLICY FRAMEWORK

2.1 National Policy

The Local Transport White Paper: Creating Growth, Cutting Carbon, Making Sustainable Local Transport Happen

2.1.1 Published in January 2011 the 'White Paper' sets out the Coalition Government's vision for the transport system in England and Wales and focuses on promoting economic growth and developing greener and safer solutions. The document sets out the mechanisms by which the vision could be achieved and outlines the following headline objective:

"Encourage sustainable local travel and economic growth by making public transport and cycling and walking more attractive and effective, promoting lower carbon transport and tackling local road congestion."

2.1.2 The White Paper reaffirms that statutory Local Transport Plans are the mechanism for planning and implementing local transport and recognises it is vital that transport planning has early engagement in development plan preparation.

2.1.3 The White Paper also sets the transport agenda for the Draft National Planning Policy Framework.

National Planning Policy Framework

2.1.4 The National Planning Policy Framework (NPPF) was published in March 2012 by the Department for Communities and Local Government and is now the primary source of national planning guidance in England.

2.1.5 The NPPF contains the Coalition Government's strategies for economic, environmental and social planning policies in England and it is designed to be a single, tightly focused document setting out national planning priorities. It replaces existing national planning policy documents including all Planning Policy Statements (PPSs), all Planning Policy Guidance notes (PPGs) and all ministerial planning Circulars.

2.1.6 At the heart of the NPPF is a "presumption in favour of sustainable development", which for decision making means:

- approving development proposals that accord with the development plan without delay; and
- where the development plan is absent, silent or relevant policies are out of date, granting permission unless:
  - any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the NPPF taken as a whole; or
  - specific policies in the NPPF indicate development should be restricted.

2.1.7 In terms of transport the NPPF states; "All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- safe and suitable access to the site can be achieved for all people; and
- improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe."

2.1.8 This Transport Assessment has been undertaken in compliance with NPPF objectives.

2.2 Local Policy

Lincolnshire County Council: 3rd Local Transport Plan

2.2.1 The local context for planning for transport is provided by Local Transport Plans. The Lincolnshire County Council (LCC) 3rd Local Transport Plan (LTP3) was adopted in May 2011. With the current uncertainty around national transport policy and funding LCC took a 'light touch' approach and rolled forward the LTP2 policies and strategies to cover 2011 to 2013. A longer term LTP will be produced during this time which will be adopted from 2013/14.

2.2.2 The LTP3 transport objectives are set out below:

- assist sustainable economic growth through transport network improvements;
- increase public transport usage;
- improve access to key services by widening non-car travel choices;
- make all modes of travel safer to reduce casualty numbers and severity;
- remove unnecessary HGV movements;
- maintain the transport system to allow the safe and efficient movement of people and goods;
- protect the environment through reducing adverse impacts of traffic;
- improve quality of public spaces through a safe, attractive and accessible environment; and
- enhance air quality.

2.2.3 Of particular relevance to the development planning process, the LTP3 states that a more robust approach for travel planning in Lincolnshire is being taken through the development control process for residential developments of more than 20 dwellings. It is stated that:

"…the need to minimise additional single occupancy car journeys is a major consideration during the planning process."

South Holland District Local Development Framework Core Strategy and Local Plan

2.2.4 The South Holland Core Strategy is not scheduled for adoption until 2013. In the interim the Local Plan (adopted in July 2006) and associated 'saved' policies remain policy consideration for development planning.

2.2.5 Chapter 8 of the Local Plan covers Transport and Communications and is closely aligned to the objectives set out in the Lincolnshire LTP. The imperative is on the need to widen travel choices and reduce reliance on the private car; however, it is acknowledged that in rural areas the scope for reducing the reliance on private car usage is hindered by the limited availability of public transport and high levels of car ownership.

3 EXISTING SITUATION

3.1 The Site

3.1.1 The site is set in a rural location on the north-east edge of the 12th Century market town of Long Sutton in Lincolnshire (population listed as 6,461 in the 2001 census) close to the Lincolnshire/Norfolk border between Spalding and King's Lynn.

3.1.2 Presently the site is occupied by the Long Sutton Butterfly & Wildlife Park. The Park comprises a number of amenity and animal housing buildings together with various outdoor recreational areas, paddocks, habitat areas, an un-surfaced car parking area and an orchard.

3.1.3 The total site area is approximately 6.4 hectares.

3.1.4 The site lies to the west of Little London. The western side of Little London is occupied by residential properties giving way to arable farmland. To the north the site is bounded by the sports pitches and playing fields of the Peele Community College and to the south by arable farmland and orchards. The land bounding the site immediately to the east has received planning permission for the construction of solar energy parks.

3.1.5 The site's internal road layout does not comprise adopted highway.

3.1.6 A site location plan is contained within **Figure 1**.

3.2 Site Access

3.2.1 The site's existing access is off Little London between numbers 54 and 64. Further residential properties extend to both north and south of this access.

3.3 Local Highways Network

3.3.1 The site is located off Little London which runs north to become Lutton Gowts and link with the nearby settlement of Lutton, and south to become Roman Bank at the junction with Woad Lane. Just north of the site, Back Lane extends west to link with Daniel's Gate.

3.3.2 Little London is subject to a 30mph speed limit in both directions past the site, however approximately 175m north of the site entrance there is an advisory 20mph speed limit 'School Zone' outside Peele Community College.

3.3.3 Little London appears to be in generally good condition with 1.2-1.8m wide footway, and a kerb-line on its western side. The footway runs immediately beside the carriageway without a separating verge but provides a pleasant walking environment for pedestrians. Positive drainage is provided. On the eastern side the carriageway abuts against grass verges and gardens. There is no kerb-line. The carriageway varies in width from 5.8m to 6.0m.

3.3.4 The main road through Long Sutton (comprising: Wisbech Road, London Road, High Street, Market Street, Gedney Road and Main Road) is classified as the B1359 and has wider links with the A17 and A1101. The B1359 provides a local link to the nearby settlements of Sutton Bridge and Gedney.

3.3.5 The A17 provides links to King's Lynn and Sleaford and the A1101 provides wider links to Wisbech and the A47.

3.3.6 A local highway network plan is contained within **Figure 1**.

3.4 Sustainability

3.4.1 This section of the report considers the sustainable transport options available at the site, and the local amenities that are accessible by such modes.

Public Transport

3.4.2 There is an unmarked bus stop opposite the Butterfly Farm on Little London serving the site directly. This is served by bus service number 505L part of the CallConnect service. The CallConnect service operates six days a week requiring pre-booking by phone or online at least one hour in advance of travel. The service provides links to many locations within the local area of Holbeach and Long Sutton area and allows for connections with longer distance bus services.

3.4.3 InterConnect is a rural bus service scheme providing local bus services, improving transport links through Lincolnshire and beyond, the nearest stop is located on London Road and is approximately 1.2km from the site and served by services 505 and 50.

3.4.4 The bus service 505 provides links to Spalding and Kings Lynn with a 20 minute frequency and service 50 provides links to four services a day to Wisbech.

3.4.5 The locations of the bus stops within the vicinity of the site are shown in **Figure 2** and a summary of the bus timetabled services are provided in **Table 3.1**.

Table 3.1 Scheduled bus services and frequencies

Service Number	Route	Approximate two way frequencies				
		Monday to Friday			Weekends	
		AM Peak	Daytime	PM peak	Saturday	Sunday
50	Long Sutton - Tydd St Mary - Wisbech	1	3	1	5	No Service
505	Spalding - Terrington - King's Lynn	2	22	2	31	11

Pedestrian and Cycle Facilities

3.4.6 **Figure 2** shows 2km and 5km isochrones to illustrate the nationally accepted recommended distances for walking and cycling.

3.4.7 The highway network in the vicinity of the site comprises of street lit carriageways and low vehicle speeds which are conducive to the creation of a cycle and pedestrian friendly environment.

3.4.8 It is nationally accepted that 2km is a suitable distance for pedestrians to walk to access amenities. By this benchmark the site is within walking distance of amenities in Long Sutton including shops, a post office, doctor and dental surgeries, Long Sutton Primary School and the Peele Community College.

3.4.9 It is nationally accepted that cycling can replace short car journeys under 5km. It has been demonstrated that a wide range of amenities can be accessed by foot; accessibility is further enhanced by cycling with the entirety of Long Sutton and the villages of Gedney, Chapel Gate, Lutton, Sutton Crosses and Sutton Bridge being with a 5km cycle ride.

3.4.10 The site is not located near any designated national or local cycle routes but there is the opportunity for on-road cycling around Long Sutton and the neighbouring villages on relatively low traffic routes.

4 HIGHWAY SAFETY

4.1 Personal Injury Collision Analysis

4.1.1 In order to establish whether there are any inherent safety issues on the highway in the vicinity of the proposed development, Personal Injury Collision Data (PIC) for the five year period from 1 August 2006 to 31 July 2011 has been reviewed.

4.1.2 During scoping discussions LCC provided the collision data for the local *area for the most recent five year period which forms the basis of this* collision study. The study area covered is shown within **Figure 3**.

4.1.3 The PIC data is summarised in **Table 4.1**. LCC do not provide a clear definition of a collision cluster but the first Local Transport Plan published in July 2000 stated that the policy was to investigate sites where four or more collision had occurred within a three year period. Within the study area there are no collision clusters as defined by this criteria.

Table 4.1 Summary of PIC Data (casualties)

Severity			Total	Primary Road User				
Slight	Serious	Fatal		Pedestrian	Car	Pedal cycle	Motor cycle	LGV
35	1	1	37	8	14	1	4	0

4.1.4 A total 27 collisions occurred within the five year study period. Of these 25 were slight, one was serious and one was fatal. The 27 collisions resulted in a total of 37 casualties.

4.1.5 Analysis of collision data reveals that the fatal and serious collisions did not occur within the vicinity of the site.

4.1.6 Of the remaining 25 slight collisions five occurred along Little London the road along which the entrance to the development site is located. One of these incidents occurred within approximately 25m of the entrance to the site. This particular incident involved a head on collision between two cars as one of the vehicles swerved to avoid a cat.

4.1.7 There is no pattern or common causational factor amongst the five collisions indicating that there is no inherent highway safety issue on Little London.

4.1.8 Of the total 27 collisions, 17 (63%) occurred in dry condition eight (30%) in wet conditions and two (7%) in snow. Ten (37%) occurred during the hours of darkness and 17 (63%) occurred during daylight hours. Two occurred during the midweek am peak (08:00 to 09:00) and five occurred during the pm peak (17:00 to 18:00).

4.1.9 The most common (37%) causational factor listed within the accident reports is a failure to look properly. Impairment by alcohol was the second most common (19%) causational factor listed. Other common factors included a failure to judge the other persons path or speed, undertaking a poor turn or manoeuvre and a failure to or misleading signal.

4.1.10 It is concluded that the proposed development is unlikely to increase the frequency of further collisions.

5 PROPOSED DEVELOPMENT

5.1 Proposed Development

5.1.1 The proposed development will comprise of 87 new homes as well as eight small wind turbines and planted and landscaped areas.

5.1.2 **Appendix A** shows the layout of the proposed development.

5.2 Site Access

5.2.1 Access to the site for vehicles and pedestrians will be from a new point of access approximately 25m north of the existing site access of Little London. The internal road layout will comprise of a 5.5m wide shared surface.

5.2.2 The visibility requirement for the proposed site access has been provided in accordance with the DfT publication Manual for Streets. This suggests that the visibility requirement would be 59m by 2.4m for a speed of 37mph.

5.2.3 The Y distance along the kerb edge has been based upon speed survey data provided by LCC that suggests that the average speeds along Little London vary between 33mph and 36mph.

5.2.4 **Appendix B** shows the visibility splay can be accommodated within the highway and land owned by the applicant.

5.3 Internal Road Layout and Servicing

5.3.1 The site will be served by a single point of access. To ensure that the site can be serviced by a refuse vehicle the site has been tracked with Auto track software. LCC have confirmed that a medium sized refuse vehicle would be appropriate to simulate **Appendix C** demonstrates.

5.4 Parking Provision

5.4.1 The South Holland Guidance[1] notes that Spalding and Area Centres of which Long Sutton is identified should have a lower maximum parking standard than the rest of the District, stipulating a maximum of 1.5 spaces per dwelling when averaged over the whole site.

5.4.2 The developments proposed car parking provision exceeds the 131 parking spaces stipulated by the guidance for 87 dwellings. Off street parking will be 200% (174 spaces) for the site as a whole. Two hundred percent off-street parking ensures a minimum parking provision on shared drives, freeing up the street for recreational and pedestrian use in accordance the 'Living Streets' design approach.

5.4.3 Cycle parking will be provided as part of the development either in the form of a garage or as covered communal spaces.

[1] South Holland District Council (SHDC) Local Plan July 2006 Appendix 2

5.5 Travel Plan

5.5.1 A residential Travel Plan has been prepared to accompany the planning application for the development. The plan details the measures that will be provided to promote and encourage sustainable transport choice and how the plan will be developed and monitored by including the appointment of a 'Travel Plan Co-ordinator'

6 TRIP GENERATION AND ASSESSMENT

6.1 Introduction

6.1.1 This section of the report outlines the baseline conditions in terms of traffic movements and the likely trips generated by the proposed development in order to establish if the likely impact of the development on transport is acceptable.

6.2 Existing Traffic Flows

6.2.1 A traffic count was undertaken at the junction of Roman Bank and London Road on Tuesday the 31 January 2012. This showed the peak hour to be 08:15 – 09:15 in the am peak and 16:30 – 17:30 in the pm peak.

6.2.2 Total flows on London Road in the am and pm peaks were 625 and 696 vehicles respectively. The survey results are contained with **Appendix D**.

6.2.3 In addition to the commissioned traffic counts, data supplied by LCC showed that weekday average (24Hr AAWT) flows on Little London were approximately 968 vehicles in the vicinity of the site.

6.3 Development Trips Attractions

6.3.1 In order to calculate the likely level of trip attraction to the proposed development, the TRICS (2011 (b)) database has been interrogated to compare trips rates with a range of similar sized developments in similar locations. The use of TRICS is an industry standard method of estimating traffic generation and is specified by the DfT guidance on Transport Assessments.

6.3.2 **Appendix E** shows the results of the TRICS analysis, and the results are summarised in **Table 5.1** below for the peak hours.

Table 5.1 Peak hour trip rates per unit

am Peak (08:00 – 09:00)			pm Peak (17:00 – 18:00)			Daily Total
Arrivals	Departures	Total	Arrivals	Departures	Total	
0.145	0.399	0.544	0.407	0.196	0.603	5.094

6.3.3 The total trip attractions are derived by multiplying the trip rates by the number of proposed units, in this case 87**.** The resultant trip attractions are summarised in **Table 5.2.**

Table 5.2 Peak hour vehicle trips

am Peak (08:00 – 09:00)			pm Peak (17:00 – 18:00)			Daily Total
Arrivals	Departures	Total	Arrivals	Departures	Total	
13	34	47	36	17	53	443

6.3.4 It is demonstrated that the proposed development will generate approximately 47 two-way car trips in the am peak hour and 53 during the pm peak hour. Throughout the whole day the development is expected to generate up to 443 movements.

6.4 Existing Development Trip Generation

6.4.1 The existing site is currently occupied by a Butterfly farm that generates existing vehicle movements between the months of March – October. The current occupier has provided vehicle numbers for the previous year 2010 and visitor numbers for the last three years.

6.4.2 This data has been utilised to determine the likely trip generation from the site on a daily basis during the months that the park is open. The three year average is presented in **Table 5.3**.

Table 5.3 Existing site trips

Year	Total Vehicle Numbers / season (March – October)	Total Vehicle Numbers / day
2010	32711	134
2009	41104	168
2009	46740	191
Three year average	40185	164

6.4.3 **Table 5.3** highlights that the existing site generates an average of 164 vehicle movements per day during the opening, therefore between the months of March and October (inclusive) there would be an increase in vehicle movements of 458 minus 164 existing movements, resulting in a net increase of 294 movements.

6.5 Cumulative Development

6.5.1 An examination of the committed development in the Long Sutton area has revealed that there is planning permission (Ref: H11-1045-10) for a 76 unit residential development located off of Lime Walk, which has not been built.

6.5.2 The Transport Assessment for the outline application (Ref: H11-0845-07) was not uploaded to the Planning Portal and it was confirmed with South Holland Planning Department that this document has been destroyed.

6.5.3 Therefore to assess the impact that the proposed development could have, the trips rates derived for Butterfly Farm development have been used to establish the potential vehicle trips for the permitted development, these are presented in **Table 5.4**.

Table 5.4 Peak hour vehicle trips (Lime Walk Development)

am Peak (08:00 – 09:00)			pm Peak (17:00 – 18:00)			Daily Total
Arrivals	Departures	Total	Arrivals	Departures	Total	
11	30	41	31	15	46	387

7 JUNCTION CAPACITY ASSESSMENT

7.1 Scope of Assessment

7.1.1 The scope of the traffic assessment includes analysis of the Roman Bank London Road junction as agreed with LCC in their scoping opinion. No other junctions have been considered.

7.2 Methodology

7.2.1 The junction was assessed with PICADY V5 junction modelling software.

7.2.2 The existing vehicle movements at the junction were recorded on Tuesday the 31 January 2012. The recorded vehicle movements have been factored to PCU's.

7.2.3 It is unclear what the build out programme for the Lime Walk development is. Therefore, for robustness 50% cent of the permitted vehicle trips for the Lime Walk development have been added to the observed 2012 movements, **Figure 4** refers.

7.2.4 The observed split of vehicles at the existing junction has been used to distribute the proposed development traffic **Figure 5**. To test the robustness of the junction, all traffic has been applied to the junction assuming all traffic approaches and exit's the site to the south, **Figure 6** refers. No reduction has been applied to the development traffic to take account of the existing site use as the traffic survey was undertaken when the site was closed.

7.2.5 The DfT guidance on Transport Assessments requires that capacity analysis should consider the impact of the development upon an appropriate horizon year (typically no less than five years).

7.2.6 The 2012 observed traffic flows have been growthed by five years to a 2017 horizon year **Figure 7** refers. The resultant turning flows are detailed in **Figure 8.** The traffic flows were growthed with the use of TEMPRO (data set 6.2) for the Long Sutton area and scaled with NRTF.

7.3 Summary

7.3.1 **Table 6.1** summarises the Ratio of Flow to Capacity (RFC) and queuing at the junction during the peak hours for 2012 with no development.

7.3.2 RFC is the standard recognised threshold used for junction assessments in the UK, when values for RFC are above 0.85 a junction is considered to be operating beyond its capacity and mitigation measures may be required.

Table 6.1 Junction capacity 2012 Baseline

Arm	am peak		pm peak	
	RFC	Queue	RFC	Queue
Private Road	0.008	0.01	0.006	0.01
London Road (East)	0.166	0.30	0.335	0.76
Roman Bank	0.378	0.60	0.231	0.30
London Road (West)	0.002	0.00	0.005	0.01

7.3.3 It is observed from **Table 6.1** that the current junction exhibits no arms exceeding 0.85 the "recognised threshold" for RFC with queues of less than a single vehicle on all arms for both peak hours.

7.3.4 **Table 6.2** summarises the RFC (ratio of flow to capacity) and queuing at the junction during the peak hours for 2012 with the proposed development.

Table 6.2 Junction capacity 2012 Baseline + Development flows

Arm	am peak		pm peak	
	RFC	Queue	RFC	Queue
Private Road	0.008	0.01	0.006	0.01
London Road (East)	0.185	0.34	0.410	1.01
Roman Bank	0.456	0.88	0.272	0.37
London Road (West)	0.002	0.00	0.005	0.01

7.3.5 It is observed from **Table 6.2** that with the proposed development the junction exhibits no arms exceeding 0.85 the "recognised threshold" for RFC with queues no greater than a single vehicle in the am peak and two vehicles during the pm peak.

7.3.6 **Table 6.3.** Summarises the RFC (ratio of flow to capacity) and queuing at the junction during the peak hours for 2017 with no development.

Table 6.3 Junction capacity 2017 Baseline

Arm	am peak		pm peak	
	RFC	Queue	RFC	Queue
Private Road	0.008	0.01	0.006	0.01
London Road (East)	0.179	0.33	0.366	0.88
Roman Bank	0.409	0.68	0.250	0.33
London Road (West)	0.002	0.00	0.005	0.01

7.3.7 It is observed from **Table 6.3** that with the proposed development the junction exhibits no arms exceeding 0.85 the "recognised threshold" for RFC with queues of less than a single vehicle on all arms for both peak hours.

7.3.8 **Table 6.4** summarises the RFC (ratio of flow to capacity) and queuing at the junction during the peak hours for 2017 with the proposed development.

Table 6.4 Junction capacity 2017 Baseline + Development flows

Arm	am peak		pm peak	
	RFC	Queue	RFC	Queue
Private Road	0.008	0.01	0.006	0.01
London Road (East)	0.201	0.38	0.444	1.18
Roman Bank	0.488	0.92	0.292	0.41
London Road (West)	0.002	0.00	0.005	0.01

7.3.9 It is observed from **Table 6.4** that with the proposed development the junction exhibits no arms exceeding 0.85 the "recognised threshold" for RFC with queues no greater than a single vehicle in the am peak and two vehicles during the pm peak.

7.3.10 The full PICADY outputs for all scenarios are contained within **Appendix F**.

7.3.11 In summary it can be observed that with the addition of particularly robust development traffic scenarios all arms continue to perform within the recognised threshold for RFC of 0.85 with queues never exceeding two vehicles.

8 SUMMARY AND CONCLUSION

8.1 Summary

8.1.1 Royal Haskoning have been commissioned by Moor Solar Ltd to produce a Transport Assessment in support of a full application for a residential development on the site of the existing Long Sutton Butterfly Park in Long Sutton, Lincolnshire.

8.1.2 The site is well located to promote walking and cycling for local trips within long Sutton. For local bus trips within the Long Sutton and Holbeach area the site is well served by the demand responsive CallConnect service.

8.1.3 An analysis of the latest five year period of personal injury data has demonstrated that there is no inherent safety problem in the vicinity of the site.

8.1.4 Tracking of the site access junction and internal layout reveals that the site can be accessed and served by the appropriate refuse vehicle.

8.1.5 The proposed site access junction visibility is in accordance with the requirements of Manual for Streets.

8.1.6 It has been demonstrated that the proposed development will generate 47 and 53 car vehicle trips during the am and pm peak hours respectively. It is considered that these trips will have a negligible impact upon the highway network.

8.1.7 Junction analysis shows that the proposed development will have a minimal impact upon the highway network.

8.2 Conclusion

8.2.1 For a rural location the development has good potential to generate sustainable trips by walking and cycling to access local amenities and therefore, the proposed development is aligned with both local and national policy.

8.2.2 It is concluded that the proposed development will not have a detrimental impact on the capacity, operation and safety of the surrounding highway network.

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Appendices

Long Sutton Solar Parks

Orchard

hockey pitch

Wind Turbines (8 x Bergey 10kW/p)
15m tower to hub / 18.5m to top of swept area.

Bergey Turbine No.1
Bergey Turbine No.2
Bergey Turbine No.3
Bergey Turbine No.4
Bergey Turbine No.5
Bergey Turbine No.6
Bergey Turbine No.7
Bergey Turbine No.8

Allotments and Amenity Space
Wetland / Swale
Allotment car parking (loading / offloading area)
Wind Turbine Maintenance Access

NORTH

The Peele Leisure Centre

The Circle
Gatekeeper Way
Copper Crescent
Crescent Green
Grayling Crescent
Cinnabar Crescent
Burnet Crescent
Atlas Grove
Skipper Copse
Comma Close
Meadow Brown Walk
Monarch Avenue

Tree Group C retained
Wetland
1.8m wide footpath
10.5m
Proposed Site Access
9000
Horse Chestnut retained
9500
Existing Access 54+56, Solar Parks and Farm Retained
54 + 56 Little London
2m high earth bunding with native hedge
new trees at boundary
Warehouse

Key:

Low impact living at
SUTTON PARK
Proposed Residential Development of Butterfly Park, Long Sutton

716.PL.01_REV-D
1:500@A1 Rev D 05.10.12

SEArch Architects

Appendix A

Appendix B

DRG No. 9X0917.SK001

DO NOT SCALE



NOTES

Junction visibility envelope 59.0 x 2.4m in accordance with Manual for Streets 2

REV	DATE	DESCRIPTION	BY	CHK	APP

REVISIONS

CLIENT

MOOR SOLAR LTD

PROJECT

LONG SUTTON, BUTTERFLY FARM REDEVELOPMENT

TITLE

JUNCTION VISIBILITY

A COMPANY OF ROYAL HASKONING

HASKONING UK LTD
DEVELOPMENT AND TRANSPORT

5th Floor Newater House,
11 Newhall Street,
Birmingham, B3 3NY
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www.royalhaskoning.co.uk Internet

DRAWN	CHECKED	APPROVED
SKT	ADR	ADR
DATE 10.04.12	DATE 10.04.12	DATE 10.04.12
SCALE 1:500 @ A3	STATUS FINAL	

DRAWING No. 9X0917.SK001 REVISION

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Appendix C

DRG No. 9X0917.TR001

DO NOT SCALE



Refuse vehicle negotiating the proposed development with no issues
Scale 1:1000

Insets, Scale 1:500



Refuse vehicle entering from the east or west with no issues



Refuse vehicle exiting to the east or west with no issues



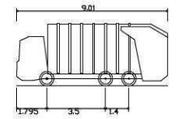
Refuse vehicle reversing 20m into the junction with no issues



Refuse vehicle turning in the turning head with no issues

Copyright 2011 © Haskoning UK Ltd.

NOTES



Medium Refuse Vehicle (3 axle)	
Overall Length	9.010m
Overall Width	2.450m
Overall Body Height	3.742m
Min Body Ground Clearance	0.295m
Track Width	2.450m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	8.200m

REV	DATE	DESCRIPTION	BY	CHK	APP

REVISIONS

CLIENT

MOOR SOLAR LTD

PROJECT

LONG SUTTON, BUTTERFLY FARM REDEVELOPMENT

TITLE

REFUSE VEHICLE SWEPT PATH ANALYSIS

A COMPANY OF ROYAL HASKONING

HASKONING UK LTD
DEVELOPMENT AND TRANSPORT

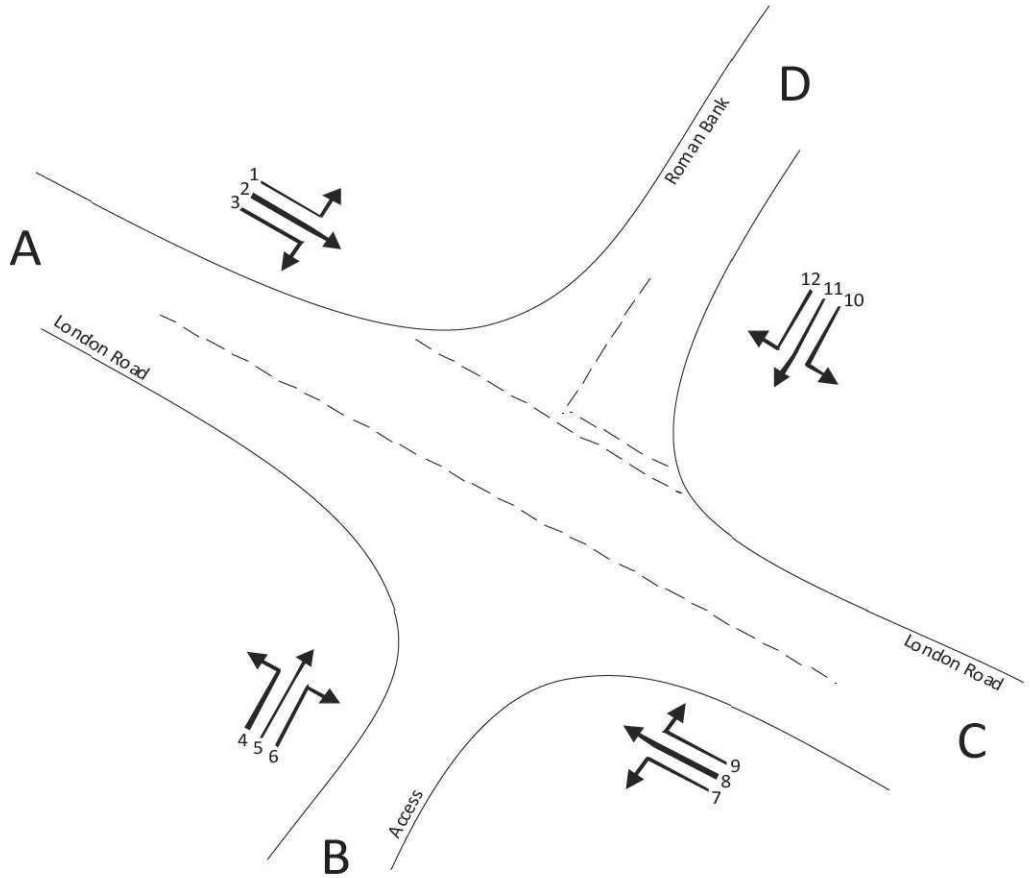
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DRAWN	SKT	CHECKED	ADR	APPROVED	ADR
DATE	10.04.12	DATE	10.04.12	DATE	10.04.12
SCALE	varies @ A3	STATUS	FINAL		

DRAWING No. 9X0917.TR001

REVISION

Appendix D



AXIOM
Traffic Limited

For and on behalf of:

ROYAL HASKONING

LONG SUTTON

Tuesday 31 January 2012

0730-0930
1600-1800

Drawing N°:	15326 - 01
Site:	1
Location:	London Road / Access / Roman Bank

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	MOVEMENT 1 FROM LONDON ROAD (NW) TO ROMAN BANK						MOVEMENT 2 FROM LONDON ROAD (NW) TO LONDON ROAD (SE)						MOVEMENT 3 FROM LONDON ROAD (NW) TO ACCESS					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
07:30	7	0	0	0	0	7	42	10	2	0	0	54	1	0	0	0	0	1
07:45	4	1	1	0	0	6	39	8	0	4	0	51	0	0	0	0	0	0
HH/TOT	11	1	1	0	0	13	81	18	2	4	0	105	1	0	0	0	0	1
08:00	0	0	0	0	0	0	33	6	1	2	0	42	0	0	0	0	0	0
08:15	9	0	0	0	0	9	44	3	3	0	0	50	0	0	0	0	0	0
08:30	5	0	0	0	0	5	44	3	3	0	1	51	0	0	0	0	0	0
08:45	4	3	0	0	0	7	66	6	2	2	0	76	1	0	0	0	0	1
H/TOT	18	3	0	0	0	21	187	18	9	4	1	219	1	0	0	0	0	1
09:00	11	1	0	0	0	12	44	2	1	1	0	48	0	0	0	0	0	0
09:15	5	1	0	0	0	6	22	9	1	2	1	35	0	0	0	0	0	0
HH/TOT	16	2	0	0	0	18	66	11	2	3	1	83	0	0	0	0	0	0
P/TOT	45	6	1	0	0	52	334	47	13	11	2	407	2	0	0	0	0	2

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	MOVEMENT 1 FROM LONDON ROAD (NW) TO ROMAN BANK						MOVEMENT 2 FROM LONDON ROAD (NW) TO LONDON ROAD (SE)						MOVEMENT 3 FROM LONDON ROAD (NW) TO ACCESS					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
16:00	7	1	0	0	0	8	47	7	0	1	0	55	0	0	0	0	0	0
16:15	6	1	0	0	0	7	45	12	1	1	1	60	1	0	0	0	0	1
16:30	4	0	0	0	0	4	49	9	0	2	1	61	1	0	0	0	0	1
16:45	14	1	0	0	0	15	35	4	1	1	0	41	0	0	0	0	0	0
H/TOT	31	3	0	0	0	34	176	32	2	5	2	217	2	0	0	0	0	2
17:00	5	0	0	0	0	5	38	7	0	1	0	46	0	0	0	0	0	0
17:15	4	0	0	0	1	5	45	9	0	2	0	56	1	0	0	0	0	1
17:30	12	1	0	0	0	13	38	4	0	0	0	42	0	0	0	0	0	0
17:45	2	0	0	0	0	2	21	0	2	1	2	26	0	0	0	0	0	0
H/TOT	23	1	0	0	1	25	142	20	2	4	2	170	1	0	0	0	0	1
P/TOT	54	4	0	0	1	59	318	52	4	9	4	387	3	0	0	0	0	3

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	MOVEMENT 4 FROM ACCESS TO LONDON ROAD (NW)						MOVEMENT 5 FROM ACCESS TO ROMAN BANK						MOVEMENT 6 FROM ACCESS TO LONDON ROAD (SE)					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HH/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1
H/TOT	2	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HH/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/TOT	2	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	MOVEMENT 4 FROM ACCESS TO LONDON ROAD (NW)						MOVEMENT 5 FROM ACCESS TO ROMAN BANK						MOVEMENT 6 FROM ACCESS TO LONDON ROAD (SE)					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
P/TOT	2	0	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	2

MANUAL CLASSIFIED COUNTS



MANUAL CL

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK

DATE: 31/01/2012

DAY: TUESDAY

JOB REF:

JOB NAME:

SITE:

LOCATION:

TIME	MOVEMENT 7 FROM LONDON ROAD (SE) TO ACCESS						MOVEMENT 8 FROM LONDON ROAD (SE) TO LONDON ROAD (NW)						MOVEMENT 9 FROM LONDON ROAD (SE) TO ROMAN BANK						TIME
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	
07:30	0	0	0	0	0	0	23	4	4	1	1	33	7	0	0	0	0	7	07:30
07:45	0	0	0	0	0	0	25	5	1	3	0	34	9	4	3	0	0	16	07:45
HH/TOT	0	0	0	0	0	0	48	9	5	4	1	67	16	4	3	0	0	23	HH/TOT
08:00	0	0	0	0	0	0	23	6	2	2	0	33	10	2	3	0	0	15	08:00
08:15	0	0	0	0	0	0	31	7	1	0	0	39	15	0	3	3	0	21	08:15
08:30	0	0	0	0	0	0	67	3	0	1	0	71	14	4	0	1	0	19	08:30
08:45	1	0	0	0	0	1	47	5	2	1	0	55	10	3	0	0	0	13	08:45
H/TOT	1	0	0	0	0	1	168	21	5	4	0	198	49	9	6	4	0	68	H/TOT
09:00	0	0	0	0	0	0	51	5	2	1	0	59	7	2	1	0	0	10	09:00
09:15	0	0	0	0	0	0	33	3	2	1	0	39	4	4	1	0	0	9	09:15
HH/TOT	0	0	0	0	0	0	84	8	4	2	0	98	11	6	2	0	0	19	HH/TOT
P/TOT	1	0	0	0	0	1	300	38	14	10	1	363	76	19	11	4	0	110	P/TOT

MANUAL CLASSIFIED COUNTS

AXIOM Traffic Limited

MANUAL CL

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK

DATE: 31/01/2012

DAY: TUESDAY

JOB REF:

JOB NAME:

SITE:

LOCATION:

TIME	MOVEMENT 7 FROM LONDON ROAD (SE) TO ACCESS						MOVEMENT 8 FROM LONDON ROAD (SE) TO LONDON ROAD (NW)						MOVEMENT 9 FROM LONDON ROAD (SE) TO ROMAN BANK						TIME
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	
16:00	0	0	0	0	0	0	57	15	1	1	1	75	8	3	0	0	0	11	16:00
16:15	0	0	0	0	0	0	47	12	2	0	0	61	11	2	1	0	0	14	16:15
16:30	0	0	0	0	0	0	49	4	3	1	1	58	24	2	2	0	0	28	16:30
16:45	0	0	0	0	0	0	58	5	0	2	0	65	29	1	1	0	0	31	16:45
H/TOT	0	0	0	0	0	0	211	36	6	4	2	259	72	8	4	0	0	84	H/TOT
17:00	0	0	0	0	0	0	76	15	1	1	0	93	29	3	0	0	0	32	17:00
17:15	0	0	0	0	0	0	81	2	0	1	1	85	21	7	2	0	0	30	17:15
17:30	0	0	0	0	0	0	59	7	2	0	0	68	26	2	0	0	0	28	17:30
17:45	0	0	0	0	0	0	41	0	0	2	0	43	31	2	0	0	1	34	17:45
H/TOT	0	0	0	0	0	0	257	24	3	4	1	289	107	14	2	0	1	124	H/TOT
P/TOT	0	0	0	0	0	0	468	60	9	8	3	548	179	22	6	0	1	208	P/TOT

ASSIFIED COUNTS

15326

LONG SUTTON

1

DATE: 31/01/2012

LONDON ROAD / ACCESS / ROMAN BANK

DAY: TUESDAY

MOVEMENT 10 FROM ROMAN BANK TO LONDON ROAD (SE)						MOVEMENT 11 FROM ROMAN BANK TO ACCESS						MOVEMENT 12 FROM ROMAN BANK TO LONDON ROAD (NW)					
CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
21	6	1	0	0	28	0	0	0	0	0	0	6	3	0	0	0	9
19	1	3	0	1	24	0	0	0	0	0	0	9	1	1	0	1	12
40	7	4	0	1	52	0	0	0	0	0	0	15	4	1	0	1	21
11	1	0	0	0	12	0	0	0	0	0	0	4	0	0	0	2	6
26	4	4	1	0	35	0	0	0	0	0	0	4	0	0	0	0	4
29	3	3	1	0	36	0	0	0	0	0	0	15	1	0	1	0	17
23	3	1	0	0	27	0	0	0	0	0	0	8	0	0	0	0	8
89	11	8	2	0	110	0	0	0	0	0	0	31	1	0	1	2	35
11	2	0	0	0	13	0	0	0	0	0	0	7	0	0	0	0	7
11	2	0	0	0	13	0	0	0	0	0	0	8	0	0	0	0	8
22	4	0	0	0	26	0	0	0	0	0	0	15	0	0	0	0	15
151	22	12	2	1	188	0	0	0	0	0	0	61	5	1	1	3	71

ASSIFIED COUNTS

15326

LONG SUTTON

1

DATE: 31/01/2012

LONDON ROAD / ACCESS / ROMAN BANK

DAY: TUESDAY

MOVEMENT 10 FROM ROMAN BANK TO LONDON ROAD (SE)					
CAR	LGV	HGV	PSV	MCL	TOT
14	4	0	0	0	18
7	2	1	0	0	10
12	5	2	0	1	20
10	5	0	0	0	15
43	16	3	0	1	63
17	2	2	0	0	21
9	3	1	0	0	13
12	1	0	0	0	13
11	1	0	0	0	12
49	7	3	0	0	59
92	23	6	0	1	122

MOVEMENT 11 FROM ROMAN BANK TO ACCESS					
CAR	LGV	HGV	PSV	MCL	TOT
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

MOVEMENT 12 FROM ROMAN BANK TO LONDON ROAD (NW)					
CAR	LGV	HGV	PSV	MCL	TOT
10	0	0	0	0	10
4	2	0	0	0	6
2	1	0	0	0	3
5	1	0	0	0	6
21	4	0	0	0	25
5	0	0	0	2	7
3	0	0	0	0	3
2	1	0	0	0	3
1	1	0	0	0	2
11	2	0	0	2	15
32	6	0	0	2	40

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	TO ARM A LONDON ROAD (NW)						FROM ARM A LONDON ROAD (NW)					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
07:30	29	7	4	1	1	42	50	10	2	0	0	62
07:45	34	6	2	3	1	46	43	9	1	4	0	57
HH/TOT	63	13	6	4	2	88	93	19	3	4	0	119
08:00	27	6	2	2	2	39	33	6	1	2	0	42
08:15	36	7	1	0	0	44	53	3	3	0	0	59
08:30	82	4	0	2	0	88	49	3	3	0	1	56
08:45	56	5	2	1	0	64	71	9	2	2	0	84
H/TOT	201	22	5	5	2	235	206	21	9	4	1	241
09:00	58	5	2	1	0	66	55	3	1	1	0	60
09:15	41	3	2	1	0	47	27	10	1	2	1	41
HH/TOT	99	8	4	2	0	113	82	13	2	3	1	101
P/TOT	363	43	15	11	4	436	381	53	14	11	2	461

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	TO ARM A LONDON ROAD (NW)						FROM ARM A LONDON ROAD (NW)					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
16:00	67	15	1	1	1	85	54	8	0	1	0	63
16:15	52	14	2	0	0	68	52	13	1	1	1	68
16:30	52	5	3	1	1	62	54	9	0	2	1	66
16:45	63	6	0	2	0	71	49	5	1	1	0	56
H/TOT	234	40	6	4	2	286	209	35	2	5	2	253
17:00	81	15	1	1	2	100	43	7	0	1	0	51
17:15	84	2	0	1	1	88	50	9	0	2	1	62
17:30	61	8	2	0	0	71	50	5	0	0	0	55
17:45	42	1	0	2	0	45	23	0	2	1	2	28
H/TOT	268	26	3	4	3	304	166	21	2	4	3	196
P/TOT	502	66	9	8	5	590	375	56	4	9	5	449

TO ARM A IS TOTAL OF MOVEMENTS 4, 8, 12

FROM ARM A IS TOTAL OF MOVEMENTS 1, 2, 3

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	TO ARM B ACCESS						FROM ARM B ACCESS					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
07:30	1	0	0	0	0	1	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0
HH/TOT	1	0	0	0	0	1	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	1	0	0	0	0	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0
08:45	2	0	0	0	0	2	2	0	0	0	0	2
H/TOT	2	0	0	0	0	2	3	0	0	0	0	3
09:00	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0
HH/TOT	0	0	0	0	0	0	0	0	0	0	0	0
P/TOT	3	0	0	0	0	3	3	0	0	0	0	3

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	TO ARM B ACCESS						FROM ARM B ACCESS					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
16:00	0	0	0	0	0	0	0	0	0	0	0	0
16:15	1	0	0	0	0	1	1	0	0	0	0	1
16:30	1	0	0	0	0	1	2	0	0	0	0	2
16:45	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	2	3	0	0	0	0	3
17:00	0	0	0	0	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	1	0	0	0	0	0	0
17:30	0	0	0	0	0	0	1	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	1	1	0	0	0	0	1
P/TOT	3	0	0	0	0	3	4	0	0	0	0	4

TO ARM B IS TOTAL OF MOVEMENTS 3, 7, 11

FROM ARM B IS TOTAL OF MOVEMENTS 4, 5, 6

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	TO ARM C LONDON ROAD (SE)						FROM ARM C LONDON ROAD (SE)					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
07:30	63	16	3	0	0	82	30	4	4	1	1	40
07:45	58	9	3	4	1	75	34	9	4	3	0	50
HH/TOT	121	25	6	4	1	157	64	13	8	4	1	90
08:00	44	7	1	2	0	54	33	8	5	2	0	48
08:15	70	7	7	1	0	85	46	7	4	3	0	60
08:30	73	6	6	1	1	87	81	7	0	2	0	90
08:45	90	9	3	2	0	104	58	8	2	1	0	69
H/TOT	277	29	17	6	1	330	218	30	11	8	0	267
09:00	55	4	1	1	0	61	58	7	3	1	0	69
09:15	33	11	1	2	1	48	37	7	3	1	0	48
HH/TOT	88	15	2	3	1	109	95	14	6	2	0	117
P/TOT	486	69	25	13	3	596	377	57	25	14	1	474

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	TO ARM C LONDON ROAD (SE)						FROM ARM C LONDON ROAD (SE)					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
16:00	61	11	0	1	0	73	65	18	1	1	1	86
16:15	52	14	2	1	1	70	58	14	3	0	0	75
16:30	62	14	2	2	2	82	73	6	5	1	1	86
16:45	45	9	1	1	0	56	87	6	1	2	0	96
H/TOT	220	48	5	5	3	281	283	44	10	4	2	343
17:00	55	9	2	1	0	67	105	18	1	1	0	125
17:15	54	12	1	2	0	69	102	9	2	1	1	115
17:30	51	5	0	0	0	56	85	9	2	0	0	96
17:45	32	1	2	1	2	38	72	2	0	2	1	77
H/TOT	192	27	5	4	2	230	364	38	5	4	2	413
P/TOT	412	75	10	9	5	511	647	82	15	8	4	756

TO ARM C IS TOTAL OF MOVEMENTS 2, 6, 10

FROM ARM C IS TOTAL OF MOVEMENTS 7, 8, 9

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	TO ARM D ROMAN BANK						FROM ARM D ROMAN BANK					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
07:30	14	0	0	0	0	14	27	9	1	0	0	37
07:45	13	5	4	0	0	22	28	2	4	0	2	36
HH/TOT	27	5	4	0	0	36	55	11	5	0	2	73
08:00	10	2	3	0	0	15	15	1	0	0	2	18
08:15	24	0	3	3	0	30	30	4	4	1	0	39
08:30	19	4	0	1	0	24	44	4	3	2	0	53
08:45	14	6	0	0	0	20	31	3	1	0	0	35
H/TOT	67	12	6	4	0	89	120	12	8	3	2	145
09:00	18	3	1	0	0	22	18	2	0	0	0	20
09:15	9	5	1	0	0	15	19	2	0	0	0	21
HH/TOT	27	8	2	0	0	37	37	4	0	0	0	41
P/TOT	121	25	12	4	0	162	212	27	13	3	4	259

MANUAL CLASSIFIED COUNTS

JOB REF: 15326

JOB NAME: LONG SUTTON

SITE: 1 **DATE:** 31/01/2012

LOCATION: LONDON ROAD / ACCESS / ROMAN BANK **DAY:** TUESDAY

TIME	TO ARM D ROMAN BANK						FROM ARM D ROMAN BANK					
	CAR	LGV	HGV	PSV	MCL	TOT	CAR	LGV	HGV	PSV	MCL	TOT
16:00	15	4	0	0	0	19	24	4	0	0	0	28
16:15	17	3	1	0	0	21	11	4	1	0	0	16
16:30	28	2	2	0	0	32	14	6	2	0	1	23
16:45	43	2	1	0	0	46	15	6	0	0	0	21
H/TOT	103	11	4	0	0	118	64	20	3	0	1	88
17:00	34	3	0	0	0	37	22	2	2	0	2	28
17:15	25	7	2	0	1	35	12	3	1	0	0	16
17:30	38	3	0	0	0	41	14	2	0	0	0	16
17:45	33	2	0	0	1	36	12	2	0	0	0	14
H/TOT	130	15	2	0	2	149	60	9	3	0	2	74
P/TOT	233	26	6	0	2	267	124	29	6	0	3	162

TO ARM D IS TOTAL OF MOVEMENTS 1, 5, 9

FROM ARM D IS TOTAL OF MOVEMENTS 10, 11, 12

Appendix E

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLES

Selected regions and areas:

03	**SOUTH WEST**		
	CW	CORNWALL	1 days
	GS	GLOUCESTERSHIRE	1 days
	WL	WILTSHIRE	1 days
04	**EAST ANGLIA**		
	SF	SUFFOLK	1 days
05	**EAST MIDLANDS**		
	LN	LINCOLNSHIRE	1 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	NY	NORTH YORKSHIRE	2 days
09	**NORTH**		
	CB	CUMBRIA	1 days
11	**SCOTLAND**		
	FI	FIFE	1 days

Filtering Stage 2 selection:

Parameter: Number of dwellings
Range: 52 to 150 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/03 to 13/05/11

Selected survey days:

Monday	4 days
Tuesday	4 days
Friday	1 days

Selected survey types:

Manual count	9 days
Directional ATC Count	0 days

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	3
Edge of Town	5

Selected Location Sub Categories:

Residential Zone	5
Out of Town	1
No Sub Category	3

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

MULTI-MODAL VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	84	0.067	9	84	0.283	9	84	0.350
08:00 - 09:00	9	84	0.145	**9**	**84**	**0.399**	9	84	0.544
09:00 - 10:00	9	84	0.192	9	84	0.219	9	84	0.411
10:00 - 11:00	9	84	0.141	9	84	0.170	9	84	0.311
11:00 - 12:00	9	84	0.178	9	84	0.158	9	84	0.336
12:00 - 13:00	9	84	0.198	9	84	0.165	9	84	0.363
13:00 - 14:00	9	84	0.195	9	84	0.177	9	84	0.372
14:00 - 15:00	9	84	0.209	9	84	0.194	9	84	0.403
15:00 - 16:00	9	84	0.269	9	84	0.181	9	84	0.450
16:00 - 17:00	9	84	0.316	9	84	0.215	9	84	0.531
17:00 - 18:00	**9**	**84**	**0.407**	9	84	0.196	**9**	**84**	**0.603**
18:00 - 19:00	9	84	0.220	9	84	0.200	9	84	0.420
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			2.537			2.557			5.094

Parameter summary

Trip rate parameter range selected:	52 - 150 (units:)
Survey date date range:	01/01/03 - 13/05/11
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	13

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

MULTI-MODAL OGVS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	84	0.004	9	84	0.003	9	84	0.007
08:00 - 09:00	9	84	0.003	9	84	0.003	9	84	0.006
09:00 - 10:00	9	84	0.003	9	84	0.003	9	84	0.006
10:00 - 11:00	**9**	**84**	**0.005**	**9**	**84**	**0.007**	**9**	**84**	**0.012**
11:00 - 12:00	9	84	0.000	9	84	0.000	9	84	0.000
12:00 - 13:00	9	84	0.003	9	84	0.001	9	84	0.004
13:00 - 14:00	9	84	0.001	9	84	0.003	9	84	0.004
14:00 - 15:00	9	84	0.000	9	84	0.001	9	84	0.001
15:00 - 16:00	9	84	0.001	9	84	0.000	9	84	0.001
16:00 - 17:00	9	84	0.004	9	84	0.000	9	84	0.004
17:00 - 18:00	9	84	0.000	9	84	0.003	9	84	0.003
18:00 - 19:00	9	84	0.000	9	84	0.000	9	84	0.000
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			0.024			0.024			0.048

Parameter summary

Trip rate parameter range selected:	52 - 150 (units:)
Survey date date range:	01/01/03 - 13/05/11
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	13

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

MULTI-MODAL PSVS

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	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	84	0.000	9	84	0.000	9	84	0.000
08:00 - 09:00	9	84	0.001	**9**	**84**	**0.001**	9	84	0.002
09:00 - 10:00	**9**	**84**	**0.003**	9	84	0.001	**9**	**84**	**0.004**
10:00 - 11:00	9	84	0.000	9	84	0.001	9	84	0.001
11:00 - 12:00	9	84	0.000	9	84	0.000	9	84	0.000
12:00 - 13:00	9	84	0.000	9	84	0.000	9	84	0.000
13:00 - 14:00	9	84	0.000	9	84	0.000	9	84	0.000
14:00 - 15:00	9	84	0.000	9	84	0.000	9	84	0.000
15:00 - 16:00	9	84	0.001	9	84	0.001	9	84	0.002
16:00 - 17:00	9	84	0.001	9	84	0.001	9	84	0.002
17:00 - 18:00	9	84	0.000	9	84	0.000	9	84	0.000
18:00 - 19:00	9	84	0.000	9	84	0.000	9	84	0.000
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			0.006			0.005			0.011

Parameter summary

Trip rate parameter range selected:	52 - 150 (units:)
Survey date date range:	01/01/03 - 13/05/11
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	13

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

MULTI-MODAL CYCLISTS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	84	0.005	9	84	0.008	9	84	0.013
08:00 - 09:00	9	84	0.005	**9**	**84**	**0.018**	9	84	0.023
09:00 - 10:00	9	84	0.003	9	84	0.005	9	84	0.008
10:00 - 11:00	9	84	0.005	9	84	0.009	9	84	0.014
11:00 - 12:00	9	84	0.005	9	84	0.003	9	84	0.008
12:00 - 13:00	9	84	0.005	9	84	0.007	9	84	0.012
13:00 - 14:00	9	84	0.004	9	84	0.004	9	84	0.008
14:00 - 15:00	9	84	0.000	9	84	0.003	9	84	0.003
15:00 - 16:00	9	84	0.017	9	84	0.009	9	84	0.026
16:00 - 17:00	9	84	0.020	9	84	0.018	**9**	**84**	**0.038**
17:00 - 18:00	**9**	**84**	**0.024**	9	84	0.012	9	84	0.036
18:00 - 19:00	9	84	0.018	9	84	0.011	9	84	0.029
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			0.111			0.107			0.218

Parameter summary

Trip rate parameter range selected:	52 - 150 (units:)
Survey date date range:	01/01/03 - 13/05/11
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	13

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

MULTI-MODAL VEHICLE OCCUPANTS

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	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	84	0.074	9	84	0.343	9	84	0.417
08:00 - 09:00	9	84	0.181	**9**	**84**	**0.619**	**9**	**84**	**0.800**
09:00 - 10:00	9	84	0.229	9	84	0.277	9	84	0.506
10:00 - 11:00	9	84	0.174	9	84	0.207	9	84	0.381
11:00 - 12:00	9	84	0.215	9	84	0.192	9	84	0.407
12:00 - 13:00	9	84	0.246	9	84	0.208	9	84	0.454
13:00 - 14:00	9	84	0.250	9	84	0.236	9	84	0.486
14:00 - 15:00	9	84	0.273	9	84	0.260	9	84	0.533
15:00 - 16:00	9	84	0.419	9	84	0.254	9	84	0.673
16:00 - 17:00	9	84	0.430	9	84	0.303	9	84	0.733
17:00 - 18:00	**9**	**84**	**0.540**	9	84	0.258	9	84	0.798
18:00 - 19:00	9	84	0.266	9	84	0.281	9	84	0.547
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			3.297			3.438			6.735

Parameter summary

Trip rate parameter range selected:	52 - 150 (units:)
Survey date date range:	01/01/03 - 13/05/11
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	13

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	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	84	0.021	9	84	0.051	9	84	0.072
08:00 - 09:00	9	84	0.024	**9**	**84**	**0.186**	**9**	**84**	**0.210**
09:00 - 10:00	9	84	0.037	9	84	0.055	9	84	0.092
10:00 - 11:00	9	84	0.025	9	84	0.041	9	84	0.066
11:00 - 12:00	9	84	0.030	9	84	0.045	9	84	0.075
12:00 - 13:00	9	84	0.047	9	84	0.022	9	84	0.069
13:00 - 14:00	9	84	0.041	9	84	0.037	9	84	0.078
14:00 - 15:00	9	84	0.032	9	84	0.041	9	84	0.073
15:00 - 16:00	**9**	**84**	**0.121**	9	84	0.057	9	84	0.178
16:00 - 17:00	9	84	0.097	9	84	0.058	9	84	0.155
17:00 - 18:00	9	84	0.067	9	84	0.025	9	84	0.092
18:00 - 19:00	9	84	0.050	9	84	0.051	9	84	0.101
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			0.592			0.669			1.261

Parameter summary

Trip rate parameter range selected:	52 - 150 (units:)
Survey date date range:	01/01/03 - 13/05/11
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	13

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	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	84	0.003	9	84	0.001	9	84	0.004
08:00 - 09:00	9	84	0.004	**9**	**84**	**0.012**	**9**	**84**	**0.016**
09:00 - 10:00	**9**	**84**	**0.011**	9	84	0.004	9	84	0.015
10:00 - 11:00	9	84	0.001	9	84	0.004	9	84	0.005
11:00 - 12:00	9	84	0.001	9	84	0.011	9	84	0.012
12:00 - 13:00	9	84	0.004	9	84	0.004	9	84	0.008
13:00 - 14:00	9	84	0.004	9	84	0.004	9	84	0.008
14:00 - 15:00	9	84	0.007	9	84	0.003	9	84	0.010
15:00 - 16:00	9	84	0.009	9	84	0.000	9	84	0.009
16:00 - 17:00	9	84	0.005	9	84	0.003	9	84	0.008
17:00 - 18:00	9	84	0.007	9	84	0.001	9	84	0.008
18:00 - 19:00	9	84	0.000	9	84	0.000	9	84	0.000
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			0.056			0.047			0.103

Parameter summary

Trip rate parameter range selected:	52 - 150 (units:)
Survey date date range:	01/01/03 - 13/05/11
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	13

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

MULTI-MODAL TOTAL PEOPLE

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	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	9	84	0.103	9	84	0.403	9	84	0.506
08:00 - 09:00	9	84	0.213	**9**	**84**	**0.835**	**9**	**84**	**1.048**
09:00 - 10:00	9	84	0.279	9	84	0.341	9	84	0.620
10:00 - 11:00	9	84	0.206	9	84	0.261	9	84	0.467
11:00 - 12:00	9	84	0.252	9	84	0.250	9	84	0.502
12:00 - 13:00	9	84	0.303	9	84	0.241	9	84	0.544
13:00 - 14:00	9	84	0.299	9	84	0.281	9	84	0.580
14:00 - 15:00	9	84	0.311	9	84	0.306	9	84	0.617
15:00 - 16:00	9	84	0.567	9	84	0.320	9	84	0.887
16:00 - 17:00	9	84	0.552	9	84	0.382	9	84	0.934
17:00 - 18:00	**9**	**84**	**0.638**	9	84	0.296	9	84	0.934
18:00 - 19:00	9	84	0.335	9	84	0.343	9	84	0.678
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			4.058			4.259			8.317

Parameter summary

Trip rate parameter range selected:	52 - 150 (units:)
Survey date date range:	01/01/03 - 13/05/11
Number of weekdays (Monday-Friday):	9
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	13

Appendix F

TRL LIMITED

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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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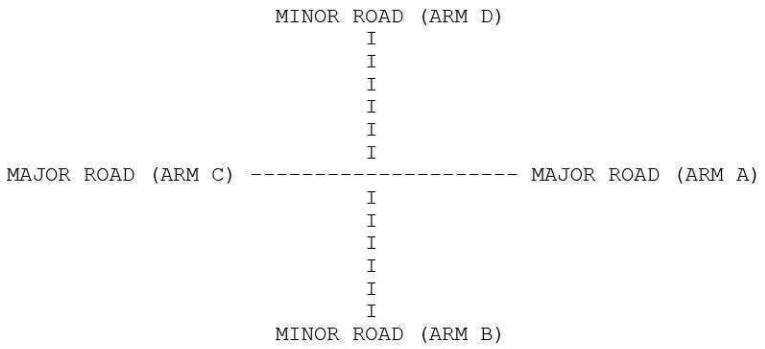
Run with file:-
"I:\9X0917\Technical_Data\E01 Calculations\Traffic & Transport\PICADY\2012.02.09 roman bank junction.vpi"
(drive-on-the-left) at 12:09:24 on Friday, 24 February 2012

RUN INFORMATION

RUN TITLE	: Long Sutton
LOCATION	: Long Sutton - Roman Bank Junction
DATE	: 09/02/12
CLIENT	:
ENUMERATOR	: 303838 [L05624]
JOB NUMBER	: 9X0917
STATUS	: Draft 1
DESCRIPTION	:

MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS London Road (East)
ARM B IS Private Rd
ARM C IS London Road (West)
ARM D IS Roman Bank

STREAM LABELLING CONVENTION

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

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.10 M.	(W) 7.10 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B)100.00 M.	(VA-D) 80.00 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 8.0 M.	(VD-A) 11.0 M.
- VISIBILITY TO RIGHT	(VB-A) 6.0 M.	(VD-C) 8.0 M.
- LANE 1 WIDTH	(WB-C) 2.20 M.	(WD-A) 2.50 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 0.00 M.

.SLOPES AND INTERCEPT

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

STREAM B-C

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
577.44	0.21	0.08

STREAM D-A

Intercept For STREAM D-A	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
597.49	0.22	0.09

STREAM B-A

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM D-A	Slope For Opposing STREAM D-B
444.57	0.19	0.19	0.19	0.19

Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C
0.08	0.12	0.28	0.10

STREAM D-C

Intercept For STREAM D-C	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM B-C	Slope For Opposing STREAM B-D
460.91	0.20	0.20	0.20	0.20

Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM B-A
0.08	0.13	0.29	0.10

STREAM C-B

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D
631.87	0.23	0.33

STREAM A-D

I STREAM A-D	STREAM C-A	STREAM C-B	I
I 620.29	0.23	0.33	I

B-D Stream From Left Hand Lane

I Intercept For I STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B	I
I 444.57	0.19	0.19	0.08	0.28	I

I I	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D	Slope For Opposing	Slope For Opposing	I
I	0.12	0.12			I

B-D Stream From Right Hand Lane

I Intercept For I STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B	I
I 444.57	0.19	0.19	0.08	0.28	I

I I	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D	Slope For Opposing	Slope For Opposing	I
I	0.12	0.12			I

D-B Stream From Left Hand Lane

I Intercept For I STREAM D-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C	Slope For Opposing STREAM A-D	I
I 460.91	0.20	0.20	0.08	0.29	I

I I	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

D-B Stream From Right Hand Lane

I Intercept For I STREAM B-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-D	I
I 460.91	0.20	0.20	0.08	0.29	I

I I	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

GEOMETRIC DELAY DATA

I	I ARM SPEED (KPH)		I ENTRY RADIUS	EXIT RADIUS	I
I	I ENTRY	EXIT	I ER (M)	EXR (M)	I
I ARM A	I 60.0	60.0	I 8.0		I
I ARM B	I 30.0	30.0	I 7.0	7.0	I
I ARM C	I 60.0	60.0	I 10.0		I
I ARM D	I 30.0	30.0	I 7.0	5.0	I

JUNCTION VISIBILITIES DO NOT CONFORM TO STANDARDS LAID DOWN IN TD42/95

****** Acceleration distance exceeds calculation distance on ARM B by 7.1m

TRAFFIC DEMAND DATA

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

Demand set: Base 2012 AM

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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	3.94	5.91	3.94
ARM B	15.00	45.00	75.00	0.04	0.06	0.04
ARM C	15.00	45.00	75.00	3.66	5.49	3.66
ARM D	15.00	45.00	75.00	2.04	3.06	2.04

Demand set: Base 2012 AM

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
08.00 - 08.15	ARM A	0.000	0.003	0.775	0.222
		0.0	1.0	244.0	70.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.333	0.000	0.667	0.000
		1.0	0.0	2.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.877	0.003	0.000	0.119
		257.0	1.0	0.0	35.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.779	0.000	0.221	0.000
		127.0	0.0	36.0	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 Base 2012 AM
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)
08.00-08.15									
B-ACD	0.04	7.64	0.005		0.00	0.00	0.1	0.1	0.13
A-BCD	1.18	11.58	0.102		0.00	0.16	2.3	1.8	0.10
A-B	0.01							0.0	
A-C	2.76							0.0	
D-ABC	2.05	8.37	0.244		0.00	0.32	4.6	4.2	0.16
C-ABD	0.02	11.99	0.001		0.00	0.00	0.0	0.0	0.08
C-D	0.44							0.7	
C-A	3.22							0.0	

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-ACD	0.04	7.40	0.006		0.00	0.01	0.1	0.1	0.14
A-BCD	1.52	11.86	0.128		0.16	0.21	3.2	2.1	0.10
A-B	0.01							0.0	
A-C	3.19							0.0	
D-ABC	2.44	8.18	0.299		0.32	0.42	6.1	5.1	0.17
C-ABD	0.02	12.28	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.52							0.9	
C-A	3.84							0.0	

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-ACD	0.06	7.08	0.008		0.01	0.01	0.1	0.1	0.14
A-BCD	2.03	12.23	0.166		0.21	0.30	4.5	2.6	0.10
A-B	0.02							0.0	
A-C	3.74							0.0	
D-ABC	2.99	7.90	0.378		0.42	0.60	8.6	6.2	0.20
C-ABD	0.03	12.69	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.64							1.1	
C-A	4.71							0.0	

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-ACD	0.06	7.07	0.008		0.01	0.01	0.1	0.1	0.14
A-BCD	2.03	12.23	0.166		0.30	0.30	4.5	2.6	0.10
A-B	0.02							0.0	
A-C	3.74							0.0	
D-ABC	2.99	7.90	0.378		0.60	0.60	9.0	6.2	0.20
C-ABD	0.03	12.69	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.64							1.1	
C-A	4.71							0.0	

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-ACD	0.04	7.40	0.006		0.01	0.01	0.1	0.1	0.14
A-BCD	1.52	11.86	0.128		0.30	0.22	3.2	2.2	0.10
A-B	0.01							0.0	
A-C	3.19							0.0	
D-ABC	2.44	8.18	0.299		0.60	0.43	6.7	5.1	0.18
C-ABD	0.02	12.28	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.52							0.9	
C-A	3.84							0.0	

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)
09.15-09.30									
B-ACD	0.04	7.63	0.005		0.01	0.00	0.1	0.1	0.13
A-BCD	1.18	11.58	0.102		0.22	0.16	2.4	1.8	0.10
A-B	0.01							0.0	
A-C	2.76							0.0	
D-ABC	2.05	8.37	0.244		0.43	0.33	5.1	4.3	0.16
C-ABD	0.02	11.99	0.001		0.00	0.00	0.0	0.0	0.08
C-D	0.44							0.7	
C-A	3.22							0.0	

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

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.0	
08.30	0.0	
08.45	0.0	
09.00	0.0	
09.15	0.0	
09.30	0.0	

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.2	
08.30	0.2	
08.45	0.3	
09.00	0.3	
09.15	0.2	
09.30	0.2	

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.3	
08.30	0.4	
08.45	0.6	*
09.00	0.6	*
09.15	0.4	
09.30	0.3	

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	4.1	2.8	0.6	0.14	0.6	0.14
A-BCD	141.9	94.6	20.2	0.14	20.2	0.14
A-B	1.2	0.8				
A-C	290.4	193.6				
D-ABC	224.4	149.6	40.0	0.18	40.1	0.18
C-ABD	2.1	1.4	0.2	0.08	0.2	0.08
C-D	48.1	32.1				
C-A	353.1	235.4				
ALL	1065.4	710.2	61.0	0.06	61.0	0.06

* 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.

INCLUSIVE GEOMETRIC DELAY

ARM	TOTAL DEMAND		GEOMETRIC DELAY BY TURN (VEH MIN) (GEOMETRIC DELAY PER LIGHT VEHICLE (SEC))				TOTAL GEOM. DELAY VEH MIN
	(VEH)	(VEH/H)	ARM A	ARM B	ARM C	ARM D	
A	433.6	289.0	0.0	0.2	0.0	13.1	13.3
			(0.0)	(7.3)	(0.0)	(8.2)	
B	4.1	2.8	0.2	0.0	0.4	0.0	0.6
			(9.3)	(0.0)	(8.0)	(5.6)	
C	403.3	268.9	0.0	0.2	0.0	5.4	5.6
			(0.0)	(7.6)	(0.0)	(6.8)	
D	224.4	149.6	23.4	0.0	7.7	0.0	31.1
			(8.0)	(5.6)	(9.3)	(0.0)	
ALL	1065.4	710.2					50.6

. POINT TO POINT JOURNEY TIME TABLE

Point to Point journey times From / To (entry point) (exit point)	Arm A	Arm B	Arm C	Arm D
ARM A	0.0	42.1	33.6	106.7
ARM B	44.1	0.0	51.0	70.4
ARM C	33.8	47.3	0.0	96.8
ARM D	108.8	70.4	99.3	0.0

* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM A BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM B BEGINS/ENDS 40.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM C BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM D BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT

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

.SLOPES AND INTERCEPT

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

STREAM B-C

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
577.44	0.21	0.08

STREAM D-A

Intercept For STREAM D-A	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
597.49	0.22	0.09

STREAM B-A

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM D-A	Slope For Opposing STREAM D-B
444.57	0.19	0.19	0.19	0.19

Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C
0.08	0.12	0.28	0.10

STREAM D-C

Intercept For STREAM D-C	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM B-C	Slope For Opposing STREAM B-D
460.91	0.20	0.20	0.20	0.20

Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM B-A
0.08	0.13	0.29	0.10

STREAM C-B

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D
631.87	0.23	0.33

STREAM A-D

Intercept For STREAM A-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
620.29	0.23	0.33

B-D Stream From Left Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
0.12	0.12

B-D Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D

D-B Stream From Left Hand Lane

Intercept For STREAM D-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

D-B Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

GEOMETRIC DELAY DATA

	ARM SPEED (KPH) ENTRY	ARM SPEED (KPH) EXIT	ENTRY RADIUS ER (M)	EXIT RADIUS EXR (M)
ARM A	60.0	60.0	8.0	
ARM B	30.0	30.0	7.0	7.0
ARM C	60.0	60.0	10.0	
ARM D	30.0	30.0	7.0	5.0

JUNCTION VISIBILITIES DO NOT CONFORM TO STANDARDS LAID DOWN IN TD42/95

****** Acceleration distance exceeds calculation distance on ARM B by 7.1m

TRAFFIC DEMAND DATA

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

Demand set: Base 2012 PM

TIME PERIOD BEGINS 16.15 AND ENDS 17.45

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	5.79	8.68	5.79
ARM B	15.00	45.00	75.00	0.03	0.04	0.03
ARM C	15.00	45.00	75.00	3.14	4.71	3.14
ARM D	15.00	45.00	75.00	1.26	1.89	1.26

Demand set: Base 2012 PM

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
16.15 - 16.30	ARM A	0.000	0.000	0.708	0.292
		0.0	0.0	328.0	135.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.500	0.000	0.500	0.000
		1.0	0.0	1.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.876	0.008	0.000	0.116
		220.0	2.0	0.0	29.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.822	0.000	0.178	0.000
		83.0	0.0	18.0	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 Base 2012 PM
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)
16.15-16.30									
B-ACD	0.03	6.91	0.004		0.00	0.00	0.1	0.1	0.15
A-BCD	2.53	12.41	0.204		0.00	0.36	5.3	3.4	0.10
A-B	0.00							0.0	
A-C	3.28							0.0	
D-ABC	1.27	8.51	0.149		0.00	0.17	2.5	2.6	0.14
C-ABD	0.03	11.17	0.003		0.00	0.00	0.0	0.0	0.09
C-D	0.36							0.6	
C-A	2.75							0.0	

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-ACD	0.03	6.60	0.005		0.00	0.00	0.1	0.1	0.15
A-BCD	3.27	12.83	0.255		0.36	0.49	7.4	4.1	0.10
A-B	0.00							0.0	
A-C	3.67							0.0	
D-ABC	1.51	8.31	0.182		0.17	0.22	3.2	3.1	0.15
C-ABD	0.04	11.32	0.004		0.00	0.00	0.1	0.1	0.09
C-D	0.43							0.7	
C-A	3.28							0.0	

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-ACD	0.04	6.18	0.006		0.00	0.01	0.1	0.1	0.16
A-BCD	4.50	13.44	0.334		0.49	0.75	11.3	5.0	0.11
A-B	0.00							0.0	
A-C	4.00							0.0	
D-ABC	1.85	8.03	0.231		0.22	0.30	4.3	3.8	0.16
C-ABD	0.06	11.53	0.005		0.00	0.01	0.1	0.1	0.09
C-D	0.53							0.9	
C-A	4.02							0.0	

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-ACD	0.04	6.18	0.006		0.01	0.01	0.1	0.1	0.16
A-BCD	4.50	13.45	0.335		0.75	0.76	11.5	5.1	0.11
A-B	0.00							0.0	
A-C	3.99							0.0	
D-ABC	1.85	8.03	0.231		0.30	0.30	4.5	3.8	0.16
C-ABD	0.06	11.53	0.005		0.01	0.01	0.1	0.1	0.09
C-D	0.53							0.9	
C-A	4.02							0.0	

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)
17.15-17.30									
B-ACD	0.03	6.60	0.005		0.01	0.00	0.1	0.1	0.15
A-BCD	3.28	12.84	0.255		0.76	0.51	7.6	4.1	0.11
A-B	0.00							0.0	
A-C	3.66							0.0	
D-ABC	1.51	8.31	0.182		0.30	0.23	3.5	3.1	0.15
C-ABD	0.04	11.31	0.004		0.01	0.00	0.1	0.1	0.09
C-D	0.43							0.7	
C-A	3.28							0.0	

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)
17.30-17.45									
B-ACD	0.03	6.90	0.004		0.00	0.00	0.1	0.1	0.15
A-BCD	2.54	12.41	0.204		0.51	0.37	5.5	3.5	0.10
A-B	0.00							0.0	
A-C	3.27							0.0	
D-ABC	1.27	8.51	0.149		0.23	0.18	2.7	2.6	0.14
C-ABD	0.03	11.16	0.003		0.00	0.00	0.0	0.0	0.09
C-D	0.36							0.6	
C-A	2.75							0.0	

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

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.0	
16.45	0.0	
17.00	0.0	
17.15	0.0	
17.30	0.0	
17.45	0.0	

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.4	
16.45	0.5	
17.00	0.8	*
17.15	0.8	*
17.30	0.5	*
17.45	0.4	

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.2
16.45	0.2
17.00	0.3
17.15	0.3
17.30	0.2
17.45	0.2

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	2.8	1.8	0.4	0.15	0.4	0.15
A-BCD	309.1	206.1	48.6	0.16	48.6	0.16
A-B	0.0	0.0				
A-C	328.2	218.8				
D-ABC	139.0	92.7	20.7	0.15	20.7	0.15
C-ABD	4.1	2.7	0.4	0.09	0.4	0.09
C-D	39.8	26.5				
C-A	301.6	201.1				
ALL	1124.5	749.7	70.1	0.06	70.1	0.06

* 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.

INCLUSIVE GEOMETRIC DELAY

ARM	TOTAL DEMAND		GEOMETRIC DELAY BY TURN (VEH MIN) (GEOMETRIC DELAY PER LIGHT VEHICLE (SEC))				TOTAL GEOM. DELAY
	(VEH)	(VEH/H)	ARM A	ARM B	ARM C	ARM D	VEH MIN
A	637.3	424.9	0.0	0.0	0.0	25.3	25.3
			(0.0)	(7.3)	(0.0)	(8.2)	
B	2.8	1.8	0.2	0.0	0.2	0.0	0.4
			(9.3)	(0.0)	(8.0)	(5.6)	
C	345.5	230.3	0.0	0.3	0.0	4.5	4.9
			(0.0)	(7.6)	(0.0)	(6.8)	
D	139.0	92.7	15.3	0.0	3.8	0.0	19.2
			(8.0)	(5.6)	(9.3)	(0.0)	
ALL	1124.5	749.7					49.7

. POINT TO POINT JOURNEY TIME TABLE

Point to Point journey times From / To (entry point) (exit point)	Arm A	Arm B	Arm C	Arm D
ARM A	0.0	42.1	33.6	107.6
ARM B	44.1	0.0	52.0	70.4
ARM C	33.8	47.8	0.0	96.8
ARM D	107.0	70.4	99.3	0.0

* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM A BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM B BEGINS/ENDS 40.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM C BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM D BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT

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

.SLOPES AND INTERCEPT

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

STREAM B-C

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
577.44	0.21	0.08

STREAM D-A

Intercept For STREAM D-A	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
597.49	0.22	0.09

STREAM B-A

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM D-A	Slope For Opposing STREAM D-B
444.57	0.19	0.19	0.19	0.19

Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C
0.08	0.12	0.28	0.10

STREAM D-C

Intercept For STREAM D-C	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM B-C	Slope For Opposing STREAM B-D
460.91	0.20	0.20	0.20	0.20

Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM B-A
0.08	0.13	0.29	0.10

STREAM C-B

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D
631.87	0.23	0.33

STREAM A-D

Intercept For STREAM A-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
620.29	0.23	0.33

B-D Stream From Left Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
0.12	0.12

B-D Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D

D-B Stream From Left Hand Lane

Intercept For STREAM D-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

D-B Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

GEOMETRIC DELAY DATA

	ARM SPEED (KPH)		ENTRY RADIUS	EXIT RADIUS
	ENTRY	EXIT	ER (M)	EXR (M)
ARM A	60.0	60.0	8.0	
ARM B	30.0	30.0	7.0	7.0
ARM C	60.0	60.0	10.0	
ARM D	30.0	30.0	7.0	5.0

JUNCTION VISIBILITIES DO NOT CONFORM TO STANDARDS LAID DOWN IN TD42/95

****** Acceleration distance exceeds calculation distance on ARM B by 7.1m

TRAFFIC DEMAND DATA

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

Demand set: Base + Dev 2012 AM

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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	4.04	6.06	4.04
ARM B	15.00	45.00	75.00	0.04	0.06	0.04
ARM C	15.00	45.00	75.00	3.71	5.57	3.71
ARM D	15.00	45.00	75.00	2.45	3.68	2.45

Demand set: Base + Dev 2012 AM

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
08.00 - 08.15	ARM A	0.000	0.003	0.755	0.241
		0.0	1.0	244.0	78.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.333	0.000	0.667	0.000
		1.0	0.0	2.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.865	0.003	0.000	0.131
		257.0	1.0	0.0	39.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.781	0.000	0.219	0.000
		153.0	0.0	43.0	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 Base + Dev 2012 AM
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)
08.00-08.15									
B-ACD	0.04	7.59	0.005		0.00	0.00	0.1	0.1	0.13
A-BCD	1.33	11.58	0.115		0.00	0.18	2.6	2.0	0.10
A-B	0.01							0.0	
A-C	2.71							0.0	
D-ABC	2.46	8.36	0.294		0.00	0.41	5.8	5.1	0.17
C-ABD	0.02	11.99	0.001		0.00	0.00	0.0	0.0	0.08
C-D	0.49							0.8	
C-A	3.22							0.0	

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-ACD	0.04	7.34	0.006		0.00	0.01	0.1	0.1	0.14
A-BCD	1.69	11.85	0.143		0.18	0.24	3.6	2.4	0.10
A-B	0.01							0.0	
A-C	3.13							0.0	
D-ABC	2.94	8.16	0.360		0.41	0.55	8.0	6.1	0.19
C-ABD	0.02	12.29	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.58							1.0	
C-A	3.84							0.0	

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-ACD	0.06	6.99	0.008		0.01	0.01	0.1	0.1	0.14
A-BCD	2.26	12.22	0.185		0.24	0.34	5.1	2.9	0.10
A-B	0.01							0.0	
A-C	3.65							0.0	
D-ABC	3.60	7.89	0.456		0.55	0.82	11.7	7.4	0.23
C-ABD	0.03	12.70	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.71							1.2	
C-A	4.71							0.0	

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-ACD	0.06	6.99	0.008		0.01	0.01	0.1	0.1	0.14
A-BCD	2.26	12.22	0.185		0.34	0.34	5.1	2.9	0.10
A-B	0.01							0.0	
A-C	3.65							0.0	
D-ABC	3.60	7.88	0.456		0.82	0.83	12.3	7.5	0.23
C-ABD	0.03	12.70	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.71							1.2	
C-A	4.71							0.0	

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-ACD	0.04	7.33	0.006		0.01	0.01	0.1	0.1	0.14
A-BCD	1.70	11.85	0.143		0.34	0.24	3.6	2.4	0.10
A-B	0.01							0.0	
A-C	3.13							0.0	
D-ABC	2.94	8.16	0.360		0.83	0.57	9.0	6.1	0.19
C-ABD	0.02	12.29	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.58							1.0	
C-A	3.84							0.0	

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)
09.15-09.30									
B-ACD	0.04	7.58	0.005		0.01	0.01	0.1	0.1	0.13
A-BCD	1.33	11.59	0.115		0.24	0.18	2.7	2.0	0.10
A-B	0.01							0.0	
A-C	2.71							0.0	
D-ABC	2.46	8.36	0.294		0.57	0.42	6.6	5.1	0.17
C-ABD	0.02	11.99	0.001		0.00	0.00	0.0	0.0	0.08
C-D	0.49							0.8	
C-A	3.22							0.0	

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

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.3
09.00	0.3
09.15	0.2
09.30	0.2

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.4	
08.30	0.6	*
08.45	0.8	*
09.00	0.8	*
09.15	0.6	*
09.30	0.4	

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	4.1	2.8	0.6	0.14	0.6	0.14
A-BCD	158.7	105.8	22.7	0.14	22.8	0.14
A-B	1.2	0.8				
A-C	284.7	189.8				
D-ABC	269.8	179.9	53.4	0.20	53.4	0.20
C-ABD	2.1	1.4	0.2	0.08	0.2	0.08
C-D	53.6	35.7				
C-A	353.1	235.4				
ALL	1127.3	751.5	76.9	0.07	76.9	0.07

* 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.

INCLUSIVE GEOMETRIC DELAY

ARM	TOTAL DEMAND		GEOMETRIC DELAY BY TURN (VEH MIN) (GEOMETRIC DELAY PER LIGHT VEHICLE (SEC))				TOTAL GEOM. DELAY
	(VEH)	(VEH/H)	ARM A	ARM B	ARM C	ARM D	VEH MIN
A	444.6	296.4	0.0	0.2	0.0	14.6	14.8
			(0.0)	(7.3)	(0.0)	(8.2)	
B	4.1	2.8	0.2	0.0	0.4	0.0	0.6
			(9.3)	(0.0)	(8.0)	(5.6)	
C	408.8	272.5	0.0	0.2	0.0	6.1	6.2
			(0.0)	(7.6)	(0.0)	(6.8)	
D	269.8	179.9	28.2	0.0	9.2	0.0	37.4
			(8.0)	(5.6)	(9.3)	(0.0)	
ALL	1127.3	751.5					59.0

. POINT TO POINT JOURNEY TIME TABLE

Point to Point journey times From / To (entry point) (exit point)	Arm A	Arm B	Arm C	Arm D
ARM A	0.0	42.1	33.6	106.8
ARM B	44.1	0.0	51.1	70.4
ARM C	33.8	47.3	0.0	96.8
ARM D	109.9	70.4	99.3	0.0

* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM A BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM B BEGINS/ENDS 40.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM C BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM D BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT

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

.SLOPES AND INTERCEPT

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

STREAM B-C

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
577.44	0.21	0.08

STREAM D-A

Intercept For STREAM D-A	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
597.49	0.22	0.09

STREAM B-A

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM D-A	Slope For Opposing STREAM D-B
444.57	0.19	0.19	0.19	0.19

Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C
0.08	0.12	0.28	0.10

STREAM D-C

Intercept For STREAM D-C	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM B-C	Slope For Opposing STREAM B-D
460.91	0.20	0.20	0.20	0.20

Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM B-A
0.08	0.13	0.29	0.10

STREAM C-B

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D
631.87	0.23	0.33

STREAM A-D

Intercept For STREAM A-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
620.29	0.23	0.33

B-D Stream From Left Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D	Slope For Opposing	Slope For Opposing
0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D	Slope For Opposing	Slope For Opposing

D-B Stream From Left Hand Lane

Intercept For STREAM D-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

D-B Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

GEOMETRIC DELAY DATA

	ARM SPEED (KPH)		ENTRY RADIUS	EXIT RADIUS
	ENTRY	EXIT	ER (M)	EXR (M)
ARM A	60.0	60.0	8.0	
ARM B	30.0	30.0	7.0	7.0
ARM C	60.0	60.0	10.0	
ARM D	30.0	30.0	7.0	5.0

JUNCTION VISIBILITIES DO NOT CONFORM TO STANDARDS LAID DOWN IN TD42/95

****** Acceleration distance exceeds calculation distance on ARM B by 7.1m

TRAFFIC DEMAND DATA

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

Demand set: Base + Dev 2012 PM

TIME PERIOD BEGINS 16.15 AND ENDS 17.45

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	6.16	9.24	6.16
ARM B	15.00	45.00	75.00	0.03	0.04	0.03
ARM C	15.00	45.00	75.00	3.21	4.82	3.21
ARM D	15.00	45.00	75.00	1.48	2.21	1.48

Demand set: Base + Dev 2012 PM

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
16.15 - 16.30	ARM A	0.000	0.000	0.665	0.335
		0.0	0.0	328.0	165.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.500	0.000	0.500	0.000
		1.0	0.0	1.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.856	0.008	0.000	0.136
		220.0	2.0	0.0	35.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.822	0.000	0.178	0.000
		97.0	0.0	21.0	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 Base + Dev 2012 PM
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)
16.15-16.30									
B-ACD	0.03	6.83	0.004		0.00	0.00	0.1	0.1	0.15
A-BCD	3.09	12.39	0.249		0.00	0.45	6.7	4.2	0.11
A-B	0.00							0.0	
A-C	3.10							0.0	
D-ABC	1.48	8.46	0.175		0.00	0.21	3.0	3.0	0.14
C-ABD	0.03	11.11	0.003		0.00	0.00	0.0	0.0	0.09
C-D	0.44							0.7	
C-A	2.75							0.0	

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-ACD	0.03	6.50	0.005		0.00	0.00	0.1	0.1	0.15
A-BCD	4.00	12.81	0.312		0.45	0.64	9.6	5.0	0.11
A-B	0.00							0.0	
A-C	3.39							0.0	
D-ABC	1.77	8.25	0.214		0.21	0.27	3.9	3.6	0.15
C-ABD	0.04	11.25	0.004		0.00	0.00	0.1	0.1	0.09
C-D	0.52							0.9	
C-A	3.28							0.0	

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-ACD	0.04	6.05	0.006		0.00	0.01	0.1	0.1	0.17
A-BCD	5.50	13.42	0.410		0.64	1.01	15.2	6.2	0.13
A-B	0.00							0.0	
A-C	3.54							0.0	
D-ABC	2.17	7.95	0.272		0.27	0.37	5.4	4.5	0.17
C-ABD	0.06	11.45	0.005		0.00	0.01	0.1	0.1	0.09
C-D	0.64							1.1	
C-A	4.02							0.0	

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-ACD	0.04	6.04	0.006		0.01	0.01	0.1	0.1	0.17
A-BCD	5.51	13.43	0.410		1.01	1.02	15.5	6.2	0.13
A-B	0.00							0.0	
A-C	3.53							0.0	
D-ABC	2.17	7.95	0.272		0.37	0.37	5.6	4.5	0.17
C-ABD	0.06	11.45	0.005		0.01	0.01	0.1	0.1	0.09
C-D	0.64							1.1	
C-A	4.02							0.0	

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)
17.15-17.30									
B-ACD	0.03	6.49	0.005		0.01	0.00	0.1	0.1	0.15
A-BCD	4.01	12.83	0.313		1.02	0.66	9.9	5.1	0.11
A-B	0.00							0.0	
A-C	3.37							0.0	
D-ABC	1.77	8.25	0.214		0.37	0.28	4.3	3.7	0.15
C-ABD	0.04	11.24	0.004		0.01	0.00	0.1	0.1	0.09
C-D	0.52							0.9	
C-A	3.28							0.0	

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)
17.30-17.45									
B-ACD	0.03	6.82	0.004		0.00	0.00	0.1	0.1	0.15
A-BCD	3.10	12.40	0.250		0.66	0.47	7.0	4.2	0.11
A-B	0.00							0.0	
A-C	3.08							0.0	
D-ABC	1.48	8.46	0.175		0.28	0.21	3.3	3.1	0.14
C-ABD	0.03	11.10	0.003		0.00	0.00	0.0	0.0	0.09
C-D	0.44							0.7	
C-A	2.75							0.0	

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

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.0	
16.45	0.0	
17.00	0.0	
17.15	0.0	
17.30	0.0	
17.45	0.0	

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.5	
16.45	0.6	*
17.00	1.0	*
17.15	1.0	*
17.30	0.7	*
17.45	0.5	

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.2
16.45	0.3
17.00	0.4
17.15	0.4
17.30	0.3
17.45	0.2

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	2.8	1.8	0.4	0.16	0.4	0.16
A-BCD	378.3	252.2	63.8	0.17	63.8	0.17
A-B	0.0	0.0				
A-C	300.3	200.2				
D-ABC	162.4	108.3	25.4	0.16	25.4	0.16
C-ABD	4.2	2.8	0.4	0.09	0.4	0.09
C-D	48.0	32.0				
C-A	301.6	201.1				
ALL	1197.5	798.3	90.0	0.08	90.1	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.

INCLUSIVE GEOMETRIC DELAY

ARM	TOTAL DEMAND		GEOMETRIC DELAY BY TURN (VEH MIN) (GEOMETRIC DELAY PER LIGHT VEHICLE (SEC))				TOTAL GEOM. DELAY
	(VEH)	(VEH/H)	ARM A	ARM B	ARM C	ARM D	VEH MIN
A	678.6	452.4	0.0	0.0	0.0	30.9	30.9
			(0.0)	(7.3)	(0.0)	(8.2)	
B	2.8	1.8	0.2	0.0	0.2	0.0	0.4
			(9.3)	(0.0)	(8.0)	(5.6)	
C	353.7	235.8	0.0	0.3	0.0	5.4	5.8
			(0.0)	(7.6)	(0.0)	(6.8)	
D	162.4	108.3	17.9	0.0	4.5	0.0	22.4
			(8.0)	(5.6)	(9.3)	(0.0)	
ALL	1197.5	798.3					59.5

. POINT TO POINT JOURNEY TIME TABLE

Point to Point journey times From / To (entry point) (exit point)	Arm A	Arm B	Arm C	Arm D
ARM A	0.0	42.1	33.6	108.3
ARM B	44.1	0.0	52.2	70.4
ARM C	33.8	47.9	0.0	96.8
ARM D	107.4	70.4	99.3	0.0

* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM A BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM B BEGINS/ENDS 40.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM C BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM D BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT

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

.SLOPES AND INTERCEPT

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

STREAM B-C

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
577.44	0.21	0.08

STREAM D-A

Intercept For STREAM D-A	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
597.49	0.22	0.09

STREAM B-A

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM D-A	Slope For Opposing STREAM D-B
444.57	0.19	0.19	0.19	0.19

Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C
0.08	0.12	0.28	0.10

STREAM D-C

Intercept For STREAM D-C	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM B-C	Slope For Opposing STREAM B-D
460.91	0.20	0.20	0.20	0.20

Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM B-A
0.08	0.13	0.29	0.10

STREAM C-B

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D
631.87	0.23	0.33

STREAM A-D

Intercept For STREAM A-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
620.29	0.23	0.33

B-D Stream From Left Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
0.12	0.12

B-D Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D

D-B Stream From Left Hand Lane

Intercept For STREAM D-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

D-B Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

GEOMETRIC DELAY DATA

	ARM SPEED (KPH)		ENTRY RADIUS	EXIT RADIUS
	ENTRY	EXIT	ER (M)	EXR (M)
ARM A	60.0	60.0	8.0	
ARM B	30.0	30.0	7.0	7.0
ARM C	60.0	60.0	10.0	
ARM D	30.0	30.0	7.0	5.0

JUNCTION VISIBILITIES DO NOT CONFORM TO STANDARDS LAID DOWN IN TD42/95

****** Acceleration distance exceeds calculation distance on ARM B by 7.1m

TRAFFIC DEMAND DATA

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

Demand set: Base 2017 AM

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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	4.19	6.28	4.19
ARM B	15.00	45.00	75.00	0.04	0.06	0.04
ARM C	15.00	45.00	75.00	3.90	5.85	3.90
ARM D	15.00	45.00	75.00	2.17	3.26	2.17

Demand set: Base 2017 AM

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
08.00 - 08.15					
	ARM A	0.000	0.003	0.776	0.221
		0.0	1.0	260.0	74.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.333	0.000	0.667	0.000
		1.0	0.0	2.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.878	0.003	0.000	0.119
		274.0	1.0	0.0	37.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.782	0.000	0.218	0.000
		136.0	0.0	38.0	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 Base 2017 AM
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)
08.00-08.15									
B-ACD	0.04	7.56	0.005		0.00	0.00	0.1	0.1	0.13
A-BCD	1.29	11.68	0.110		0.00	0.17	2.6	1.9	0.10
A-B	0.01							0.0	
A-C	2.90							0.0	
D-ABC	2.18	8.32	0.262		0.00	0.35	5.0	4.5	0.16
C-ABD	0.02	12.09	0.001		0.00	0.00	0.0	0.0	0.08
C-D	0.46							0.8	
C-A	3.43							0.0	

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-ACD	0.04	7.31	0.006		0.00	0.01	0.1	0.1	0.14
A-BCD	1.65	11.97	0.138		0.17	0.23	3.5	2.3	0.10
A-B	0.01							0.0	
A-C	3.36							0.0	
D-ABC	2.61	8.11	0.322		0.35	0.47	6.8	5.4	0.18
C-ABD	0.02	12.40	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.55							0.9	
C-A	4.10							0.0	

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-ACD	0.06	6.96	0.008		0.01	0.01	0.1	0.1	0.14
A-BCD	2.21	12.37	0.179		0.23	0.33	5.0	2.8	0.10
A-B	0.02							0.0	
A-C	3.92							0.0	
D-ABC	3.19	7.82	0.408		0.47	0.67	9.7	6.6	0.21
C-ABD	0.03	12.84	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.68							1.1	
C-A	5.02							0.0	

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-ACD	0.06	6.95	0.008		0.01	0.01	0.1	0.1	0.15
A-BCD	2.21	12.37	0.179		0.33	0.33	5.1	2.8	0.10
A-B	0.02							0.0	
A-C	3.92							0.0	
D-ABC	3.19	7.82	0.409		0.67	0.68	10.2	6.6	0.22
C-ABD	0.03	12.84	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.68							1.1	
C-A	5.02							0.0	

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-ACD	0.04	7.31	0.006		0.01	0.01	0.1	0.1	0.14
A-BCD	1.65	11.97	0.138		0.33	0.24	3.6	2.3	0.10
A-B	0.01							0.0	
A-C	3.36							0.0	
D-ABC	2.61	8.11	0.322		0.68	0.48	7.5	5.5	0.18
C-ABD	0.02	12.40	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.55							0.9	
C-A	4.10							0.0	

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)
09.15-09.30									
B-ACD	0.04	7.56	0.005		0.01	0.01	0.1	0.1	0.13
A-BCD	1.29	11.69	0.111		0.24	0.18	2.7	1.9	0.10
A-B	0.01							0.0	
A-C	2.90							0.0	
D-ABC	2.18	8.32	0.263		0.48	0.36	5.6	4.6	0.16
C-ABD	0.02	12.09	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.46							0.8	
C-A	3.43							0.0	

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

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.2
08.45	0.3
09.00	0.3
09.15	0.2
09.30	0.2

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.4	
08.30	0.5	
08.45	0.7	*
09.00	0.7	*
09.15	0.5	
09.30	0.4	

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	4.1	2.8	0.6	0.14	0.6	0.14
A-BCD	154.5	103.0	22.4	0.15	22.4	0.15
A-B	1.2	0.8				
A-C	305.4	203.6				
D-ABC	239.5	159.7	44.8	0.19	44.8	0.19
C-ABD	2.2	1.5	0.2	0.08	0.2	0.08
C-D	50.8	33.9				
C-A	376.4	251.0				
ALL	1134.2	756.1	67.9	0.06	67.9	0.06

* 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.

INCLUSIVE GEOMETRIC DELAY

ARM	TOTAL DEMAND		GEOMETRIC DELAY BY TURN (VEH MIN) (GEOMETRIC DELAY PER LIGHT VEHICLE (SEC))				TOTAL GEOM. DELAY VEH MIN
	(VEH)	(VEH/H)	ARM A	ARM B	ARM C	ARM D	
A	461.1	307.4	0.0	0.2	0.0	13.9	14.0
			(0.0)	(7.3)	(0.0)	(8.2)	
B	4.1	2.8	0.2	0.0	0.4	0.0	0.6
			(9.3)	(0.0)	(8.0)	(5.6)	
C	429.4	286.3	0.0	0.2	0.0	5.8	5.9
			(0.0)	(7.6)	(0.0)	(6.8)	
D	239.5	159.7	25.1	0.0	8.1	0.0	33.2
			(8.0)	(5.6)	(9.3)	(0.0)	
ALL	1134.2	756.1					53.8

. POINT TO POINT JOURNEY TIME TABLE

Point to Point journey times From / To (entry point) (exit point)	Arm A	Arm B	Arm C	Arm D
ARM A	0.0	42.1	33.6	106.9
ARM B	44.1	0.0	51.1	70.4
ARM C	33.8	47.2	0.0	96.8
ARM D	109.3	70.4	99.3	0.0

* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM A BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM B BEGINS/ENDS 40.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM C BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM D BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT

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

.SLOPES AND INTERCEPT

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

STREAM B-C

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
577.44	0.21	0.08

STREAM D-A

Intercept For STREAM D-A	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
597.49	0.22	0.09

STREAM B-A

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM D-A	Slope For Opposing STREAM D-B
444.57	0.19	0.19	0.19	0.19

Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C
0.08	0.12	0.28	0.10

STREAM D-C

Intercept For STREAM D-C	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM B-C	Slope For Opposing STREAM B-D
460.91	0.20	0.20	0.20	0.20

Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM B-A
0.08	0.13	0.29	0.10

STREAM C-B

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D
631.87	0.23	0.33

STREAM A-D

Intercept For STREAM A-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
620.29	0.23	0.33

B-D Stream From Left Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D	Slope For Opposing	Slope For Opposing
0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D	Slope For Opposing	Slope For Opposing

D-B Stream From Left Hand Lane

Intercept For STREAM D-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing	Slope For Opposing
0.13	0.13		

D-B Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing	Slope For Opposing
0.13	0.13		

GEOMETRIC DELAY DATA

	ARM SPEED (KPH) ENTRY	ARM SPEED (KPH) EXIT	ENTRY RADIUS ER (M)	EXIT RADIUS EXR (M)
ARM A	60.0	60.0	8.0	
ARM B	30.0	30.0	7.0	7.0
ARM C	60.0	60.0	10.0	
ARM D	30.0	30.0	7.0	5.0

JUNCTION VISIBILITIES DO NOT CONFORM TO STANDARDS LAID DOWN IN TD42/95

****** Acceleration distance exceeds calculation distance on ARM B by 7.1m

TRAFFIC DEMAND DATA

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

Demand set: Base 2017 PM

TIME PERIOD BEGINS 16.15 AND ENDS 17.45

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	6.18	9.26	6.18
ARM B	15.00	45.00	75.00	0.03	0.04	0.03
ARM C	15.00	45.00	75.00	3.35	5.02	3.35
ARM D	15.00	45.00	75.00	1.35	2.03	1.35

Demand set: Base 2017 PM

TURNING PROPORTIONS
TURNING COUNTS
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.15 - 16.30	ARM A	0.000	0.000	0.709	0.291
		0.0	0.0	350.0	144.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.500	0.000	0.500	0.000
		1.0	0.0	1.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.877	0.007	0.000	0.116
		235.0	2.0	0.0	31.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.824	0.000	0.176	0.000
		89.0	0.0	19.0	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 Base 2017 PM
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)
16.15-16.30									
B-ACD	0.03	6.80	0.004		0.00	0.00	0.1	0.1	0.15
A-BCD	2.77	12.55	0.221		0.00	0.40	5.9	3.7	0.10
A-B	0.00							0.0	
A-C	3.43							0.0	
D-ABC	1.36	8.45	0.160		0.00	0.19	2.7	2.8	0.14
C-ABD	0.04	11.23	0.003		0.00	0.00	0.0	0.0	0.09
C-D	0.39							0.7	
C-A	2.94							0.0	

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-ACD	0.03	6.48	0.005		0.00	0.00	0.1	0.1	0.16
A-BCD	3.60	13.00	0.277		0.40	0.56	8.4	4.4	0.11
A-B	0.00							0.0	
A-C	3.80							0.0	
D-ABC	1.62	8.24	0.196		0.19	0.24	3.5	3.3	0.15
C-ABD	0.05	11.38	0.004		0.00	0.00	0.1	0.1	0.09
C-D	0.46							0.8	
C-A	3.51							0.0	

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-ACD	0.04	6.02	0.006		0.00	0.01	0.1	0.1	0.17
A-BCD	5.00	13.66	0.366		0.56	0.87	13.1	5.4	0.12
A-B	0.00							0.0	
A-C	4.07							0.0	
D-ABC	1.98	7.93	0.250		0.24	0.33	4.8	4.1	0.17
C-ABD	0.06	11.62	0.005		0.00	0.01	0.1	0.1	0.09
C-D	0.57							1.0	
C-A	4.29							0.0	

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-ACD	0.04	6.02	0.006		0.01	0.01	0.1	0.1	0.17
A-BCD	5.00	13.67	0.366		0.87	0.88	13.4	5.4	0.12
A-B	0.00							0.0	
A-C	4.06							0.0	
D-ABC	1.98	7.93	0.250		0.33	0.33	4.9	4.1	0.17
C-ABD	0.06	11.62	0.005		0.01	0.01	0.1	0.1	0.09
C-D	0.57							1.0	
C-A	4.29							0.0	

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)
17.15-17.30									
B-ACD	0.03	6.47	0.005		0.01	0.00	0.1	0.1	0.16
A-BCD	3.61	13.02	0.277		0.88	0.58	8.7	4.4	0.11
A-B	0.00							0.0	
A-C	3.79							0.0	
D-ABC	1.62	8.23	0.197		0.33	0.25	3.8	3.4	0.15
C-ABD	0.05	11.38	0.004		0.01	0.00	0.1	0.1	0.09
C-D	0.46							0.8	
C-A	3.51							0.0	

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)
17.30-17.45									
B-ACD	0.03	6.80	0.004		0.00	0.00	0.1	0.1	0.15
A-BCD	2.78	12.56	0.221		0.58	0.41	6.2	3.7	0.10
A-B	0.00							0.0	
A-C	3.42							0.0	
D-ABC	1.36	8.45	0.160		0.25	0.19	3.0	2.8	0.14
C-ABD	0.04	11.22	0.003		0.00	0.00	0.0	0.0	0.09
C-D	0.39							0.7	
C-A	2.94							0.0	

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

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.0	
16.45	0.0	
17.00	0.0	
17.15	0.0	
17.30	0.0	
17.45	0.0	

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.4	
16.45	0.6	*
17.00	0.9	*
17.15	0.9	*
17.30	0.6	*
17.45	0.4	

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.2
16.45	0.2
17.00	0.3
17.15	0.3
17.30	0.2
17.45	0.2

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	2.8	1.8	0.4	0.16	0.4	0.16
A-BCD	341.4	227.6	55.7	0.16	55.7	0.16
A-B	0.0	0.0				
A-C	338.5	225.7				
D-ABC	148.7	99.1	22.8	0.15	22.8	0.15
C-ABD	4.2	2.8	0.4	0.09	0.4	0.09
C-D	42.5	28.3				
C-A	322.1	214.8				
ALL	1200.2	800.2	79.2	0.07	79.3	0.07

* 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.

INCLUSIVE GEOMETRIC DELAY

ARM	TOTAL DEMAND		GEOMETRIC DELAY BY TURN (VEH MIN) (GEOMETRIC DELAY PER LIGHT VEHICLE (SEC))				TOTAL GEOM. DELAY
	(VEH)	(VEH/H)	ARM A	ARM B	ARM C	ARM D	VEH MIN
A	680.0	453.3	0.0	0.0	0.0	27.0	27.0
			(0.0)	(7.3)	(0.0)	(8.2)	
B	2.8	1.8	0.2	0.0	0.2	0.0	0.4
			(9.3)	(0.0)	(8.0)	(5.6)	
C	368.9	245.9	0.0	0.3	0.0	4.8	5.2
			(0.0)	(7.6)	(0.0)	(6.8)	
D	148.7	99.1	16.4	0.0	4.1	0.0	20.5
			(8.0)	(5.6)	(9.3)	(0.0)	
ALL	1200.2	800.2					53.1

. POINT TO POINT JOURNEY TIME TABLE

Point to Point journey times From / To (entry point) (exit point)	Arm A	Arm B	Arm C	Arm D
ARM A	0.0	42.1	33.6	108.0
ARM B	44.1	0.0	52.2	70.4
ARM C	33.8	47.8	0.0	96.8
ARM D	107.2	70.4	99.3	0.0

* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM A BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM B BEGINS/ENDS 40.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM C BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM D BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT

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

.SLOPES AND INTERCEPT

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

STREAM B-C

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
577.44	0.21	0.08

STREAM D-A

Intercept For STREAM D-A	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
597.49	0.22	0.09

STREAM B-A

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM D-A	Slope For Opposing STREAM D-B
444.57	0.19	0.19	0.19	0.19

Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C
0.08	0.12	0.28	0.10

STREAM D-C

Intercept For STREAM D-C	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM B-C	Slope For Opposing STREAM B-D
460.91	0.20	0.20	0.20	0.20

Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM B-A
0.08	0.13	0.29	0.10

STREAM C-B

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D
631.87	0.23	0.33

STREAM A-D

Intercept For STREAM A-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
620.29	0.23	0.33

B-D Stream From Left Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
0.12	0.12

B-D Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D

D-B Stream From Left Hand Lane

Intercept For STREAM D-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

D-B Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
0.13	0.13

GEOMETRIC DELAY DATA

	ARM SPEED (KPH)		ENTRY RADIUS	EXIT RADIUS
	ENTRY	EXIT	ER (M)	EXR (M)
ARM A	60.0	60.0	8.0	
ARM B	30.0	30.0	7.0	7.0
ARM C	60.0	60.0	10.0	
ARM D	30.0	30.0	7.0	5.0

JUNCTION VISIBILITIES DO NOT CONFORM TO STANDARDS LAID DOWN IN TD42/95

****** Acceleration distance exceeds calculation distance on ARM B by 7.1m

TRAFFIC DEMAND DATA

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

Demand set: Base + Dev 2017 AM

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

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	4.30	6.45	4.30
ARM B	15.00	45.00	75.00	0.04	0.06	0.04
ARM C	15.00	45.00	75.00	3.96	5.94	3.96
ARM D	15.00	45.00	75.00	2.59	3.88	2.59

Demand set: Base + Dev 2017 AM

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
08.00 - 08.15	ARM A	0.000	0.003	0.756	0.241
		0.0	1.0	260.0	83.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.333	0.000	0.667	0.000
		1.0	0.0	2.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.864	0.003	0.000	0.132
		274.0	1.0	0.0	42.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.783	0.000	0.217	0.000
		162.0	0.0	45.0	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 Base + Dev 2017 AM
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)
08.00-08.15									
B-ACD	0.04	7.51	0.005		0.00	0.00	0.1	0.1	0.13
A-BCD	1.45	11.67	0.124		0.00	0.20	2.9	2.1	0.10
A-B	0.01							0.0	
A-C	2.86							0.0	
D-ABC	2.60	8.30	0.313		0.00	0.45	6.4	5.3	0.17
C-ABD	0.02	12.10	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.53							0.9	
C-A	3.43							0.0	

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-ACD	0.04	7.24	0.006		0.00	0.01	0.1	0.1	0.14
A-BCD	1.85	11.95	0.155		0.20	0.26	4.0	2.5	0.10
A-B	0.01							0.0	
A-C	3.29							0.0	
D-ABC	3.10	8.09	0.383		0.45	0.61	8.8	6.4	0.20
C-ABD	0.02	12.41	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.63							1.1	
C-A	4.10							0.0	

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-ACD	0.06	6.87	0.008		0.01	0.01	0.1	0.1	0.15
A-BCD	2.48	12.35	0.201		0.26	0.38	5.7	3.1	0.10
A-B	0.01							0.0	
A-C	3.82							0.0	
D-ABC	3.80	7.79	0.488		0.61	0.92	13.1	7.9	0.25
C-ABD	0.03	12.86	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.77							1.3	
C-A	5.02							0.0	

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-ACD	0.06	6.86	0.008		0.01	0.01	0.1	0.1	0.15
A-BCD	2.48	12.35	0.201		0.38	0.38	5.7	3.1	0.10
A-B	0.01							0.0	
A-C	3.81							0.0	
D-ABC	3.80	7.79	0.488		0.92	0.94	14.0	7.9	0.25
C-ABD	0.03	12.85	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.77							1.3	
C-A	5.02							0.0	

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-ACD	0.04	7.24	0.006		0.01	0.01	0.1	0.1	0.14
A-BCD	1.85	11.96	0.155		0.38	0.27	4.0	2.6	0.10
A-B	0.01							0.0	
A-C	3.29							0.0	
D-ABC	3.10	8.09	0.383		0.94	0.63	10.0	6.5	0.20
C-ABD	0.02	12.41	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.63							1.1	
C-A	4.10							0.0	

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)
09.15-09.30									
B-ACD	0.04	7.50	0.005		0.01	0.01	0.1	0.1	0.13
A-BCD	1.45	11.67	0.124		0.27	0.20	3.0	2.1	0.10
A-B	0.01							0.0	
A-C	2.86							0.0	
D-ABC	2.60	8.30	0.313		0.63	0.46	7.2	5.4	0.18
C-ABD	0.02	12.09	0.002		0.00	0.00	0.0	0.0	0.08
C-D	0.53							0.9	
C-A	3.43							0.0	

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

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.2
08.30	0.3
08.45	0.4
09.00	0.4
09.15	0.3
09.30	0.2

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
08.15	0.4	
08.30	0.6	*
08.45	0.9	*
09.00	0.9	*
09.15	0.6	*
09.30	0.5	

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	4.1	2.8	0.6	0.14	0.6	0.14
A-BCD	173.4	115.6	25.4	0.15	25.4	0.15
A-B	1.1	0.8				
A-C	298.9	199.3				
D-ABC	284.9	189.9	59.4	0.21	59.4	0.21
C-ABD	2.2	1.5	0.2	0.08	0.2	0.08
C-D	57.7	38.5				
C-A	376.4	250.9				
ALL	1198.9	799.2	85.5	0.07	85.6	0.07

* 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.

INCLUSIVE GEOMETRIC DELAY

ARM	TOTAL DEMAND		GEOMETRIC DELAY BY TURN (VEH MIN) (GEOMETRIC DELAY PER LIGHT VEHICLE (SEC))				TOTAL GEOM. DELAY VEH MIN
	(VEH)	(VEH/H)	ARM A	ARM B	ARM C	ARM D	
A	473.5	315.7	0.0	0.2	0.0	15.6	15.7
			(0.0)	(7.3)	(0.0)	(8.2)	
B	4.1	2.8	0.2	0.0	0.4	0.0	0.6
			(9.3)	(0.0)	(8.0)	(5.6)	
C	436.3	290.9	0.0	0.2	0.0	6.5	6.7
			(0.0)	(7.6)	(0.0)	(6.8)	
D	284.9	189.9	29.9	0.0	9.6	0.0	39.5
			(8.0)	(5.6)	(9.3)	(0.0)	
ALL	1198.9	799.2					62.5

. POINT TO POINT JOURNEY TIME TABLE

Point to Point journey times From / To (entry point) (exit point)	Arm A	Arm B	Arm C	Arm D
ARM A	0.0	42.1	33.6	106.9
ARM B	44.1	0.0	51.2	70.4
ARM C	33.8	47.2	0.0	96.8
ARM D	110.6	70.4	99.3	0.0

* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM A BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM B BEGINS/ENDS 40.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM C BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM D BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT

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

.SLOPES AND INTERCEPT

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

STREAM B-C

Intercept For STREAM B-C	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
577.44	0.21	0.08

STREAM D-A

Intercept For STREAM D-A	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
597.49	0.22	0.09

STREAM B-A

Intercept For STREAM B-A	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM D-A	Slope For Opposing STREAM D-B
444.57	0.19	0.19	0.19	0.19

Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C
0.08	0.12	0.28	0.10

STREAM D-C

Intercept For STREAM D-C	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM B-C	Slope For Opposing STREAM B-D
460.91	0.20	0.20	0.20	0.20

Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM B-A
0.08	0.13	0.29	0.10

STREAM C-B

Intercept For STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D
631.87	0.23	0.33

STREAM A-D

Intercept For STREAM A-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B
620.29	0.23	0.33

B-D Stream From Left Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D
0.12	0.12

B-D Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-D	Slope For Opposing STREAM A-B	Slope For Opposing STREAM C-B
444.57	0.19	0.19	0.08	0.28

Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-D

D-B Stream From Left Hand Lane

Intercept For STREAM D-B	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM D-C	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing	Slope For Opposing
0.13	0.13		

D-B Stream From Right Hand Lane

Intercept For STREAM B-D	Slope For Opposing STREAM C-A	Slope For Opposing STREAM C-B	Slope For Opposing STREAM C-D	Slope For Opposing STREAM A-D
460.91	0.20	0.20	0.08	0.29

Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B	Slope For Opposing	Slope For Opposing
0.13	0.13		

GEOMETRIC DELAY DATA

	ARM SPEED (KPH) ENTRY	ARM SPEED (KPH) EXIT	ENTRY RADIUS ER (M)	EXIT RADIUS EXR (M)
ARM A	60.0	60.0	8.0	
ARM B	30.0	30.0	7.0	7.0
ARM C	60.0	60.0	10.0	
ARM D	30.0	30.0	7.0	5.0

JUNCTION VISIBILITIES DO NOT CONFORM TO STANDARDS LAID DOWN IN TD42/95

****** Acceleration distance exceeds calculation distance on ARM B by 7.1m

TRAFFIC DEMAND DATA

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

Demand set: Base + Dev 2017 PM

TIME PERIOD BEGINS 16.15 AND ENDS 17.45

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	6.55	9.83	6.55
ARM B	15.00	45.00	75.00	0.03	0.04	0.03
ARM C	15.00	45.00	75.00	3.42	5.14	3.42
ARM D	15.00	45.00	75.00	1.56	2.34	1.56

Demand set: Base + Dev 2017 PM

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
16.15 - 16.30	ARM A	0.000	0.000	0.668	0.332
		0.0	0.0	350.0	174.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.500	0.000	0.500	0.000
		1.0	0.0	1.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.858	0.007	0.000	0.135
		235.0	2.0	0.0	37.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.824	0.000	0.176	0.000
		103.0	0.0	22.0	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 Base + Dev 2017 PM
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)
16.15-16.30									
B-ACD	0.03	6.72	0.004		0.00	0.00	0.1	0.1	0.15
A-BCD	3.35	12.53	0.267		0.00	0.50	7.4	4.4	0.11
A-B	0.00							0.0	
A-C	3.23							0.0	
D-ABC	1.57	8.40	0.187		0.00	0.23	3.3	3.2	0.15
C-ABD	0.04	11.17	0.003		0.00	0.00	0.0	0.0	0.09
C-D	0.46							0.8	
C-A	2.94							0.0	

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-ACD	0.03	6.37	0.005		0.00	0.00	0.1	0.1	0.16
A-BCD	4.36	12.99	0.335		0.50	0.72	10.8	5.3	0.12
A-B	0.00							0.0	
A-C	3.49							0.0	
D-ABC	1.87	8.18	0.229		0.23	0.29	4.3	3.9	0.16
C-ABD	0.05	11.31	0.004		0.00	0.00	0.1	0.1	0.09
C-D	0.55							0.9	
C-A	3.51							0.0	

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-ACD	0.04	5.89	0.006		0.00	0.01	0.1	0.1	0.17
A-BCD	6.05	13.65	0.443		0.72	1.17	17.6	6.5	0.13
A-B	0.00							0.0	
A-C	3.57							0.0	
D-ABC	2.29	7.85	0.292		0.29	0.41	5.9	4.7	0.18
C-ABD	0.06	11.54	0.005		0.00	0.01	0.1	0.1	0.09
C-D	0.68							1.1	
C-A	4.29							0.0	

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-ACD	0.04	5.88	0.006		0.01	0.01	0.1	0.1	0.17
A-BCD	6.06	13.66	0.444		1.17	1.18	18.0	6.5	0.13
A-B	0.00							0.0	
A-C	3.56							0.0	
D-ABC	2.29	7.85	0.292		0.41	0.41	6.1	4.7	0.18
C-ABD	0.06	11.53	0.005		0.01	0.01	0.1	0.1	0.09
C-D	0.68							1.1	
C-A	4.29							0.0	

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)
17.15-17.30									
B-ACD	0.03	6.36	0.005		0.01	0.00	0.1	0.1	0.16
A-BCD	4.37	13.01	0.336		1.18	0.74	11.2	5.4	0.12
A-B	0.00							0.0	
A-C	3.48							0.0	
D-ABC	1.87	8.17	0.229		0.41	0.30	4.7	3.9	0.16
C-ABD	0.05	11.30	0.004		0.01	0.00	0.1	0.1	0.09
C-D	0.55							0.9	
C-A	3.51							0.0	

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)
17.30-17.45									
B-ACD	0.03	6.71	0.004		0.00	0.00	0.1	0.1	0.15
A-BCD	3.36	12.55	0.268		0.74	0.52	7.8	4.5	0.11
A-B	0.00							0.0	
A-C	3.21							0.0	
D-ABC	1.57	8.40	0.187		0.30	0.23	3.6	3.3	0.15
C-ABD	0.04	11.15	0.003		0.00	0.00	0.0	0.0	0.09
C-D	0.46							0.8	
C-A	2.94							0.0	

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

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.0	
16.45	0.0	
17.00	0.0	
17.15	0.0	
17.30	0.0	
17.45	0.0	

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.30	0.5	*
16.45	0.7	*
17.00	1.2	*
17.15	1.2	*
17.30	0.7	*
17.45	0.5	*

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.2
16.45	0.3
17.00	0.4
17.15	0.4
17.30	0.3
17.45	0.2

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-ACD	2.8	1.8	0.4	0.16	0.4	0.16
A-BCD	413.1	275.4	72.8	0.18	72.8	0.18
A-B	0.0	0.0				
A-C	308.1	205.4				
D-ABC	172.1	114.7	27.8	0.16	27.8	0.16
C-ABD	4.3	2.9	0.4	0.09	0.4	0.09
C-D	50.7	33.8				
C-A	322.1	214.7				
ALL	1273.2	848.8	101.4	0.08	101.4	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.

INCLUSIVE GEOMETRIC DELAY

ARM	TOTAL DEMAND		GEOMETRIC DELAY BY TURN (VEH MIN) (GEOMETRIC DELAY PER LIGHT VEHICLE (SEC))				TOTAL GEOM. DELAY VEH MIN
	(VEH)	(VEH/H)	ARM A	ARM B	ARM C	ARM D	
A	721.2	480.8	0.0	0.0	0.0	32.6	32.6
			(0.0)	(7.3)	(0.0)	(8.2)	
B	2.8	1.8	0.2	0.0	0.2	0.0	0.4
			(9.3)	(0.0)	(8.0)	(5.6)	
C	377.1	251.4	0.0	0.3	0.0	5.8	6.1
			(0.0)	(7.6)	(0.0)	(6.8)	
D	172.1	114.7	19.0	0.0	4.7	0.0	23.7
			(8.0)	(5.6)	(9.3)	(0.0)	
ALL	1273.2	848.8					62.8

. POINT TO POINT JOURNEY TIME TABLE

Point to Point journey times From / To (entry point) (exit point)	Arm A	Arm B	Arm C	Arm D
ARM A	0.0	42.1	33.6	108.7
ARM B	44.1	0.0	52.4	70.4
ARM C	33.8	47.8	0.0	96.8
ARM D	107.7	70.4	99.3	0.0

* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM A BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM B BEGINS/ENDS 40.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM C BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT
* JOURNEY TIME CALCULATION STARTING/ENDING ON ARM D BEGINS/ENDS 500.0M FROM STOP LINE/AFTER EXIT

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

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

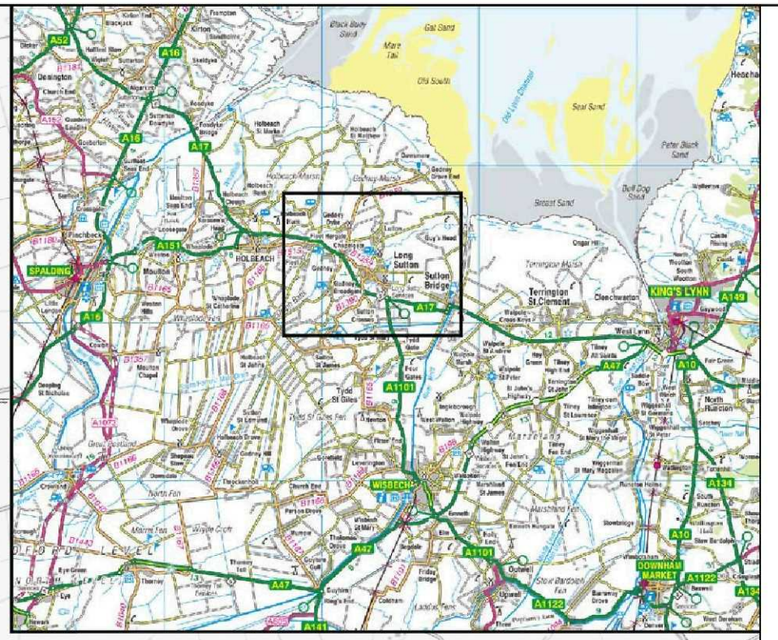
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Figures

Figure 1

DRG No. FIGURE 1

DO NOT SCALE



TO HOLBEACH

FLEET HARGATE

PROPOSED SITE LOCATION

LONG SUTTON

SUTTON BRIDGE

ROYAL HASKONING

HASKONING UK LTD

DEVELOPMENT AND TRANSPORT

MOOR SOLAR LTD

LONG SUTTON
BUTTERFLY FARM REDEVELOPMENT

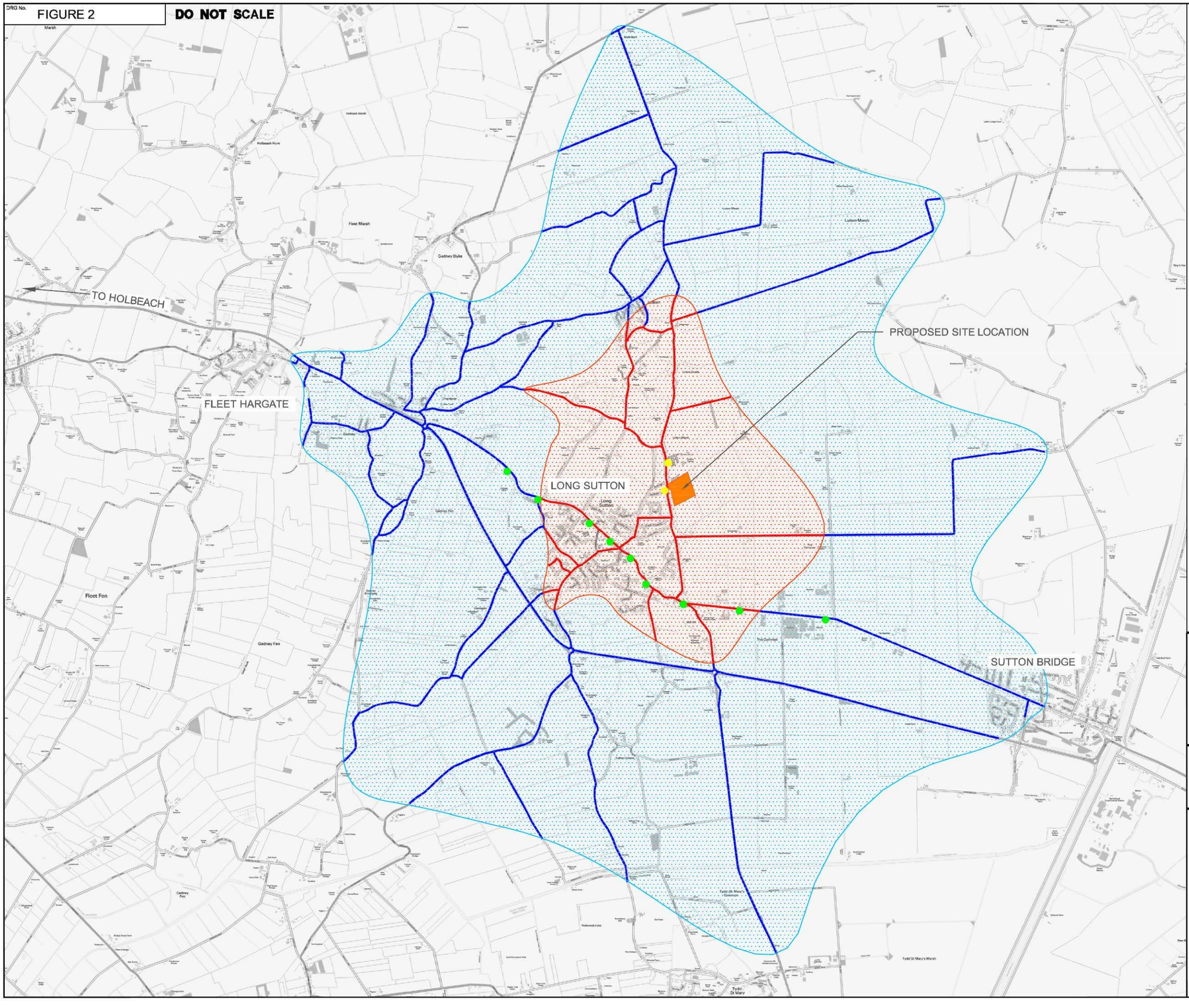
LOCAL AND
WIDER HIGHWAY NETWORK

FIGURE 1

Figure 2

DRG No. FIGURE 2

DO NOT SCALE



KEY

- WALKING ROUTES
- CYCLING ROUTES
- 2km WALKING ISOCHRONE
- 5km CYCLING ISOCHRONE
- MARKED BUS STOPS
- UNMARKED BUS STOPS

ROYAL HASKONING

HASKONING UK LTD

DEVELOPMENT AND TRANSPORT

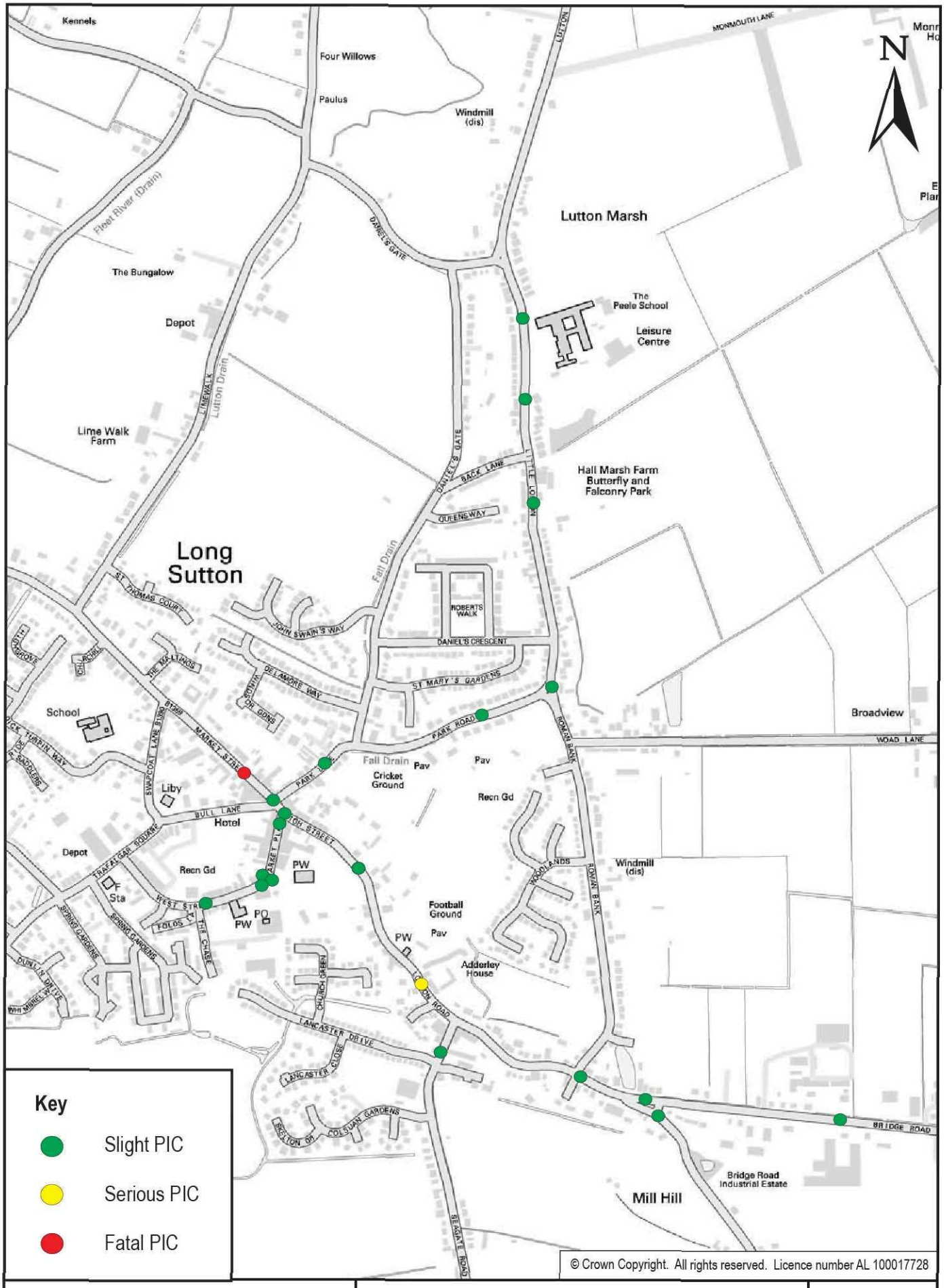
MOOR SOLAR LTD

LONG SUTTON
BUTTERFLY FARM REDEVELOPMENT

2KM WALKING &
AND 5KM CYCLING ISOCHRONES
WITH PEDESTRIAN LINKS

FIGURE 2

Figure 3



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Planning and Transport

ROYAL HASKONING

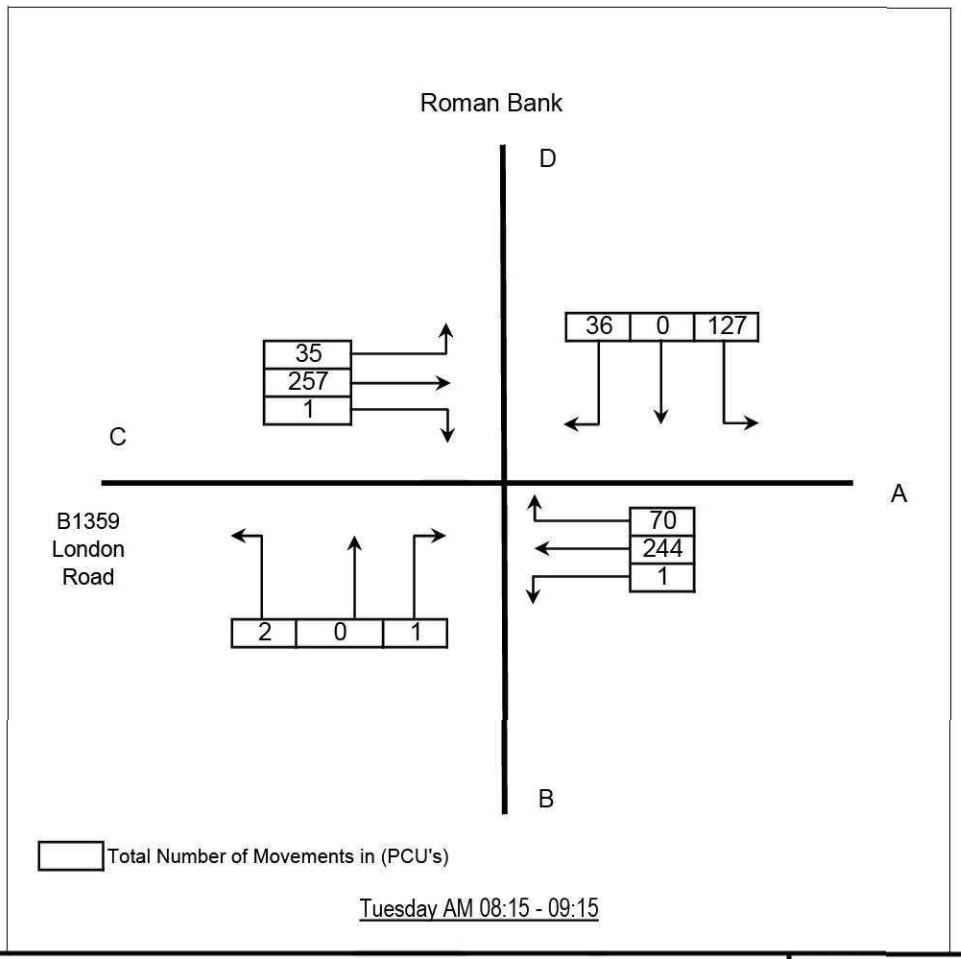
9X0917 Long Sutton PIC Location Plan

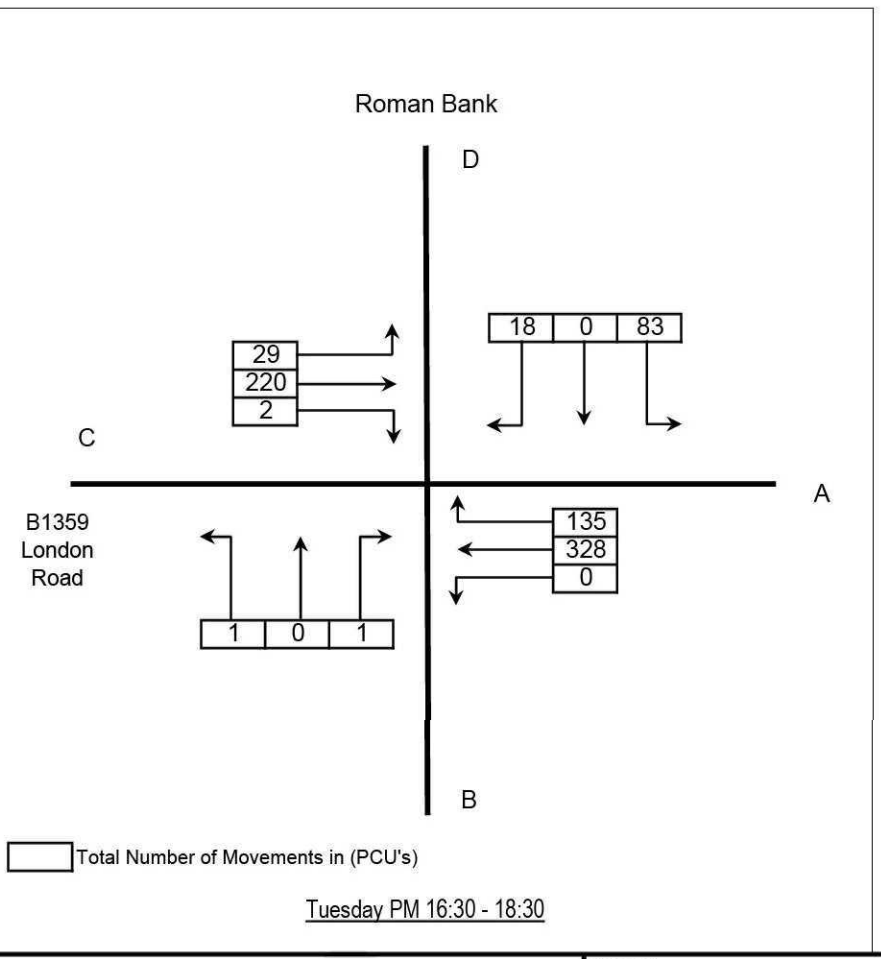
Figure 3

SCALE: Not to Scale

DATE: April 2012

Figure 4





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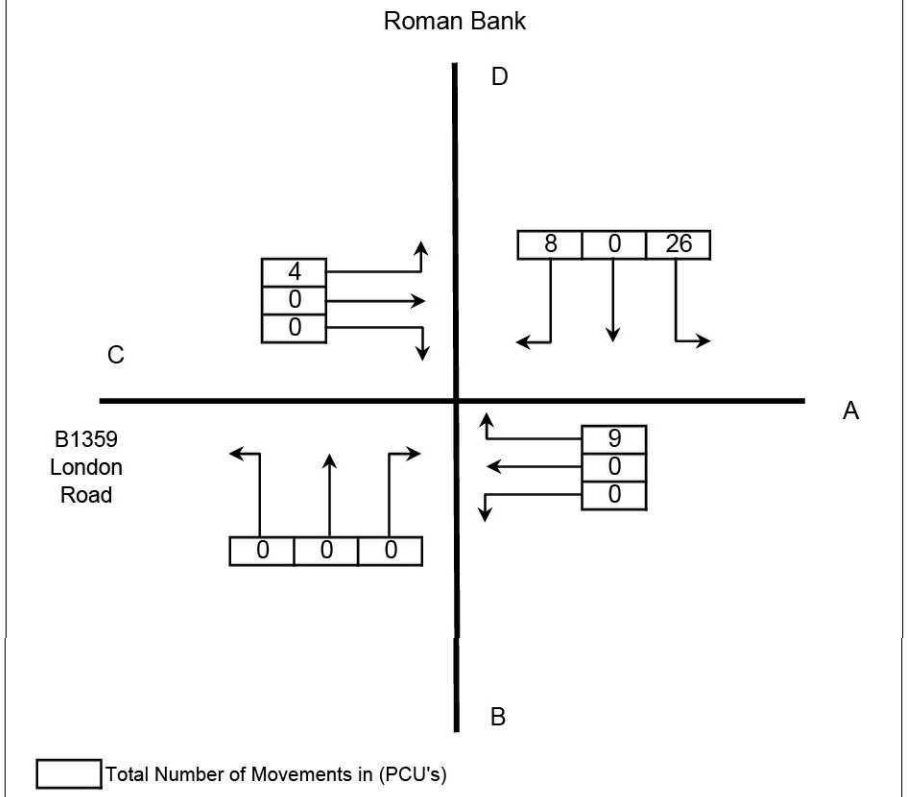
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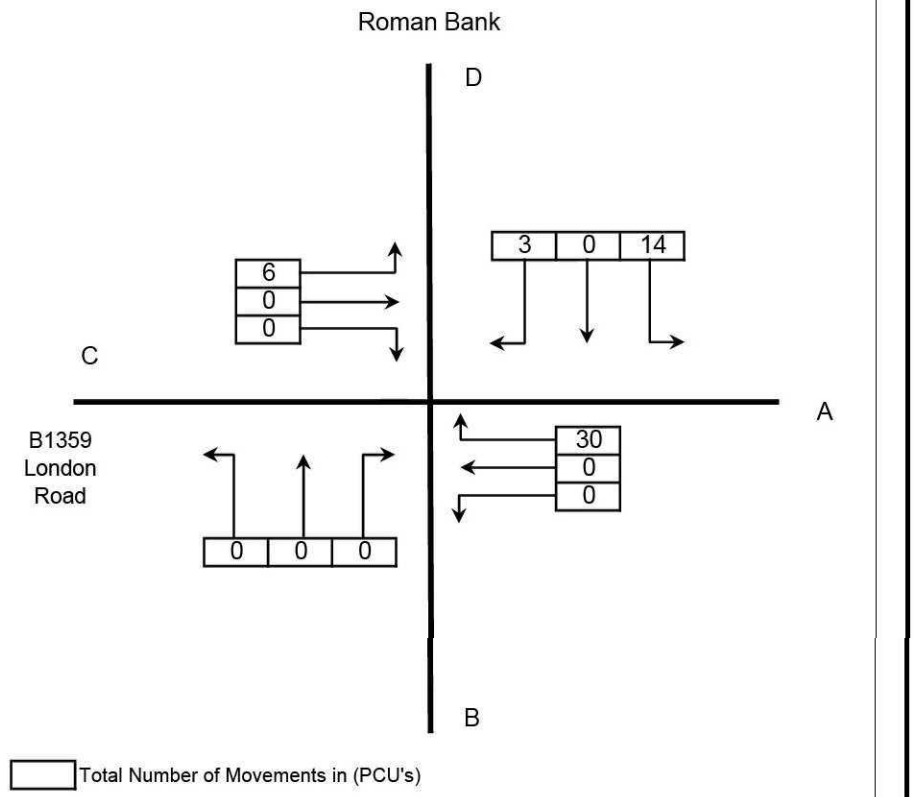
PROJECT NAME:	LONG SUTTON
FIGURE TITLE:	2012 Observed Traffic Flows (PCU's)
PROJECT No:	9X0917
DATE:	April 2012
FIGURE No:	**FIGURE No: 4**

I:\9X0917\Technical_Data\E01 Calculations\Traffic & Transport\2012.02.09 Turning Diagram

Figure 5



Tuesday AM 08:15 - 09:15



Tuesday PM 16:30 - 18:30

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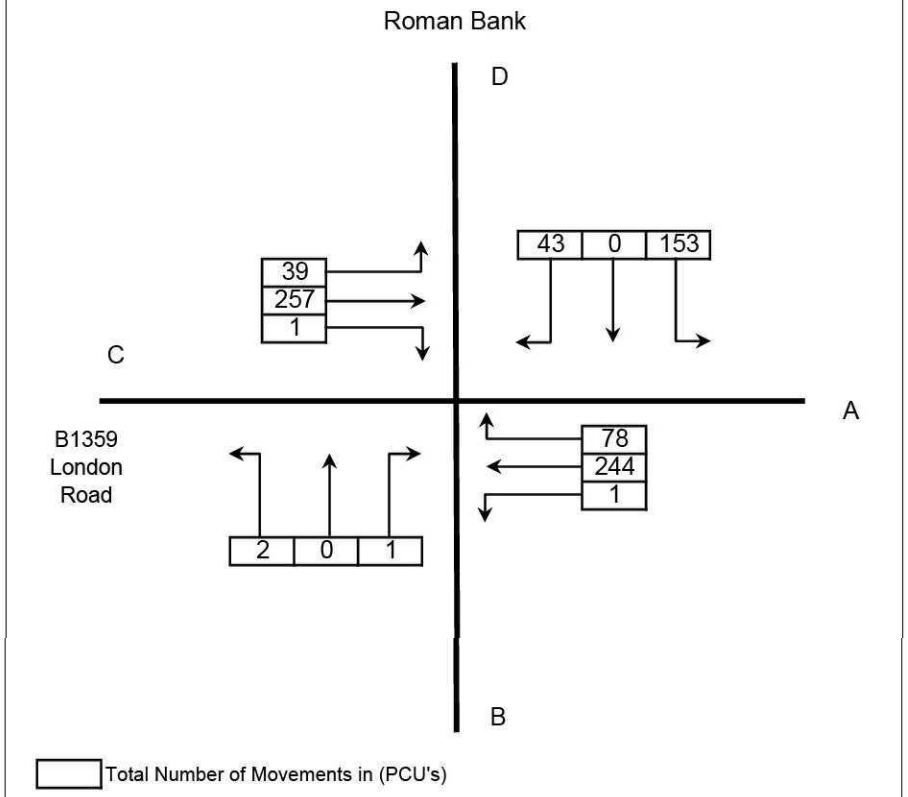
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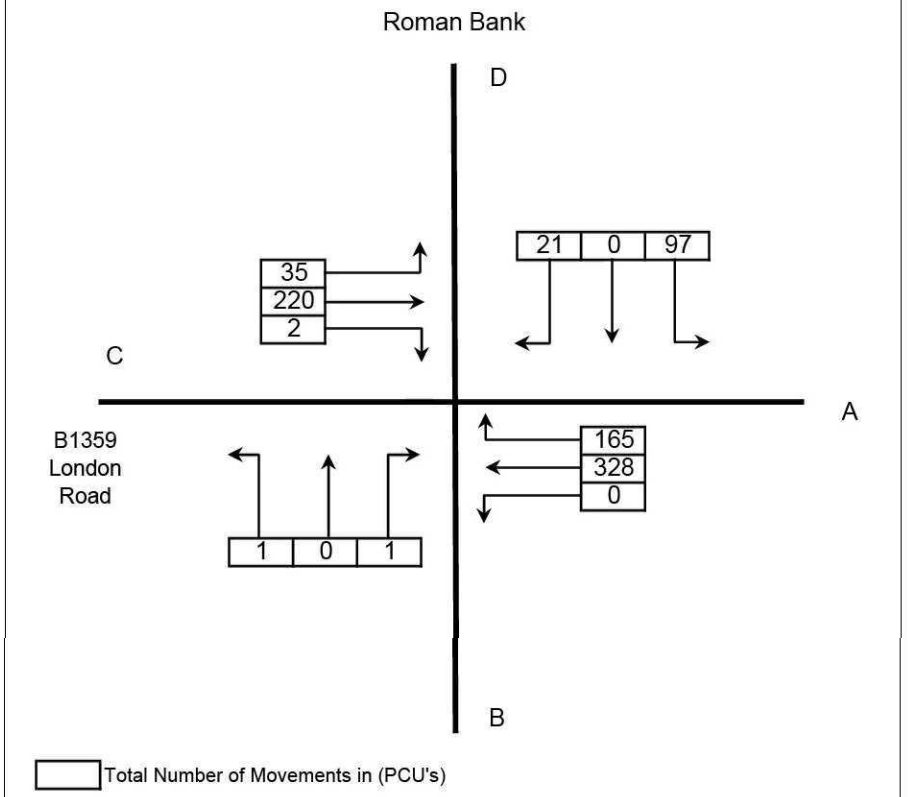
PROJECT NAME:	LONG SUTTON
FIGURE TITLE:	Proposed Development Traffic Flows (PCU's)
PROJECT No:	9X0917
DATE:	April 2012
FIGURE No:	**FIGURE No: 5**

I:\9X0917\Technical_Data\E01 Calculations\Traffic & Transport\2012.02.09 Turning Diagram

Figure 6



Tuesday AM 08:15 - 09:15



Tuesday PM 16:30 - 18:30

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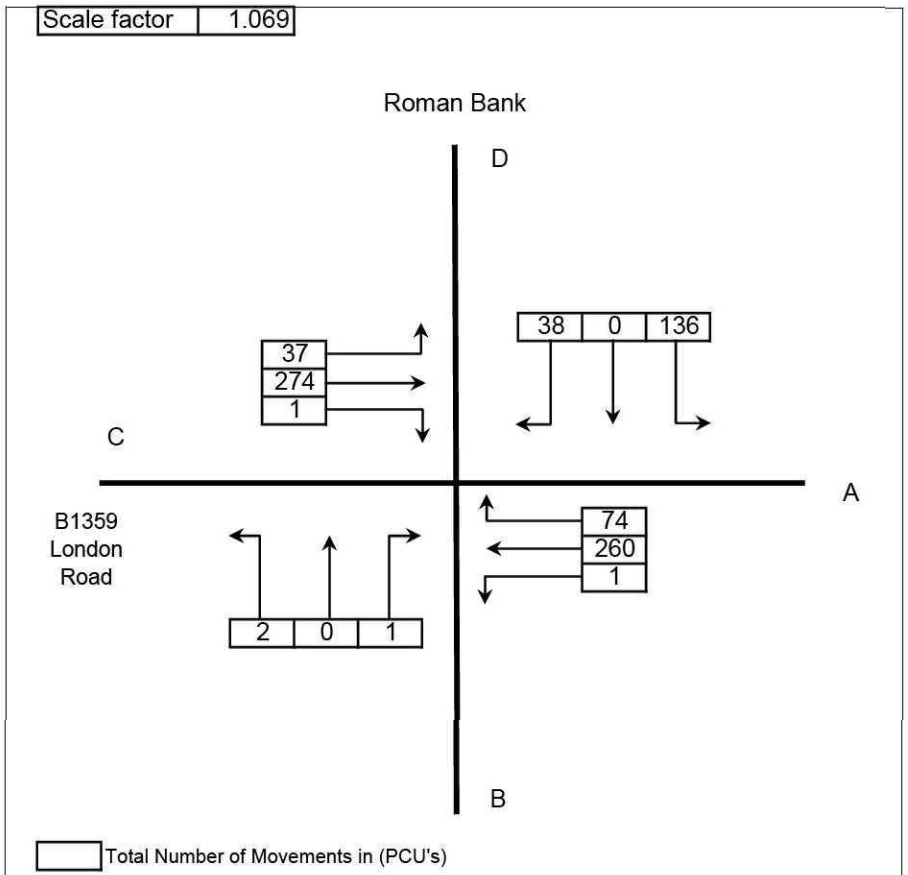
ROYAL HASKONING

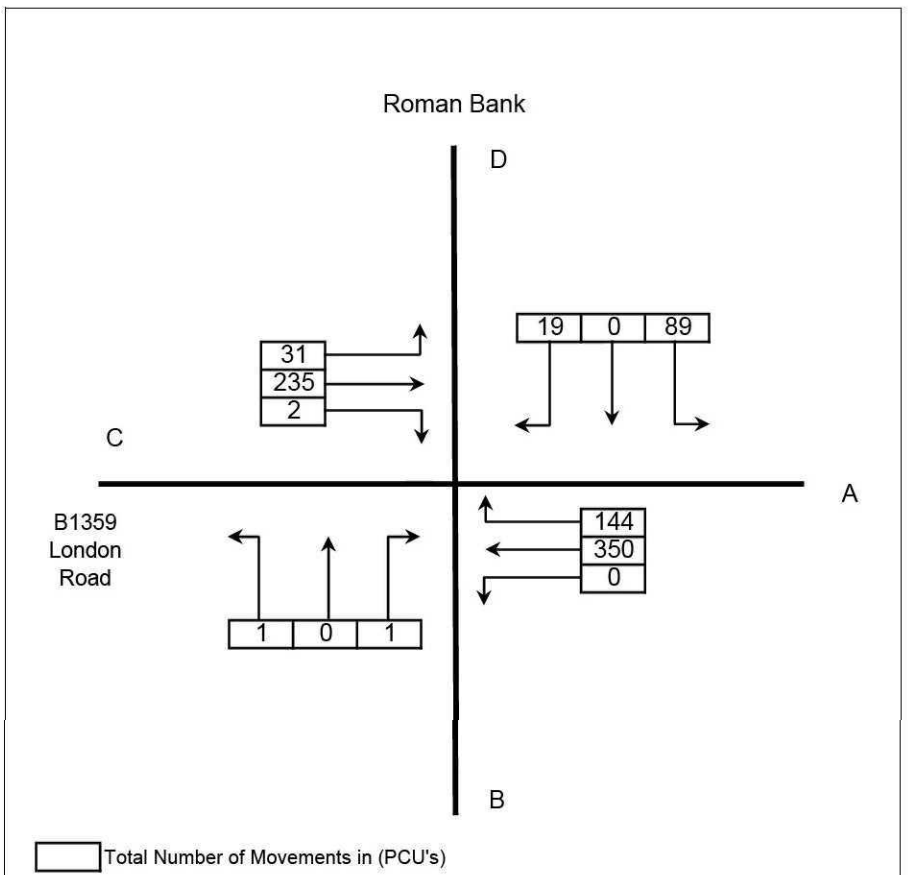
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PE3 8DW
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birmingham@royalhaskoning.com E-mail
www.royalhaskoning.com Internet

PROJECT NAME:	LONG SUTTON
FIGURE TITLE:	2012 Observed + Development Traffic Flows (PCU's)
PROJECT No:	9X0917
DATE:	April 2012
FIGURE No:	**FIGURE No: 6**

I:\9X0917\Technical_Data\E01 Calculations\Traffic & Transport\2012.02.09 Turning Diagram

Figure 7





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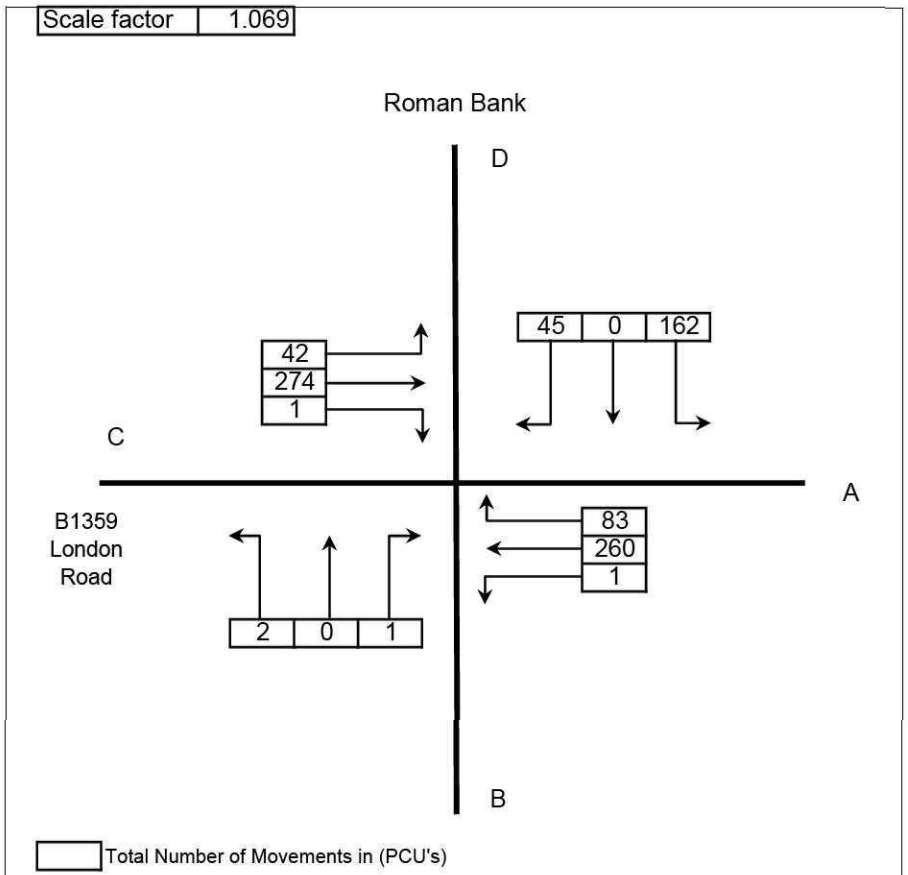
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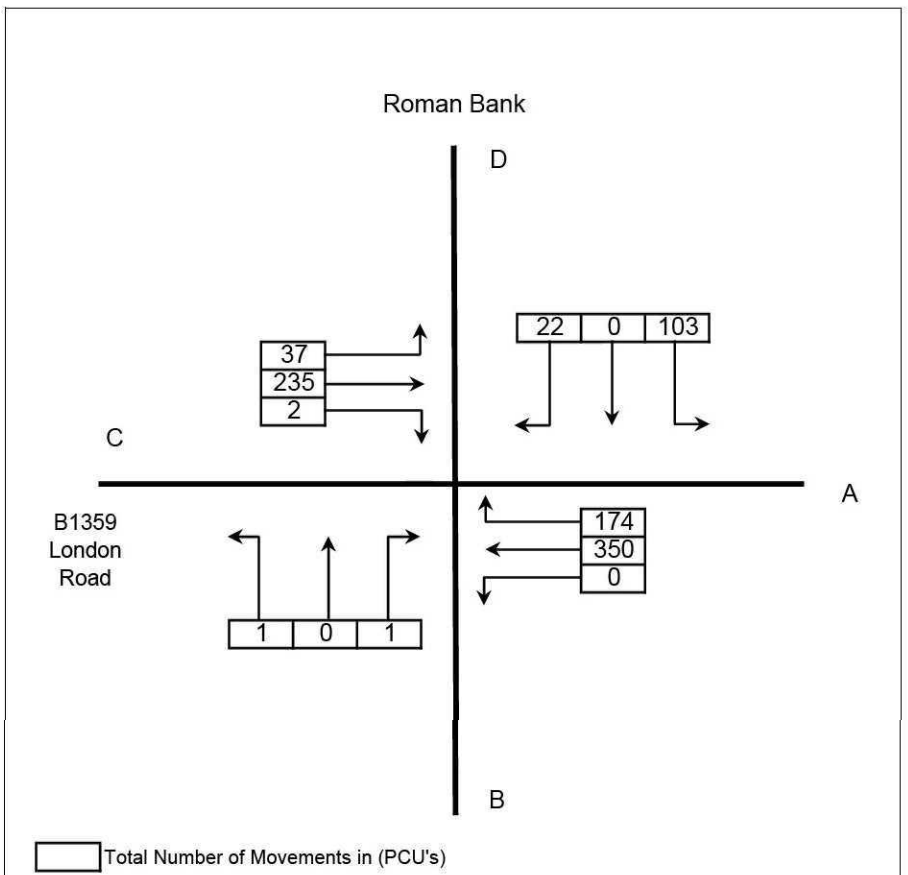
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PROJECT NAME:	LONG SUTTON
FIGURE TITLE:	2017 Observed Traffic Flows (PCU's)
PROJECT No:	9X0917
DATE:	April 2012
FIGURE No:	**FIGURE No: 7**

I:\9X0917\Technical_Data\E01 Calculations\Traffic & Transport\2012.02.09 Turning Diagram

Figure 8





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PROJECT NAME:	LONG SUTTON
FIGURE TITLE:	2017 Observed + Development Traffic Flows (PCU's)
PROJECT No:	9X0917
DATE:	April 2012
FIGURE No:	**FIGURE No: 8**

I:\9X0917\Technical_Data\E01 Calculations\Traffic & Transport\2012.02.09 Turning Diagram

Appendices

Appendix A

Long Sutton Solar Parks

Orchard

hockey pitch

Wind Turbines (8 x Bergey 10kW/p)
15m tower to hub / 18.5m to top of swept area.

Bergey Turbine No.1
Bergey Turbine No.2
Bergey Turbine No.3
Bergey Turbine No.4
Bergey Turbine No.5
Bergey Turbine No.6
Bergey Turbine No.7
Bergey Turbine No.8

Allotments and Amenity Space
Wetland / Swale
Allotment car parking (loading / offloading area)
Wind Turbine Maintenance Access

NORTH

The Peele Leisure Centre

The Circle
Gatekeeper Way
Copper Crescent
Crescent Green
Grayling Crescent
Cinnabar Crescent
Burnet Crescent
Atlas Grove
Skipper Copse
Comma Close
Meadow Brown Walk
Monarch Avenue

Tree Group C retained
Wetland
1.8m wide footpath
10.5m
Proposed Site Access
9000
Horse Chestnut retained
9500
Existing Access 54+56, Solar Parks and Farm Retained
54 + 56 Little London
2m high earth bunding with native hedge
new trees at boundary
Warehouse

Key:

Low impact living at
SUTTON PARK
Proposed Residential Development of Butterfly Park, Long Sutton

716.PL.01_REV-D
1:500@A1 Rev D 05.10.12

SEArch Architects