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Civil & Structural Engineering Consultants



P-2011-00546

Received 16/05/11

Peveril Homes Ltd

Land at Tutbury

Transport Assessment

November 2009

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REPORT REF:	F09049 Land at Tutbury TA Rev A April 2011
STATUS:	FINAL

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1.0 INTRODUCTION

- 1.1 Armstrong Stokes and Clayton were appointed by Peveril Homes Ltd to provide traffic and transportation advice in respect of proposals to redevelop land to the west of the A511 in Tutbury, Staffordshire. The proposals comprise a mixed use development primarily of residential dwellings and B1 office buildings. This assessment is to accompany a detailed planning application for the site.
- 1.2 The objective of this Transport Assessment is to assess the impact of the proposed development on the surrounding highway infrastructure and determine whether it could satisfactorily accommodate any increases in trips. It assesses the proposed use traffic generation and considers how the overall conditions could change as a result of the proposals. In keeping with current Government policy contained within PPG13: Transport [March 2001], the report also examines opportunities for travel to the site by sustainable modes of transport.
- 1.3 Prior to this Assessment being produced, discussions took place between Armstrong Stokes & Clayton and Staffordshire County Council, acting as the local highway authority. The purpose of these discussions was to agree on the scope and required content of the Transport Assessment. Given the proximity of the site to the border with Derbyshire, a representative from Derbyshire County Council's highways department was also present during these discussions. A Scoping Note was produced to guide the discussions at this meeting, a copy of which is contained at **Appendix A** along with a summary of the key points discussed. The approach taken within this assessment reflects the outcome of these discussions.
- 1.4 This report has been produced in accordance with the highway design requirements of the Design Manual for Roads and Bridges (Volume 6, TD42/95), and also takes into account previously adopted guidance contained within the Staffordshire Residential Design Guide (Staffordshire County Council, 2000). Furthermore, the Department for Transport documents 'Guidance on Transport Assessment' (March 2007) and 'Manual for Streets' (March 2007) have also been used for guidance in producing this assessment.

EXISTING CONDITIONS

General

- 2.1 The site is located on undeveloped land at the south-eastern edge of Tutbury and is bound by Iron Walls Lane and Burton Road to the north, the A511 to the east, undeveloped land to the south, and existing residential dwellings and Green Lane to the west. The site measures approximately 15 hectares in area and its location is shown in **Figure 1**.
- 2.2 The area surrounding the site comprises mainly residential developments within Tutbury immediately to the west and Hatton approximately 1.5 kilometres to the north. The areas to the east and south of the site mainly comprise fields and farmland. Within Tutbury there are a number of local amenities including a primary school, a post office, three churches, public houses, and various local shops. Further afield of the site, Burton on Trent is located approximately 5 kilometres southeast of the site and comprises a significant amount of residential, retail, and employment developments.

Highway layout

- 2.3 The A511 runs adjacent to the eastern edge of the site. As it passes the site, the carriageway measures approximately 10 metres wide, with one traffic lane in each direction separated by central ladder markings. To the south of the site the carriageway width reduces to approximately 8 metres with one traffic lane in each direction. To the north the northbound lane splits into two lanes on the approach to the A511/Burton Road/Rolleston Lane roundabout. The A511 is subject to a derestricted speed limit past the site. The site is served by a gated field access located at the A511, approximately 250 metres south of the A511/Burton Road/Rolleston Lane roundabout.
- 2.4 To the northeast of the site is the A511/Burton Road/Rolleston Lane four-arm roundabout. This roundabout provides access into Tutbury via Burton Road, whilst the A511 to the north it acts as a bypass for the village. Each arm of the roundabout has two lanes on the approach, with no directional markings.

Rolleston Lane is subject to a 7.5 tonnes weight restriction for vehicles, as indicated by a sign at the roundabout.

- 2.5 Burton Road measures approximately 7.5 metres wide past the northern edge of the site and is subject to a derestricted speed limit, which reduces to a 30 mph limit to the east of the junction with Iron Walls Lane. A dropped kerb field access into the site exists on Burton Road, approximately 50 metres to the northwest of the roundabout junction, which measures approximately 3.5 metres wide. Iron Walls Lane runs along the northern edge of the site and measures approximately 7.5 metres wide with a 30 mph speed restriction. Iron Walls Lane leads to Green Lane, which runs along the western edge of the site and measures approximately 6.4 metres wide with a 30 mph speed limit.
- 2.6 Further afield of the site, the A511 extends south towards Burton upon Trent, where two major junctions exist along the route. The first of these is the A511/Harehedge Lane/Beamhill Road signal controlled crossroads junction, which is located approximately 3 kilometres southeast of the site. The second major junction along the route is the A511/A5121 roundabout, which is located within the centre of Burton upon Trent, approximately 5 kilometres southeast of the site.
- 2.7 To the north of the site the A511 bypasses Tutbury and leads to the A511/Bridge Street roundabout, north of the village. This roundabout has recently been reconfigured to realign and improve the Tutbury Mill arm, which leads to a picnic area west of the junction. However, current Ordnance Survey mapping has not yet been updated to show these improvements. Details of the improved layout were therefore extracted from the internet to establish the new layout and its dimensions.
- 2.8 Beyond the roundabout with Bridge Street, the A511 extends through Hatton to a signal controlled T-junction with Uttoxeter Road/Derby Road. To the east of this junction, Derby Road passes through Hilton to two linked grade-separated roundabouts at junction 5 of the A50. These junctions also provide access to the A516 leading to Derby. The route through Hilton towards this junction is restricted to village traffic only, therefore vehicles travelling to the A50 or A516

are directed around Hilton via a new route which was introduced in 2004 to serve major residential and employment developments to the south of the village. To the east of the signal controlled T-junction, Uttoxeter Road leads to another set of linked grade separated roundabouts, which provide access to junction 6 of the A50.

Pedestrian travel

- 2.9 The Institution of Highways and Transportation [IHT] publication 'Guidelines for providing for journeys on foot' [2000] provides guidance on how to encourage pedestrian travel. The guidelines note that walking accounts for over one quarter of all journeys and four-fifths of journeys less than one mile (1.6 kilometres). Furthermore, walking is also an essential part of much car and almost all public transport travel. Promoting sustainable, integrated transport therefore involves providing good pedestrian links to public transport facilities.
- 2.10 The IHT guidelines describe 'acceptable' walking distances for pedestrians without impaired mobility. They suggest that for a commuting or school trip, up to 500 metres is the desirable distance, up to 1000 metres is an acceptable distance, and 2000 metres is the preferred maximum. **Figure 2** shows a 2 kilometres pedestrian isochrone centred on the site, which demonstrates that all of Tutbury is within a reasonable walking distance, as well as the southernmost part of Hatton and a number of small farm developments to the east and south. All of the local amenities within Tutbury described above, such as the shops and the school, are therefore within a reasonable walking distance of the site, as well as all of the residential dwellings within this area.
- 2.11 A footway exists at the eastern edge of Burton Road to the north of the site, which measures between approximately 1.5 and 2 metres wide past the site with street lighting present. To the northwest of the site, past the T-junction with Iron Walls Lane, a footway is also present along the western edge of Burton Road, which measures approximately 2.8 metres wide. On Iron Walls Lane, which runs close to the northern edge of the site, footways with street lighting are present on both sides of the carriageway. These footways measure approximately 2.5 metres wide along the southern edge of the carriageway and approximately 2

metres wide along the northern edge. Iron Walls Lane leads to Green Lane, which runs past the western edge of the site. Footways measuring approximately 2 metres wide continue on both sides of the carriageway along Green Lane for approximately the first 200 metres south of Iron Walls Lane, after which point they cease.

- 2.12 At the eastern edge of the site, a footway measuring approximately 2 metres wide runs along the eastern edge of the A511. Further afield of the site, this footway continues south towards the neighbouring villages. To the north of the A511/Burton Road/Rolleston Lane roundabout there are no footways on either side of the A511, nor are there footways on either side of Rolleston Lane to the east. Further afield within Tutbury, there is a comprehensive network of footways leading to and throughout the central residential and retail developments.
- 2.13 Designated pedestrian crossing facilities are included at the A511/Burton Road/Rolleston Lane roundabout. These comprise pedestrian refuge islands with dropped kerbs at the A511 (north) and Rolleston Lane arms of the roundabout. There are no designated crossing facilities on Burton Road, the A511, Iron Walls Lane or Green Lane. However, the lightly trafficked nature of Iron Walls Lane and Green Lane should be suitable to accommodate pedestrian crossing movements.

Cycle travel

- 2.14 PPG13 identifies cycling as having “the potential to substitute for short car trips, particularly those under 5 km, and to form part of longer journeys by public transport”. **Figure 3** shows the site centred within a 5 kilometres catchment area. It demonstrates that surrounding areas including Tutbury, Hatton, Hilton, Church Broughton, Scopton, Rolleston-on-Dove, and Hanbury are all within a reasonable cycle distance. Inspection of the East Staffordshire and Derbyshire Cycle Route Maps reveal that there are a number of advisory cycle routes through Tutbury and Hatton, whilst to the south there is a comprehensive network of cycle routes within Burton upon Trent and the surrounding areas.

Travel by public transport

- 2.15 Details of local bus services are summarised in **Table 1** and shown in **Figure 4**. **Figure 4** shows that a total of 4 bus routes operate within a reasonable 400 metres walking distance of the northern site boundary. Three of these bus routes, numbers 1, 1a, and the 'Villager' (V1), operate from Monday to Saturday at a combined peak hour frequency of 3 services per hour in each direction, or approximately one service every 20 minutes to locations including Tutbury, Hatton, Burton upon Trent, Rolleston, and Uttoxeter. In addition, route numbers 1e and the 'Villager' (V1) run on Sundays at a combined frequency of 2 services every 2 hours.
- 2.16 The closest bus stops that serve the routes detailed above are located on Burton Road to the north of the site. A shelter with timetable information serving southbound services is located on the eastern edge of Burton Road, approximately 15 metres to the east of the junction with Iron Walls Lane, whilst a flag and pole arrangement with timetable information serving northbound services is located at the western edge of Burton Road, approximately 30 metres from the junction with Iron Walls Lane.
- 2.17 Tutbury and Hatton Train Station is located approximately 1.25 kilometres north of the site at the southern edge of Hatton. This station lies beyond the usual threshold for reasonable walking distances for public transport. However, it is served by regular trains between Derby and Crewe which run at a frequency of approximately one service every hour in each direction during weekday daytimes. Given the regular train services to areas that are not easily or often accessible by bus to the site, it is considered that the train station is suitably located to serve public transport journeys between the site and locations further afield of the local areas.

Summary

- 2.18 Overall, there are good opportunities to access the site by sustainable modes. All of Tutbury is within a reasonable walking distance of the site, with a number of pedestrian facilities within Tutbury, although there are currently no footways linking

the site directly to the surrounding facilities. Many areas surrounding the site can be reached within a five kilometres cycle distance and there are advisory cycle routes to accommodate these journeys. There are regular bus services that travel to key local destinations that stop within 400 metres of the site's northern boundary, whilst Tutbury and Hatton Train Station is located approximately 1.25 kilometres north of the site and presents an opportunity to travel further afield.

Traffic flows

- 2.19 To ascertain existing traffic flows within the surrounding highway network during the weekday peak periods, full turning count traffic surveys were carried out by ANSA Traffic & Construction Ltd at the following junctions:

Wednesday 14 October 2009

- A511/Burton Road/Rolleston Lane roundabout
- A511/Bridge Street roundabout
- A511/Harehedge Lane/Beamhill Road signal controlled crossroads junction

Thursday 22 October 2009

- Derby Road/Utttoxeter Road/Station Road/Malthouse Lane signal controlled crossroads junction
- Derby Road/Utttoxeter Road ghost island right turn lane T-junction
- A516/A5132 roundabout

The above surveys were all carried out during the morning and evening weekday peak traffic periods of 0730 to 0930 hours and 1630 to 1830 hours. Details of the resulting peak hour turning movements are summarised in **Figure 5**, with a full copy of the results included within **Appendix B**.

Accident study

- 2.20 To fully comply with the requirements of Guidance on Transport Assessment, an assessment of existing Personal Injury Accident records for the local area was carried out to ensure that there would be no highway safety issues that could be exacerbated by any increase in movements associated with the proposed development. Data for the surrounding area covering the last five years was therefore obtained from Staffordshire County Council and Derbyshire Police Authority.

2.21 The accident data shows that a total of 83 accidents have occurred in the vicinity of the site during the past five years. The locations of these accidents are shown in **Figures 6 and 7**, which cover the Staffordshire and Derbyshire areas, respectively, whilst a summary and full detail of the accidents are contained within **Appendix C**. Of the 83 accidents, two was classed as fatal, eight were classed as serious, and the remaining seventy three were classed as slight. Seven accidents also involved pedestrians and three involved cyclists. The remaining accidents all involved vehicle drivers and passengers.

2.22 **Figures 6 and 7** highlight nine areas where a significant cluster of three or more accidents was recorded during the study period (labelled as areas A to I). Each area was subsequently analysed in further detail to identify any trends in the types of accidents. The nine areas labelled on **Figures 6 and 7** are as follows:

- Area A: A511/Burton Road/Rolleston Road roundabout junction
- Area B: Tutbury Road/Anslow Lane/Longhedge Lane staggered T-junctions
- Area C: Tutbury Road/Harehedge Lane/Beamhill Road signal-controlled crossroads junction
- Area D: The level crossing on Station Road
- Area E: Station Road/Yew Tree Road and Station Road/Rye Flatts Lane T-junctions
- Area F: Derby Road/Uttoxeter Road/Station Road/Malthouse Lane signal controlled crossroads junction
- Area G: A5132/The Mease roundabout
- Area H: The southern A50/A516 grade-separated roundabout
- Area I: The A50 (past the A516)

2.23 Area A is located at A511/Burton Road/Rolleston Road roundabout junction, where a total of three accidents were recorded during the study period. All three of the accidents were classed as slight. Of the three accidents, one accident involved a car travelling north along the A511 towards the roundabout colliding with a pedestrian in the carriageway. One accident involved a vehicle travelling south towards the roundabout performing an overtaking manoeuvre and skidding. The final accident involved a Light Goods Vehicle travelling along Rolleston Lane away from the roundabout around a right hand bend and colliding with a car

travelling in the same direction. Two accidents occurred during weekday peak traffic periods and one occurred during wet conditions.

- 2.24 Area B comprises the Tutbury Road/Anslow Lane/Longhedge Lane staggered T-junction. In total six accidents were recorded within this area during the study period, one of which was classed as serious and five of which were classed as slight. Of these six accidents, four occurred as a result of rear end shunts at the junction. One accident involved a vehicle turning right onto Tutbury Road colliding with an oncoming vehicle. The final accident involved a motorcycle travelling northwest along Tutbury Road colliding with an animal in the carriageway. Four accidents occurred during weekday peak traffic periods.
- 2.25 Area C is located at the Tutbury Road/Harehedge Lane/Beamhill Road signal-controlled crossroads junction. In total, five accidents occurred in this area during the study period, all of which were classed as slight. Of these five accidents, one involved a pedestrian using the crossing at Tutbury Road and getting hit by a car travelling north through the junction. Of the remaining four accidents, three involved right turn collisions, one of which involved a cyclist attempting to undertake a turning car and the other involved a stolen vehicle. Another accident involved a vehicle colliding whilst overtaking moving vehicles along Tutbury Road. The final accident involved a rear end shunt as a vehicle waited at the junction to go ahead along Tutbury Road. Two accidents occurred during weekday peak traffic periods and one occurred in wet conditions.
- 2.26 Area D surrounds the level crossing on Station Road, where a total of three accidents were recorded during the study period. All three of these accidents were classed as slight. Of the three accidents, two involved vehicles colliding with pedestrians as they crossed the carriageway. The final accident involved a rear end shunt between two cars waiting to enter Station Road from Old Marston Lane. One of these accidents occurred during weekday peak traffic periods.
- 2.27 Area E is located around the Station Road/Yew Tree Road and Station Road/Rye Flatts Lane T-junctions, where a total of six accidents were recorded during the study period. Of these accidents, one was classed as serious and the remaining four were classed as slight. One of these accidents involved a vehicle colliding

with a pedestrian whilst overtaking a parked vehicle on Station Road. Two of the accidents occurred when a car turning right out of Yew Tree Road collided with a motorcycle travelling north along Station Road, one of which was classed as serious. One of the accidents occurred when a vehicle travelling straight ahead on Station Road skidded on a wet road. The final accident involved a car performing a u-turn manoeuvre on Station Road and colliding with two vehicles travelling along Station Road. Four of the accidents occurred during weekday peak traffic periods, and four occurred on a wet road surface.

2.28 Area F is located at the Derby Road/Uttoxeter Road/Station Road/Malthouse Lane signal-controlled crossroads junction, where a total of six accidents were recorded during the study period. Two of these accidents were classed as serious, whilst the remaining four accidents were classed as slight. Of the two serious accidents, one involved a vehicle travelling northbound towards the signal junction colliding with a pedestrian crossing the road, whilst the other involved a cyclist being hit by a vehicle at the junction. Of the four slight accidents, one involved a car turning right onto Uttoxeter Road from a service station colliding with a vehicle travelling westbound from the signal junction. Another accident comprised a rear end shunt involving two vehicles at the Derby Road arm of the signal junction, one accident involved a vehicle reversing from a private driveway on Station Road colliding with a motorcycle travelling northbound towards the signal junction. The final accident involved a 7.5 tonne goods vehicle turning right, colliding with a vehicle going straight ahead. Four of these accidents occurred during weekday peak traffic periods, whilst one occurred on a wet road surface.

2.29 Area G is located at the A5132/The Mease roundabout, where one accident was recorded during the study period. The accident was classed as slight, it involved vehicles colliding whilst turning onto/circulating the roundabout and occurred on an icy road surface.

2.30 Area H is located at the southernmost of the two A50/A516 Junction 5 grade-separated roundabouts, where a total of five accidents were recorded during the study period. All of these accidents were classed as slight. Of the five accidents, two involved vehicles turning right at the roundabout from the A516 to the A50

slip road colliding. One involved a vehicle turning right from the A5132 and colliding, whilst one involved vehicles travelling straight ahead on the A5132 to the A516 colliding. The final accident occurred when a motorcycle collided with the rear of a car turning right at the roundabout from the A516 onto the A50 slip road. None of these accidents occurred during weekday peak traffic periods.

2.31 Area I is located along a section of the A50, where a total of five accidents were recorded during the study period. All of these accidents were classed as slight. Of the five accidents, three comprised rear end shunts whilst vehicles travelled along the A50. Of the remaining two accidents, one involved two vehicles colliding whilst one was changing lanes and the final accident occurred when a car travelling west along the A50 lost control. This accident involved no other vehicles. Of the five accidents, two occurred during weekday peak traffic periods and two occurred on a wet road surface.

2.32 In summary, the Personal Injury Accident Data highlights nine areas in the vicinity of the site where significant clusters of three or more accidents have occurred during the last five years. These areas should therefore be considered in further detail when assessing the impact of any material traffic increases resulting from the proposed development.

3.0 PROPOSED DEVELOPMENT

- 3.1 The proposals comprise a mixed use development measuring approximately 15 hectares in site area. The development would consist of up to 224 residential dwellings, 1803 sqm of B1 employment use, a sports pitch with associated changing facilities, and open space including play areas, allotments, and National Forest planting. The main vehicular access to the residential dwellings and the employment area would be provided from Burton Road at the north of the site, and an access from the A511 to the east of the site. There is an additional access point proposed off Green Lane, which will serve six residential properties via a shared private driveway. For the purposes of this assessment, it has been assumed that the proposed development would have an opening year of 2013. A copy of the proposed site layout plan is contained at **Appendix D**.

4.0 TRAFFIC GENERATION

- 4.1 The TRICS database was examined to determine appropriate trip rates for both the proposed residential and employment uses. For the residential use, the category 'Residential – Houses Privately Owned' was interrogated, with the Greater London, Northern Ireland, and Republic of Ireland regions excluded, all sites with up to 491 dwellings selected, and all weekend surveys excluded. During preliminary discussions, the local highway authority indicated that they would require the traffic generation calculations to account for person trips as well as vehicle trips. In light of this, only surveys that included multi-modal data were included within the search. This search produced a total of 54 sites covering 54 survey days. Following an initial observation of the details of these sites, a residential development comprising 237 dwellings in Stanford-le-Hope, Essex (TRICS ref: EX-03-A-01) was considered a suitable comparison for the proposed residential development. The site is located in an edge of town residential zone, is served by a similar level of public transport services, and has a similar number of dwellings. The trip rates for the site can also be considered robust, given that they were only 3 places below the 85th percentile when ranked using the morning peak hour. Modal split details for the site confirm that the overall modal split is similar to the Tutbury area, based on National Statistics data described in more detail within Section 7 of this assessment. The site can therefore be considered an accurate representation of the overall split of person trips that would occur at the proposed residential development.
- 4.2 For the employment development, the category 'Employment – Business Park' was interrogated, to reflect the fact that the offices are likely to be occupied by a number of individual tenants. Sites within Greater London, Northern Ireland, and Republic of Ireland regions were excluded, with all sites up to a gross floor area of 5000sqm selected, and all weekend surveys excluded. In line with the approach taken for the residential search, only multi-modal surveys were included. This search produced a total of 10 sites covering 10 survey days. Following an initial observation of the details of these sites, a business park development measuring 2600 sqm gross floor area in Wootton Bassett, Wiltshire (TRICS ref: WL-02-B-01) was considered a suitable comparison for the proposed employment development. The site is located in an edge of town residential

zone, is served by a similar level of public transport services, and has a similar gross floor area. Once again, the trip rates for the site can also be considered robust, given that they were ranked as the equivalent 85th percentile using the morning peak hour. Modal split details for the site again confirm that the overall modal split is similar to the Tutbury area.

- 4.3 Details of the TRICS output data are included in **Appendix E**, with the resulting morning and evening peak hour and daily trip rates as follows:

Residential development (per dwelling)

- morning peak (0800 to 0900 hours) 0.177 arrive 0.523 depart
- evening peak (1700 to 1800 hours) 0.439 arrive 0.274 depart
- daily total (0700 to 1900 hours) 2.976 arrive 2.932 depart

Employment development (per 100 sqm gross floor area)

- morning peak (0800 to 0900 hours) 2.423 arrive 0.384 depart
- evening peak (1700 to 1800 hours) 0.154 arrive 2.000 depart
- daily total (0700 to 1900 hours) 7.073 arrive 6.614 depart

- 4.4 Based on the above trip rates, the proposed development traffic generation would be as follows:

224 residential dwellings

- morning peak (0800 to 0900 hours) 40 arrive 117 depart 157 total
- evening peak (1700 to 1800 hours) 98 arrive 61 depart 159 total
- daily total (0700 to 1900 hours) 666 arrive 657 depart 1323 total

Employment development (1803 sqm gross floor area)

- morning peak (0800 to 0900 hours) 44 arrive 7 depart 51 total
- evening peak (1700 to 1800 hours) 3 arrive 36 depart 39 total
- daily total (0700 to 1900 hours) 128 arrive 119 depart 247 total

Total combined

- morning peak (0800 to 0900 hours) 84 arrive 124 depart 208 total
- evening peak (1700 to 1800 hours) 101 arrive 97 depart 198 total
- daily total (0700 to 1900 hours) 794 arrive 776 depart 1570 total

- 4.5 The proposed site layout plan also shows a sports pitch with associated changing facilities and car park, located at the south-western corner of the site. This use has not been included within the traffic generation calculations above; as it is

considered that a large proportion of trips to these facilities would come from within the development. In addition, the sports pitch is likely to generate the majority of its movements on evenings and weekends, during which time the employment development is likely to be unoccupied. Therefore the overall traffic generation for the site would not be likely to exceed the figures given above during any particular period over the course of the week. For these reasons it is considered that the sports pitch need not be included within the overall peak hour traffic generation calculations for the site.

5.0 DISTRIBUTION MODEL AND ASSIGNMENT

- 5.1 Traffic movements associated with the proposed development were assigned to the surrounding highway network in accordance with a gravity model that reflects the sites accessibility to the local and strategic highway network and proximity to adjacent towns and cities.
- 5.2 To create the gravity model, Microsoft Autoroute was used to determine a 30 minute drive-time isochrone for vehicle based trips to and from the site. The results of this exercise are shown in **Figure 8**, which demonstrates that a number of local and strategic destinations are within a 30-minute drive of the site, including:
- Tutbury
 - Hatton
 - Burton upon Trent
 - Derby
 - Uttoxeter
 - Stafford
 - Stoke-on-Trent
- 5.3 Tempro 5.4 is then used to determine population statistics for all major locations within the isochrone for which data was available. The proportion of each location within the isochrone was then estimated and the resulting population incorporated within the P/T^2 calculation, where P is the population covered and T is the time taken to complete the journey. The results of the P/T^2 calculation for each location were then added together and adjusted so that the total equalled 100% and the individual areas proportioned accordingly.
- 5.4 The population details given in Tempro count Tutbury and Hatton as a single destination. Therefore, 50% of traffic associated with this area was assigned to Tutbury, whilst the remaining 50% was assigned to Hatton. In addition, to account more specifically for local trips to and from Burton upon Trent, the percentage of the distribution for Burton upon Trent was distributed based on the developments located within this area and the likely routes that would be taken by drivers. Six alternative routes to and from different areas in Burton upon Trent

were used as part of the distribution calculation process. These comprise all traffic heading south on the A511 and then 5% of traffic travelling along Harehedge Lane, 5% of traffic disbursing between Harehedge Lane and the underpass under the A38, 20% of traffic disbursing between the A38 underpass and the A511/A5121 roundabout, 10% of traffic travelling westbound on the A5121, 10% of traffic heading southbound on the A511, and 50% of traffic disbursing between the A511/A5121 roundabout and the A38 junction to the west.

5.5 Microsoft Autoroute was then used to determine the quickest route between the site and each of the remaining locations identified within the isochrone. Once each of the routes was identified, the sum of percentages on each link was calculated and a distribution model produced for the assignment of proposed development traffic. For traffic passing through junction 5 of the A50 to the northeast of the site, Microsoft Autoroute identified the quickest route as being through the village of Hilton. However, this is signed as a 'village only' route, with A516 and A50 traffic being guided through the new residential estate to the south of the village. It is also considered that some of the traffic assigned in this direction would be likely to be associated with both Hilton and the new residential/employment developments to the south of the village. Furthermore, given the longer route vehicles are encouraged to take to reach the A516 and A50 in this direction, which includes several roundabout junctions, it is anticipated that some of the vehicles travelling towards these roads may choose to travel via junction 6 of the A50 instead as a more straightforward route. Given all of the above, it has been assumed that the traffic associated with the A516 north and A50 east would be split up as follows:

- to Hilton - 15%
- to new residential and employment developments to south of Hilton - 15%
- through Hilton - 15%
- via bypass route to south of Hilton - 40%
- via A50 (junction 6) - 15%

5.6 The results of the P/T^2 calculation are summarised within **Table 2**, whilst the resulting distribution model is shown within **Figure 9**. **Table 2** shows that over

20% of the proposed development traffic would comprise trips to and from Tutbury and Hatton, whilst approximately 25% of traffic would be associated with Derby and over 30% would travel to and from Burton upon Trent. The rest of the traffic would consist of small percentages of trips to and from a number of smaller or more distant areas.

- 5.7 To assess the accuracy of the distribution percentages described above, details of the distances people travel to work for the 'East Staffordshire 004D' and 'East Staffordshire 004E' lower super output areas were obtained from the National Statistics website, details of which are contained at **Appendix F**. These figures indicate that the percentages of people living within this area who travel certain distances to work correlates closely with the percentages of people travelling to the locations identified above. For example, the data shows that 20% of people travel less than 2 kilometres, which compares with approximately 20% of people associated with Tutbury and Hatton in the distribution model. In addition, the data shows that 38% of people travel between 5 and 10 kilometres, which is comparable to over 30% of movements in the model being associated with Burton upon Trent. The percentages given in **Table 2** can therefore be considered a realistic representation of the likely distribution of traffic associated with the proposed development.
- 5.8 The resulting distribution model shown in **Figure 9** demonstrates that the proposed development traffic would be relatively evenly distributed between routes to the north and south of the site, with a small percentage of traffic travelling into Tutbury and beyond to the west. This even distribution reflects the fact that the main draws for traffic travelling to/from the site are Burton upon Trent to the south along the A511, and Derby, Hatton and Hilton to the north along the A511 and A516. During preliminary discussions with Staffordshire County Council and Derbyshire County Council, the general principles of this model were agreed to be suitable for the purposes of this assessment.
- 5.9 Following completion of the distribution model, the proposed development traffic was subsequently assigned to the surrounding highway network in accordance with **Figure 9**. The resulting proposed development morning and evening peak hour traffic assignment is shown in **Figure 10**.

5.10 The observed network traffic flows were also adjusted to a local highway network Design Year scenario of 2018 (opening year 2013 + 5) using National Transport Model growth factors, adjusted by the TEMPRO 5.4 dataset for Tutbury and Hatton. The resulting 2018 Design Year 'without development' turning movements for the local highway network are summarised within **Figure 11**. The proposed development traffic assignment was subsequently added to the Design Year flows to give the 2018 Design Year 'with development' turning movements, which are shown within **Figure 12**.

6.0 HIGHWAY IMPACT

On-site issues

- 6.1 The proposed site layout plan indicates that the development would be served via an access at Burton Road, with an additional access from the A511, south of the A511/Burton Road/Rolleston Lane roundabout. During initial discussions with Staffordshire County Council, it was confirmed that the proposed access locations would be acceptable in principle. **Drawing Numbers F09049/05 and F09049/06** therefore show proposed site access arrangements to serve the site based on the indicative access locations shown within the site layout plan.
- 6.2 **Drawing Number F09049/05** shows how the development would be served by a simple T-junction arrangement at Burton Road. Staffordshire County Council does not currently have an adopted highway design guide. However, to ensure that the junction would be suitable to serve the proposed development, the design standards set out with the local authority's previously adopted guidance, the Staffordshire Residential Design Guide, have been applied. **Drawing Number F09049/05** shows how the junction would comprise a 6.5 metres wide carriageway with 10 metres kerb radii. This carriageway width would ensure that the access road would be of sufficient width to accommodate any bus movements associated with the site.
- 6.3 Typically, the level of movements associated with the proposed development would trigger the requirement for a ghost island right turn lane to be included within the layout of the junction, in accordance with Figure 2/2 of the Design Manual for Roads and Bridges. However, during initial discussions with the local highway authority, it was indicated that a right turn lane should not be required, given that **Figure 10** shows there would be minimal demand for right turns into the site, particularly during peak hours. Visibility splays measuring 4.5 x 215 metres are shown in each direction from the junction, in accordance with the 60 mph speed limit along this section of Burton Road and the requirements of Table 7/1 of the Design Manual for Roads and Bridges.

- 6.4 **Drawing Number F09049/05** also shows how a 3 metres wide shared footway/cycleway could be provided along the northern edge of the access road, which would then extend to the north along Burton Road to tie in with the existing pedestrian facilities on Burton Road and Iron Walls Lane. The existing footway on the western edge of Burton Road to the north of Iron Walls Lane is of sufficient width to continue this shared pedestrian/cycle environment. No footway would be provided to the south of the junction, given that there is unlikely to be a significant demand for pedestrian movements along either the A511 or Rolleston Lane in this direction.
- 6.5 **Drawing Number F09049/06** shows how the proposed development would also be accessed by a ghost island T-junction arrangement at the A511. This arrangement would be situated at the location of an existing field access into the site, which is directly opposite another field access into land to the east of the A511. It is not considered that locating the proposed junction opposite this field access should cause any highway safety concerns, given that the field access is likely to be lightly trafficked. **Drawing Number F09049/06** also shows how the junction would comprise a 7.3 metres wide carriageway with 10 metres kerb radii. The carriageway width would then reduce to 6.5m within the development and at the approximate location of plot 167 as illustrated on the site layout plan within **Appendix D**. This will then tie in with the carriageway width from the Burton Road access as illustrated within 6.2 of this assessment. The proposed ghost island right turn lane has been designed in accordance with the Design Manual for Roads and Bridges and to tie in with the existing road markings on the A511. It would comprise a 3.5 metres wide right turn lane and 3.25 metres wide through lanes. Visibility splays measuring 4.5 x 215 metres are shown in each direction from the junction, in accordance with the 60 mph speed limit along the A511 and the requirements of Table 7/1 of the Design Manual for Roads and Bridges.
- 6.6 **Drawing Number F09049/06** also shows how 2 metres wide footways would be present on both sides of the access road, which would then extend from the site access junction along the A511 in both directions. These footways would lead to proposed pedestrian refuge islands to allow pedestrians to access the existing footway on the eastern edge of the carriageway.

6.7 East Staffordshire Borough Council's 'Supplementary Planning Guidance: Parking Standards' document contains parking standards for residential dwellings. It states that the maximum number of parking spaces for dwellings is dependent upon the number of bedrooms. The maximum parking standards for residential dwellings outside of the central retail areas of Burton and Uttoxeter are as follows:

- 1 bed dwellings - 1 space per dwelling plus 1 space per 3 dwellings for visitors
- 2/3 bed dwellings - 2 spaces per unit
- 4+ bed dwellings - 3 spaces per unit

Based on the above standards, the proposed 224 dwelling residential development at the site would require a maximum parking provision of 552 spaces, based on the proposed residential development being made up of the following house types:

- 30 - 2 bed houses
- 54 - 3 bed houses
- 106 - 4 bed houses
- 22 - 5 bed houses.

6.8 The document 'Residential Car Parking Research' (Department for Communities and Local Government, May 2007) sets out levels of expected car parking demand for residential developments based on up to date research for existing developments. Table 4 of the document states that in a suburban area, 5 room owner occupied houses (equivalent to a 2 bed house) would generate an average parking demand for 1.7 spaces per dwelling, based on an average of one allocated space per dwelling, 6 room owner occupied houses (equivalent to a 3 bed house) would generate an average parking demand for 1.9 spaces, 7 room owner occupied houses (equivalent to a 4 bed house) would generate an average of 2.1 spaces and 8 room owner occupied houses (equivalent to a 5 bed house) would generate an average parking demand of 2.2 spaces. This would equate to an overall parking demand for 425 vehicles at the proposed 224 dwelling residential development. Taking the above figures into account, it is considered that parking provision at the proposed residential development should be somewhere in the region of 425 to 552 spaces.

- 6.9 East Staffordshire Borough Council's parking standards guidance also states that B1 use employment developments larger than 235 sqm gross floor area should provide a maximum of 1 parking space per 30 sqm gross floor area. Based on these standards, the proposed employment development (1803 sqm gross floor area) at the site should provide a maximum of 60 spaces. **Table 3** shows a parking accumulation profile for the proposed employment development based on the TRICS based traffic generation details given in Section 4 of this assessment. It shows that the maximum parking accumulation at the site would be 67 vehicles between 0900 and 1100 hours. It is therefore proposed that a maximum of 67 parking spaces are provided.
- 6.10 The proposed site layout would need to accommodate typical service vehicle turning manoeuvres within both the residential and employment areas. 'Manual for Streets' states that refuse workers should not have to walk more than 25 metres from their vehicle, whilst residents/employees should have to walk no further than 30 metres from their property. The proposed site layout plan (**Appendix D**) shows that the residential site would include a number of locations for a service vehicle to turn, plus circuits that would eliminate the need for a turning manoeuvre within certain parts of the development. In addition, the site layout plan shows that the employment site would also include areas for a service vehicle to turn within. Provided these turning heads are of adequate size and would allow a refuse vehicle to get within the required distance of each bin store/location, the proposed layout should be generally acceptable in terms of servicing.

Off-site issues

- 6.11 The publication 'Guidance on Transport Assessment' (DfT, March 2007), suggests that a material traffic increase would occur at around 30 hourly two-way movements at any particular junction. This threshold was therefore adopted to determine the extent of local highway network that should be examined in further detail. However, it is important to note that Guidance on Transport Assessment merely recommends the 30 movements threshold as a starting point for assessment and larger increases may be acceptable where capacity or highway safety issues are unlikely.

6.12 **Figure 10** shows the proposed development traffic assignment for the weekday morning and evening peak hours. It demonstrates that increases of 30 or more two-way vehicle movements would occur at the following major junctions within the surrounding highway network:

- Proposed Burton Road/residential site access T-junction
- Proposed A511/employment site access ghost island T-junction
- A511/Burton Road/Rolleston Lane roundabout
- A511/Bridge Street roundabout
- Derby Road/Utttoxeter Road/Station Road/Malthouse Lane signal controlled crossroads junction
- Derby Road/Utttoxeter Road ghost island T-junction
- The series of roundabouts along the bypass road that runs to the south of Hilton
- A516/A5132 roundabout
- Junction 5 at the A50 (2 linked grade separated roundabouts that link the A50 to the A516)
- A511/Harehedge Lane/Beamhill Road signal controlled crossroads junction
- A511/A5121 roundabout

6.13 Following discussion with both Staffordshire County Council and Derbyshire County Council, it was agreed that the following junctions could be discounted in terms of further detailed analysis based on the following reasons:

- *The series of roundabouts along bypass route to south of Hilton* – it should not be necessary to assess all of these junctions, as traffic increases associated with the adjacent residential and employment developments are unlikely to cause any significant conflict with the straight-on movements associated with the proposed development.
- *Junction 5 of the A50 (2 linked grade separated roundabouts)* – it is considered that minimal peak hour traffic increases of up to 41 two-way vehicle movements would be generated by the proposed development, which is equivalent to less than one vehicle per minute and should be satisfactorily accommodated within the existing layout of the two roundabouts. Hence, no further detailed assessment should be required.

- *A511/A5121 roundabout* – discounted based on recent advice from Staffordshire County Council, where it was indicated that the local highway authority would not require any detailed assessment of this particular junction.
- *Six number dwellings are be accessed via a new shared private driveway from Green Lane. The impact of this is considered insignificant and thus no further assessment of this access has been carried out.*

6.14 Taking the above into account, the agreed study area or further detailed assessment is as follows:

- Proposed Burton Road/residential site access T-junction
- Proposed A511/employment site access ghost island T-junction
- A511/Burton Road/Rolleston Lane roundabout
- A511/Bridge Street roundabout
- Derby Road/Utttoxeter Road/Station Road/Malthouse Lane signal controlled crossroads junction
- Derby Road/Utttoxeter Road ghost island T-junction
- A516/A5132 roundabout
- A511/Harehedge Lane/Beamhill Road signal controlled crossroads junction

6.15 Each of the junctions listed above was subsequently tested at the 2018 Design Year using the ‘with development’ flows shown in **Figure 12**. The results of these capacity assessments are as follows, with the associated PICADY, ARCADY, and LinSig outputs contained within **Appendix G**.

Proposed Burton Road site access T-junction

6.16 The results of the PICADY assessment of the proposed Burton Road/residential site access T-junction are summarised in **Table 4** and indicate that the proposed junction (as shown in **Drawing Number F09049/05**) would operate satisfactorily in both the morning and evening peak hours. The site access arm would be at a maximum 9.1% capacity in the morning peak hour, with a maximum queue length of 0.1 vehicles and an average delay of 0.13 minutes per vehicle.

Proposed A511 site access ghost island T-junction

- 6.17 The results of the PICADY assessment of the proposed A511 site access ghost island T-junction are summarised in **Table 5** and indicate that the proposed junction (as shown in **Drawing Number F09049/06**) would operate satisfactorily in both the morning and evening peak hours. The site access arm would be at a maximum 21.90% capacity in the evening peak hour, with a maximum queue length of 0.3 vehicles and an average delay of 0.17 minutes per vehicle.

A511/Burton Road/Rolleston Lane roundabout

- 6.18 The results of the ARCADY assessment of the A511/Burton Road/Rolleston Lane roundabout are summarised in **Table 6** and indicate that the roundabout would operate satisfactorily in both the morning and evening peak hours. The A511 (south) arm would be at a maximum 41.6% capacity in the evening peak hour, with a maximum queue length of 0.7 vehicles and an average delay of 0.05 minutes per vehicle.

A511/Bridge Street roundabout

- 6.19 Given that this junction has recently been updated, a combination of the previous layout and an indicative drawing showing the new layout were used to ascertain the dimensions of the roundabout. The results of the ARCADY assessment of the A511/Bridge Street roundabout are summarised in **Table 7** and indicate that the roundabout would operate satisfactorily in both the morning and evening peak hours. The A511 (north) arm would be at a maximum 56.8% capacity in the morning peak hour, with a maximum queue length of 1.3 vehicles and an average delay of 0.08 minutes per vehicle.

Derby Road/Uttoxeter Road/Station Road/Malthouse Lane signal controlled crossroads junction

- 6.20 Derbyshire County Council were consulted to obtain details of the layout and signal timings for the Derby Road/Uttoxeter Road/Station Road/Malthouse Lane signal controlled crossroads junction. However, these discussions revealed that this junction was being refurbished at the time of the assessment; therefore preliminary details of the layout of the improved junction were obtained. Observations during the traffic survey at this junction indicated that the refurbishment works did not cause any significant delays, therefore the flows obtained during this survey can be used with confidence that they reflect atypical conditions.
- 6.21 Given that detailed timing information for the junction was not yet available at the time of writing this report, the cycle time and intergreens were calculated based on the layout of the junction. The adopted stage sequence allows for the all-red pedestrian stages to run once every three cycles. This should ensure a robust yet balanced representation of the potential demand for pedestrian crossing movements at the junction, given that there are unlikely to be many pedestrian movements from the north, east or west, based on the nature of the surrounding area. In addition, the Malthouse Lane stage of the junction was excluded from the model, given that only two movements occurred at this arm in the morning peak hour and one in the evening peak. Therefore if this stage was included the model would not realistically reflect how the junction would operate.
- 6.22 The junction was tested using the 2018 Design Year 'with development' turning movements shown in **Figure 12**, which were converted to pcus by applying a factor of 2.3 to the HGV movements, as shown in **Figure 13**. The results of the subsequent LinSig assessment are summarised in **Table 8** and show that the junction would continue to operate satisfactorily in the morning peak hours in all scenarios. In the evening peak hours the junction is only just in capacity without development flows, with development traffic the junction is over capacity. The worst degrees of saturation are Station Road link at 96.6% degree of saturation in the evening peak hour, with a mean maximum queue length of 28.1 pcus and an average pcu delay of 28.53 (pcu/Hr). There are some anomalies in the results,

which are associated with the Malthouse Lane arm; however this is simply due to the corresponding stage being excluded from the model.

Derby Road/Uttoxeter Road ghost island T-junction

- 6.23 The results of the PICADY assessment of the Derby Road/Uttoxeter Road ghost island T-junction are summarised in **Table 9** and indicate that it would operate satisfactorily in the morning peak hour but in the evening peak hour is overcapacity on the Uttoxeter Road arm. The Uttoxeter Road arm (right turn lane) would be at a maximum 96.30% capacity in the evening peak hour, with a maximum queue length of 10.9 vehicles and an average delay of 0.73 minutes per vehicle. This junction was reassessed in the evening peak hour only without the proposed development traffic and was found to be at a maximum 92.0% capacity in the evening peak hour, with a maximum queue length of 8.0 vehicles and an average delay of 0.59 minutes per vehicle.

A516/A5132 roundabout

- 6.24 The results of the ARCADY assessment of the A516/A5132 roundabout are summarised in **Table 10** and indicate that the roundabout would operate satisfactorily in the evening peak hour but in the morning peak hour is overcapacity on the A5132 arm. The A5132 arm would be at a maximum 93.4% capacity in the morning peak hour, with a maximum queue length of 11 vehicles and an average delay of 0.30 minutes per vehicle. This junction was reassessed in the evening peak hour only without the proposed development traffic and was found to be at a maximum 93.2% capacity in the evening peak hour, with a maximum queue length of 10.7 vehicles and an average delay of 0.30 minutes per vehicle.

A511/Harehedge Lane/Beamhill Road signal controlled crossroads junction

- 6.25 Details of the current layout and signal timings for the A511/Harehedge Lane/Beamhill Road signal controlled crossroads junction were obtained from Staffordshire County Council. The results of the traffic count survey at this junction (see **Appendix B**) included details of how often the push button

pedestrian crossings were activated during the peak hours. These results show that the crossings were only activated twice during the morning peak hour and three times during the evening peak hour. The adopted stage sequence therefore only includes an all-red pedestrian phase every two cycles, to reflect the limited use of these crossings.

- 6.26 The junction was tested using the 2018 Design Year 'with development' turning movements shown in **Figure 12**, which were converted to pcus by applying a factor of 2.3 to the HGV movements, as shown in **Figure 14**. The results of the subsequent Linsig assessment are summarised in **Table 11** and show that the junction would continue to operate satisfactorily in the morning and evening peak hours with development traffic. The Harehedge Lane link would operate at a maximum 84.5% degree of saturation in the evening peak hour, with a mean maximum queue length of 6.5 pcus and an average pcu delay of 18.22 (pcu/Hr).
- 6.27 During preliminary discussions regarding the scope of the Transport Assessment, the local highway authority indicated that they would also require the proposed development traffic increases to be tested at the A511/Harehedge Lane/Beamhill Road T-junction using their own traffic model. Further negotiations will therefore be required with the local highway authority to confirm the results of this exercise. However, it is evident that the junction has sufficient spare capacity to accommodate further increases in traffic flow.

Summary

- 6.28 The above results demonstrate that traffic movements associated with the proposed development would not represent a detrimental impact at many of the major junctions within the surrounding highway network, both in the immediate vicinity of the site and also further afield at more strategic junctions. The Derby Road/Uttoxeter Road junction and the A516/A5132 roundabout are both over capacity with and without the proposed development and therefore the minor increase from the development traffic should be acceptable to the highway authority. It is therefore considered that no further detailed assessment of the off-site highway impact should be required.

Highway safety

6.29 The accident study showed that potential highway safety concerns exist at nine locations within the surrounding highway network (see **Figures 6 and 7**), which could in theory be exacerbated by the additional traffic movements resulting from the proposed development. However, it is not considered that the potential traffic increases would exacerbate the potential for accidents in any of these areas based on the following reasons (see **Figures 6 and 7** for locations of accident clusters described below):

Area A: Whilst two of the three accidents at this location occurred during weekday peak traffic periods, there is no correlation between the cause of the three accidents, which suggests that there is no single particular type of accident that could be exacerbated by the proposed development traffic increases.

Area B: Four of the these accidents occurred during weekday traffic periods, the majority of which comprised rear end shunts on the A511 caused by vehicles waiting to turn into minor roads. Given that the proposed development would not be likely to generate any turning movements at this junction, it is not considered that the existing accident concerns would be exacerbated.

Area C: Whilst five accidents were recorded at this location, there is no correlation between these accidents, with various causes including a rear end shunt, a cyclist performing an overtaking manoeuvre, and an accident involving a stolen vehicle. This suggests that there is no single particular type of accident that could be exacerbated by the proposed development traffic increases.

Area D: Three accidents were recorded at this location during the study period, only two of which were similar. These two accidents both involved pedestrians, however, the causes of these accidents were different, in that one occurred at the level crossing, whilst the other occurred to the north of the railway line and was associated with a vehicle turning out of a minor road. Also, taking into account the fact that both of these accidents occurred on a Saturday, where the proposed development would generate significantly fewer traffic movements, it is not considered that the proposed development would increase the chances of pedestrian accidents at this location.

Area E: Only two of the six accidents that were recorded at this location were of a similar type, which comprised vehicles turning right out of Yew Tree Road colliding with motorcycles travelling north on Station Road. However, one of

these accidents resulted from the motorcycle performing a dangerous overtaking manoeuvre, therefore this can be discounted. Therefore this suggests that there is no single particular type of accident that could be exacerbated by the proposed development traffic increases.

Area F: As described above, this signal controlled junction at the time of this assessment was being refurbished and improved to include, amongst other things, pedestrian crossing facilities. Given that these improvements should in theory improve highway safety, it is not considered that the existing accident history at this junction would be of any concern in line with the proposed development traffic increases. Notwithstanding this fact, none of the accidents that were recorded at this location had similar causes, indicating that there is no single existing accident problem that could be exacerbated by the proposed development.

Area G: One accident has occurred at this junction in the last five years, this occurred in 2005, there have been no recorded accidents since, which indicates that there have been no highway safety problems at this roundabout in the last three years. Hence, it is not considered that the proposed development traffic increases should cause any significant highway safety concerns at this junction.

Area H: Only two of the five accidents at this location were similar, which both involved heavy goods vehicles losing control as they turned. Given that the proposed development should not generate a significant amount of HGV movements, it is not considered that it would exacerbate this particular accident trend.

Area I: Three of the five accidents at this location were similar in that they comprised rear end shunts. However, the proposed development would only generate one or two movements along this section during peak hours, which given the overall traffic levels on the A50 could not be considered to have the potential to exacerbate any existing accident problem along this route.

6.30 The above details show that the proposed development traffic increases should not exacerbate any existing accident problems within the surrounding highway network. Hence, there should be no requirement for the developer to mitigate any of these problems as part of the proposed development.

7.0 OPPORTUNITIES TO ENCOURAGE NON-CAR TRAVEL

7.1 To address travel by all modes of transport, PPG13 requires an assessment of modal splits for new developments. Inspection of the National Statistics website shows the following average journey to work modal split for the 'East Staffordshire 004D' and 'East Staffordshire 004E' lower super output areas, which combine to include the site and the rest of Tutbury:

• work mainly at or from home	9.86%
• by underground, metro, light rail or train	0.00%
• by train	0.91%
• by bus	5.68%
• by motorcycle/scooter/moped	1.29%
• by car/van (as driver)	62.84%
• by car/van (as passenger)	7.24%
• by taxi or minicab	0.51%
• on bicycle	2.11%
• on foot	9.13%
• other	0.43%

A copy of the output data from the website is contained at **Appendix H**.

7.2 The 'people who work mainly at or from home' category was removed and the remaining percentages adjusted accordingly, resulting in the following modal split:

• by underground, metro, light rail or train	0.00%
• by train	1.01%
• by bus	6.30%
• by motorcycle/scooter/moped	1.43%
• by car/van (as driver)	69.71%
• by car/van (as passenger)	8.03%
• by taxi or minicab	0.57%
• on bicycle	2.34%
• on foot	10.13%
• other	0.48%

7.3 Based on the above details, the modal split for Tutbury is similar to the modal splits for the TRICS sites used to calculate the traffic generation for the proposed development (see **Appendix E**) in terms of the proportion of car versus non-car trips. For the Tutbury data, there are 78.31% of trips by car and 21.69% of trips by non-car modes, which closely compares to an average of 80.8% of trips by car and 19.2% of trips by non-car modes at the TRICS sites. The modal split for Tutbury can therefore be used with confidence that it accurately reflects the modal split of the TRICS sites used to calculate the number of vehicle movements at the site. It is considered that the figures for Tutbury should be used in this assessment rather than the TRICS based modal splits, given that they provide a more accurate breakdown of person trips and are more specific to the local area.

7.4 Based on the above, the Tutbury area modal split was therefore adopted for the purposes of this assessment. To calculate the hourly amount of person trips by each mode, the following approach was adopted:

- 78.31% (69.71% + 8.03% + 0.57%) of vehicle occupants is equal to 208 total car movements during the morning peak hour
- $208 / 78.31$ equals the number of person trips per percent, or 2.66
- The morning peak hour person trips can therefore be calculated by multiplying the modal percentage for each category by 2.66

7.5 Inspection of the traffic generation calculations for the proposed development show that approximately 13.2% of all daily vehicle movements would occur during the morning peak hour. This results in a conversion factor of 7.55 from peak hour to daily movements [$1 / 0.132$].

7.6 Using the above process, it was possible to calculate that the proposed development would generate the following total person trips:

	peak hour	daily
• by underground, metro, light rail, or tram	0	0
• by train	3	23
• by bus	17	128
• by motor cycle/scooter/moped	4	30
• by car/van (as driver)	185	1397

• by car/van (as passenger)	21	159
• by taxi or minicab	2	15
• by bicycle	6	45
• on foot	27	204
• other	1	8

Pedestrian travel

- 7.7 Based on the above results, the proposed development would generate a total increase of 204 daily pedestrian movements, including 27 movements during the morning peak hour. The proposed site layout plan (**Appendix D**) indicates that the on-site layout would include a comprehensive network of pedestrian routes to accommodate these increases, including pedestrian/cyclist links to Green Lane and Iron Walls Lane as well as Burton Road and the A511. The proposed pedestrian footways and crossings at the residential and employment access junctions should be satisfactory to accommodate the increases in pedestrian movements to/from the site.
- 7.8 Further afield of the site, the 2 kilometres pedestrian isochrone in **Figure 2** indicates that the main draw for pedestrian movements would be Tutbury. The main route into Tutbury would be via Burton Road and Burton Street, which include footways on both sides of the carriageway and should satisfactorily accommodate the increases in pedestrian movements associated with the proposed development.
- 7.9 Within the proposed site layout it is important that safe and convenient network pedestrian links are provided throughout both the employment and residential developments. It is recommended that on major routes through the site 3 metres wide segregated footway/cycleways are provided, with appropriate lighting, dropped kerbing, tactile paving, and signage. Beyond the major routes, it is important that all footways comprise a minimum width of 2 metres and include 2 x 2 metres pedestrian intervisibility splays at any vehicle crossing points.

Cycle travel

- 7.10 The person trip calculations show that the proposed development would generate 45 daily cycle movements, including 6 movements during the morning peak hour. It is considered that the presence of advisory cycle routes leading to areas within a 5 kilometres cycle distance, such as Rolleston and Anslow, as well as the fact that the topography of the surrounding roads is generally suitable for cycling, mean that the moderate increases in cyclist movements should be accommodated by the existing facilities surrounding the site. In addition, the Personal Injury Accident data does not show any significant clusters of cyclist related accidents on the surrounding routes that could be exacerbated by these increases in movements.
- 7.11 As recommended above, it is important that the proposed site layout includes a comprehensive network of designated cycleways. Consideration should be given to providing traffic-free routes along key desire lines.
- 7.12 Inspection of the local highway authority's adopted parking standards confirms that B1 use developments should provide a minimum of one 'stand' per 300 sqm gross floor area, whilst residential dwellings should provide a minimum of 1 space per unit. It is therefore recommended that the proposed development should provide a minimum of 6 stands within the employment development, located within safe, convenient, and well lit areas. To satisfy the minimum requirements for the residential dwellings it is recommended that consideration be given to providing internal cycle parking within each unit, such as cycle racks within garages or stands within the property boundary. Alternatively, communal cycle parking could be provided within any courtyard areas.

Bus travel

- 7.13 The proposed development would also generate a total increase of 128 daily bus passenger movements, with 17 during the peak hour. Detailed inspection of the timetables for the local bus routes that run in the vicinity of the site show that the timings of the services should be suitable to accommodate bus trips to and from the main employment and residential areas surrounding the site such as Burton

upon Trent and Derby. For example, the V1 (Villager) route provides a service departing Tutbury at 0815 hours that would allow people living at the proposed development to arrive in Burton by 0851 hours to start work at 0900 hours.

- 7.14 During preliminary discussions, the local highway authority stated that they would require each dwelling and office within the development to be served by bus stops that are within 400 metres walking distance. Currently, the closest bus stops that would serve the site are located on Burton Road to the north, which would be within the required distance of some of the proposed dwellings, however the majority of the dwellings and all of the office development would be beyond this walking distance.
- 7.15 Given the potential distances between the site and its nearest bus services, it is recommended that an existing route is diverted through the proposed residential site. Any subsequent bus stop facilities should be located along key pedestrian desire lines within the proposed site layout plan and comprise well lit shelters with timetable information to further encourage bus travel. The proposed site layout plan should also be designed to ensure that all major routes within the development measure at least 6.5 metres wide to safely accommodate two-way bus movements. Pedestrian links should also be provided between the proposed employment development and the bus stops within the site.
- 7.16 To establish how the existing bus services that run along Burton Road could be re-routed to serve bus stops within the site, initial 'in-principle' discussions were held with both of the local bus operators, Arriva Midlands and Trent Barton. However, it was indicated that the operators would require further details regarding the proposed development before the logistics and costs associated with extending/improving a route could be discussed in further detail. The local bus operators should therefore be further consulted following any 'in principle' agreement with the local highway authority.
- 7.17 Detailed timetable information for the existing local routes was examined to give an indication of how one of the services could be extended to serve the proposed development. The traffic distribution details given in Section 5 of this report indicate that Burton upon Trent and Derby would be the two main draws for traffic

further afield of the site; therefore it can be assumed that the highest demand for bus trips to/from the site would also be associated with these areas. It is therefore considered that it would be most beneficial to extend the existing V1 (Villager) route into the site, as this serves both Burton upon Trent and Derby. There should not be a requirement to increase the existing hourly frequency of this route, in line with best practice advice given by other local authorities.

- 7.18 Detailed timetable information for the V1 (Villager) route indicates that there is an overlap between when the service arrives at and departs Burton upon Trent, meaning that two separate buses are currently utilised as part of this route. If each of these buses is currently left unused for periods whilst they wait to travel along this route, there may be scope to extend these services into the site without the need to provide an extra bus. However, if the buses are utilised for another route during their 'downtime' then another bus may be required so that the route can be extended. If another bus is required, this may allow the frequency of the service to be increased to every 30 mins rather than every 1 hour.
- 7.19 As an alternative to re-routing a bus route through the site, bus stops could be provided on the A511 close to the proposed employment development access. Subject to adequate pedestrian links being provided within the site, these stops would ensure that all dwellings/offices would be within or just beyond a reasonable 400 metres walking distance. These stops would serve route number 1 on weekdays and Saturdays, which operates at an average frequency of one service per hour in each direction.

Train travel

- 7.20 The above details also show that the site would generate 23 daily train passenger movements, with 3 during the peak hour. Given that the Tutbury and Hatton Train Station is located only approximately 1.25 kilometres north of the site, it is considered that this facility should accommodate the increases in demand for travel by train. The increases in movements between the site and the Train Station would be likely to occur through Tutbury, where the existing pedestrian facilities should accommodate these increases.

Travel Plan

7.21 In line with the requirements of Guidance on Transport Assessment (DfT, March 2007) a travel plan would be required for the proposed residential development, whilst the proposed employment development would not trigger the threshold for a travel plan. However, during initial discussions with the local highway authority (see **Appendix A**), it was indicated that both developments would require travel plans to encourage the use of sustainable travel. The travel plans should encourage occupants of the site to take advantage of the surrounding sustainable travel opportunities and provide them with up to date information on upcoming schemes and initiatives, in order to minimise any demand for car travel.

7.22 Without prejudicing the final content of the subsequent documents, these travel plans could include measures such as the following:

Residential travel plan

- one 3-month bus pass for each dwelling
- a free bicycle for each dwelling
- sustainable travel information packs

Employment development travel plan

- car parking management plan
- car sharing scheme
- discounted public transport travel for staff

8.0 SUMMARY AND CONCLUSIONS

8.1 Armstrong Stokes and Clayton were appointed by Peveril Homes Ltd to provide traffic and transportation advice in respect of proposals to redevelop land to the west of the A511 in Tutbury, Staffordshire. The proposals comprise a mixed use development primarily of residential dwellings and B1 office buildings. This assessment is to accompany a detailed planning application for the site.

8.2 The proposed development would comprise a mixed use development consisting of up to 224 residential dwellings, 1803 sqm of B1 employment use, a sports pitch with associated changing facilities, and open space including play areas, allotments, and National Forest planting. The main vehicular access to the residential dwellings and the employment area would be provided from Burton Road at the north of the site, and an access from the A511 to the east of the site. There is an additional private driveway access proposed off Green Lane, which will serve six residential properties. This assessment, assumes the proposed development would have an opening year of 2013

8.3 The following trip rates were obtained from the TRICS database and deemed appropriate for the proposed development:

224 residential dwellings

▪ morning peak (0800 to 0900 hours)	40 arrive	117 depart	157 total
▪ evening peak (1700 to 1800 hours)	98 arrive	61 depart	159 total
▪ daily total (0700 to 1900 hours)	666 arrive	657 depart	1323 total

Employment development (1803 sqm gross floor area)

▪ morning peak (0800 to 0900 hours)	44 arrive	7 depart	51 total
▪ evening peak (1700 to 1800 hours)	3 arrive	36 depart	39 total
▪ daily total (0700 to 1900 hours)	128 arrive	119 depart	247 total

Total combined

▪ morning peak (0800 to 0900 hours)	84 arrive	124 depart	208 total
▪ evening peak (1700 to 1800 hours)	101 arrive	97 depart	198 total
▪ daily total (0700 to 1900 hours)	794 arrive	776 depart	1570 total

8.4 The proposed development traffic generation was assigned to the highway network at a Design Year of 2018. The junctions where it was deemed that a

significant impact would occur were tested, with the results of the subsequent capacity assessments revealing that the highway network would continue to operate satisfactorily at the relevant Design Year. An accident study revealed that the additional traffic movements associated with the proposed development should not exacerbate any existing accident problems within the surrounding highway network.

- 8.5 **Drawing Number F09049/05** shows the proposed site access T-junction layout at Burton Road, which has been designed in accordance with Staffordshire County Council's previously adopted Highway Design Guide. The access junction would provide 4.5 x 215 metres visibility splays and a 3 metres wide shared footway/cycleway extending from the site to the north along Burton Road to tie in with the existing facilities.
- 8.6 **Drawing Number F08049/06** shows the proposed site access ghost island T-junction layout at the A511. The access junction would provide 4.5 x 215 metres visibility splays and includes footways extending from the site in both directions along the A511, as well as proposed pedestrian refuge islands to tie these footways in with the existing facilities on the opposite side of the carriageway.
- 8.7 The proposed development should provide adequate levels of parking within its layout. Based on both East Staffordshire parking standards and recent residential parking research, the site should provide between 425 and 552 spaces. In addition, based on the East Staffordshire parking standards, the proposed employment development should provide a maximum of 67 spaces. The trip generation calculations for the employment development show that it could generate a peak parking accumulation of 67 vehicles. Hence, the proposed employment development should provide 67 spaces initially, which could subsequently be reduced in line with a travel plan at the site. The site layout should also incorporate adequate turning heads for service vehicle manoeuvres.
- 8.8 Existing opportunities to access the site by sustainable modes are very good. There is a comprehensive network of footways surrounding the site within Tutbury, which would be accessible to/from the site once the proposed improvements to pedestrian facilities are included. All of Tutbury is within a

reasonable two kilometres walking distance of the site. Many areas surrounding Tutbury can be reached within a five kilometres cycle distance of the site and the advisory cycle routes in the local area, along with the general layout of the highway network in the vicinity of the site, should be adequate to accommodate cycle journeys. There are regular bus services which travel to key local destinations which stop within 400 metres of the northern site boundary, whilst Tutbury and Hatton Train Station is located approximately 1.25 kilometres from the site and presents an opportunity to travel further afield.

- 8.9 Modal split data for the Tutbury area has shown that the proposed development would increase daily pedestrian trips by 204 and daily cycle trips by 45. It is considered that the proposed improvements to pedestrian facilities, along with the existing infrastructure in the surrounding area, would satisfactorily accommodate these increases. However, to ensure that demand for pedestrian and cycle travel is fully accommodated, it is recommended that both the residential and employment site layouts are developed to include a network of segregated footway/cycleways along key desire lines. These routes should include appropriate street lighting and infrastructure.
- 8.10 Inspection of the local highway authority's adopted parking standards confirms that B1 use developments should provide a minimum of one 'stand' per 300 sqm gross floor area, whilst residential dwellings should provide a minimum of 1 space per unit. It is therefore recommended that the proposed development should provide a minimum of 6 stands within the employment development, located within safe, convenient, and well lit areas. To satisfy the minimum requirements for the residential dwellings it is recommended that consideration be given to providing internal cycle parking within each unit, such as cycle racks within garages or stands within the property boundary. Alternatively, communal cycle parking could be provided within any courtyard areas.
- 8.11 The modal split data also shows that the proposed development would increase daily bus trips by 128 and daily train journeys by 23. The local highway authority has indicated that all dwellings/offices within the proposed residential development should be located within 400 metres of a bus stop. It is therefore recommended the developer should liaise with the local bus operator to secure a

diversion of the V1 (Villager) service, at a minimum frequency of 1 bus per hour in each direction. Any diversion of services within the site should be supported by bus shelters that are conveniently located in key areas and accessible by good pedestrian and cycle links. Alternatively, bus stops could be provided on the A511 close to the employment development, which would be served by route number 1 on weekdays and Saturdays. The presence of Tutbury and Hatton Train Station to the north of the site should accommodate the moderate increases in travel by this mode.

- 8.12 In conclusion, the proposed development should not result in any detrimental impact on the surrounding highway network. The proposed site access junctions would comply with relevant design guidance and should be acceptable to the local highway authority. The surrounding infrastructure, along with recommended improvements, should also satisfactorily accommodate any increases in pedestrian, cycle and public transport trips resulting from the proposed development. Consequently, the proposed development would satisfy the requirements contained within PPG13: Transport and should be acceptable to the local highway authority.

Route No.	Operator	Details	Frequency (services)			
			Weekdays		Saturday	Sunday
			peak am + pm	off peak		
1	Arriva	Uttoxeter-Tutbury-Burton	60 mins	60 mins	60 mins	No service
1a	Arriva	Tutbury-Rolleston-Burton	60 mins	60 mins	60 mins	No service
1e	Arriva	Uttoxeter-Tutbury-Burton	No service	No service	No service	2 hours
Villager (V1)	Trent Barton	Burton upon Trent-Tutbury-Derby	60 mins	60 mins	60 mins	2 hours

TABLE 1: DETAILS OF LOCAL BUS SERVICES

Location	Route from site	Population	Percentage of area within isochrone	P	T	P/T ²	Percentage of total P/T ²
RIPLEY	Route 1	18,988	90%	17089	25	27.34	0.73%
BELPER	Route 1	22,646	100%	22646	27	31.06	0.83%
DUFFIELD	Route 1	4,661	100%	4661	20	11.65	0.31%
DERBY	Route 1	238,284	100%	238284	16	930.80	24.85%
ASHBOURNE	Route 2	5,060	100%	5060	19	14.02	0.37%
LONG EATON	Route 3	47,148	100%	47148	25	75.44	2.01%
ASHBY-DE-LA-ZOUCH	Route 4	11,953	100%	11953	24	20.75	0.55%
CASTLE DONINGTON	Route 3	6,413	100%	6413	22	13.25	0.35%
MEASHAM	Route 5	5,098	100%	5098	24	8.85	0.24%
SWADLINCOTE	Route 4	42,287	100%	42287	16	165.18	4.41%
MELBOURNE	Route 3	4,800	100%	4800	20	12.00	0.32%
RUGELEY	Route 6	23,592	100%	23592	23	44.60	1.19%
BURTON UPON TRENT	5% Route 7a, 10% Route 7b, 15% Route 7c, 10% Route 7d, 10% Route 7e, 50% Route 7f	45,455	100%	45455	6	1262.64	33.71%
UTTOXETER	Route 2	12,548	100%	12548	14	64.02	1.71%
TUTBURY/HATTON	50% Route 8, 50% Route 9	3,185	100%	3185	2	796.25	21.26%
BARTON-UNDER-NEEDWOOD	Route 6	4,132	100%	4132	14	21.08	0.56%
BURNTWOOD	Route 10	29,952	20%	5990	28	7.64	0.20%
LICHFIELD	Route 10	29,666	100%	29666	21	67.27	1.80%
STAFFORD	Route 2	63,412	10%	6341	30	7.05	0.19%
CHEADLE	Route 2	10,745	100%	10745	24	18.65	0.50%
STOKE-ON-TRENT	Route 2	236,053	40%	94421	28	120.44	3.22%
TAMWORTH	Route 10	73,152	25%	18288	27	25.09	0.67%
					Totals	3745.07	100.00%

Route 1	A511(N) / A516(N)	Route 7c	A511(S) / various routes between A38 and A5121
Route 2	A511(N) / A50(W)	Route 7d	A511(S) / A5121(N) / various routes
Route 3	A511(N) / A516 / A50(E)	Route 7e	A511(S) / various routes between A5121 and A444
Route 4	A511 (S) (through burton and beyond)	Route 7f	A511(S) / A5121(S) / various routes between A511 and A38
Route 5	A511(S) / A444(S)	Route 8	Burton Road / various routes within Tutbury
Route 6	Burton Road / Iron Walls Lane / Belmot Road	Route 9	A511(N) / various routes within Hatton
Route 7a	A511(S) / Harehedge Lane / various routes	Route 10	A511(S) / A5121(S) / A38(S)
Route 7b	A511(S) / various routes between Harehedge Lane and A38		

TABLE 2 - RESULTS OF TRAFFIC DISTRIBUTION CALCULATIONS

Time Period	Arrive	Depart	Total	Parking Accumulation
0700 - 0800	12	2	14	2
0800 - 0900	44	7	51	12
0900 - 1000	19	1	20	49
1000 - 1100	10	10	20	67
1100 - 1200	10	16	26	67
1200 - 1300	9	13	22	61
1300 - 1400	8	4	12	57
1400 - 1500	3	1	4	61
1500 - 1600	6	8	14	63
1600 - 1700	4	17	21	61
1700 - 1800	3	36	39	48
1800 - 1900	2	4	6	15
Daily	141	132	273	13

note: initial parking accumulation figures calculated relative to initial occupancy at TRICS sites

**TABLE 3: PROPOSED EMPLOYMENT DEVELOPMENT TRAFFIC
GENERATION AND PARKING ACCUMULATION PROFILE**

Traffic scenario	Burton Road (north)		
	Site Access	left/right	ahead/right
2018 Morning peak hour with development	RFC value	9.10%	2.4%
	max queue (vehs)	0.31	0.00%
	av. delay (mins/veh)	0.13	0.1
2018 Evening peak hour with development	RFC value	5.60%	2.70%
	max queue (vehs)	0.1	0
	av. delay (mins/veh)	0.13	0.11

TABLE 4: SUMMARY RESULTS OF THE PROPOSED BURTON ROAD/SITE ACCESS T-JUNCTION PICADY ASSESSMENT

Traffic scenario	A511 (Southbound)		
	Site Access	left/right	right
2018 Morning peak hour with development	RFC value	21.90%	4.60%
	max queue (vehs)	0.3	0
	av. delay (mins/veh)	0.17	0.09
2018 Evening peak hour with development	RFC value	21.50%	4.30%
	max queue (vehs)	0.3	0
	av. delay (mins/veh)	0.18	0.1

TABLE 5: SUMMARY RESULTS OF THE PROPOSED A511/SITE ACCESS GHOST ISLAND T-JUNCTION PICADY ASSESSMENT

Traffic scenario	Arm A			Arm B		Arm C		Arm D	
	A511 (North)			Rolleston Lane		A511 (South)		Burton Road	
2018 AM peak hour with development	RFC value			19.90%		26.80%		30.00%	
	max queue (vehs)			0.2		0.3		0.4	
	av. delay (mins/veh)			0.04		0.05		0.70	
2018 PM peak hour with development	RFC value			15.20%		41.60%		27.20%	
	max queue (vehs)			0.2		0.7		0.4	
	av. delay (mins/veh)			0.04		0.05		0.07	

TABLE 6: SUMMARY RESULTS OF THE A511/BURTON ROAD/ROLLESTON LANE ROUNDABOUT ARCADY ASSESSMEN*

Traffic scenario	Arm A			Arm B		Arm C		Arm D	
	A511 (North)			A511 (East)		Bridge Street		Tutbury Mill access	
2018 AM peak hour with development	RFC value			56.80%		25.70%		21.80%	
	max queue (vehs)			1.3		0.3		0.3	
	av. delay (mins/veh)			0.08		0.04		0.06	
2018 PM peak hour with development	RFC value			53.80%		35.00%		26.00%	
	max queue (vehs)			1.2		0.5		0.4	
	av. delay (mins/veh)			0.08		0.05		0.06	

TABLE 7: SUMMARY RESULTS OF THE A511/BRIDGE STREET ROUNDABOUT ARCADY ASSESSMENT

Link Number	Link Description	2018 AM Peak Design Year 'With Development' Traffic		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	Total Delay (PCU/Hr)
1/1	Station Road - Left/Right/Ahead	87.4	25.1	25.1
2/1	Derby Road - Ahead/Left/Right	9.6	12.6	12.6
3/1	Malthouse Lane - Right/Ahead/Left	0.0	0.0	0.0
4/1 - 4/2	Uttoxeter Road - Ahead/Left/Right	82.4	9.9	9.9
		PRC (%)	Total Delay (pcu/hr)	Cycle Time
		3	19.67	270 secs

Link Number	Link Description	2018 PM Peak Design Year 'With Development' Traffic		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	Total Delay (PCU/Hr)
1/1	Station Road - Left/Right/Ahead	96.6	28.1	13.4
2/1	Derby Road - Ahead/Left/Right	61.1	12.7	3.5
3/1	Malthouse Lane - Right/Ahead/Left	0.0	0.0	0.0
4/1 - 4/2	Uttoxeter Road - Ahead/Left/Right	95.4	10.0	11.7
		PRC (%)	Total Delay (pcu/hr)	Cycle Time
		-7.4	28.53	270 secs

TABLE 8: SUMMARY RESULTS OF THE DERBY ROAD/UTTOXETER ROAD/STATION ROAD/MALTHOUSE LANE SIGNAL CONTROLLED CROSSROADS JUNCTION LINSIG ASSESSMENT

Traffic scenario	Uttoxeter Road		Uttoxeter Road		Derby Road (east)
		left	right	right	right
2018 Morning peak hour with development	RFC value	3.40%	59.80%	7.70%	
	max queue (vehs)	0	1.4	0.1	
	av. delay (mins/veh)	0.15	0.25	0.11	
2018 Evening peak hour with development	RFC value	91.10%	96.30%	2.90%	
	max queue (vehs)	3.2	10.9	0	
	av. delay (mins/veh)	1.08	0.73	0.1	
2018 Evening peak hour with no development	RFC value	46.10%	92.00%	2.80%	
	max queue (vehs)	1.6	8	0	
	av. delay (mins/veh)	0.59	0.59	0.1	

TABLE 9: SUMMARY RESULTS OF THE DERBY ROAD/UTTOXETER ROAD GHOST ISLAND T-JUNCTION PICADY ASSESSMENT

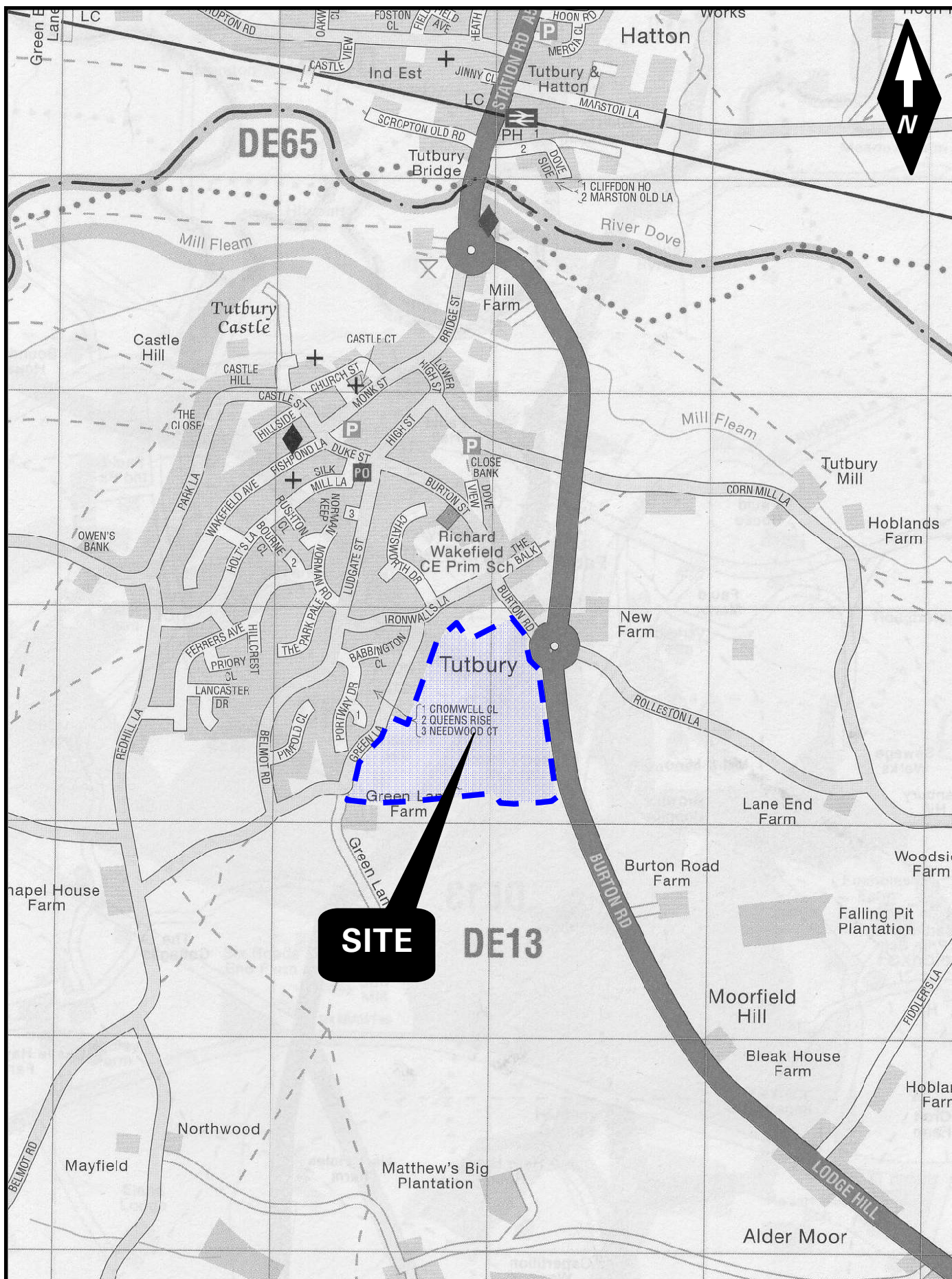
Traffic scenario	Arm A		Arm B		Arm C	
	A516 (North)		A5132		A516 (West)	
2018 AM peak hour with development	RFC value		32.20%		93.40%	
	max queue (vehs)		0.5		11	
	av. delay (mins/veh)		0.06		0.30	
2018 PM peak hour with development	RFC value		80.00%		46.80%	
	max queue (vehs)		3.9		0.9	
	av. delay (mins/veh)		0.14		0.09	
2018 AM peak hour no development	RFC value		31.10%		93.20%	
	max queue (vehs)		0.4		10.7	
	av. delay (mins/veh)		0.06		0.3	
					68.50%	
					2.1	
					0.13	

TABLE 10: SUMMARY RESULTS OF THE A516/A5132 ROUNDABOUT ARCADY ASSESSMENT

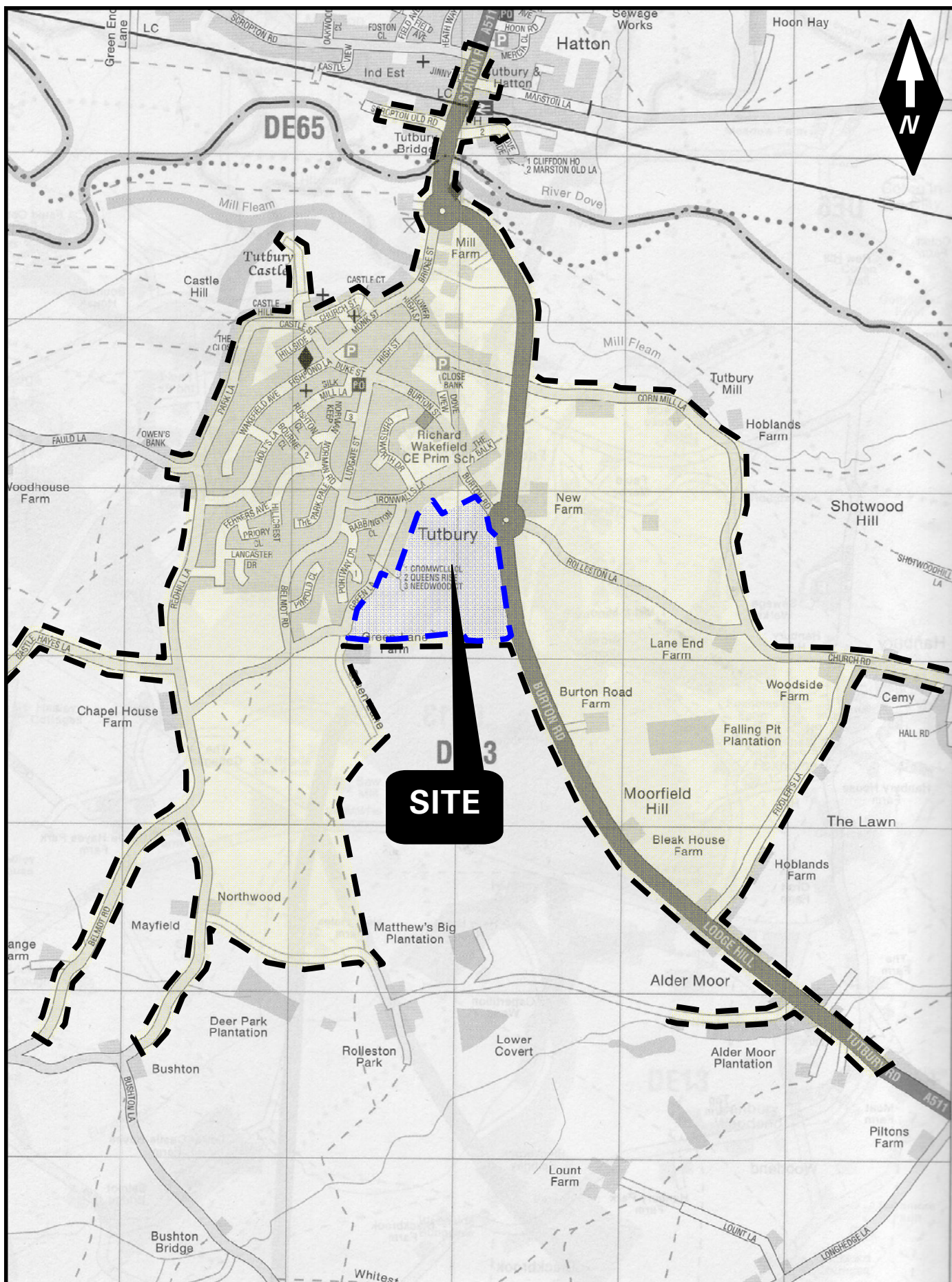
Link Number	Link Description	2018 AM Peak Design Year 'With Development' Traffic		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	Total Delay (PCU/Hr)
1/1	A511 (North) - Left/Ahead/Right	72.1	21.1	4.9
2/1	Harehedge Lane - Right/Ahead/Left	67.3	7.7	3.4
3/1 - 3/2	A511 (South) - Ahead/Left/Right	56.8	12.6	3.9
4/1	Beamhill Road - Left/Right/Ahead	71.9	6.4	3.4
		PRC (%)	Total Delay (pcu/hr)	Cycle Time
		24.9	15.57	180 secs

Link Number	Link Description	2018 PM Peak Design Year 'With Development' Traffic		
		Degree of Saturation (%)	Mean Maximum Queue (PCU)	Total Delay (PCU/Hr)
1/1	A511 (North) - Left/Ahead/Right	44.4	7.7	2.1
2/1	Harehedge Lane - Right/Ahead/Left	84.5	9.1	5.7
3/1 - 3/2	A511 (South) - Ahead/Left/Right	84.1	18.7	6.7
4/1	Beamhill Road - Left/Right/Ahead	75.6	5.9	3.7
		PRC (%)	Total Delay (pcu/hr)	Cycle Time
		6.5	18.22	180 secs

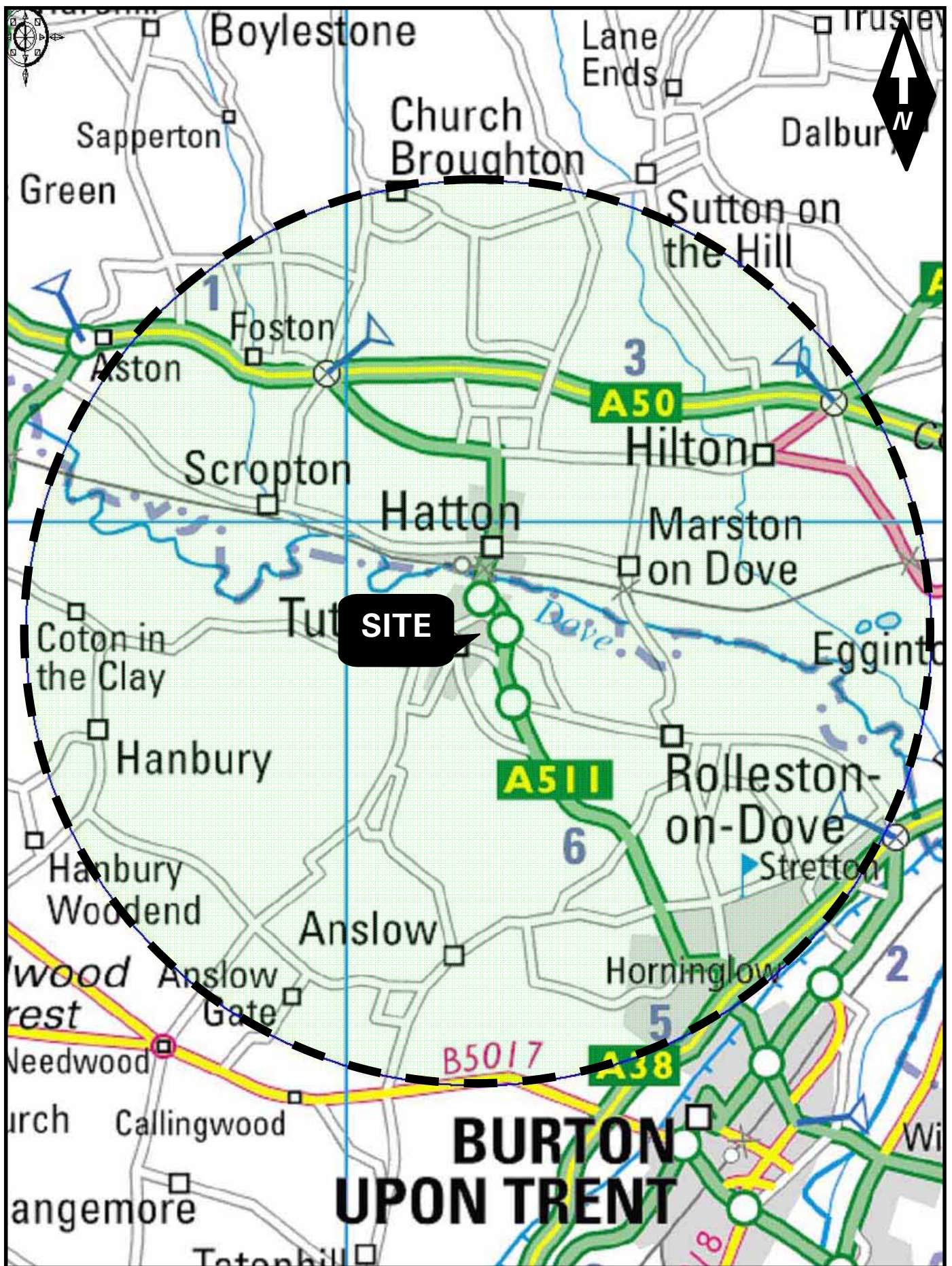
TABLE 11: SUMMARY RESULTS OF THE A511/HAREHEDGE LANE/BEAMHILL ROAD SIGNAL CONTROLLED CROSSROADS JUNCTION LINSIG ASSESSMENT



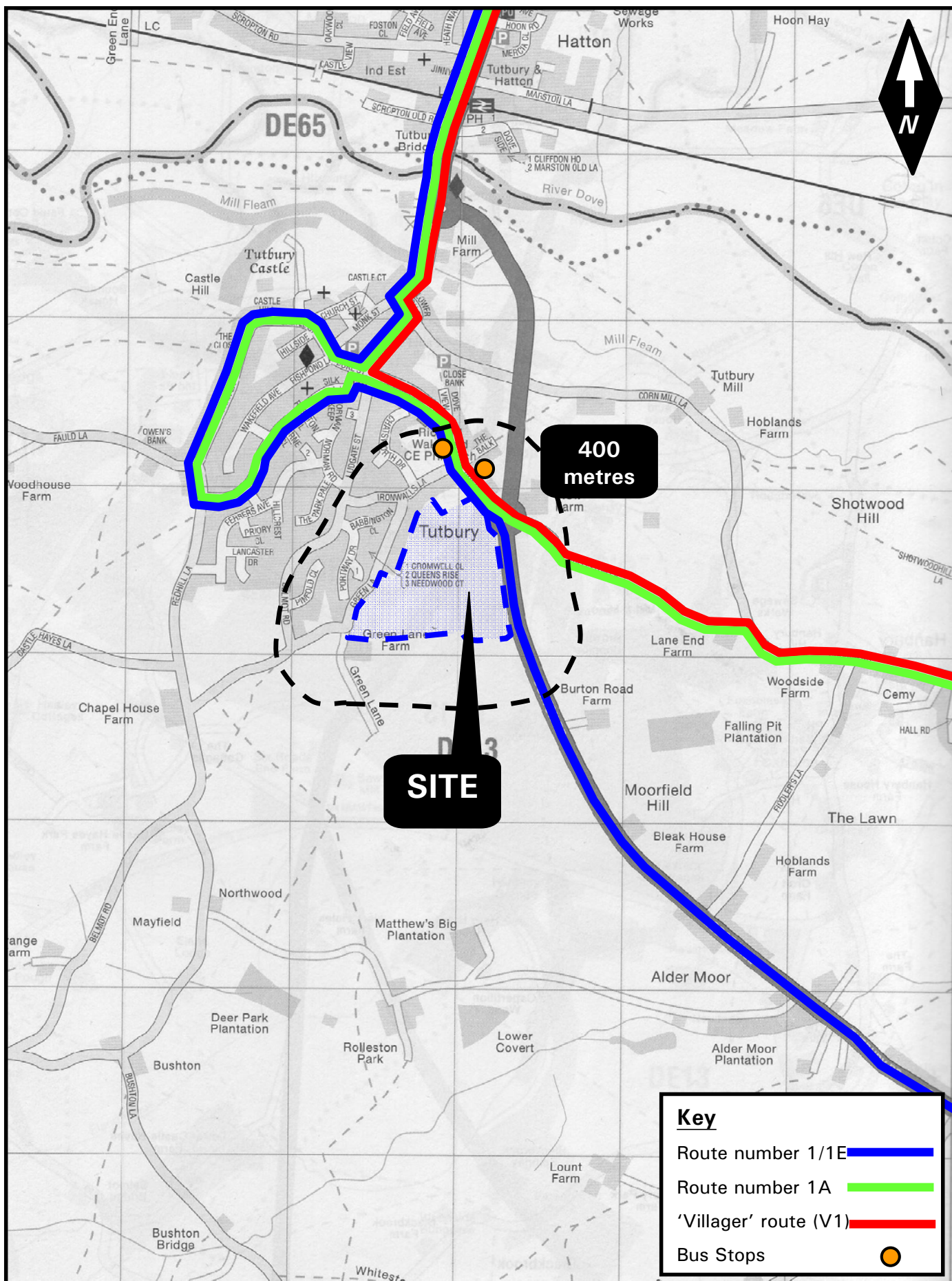
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DATE: 24/04/09				
DRAWN: AG	TITLE: SITE LOCATION PLAN	JOB NUMBER: F09049	FIGURE: 1	



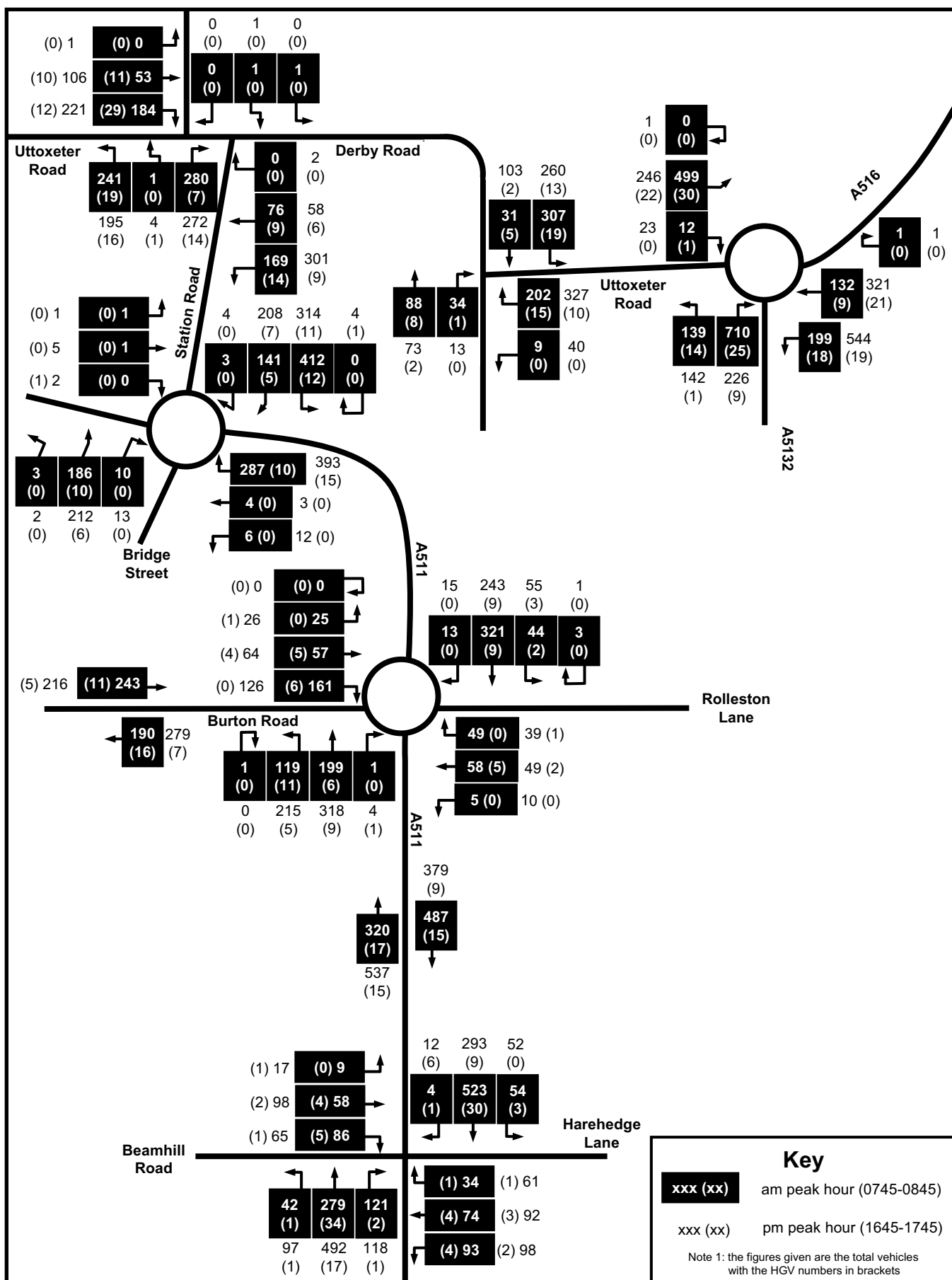
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DATE: 24/04/09	Peveril Homes Ltd	Land at Tutbury		
DRAWN: AG	TITLE:	JOB NUMBER:	FIGURE:	
	PEDESTRIAN ISOCHRONE (2 KILOMETRES)	F09049	2	



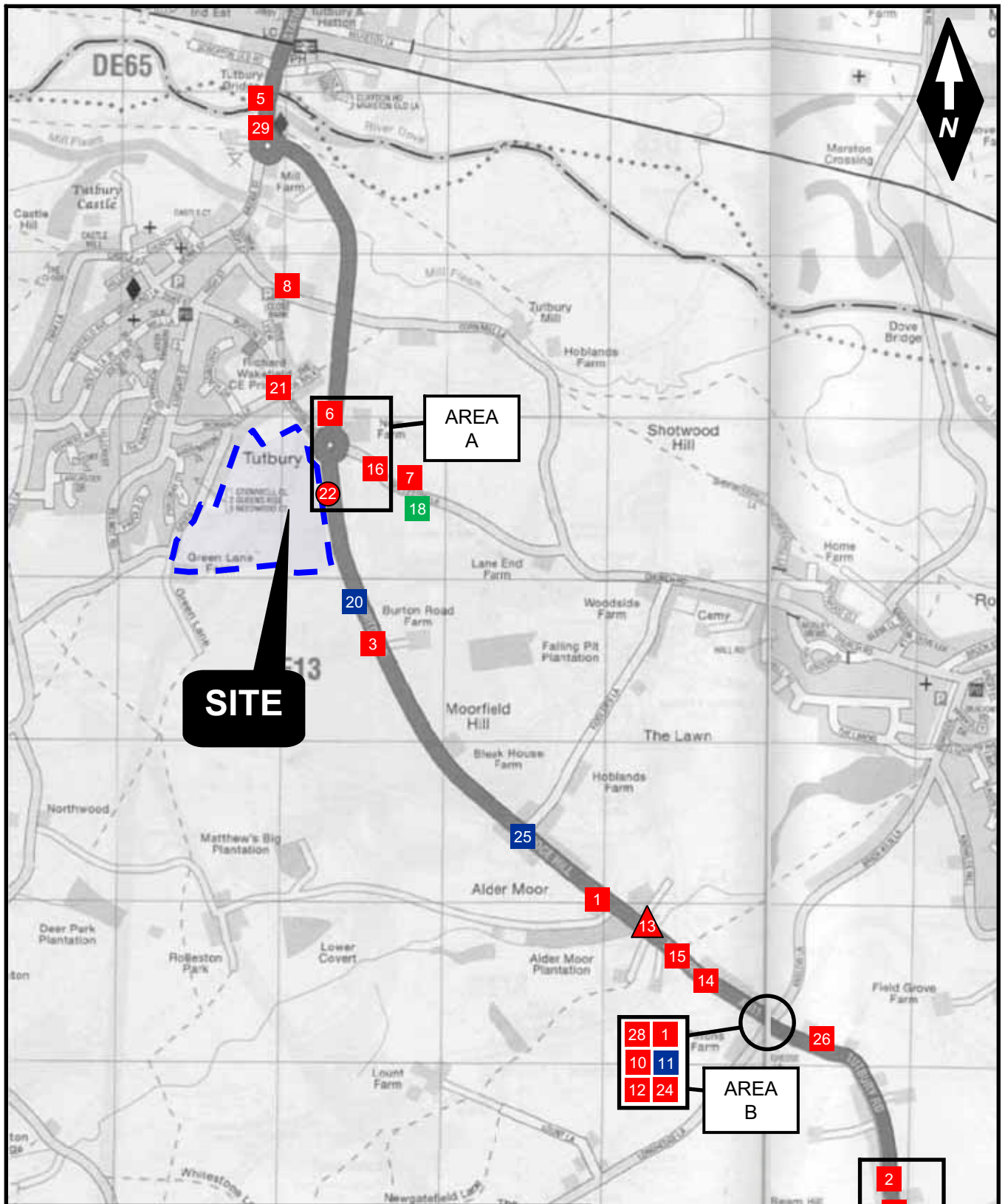
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DATE: 24/04/09			JOB NUMBER: F09049	FIGURE: 3
DRAWN: AG	TITLE: CYCLIST CATCHMENT AREA (5 KILOMETRES)			



SCALE: Do Not Scale	CLIENT:	JOB TITLE:		
DATE: 24/04/09	Peveril Homes Ltd	Land at Tutbury		
DRAWN: AG	TITLE:	JOB NUMBER:	FIGURE:	
	LOCAL BUS ROUTES	F09049	4	



SCALE: Do Not Scale	CLIENT:	JOB TITLE:		
DATE: 09/09/2009	Peveril Homes Ltd	Land at Tutbury		
DRAWN: AG	TITLE:	JOB NUMBER:	FIGURE:	
	2009 OBSERVED PEAK HOUR TRAFFIC FLOWS	F09049	5	



KEY

- = Vehicle
 = Cyclist
 = Pedestrian
x = Slight
x = Serious
x = Fatal

SCALE: **Do Not Scale**

CLIENT:

Peveril Homes Ltd

JOB TITLE:

Land at West Tutbury

DATE: **19/10/09**

DRAWN: **AG**

TITLE:

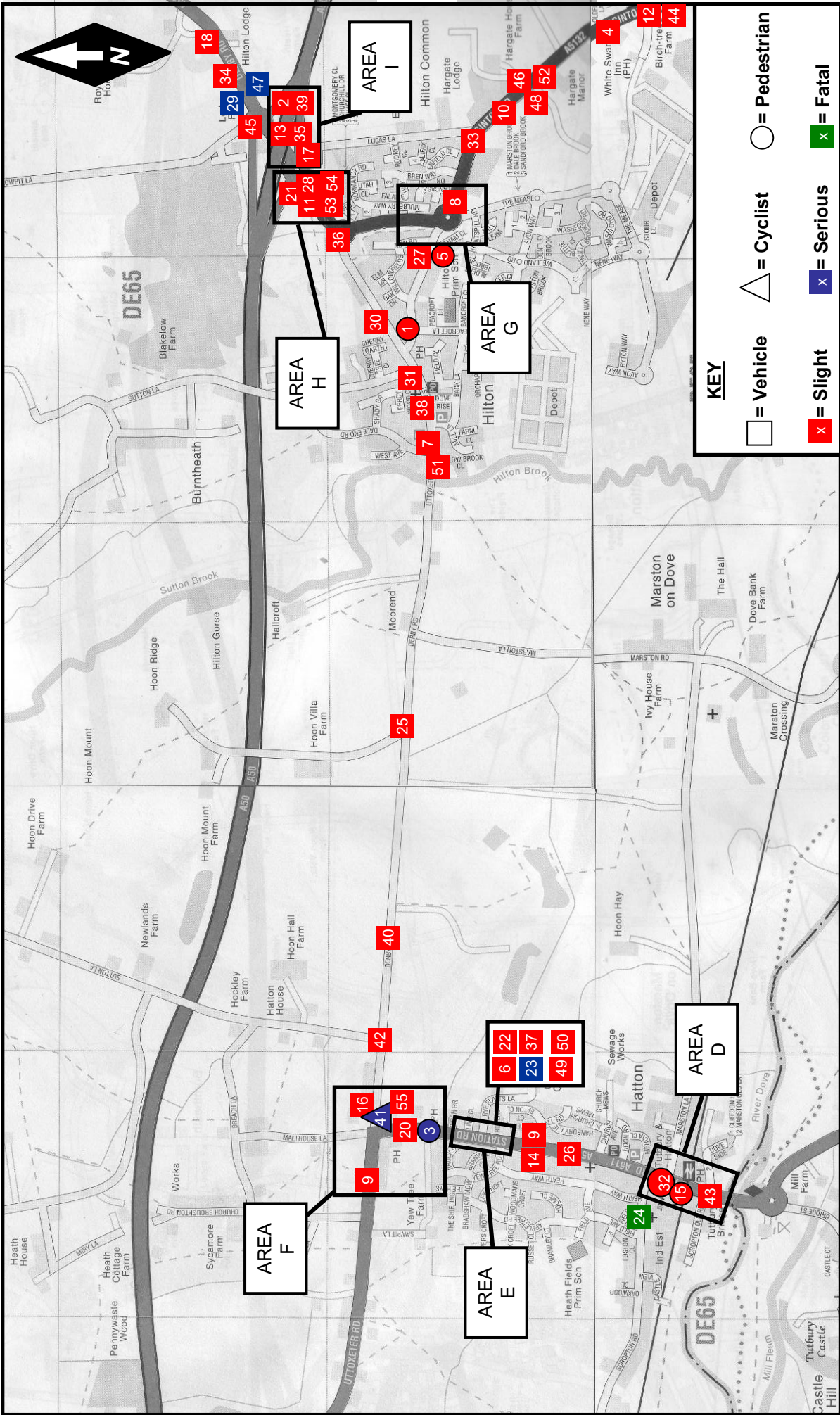
STAFFORDSHIRE AREA ACCIDENT LOCATIONS

JOB NUMBER:

F09049

FIGURE:

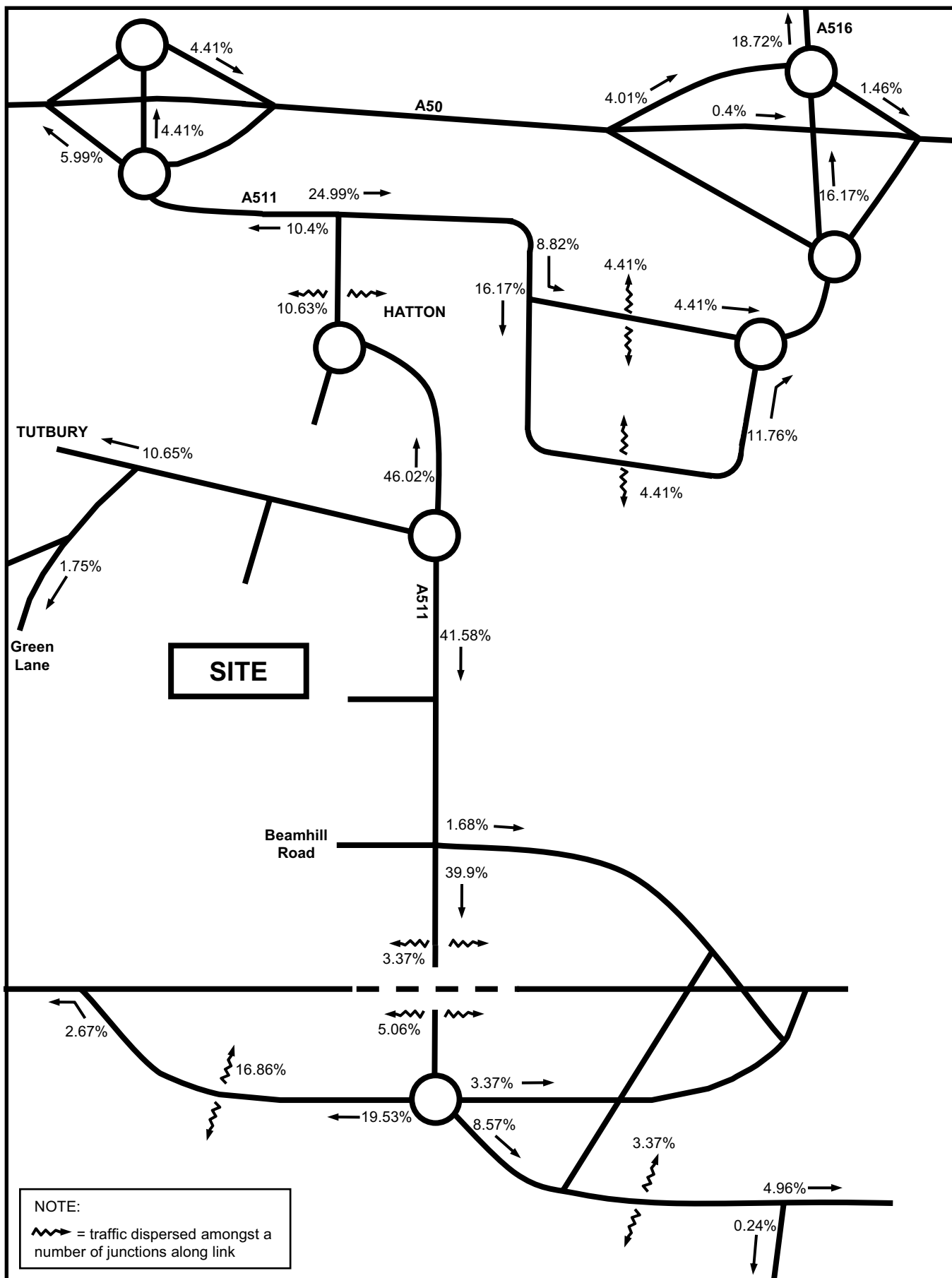
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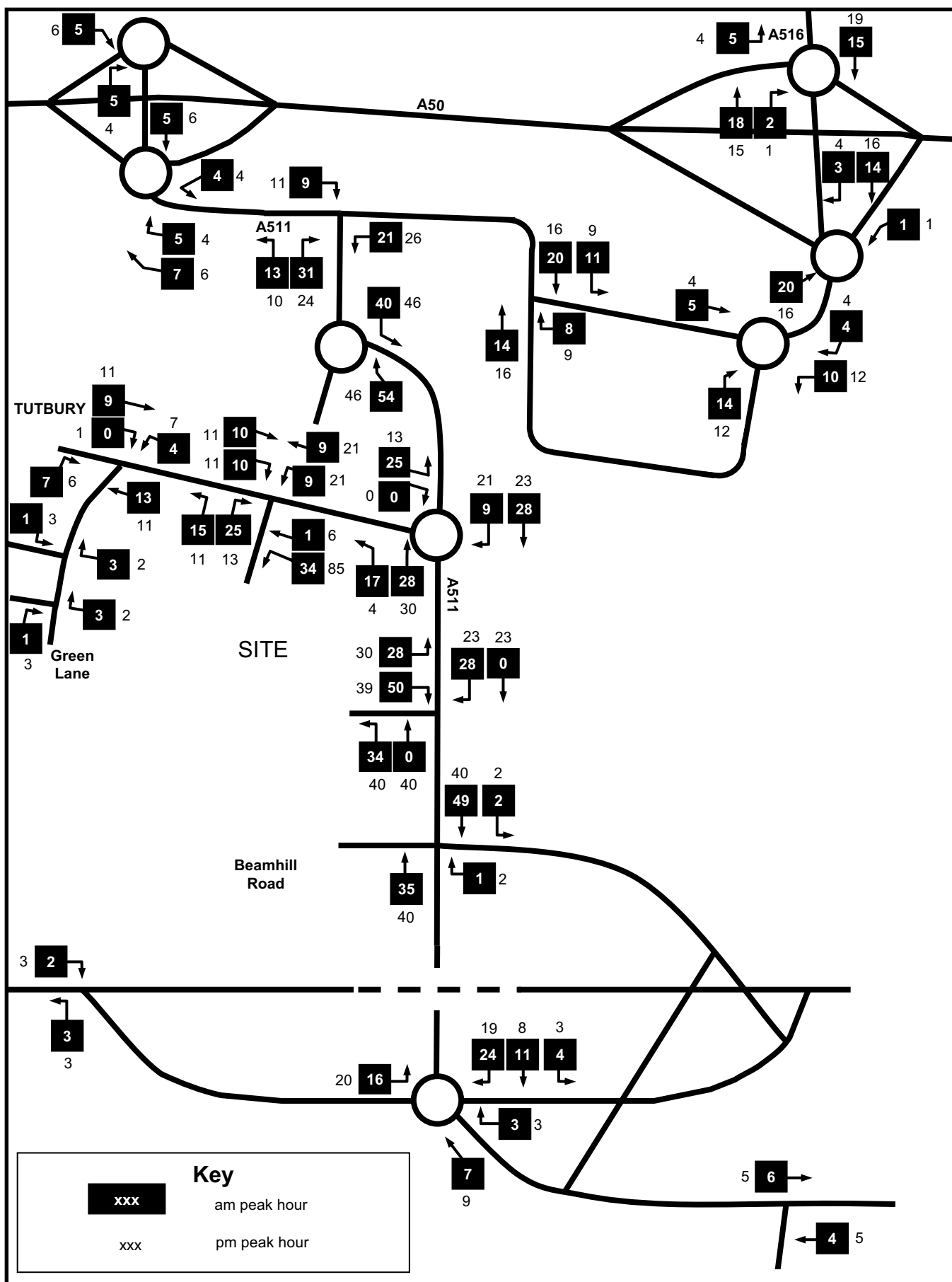
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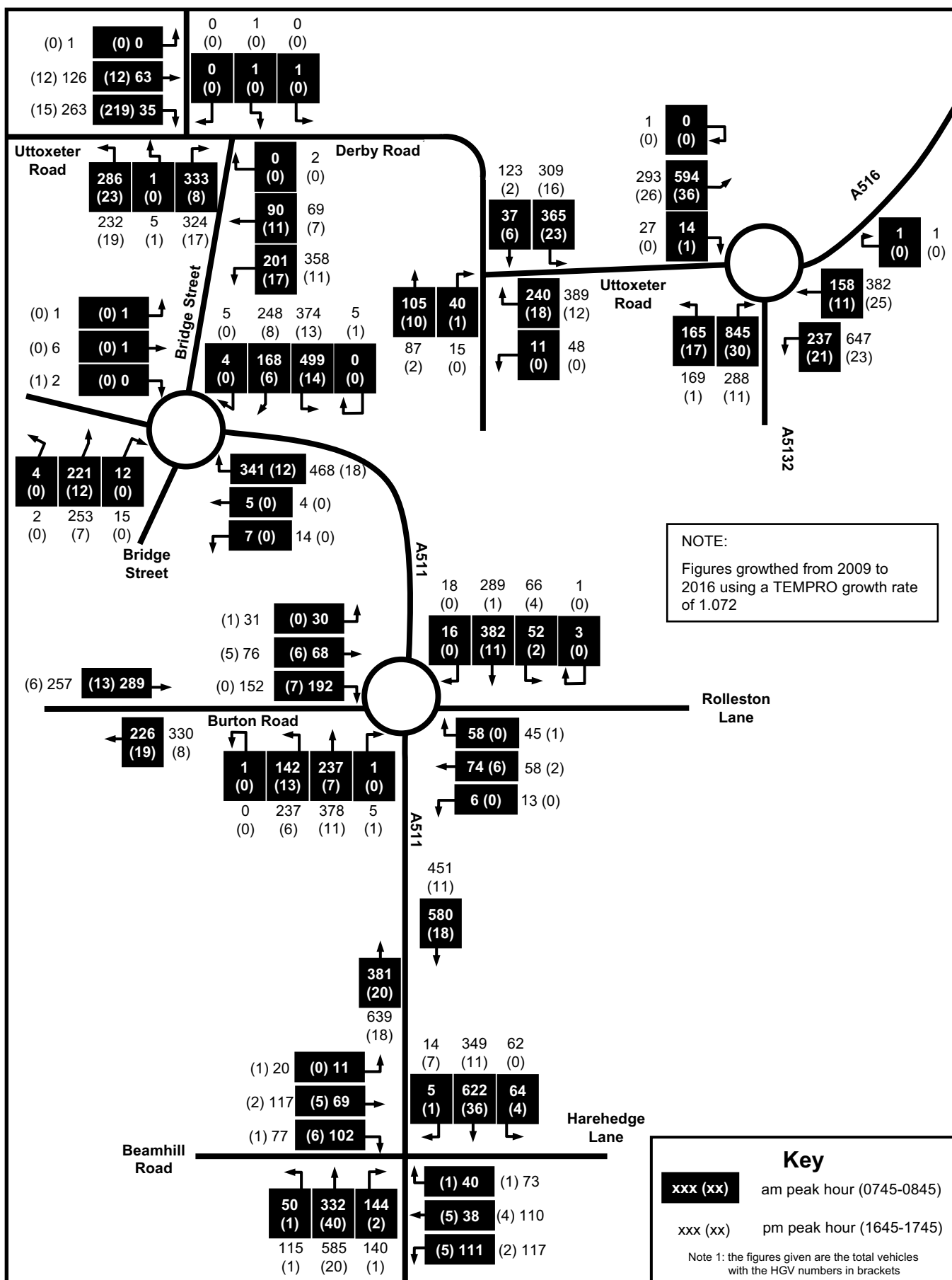
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DATE: 24/04/09				
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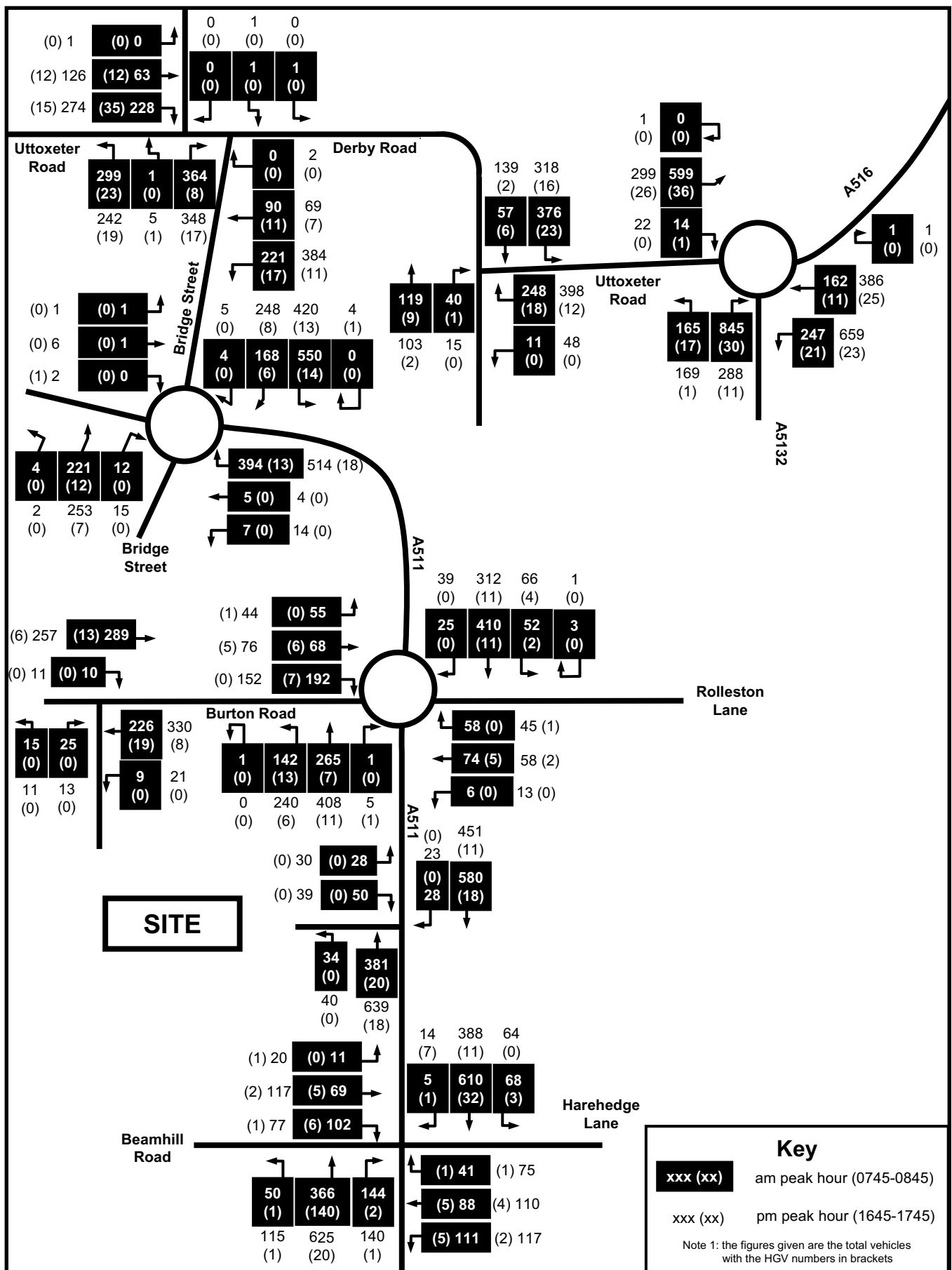
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DRAWN: AG	TITLE: PROPOSED DEVELOPMENT TRAFFIC DISTRIBUTION MODEL (DEPARTING SITE)		JOB NUMBER: F09049	FIGURE: 9



SCALE: Do Not Scale	CLIENT:	JOB TITLE:		
DATE: 09/09/2009	Peveril Homes Ltd	Land at Tutbury		
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				FIGURE: 10

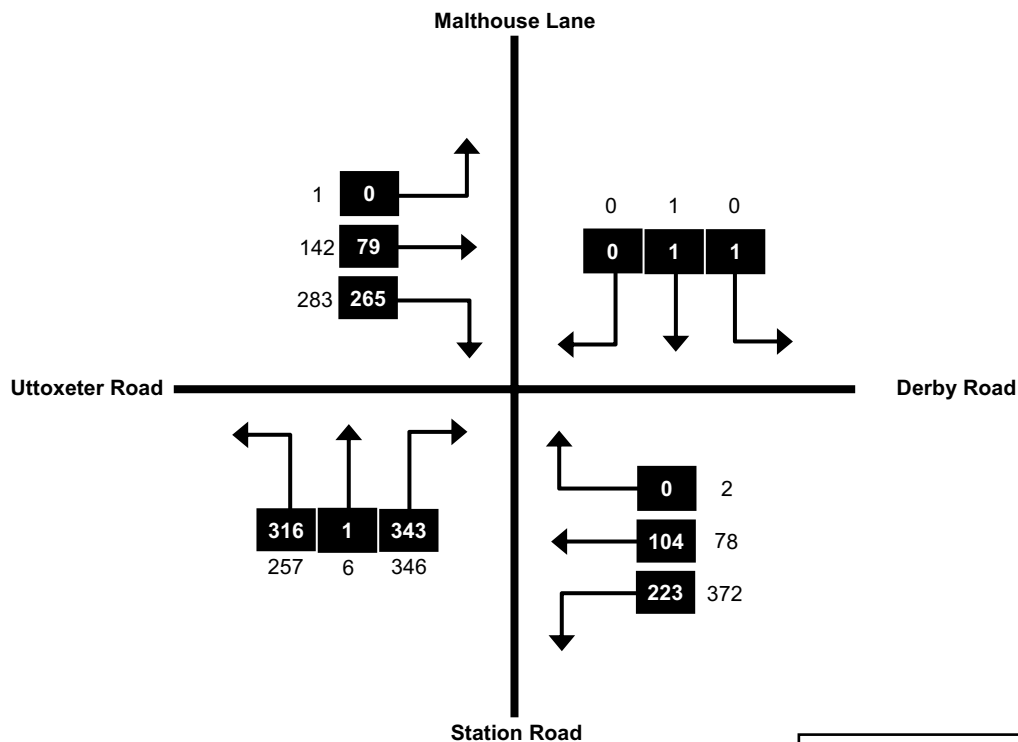


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DATE: 09/09/2009				
DRAWN: AG	TITLE: 2018 DESIGN YEAR 'WITHOUT DEVELOPMENT' TRAFFIC FLOWS	JOB NUMBER: F09049	FIGURE: 11	



SCALE: Do Not Scale	CLIENT:	JOB TITLE:		
DATE: 09/09/2009	Peveril Homes Ltd	Land at Tutbury		
DRAWN: AG	TITLE: 2018 DESIGN YEAR 'WITH DEVELOPMENT' TRAFFIC FLOWS	JOB NUMBER: F09049	FIGURE: 12	

WITHOUT DEVELOPMENT

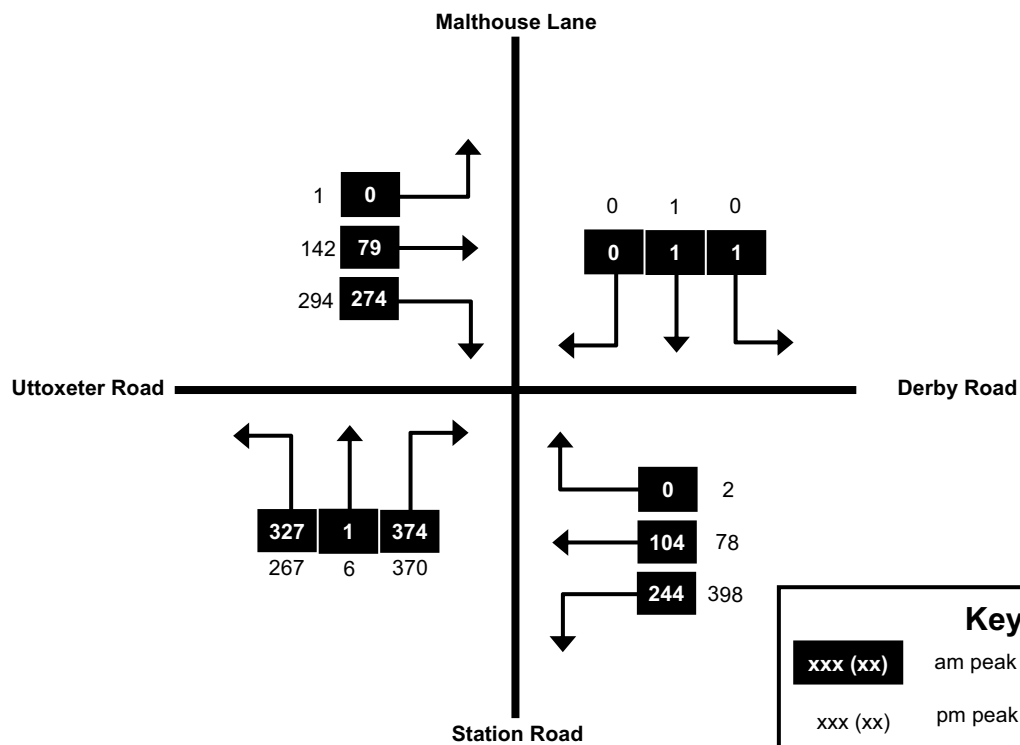


NOTE:

Light vehicle = 1 PCU

Heavy vehicles = 2.3 PCUs

WITH DEVELOPMENT



Key

xxx (xx)

am peak hour (0745-0845)

xxx (xx)

pm peak hour (1645-1745)

SCALE: **Do Not Scale**

CLIENT:

Peveril Homes Ltd

JOB TITLE:

Land at Tutbury

DATE: **09/09/2009**

TITLE:

**DERBY ROAD/UTTOXETER ROAD/STATION ROAD/
MALTHOUSE LANE SIGNAL CONTROLLED CROSSROADS
JUNCTION 2018 DESIGN YEAR PCU FLOWS**

JOB NUMBER:

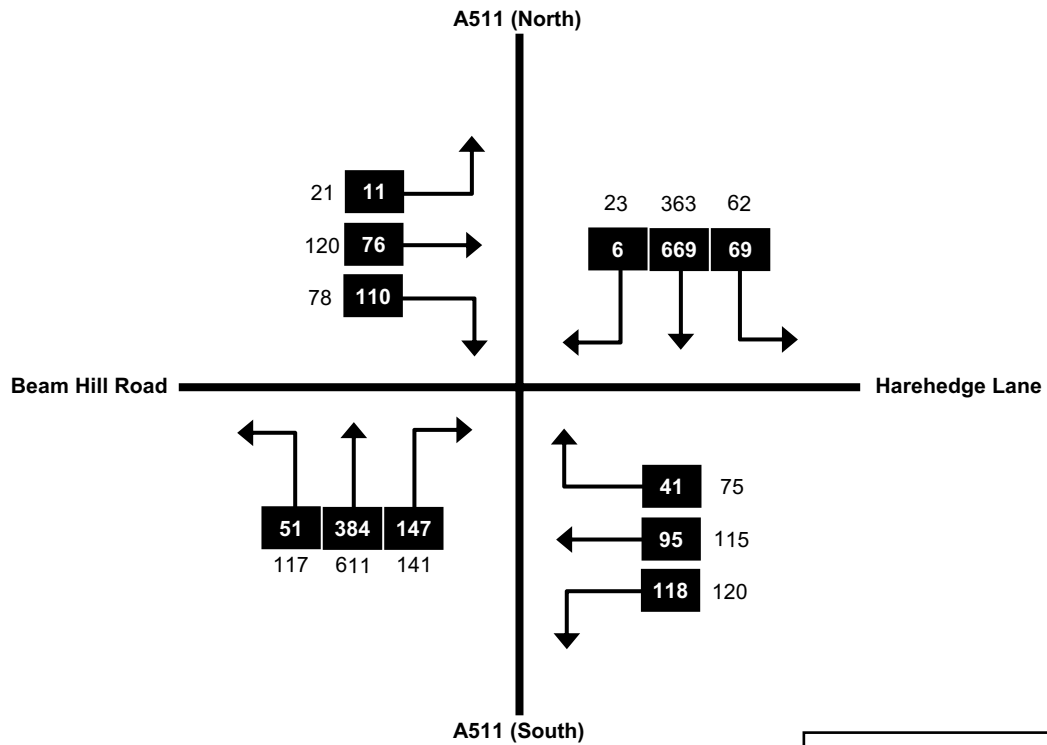
F09049

FIGURE:

13

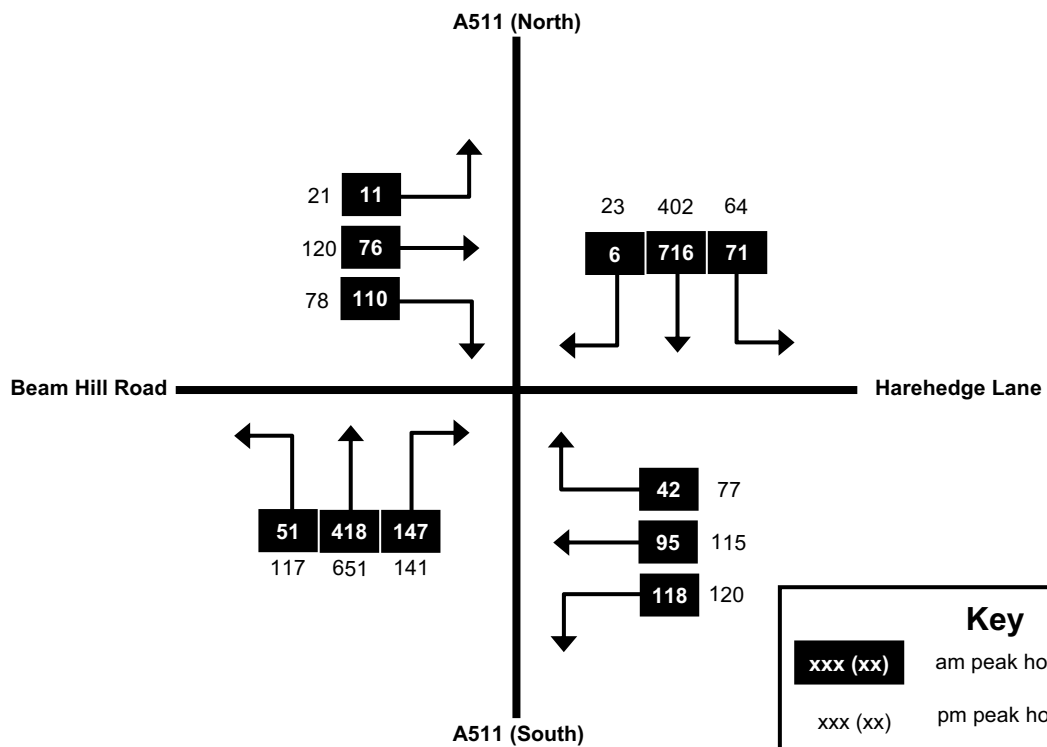
DRAWN: **AG**

WITHOUT DEVELOPMENT



NOTE:
Light vehicle = 1 PCU
Heavy vehicles = 2.3 PCUs

WITH DEVELOPMENT



Key
xxx (xx) am peak hour (0745-0845)
 xxx (xx) pm peak hour (1645-1745)

SCALE: **Do Not Scale**

CLIENT:

Peveril Homes Ltd

JOB TITLE:

Land at Tutbury

DATE: **09/09/2009**

TITLE:

A511/HAREHEDGE LANE/BEAMHILL ROAD SIGNAL CONTROLLED CROSSROADS JUNCTION 2018 DESIGN YEAR PCU FLOWS

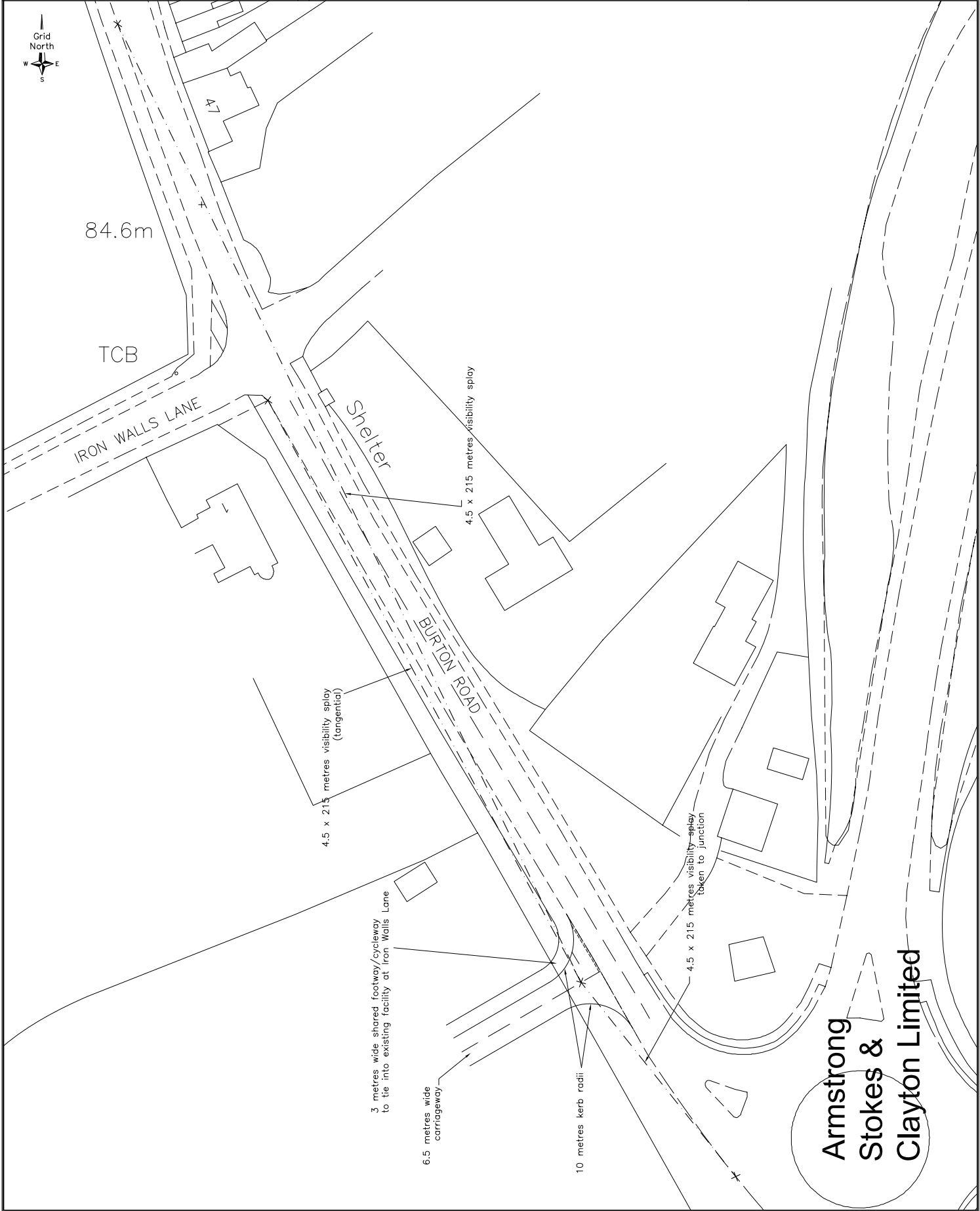
JOB NUMBER:

F09049

FIGURE:

14

DRAWN: **AG**



NOTES

DO NOT SCALE FROM THIS DRAWING.
ALL DIMENSIONS MUST BE
CHECKED/VERIFIED ON SITE

Armstrong Stokes & Clayton Limited

Civil Structural Engineering Consultants
The Box Street, Chalfont St Giles, Bucks, HP8 4JH
Tel: 01296 614 615 Fax: 01296 615 343
Email: info@armstrongstokesandclayton.co.uk

Client:

Peveril Homes Ltd

Job Title:

Land at Tibbury

Drawing Title:

Proposed Burton Road Site Access Arrangement

Drawing number:

F090049/05

Drawn:

AG

Date:

27/10/09

Scale:

1:500 @ A2



Mile Post

4.5 x 215 metres visibility
slopy

4.5 x 215 metres visibility
slopy down to tangent

4.5 x 215 metres visibility
slopy

7.2 metres wide carriageway

2 metres wide footways

to include left-hand

Def

indicative existing road markings

proposed pedestrian
refuge

existing footway

proposed pedestrian
refuge

existing footway to field

Armstrong
Stokes &
Clayton Limited

DO NOT SCALE FROM THIS DRAWING.
ALL DIMENSIONS MUST BE
CHECKED/VERIFIED ON SITE

Armstrong Stokes & Clayton Limited
104 B Church Lane, Clayton, Derby DE11 1AA
Tel: 01332 353100 Fax: 01332 353101
Email: sales@armstrongstokes.co.uk
www.armstrongstokes.co.uk
Project: Clayton Road
Client: Clayton Road
Project Manager: J. H. H. H.
Drawn: J. H. H. H.
Checked: J. H. H. H.
Date: 27/10/09
Scale: 1:500 @ A3

**APPENDIX A – SCOPING NOTE AND DETAILS OF
PRELIMINARY DISCUSSIONS WITH STAFFORDSHIRE
COUNTY COUNCIL**

**PROPOSED RESIDENTIAL/EMPLOYMENT DEVELOPMENT
ON LAND AT TUTBURY, STAFFORDSHIRE**

**SCOPING NOTE
(OCTOBER 2009)**

Introduction

- 1.1 Armstrong Stokes & Clayton have been appointed by Peveril Homes Ltd to provide traffic and transportation advice in respect of a proposed mixed residential and B1 office development on land at eastern edge of Tutbury. This Scoping Note has been produced to assist with initial discussions with the local highway authority in respect of the scheme, prior to a full Transport Assessment being completed for the site. The purpose of this Scoping Note is primarily to assess the extent to which the site will impact on the surrounding highway network and, hence, identify a suitable study area for further detailed analysis within the Transport Assessment. This Scoping Note will also provide a brief overview of the other transport issues that have been considered in respect of the proposed development, including parking, servicing, and opportunities for access by non-car modes.

Proposed development details

- 1.2 The proposed development would be located on an area of undeveloped land at the eastern edge of Tutbury, which is bound by Iron Walls Lane and Burton Road to the north, the A511 to the east, undeveloped land to the south and existing residential dwellings and Green Lane to the west. The site measures approximately 15 hectares in area. The development proposals comprise 200 residential dwellings served via an access at Burton Road and a B1 office development measuring 2000 sqm gross floor area, which would be served via the A511 (Tutbury Road). Also included within the site would be a sports pitch with associated changing facilities. It has been assumed for the purposes of this assessment that the development would have an opening year of 2012.

Traffic generation and distribution

- 1.3 The TRICS database was searched to identify suitable trip rates for the residential and employment aspects of the proposed development, which are as follows:

Residential development (per dwelling)

- morning peak (0800 to 0900 hours) 0.165 arrive 0.638 depart
- evening peak (1700 to 1800 hours) 0.531 arrive 0.335 depart
- daily total (0700 to 1900 hours) 2.767 arrive 3.072 depart

Employment development (per 100 sqm gross floor area)

- morning peak (0800 to 0900 hours) 0.300 arrive 0.333 depart
- evening peak (1700 to 1800 hours) 0.792 arrive 1.708 depart
- daily total (0700 to 1900 hours) 14.166 arrive 10.001 depart

- 1.4 The above trips rates were subsequently used to calculate the following peak hour and daily vehicle movements for the proposed development:

200 residential dwellings

- morning peak (0800 to 0900 hours) 33 arrive 128 depart 161 total
- evening peak (1700 to 1800 hours) 107 arrive 67 depart 174 total
- daily total (0700 to 1900 hours) 553 arrive 614 depart 1167 total

Employment development (2000 sqm gross floor area)

- morning peak (0800 to 0900 hours) 60 arrive 7 depart 67 total
- evening peak (1700 to 1800 hours) 16 arrive 34 depart 50 total
- daily total (0700 to 1900 hours) 283 arrive 200 depart 483 total

Total combined

- morning peak (0800 to 0900 hours) 93 arrive 135 depart 228 total
- evening peak (1700 to 1800 hours) 123 arrive 101 depart 224 total
- daily total (0700 to 1900 hours) 836 arrive 814 depart 1650 total

- 1.5 A PT² gravity model was then created to identify a suitable distribution model with which the above movements could be assigned to the surrounding highway network. The PT² calculations are shown within **Table 1**, which are based on local population data and a 30 minute drivetime from the site. The following method was subsequently used to create the final distribution model:

- The results of the PT² model were used to create an initial distribution model for vehicle movements to/from the site

- This model was then adjusted to account for the following factors:
 - Trips to Burton upon Trent were distributed based on the key areas of development within that area and the key routes drivers would be likely to take
 - Given that Tutbury and Hatton are counted as one area in terms of population data, 50% of the traffic associated with these areas was assigned to Tutbury and 50% to Hatton
 - Given that 'village only' traffic is permitted to travel through Hilton, the traffic associated with Hilton, the A50 and beyond was redistributed based on the following assumptions:
 - 15% of traffic travelling to/from Hilton
 - 15% of traffic travelling to/from the new residential/employment developments to the south of Hilton
 - 15% of traffic travelling to the A50 and A516 through Hilton
 - 40% of traffic travelling to the A50 and A516 via the bypass route to the south of Hilton
 - 15% of traffic accessing the A50 via junctions 6 rather than junction 5 (as an alternative to the detour around Hilton)

1.6 The resulting final traffic distribution model for the site is shown in **Figure 1**, which demonstrates that the main attractors/generators of traffic to/from the site would be Derby to the north-east and Burton upon Trent to the south. For simplicity, the model shows the distribution for vehicles departing the site, which would be reversed for vehicles arriving at the site. In addition, a significant amount of trips would also be associated with Tutbury and Hatton.

1.7 The peak hour traffic movements calculated for the proposed development were then assigned to the surrounding highway network in accordance with the distribution model shown in **Figure 1**. The results of this assignment are shown in **Figure 2**. This assignment reflects the fact that the traffic movements associated with the residential development would use the proposed junction at Burton Road, whilst vehicles associated with the employment use would use the proposed access at the A511.

1.8 Guidance on Transport Assessment advises a threshold of 30 two-way vehicle movements when considering where a development could have a significant traffic impact and, hence, the parts of the road network that require further detailed analysis. **Figure 2** demonstrates that peak hour increases of over 30 two-way movements would occur at the following key junctions within the surrounding highway network:

- proposed Burton Road/residential site access T-junction
- proposed A511/employment site access ghost island T-junction
- A511/Burton Road/Rolleston Lane roundabout
- A511/Bridge Street roundabout
- Derby Road/Utttoxeter Road/Station Road/Malthouse Lane signal controlled staggered T-junctions
- Derby Road/Utttoxeter Road ghost island T-junction
- series of roundabouts along bypass route to south of Hilton
- A516/A5132 roundabout
- Junction 5 at the A50 (2 linked grade separated roundabouts)
- A511/Harehedge Lane/Beamhill Road signal controlled T-junction
- A511/A5121 roundabout

For ease of reference, these junctions are highlighted within **Figure 3**, along with an indication of the peak hour traffic increases that would occur.

1.9 Some of the above junctions can be discounted in terms of further detailed analysis based on the following reasons:

- series of roundabouts along bypass route to south of Hilton – it should not be necessary to assess all of these junctions, given that there would not be a significant amount of movements coming from the residential and employment developments that would cause any significant conflict with the straight on movements associated with the proposed development.
- Junction 5 at the A50 (2 linked grade separated roundabouts) – it is not considered that these two roundabouts should require further detailed assessment, given that the traffic increases of up to 45 movements would not significantly exceed the 30 movements threshold and would be less than 1 vehicle per minute, which is unlikely to have a detrimental impact at a major strategic junction such as this.

- A511/A5121 roundabout – discounted based on recent advice from Staffordshire County Council, where it was indicated that the local highway authority would not require any detailed assessment of this particular junction.

1.10 Based on the above details, the key junctions within the surrounding highway network that would require further detailed analysis as part of the Transport Assessment are as follows:

- proposed Burton Road/residential site access T-junction
- proposed A511/employment site access ghost island T-junction
- A511/Burton Road/Rolleston Lane roundabout
- A511/Bridge Street roundabout
- Derby Road/Utttoxeter Road/Station Road/Malthouse Lane signal controlled staggered T-junctions
- Derby Road/Utttoxeter Road ghost island T-junction
- A516/A5132 roundabout
- A511/Harehedge Lane/Beamhill Road signal controlled T-junction

The above list of junctions therefore represents the study area that will be considered within the Transport Assessment.

Other transport considerations

1.11 To accommodate pedestrian movements associated with the site, the proposed site access junctions will include pedestrian footways that will tie into the existing facilities on the A511 and on Burton Road. In addition, pedestrian refuge islands would be included as part of the proposed site access arrangement at the A511. A number of the surrounding local areas are also within a reasonable 5 km cycle distance of the site. Cycle trips associated with the proposed development should be accommodated by the existing facilities including a number of advisory cycle routes through Tutbury and Hatton and a comprehensive network of cycle routes within Burton upon Trent and the surrounding areas.

1.12 Bus stops are currently located within a reasonable 400 metres walking distance of the site on Burton Road to the north, which serve route number 1, 1a, 1e and the 'Villager'. These routes currently run at a combined weekday peak hour frequency of approximately 3 services per hour in each direction, or one service every 20

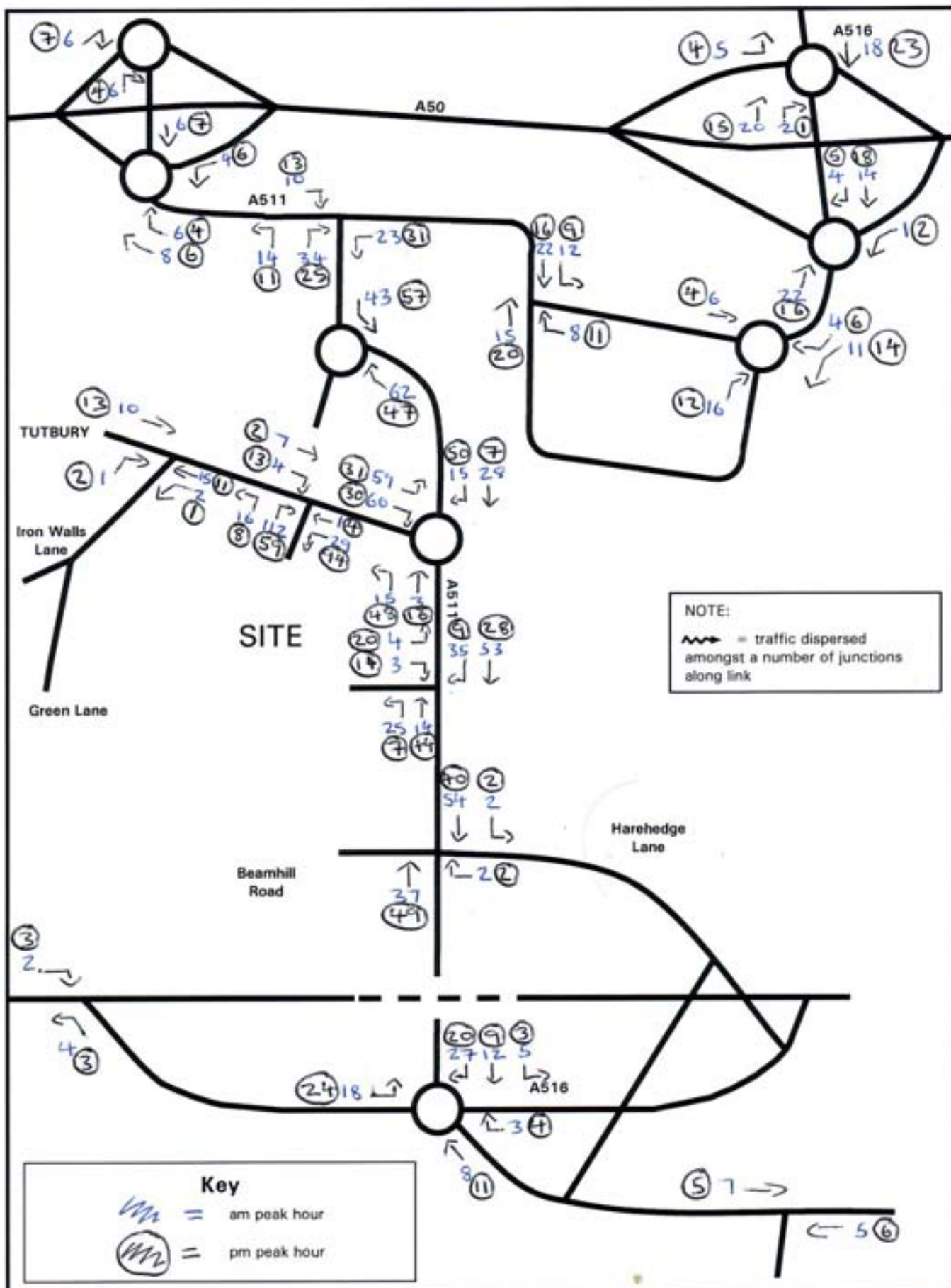
minutes on average. These routes serve a number of local and strategic areas including Tutbury, Hatton, Burton upon Trent and Uttoxeter. Strictly speaking, the proximity and frequency of these bus routes should be satisfactory to serve the proposed development. However, given the size and scale of the development, the Transport Assessment will investigate opportunities to provide improved access to public transport by possibly extending one or more of these routes into the site and providing suitable bus stops facilities within the site. As an alternative, the feasibility of providing stops on the A511 outside the site frontage will also be investigated.

- 1.13 The Transport Assessment will also recommend a suitable parking and servicing strategy for the proposed development. Based on local standards and also the latest residential parking research, it will be recommended that the residential development should provide between 340 and 400 spaces in total to serve 200 dwellings. Based on local standards, the employment use should provide a maximum of 67 parking spaces. The proposed site masterplan should also include adequate turning facilities to ensure that typical service vehicles could manoeuvre within the site.

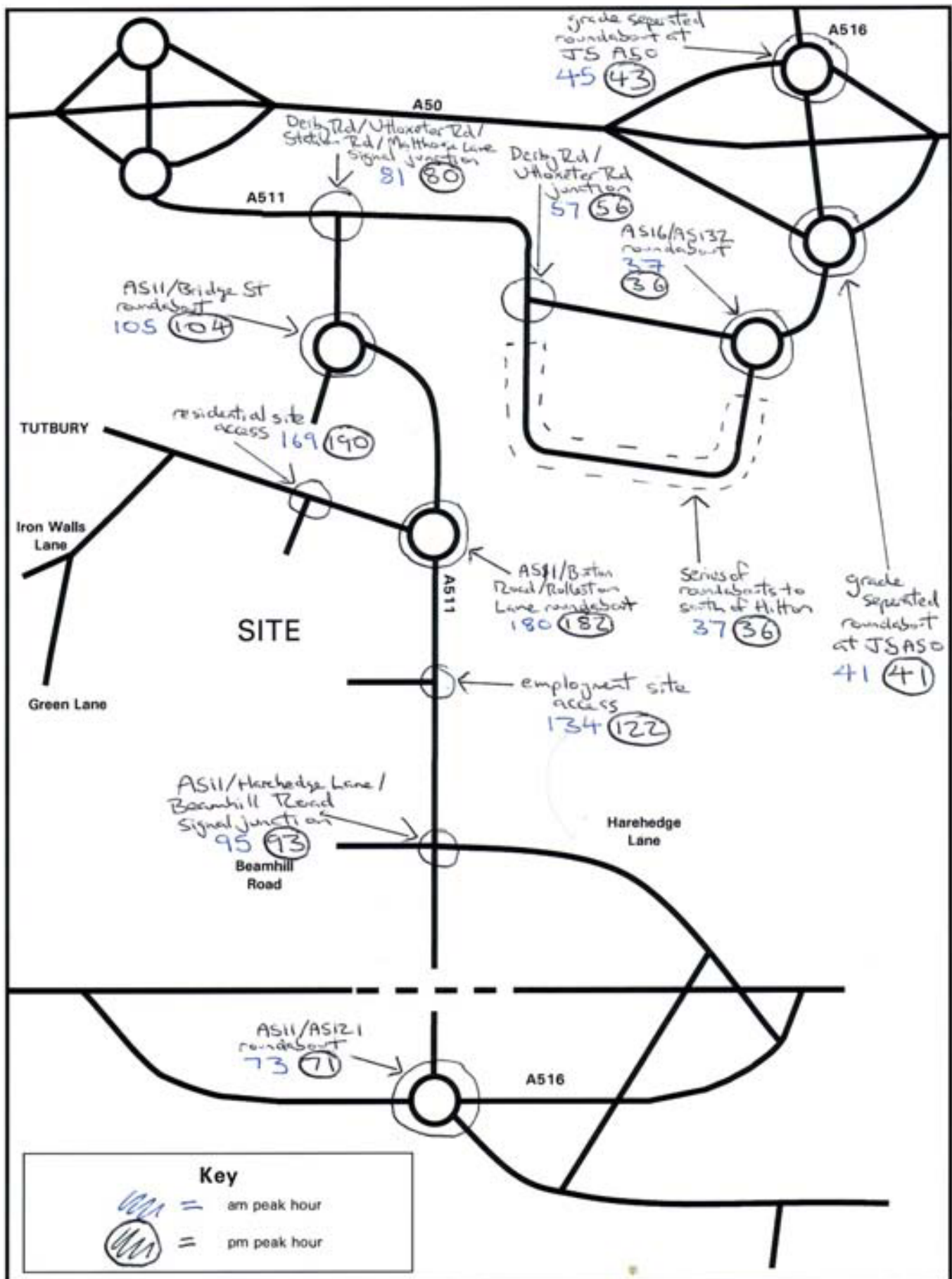
Location	Route from site	Population	Percentage of area within isochrone	P	T	P/T ²	Percentage of total P/T ²
RIPLEY	Route 1	18,988	90%	17089	25	27.34	0.73%
BELPER	Route 1	22,646	100%	22646	27	31.06	0.83%
DUFFIELD	Route 1	4,661	100%	4661	20	11.65	0.31%
DERBY	Route 1	238,284	100%	238284	16	930.80	24.85%
ASHBOURNE	Route 2	5,060	100%	5060	19	14.02	0.37%
LONG EATON	Route 3	47,148	100%	47148	25	75.44	2.01%
ASHBY-DE-LA-ZOUCH	Route 4	11,953	100%	11953	24	20.75	0.55%
CASTLE DONINGTON	Route 3	6,413	100%	6413	22	13.25	0.35%
MEASHAM	Route 5	5,098	100%	5098	24	8.85	0.24%
SWADLINCOTE	Route 4	42,287	100%	42287	16	165.18	4.41%
MELBOURNE	Route 3	4,800	100%	4800	20	12.00	0.32%
RUGELEY	Route 6	23,592	100%	23592	23	44.60	1.19%
BURTON UPON TRENT	5% Route 7a, 10% Route 7b, 15% Route 7c, 10% Route 7d, 10% Route 7e, 50% Route 7f	45,455	100%	45455	6	1262.64	33.71%
UTTOXETER	Route 2	12,548	100%	12548	14	64.02	1.71%
TUTBURY/HATTON	50% Route 8, 50% Route 9	3,185	100%	3185	2	796.25	21.26%
BARTON-UNDER-NEEDWOOD	Route 6	4,132	100%	4132	14	21.08	0.56%
BURNTWOOD	Route 10	29,952	20%	5990	28	7.64	0.20%
LICHFIELD	Route 10	29,666	100%	29666	21	67.27	1.80%
STAFFORD	Route 2	63,412	10%	6341	30	7.05	0.19%
CHEADLE	Route 2	10,745	100%	10745	24	18.65	0.50%
STOKE-ON-TRENT	Route 2	236,053	40%	94421	28	120.44	3.22%
TAMWORTH	Route 10	73,152	25%	18288	27	25.09	0.67%
		Totals		3745.07			100.00%

Route 1	A511(N) / A516(N)	Route 7c	A511(S) / various routes between A38 and A5121
Route 2	A511(N) / A50(W)	Route 7d	A511(S) / A5121(N) / various routes
Route 3	A511(N) / A516 / A50(E)	Route 7e	A511(S) / various routes between A5121 and A444
Route 4	A511 (S) (through burton and beyond)	Route 7f	A511(S) / A5121(S) / various routes between A511 and A38
Route 5	A511(S) / A444(S)	Route 8	Burton Road / various routes within Tutbury
Route 6	Burton Road / Iron Walls Lane / Belmot Road	Route 9	A511(N) / various routes within Hatton
Route 7a	A511(S) / Harehedge Lane / various routes	Route 10	A511(S) / A5121(S) / A38(S)
Route 7b	A511(S) / various routes between Harehedge Lane and A38		

TABLE 1 - RESULTS OF TRAFFIC DISTRIBUTION CALCULATIONS



SCALE: Do Not Scale	CLIENT: Peveril Homes Ltd	JOB TITLE: Land at Tutbury		
DATE: 26/10/2009				
DRAWN: ATB	TITLE: PROPOSED DEVELOPMENT TRAFIC ASSIGNMENT		JOB NUMBER: F09049	FIGURE: 2



SCALE: Do Not Scale	CLIENT: Peveril Homes Ltd	JOB TITLE: Land at Tutbury		
DATE: 26/10/2009			JOB NUMBER: F09049	FIGURE: 3
DRAWN: ATB	TITLE: KEY JUNCTICONS WHERE PEAK HOUR TRAFFIC INCREASES OF 30+ MOVEMENTS WOULD OCCUR			

**PROPOSED RESIDENTIAL/EMPLOYMENT DEVELOPMENT
ON LAND AT TUTBURY, STAFFORDSHIRE**

**SUMMARY OF POINTS DISCUSSED AT MEETING AT STAFFORDSHIRE
COUNTY COUNCIL OFFICES ON FRIDAY 30 OCTOBER 2009**

Introduction

This note provides a brief bulletpoint summary of the main points discussed at the above meeting:

1) Proposed vehicular access arrangements

- The two access locations shown on the latest site masterplan were agreed by the local highway authority to be suitable to serve the proposed development. These comprise access to the residential dwelling from Burton Road and access to the employment development from the A511.
- It was agreed that an access directly via a fifth arm the A511/Burton Road/Rolleston Lane roundabout would not be suitable to serve the development, given the potential accident risk that could be generated and the difficulties with achieving the required design criteria.
- It was agreed that a residential development of up to 220 dwellings could be served via a single point of access, as long as the internal site layout provides sufficient space to minimise the risk of a blockage preventing access by emergency vehicles.
- Given the above, there would be no requirement for a vehicular link between the residential and employment developments.
- Given the minimal right turn movements that would occur at the proposed residential site access at Burton Road, it was agreed that no right turn lane would be required.
- It was agreed that a right turn lane would be provided for the employment access at the A511

2) Study area

- Staffordshire County Council confirmed their agreement with the junctions identified within the scoping note for the study area.

- Staffordshire County Council indicated that they would require the proposed development traffic increases at the A511/Harehedge Lane/Beamhill Road signal controlled crossroads junction to be tested using their model of this junction.
- Derbyshire County Council initially identified some alternative junctions that they may require testing as part of the assessment, however following more detailed discussions it was agreed that the junctions identified within the scoping note would be sufficient.

3) Proposed development traffic generation

- Staffordshire County Council noted that they would require the traffic generation calculations to take person trips into consideration as well as vehicle trips. It was also noted that the residential trip rate contained within the scoping note was very robust and could be reconsidered.

4) Access by sustainable modes

- Staffordshire County Council confirmed that agreed travel plans for both the residential and employment uses would be required as part of the planning application.
- It was also confirmed that all dwellings and offices within the development would need to be within 350 to 400 metres of a bus stop.

APPENDIX B – 2009 TRAFFIC COUNT SURVEY RESULTS

Place:	Tutbury	Weather:	Sunny / Overcast	Survey Ref. No:	F09049	Page:	1
Date:	13/10/2009	Traffic entering on:	Tutbury Road Northbound	Client:		of:	4

Time	Left turn to: Beamhill Road										Straight on to: Tutbury Road North										Right turn to: Harehedge Lane										U turn to: Tutbury Road South										Total
Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	Vehs	PCUs									
0730				1			8	1	9										19	0	19							0	0	0		117									
0745				3			3	0	3										18	3	21							0	0	0		114									
0800				1			14	0	14										29	0	29							0	0	0		115									
0815				3			15	1	16										38	1	39							0	0	0		113									
0830				3			19	0	19										1	34	2	36						0	0	0		110									
0845				1			17	0	17										1	20	1	21						0	0	0		105									
0900				2			7	1	8										12	0	12							0	0	0		70									
0915							7	0	7										14	2	16							0	0	0		69									
1630							16	1	17										26	0	26							0	0	0		149									
1645							18	1	19										33	0	33							0	0	0		184									
1700							31	0	31										27	0	27							0	0	0		184									
1715				5			33	0	33										38	1	39							0	0	0		201									
1730				4			23	0	23										1	20	0	20						0	0	0		147									
1745				1			18	0	18										37	1	38							0	0	0		143									
1800				1			21	1	22										2	31	0	31						0	0	0		152									
1815				3			20	0	20										11	1	12							0	0	0		95									
Total							270	6	276									###	69	1373								407	12	419		2068									

Place:	Tutbury	Weather:	Sunny / Overcast	Survey Ref. No:	F09049	Page:	2
Date:	13/10/2009	Traffic entering on:	Beamhill Road	Client:		of:	4

Time	Left turn to: Tutbury Road North										Straight on to: Harehedge lane										Right turn to: Tutbury Road South										U turn to: Beamhill Road										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs		PCUs										
0730							4	0	4										14	1	15							14	0	14		33										
0745							2	0	2										18	2	20							2	0	0	39											
0800							0	0	0										23	1	24							1	0	0	35											
0815							2	0	2										23	1	22							1	0	0	48											
0830							5	0	5										7	1	8							1	0	0	32											
0845							5	0	5										13	0	13							1	0	0	43											
0900							3	0	3										17	2	19							1	0	0	32											
0915							1	0	1										8	0	8								1	0	0	28										
1630							4	0	4										20	0	20								32	0	0	56										
1645							6	1	7										16	2	18								1	1	12	37										
1700							5	0	5										23	0	23								15	0	0	43										
1715							3	0	3										34	0	34								20	0	0	57										
1730							2	0	2										23	0	23								18	0	0	43										
1745							4	1	5										17	0	17								15	0	0	37										
1800							6	1	7										15	0	15								19	1	20	42										
1815							2	0	2										10	1	11								16	0	0	29										
Total							54	3	57									264	10	274									294	9	303		634									

Place:	Tutbury	Weather:	Sunny / Overcast	Survey Ref. No:	F09049	Page:	3
Date:	13/10/2009	Traffic entering on:	Tutbury Road Southbound	Client:		of:	4

Time	Left turn to: Harehedge Lane										Straight on to: Tutbury Road South										Right turn to: Beamhill Road										U turn to: Tutbury Road North										Total	
	Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	Vehs	PCUs									
0730								9	1	10										5	1	6							0	0	0		99									
0745								9	0	9										0	1	1							0	0	0		128									
0800								10	1	11										0	0	0							0	0	0		157									
0815								12	1	13										1	0	1							0	0	0		144									
0830								20	1	21										2	0	2							0	0	0		152									
0845								13	0	13										6	0	6							0	0	0		141									
0900								8	0	8										3	1	4							0	0	0		117									
0915								3	1	4										0	0	0							0	0	0		79									
1630								15	0	15										4	0	4							0	0	0		77									
1645								7	0	7										2	0	2							0	0	0		83									
1700								20	0	20										4	0	4							0	0	0		101									
1715								13	0	13										0	6	6							0	0	0		105									
1730								12	0	12										2	0	2							0	0	0		70									
1745								8	0	8										2	0	2							0	0	0		83									
1800								13	0	13										5	0	5							0	0	0		95									
1815								11	0	11										4	0	4							0	0	0		89									
Total								183	5	188									####	70	1483								40	9	49		1720									

Place:	Tutbury	Weather:	Sunny / Overcast	Survey Ref. No:	F09049	Page:	4
Date:	13/10/2009	Traffic entering on:	Harehedge Lane	Client:		of:	4

Time	Left turn to: Tutbury Road South										Straight on to: Beamhill Road										Right turn to: Tutbury Road North										U turn to: Harehedge Lane										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	Vehs	PCUs										
0730							19	3	22											23	2	25							0	0	0	54										
0745							22	1	23											6	0	6							0	0	0	56										
0800							16	1	17											14	0	14							0	0	0	49										
0815							21	0	21											7	0	7							0	0	0	47										
0830							30	2	32											6	1	7							0	0	0	49										
0845							40	0	40											5	0	5							0	0	0	56										
0900							19	1	20											10	1	11							0	0	0	41										
0915							8	0	8											10	1	11							0	0	0	34										
1630							31	1	32											20	0	20							0	0	0	70										
1645							28	0	28											16	1	17							0	0	0	57										
1700							20	0	20											16	0	16							0	0	0	63										
1715							27	0	27											16	0	16							0	0	0	74										
1730							21	2	23											12	0	12							0	0	0	57										
1745							18	1	19											13	0	13							0	0	0	52										
1800							25	1	26											9	0	9							0	0	0	49										
1815							15	1	16											11	0	11							0	0	0	37										
Total							360	14	374											257	14	271							0	0	0	845										

Tutbury	Queue lengths (m)									
	Tutbury Road			Harehedge Lane			Tutbury Road			Activations
	Q	→	Activations	Q	→	Activations	Q	→	Activations	
Time										
07:30	20	0	0	15	0	0	20	0	0	0
07:35	10	0	0	20	0	0	20	0	0	0
07:40	15	0	0	25	15	0	40	0	0	5
07:45	20	0	0	25	10	0	20	0	0	0
07:50	20	0	0	30	0	0	25	0	0	0
07:55	25	0	0	25	15	0	30	0	0	0
08:00	20	0	0	20	0	0	25	0	0	0
08:05	100	0	0	15	0	0	20	0	0	10
08:10	150	15	0	25	0	0	20	0	0	40
08:15	20	0	0	30	0	0	30	0	0	10
08:20	20	0	0	25	0	0	25	0	0	10
08:25	90	0	0	20	0	0	40	25	15	0
08:30	70	2	0	20	0	0	20	0	0	40
08:35	120	0	0	50	0	0	20	0	0	20
08:40	90	0	0	30	0	0	25	0	5	15
08:45	100	0	0	35	0	0	25	0	0	25
08:50	90	0	0	10	0	0	35	0	0	30
08:55	85	0	0	60	0	0	15	0	0	15
09:00	85	0	0	40	15	0	40	0	0	40
09:05	40	0	0	45	20	0	20	0	0	25
09:10	35	0	0	20	0	0	5	0	0	10
09:15	35	0	0	10	0	0	10	0	0	10
09:20	25	0	0	20	0	0	20	0	0	10
09:25	40	0	0	30	0	0	25	0	0	10
09:30	20	0	0	45	0	0	10	0	0	30
			2			0			0	0



Arrow denotes approach lane / distance represents length of queue left at lights following each phase.

Tutbury	Queue lengths (m)									
	Tutbury Road			Harehedge Lane			Tutbury Road			Activations
	Q	→	Activations	Q	→	Activations	Q	→	Activations	
Time										
16:30	20	0	0	25	0	0	40	0	0	0
16:35	50	0	0	20	0	0	20	0	0	0
16:40	20	0	0	30	0	0	80	0	0	0
16:45	30	0	0	25	0	0	45	0	0	0
16:50	10	0	0	40	0	0	30	0	0	1
16:55	40	0	0	60	25	0	25	0	0	15
17:00	40	0	0	30	5	0	50	0	1	20
17:05	0	0	0	20	0	0	50	0	0	20
17:10	35	0	0	20	0	0	20	0	0	20
17:15	55	0	0	30	0	0	25	0	0	20
17:20	25	0	0	30	0	0	80	0	0	40
17:25	10	0	0	35	0	0	65	0	0	40
17:30	60	0	0	30	0	0	20	0	0	45
17:35	10	0	0	20	0	0	35	0	0	30
17:40	30	0	0	20	0	0	25	0	0	25
17:45	10	0	0	30	0	0	35	0	0	15
17:50	25	0	0	20	0	0	50	0	2	25
17:55	10	0	0	25	0	0	25	0	0	10
18:00	5	0	0	25	0	0	25	0	5	20
18:05	50	0	1	30	0	0	20	0	0	15
18:10	50	0	1	20	0	0	60	0	0	40
18:15	80	0	0	20	0	0	5	0	0	15
18:20	20	0	0	25	0	0	15	0	0	25
18:25	15	0	0	20	0	0	10	0	0	15
18:30	40	0	0	15	0	0	15	0	0	20
			2			0			5	2

Place:	Tutbury	Weather:	Sunny / Overcast	Survey Ref. No:	F09049	Page:	1
Date:	13/10/2009	Traffic entering on:	Bridge Street Northbound	Client:		of:	4

Time	Left turn to: Park										Straight on to: Bridge Street North										Right turn to: Burton Road East										U turn to: Bridge Street South										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	Vehs	PCUs										
0730							0	0	0										36	2	38							0	1	1		39										
0745							1	0	1										57	2	59							1	0	1		61										
0800							0	0	0										45	3	48							3	0	3		51										
0815							2	0	2										33	2	35							2	0	2		39										
0830							0	0	0										41	3	44							4	0	4		48										
0845							0	0	0										38	1	39							6	0	6		45										
0900							2	0	2										39	1	40							2	0	2		44										
0915							0	0	0										35	3	38							4	0	4		42										
1630							3	0	3										63	3	66							0	0	0		69										
1645							0	0	0										50	0	50							3	0	3		53										
1700							0	0	0										54	5	59							3	0	3		62										
1715							1	0	1										55	1	56							2	0	2		59										
1730							1	0	1										47	0	47							5	0	5		53										
1745							1	0	1										45	3	48							3	0	3		52										
1800							1	0	1										47	0	47							4	1	5		53										
1815							0	0	0										24	3	27							0	0	0		27										
Total							12	0	12										709	32	741							42	2	44		797										

Place:	Tutbury	Weather:	Sunny / Overcast	Survey Ref. No:	F09049	Page:	2
Date:	13/10/2009	Traffic entering on:	Park	Client:		of:	4

Time	Left turn to: Bridge Street North										Straight on to: Burton Road East										Right turn to: Bridge Street South										U turn to: Park										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	Vehs	PCUs										
0730							0	0	0										0	0	0								0	0	0											
0745							0	0	0										0	0	0								0	0	0											
0800							0	0	0										0	0	0								0	0	0											
0815							1	0	1										0	0	0								0	0	0	1										
0830							0	0	0										1	0	1								0	0	0	1										
0845							0	0	0										0	0	0								0	0	0	0										
0900							1	0	1										4	0	4								0	0	0	6										
0915							1	0	1										0	0	0								0	0	0	1										
1630							2	0	2										1	0	1								0	0	0	4										
1645							0	0	0										0	0	0								0	0	0	1										
1700							0	0	0										1	0	1								0	0	0	1										
1715							0	0	0										1	0	1								0	0	0	2										
1730							1	0	1										3	0	3								0	0	0	4										
1745							3	0	3										0	0	0								0	0	0	3										
1800							1	0	1										0	0	0								0	0	0	1										
1815							1	0	1										2	0	2								0	0	0	3										
Total							11	0	11										13	0	13								3	1	4	28										

Place:	Tutbury	Weather:	Sunny / Overcast	Survey Ref. No:	F09049	Page:	3
Date:	13/10/2009	Traffic entering on:	Bridge Street Southbound	Client:		of:	4

Time	Left turn to: Burton Road East										Straight on to: Bridge Street South										Right turn to: Park										U turn to: Bridge Street North										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	Vehs	PCUs										
0730							69	7	76											13	2	15							0	0	0	91										
0745							77	1	78											24	0	24							0	0	0	102										
0800							116	2	118											34	3	37							1	0	1	156										
0815							111	5	116											36	2	38							1	0	1	155										
0830							96	4	100											42	0	42							1	0	1	143										
0845							73	7	80											45	0	45							0	0	0	125										
0900							60	6	66											37	1	38							2	0	2	107										
0915							44	8	52											32	3	35							0	0	0	87										
1630							71	1	72											54	3	57							1	0	1	131										
1645							56	1	57											30	1	31							3	0	3	91										
1700							86	4	90											64	2	66							1	0	1	159										
1715							79	2	81											47	1	48							0	0	0	130										
1730							82	4	86											60	3	63							0	0	0	150										
1745							57	2	59											41	2	43							1	0	1	103										
1800							96	1	97											48	2	50							0	0	0	147										
1815							71	3	74											47	1	48							0	0	0	122										
Total						####	58	1302												654	26	680							11	0	11	1999										

Place:	Tutbury	Weather:	Sunny / Overcast	Survey Ref. No:	F09049	Page:	4
Date:	13/10/2009	Traffic entering on:	Burton Road Westbound	Client:		of:	4

Time	Left turn to: Bridge Street South										Straight on to: Park										Right turn to: Bridge Street North										U turn to: Burton Road East										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Light	Heavy	Vehs	PCUs	Vehs	PCUs										
0730							1	0	1										76	3	79							0	0	0	80											
0745							2	0	2										92	3	95							0	0	0	98											
0800							2	0	2										67	0	67							0	0	0	70											
0815							0	0	0										74	4	78							0	0	0	79											
0830							2	0	2										44	3	47							0	0	0	50											
0845							4	0	4										52	9	61							0	0	0	65											
0900							6	1	7										41	5	46							2	0	2	56											
0915							2	0	2										42	9	51							0	0	0	53											
1630							1	0	1										80	1	81							1	0	1	83											
1645							0	0	0										85	4	89							0	0	0	90											
1700							6	0	6										108	4	112							0	0	0	118											
1715							2	0	2										104	5	109							0	0	0	112											
1730							4	0	4										81	2	83							0	0	0	88											
1745							1	0	1										80	4	84							0	0	0	85											
1800							2	0	2										82	4	86							0	0	0	88											
1815							1	0	1										51	3	54							0	0	0	57											
Total							36	1	37									####	63	1222								3	0	3	1272											

Hatton	Queue lengths (m)								
Time	Station Road		Uttoxeter Road			Malthouse Lane		Derby Road	
	Q	↑	Q	↑	↑	Q	↑	Q	↑
07:30	0	35	0	5	15	0	0	0	20
07:35	0	45	0	5	5	0	0	0	20
07:40	0	60	0	0	25	0	0	0	20
07:45	10	80	0	0	10	0	0	0	30
07:50	15	85	0	0	10	0	0	0	25
07:55	15	85	0	0	20	0	0	0	30
08:00	0	45	0	5	15	0	0	0	25
08:05	40	95	0	0	40	0	0	0	30
08:10	30	50	0	5	15	5	0	0	20
08:15	20	85	0	10	5	0	0	0	40
08:20	0	80	0	5	30	0	0	0	35
08:25	0	70	0	10	15	0	0	0	15
08:30	0	55	0	0	10	0	0	0	15
08:35	0	50	0	15	30	0	0	0	10
08:40	0	50	0	5	50	0	0	0	25
08:45	0	30	0	5	15	0	0	0	30
08:50	0	45	5	10	40	0	0	0	55
08:55	0	65	0	0	35	0	0	0	45
09:00	0	60	0	5	5	0	0	0	50
09:05	0	80	0	10	30	0	0	0	40
09:10	0	60	0	0	10	0	0	0	25
09:15	0	40	0	10	15	0	0	0	25
09:20	0	15	0	5	15	5	0	0	25
09:25	0	20	0	0	30	0	0	0	15
09:30	0	35	0	5	10	0	0	0	15

↑ Arrow denotes approach lane

Q

Distance represents length of queue left at lights following each phase

Hatton	Queue lengths (m)									
Time	Station Road		Uttoxeter Road			Malthouse Lane		Derby Road		
	Q	↑	Q	↑	↑	Q	↑	Q	↑	
16:30	0	10	0	10	15	0	0	0	25	
16:35	0	15	0	5	5	0	0	0	45	
16:40	0	85	0	5	15	0	0	0	40	
16:45	100	130	0	5	5	0	0	0	30	
16:50	0	50	0	0	5	0	0	0	20	
16:55	0	80	0	10	15	0	0	0	15	
17:00	0	80	0	5	60	0	0	10	80	
17:05	30	120	30	5	50	0	0	10	70	
17:10	20	120	0	5	55	0	0	0	70	
17:15	0	50	0	5	40	0	0	0	75	
17:20	0	30	15	5	50	0	5	0	45	
17:25	35	85	0	10	25	0	0	0	45	
17:30	40	80	15	15	15	0	0	30	45	
17:35	0	20	0	5	25	0	0	20	85	
17:40	0	80	10	5	30	0	0	30	90	
17:45	0	40	15	10	45	0	0	0	60	
17:50	0	40	0	5	20	0	0	5	30	
17:55	0	50	0	5	15	0	5	0	75	
18:00	0	55	0	5	20	0	0	0	40	
18:05	20	60	0	5	40	0	5	0	75	
18:10	40	110	5	0	25	0	0	0	60	
18:15	20	70	0	5	65	0	15	0	35	
18:20	0	25	5	20	30	0	5	0	70	
18:25	0	50	20	10	40	0	0	0	30	
18:30	0	10	0	5	10	0	0	0	15	

Place:	Hilton	Weather:	Rain / Overcast	Survey Ref. No:	F09049	Page:	1
Date:	22/10/2009	Traffic entering on:	Derby Road Westbound	Client:		of:	3

Time	Left turn to: NA										Straight on to: Derby Road West										Right turn to: Uttoxeter Road										U turn to: Derby Road East										Total
	Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	Vehs	PCUs								
0730								0	0	0									23	1	24								10	0	10				34						
0745								0	0	0									17	2	19								8	1	9				28						
0800								0	0	0									23	0	23								5	0	5				28						
0815								0	0	0									14	3	17								2	0	2				19						
0830								0	0	0									26	3	29								18	0	18				47						
0845								0	0	0									18	2	20								5	0	5				25						
0900								0	0	0									11	0	11								2	0	2				13						
0915								0	0	0									15	0	15								2	0	2				17						
1630								0	0	0									13	3	16								3	0	3				19						
1645								0	0	0									20	0	20								3	0	3				23						
1700								0	0	0									17	0	17								2	0	2				19						
1715								0	0	0									15	2	17								5	0	5				22						
1730								0	0	0									19	0	19								3	0	3				22						
1745								0	0	0									9	0	9								6	0	6				15						
1800								0	0	0									13	0	13								5	0	5				18						
1815								0	0	0									8	0	8								3	0	3				11						
Total								0	0	0									261	16	277								82	1	83				360						

Place:	Hilton	Weather:	Rain / Overcast	Survey Ref. No:	F09049	Page:	2
Date:	22/10/2009	Traffic entering on:	Derby Road Eastbound	Client:		of:	3

Time Left turn to: <u>Uttoxeter Road</u>										Straight on to: <u>Derby Road East</u>										Right turn to: <u>NA</u>										U turn to: <u>Derby Road West</u>										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	Vehs	PCUs									
0730							52	2	54									4	0	4								0	0	0		58									
0745							58	3	61									7	1	8								0	0	0		69									
0800							75	1	76									5	1	6								0	0	0		82									
0815							58	3	61									6	1	7								0	0	0		68									
0830							97	12	109									8	2	10								0	0	0		119									
0845							46	4	50									8	1	9								0	0	0		59									
0900							69	1	70									8	1	9								0	0	0		79									
0915							28	4	32									6	0	6								0	0	0		38									
1630							49	6	55									11	0	11								0	0	0		66									
1645							63	4	67									13	0	13								0	0	0		80									
1700							70	2	72									30	0	30								0	0	0		102									
1715							58	3	61									30	1	31								0	0	0		92									
1730							56	4	60									28	1	29								0	0	0		89									
1745							63	1	64									15	1	16								0	0	0		80									
1800							78	0	78									10	0	10								0	0	0		88									
1815							42	3	45									21	0	21								0	0	0		66									
Total							962	53	1015									210	10	220								0	0	0		1235									

Place:	Hilton	Weather:	Rain / Overcast	Survey Ref. No:	F09049	Page:	3
Date:	22/10/2009	Traffic entering on:	Uttoxeter Road	Client:		of:	3

Time Left turn to: Derby Road East										Straight on to: NA										Right turn to: Derby Road West										U turn to: Uttoxeter Road										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	Vehs	PCUs									
0730							1	0	1									42	0	42								0	0	0		43									
0745							4	0	4									41	3	44								0	0	0		48									
0800							3	0	3									37	8	45								0	0	0		48									
0815							1	0	1									21	0	21								0	0	0		22									
0830							1	0	1									88	4	92								0	0	0		93									
0845							7	0	7									62	1	63								0	0	0		70									
0900							10	0	10									43	0	43								0	0	0		53									
0915							5	1	6									48	2	50								0	0	0		56									
1630							16	0	16									74	7	81								0	0	0		97									
1645							12	0	12									63	2	65								0	0	0		77									
1700							9	0	9									71	3	74								0	0	0		83									
1715							5	0	5									96	1	97								0	0	0		102									
1730							14	0	14									87	4	91								0	0	0		105									
1745							13	0	13									80	3	83								0	0	0		96									
1800							4	0	4									73	3	76								0	0	0		80									
1815							13	0	13									67	1	68								0	0	0		81									
Total							118	1	119									993	42	1035								0	0	0		1154									

Place:	Hilton	Weather:	Rain / Overcast	Survey Ref. No:	F09049	Page:	1
Date:	22/10/2009	Traffic entering on:	Eggington Road	Client:		of:	3

Time Left turn to: Derby Road West										Straight on to: NA										Right turn to: Derby Road East										U turn to: Eggington Road										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	Vehs	PCUs									
0730							3	0	3									168	3	171								0	0	0		174									
0745							43	1	44									173	10	183							0	0	0		227										
0800							26	9	35									151	4	155							0	0	0		190										
0815							35	1	36									163	6	169							0	0	0		205										
0830							21	3	24									198	5	203							0	0	0		227										
0845							25	0	25									100	1	101							0	0	0		126										
0900							9	0	9									63	5	68							0	0	0		77										
0915							12	0	12									64	0	64							1	0	1		77										
1630							27	1	28									57	1	58							0	0	0		86										
1645							31	0	31									51	1	52							0	0	0		83										
1700							35	0	35									43	3	46							0	0	0		81										
1715							40	1	41									58	1	59							0	0	0		100										
1730							35	0	35									65	4	69							0	0	0		104										
1745							27	0	27									71	1	72							0	0	0		99										
1800							18	2	20									88	3	91							0	0	0		111										
1815							14	0	14									48	4	52							0	0	0		66										
Total							401	18	419									####	52	1613							1	0	1		2033										

Place:	Hilton	Weather:	Rain / Overcast	Survey Ref. No:	F09049	Page:	2
Date:	22/10/2009	Traffic entering on:	Derby Road Eastbound	Client:		of:	3

Time Left turn to: NA										Straight on to: Derby Road East										Right turn to: Eggington Road										U turn to: Derby Road West										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	
0730							0	0	0									103	3	106									2	0	2					0	0	0		108	
0745							0	0	0									113	2	115									6	0	6					0	0	0		121	
0800							0	0	0									113	1	114									3	0	3					0	0	0		117	
0815							0	0	0									117	11	128									0	0	0					0	0	0		128	
0830							0	0	0									126	16	142									2	1	3					0	0	0		145	
0845							0	0	0									87	5	92									7	0	7					0	0	0		99	
0900							0	0	0									60	5	65									4	1	5					0	0	0		70	
0915							0	0	0									37	5	42									3	0	3					0	0	0		45	
1630							0	0	0									57	4	61									3	0	3					0	0	0		64	
1645							0	0	0									48	5	53									4	0	4					0	0	0		57	
1700							0	0	0									46	2	48									4	0	4					0	0	0		52	
1715							0	0	0									72	8	80									11	0	11					1	0	1		92	
1730							0	0	0									58	7	65									4	0	4					0	0	0		69	
1745							0	0	0									60	4	64									8	0	8					0	0	0		72	
1800							0	0	0									76	2	78									1	0	1					0	0	0		79	
1815							0	0	0									61	6	67									0	0	0					0	0	0		67	
Total							0	0	0									1234	86	1320									62	2	64					1	0	1		1385	

Place:	Hilton	Weather:	Rain / Overcast	Survey Ref. No:	F09049	Page:	3
Date:	22/10/2009	Traffic entering on:	Derby Road Westbound	Client:		of:	3

Left turn to: Eggington Road										Straight on to: Derby Road West										Right turn to: NA										U turn to: Derby Road East										Total	
Begin	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	P	PC	MC	Cars	LGV	Bus	Lights	Heavy	Vehs	PCUs	
0730							28	6	34									30	0	30									0	0	0					0	0	0		64	
0745							28	3	31									23	2	25									0	0	0					0	0	0		56	
0800							54	2	56									29	3	32									0	0	0					0	0	0		88	
0815							44	7	51									24	2	26									0	0	0					0	0	0		77	
0830							55	6	61									47	2	49									0	0	0					1	0	1		111	
0845							62	0	62									45	2	47									0	0	0					1	0	1		110	
0900							40	1	41									34	4	38									0	0	0					0	0	0		79	
0915							30	4	34									23	7	30									0	0	0					1	0	1		65	
1630							104	10	114									71	5	76									0	0	0					2	0	2		192	
1645							120	6	126									72	2	74									0	0	0					0	0	0		200	
1700							125	2	127									55	15	70									0	0	0					0	0	0		197	
1715							151	8	159									86	1	87									0	0	0					1	0	1		247	
1730							129	3	132									87	3	90									0	0	0					0	0	0		222	
1745							125	2	127									82	3	85									0	0	0					0	0	0		212	
1800							118	6	124									74	5	79									0	0	0					0	0	0		203	
1815							70	9	79									67	2	69									0	0	0					0	0	0		148	
Total							1283	75	1358									849	58	907									0	0	0					6	0	6		2271	

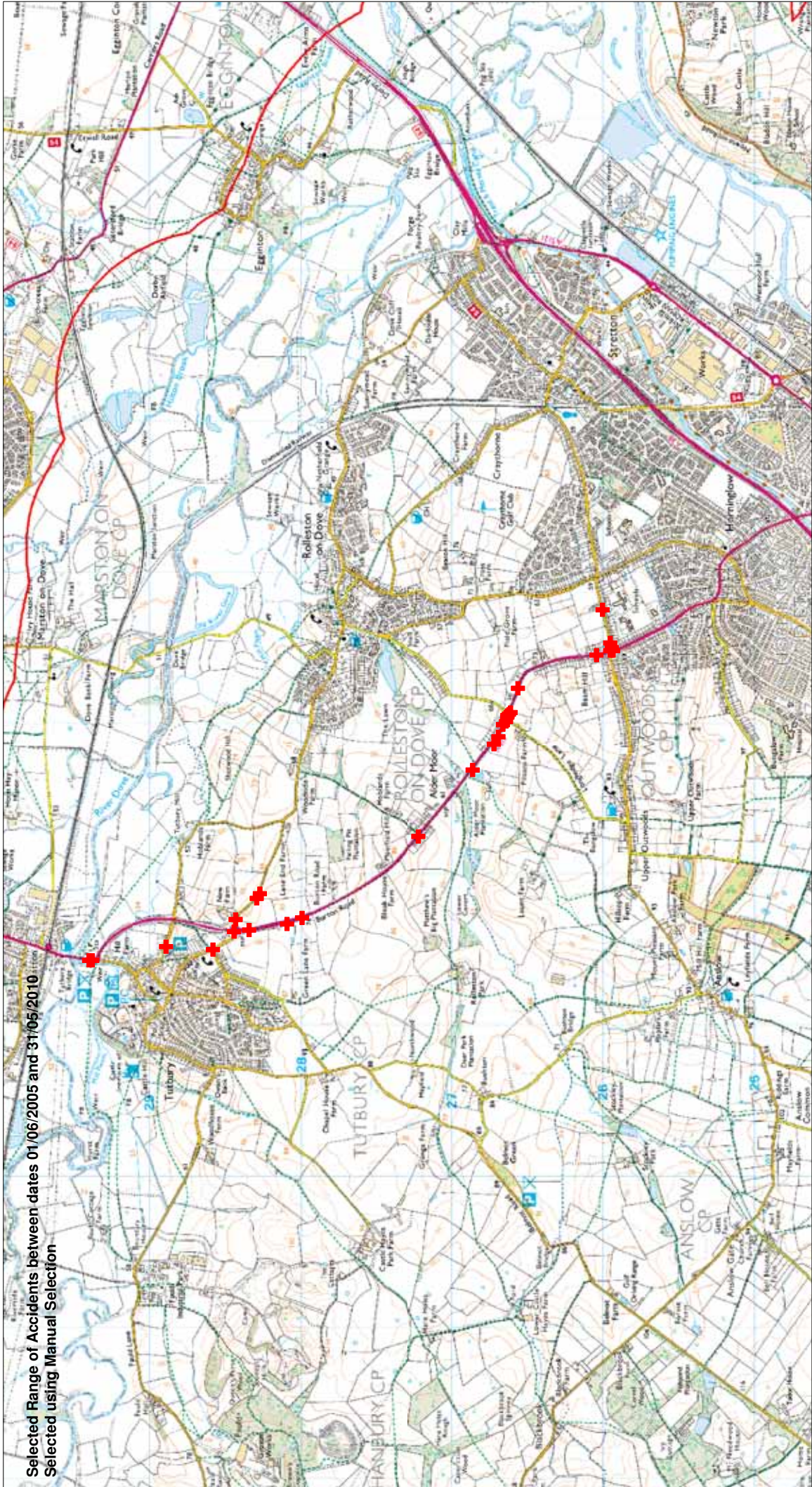
Hilton	Queue lengths (m)					
Time	Derby Road		Eggington Road		Derby Road	
	Q	←	Q	←	Q	←
07:30	0	0	0	0	0	0
07:35	0	15	0	15	0	0
07:40	0	25	0	20	0	0
07:45	0	25	0	20	0	0
07:50	0	20	0	20	0	0
07:55	0	25	0	25	0	0
08:00	0	5	0	15	0	0
08:05	0	5	0	20	0	0
08:10	0	25	0	20	0	5
08:15	0	20	0	40	0	0
08:20	0	30	0	20	0	25
08:25	0	30	0	30	0	0
08:30	0	25	0	15	0	0
08:35	0	30	0	20	0	0
08:40	0	25	0	20	0	0
08:45	0	10	0	10	0	0
08:50	0	10	0	20	0	0
08:55	0	15	0	20	0	0
09:00	0	0	0	0	0	0
09:05	0	0	0	0	0	0
09:10	0	0	0	0	0	0
09:15	0	0	0	0	0	0
09:20	0	15	0	0	0	0
09:25	0	0	0	0	0	0
09:30	0	0	0	0	0	0


 Arrow denotes approach lane


 Distance represents length of queue left at lights following each phase

Hilton	Queue lengths (m)					
Time	Derby Road		Eggington Road		Derby Road	
	Q	←	Q	←	Q	←
	16:30	0	0	0	0	0
	16:35	0	0	0	25	0
	16:40	0	0	0	15	0
	16:45	0	0	0	0	0
	16:50	0	0	0	0	0
	16:55	0	0	0	20	0
	17:00	0	0	0	0	0
	17:05	0	15	0	10	0
	17:10	0	0	0	0	0
	17:15	0	0	0	15	0
	17:20	0	0	0	0	0
	17:25	0	0	0	0	50
	17:30	0	0	0	0	0
	17:35	0	0	0	0	0
	17:40	0	15	0	0	0
17:45	0	0	0	0	0	
17:50	0	0	0	10	0	
17:55	0	0	0	0	0	
18:00	0	0	0	0	0	
18:05	0	0	0	0	0	
18:10	0	0	0	20	0	
18:15	0	0	0	0	0	
18:20	0	0	0	0	0	
18:25	0	0	0	0	0	
18:30	0	0	0	0	0	

APPENDIX C – PERSONAL INJURY ACCIDENT DATA



Selected Range of Accidents between dates 01/06/2005 and 31/05/2010
Selected using Manual Selection

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Tutbury Data

SCALE	1 : 35000
DATE	02/11/2010
DRAWING No.	
DRAWN BY	

Accidents between dates **01/06/2005 and 31/05/2010** (60) months

Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	05423099	Road:	A 511	Grid Reference:	423010 326640
District Council:	East Staffordshire	Time:	1700		Friday 08-July-2005
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	50
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY RD BURTON J/W LONGHEDGE LANE				

The accident occurred at a T or staggered junction on the A511, a single carriageway at its junction with the Unclassified22 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Car, travelling from S to N was turning right on the main carriageway. The vehicle was entering main road and collided with vehicle 2. The male driver aged 29 lived in DE14.

Vehicle 2 Car, travelling from E to W was going ahead other on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and skidded and collided with vehicle 1. The male driver aged 30 lived in DE14.

Casualty 1 (Vehicle 2) A male driver aged 30 suffered a slight injury.

Contributory Factors

Vehicle 1 Road layout (eg bend, hill crest)

Acc. Ref. No:	05423534	Road:	A 511	Grid Reference:	423450 326040
District Council:	East Staffordshire	Time:	1925		Monday 11-July-2005
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY RD APPROX 100MTS N/TH J/W BEAMHILL RD				

The accident occurred on the A511, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from S to NE was changing lane to right on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 2. The male driver aged 28 lived in NE7 .

Vehicle 2 Car, travelling from S to N was overtaking a moving vehicle on the offside on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The female driver of an unknown age lived in DE15 had regularly travelled through the site before.

Vehicle 3 Car, travelling from S to N was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction. The female driver of an unknown age .

Vehicle 4 Car, travelling from S to N was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction. The untraced driver of an unknown age .

Casualty 1 (Vehicle 2) A female driver age unknown suffered a slight injury.

Contributory Factors

Vehicle 1 Following too close

Vehicle 1 Aggressive driving

Vehicle 1 Careless/Reckless/In a hurry

Vehicle 3 Inexperienced or learner driver/rider

Acc. Ref. No:	05424406	Road:	A 511	Grid Reference:	421710 327990
District Council:	East Staffordshire	Time:	2051		Tuesday 19-July-2005
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	60
Severity:	SLIGHT	Road surface	Dry		
Location:	BURTON RD TUTBURY APPROX 440 MTRS STH J/W ROLLESTON LANE				

The accident occurred on the A511, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from S to N was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction and skidded and overturned. The male driver aged 40.

Casualty 1 (Vehicle 1) A male driver aged 40 suffered a slight injury.

Contributory Factors

Vehicle 1 Exceeding speed limit

Vehicle 1 Loss of control

Vehicle 1 Impaired by alcohol

Vehicle 1 Careless/Reckless/In a hurry

AccsMap - Accident Analysis System
Accidents between dates 01/06/2005 and 31/05/2010 (60) months
Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	06408420	Road:	C 58	Grid Reference:	423500 325940
District Council:	East Staffordshire	Time:	1313		Wednesday 15-March-2006
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30
Severity:	SLIGHT	Road surface	Dry		
Location:	HAREHEDGE LANE APPROX 15MTS EAST OF TUTBURY RD BURTON ON TRENT				

The accident occurred at a T or staggered junction on the C58, a single carriageway at its junction with the A511 controlled by automatic traffic signal(s)..

Special conditions and hazards: None

Vehicle 1 Car, travelling from SE to NE was turning right on the main carriageway. The vehicle was leaving main road and skidded and collided with vehicle 2. The male driver aged 27.

Vehicle 2 Car, travelling from NE to SW was going ahead other on the main carriageway. The vehicle cleared junction or waiting/parked at junction exit and collided with vehicle 1. The female driver aged 43.

Vehicle 3 Car, travelling from SE to NE was turning right on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach. The male driver aged 28 lived in ST18 had occasionally travelled through the site before.

Casualty 1 (Vehicle 1) A female pedestrian aged 18 suffered a slight injury0.

Casualty 2 (Vehicle 1) A male pedestrian aged 0 suffered a slight injury0.

Contributory Factors

Vehicle 1 Exceeding speed limit

Vehicle 1 Careless/Reckless/In a hurry

Vehicle 1 Stolen vehicle

Vehicle 1 Aggressive driving

Acc. Ref. No:	06411175	Road:	A 511	Grid Reference:	421430 329400
District Council:	East Staffordshire	Time:	0740		Thursday 13-April-2006
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30
Severity:	SLIGHT	Road surface	Dry		
Location:	BRIDGE ST BY FIRE STATION TUTBURY				

The accident occurred on the A511, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from S to N was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 2. The male driver aged 71 lived in DE13 had regularly travelled through the site before.

Vehicle 2 Car, travelling from N to S was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The male driver aged 78 lived in DE65 had regularly travelled through the site before.

Casualty 1 (Vehicle 2) A male driver aged 78 suffered a slight injury.

Contributory Factors

Vehicle 1 Other

Acc. Ref. No:	06413173	Road:	A 511	Grid Reference:	421620 328440
District Council:	East Staffordshire	Time:	0718		Tuesday 02-May-2006
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	60
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY BY PASS J/W ROLLESTON LANE TUTBURY				

The accident occurred at a roundabout on the A511, at its junction with the Unclassified446 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Car, travelling from N to SE was overtaking a moving vehicle on the offside on the main carriageway. The vehicle was entering roundabout and skidded. The male driver aged 30 lived in DE13 had regularly travelled through the site before.

Casualty 1 (Vehicle 1) A male driver aged 30 suffered a slight injury.

Contributory Factors

Vehicle 1 Travelling too fast for conditions

Accidents between dates **01/06/2005 and 31/05/2010** (60) months

Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	07000402	Road:	D 446	Grid Reference:	421870	328270
District Council:	East Staffordshire	Time:	0031	Wednesday	03-January-2007	
Lighting:	Darkness: no street lighting	Weather:	Other	Speed limit:	60	
Severity:	SLIGHT	Road surface	Wet/Damp			
Location:	ROLLESTON LN APPROX 280 MTS S/TH R/BOUT J/W BURTON RD TUTBURY					

The accident occurred on the D446, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from SE to NW was going ahead on a right bend on the main carriageway. The vehicle was not at, or within 20M of a junction and skidded. The female driver aged 42 lived in DE13.

Casualty 1 (Vehicle 1) A female driver aged 42 suffered a slight injury.

Contributory Factors

Vehicle 1 Slippery road (due to weather)

Vehicle 1 Loss of control

Acc. Ref. No:	07004967	Road:	C 91	Grid Reference:	421520	328890
District Council:	East Staffordshire	Time:	1000	Sunday	18-February-2007	
Lighting:	Daylight: street lighting unknown	Weather:	Fine without high winds	Speed limit:	30	
Severity:	SLIGHT	Road surface	Dry			
Location:	CORNMILL LANE TUTBURY O/S24					

The accident occurred on the C91, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from W to E was reversing on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 2. The male driver aged 18 lived in DE65 had regularly travelled through the site before.

Vehicle 2 Car, travelling from NW to SE was stopping on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The female driver aged 50 lived in DE13 had regularly travelled through the site before.

Vehicle 3 Car, was going ahead but held up on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The untraced driver of an unknown age .

Vehicle 4 Car, was going ahead but held up on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The untraced driver of an unknown age .

Casualty 1 (Vehicle 2) A female driver aged 50 suffered a slight injury.

Contributory Factors

Vehicle 1 Travelling too fast for conditions

Vehicle 1 Impaired by alcohol

Vehicle 1 Failed to look properly

Acc. Ref. No:	07007383	Road:	C 58	Grid Reference:	423750	326000
District Council:	East Staffordshire	Time:	0840	Tuesday	13-March-2007	
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30	
Severity:	SLIGHT	Road surface	Dry			
Location:	HAREHEDGE LN ADJ NAJELUEM BARN B.O.T					

The accident occurred on the C58, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from W to E was overtaking a static vehicle on the offside on the main carriageway. The vehicle was not at, or within 20M of a junction. The male driver aged 46 lived in DE13.

Vehicle 2 Bus or coach, on the main carriageway. The vehicle was not at, or within 20M of a junction. The male driver aged 23 lived in DE14.

Casualty 1 (Vehicle 1) A female pedestrian aged 13 suffered a slight injury9.

Contributory Factors

Casualty 1 Crossed road masked by stationary veh

Casualty 1 Careless/Reckless/In a hurry

AccsMap - Accident Analysis System
Accidents between dates **01/06/2005 and 31/05/2010** (60) months

Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	07007286	Road:	A 511	Grid Reference:	423040 326630
District Council:	East Staffordshire	Time:	0840		Tuesday 13-March-2007
Lighting:	Daylight: street lighting unknown	Weather:	Fine without high winds	Speed limit:	50
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY RD J/W ANSLOW LANE BOT				

The accident occurred at a T or staggered junction on the A511, a single carriageway at its junction with the Unclassified452 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Goods over 3.5 tonnes and under 7.5 tonnes mgw, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 2.

The male driver aged 51 lived in TS9 .

Vehicle 2 Car, travelling from SE to NE was waiting to turn right on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 1.

The female driver aged 39 lived in DE13 had regularly travelled through the site before.

Casualty 1 (Vehicle 2) A female driver aged 39 suffered a slight injury.

Casualty 2 (Vehicle 2) A male vehicle or pillion passenger aged 7 suffered a slight injury.

Contributory Factors

Vehicle 1 Failed to judge other persons path or speed

Acc. Ref. No:	07009838	Road:	A 511	Grid Reference:	423050 326630
District Council:	East Staffordshire	Time:	1035		Sunday 15-April-2007
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30
Severity:	SERIOUS	Road surface	Dry		
Location:	TUTBURY RD ROLLESTON J/W ANDLOW LANE				

The accident occurred at a T or staggered junction on the A511, a single carriageway at its junction with the Unclassified452 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Car, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was mid junction - on roundabout or main road and skidded and collided with vehicle 3. The male driver of an unknown age .

Vehicle 2 Motorcycle over 500cc, travelling from NW to SE was going ahead other on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 1. The male driver aged 46 lived in WA3 .

Vehicle 3 Car, travelling from SE to NW was waiting to turn right on the main carriageway. The vehicle was mid junction - on roundabout or main road and collided with vehicle 1. The female driver aged 55 lived in DE13.

Casualty 1 (Vehicle 2) A male rider aged 46 suffered a slight injury.

Casualty 2 (Vehicle 2) A female vehicle or pillion passenger aged 36 suffered a serious injury.

Contributory Factors

Vehicle 1 Travelling too fast for conditions

Vehicle 1 Careless/Reckless/In a hurry

Acc. Ref. No:	07010294	Road:	A 511	Grid Reference:	423070 326610
District Council:	East Staffordshire	Time:	1610		Friday 20-April-2007
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	30
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY RD APPROX 30 MTRS E J/W ANSLOW LANE				

The accident occurred on the A511, a dual carriageway .

Special conditions and hazards: Any animal in carriageway (except ridden horse)

Vehicle 1 Motorcycle 50cc and under, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction. The male driver aged 16 lived in DE13 had occasionally travelled through the site before.

Casualty 1 (Vehicle 1) A male rider aged 16 suffered a slight injury.

Contributory Factors

Vehicle 1 Animal or object in carriageway

AccsMap - Accident Analysis System
Accidents between dates **01/06/2005 and 31/05/2010** (60) months

Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	07017572	Road:	A 511	Grid Reference:	422690 326860
District Council:	East Staffordshire	Time:	1620		Monday 02-July-2007
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	50
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY RD J/W DRIVEWAY TO WYNDALD TUTBURY				

The accident occurred at a private drive on the A511, a single carriageway at its junction with the Unclassified0 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Car, travelling from NW to SE was going ahead other on footway. The vehicle was entering main road and collided with vehicle 2. The male driver aged 35.

Vehicle 2 Pedal Cycle, travelling from SW to NE was going ahead other on footway. The vehicle was mid junction - on roundabout or main road and skidded and collided with vehicle 1. The male driver aged 17 lived in DE13 had regularly travelled through the site before.

Casualty 1 (Vehicle 2) A male rider aged 17 suffered a slight injury.

Acc. Ref. No:	07020054	Road:	A 511	Grid Reference:	422860 326720
District Council:	East Staffordshire	Time:	1625		Monday 30-July-2007
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	50
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY RD 200 MTS N/TH J/W ANSLOW LN TUTBURY				

The accident occurred on the A511, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from N to SE was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 2. The male driver aged 26 lived in ST14 had regularly travelled through the site before.

Vehicle 2 Minibus, on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The male driver aged 60 lived in DE14 had regularly travelled through the site before.

Casualty 1 (Vehicle 1) A male driver aged 26 suffered a slight injury.

Casualty 2 (Vehicle 2) A female vehicle or pillion passenger aged 44 suffered a slight injury.

Contributory Factors

Vehicle 1 Failed to look properly

Vehicle 1 Careless/Reckless/In a hurry

Vehicle 1 Dazzling sun

Acc. Ref. No:	07020444	Road:	A 511	Grid Reference:	422910 326690
District Council:	East Staffordshire	Time:	1200		Sunday 05-August-2007
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	50
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY RD APPROX 100MTS N/TH LONGHRDGE LN				

The accident occurred on the A511, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from NW to SE was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 2. The male driver aged 58 lived in DE13 had regularly travelled through the site before.

Vehicle 2 Motorcycle over 500cc, travelling from NW to SE was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The male driver aged 42 lived in DE13 had regularly travelled through the site before.

Casualty 1 (Vehicle 2) A male rider aged 42 suffered a slight injury.

Contributory Factors

Vehicle 1 Aggressive driving

Vehicle 1 Illness or disability, mental or physical

AccsMap - Accident Analysis System
Accidents between dates **01/06/2005 and 31/05/2010** (60) months

Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	07024121	Road:	D 446	Grid Reference:	421700	328430
District Council:	East Staffordshire	Time:	1820		Monday	17-September-2007
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	60	
Severity:	SLIGHT	Road surface	Wet/Damp			
Location:	ROLLESTON LN APPROX 60MTS EAST R/B J/W LODGE HILL TUTBURY					

The accident occurred on the D446, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Goods over 3.5 tonnes and under 7.5 tonnes mgw, travelling from W to SE was going ahead on a right bend on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 2. The male driver aged 25 lived in ST14.

Vehicle 2 Car, travelling from SE to W was going ahead on a left bend on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The female driver aged 40 lived in DE15.

Casualty 1 (Vehicle 2) A female driver aged 40 suffered a slight injury.

Contributory Factors

Vehicle 1 Inexperience of driving on the left

Vehicle 1 Other

Acc. Ref. No:	08000615	Road:	A 511	Grid Reference:	423480	325930
District Council:	East Staffordshire	Time:	1630		Friday	04-January-2008
Lighting:	Darkness: street lights present and lit	Weather:	Raining without high winds	Speed limit:	30	
Severity:	SLIGHT	Road surface	Wet/Damp			
Location:	TUTBURY RD J/W HAREHEDGE LA ROLLESTON ON DOVE					

The accident occurred at a T or staggered junction on the A511, a single carriageway at its junction with the C58 controlled by automatic traffic signal(s). There was a pedestrian phase at the traffic signal junction.

Special conditions and hazards: None

Vehicle 1 Car, travelling from S to N was going ahead other on the main carriageway. The vehicle was mid junction - on roundabout or main road. The female driver aged 58 lived in DE65 had regularly travelled through the site before.

Casualty 1 (Vehicle 1) A male pedestrian aged 45 suffered a slight injury9.

Contributory Factors

Casualty 1 Failed to look properly

Casualty 1 Wrong use of pedestrian crossing facility

Acc. Ref. No:	08002585	Road:	D 446	Grid Reference:	421840	328290
District Council:	East Staffordshire	Time:	2037		Saturday	26-January-2008
Lighting:	Darkness: no street lighting	Weather:	Fine without high winds	Speed limit:	60	
Severity:	FATAL	Road surface	Wet/Damp			
Location:	ROLLESTON LN APPROX 250MTS S/TH BURTON RD TUTBURY					

The accident occurred on the D446, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from SE to NW was going ahead on a right bend on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 2. The female driver aged 43 lived in DE13 had regularly travelled through the site before.

Vehicle 2 Car, travelling from NW to SE was going ahead on a left bend on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The male driver aged 49 lived in DE65 had regularly travelled through the site before.

Casualty 1 (Vehicle 1) A female driver aged 43 suffered a fatal injury.

Casualty 2 (Vehicle 2) A female vehicle or pillion passenger aged 45 suffered a slight injury.

Casualty 3 (Vehicle 2) A male driver aged 49 suffered a slight injury.

Contributory Factors

Vehicle 1 Careless/Reckless/In a hurry

AccsMap - Accident Analysis System
Accidents between dates 01/06/2005 and 31/05/2010 (60) months
Selection:

Selected using Manual Selection

Notes:

Acc. Ref. No:	08003199	Road:	A 511	Grid Reference:	423480	325950
District Council:	East Staffordshire	Time:	1115		Tuesday	29-January-2008
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30	
Severity:	SLIGHT	Road surface	Dry			
Location:	TUTBURY RD BURTON APPROX 6 MTRS NTH J/W HAREHEDGE LANE					

The accident occurred at a crossroads on the A511, a single carriageway at its junction with the C58 controlled by automatic traffic signal(s). There was a pelican/puffin/toucan within 50 metres..

Special conditions and hazards: Road works

Vehicle 1 Car, travelling from N to S was going ahead other on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 2. The male driver of an unknown age lived in DE65.

Vehicle 2 Car, travelling from N to S was going ahead but held up on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 1. The male driver of an unknown age lived in DE15 had occasionally travelled through the site before.

Casualty 1 (Vehicle 2) A male vehicle or pillion passenger aged 51 suffered a slight injury.

Contributory Factors

Vehicle 1 Failed to look properly

Vehicle 1 Sudden braking

Acc. Ref. No:	08011221	Road:	A 511	Grid Reference:	421670	328090
District Council:	East Staffordshire	Time:	1330		Wednesday	28-May-2008
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	60	
Severity:	SERIOUS	Road surface	Wet/Damp			
Location:	LODGE HILL 320MTS SOUTH OF ROLLESTON LANE TUTBURY					

The accident occurred on the A511, a dual carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from NW to SE was changing lane to right on the main carriageway. The vehicle was not at, or within 20M of a junction and skidded and collided with vehicle 2. The male driver aged 29 lived in DE15.

Vehicle 2 Car, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction and collided with vehicle 1. The female driver aged 36 lived in DE13 had regularly travelled through the site before.

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

Casualty 2 (Vehicle 2) A female vehicle or pillion passenger aged 12 suffered a slight injury.

Casualty 3 (Vehicle 2) A male vehicle or pillion passenger aged 14 suffered a slight injury.

Casualty 4 (Vehicle 2) A male vehicle or pillion passenger aged 23 suffered a slight injury.

Casualty 5 (Vehicle 1) A male driver aged 29 suffered a serious injury.

Contributory Factors

Vehicle 1 Travelling too fast for conditions

Vehicle 1 Impaired by alcohol

Vehicle 1 Impaired by drugs (illicit or medicinal)

Vehicle 1 Illness or disability, mental or physical

Acc. Ref. No:	08015307	Road:	D 446	Grid Reference:	421500	328580
District Council:	East Staffordshire	Time:	0727		Friday	12-September-2008
Lighting:	Darkness: street lighting unknown	Weather:	Fine without high winds	Speed limit:	50	
Severity:	SLIGHT	Road surface	Dry			
Location:	BURTON RD J/W IRONWALLS LN TUTBURY					

The accident occurred at a T or staggered junction on the D446, a single carriageway at its junction with the Unclassified344 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Motor Cycle over 125 cc and up to 500cc, travelling from SE to SW was overtaking a moving vehicle on the offside on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 2. The male driver aged 19 lived in DE11 had regularly travelled through the site before.

Vehicle 2 Car, travelling from SW to SE was turning right on the main carriageway. The vehicle was entering main road and collided with vehicle 1. The female driver aged 60 lived in DE13 had regularly travelled through the site before.

Vehicle 3 Other motor vehicle, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach. The male driver aged 30 lived in DE14 had regularly travelled through the site before.

Casualty 1 (Vehicle 1) A male rider aged 19 suffered a slight injury.

AccsMap - Accident Analysis System
Accidents between dates 01/06/2005 and 31/05/2010 (60) months
Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	08018754	Road:	A 511	Grid Reference:	421630	328340
District Council:	East Staffordshire	Time:	1830		Friday	19-December-2008
Lighting:	Darkness: no street lighting	Weather:	Fine without high winds	Speed limit:	60	
Severity:	SLIGHT	Road surface	Dry			
Location:	LODGE HILL APPROX 70MTS SOUTH OF BURTON ROAD TUTBURY					

The accident occurred on the A511, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from S to N was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction. The untraced driver of an unknown age .

Casualty 1 (Vehicle 1) A male pedestrian aged 32 suffered a slight injury in carr back to traffic1.

Contributory Factors

Vehicle 1 Failed to judge other persons path or speed

Casualty 1 Careless/Reckless/In a hurry

Casualty 1 Pedestrian wearing dark clothing at night

Acc. Ref. No:	09003414	Road:	A 511	Grid Reference:	423480	325940
District Council:	East Staffordshire	Time:	0946		Tuesday	14-April-2009
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30	
Severity:	SLIGHT	Road surface	Dry			
Location:	TUTBURY RD.J/W HAREHEDGE LN .BURTON					

The accident occurred at a crossroads on the A511, a single carriageway at its junction with the C58 controlled by automatic traffic signal(s). There was a pedestrian phase at the traffic signal junction.

Special conditions and hazards: None

Vehicle 1 Car, travelling from NW to E was turning left on the main carriageway. The vehicle was leaving main road and collided with vehicle 2. The untraced driver of an unknown age .

Vehicle 2 Pedal Cycle, travelling from NW to SE was overtaking on the nearside on the main carriageway. The vehicle was mid junction - on roundabout or main road and collided with vehicle 1. The male driver aged 60 lived in DE.

Casualty 1 (Vehicle 2) A male rider aged 60 suffered a slight injury.

Contributory Factors

Vehicle 1 Failed to look properly

Acc. Ref. No:	09003603	Road:	A 511	Grid Reference:	423060	326620
District Council:	East Staffordshire	Time:	1636		Tuesday	28-April-2009
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	40	
Severity:	SLIGHT	Road surface	Dry			
Location:	TUTBURY RD APPROX 10MTRS SE J/W ANSLOW LANE					

The accident occurred at a T or staggered junction on the A511, a single carriageway at its junction with the Unclassified452 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Car, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 2.

The male driver aged 20 lived in DE65 had regularly travelled through the site before.

Vehicle 2 Car, travelling from SE to NE was stopping on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 1. The female driver aged 40 lived in DE13.

Casualty 1 (Vehicle 2) A female driver aged 40 suffered a slight injury.

Contributory Factors

Vehicle 1 Failed to look properly

Accidents between dates **01/06/2005 and 31/05/2010** (60) months

Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	09005158	Road:	A 511	Grid Reference:	422990 326660
District Council:	East Staffordshire	Time:	1205		Monday 29-June-2009
Lighting:	Daylight: no street lighting	Weather:	Fine without high winds	Speed limit:	40
Severity:	SLIGHT	Road surface	Dry		
Location:	TUTBURY ROAD APPROX 16MTS NW J/W LONGHEDGE LANE BURTON				

The accident occurred at a private drive on the A511, a single carriageway at its junction with the Unclassified0 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Car, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 2.
The male driver aged 27 lived in DE11 had regularly travelled through the site before.

Vehicle 2 Car, travelling from SE to NW was stopping on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 1. The male driver aged 38 lived in WS13.

Vehicle 3 Car, travelling from SE to NW was stopping on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 2. The female driver aged 45 lived in DE65.

Vehicle 4 Car, travelling from SE to NW was stopping on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 3. The female driver aged 27 lived in DE14.

Vehicle 5 Car, travelling from SE to NW was stopping on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 4. The female driver aged 18 lived in DE11.

Vehicle 6 Car, travelling from SE to NE was turning right on the main carriageway. The vehicle was leaving main road. The untraced driver of an unknown age .

Casualty 1 (Vehicle 3) A female driver aged 45 suffered a slight injury.

Contributory Factors

Vehicle 1 Following too close
 Vehicle 2 Following too close
 Vehicle 3 Following too close
 Vehicle 4 Following too close
 Vehicle 5 Following too close

Acc. Ref. No:	09008291	Road:	C 58	Grid Reference:	423530 325950
District Council:	East Staffordshire	Time:	1545		Thursday 05-November-2009
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30
Severity:	SLIGHT	Road surface	Wet/Damp		
Location:	HAREHEDGE LANE APPROX 40MTS EAST OF TUTBURY ROAD BURTON				

The accident occurred on the C58, a single carriageway There was a pedestrian phase at the traffic signal junction.

Special conditions and hazards: None

Vehicle 1 Car, travelling from SW to NE was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction. The male driver aged 73 lived in DE17 had regularly travelled through the site before.

Casualty 1 (Vehicle 1) A male pedestrian aged 12 suffered a slight injury crossing from driver's offside masked1.

Contributory Factors

Casualty 1 Crossed road masked by stationary veh
 Casualty 1 Careless/Reckless/In a hurry
 Casualty 1 Failed to look properly

AccsMap - Accident Analysis System
Accidents between dates **01/06/2005 and 31/05/2010** (60) months

Selection:
Notes:

Selected using Manual Selection

Acc. Ref. No:	09008909	Road:	A 511	Grid Reference:	422250 327220
District Council:	East Staffordshire	Time:	2045		Friday
Lighting:	Darkness: no street lighting	Weather:	Fine without high winds	Speed limit:	50
Severity:	SERIOUS	Road surface	Dry		
Location:	LODGE HILL TUTBURY J/W SERVICE RD ENT OPP FIDDLERS LANE				

The accident occurred at a private drive on the A511, a single carriageway at its junction with the Unclassified0 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Car, travelling from NW to NW was performing a U-turn on the main carriageway. The vehicle was leaving main road and collided with vehicle 2. The male driver aged 38 lived in LS12 had not travelled through the site before.

Vehicle 2 Motorcycle over 500cc, travelling from SE to NW was going ahead other on the main carriageway. The vehicle was mid junction - on roundabout or main road and collided with vehicle 1.
The male driver aged 29 had regularly travelled through the site before.

Casualty 1 (Vehicle 2) A male rider aged 29 suffered a serious injury.

Contributory Factors

Vehicle 1 Junction overshoot
Vehicle 1 Poor turn or manoeuvre
Vehicle 1 Failed to look properly
Vehicle 1 Careless/Reckless/In a hurry

Acc. Ref. No:	10000214	Road:	A 511	Grid Reference:	423230 326560
District Council:	East Staffordshire	Time:	0500		Saturday
Lighting:	Daylight:street lights present	Weather:	Other	Speed limit:	50
Severity:	SLIGHT	Road surface	Frost/Ice		
Location:	TUTBURY RD BURTON APPROX 182MTS SE J/W ANSLOW LANE				

The accident occurred on the A511, a single carriageway .

Special conditions and hazards: None

Vehicle 1 Car, travelling from NW to SE was going ahead other on the main carriageway. The vehicle was not at, or within 20M of a junction and skidded. The male driver aged 22 lived in DE15.

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

Contributory Factors

Vehicle 1 Slippery road (due to weather)
Vehicle 1 Travelling too fast for conditions
Vehicle 1 Impaired by alcohol

Acc. Ref. No:	10002864	Road:	A 511	Grid Reference:	421430 329380
District Council:	East Staffordshire	Time:	1140		Thursday
Lighting:	Daylight:street lights present	Weather:	Fine without high winds	Speed limit:	30
Severity:	SLIGHT	Road surface	Dry		
Location:	BRIDGE ST.R/B J/W TUTBURY BYPASS TUTBURY.				

The accident occurred at a roundabout on the A511, a single carriageway at its junction with the A5011 controlled by a give way or uncontrolled..

Special conditions and hazards: None

Vehicle 1 Car, travelling from N to S was overtaking a moving vehicle on the offside on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 2.
The male driver of an unknown age lived in DE15.

Vehicle 2 Pedal Cycle, travelling from N to S was going ahead other on the main carriageway. The vehicle was approaching junction or waiting/parked at junction approach and collided with vehicle 1. The male driver aged 57 lived in DE3 .

Casualty 1 (Vehicle 2) A male rider aged 57 suffered a slight injury.



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Derbyshire Constabulary

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Tel Ext:
Direct Line: 01773 573710
Ask For: Mrs Alison Morse
Our Ref. (GEA)/HQI/IM/AM
Your Ref.

15th November 2010

Dear Jon

PERSONAL INJURY ACCIDENT DATA IN DERBYSHIRE

In reply to your recent request for personal injury accident data in Derbyshire, I am enclosing the data for the periods 01/08/2005 to 31/07/2010. The map shows the location and the text provides details of the accidents.

Thank you for the cheque for £120.00.

If you have any queries please do not hesitate to contact me.

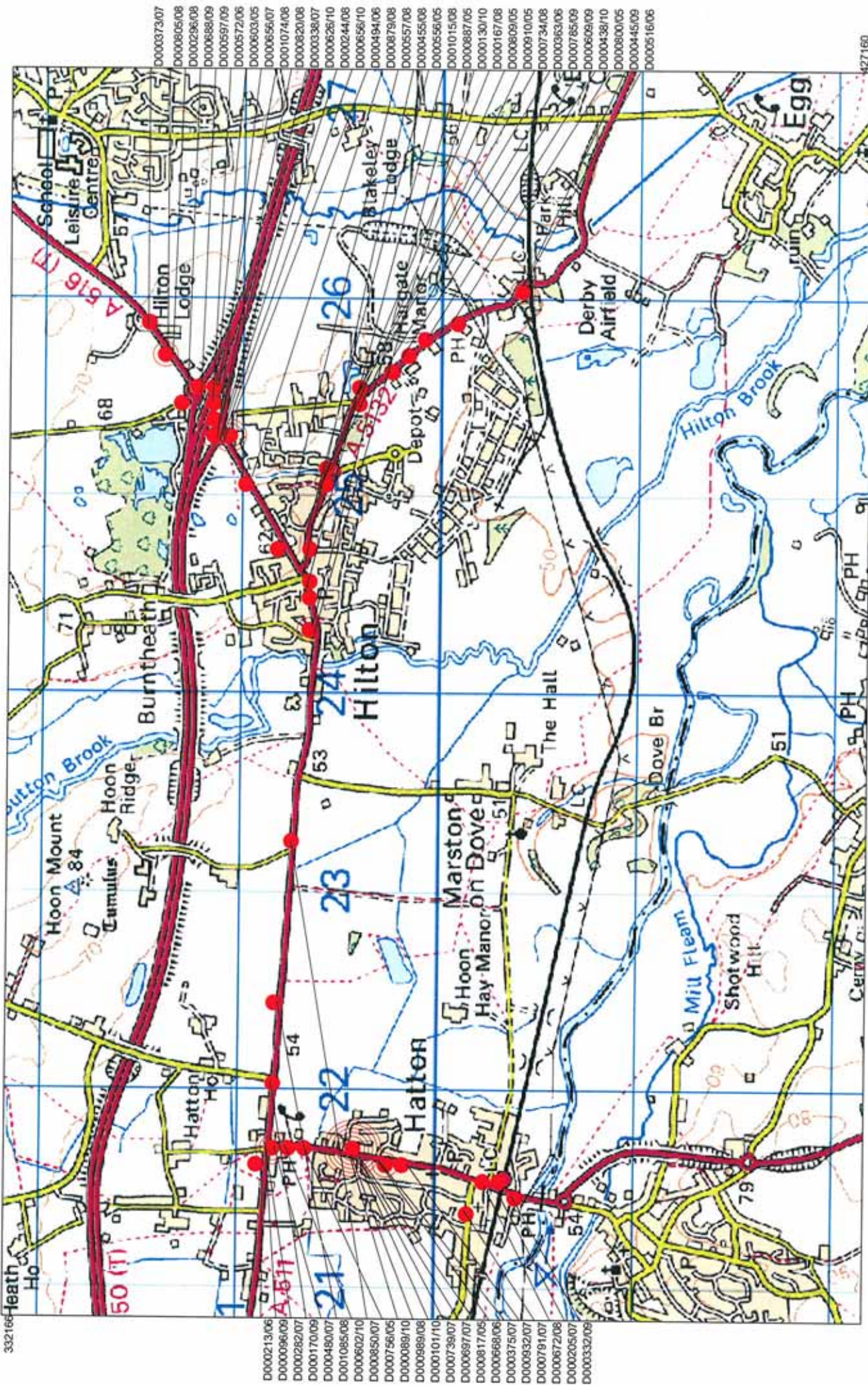
Yours sincerely

Alison Morse
Planning and Performance Section



01/08/2005 to 31/07/2010

420840
332166



427160
327834

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Ripley, Derbyshire DE5 3RS

Personal Injury accident data from 01/08/2005 to 31/07/2010

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*****
Reference D000556/05  Loc - HILTON A5132 EGGINTON ROAD J/W
~~~~~
Severity Slight           Time 1200           First Rd A5132 30 mph           Easting 424749
Day Thu                Weather FINE        Second Rd U 30 mph           Northing 330682
Date 04/08/2005        Surface DRY          Lighting DAY-LIGHTS
-----
Veh
1 CAR Overtaking on nearside E W Cas
2 PSV Waiting to go ahead E W 1 PEDESTRIAN N 16 Sli
*****
Reference D000603/05  Loc - HILTON A50 WESTBOUND CARRIAGEWAY
~~~~~
Severity Slight           Time 2008           First Rd A50 70 mph           Easting 425552
Day Sun                Weather FINE        Second Rd mph           Northing 331132
Date 21/08/2005        Surface DRY          Lighting DAY-NO LIGHTS
-----
Veh
1 CAR Waiting to go ahead E W Cas
2 CAR Waiting to go ahead E W
3 CAR Going ahead other E W 1 DRIVER 23 Sli
*****
Reference D000756/05  Loc - HATTON A511 200 MTRS SOUTH J/W
~~~~~
Severity Serious          Time 1550           First Rd A511 40 mph           Easting 421701
Day Sun                Weather FINE        Second Rd mph           Northing 330649
Date 16/10/2005        Surface DRY          Lighting DAY-LIGHTS
-----
Veh
1 CAR Going ahead other S N 1 PEDESTRIAN 44 Ser
*****
Reference D000800/05  Loc - HILTON A5132 EGGINTON ROAD O/S
~~~~~
Severity Slight           Time 0830           First Rd A5132 60 mph           Easting 425877
Day Sat                Weather FINE        Second Rd 30 mph           Northing 329945
Date 29/10/2005        Surface DRY          Lighting DAY-NO LIGHTS
-----
Veh
1 CAR Going ahead other NW SE 1 DRIVER 26 Sli
*****
Reference D000809/05  Loc - HILTON A5132 EGGINTON ROAD 5 MTRS
~~~~~
Severity Slight           Time 1545           First Rd A5132 30 mph           Easting 425030
Day Mon                Weather FINE        Second Rd U 30 mph           Northing 330603
Date 31/10/2005        Surface DRY          Lighting DAY-LIGHTS
-----
Veh
1 CAR O/Take stry Veh on O/S SE NW 1 PEDESTRIAN N 14 Sli
2 PSV Parked PKK PKK
*****
Reference D000817/05  Loc - HATTON A511 STATION ROAD J/W
~~~~~
Severity Slight           Time 0800           First Rd A511 30 mph           Easting 421657
Day Wed                Weather FINE        Second Rd U 30 mph           Northing 330370
Date 02/11/2005        Surface WET          Lighting DAY-LIGHTS
-----
Veh
1 CAR Turning Right E S Cas
2 Going ahead other N S 1 DRIVER 32 Sli
*****
Reference D000887/05  Loc - HILTON MAIN STREET J/W MILL LANE
~~~~~
Severity Slight           Time 0900           First Rd C366 30 mph           Easting 424336
Day Tue                Weather FINE        Second Rd U 30 mph           Northing 330634
Date 22/11/2005        Surface WET          Lighting DAY-LIGHTS
-----
Veh
1 CAR Turning Right W S Cas
2 CAR Going ahead other E W 1 DRIVER 24 Sli
3 CAR Waiting to turn Left S W
-----

```

Personal Injury accident data from 01/08/2005 to 31/07/2010

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*****
Reference D000910/05 Loc - HILTON EGGINTON ROAD J/W THE MEASE
~~~~~
Severity Slight Time 1351 First Rd A5132 30 mph Easting 425129
Day Mon Weather OTHER Second Rd U 30 mph Northing 330549
Date 28/11/2005 Surface ICE Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Going ahead other E W
2 CAR Going ahead other N S 1 DRIVER 51 Sli
*****
Reference D000213/06 Loc - HATTON A511 UTTOXETER ROAD J/W THE
~~~~~
Severity Slight Time 1615 First Rd A511 40 mph Easting 421581
Day Fri Weather FINE Second Rd U 30 mph Northing 330859
Date 17/03/2006 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Turning Right S E 1 DRIVER 20 Sli
2 CAR Going ahead other E W
*****
Reference D000363/06 Loc - HILTON A5132 EGGINTON ROAD ON BEND
~~~~~
Severity Slight Time 2110 First Rd A5132 60 mph Easting 425512
Day Tue Weather FINE Second Rd mph Northing 330416
Date 23/05/2006 Surface DRY Lighting DAY-NO LIGHTS
-----
Veh Cas
1 CAR Going ahead L/H bend SE W 1 PASSENGER nk Sli
*****
Reference D000494/06 Loc - HILTON A5132 DERBY ROAD J/W A50
~~~~~
Severity Slight Time 2000 First Rd A5132 60 mph Easting 425268
Day Sun Weather UNKNOWN Second Rd A50 30 mph Northing 331090
Date 02/07/2006 Surface DRY Lighting DAY-UNKNOWN
-----
Veh Cas
1 CAR U Turn NE NE
2 M<125 O/Take move Veh O/S NE SW 1 DRIVER nk Sli
*****
Reference D000516/06 Loc - HILTON A5132 EGGINTON ROAD PRIOR
~~~~~
Severity Slight Time 1045 First Rd A5132 60 mph Easting 426067
Day Sat Weather FINE Second Rd mph Northing 329584
Date 15/07/2006 Surface DRY Lighting DAY-NO LIGHTS
-----
Veh Cas
1 CAR Waiting to go ahead NW S 1 PASSENGER 6 Sli
2 CAR Going ahead R/H bend NW S
*****
Reference D000572/06 Loc - HILTON A50 (W)
~~~~~
Severity Slight Time 1030 First Rd A50 70 mph Easting 425471
Day Thu Weather FINE Second Rd mph Northing 331146
Date 03/08/2006 Surface DRY Lighting DAY-NO LIGHTS
-----
Veh Cas
1 CAR Going ahead other SE NW 1 DRIVER 41 Sli
2 G>7.5 Stopping SE NW
*****
Reference D000668/06 Loc - HATTON A511 STATION ROAD J/W
~~~~~
Severity Slight Time 2025 First Rd A511 30 mph Easting 421643
Day Sat Weather FINE Second Rd U 30 mph Northing 330277
Date 02/09/2006 Surface DRY Lighting DARK-UNKNOWN
-----
Veh Cas
1 CAR Turning Right E N
2 M<125 Going ahead other N S 1 PASSENGER 17 Sli
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Personal Injury accident data from 01/08/2005 to 31/07/2010

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*****
Reference D000205/07 Loc - HATTON STATION ROAD NR THE RAILWAY
~~~~~
Severity Slight Time 1300 First Rd A511 30 mph Easting 421493
Day Sat Weather FINE Second Rd mph Northing 329679
Date 17/03/2007 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Going ahead other S N 1 PEDESTRIAN E 20 Sli
*****
Reference D000282/07 Loc - HATTON DERBY ROAD APP 19 MTRS EAST
~~~~~
Severity Slight Time 1030 First Rd C366 40 mph Easting 421725
Day Sat Weather FINE Second Rd A511 30 mph Northing 330848
Date 14/04/2007 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Waiting to go ahead E W 1 DRIVER 31 Sli
2 CAR Going ahead other E W
*****
Reference D000338/07 Loc - HILTON A50 W/B C/WAY J/W A516
~~~~~
Severity Slight Time 1805 First Rd A50 60 mph Easting 425349
Day Tue Weather FINE Second Rd A516 30 mph Northing 331112
Date 01/05/2007 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Waiting to turn Left SE SW
2 CAR Starting SE SW 1 DRIVER 44 Sli
*****
Reference D000373/07 Loc - HILTON A516 DERBY ROAD J/W LAYBY
~~~~~
Severity Slight Time 0930 First Rd A516 60 mph Easting 425853
Day Tue Weather RAIN Second Rd U 30 mph Northing 331473
Date 15/05/2007 Surface WET Lighting DAY-NO LIGHTS
-----
Veh Cas
1 G<3.5 Going ahead other NE SW
2 G<3.5 Going ahead other SW NE 1 DRIVER 32 Sli
3 CAR Going ahead other SW NE
4 G<3.5 Waiting to turn Right NE NW
*****
Reference D000375/07 Loc - HATTON A511 STATION ROAD J/W
~~~~~
Severity Slight Time 1235 First Rd A511 30 mph Easting 421643
Day Tue Weather FINE Second Rd U 30 mph Northing 330276
Date 15/05/2007 Surface WET Lighting DAY-LIGHTS
-----
Veh Cas
1 G>7.5 Going ahead other S N
2 CAR Waiting to turn Right S E 1 DRIVER 37 Sli
*****
Reference D000480/07 Loc - HATTON A511 STATION ROAD J/W
~~~~~
Severity Slight Time 0817 First Rd A511 40 mph Easting 421709
Day Mon Weather FINE Second Rd U mph Northing 330801
Date 11/06/2007 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Reversing W E
2 MOPED Waiting to go ahead S N 1 DRIVER 16 Sli
*****
Reference D000656/07 Loc - HILTON A516 T/I J/W A50 (W) ACCESS
~~~~~
Severity Slight Time 0544 First Rd A516 60 mph Easting 425284
Day Mon Weather FINE Second Rd A50 30 mph Northing 331122
Date 20/08/2007 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 G>7.5 Going ahead R/H bend NE NW 1 DRIVER 59 Sli
-----

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Personal Injury accident data from 01/08/2005 to 31/07/2010

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*****
Reference D000697/07 Loc - HATTON A511 STATION ROAD J/W YEW
~~~~~
TREE ROAD
Severity Slight Time 0822 First Rd A511 30 mph Easting 421658
Day Tue Weather FINE Second Rd U 30 mph Northing 330378
Date 04/09/2007 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 M<125 O/Take stry Veh on O/S S N 1 DRIVER 27 Sli
2 CAR Turning Right W S
3 OMV Waiting to go ahead S N
*****
Reference D000739/07 Loc - HATTON A511 STATION ROAD J/W YEW
~~~~~
TREE ROAD
Severity Serious Time 1540 First Rd A511 30 mph Easting 421658
Day Tue Weather FINE Second Rd U 30 mph Northing 330378
Date 18/09/2007 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Waiting to turn Right W S
2 M>125 Going ahead other S N 1 DRIVER 72 Ser
*****
Reference D000791/07 Loc - HATTON - SCROPTON ROAD O/S
~~~~~
METHODIST CHURCH
Severity Fatal Time 1150 First Rd C36 30 mph Easting 421392
Day Wed Weather FINE Second Rd mph Northing 329842
Date 03/10/2007 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 G<3.5 Going ahead other E W
2 OMV Going ahead other N S 1 DRIVER 68 Fat
*****
Reference D000850/07 Loc - HOON DERBY ROAD NEAR HOON LANE
~~~~~
LOCATION N/V
Severity Slight Time 0715 First Rd C366 60 mph Easting 423253
Day Sat Weather RAIN Second Rd mph Northing 330733
Date 27/10/2007 Surface WET Lighting DARK-UNLIT
-----
Veh Cas
1 CAR O/Take stry Veh on O/S E W
2 CAR Going ahead other W E 1 DRIVER 37 Sli
3 PSV Parked PKK PKK
*****
Reference D000932/07 Loc - HATTON - A511 STATION ROAD J/W
~~~~~
DRIVEWAY TO NO 75
Severity Slight Time 0630 First Rd A511 30 mph Easting 421622
Day Tue Weather RAIN Second Rd 30 mph Northing 330133
Date 13/11/2007 Surface WET Lighting DARK-LIT
-----
Veh Cas
1 CAR Starting W E
2 CAR Going ahead other S N 1 PASSENGER 28 Sli
*****
Reference D000167/08 Loc - HILTON A5132 EGGINTON ROAD J/W
~~~~~
WITHAM CLOSE
Severity Slight Time 0815 First Rd A5132 30 mph Easting 425021
Day Thu Weather FINE Second Rd U 30 mph Northing 330606
Date 28/02/2008 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Going ahead other SE NW
2 P/C Turning Right SW SE 1 DRIVER 90 Sli
*****
Reference D000244/08 Loc - HILTON A516 T/I J/W A516
~~~~~
Severity Slight Time 1627 First Rd A516 60 mph Easting 425292
Day Mon Weather FINE Second Rd A516 mph Northing 331102
Date 31/03/2008 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 G>7.5 Going ahead R/H bend NE NW 1 DRIVER 45 Sli
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Personal Injury accident data from 01/08/2005 to 31/07/2010

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*****
Reference D000296/08  Loc - HILTON  DERBY ROAD LOC N/V
~~~~~
Severity Serious      Time 1415      First Rd A516      60 mph      Easting 425703
Day Tue              Weather RAIN      Second Rd      30 mph      Northing 331350
Date 15/04/2008      Surface WET      Lighting DAY-NO LIGHTS
-----
Veh                               Cas
1 CAR Parked              PKK PKK
2 MOPED Going ahead other  SW NE 1 DRIVER      16 Ser
*****
Reference D000557/08  Loc - HILTON  DERBY ROAD LOC N/V
~~~~~
Severity Slight      Time 0845      First Rd C366      30 mph      Easting 424759
Day Sat              Weather FINE      Second Rd      mph      Northing 330793
Date 31/05/2008      Surface DRY      Lighting DAY-LIGHTS
-----
Veh                               Cas
1 CAR O/Take move Veh O/S  NE SW 1 DRIVER      28 Sli
2 CAR Going ahead other    NE SW 2 DRIVER      28 Sli
*****
Reference D000455/08  Loc - HILTON  MAIN STREET J/W MAIN STREET
~~~~~
Severity Slight      Time 1413      First Rd C366      30 mph      Easting 424582
Day Mon              Weather FINE      Second Rd C366      30 mph      Northing 330688
Date 09/06/2008      Surface DRY      Lighting DAY-NO LIGHTS
-----
Veh                               Cas
1 CAR Turning Right      N W
2 CAR Going ahead L/H bend W NE 1 DRIVER      57 Sli
*****
Reference D000672/08  Loc - HATTON  A511 STATION ROAD J/W JINNY
~~~~~
Severity Slight      Time 1609      First Rd A511      30 mph      Easting 421517
Day Sat              Weather FINE      Second Rd U      30 mph      Northing 329743
Date 23/08/2008      Surface DRY      Lighting DAY-LIGHTS
-----
Veh                               Cas
1 CAR Turning Right      W S 1 PEDESTRIAN W 21 Sli
*****
Reference D000734/08  Loc - HILTON  A5132 EGGINTON ROAD J/W
~~~~~
Severity Slight      Time 1649      First Rd A5132      60 mph      Easting 425467
Day Tue              Weather FINE      Second Rd C246      30 mph      Northing 330447
Date 16/09/2008      Surface DRY      Lighting DAY-LIGHTS
-----
Veh                               Cas
1 G<3.5 Turning Right    SE NE
2 Going ahead other      SE NW 1 DRIVER      17 Sli
*****
Reference D000805/08  Loc - HILTON  A516DERBY ROAD BTWN HILTON
~~~~~
Severity Slight      Time 0805      First Rd A516      60 mph      Easting 425740
Day Sat              Weather FINE      Second Rd      mph      Northing 331377
Date 04/10/2008      Surface DRY      Lighting DAY-NO LIGHTS
-----
Veh                               Cas
1 CAR Going ahead other  NE SW 1 DRIVER      20 Sli
2 CAR Going ahead other  SW NE 2 DRIVER      45 Sli
*****
Reference D000820/08  Loc - HILTON  A50 W/B C/WAY J/W A516
~~~~~
Severity Slight      Time 2200      First Rd A50      70 mph      Easting 425345
Day Tue              Weather FINE      Second Rd A516      mph      Northing 331112
Date 07/10/2008      Surface WET      Lighting DARK-LIT
-----
Veh                               Cas
1 CAR Going ahead other  E W 1 DRIVER      32 Sli
2 G>7.5 Changing Lane to Left E W
-----

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Personal Injury accident data from 01/08/2005 to 31/07/2010

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*****
Reference D000879/08 Loc - HILTON A5132 DERBY ROAD J/W A5132
~~~~~
Severity Slight          Time 1540      First Rd A5132 30 mph      Easting 425090
Day Wed                Weather FINE    Second Rd A5132      mph      Northing 330946
Date 22/10/2008        Surface DRY      Lighting DAY-LIGHTS
-----
Veh
1 CAR Turning Left      NE S          Cas
2 P/C Going ahead other NE SW 1 DRIVER 30 Sli
*****
Reference D000989/08 Loc - HATTON A511 STATION ROAD 30 MTRS
~~~~~
Severity Slight          Time 1810      First Rd A511 30 mph      Easting 421663
Day Mon                Weather FINE    Second Rd      mph      Northing 330409
Date 24/11/2008        Surface WET      Lighting DARK-LIT
-----
Veh
1 CAR U Turn            N N          Cas
2 Going ahead other     N S 1 DRIVER 40 Sli
3 CAR Going ahead other S N
*****
Reference D001015/08 Loc - HILTON MAIN STREET O/S NO. 19
~~~~~
Severity Slight          Time 1524      First Rd C366 30 mph      Easting 424508
Day Sun                Weather FINE    Second Rd      mph      Northing 330672
Date 30/11/2008        Surface DRY      Lighting DAY-LIGHTS
-----
Veh
1 CAR Parked            PKK PKK      Cas
2 CAR Parked            PKK PKK 1 DRIVER 38 Sli
3 CAR O/Take stry Veh on O/S E W
*****
Reference D001074/08 Loc - HILTON A50 (W) WEST EXIT S/RD
~~~~~
Severity Slight          Time 1750      First Rd A50 70 mph      Easting 425550
Day Thu                Weather RAIN    Second Rd      mph      Northing 331121
Date 18/12/2008        Surface WET      Lighting DARK-NO LIGHTS
-----
Veh
1 CAR Going ahead other E W 1 DRIVER 19 Sli
*****
Reference D001085/08 Loc - HOON DERBY ROAD APP 400 MTRS EAST
~~~~~
Severity Slight          Time 1130      First Rd C366 60 mph      Easting 422445
Day Sat                Weather RAIN    Second Rd      mph      Northing 330793
Date 20/12/2008        Surface WET      Lighting DAY-LIGHTS
-----
Veh
1 CAR Going ahead other W E          Cas
2 CAR Stopping          W E 1 DRIVER 21 Sli
*****
Reference D000096/09 Loc - HATTON DERBY ROAD J/W A511
~~~~~
Severity Serious          Time 1720      First Rd C366 40 mph      Easting 421724
Day Fri                Weather FINE    Second Rd A511 30 mph      Northing 330848
Date 06/02/2009        Surface WET      Lighting DARK-LIT
-----
Veh
1 CAR Going ahead other W E          Cas
2 P/C Starting          N S 1 DRIVER 76 Ser
*****
Reference D000170/09 Loc - HATTON DERBY ROAD J/W SUTTON LANE
~~~~~
Severity Slight          Time 1600      First Rd C366 60 mph      Easting 422037
Day Thu                Weather FINE    Second Rd C79      mph      Northing 330825
Date 05/03/2009        Surface DRY      Lighting DAY-LIGHTS
-----
Veh
1 CAR Waiting to turn Right E N 1 DRIVER 46 Sli
2 CAR Going ahead other E W
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Personal Injury accident data from 01/08/2005 to 31/07/2010

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*****
Reference D000332/09 Loc - HATTON MARSTON OLD LANE J/W STATION
~~~~~
Severity Slight Time 1654 First Rd U 30 mph Easting 421468
Day Mon Weather FINE Second Rd A511 mph Northing 329604
Date 04/05/2009 Surface DRY Lighting DAY-NO LIGHTS
-----
Veh
1 CAR Waiting to turn Left E S 1 PASSENGER 32 Sli
2 CAR Stopping E W
*****
Reference D000445/09 Loc - HILTON EGGINGTON ROAD ON A BEND NR
~~~~~
Severity Serious Time 1423 First Rd A5132 40 mph Easting 426067
Day Sat Weather FINE Second Rd mph Northing 329587
Date 13/06/2009 Surface DRY Lighting DAY-NO LIGHTS
-----
Veh
1 Going ahead L/H bend S NW 1 DRIVER 20 Ser
2 CAR Going ahead R/H bend NW S
3 Waiting to go ahead S NW 2 PASSENGER 62 Sli
*****
Reference D000597/09 Loc - HILTON A516/A50 T/I
~~~~~
Severity Slight Time 1556 First Rd A516 40 mph Easting 425513
Day Thu Weather FINE Second Rd A50 30 mph Northing 331206
Date 30/07/2009 Surface DRY Lighting DAY-LIGHTS
-----
Veh
1 G>7.5 Going ahead R/H bend NE W 1 DRIVER 48 Sli
*****
Reference D000609/09 Loc - HILTON EGGINGTON ROAD O/S DON AMOTT
~~~~~
Severity Slight Time 0817 First Rd A5132 40 mph Easting 425696
Day Fri Weather FINE Second Rd mph Northing 330199
Date 31/07/2009 Surface DRY Lighting DAY-LIGHTS
-----
Veh
1 G>7.5 Parked PKK PKK
2 CAR Stopping SE NW 1 DRIVER 27 Sli
3 CAR Going ahead other SE NW
*****
Reference D000688/09 Loc - HILTON A516 T/I J/W WILLOWPIT LANE
~~~~~
Severity Serious Time 1517 First Rd A516 60 mph Easting 425499
Day Sat Weather FINE Second Rd C246 mph Northing 331274
Date 05/09/2009 Surface DRY Lighting DAY-LIGHTS
-----
Veh
1 MG V Going ahead other W E
2 P/C Going ahead other W E 1 DRIVER 54 Ser
*****
Reference D000785/09 Loc - HILTON A5132 EGGINGTON ROAD APP 5
~~~~~
Severity Slight Time 1415 First Rd A5132 40 mph Easting 425627
Day Wed Weather FINE Second Rd U mph Northing 330286
Date 07/10/2009 Surface DRY Lighting DAY-LIGHTS
-----
Veh
1 CAR Going ahead other NW SE 1 DRIVER 18 Sli
2 CAR Going ahead other SE NW
*****
Reference D000089/10 Loc - HATTON A511 STATION ROAD LOC N/V
~~~~~
Severity Serious Time 1545 First Rd A511 30 mph Easting 421664
Day Wed Weather RAIN Second Rd mph Northing 330417
Date 03/02/2010 Surface WET Lighting DAY-LIGHTS
-----
Veh
1 CAR O/Take stry Veh on O/S N S 1 PEDESTRIAN W 12 Ser
2 OMV Parked PKK PKK
-----

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Personal Injury accident data from 01/08/2005 to 31/07/2010

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*****
Reference D000101/10 Loc - HATTON A511 STATION ROAD J/W YEW
~~~~~
Severity Slight Time 2130 First Rd A511 30 mph Easting 421660
Day Fri Weather FINE Second Rd U 30 mph Northing 330387
Date 05/02/2010 Surface WET Lighting DARK-LIT
-----
Veh Cas
1 P/C Going ahead other S N 1 DRIVER 42 Sli
*****
Reference D000130/10 Loc - HILTON MAIN STREET O/S THE KINGS
~~~~~
Severity Slight Time 1535 First Rd C366 30 mph Easting 424300
Day Fri Weather FINE Second Rd mph Northing 330624
Date 12/02/2010 Surface WET Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Going ahead other W E
2 CAR Stopping W E 1 PASSENGER 38 Sli
*****
Reference D000438/10 Loc - HILTON A5132 EGGINGTON ROAD LOC N/V
~~~~~
Severity Slight Time 1920 First Rd A5132 50 mph Easting 425803
Day Mon Weather FINE Second Rd mph Northing 330064
Date 17/05/2010 Surface DRY Lighting DAY-NO LIGHTS
-----
Veh Cas
1 G<3.5 O/Take move Veh O/S SE NW
2 P/C Going ahead other SE NW 1 DRIVER 41 Sli
*****
Reference D000656/10 Loc - HILTON A5132 DERBY ROAD J/W A50
~~~~~
Severity Slight Time 1727 First Rd A5132 40 mph Easting 425287
Day Tue Weather FINE Second Rd A50 30 mph Northing 331095
Date 29/06/2010 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Turning Right NW SW
2 CAR Going ahead other NE SW 1 DRIVER 42 Sli
*****
Reference D000626/10 Loc - HILTON A5132 J/W A516
~~~~~
Severity Slight Time 1130 First Rd A5132 40 mph Easting 425279
Day Wed Weather UNKNOWN Second Rd A516 30 mph Northing 331111
Date 30/06/2010 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 CAR Going ahead R/H bend E NW
2 CAR Waiting to go ahead SW NE 1 DRIVER 43 Sli
*****
Reference D000602/10 Loc - HATTON A511 STATION ROAD J/W SALT
~~~~~
Severity Slight Time 1228 First Rd A511 30 mph Easting 421711
Day Fri Weather FINE Second Rd U mph Northing 330745
Date 02/07/2010 Surface DRY Lighting DAY-LIGHTS
-----
Veh Cas
1 G>7.5 Turning Right E N
2 CAR Going ahead other S N 1 DRIVER 39 Sli
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The attached information has been obtained from the Derbyshire Constabulary accident database. The database contains information relating to accidents involving personal injury which were recorded by the Derbyshire Constabulary. Whilst every effort has been made to ensure the accuracy of the data now supplied, Derbyshire Constabulary cannot be held responsible for any errors.

APPENDIX D – PROPOSED SITE MASTERPLAN

PROPOSED SITE LAYOUT PLAN TO BE INSERTED HERE

APPENDIX E – TRICS OUTPUT DATA

RESIDENTIAL TRICS SEARCH

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST	BD BEDFORDSHIRE	2 days
		ES EAST SUSSEX	1 days
		EX ESSEX	1 days
		HF HERTFORDSHIRE	1 days
		SC SURREY	1 days
03	SOUTH WEST	CW CORNWALL	2 days
		GS GLOUCESTERSHIRE	1 days
		WL WILTSHIRE	1 days
04	EAST ANGLIA	CA CAMBRIDGESHIRE	2 days
		SF SUFFOLK	3 days
05	EAST MIDLANDS	DS DERBYSHIRE	1 days
		LE LEICESTERSHIRE	1 days
		LN LINCOLNSHIRE	2 days
		NT NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS	ST STAFFORDSHIRE	2 days
		WM WEST MIDLANDS	3 days
		WO WORCESTERSHIRE	4 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	NY NORTH YORKSHIRE	3 days
08	NORTH WEST	CH CHESHIRE	2 days
		GM GREATER MANCHESTER	2 days
		LC LANCASHIRE	2 days
		MS MERSEYSIDE	1 days
09	NORTH	CB CUMBRIA	3 days
		TV TEES VALLEY	1 days
		TW TYNE & WEAR	1 days
10	WALES	CF CARDIFF	3 days
		CP CAERPHILLY	1 days
		WR WREXHAM	1 days
11	SCOTLAND	EA EAST AYRSHIRE	1 days
		FI FIFE	2 days
		HI HIGHLAND	1 days
		SR STIRLING	1 days

Filtering Stage 2 selection:

Parameter: Number of dwellings
Range: 10 to 491 (units:)

Public Transport Provision:

Selection by:

Include all surveys

Date Range: 01/01/00 to 24/04/09

Selected survey days:

Monday	14 days
Tuesday	14 days
Wednesday	5 days
Thursday	14 days
Friday	7 days

Selected survey types:

Manual count	54 days
Directional ATC Count	0 days

Selected Locations:

Edge of Town Centre	4
Suburban Area (PPS6 Out of Centre)	21
Edge of Town	27
Neighbourhood Centre (PPS6 Local Centre)	2

Selected Location Sub Categories:

Residential Zone	42
Out of Town	1
No Sub Category	11

LIST OF SITES relevant to selection parameters

1	BD-03-A-01 NEW BEDFORD ROAD LUTON Total Number of dwellings: 131 Survey date: THURSDAY 08/07/04 SEMI DETACHED, LUTON	BEDFORDSHIRE
2	BD-03-A-02 RIDDY LANE LUTON Total Number of dwellings: 131 Survey date: THURSDAY 08/07/04 SEMI DETACHED, LUTON	BEDFORDSHIRE Survey Type: MANUAL
3	CA-03-A-01 FALLOWFIELD CHESTERTON CAMBRIDGE Total Number of dwellings: 82 Survey date: TUESDAY 06/07/04 SEMI D./TERRACED, CAMBRIDGE	CAMBRIDGESHIRE Survey Type: MANUAL
4	CA-03-A-02 THORPE ROAD PETERBOROUGH Total Number of dwellings: 124 Survey date: TUESDAY 06/02/01 MIXED HOUSES, PETERBOROUGH	CAMBRIDGESHIRE Survey Type: MANUAL
5	CB-03-A-02 HAWKSHEAD AVENUE WORKINGTON Total Number of dwellings: 363 Survey date: THURSDAY 13/05/04 SEMI DETACHED, WORKINGTON	CUMBRIA Survey Type: MANUAL
6	CB-03-A-03 HAWKSHEAD AVENUE WORKINGTON Total Number of dwellings: 40 Survey date: MONDAY 20/06/05 SEMI DETACHED, WORKINGTON	CUMBRIA Survey Type: MANUAL
7	CB-03-A-04 MOORCLOSE ROAD SALTERBACK WORKINGTON Total Number of dwellings: 40 Survey date: THURSDAY 20/11/08 SEMI DETACHED, WORKINGTON	CUMBRIA Survey Type: MANUAL
8	CF-03-A-01 VIRGIL STREET NINIAN PARK CARDIFF Total Number of dwellings: 82 Survey date: FRIDAY 24/04/09 MIXED HOUSES, CARDIFF	CARDIFF Survey Type: MANUAL
9	CF-03-A-02 DROPE ROAD CARDIFF Total Number of dwellings: 222 Survey date: THURSDAY 17/10/02 MIXED HOUSES, CARDIFF	CARDIFF Survey Type: MANUAL
	CARDIFF Total Number of dwellings: 196 Survey date: FRIDAY 05/10/07	CARDIFF Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

10	CF-03-A-03 LLANTRISANT ROAD CARDIFF Total Number of dwellings: 29 Survey date: MONDAY 08/10/07 DETACHED, CREWE	CARDIFF Survey Type: MANUAL
11	CH-03-A-05 SYDNEY ROAD SYDNEY CREWE Total Number of dwellings: 17 Survey date: TUESDAY 14/10/08 SEMI-DET./BUNGALOWS, CREWE	CHESHIRE Survey Type: MANUAL
12	CH-03-A-06 CREWE ROAD CREWE Total Number of dwellings: 129 Survey date: TUESDAY 14/10/08 SEMI DETACHED, PENGAM	CHESHIRE Survey Type: MANUAL
13	CP-03-A-02 THE RISE PENGAM Total Number of dwellings: 41 Survey date: MONDAY 05/09/05 TERRACED, PENZANCE	CAERPHILLY Survey Type: MANUAL
14	CW-03-A-01 ALVERTON ROAD PENZANCE Total Number of dwellings: 13 Survey date: THURSDAY 30/06/05 SEMI D./DETACHED, TRURO	CORNWALL Survey Type: MANUAL
15	CW-03-A-02 BOSVEAN GARDENS TRURO Total Number of dwellings: 73 Survey date: TUESDAY 18/09/07 SEMI D./TERRACED, DRONFIELD	CORNWALL Survey Type: MANUAL
16	DS-03-A-01 THE AVENUE HOLMESDALE DRONFIELD Total Number of dwellings: 20 Survey date: THURSDAY 22/06/06 DETACHED, KILMARNOCK	DERBYSHIRE Survey Type: MANUAL
17	EA-03-A-01 TALISKER AVENUE KILMARNOCK Total Number of dwellings: 39 Survey date: THURSDAY 05/06/08 MIXED HOUSES/FLATS, LEWES	EAST AYRSHIRE Survey Type: MANUAL
18	ES-03-A-01 OLD MALLING WAY SOUTH MALLING LEWES Total Number of dwellings: 491 Survey date: THURSDAY 29/03/01	EAST SUSSEX Survey Type: MANUAL

Bancroft Consulting Mercury House, New Basford Nottingham

LIST OF SITES relevant to selection parameters (Cont.)

19	EX-03-A-01 MILTON ROAD CORRINGHAM STANFORD-LE-HOPE Total Number of dwellings: 237 Survey date: <i>TUESDAY</i>	SEMI-DET., STANFORD-LE-HOPE	ESSEX
20	FI-03-A-02 WAROUT ROAD Total Number of dwellings: 237 Survey date: <i>TUESDAY</i>	SEMI DETACHED, GLENROTHES	FIFE <i>Survey Type: MANUAL</i>
21	FI-03-A-03 WOODMILL ROAD Total Number of dwellings: 58 Survey date: <i>MONDAY</i>	MIXED HOUSES, DUNFERMLINE	FIFE <i>Survey Type: MANUAL</i>
22	GM-03-A-07 MILFORD DRIVE LEVENSHULME MANCHESTER Total Number of dwellings: 155 Survey date: <i>MONDAY</i>	SEMI DETACHED, MANCHESTER	GREATER MANCHESTER <i>Survey Type: MANUAL</i>
23	GM-03-A-08 ELM TREE ROAD LOWER BREDBURY STOCKPORT Total Number of dwellings: 138 Survey date: <i>FRIDAY</i>	SEMI DETACHED, STOCKPORT	GREATER MANCHESTER <i>Survey Type: MANUAL</i>
24	GS-03-A-01 KINGSHOLM ROAD KINGSHOLM GLOUCESTER Total Number of dwellings: 247 Survey date: <i>FRIDAY</i>	SEMI D./TERRACED, GLOUCESTER	GLOUCESTERSHIRE <i>Survey Type: MANUAL</i>
25	HF-03-A-01 LONGCROFT LANE Total Number of dwellings: 73 Survey date: <i>TUESDAY</i>	MIXED HOUSES, WELWYN GC	HERTFORDSHIRE <i>Survey Type: MANUAL</i>
26	HI-03-A-11 STEVENSON ROAD INSHES INVERNESS Total Number of dwellings: 85 Survey date: <i>MONDAY</i>	BUNGALOWS, INVERNESS	HIGHLAND <i>Survey Type: MANUAL</i>
27	LC-03-A-22 CLIFTON DRIVE NORTH BLACKPOOL Total Number of dwellings: 98 Survey date: <i>TUESDAY</i>	BUNGALOWS, BLACKPOOL	LANCASHIRE <i>Survey Type: MANUAL</i>

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LIST OF SITES relevant to selection parameters (Cont.)

28	LC-03-A-29 REVIDGE ROAD FOUR LANE ENDS BLACKBURN Total Number of dwellings: 185 Survey date: <i>THURSDAY</i>	DETACHED/SEMI D., BLACKBURN	LANCASHIRE <i>Survey Type: MANUAL</i>
29	LE-03-A-01 REDWOOD AVENUE Total Number of dwellings: 185 Survey date: <i>THURSDAY</i>	DETACHED, MELTON MOWBRAY	LEICESTERSHIRE <i>Survey Type: MANUAL</i>
30	LN-03-A-01 BRANT ROAD BRACEBRIDGE LINCOLN Total Number of dwellings: 11 Survey date: <i>TUESDAY</i>	MIXED HOUSES, LINCOLN	LINCOLNSHIRE <i>Survey Type: MANUAL</i>
31	LN-03-A-02 HYKEHAM ROAD Total Number of dwellings: 150 Survey date: <i>TUESDAY</i>	MIXED HOUSES, LINCOLN	LINCOLNSHIRE <i>Survey Type: MANUAL</i>
32	MS-03-A-01 PALACE FIELDS AVENUE RUNCORN Total Number of dwellings: 186 Survey date: <i>MONDAY</i>	TERRACED, RUNCORN	MERSEYSIDE <i>Survey Type: MANUAL</i>
33	NT-03-A-03 B6018 SUTTON ROAD KIRKBY-IN-ASHFIELD Total Number of dwellings: 372 Survey date: <i>THURSDAY</i>	SEMI DETACHED, KIRKBY-IN-ASHFD	NOTTINGHAMSHIRE <i>Survey Type: MANUAL</i>
34	NY-03-A-01 GRAMMAR SCHOOL LANE Total Number of dwellings: 166 Survey date: <i>WEDNESDAY</i>	MIXED HOUSES, NORTHALLERTON	NORTH YORKSHIRE <i>Survey Type: MANUAL</i>
35	NY-03-A-03 NEW ROW BOROUGHBRIDGE Total Number of dwellings: 14 Survey date: <i>MONDAY</i>	PRIVATE HOUSING, BOROUGHBRIDGE	NORTH YORKSHIRE <i>Survey Type: MANUAL</i>

LIST OF SITES relevant to selection parameters (Cont.)

36	NY-03-A-05	HOUSES AND FLATS, RIPON	NORTH YORKSHIRE
	BOROUGHBRIDGE ROAD		
	RIPON		
	Total Number of dwellings: 71		
	Survey date: <i>MONDAY</i>		Survey Type: <i>MANUAL</i>
37	AC-03-A-03	DETACHED, EAST MOLESEY	SURREY
	A3050 HURST ROAD		
	HURST PARK		
	EAST MOLESEY		
	Total Number of dwellings: 54		
	Survey date: <i>TUESDAY</i>		Survey Type: <i>MANUAL</i>
38	SF-03-A-01	SEMI DETACHED, IPSWICH	SUFFOLK
	A1156 FELIXSTOWE ROAD		
	RACECOURSE		
	IPSWICH		
	Total Number of dwellings: 77		
	Survey date: <i>WEDNESDAY</i>		Survey Type: <i>MANUAL</i>
39	SF-03-A-02	SEMI DET./TERRACED, IPSWICH	SUFFOLK
	STOKE PARK DRIVE		
	MAIDENHALL		
	IPSWICH		
	Total Number of dwellings: 230		
	Survey date: <i>THURSDAY</i>		Survey Type: <i>MANUAL</i>
40	SF-03-A-03	MIXED HOUSES, BURY ST EDMDS	SUFFOLK
	BARTON HILL		
	FORNHAM ST MARTIN		
	BURY ST EDMUNDS		
	Total Number of dwellings: 101		
	Survey date: <i>MONDAY</i>		Survey Type: <i>MANUAL</i>
41	SR-03-A-01	DETACHED, STIRLING	STIRLING
	BEVIEW		
	STIRLING		
	Total Number of dwellings: 115		
	Survey date: <i>MONDAY</i>		Survey Type: <i>MANUAL</i>
42	ST-03-A-03	MIXED HOUSES, STAFFORD	STAFFORDSHIRE
	QUEENSVILLE		
	STAFFORD		
	Total Number of dwellings: 224		
	Survey date: <i>TUESDAY</i>		Survey Type: <i>MANUAL</i>
43	ST-03-A-05	TERRACED/DETACHED, STOKE	STAFFORDSHIRE
	WATERMEET GROVE		
	ETRURIA		
	STOKE-ON-TRENT		
	Total Number of dwellings: 14		
	Survey date: <i>WEDNESDAY</i>		Survey Type: <i>MANUAL</i>
44	TV-03-A-01	MIXED HOUSES/FLATS, HARTLEPL	TEES VALLEY
	POWLETT ROAD		
	HARTLEPOOL		
	Total Number of dwellings: 225		
	Survey date: <i>THURSDAY</i>		Survey Type: <i>MANUAL</i>

LIST OF SITES relevant to selection parameters (Cont.)

45	TW-03-A-01	SEMI DETACHED, SUNDERLAND	TYNE & WEAR
	LEECHMERE ROAD		
	HILLVIEW		
	SUNDERLAND		
	Total Number of dwellings: 81		
	Survey date: <i>WEDNESDAY</i>		Survey Type: <i>MANUAL</i>
46	WL-03-A-01	SEMI D./TERRACED W. BASSETT	WILTSHIRE
	MAPLE DRIVE		
	WOOTTON BASSETT		
	Total Number of dwellings: 99		
	Survey date: <i>MONDAY</i>		Survey Type: <i>MANUAL</i>
47	WM-03-A-01	TERRACED, COVENTRY	WEST MIDLANDS
	FOLESHILL ROAD		
	FOLESHILL		
	COVENTRY		
	Total Number of dwellings: 79		
	Survey date: <i>FRIDAY</i>		Survey Type: <i>MANUAL</i>
48	WM-03-A-02	DETACHED/SEMI D., STRBRIDGE	WEST MIDLANDS
	HEATH STREET		
	STOURBRIDGE		
	Total Number of dwellings: 12		
	Survey date: <i>WEDNESDAY</i>		Survey Type: <i>MANUAL</i>
49	WM-03-A-03	MIXED HOUSING, COVENTRY	WEST MIDLANDS
	BASELEY WAY		
	ROWLEYS GREEN		
	COVENTRY		
	Total Number of dwellings: 84		
	Survey date: <i>MONDAY</i>		Survey Type: <i>MANUAL</i>
50	WO-03-A-01	DETACHED, BROMSGROVE	WORCESTERSHIRE
	MARLBOROUGH AVENUE		
	ASTON FIELDS		
	BROMSGROVE		
	Total Number of dwellings: 10		
	Survey date: <i>THURSDAY</i>		Survey Type: <i>MANUAL</i>
51	WO-03-A-02	SEMI DETACHED, REDDITCH	WORCESTERSHIRE
	MEADOWHILL ROAD		
	REDDITCH		
	Total Number of dwellings: 48		
	Survey date: <i>TUESDAY</i>		Survey Type: <i>MANUAL</i>
52	WO-03-A-03	DETACHED, KIDDERMINSTER	WORCESTERSHIRE
	BLAKEBROOK		
	KIDDERMINSTER		
	Total Number of dwellings: 138		
	Survey date: <i>FRIDAY</i>		Survey Type: <i>MANUAL</i>
53	WO-03-A-06	DET./TERRACED, BROMSGROVE	WORCESTERSHIRE
	ST GODWALDS ROAD		
	ASTON FIELDS		
	BROMSGROVE		
	Total Number of dwellings: 232		
	Survey date: <i>THURSDAY</i>		Survey Type: <i>MANUAL</i>

LIST OF SITES relevant to selection parameters (Cont.)

54 WR-03-A-01 SEMI DETACHED, WREXHAM WREXHAM

MOLD ROAD
RHOSDDU
WREXHAM

Total Number of dwellings:

Survey date: MONDAY

82

Survey Type: MANUAL

05/07/04

TRICS 2009(b)v6.4.2 280909 B14.19 (C) 2009 JMP Consultants Ltd on behalf of the TRICS Consortium

Bancroft Consulting Mercury House, New Basford Nottingham

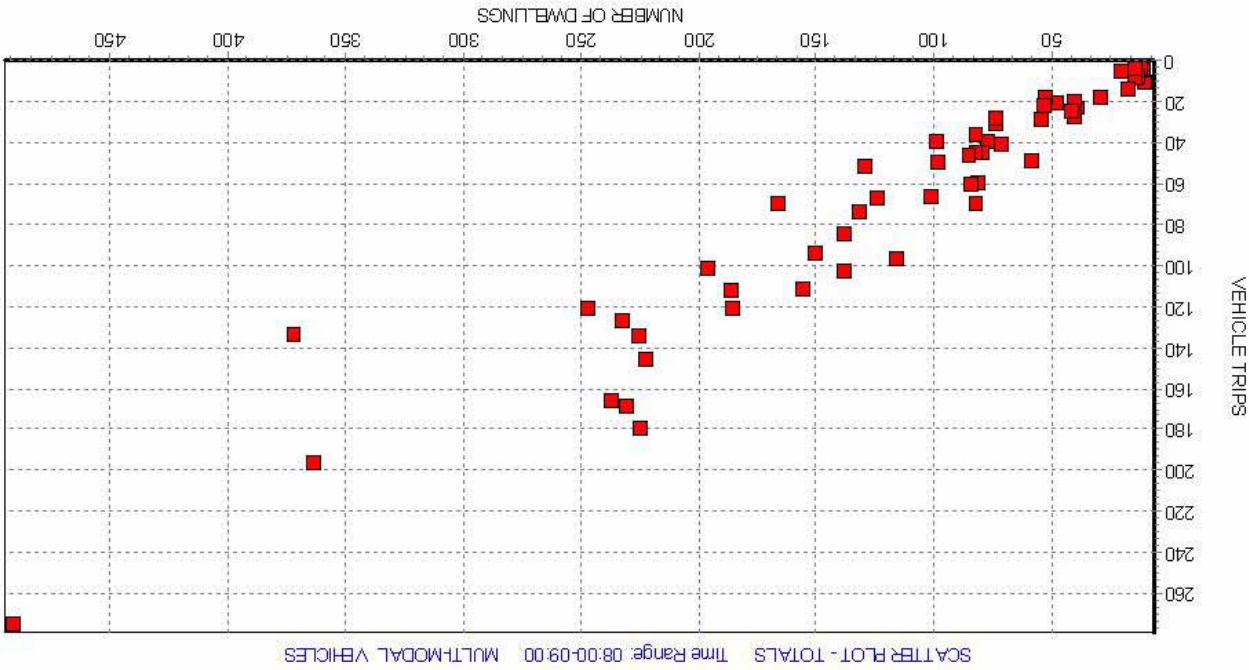
Licence No: 539501

RANK ORDER for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
Ranking Type: TOTALS
15th Percentile = No. 46 (**)
85th Percentile = No. 9 (**)
Median Values
Arrivals: 0.148
Departures: 0.419
Totals: 0.567

Time Range: 08:00-09:00

Rank	Site-Ref	Description	Area	DWELLS	Day	Date	Arrivals	Departures	Trip Rate (Sorted by Totals)	Travel Plan
1	WO-03-A-01	DETACHED, BROMSGROVE	WORCESTERSHIRE	10	Tue	23/06/05	0.500	0.600	1.100	
2	BD-03-A-02	SEMI DETACHED, LUTON	BEDFORDSHIRE	82	Tue	06/07/04	0.317	0.537	0.854	
3	FI-03-A-02	SEMI DETACHED, GLENROTHIE	FIFE	58	Mon	16/05/05	0.276	0.569	0.845	
4	SR-03-A-01	DETACHED, STIRLING	STIRLING	115	Mon	23/04/07	0.165	0.678	0.843	
5	CH-03-A-05	DETACHED, CREWE	CHESHIRE	17	Tue	14/10/08	0.235	0.588	0.823	
6	ST-03-A-03	MIXED HOUSES, STAFFORD	STAFFORDSHIRE	224	Tue	04/07/00	0.165	0.638	0.803	
7	WO-03-A-03	DETACHED, KIDDERMINSTER	WORCESTERSHIRE	138	Fri	05/05/06	0.203	0.543	0.746	
8	TW-03-A-01	SEMI DETACHED, SUNDERLAN	TYNE & WEAR	81	Wed	18/09/02	0.235	0.506	0.741	
9 **	SF-03-A-02	SEMI DET./TERRACED, IPSW	SUFFOLK	230	Thu	24/05/07	0.243	0.491	0.734	
10	WM-03-A-03	MIXED HOUSES, COVENTRY	WEST MIDLANDS	84	Mon	24/09/07	0.321	0.405	0.726	
11	FI-03-A-03	DETACHED/SEMI D., BLACKB	FIFE	155	Mon	30/04/07	0.174	0.548	0.722	
12	EX-03-A-01	SEMI-DET., STANFORD-LE-H	ESSEX	237	Tue	13/05/08	0.177	0.523	0.700	
13	CB-03-A-03	SEMI DETACHED, WORKINGTO	CUMBRIA	40	Thu	20/11/08	0.225	0.450	0.675	
14	SF-03-A-03	MIXED HOUSES, BURY ST ED	SUFFOLK	101	Mon	15/05/06	0.109	0.554	0.663	
15	CF-03-A-01	MIXED HOUSES, CARDIFF	CARDIFF	222	Thu	17/10/02	0.167	0.491	0.658	
16	LC-03-A-29	TERRACED/SEMI D., BLACKB	LANCASHIRE	185	Thu	10/06/04	0.130	0.524	0.654	
17	ST-03-A-05	TERRACED/DETACHED, STOKE	STAFFORDSHIRE	14	Wed	26/11/08	0.143	0.500	0.643	
18	LN-03-A-01	MIXED HOUSES, LINCOLN	LINCOLNSHIRE	150	Tue	15/05/07	0.187	0.440	0.627	
19	CF-03-A-03	DETACHED, CARDIFF	CARDIFF	29	Mon	08/10/07	0.069	0.552	0.621	
20	CM-03-A-01	TERRACED, PENZANCE	CORNWALL	13	Thu	30/06/05	0.385	0.231	0.616	
21	GM-03-A-07	SEMI DETACHED, MANCHESTE	GREATER MANCHESTER	138	Fri	09/11/01	0.196	0.420	0.616	
22	CP-03-A-02	SEMI DETACHED, PENGAM	CARPHILLY	41	Mon	05/09/05	0.195	0.415	0.610	
23	LN-03-A-02	MIXED HOUSES, LINCOLN	LINCOLNSHIRE	186	Mon	14/05/07	0.183	0.425	0.608	
24	TV-03-A-01	MIXED HOUSES/FLATS, HART	TEES VALLEY	225	Thu	14/04/05	0.138	0.458	0.596	
25	EA-03-A-01	DETACHED, KILMARNOCK	EAST Ayrshire	39	Thu	05/06/08	0.231	0.359	0.590	
26	NY-03-A-05	HOUSES AND FLATS, RIPON	NORTH YORKSHIRE	71	Mon	22/09/08	0.113	0.465	0.578	
27	BD-03-A-01	SEMI DETACHED, LUTON	BEDFORDSHIRE	131	Thu	08/07/04	0.145	0.420	0.565	
28	WM-03-A-01	TERRACED, COVENTRY	WEST MIDLANDS	79	Fri	03/02/06	0.132	0.418	0.570	
29	ES-03-A-01	MIXED HOUSES/FLATS, LEWE	EAST SUSSEX	491	Thu	29/03/01	0.151	0.409	0.560	
30	HI-03-A-11	BUNGALOWS, INVERNESS	HIGHLAND	85	Mon	05/06/06	0.129	0.424	0.553	
31	CB-03-A-04	SEMI DETACHED, WORKINGTO	CUMBRIA	82	Fri	24/04/09	0.183	0.366	0.549	
32	CA-03-A-01	SEMI D./TERRACED, CAMBRI	CAMBRIDGESHIRE	124	Tue	06/02/01	0.153	0.395	0.548	
33	WO-03-A-06	DET./TERRACED, BROMSGROV	WORCESTERSHIRE	232	Thu	30/06/05	0.099	0.448	0.547	
34	CA-03-A-02	MIXED HOUSES, PETERBOROU	CAMBRIDGESHIRE	363	Thu	13/05/04	0.201	0.339	0.540	

Rank	Site-Ref	Description	Area	DWELLS	Day	Date	Arrivals	Departures	Trip Rate (Sorted by Totals)	Travel Plan
35	SC-03-A-03	DETACHED, EAST MOLESEY	SURREY	54	Tue	12/11/02	0.148	0.389	0.537	
36	CF-03-A-02	MIXED HOUSES, CARDIFF	CARDIFF	196	Fri	05/10/07	0.107	0.413	0.520	
37	SF-03-A-01	SEMI DETACHED, IPSWICH	SUFFOLK	77	Wed	23/05/07	0.104	0.416	0.520	
38	LC-03-A-22	BUNGALOWS, BLACKPOOL	LANCASHIRE	98	Tue	18/10/05	0.173	0.337	0.510	
39	GB-03-A-02	SEMI DETACHED, WORKINGTON	CUMBRIA	40	Mon	20/06/05	0.075	0.425	0.500	
40	GM-03-A-08	SEMI DETACHED, STOCKPORT	GREATER MANCHESTER	247	Fri	12/10/01	0.113	0.377	0.490	
41	LE-03-A-01	DETACHED, MELTON MOWBRAY	LEICESTERSHIRE	11	Tue	03/05/05	0.091	0.364	0.455	
42	WR-03-A-01	SEMI DETACHED, WREXHAM	WREXHAM	82	Mon	05/07/04	0.085	0.366	0.451	
43	WO-03-A-02	SEMI DETACHED, REDDITCH	WORCESTERSHIRE	48	Tue	02/05/06	0.104	0.333	0.437	
44	CW-03-A-02	SEMI D./DETACHED, TURRO	CORNWALL	73	Tue	18/09/07	0.096	0.329	0.425	
45	NT-03-A-03	SEMI DETACHED, KIRKBY-IN-	NOTTINGHAMSHIRE	166	Wed	28/06/06	0.108	0.313	0.421	
46 **	HF-03-A-01	MIXED HOUSES, WELWYN GC	HERTFORDSHIRE	53	Fri	06/09/02	0.113	0.302	0.415	
47	WL-03-A-01	SEMI D./TERRACED W. BASS	WILTSHIRE	99	Mon	02/10/06	0.071	0.333	0.404	
48	CH-03-A-06	SEMI-DET./BUNGALOWS, CREW	CESHIRE	129	Tue	14/10/08	0.163	0.240	0.403	
49	GS-03-A-01	SEMI D./TERRACED, GLOUCE	GLOUCESTERSHIRE	73	Tue	25/05/04	0.123	0.260	0.383	
50	MS-03-A-01	TERRACED, RUNCOMB	MERSEYSIDE	372	Thu	06/10/05	0.091	0.269	0.360	
51	NY-03-A-01	MIXED HOUSES, NORTHALLERT	NORTH YORKSHIRE	52	Tue	25/09/07	0.173	0.173	0.346	
52	WM-03-A-02	DETACHED/SEMI D., STRBRI	WEST MIDLANDS	12	Wed	26/04/06	0.083	0.250	0.333	
53	DS-03-A-01	SEMI D./TERRACED, DRONFI	DERBYSHIRE	20	Thu	22/06/06	0.200	0.100	0.300	
54	NY-03-A-03	PRIVATE HOUSING, BOROUGH	NORTH YORKSHIRE	14	Mon	15/09/08	0.143	0.143	0.286	



Site Reference: EX-03-A-01 Multi-Modal Site
Created: Version: 2008(b)v6.2.1 21/07/08
Latitude/Longitude: 51.53517, 0.445885
Land Use Type: 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
Region/Area: SOUTH EASTSESSEX
Version/Creation Date: 2008(b)v6.2.1 21/07/08

Description: SEMI-DET., STANFORD-LE-HOPE
Street: MILTON ROAD
District: CORRINGHAM
Town: STANFORD-LE-HOPE
Post Code: SS17 8JU

Location: Edge of Town
Location Sub Category: Residential Zone
Use Class: C3

Population within 500m: 3521
Population within 1 Mile: 15,001 to 20,000
Population within 5 Miles: 125,001 to 250,000
Car ownership within 5 Miles: 0.6 to 1.0

Public Transport Provision Summary

Day	Period	Total buses/trams within 400m	Total Trains within 1000m	Total Services
Monday-Friday	0700-1900	46		46
Monday-Friday	0700-1000	10		10
Monday-Friday	1600-1900	12		12
Saturday	0700-1900	46		46
Sunday	0700-1900			

Is site associated with a travel plan: No
If not, are there any plans to implement a Travel Plan in the future? No

Is survey data available before the implementation of the Travel Plan?

Is the location of the site hilly or flat: Flat

Urban Regeneration: No

Site area 6.84 hect
Number of dwellings 237
Housing Density 34.65

No. of developments for this Site: 1
No. of survey Days for this Site: 1

Comments

This site is located on the north edge of Corringham. The site is within close proximity to the A13, the Stanford-le-Hope Bypass, which leads north-east towards Basildon and south-west towards Grays. The A13 also leads south-west towards the M25 and continues west into Central London.

Bus (or tram) site accessibility

3. Is there at least 1 bus (or tram) stop within the site frontage or within 400m of the site frontage? : Yes
4. If yes to question 3, where it is necessary to cross a road between the development and the stop, is there a conveniently placed crossing facility? : Yes
5. If yes to question 3, are there at least 2 buses (or trams) per hour (per direction between 0700 and 1900) with routes

serving significant areas of population within a 5 kilometre radius? (Mon-Sat): Yes
6. If yes to question 5, what are the service characteristics? (please complete the outline information below)

Destination (town/area)	Number per hour	Approx. journey time
Basildon Bus Station	2	14

11. Please enter general comments/views about the relevance, quality and importance of public transport services relating to this development.

There is no train station within 1km of the site.

Design features encouraging non-car modes

12. Pedestrians

None

13. Pedal cycles

None

14. Public transport

There is a local bus service available.

Accessibility & Census Information

Year of Analysis	Road Network Distance to Local Developments	2001
Nearest Primary School		0.5 kilometres
Nearest Secondary School		0.2 kilometres
Nearest Local Shop/Corner Shop		0.4 kilometres
Nearest Main Supermarket		1.6 kilometres
Nearest Doctors Surgery		1.0 kilometres
Nearest Hospital with Minor Injuries/A & E		1.6 kilometres
Nearest Sports/Leisure Centre		0.3 kilometres

Year of Census	Census Data	2001
Census Output Area/Data Zone		
Number of people employed within Census Output Area		299
Number of households within Census Output Area		131
Number of people living within Census Output Area		386
Area of Census Output Area (hectares)		24.00
Population density within Census Output Area (per hectare)		16.43

SITE PHOTO



Site reference: EX-03-A-01 Multi-Modal survey site
Trade name: MILTON ROAD

Site area (h/a): 6.84
Site area excluding public open spaces (h/a): 6.84

Open since 1901

Occupied dwellings 237
Unoccupied dwellings
Total dwellings

Housing Density 34.65
Privately owned units 237
Non-Privately owned units 0
Name of nearest site ANTHONY DRIVE
Distance to nearest similar site 0 Km

Average Bedrooms Per Unit 3.03
No of units with 1 bedroom 0
No of units with 2 bedrooms 8
No of units with 3 bedrooms 218
No of units with 4+ bedrooms 11
Total bedrooms 717
Unit Density 34.6

Residential unit types		
	Private	Non-Private
Detached houses	2	0
Semi-detached houses	224	0
Terraced houses	0	0
Bungalows	11	0
Flats (in houses)	0	0
Flats (in blocks)	0	0
Other (specify below)		
Other:		

Comments
The nearest similar site is located 0.8km away.

Multi-Modal survey site

On-Site parking
Total no. of parking spaces 599
Spaces Per Hectare 87.573
Spaces Per dwelling 2.527

Number of spaces
On-Street 86
Driveway 290
Garages 203
Communal parking spaces 20

Off-Site parking details
Is there off-site parking available

Off-Site parking included in the counts Yes

Free On-Street parking available nearby No

If yes, considered easy to find a space Yes

If prepared to pay, easy to find somewhere to park off-site all day Yes

Parking restrictions No

Area subject to parking restrictions (controlled parking zone - CPZ)

Off-Street parking No

Off-Street parking available

Park & Ride

Park & Ride Type Facility providing relevant means of accessing the site

No

Site reference: EX-03-A-01

Survey date: 13/05/08

Day of week: Tuesday

Multi-Modal survey site

Survey type: Manual Count

AM weather: Hot and Clear

PM weather: Hot and Clear

Initial car park occupancy:

BRACKETED ACCUMULATION FIGURES ARE NOT ABSOLUTE

Data proportions in %

Motor cars 86

Light goods 11

Motor cycles

OGV (1)

Public service

OGV (2)

Taxis

Time	Arrivals	Departures	Totals	Parking Accum
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00	30	79	109	(-49)
08:00-09:00	42	124	166	(-131)
09:00-10:00	37	47	84	(-141)
10:00-11:00	29	45	74	(-157)
11:00-12:00	39	28	67	(-146)
12:00-13:00	51	44	95	(-139)
13:00-14:00	48	45	93	(-136)
14:00-15:00	49	44	93	(-131)
15:00-16:00	112	73	185	(-92)
16:00-17:00	96	55	151	(-51)
17:00-18:00	104	65	169	(-12)
18:00-19:00	68	46	114	(10)
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				

Comments

There are no initial and final car park occupancy figures provided as there are garages at the site and therefore these figures could not be counted.

No PSVs entered or exited the site during this survey.

Site reference: EX-03-A-01
Multi-Modal survey site
Vehicles surveyed: OGV

Survey date: 13/05/08
Day of week: Tuesday

Data proportions in % OGV (1) 100 OGV (2) 0

1 occupant per OGV is assumed, and included in the vehicle occupants count

Time	Arrivals 6	Departures 8	Totals	Accumulation
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00	2	2	4	(0)
08:00-09:00	0	0	0	(0)
09:00-10:00	0	0	0	(0)
10:00-11:00	0	0	0	(0)
11:00-12:00	0	0	0	(0)
12:00-13:00	2	4	6	(-2)
13:00-14:00	2	2	4	(-2)
14:00-15:00	0	0	0	(-2)
15:00-16:00	0	0	0	(-2)
16:00-17:00	0	0	0	(-2)
17:00-18:00	0	0	0	(-2)
18:00-19:00	0	0	0	(-2)
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				

Site reference: EX-03-A-01
Multi-Modal survey site
Vehicles surveyed: Taxis

Survey date: 13/05/08
Day of week: Tuesday

Time	Arrivals 16	Departures 12	Totals	Accumulation
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00	4	2	6	(2)
08:00-09:00	1	2	3	(1)
09:00-10:00	1	0	1	(2)
10:00-11:00	0	0	0	(2)
11:00-12:00	1	1	2	(2)
12:00-13:00	1	1	2	(2)
13:00-14:00	1	0	1	(3)
14:00-15:00	1	2	3	(2)
15:00-16:00	1	0	1	(3)
16:00-17:00	2	1	3	(4)
17:00-18:00	2	2	4	(4)
18:00-19:00	1	1	2	(4)
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				

Site reference: EX-03-A-01 Survey date: 13/05/08 Day of week: Tuesday
Multi-Modal survey site
People Surveyed: Pedestrians

Time	Arrivals 252	Departures 245	Totals	Accumulation
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00	11	32	43	(-21)
08:00-09:00	21	71	92	(-71)
09:00-10:00	17	22	39	(-76)
10:00-11:00	3	11	14	(-84)
11:00-12:00	11	6	17	(-79)
12:00-13:00	9	4	13	(-74)
13:00-14:00	10	8	18	(-72)
14:00-15:00	5	13	18	(-80)
15:00-16:00	89	24	113	(-15)
16:00-17:00	31	15	46	(1)
17:00-18:00	18	20	38	(-1)
18:00-19:00	27	19	46	(7)
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				

Site reference: EX-03-A-01 Survey date: 13/05/08 Day of week: Tuesday
Multi-Modal survey site
People Surveyed: Public transport Users

Time	Arrivals 15	Departures 9	Totals	Accumulation
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00	0	0	0	(0)
08:00-09:00	1	3	4	(-2)
09:00-10:00	1	3	4	(-4)
10:00-11:00	1	1	2	(-4)
11:00-12:00	0	1	1	(-5)
12:00-13:00	4	1	5	(-2)
13:00-14:00	4	0	4	(2)
14:00-15:00	0	0	0	(2)
15:00-16:00	0	0	0	(2)
16:00-17:00	2	0	2	(4)
17:00-18:00	2	0	2	(6)
18:00-19:00	0	0	0	(6)
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				

Site reference: EX-03-A-01 Survey date: 13/05/08 Day of week: Tuesday
Multi-Modal survey site
People Surveyed: Bus/Tram Passengers

Time	Arrivals 15	Departures 9	Totals	Accumulation
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00	0	0	0	(0)
08:00-09:00	1	3	4	(-2)
09:00-10:00	1	3	4	(-4)
10:00-11:00	1	1	2	(-4)
11:00-12:00	0	1	1	(-5)
12:00-13:00	4	1	5	(-2)
13:00-14:00	4	0	4	(2)
14:00-15:00	0	0	0	(2)
15:00-16:00	0	0	0	(2)
16:00-17:00	2	0	2	(4)
17:00-18:00	2	0	2	(6)
18:00-19:00	0	0	0	(6)
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				

Site reference: EX-03-A-01 Survey date: 13/05/08 Day of week: Tuesday
Multi-Modal survey site
People Surveyed: Total people

Time	Arrivals 1246	Departures 1266	Totals	Accumulation
00:00-01:00				
01:00-02:00				
02:00-03:00				
03:00-04:00				
04:00-05:00				
05:00-06:00				
06:00-07:00				
07:00-08:00	46	134	180	(-88)
08:00-09:00	87	273	360	(-274)
09:00-10:00	63	92	155	(-303)
10:00-11:00	40	70	110	(-333)
11:00-12:00	57	45	102	(-321)
12:00-13:00	83	61	144	(-299)
13:00-14:00	78	66	144	(-287)
14:00-15:00	68	68	136	(-287)
15:00-16:00	269	153	422	(-171)
16:00-17:00	167	98	265	(-102)
17:00-18:00	160	114	274	(-56)
18:00-19:00	128	92	220	(-20)
19:00-20:00				
20:00-21:00				
21:00-22:00				
22:00-23:00				
23:00-24:00				

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02 SOUTH EAST
EX ESSEX
1 days

Filtering Stage 2 selection:

Parameter: Number of dwellings
Range: 237 to 237 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/00 to 24/04/09

Selected survey days:
Tuesday 1 days

Selected survey types:
Manual count 1 days
Directional ATC Count 0 days

Selected Locations:
Edge of Town 1

Selected Location Sub Categories:
Residential Zone 1

LIST OF SITES relevant to selection parameters

1 EX-03-A-01 SEMI-DET., STANFORD-LE-HOPE ESSEX
MILTON ROAD
CORRINGHAM
STANFORD-LE-HOPE
Total Number of dwellings: 237
Survey date: TUESDAY 13/05/08
Survey Type: MANUAL

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

MULTI-MODAL VEHICLES

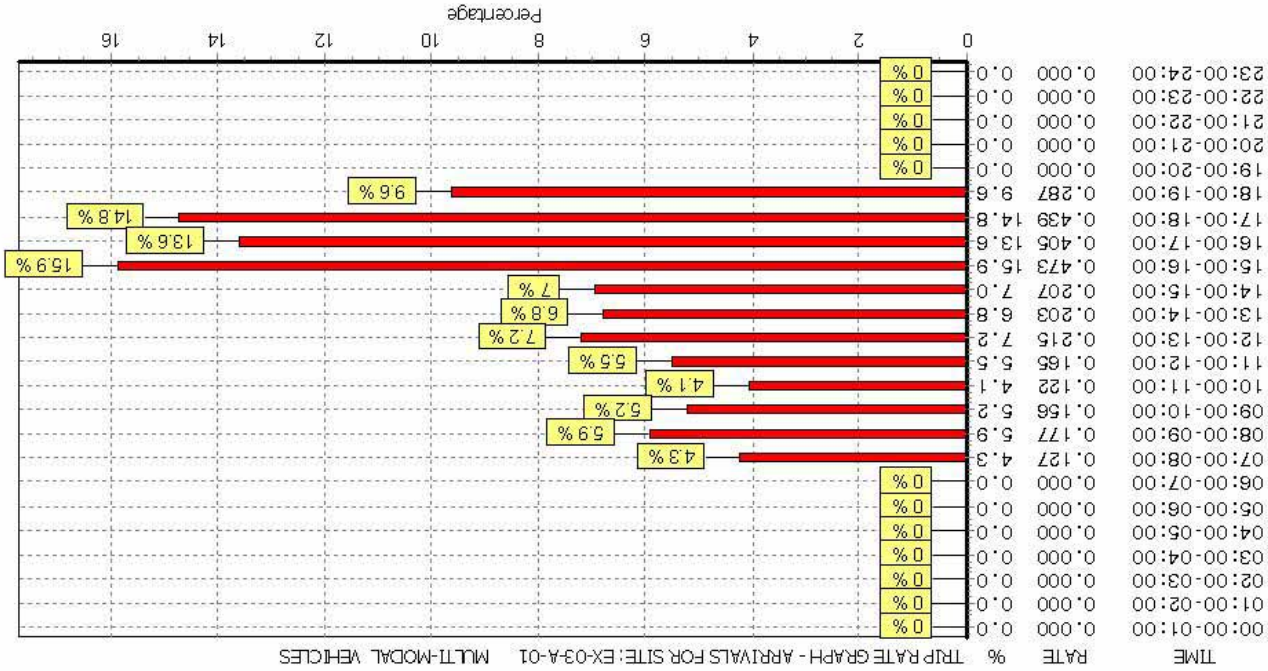
Calculation factor: 1 DWELLS

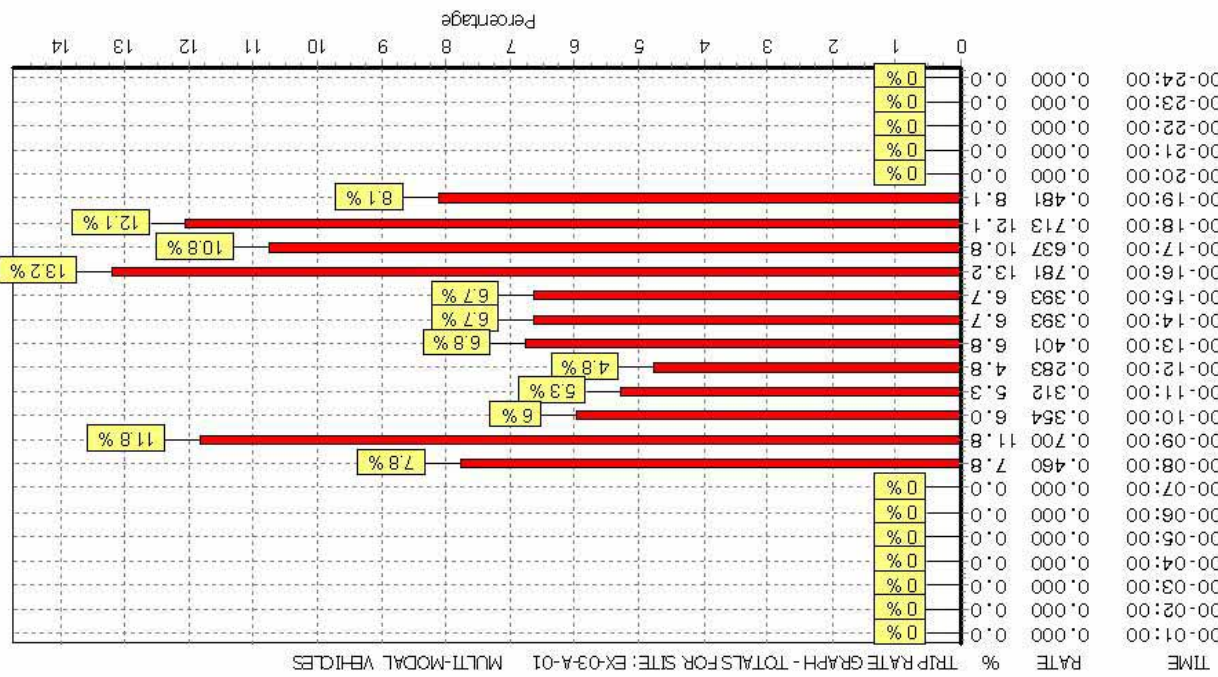
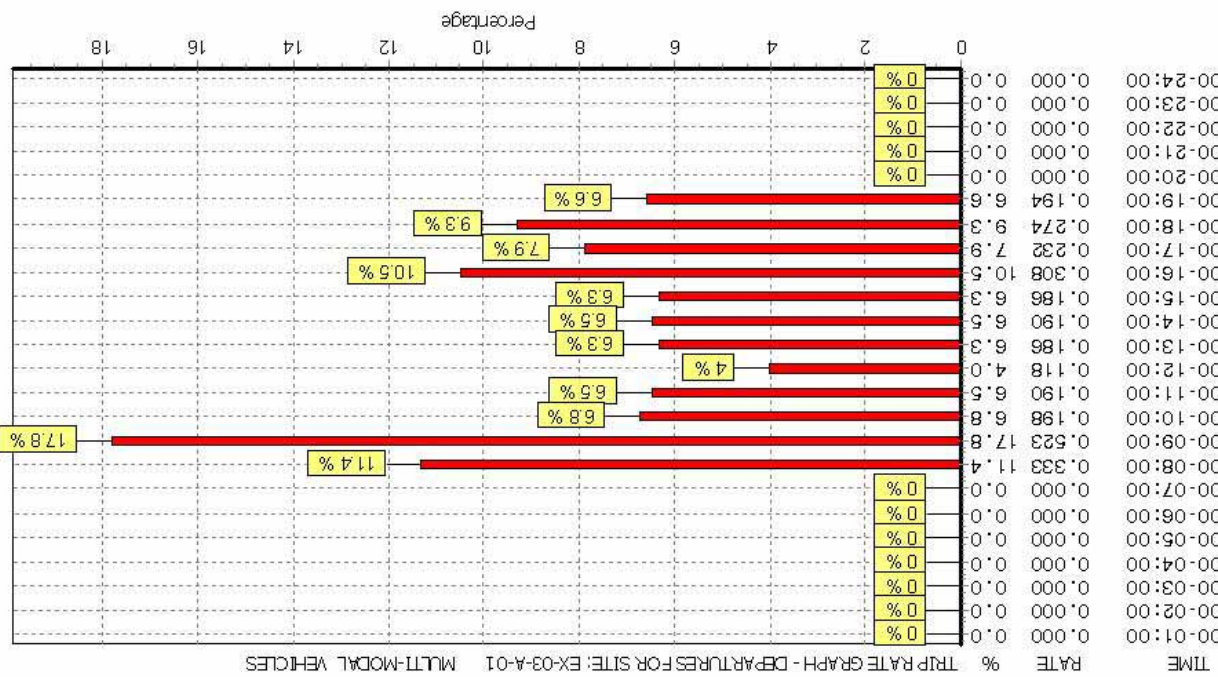
BOLD print indicates peak (busiest) period

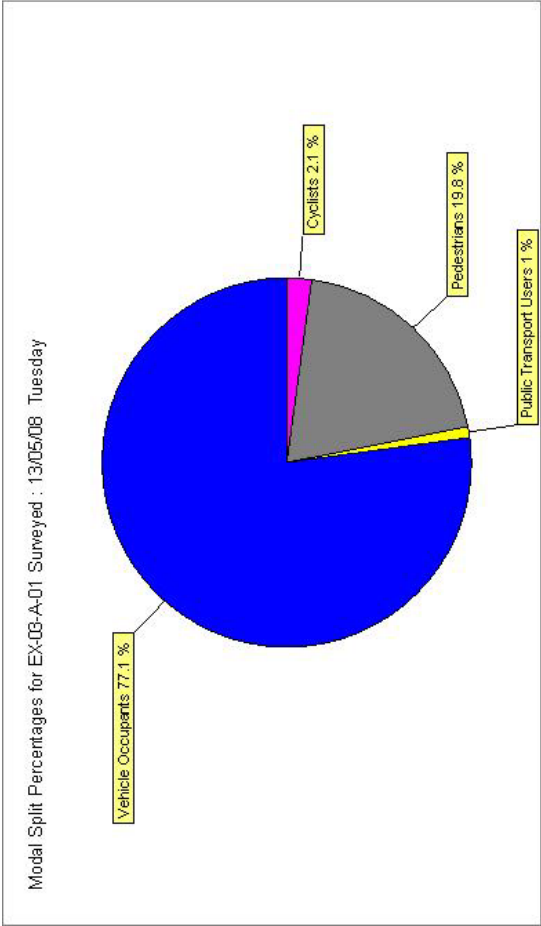
Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	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	1	237	0.127	1	237	0.333	1	237	0.460
08:00 - 09:00	1	237	0.177	1	237	0.523	1	237	0.700
09:00 - 10:00	1	237	0.156	1	237	0.198	1	237	0.354
10:00 - 11:00	1	237	0.122	1	237	0.190	1	237	0.312
11:00 - 12:00	1	237	0.165	1	237	0.118	1	237	0.283
12:00 - 13:00	1	237	0.215	1	237	0.186	1	237	0.401
13:00 - 14:00	1	237	0.203	1	237	0.190	1	237	0.393
14:00 - 15:00	1	237	0.207	1	237	0.186	1	237	0.393
15:00 - 16:00	1	237	0.473	1	237	0.308	1	237	0.781
16:00 - 17:00	1	237	0.405	1	237	0.232	1	237	0.637
17:00 - 18:00	1	237	0.439	1	237	0.274	1	237	0.713
18:00 - 19:00	1	237	0.287	1	237	0.194	1	237	0.481
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:			2.976			2.932			5.908

Parameter summary

Trip rate parameter range selected: 237 - 237 (units:)
Survey date range: 01/01/00 - 24/04/09
Number of weekdays (Monday-Friday): 1
Number of Saturdays: 0
Number of Sundays: 0
Surveys manually removed from selection: 53







EMPLOYMENT TRICS SEARCH

Bancroft Consulting Mercury House, New Basford Nottingham

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : B - BUSINESS PARK
MULTI-MODAL VEHICLES

Selected regions and areas:

03 SOUTH WEST	
DC DORSET	1 days
WL WILTSHIRE	1 days
04 EAST ANGLIA	
SF SUFFOLK	1 days
05 EAST MIDLANDS	
LN LINCOLNSHIRE	1 days
NT NOTTINGHAMSHIRE	1 days
06 WEST MIDLANDS	
ST STAFFORDSHIRE	1 days
WO WORCESTERSHIRE	1 days
07 YORKSHIRE & NORTH LINCOLNSHIRE	
NO NORTH LINCOLNSHIRE	1 days
09 NORTH	
TW TYNE & WEAR	1 days
10 WALES	
CF CARDIFF	1 days

Filtering Stage 2 selection:

Parameter: Gross floor area
Range: 975 to 4460 (units: sqm)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 17/07/08

Selected survey days:

Monday	1 days
Tuesday	3 days
Wednesday	1 days
Thursday	4 days
Friday	1 days

Selected survey types:

Manual count	10 days
Directional ATC Count	0 days

Selected Locations:

Town Centre	1
Suburban Area (PPS6 Out of Centre)	3
Edge of Town	6

Selected Location Sub Categories:

Industrial Zone	4
Residential Zone	2
Built-Up Zone	2
No Sub Category	2

Bancroft Consulting Mercury House, New Basford Nottingham

LIST OF SITES relevant to selection parameters

1	CF-02-B-02 CRICKHOWELL ROAD ST MELLONS CARDIFF	BUSINESS/TECH. UNITS, CARDIFF	2587 sqm 20/10/06	CARDIFF	Survey Type: MANUAL DORSET
2	DC-02-B-01 COMMERCIAL ROAD POOLE	BUSINESS PARK, POOLE	1570 sqm 17/07/08		Survey Type: MANUAL LINCOLNSHIRE
3	LN-02-B-01 BISHOPS ROAD LINCOLN	BUSINESS PARK, LINCOLN	4460 sqm 17/05/05		Survey Type: MANUAL NORTH LINCOLNSHIRE
4	NO-02-B-02 DONCASTER ROAD SCUNTHORPE	BUSINESS PARK, SCUNTHORPE	1574 sqm 22/09/05		Survey Type: MANUAL NOTTINGHAMSHIRE
5	NT-02-B-01 PARK LAINE NOTTINGHAM	BUSINESS PARK, NOTTINGHAM	2321 sqm 17/05/07		Survey Type: MANUAL SUFFOLK
6	SF-02-B-01 KEMPSON WAY BURY ST EDMUNDS	BUSINESS PK. BURY ST EDMUNDS	2480 sqm 10/05/06		Survey Type: MANUAL STAFFORDSHIRE
7	ST-02-B-03 FRANK FOLEY WAY GREYFRIARS STAFFORD	BUSINESS PARK, STAFFORD	4064 sqm 06/07/00		Survey Type: MANUAL TYNE & WEAR
8	TW-02-B-01 ST THOMAS STREET NEWCASTLE	BUSINESS PARK, NEWCASTLE	975 sqm 03/05/05		Survey Type: MANUAL WILTSHIRE
9	WL-02-B-01 HIGH STREET COPED HALL WOOTTON BASSETT	BUSINESS PK. WOOTTON BASSETT	2600 sqm 02/10/06		Survey Type: MANUAL

Site Reference: WL-02-B-01 Multi-Modal Site
Latitude/Longitude: 51.5503414860659, -1.89322850613545
Land Use Type: 02 - EMPLOYMENT/B - BUSINESS PARK
Region/Area: SOUTH WESTWILTSHIRE
Description: BUSINESS PK, WOOTTON BASSETT
Street: HIGH STREET
District: COPED HALL
Town: WOOTTON BASSETT
Post Code: SN4 8DP

Location: Edge of Town
Location Sub Category: Residential Zone
Use Class: B1
Use Class Break Down:
B1 (a) 73%
B1 (b) 12%
B1 (c) 0%
B2 0%
B8 15%

Population within 500m: 2000
Population within 1 Mile: 5,001 to 10,000
Population within 5 Miles: 100,001 to 125,000
Car ownership within 5 Miles: 1.1 to 1.5

Public Transport Provision Summary

Day	Period	Total buses/trams within 400m	Total Trains within 1000m	Total Services
Monday-Friday	0700-1900	156		156
Monday-Friday	0700-1000	36		36
Monday-Friday	1600-1900	38		38
Saturday	0700-1900	140		140
Sunday	0700-1900	40		40

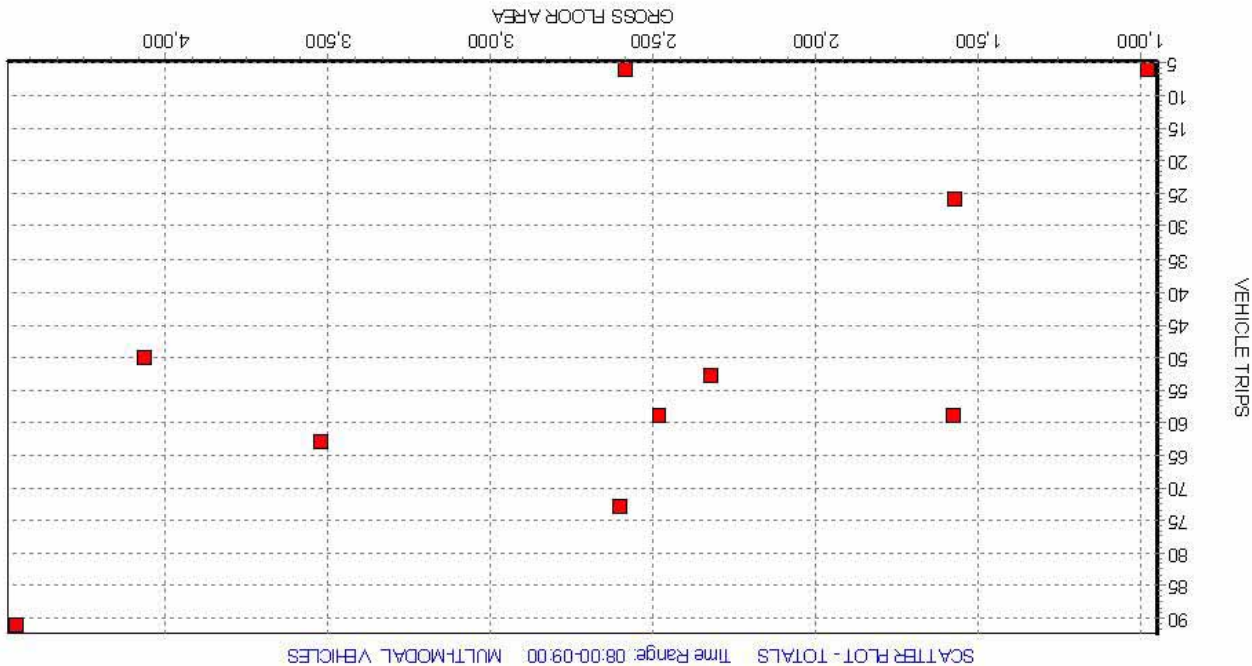
Is site associated with a travel plan: No
If not, are there any plans to implement a Travel Plan in the future? No
Is survey data available before the implementation of the Travel Plan? Flat
Is the location of the site hilly or flat: No
Urban Regeneration:

Gross floor area: 2600 sqm
Total Full Time Employees: 95
Total Part Time Employees: 59

No. of developments for this Site: 9
No. of survey Days for this Site: 1

Comments

This site is the Coped Hall Business Park. It is located at the northern edge of Wootton Bassett, off the A3102 High Street, which heads north-east a very short distance to the junction with the B4042 (where it turns eastwards and heads towards Junction 16 of the M4 motorway), and south-west through the town and beyond. The site has a single access for all modes, with an internal loop road serving its 4 buildings. Local developments are mainly residential to the west and south, with open land across the A3102 to the east and across the B4042 to the north. There were 2 vacant units at the site, which have a combined Gross Floor Area of 825m2 (excluded from the survey). There are 3 bus stops close to the site, all across High Street (one on High Street itself and one on either side of Maple Drive) - all a short distance to the west.



- Bus (or tram) site accessibility
3. Is there at least 1 bus (or tram) stop within the site frontage or within 400m of the site frontage? : Yes
4. If yes to question 3, where it is necessary to cross a road between the development and the stop, is there a conveniently placed crossing facility? : Yes
5. If yes to question 3, are there at least 2 buses (or trams) per hour (per direction between 0700 and 1900) with routes serving significant areas of population within a 5 kilometre radius? (Mon-Sat): Yes
6. If yes to question 5, what are the service characteristics? (please complete the outline information below)

Destination (town/area)	Number per hour	Approx. journey time
Chippenhams	3	40
Swindon	3	30

11. Please enter general comments/views about the relevance, quality and importance of public transport services relating to this development.
- In addition to the bus services shown there is an hourly service available to Malmesbury, the journey time taking 30 minutes.
- The bus frequencies are slightly lower at am and pm peaks than at other times of the day.

Design features encouraging non-car modes

12. Pedestrians
None
13. Pedal cycles
Cycle storage is available at the site, and there are local cycle routes.
14. Public transport
The site is in close proximity to local bus routes.

SITE PHOTO



Bancroft Consulting Mercury House, New Basford Nottingham

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: FAST TRACK HOLIDAYS

Site area (h/a): 0.60
Gross floor area (sqm) 600
GFA not in use (sqm) 0

Open since 2004
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%

Approximate % of total employees working standard 9-5 hours or similar 85%

Percentage Split of Employee Gender
Male 65%
Female 35%

GFA per employee 12.500
Number of units 2

Name of nearest site SCORPIO TRAVEL
Distance to nearest similar site 5 Km

OPENING TIMES (24 Hour format)

Mon to Thurs	08:00	to	23:00
Friday	08:00	to	23:00
Saturday	08:00	to	23:00
Sunday	08:00	to	23:00

Comments

The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

Bancroft Consulting Mercury House, New Basford Nottingham

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: HIRUMED LIMITED/POINT OF CARE SERVICES

Site area (h/a): 0.60
Gross floor area (sqm) 1775
GFA not in use (sqm) 0

Open since 2005
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%

Approximate % of total employees working standard 9-5 hours or similar 85%

Percentage Split of Employee Gender
Male 65%
Female 35%

GFA per employee 12.500
Number of units 1

Name of nearest site CLINICAL SYSTEMS LTD
Distance to nearest similar site 75 Km

OPENING TIMES (24 Hour format)

Mon to Thurs	09:00	to	17:30
Friday	09:00	to	17:30
Saturday	00:00	to	00:00
Sunday	00:00	to	00:00

Comments

The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: NIGEL B BUTLER

Site area (h/a): 0.60
Gross floor area (sqm) 100
GFA not in use (sqm) 0

Open since 2005
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%

Approximate % of total employees working standard 9-5 hours or similar 85%

Percentage Split of Employee Gender
Male 65%
Female 35%

GFA per employee 12.500
Number of units 1
Name of nearest site HAYDN J WILLIAMS
Distance to nearest similar site 2 Km

OPENING TIMES (24 Hour format)

Mon to Thurs	09:00	to	17:30
Friday	09:00	to	17:30
Saturday	00:00	to	00:00
Sunday	00:00	to	00:00

Comments

The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: INFOCAP TECHNOLOGIES LIMITED

Site area (h/a): 0.60
Gross floor area (sqm) 100
GFA not in use (sqm) 0

Open since 2005
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%

Approximate % of total employees working standard 9-5 hours or similar 85%

Percentage Split of Employee Gender
Male 65%
Female 35%

GFA per employee 12.500
Number of units 1
Name of nearest site FORMSCAN, FROME
Distance to nearest similar site 50 Km

OPENING TIMES (24 Hour format)

Mon to Thurs	09:00	to	17:30
Friday	09:00	to	17:30
Saturday	00:00	to	00:00
Sunday	00:00	to	00:00

Comments

The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: JELF GROUP PLC

Site area (h/a): 0.60
Gross floor area (sqm) 250
GFA not in use (sqm) 0

Open since 2005
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%

Approximate % of total employees working standard 9-5 hours or similar 85%

Percentage Split of Employee Gender
Male 65%
Female 35%

GFA per employee 12.500
Number of units 1

Name of nearest site ALLIED WESSEX
Distance to nearest similar site 2 Km

OPENING TIMES (24 Hour format)

Mon to Thurs	09:00	to	17:30
Friday	09:00	to	17:30
Saturday	00:00	to	00:00
Sunday	00:00	to	00:00

Comments
The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: TRIO CHILDCARE CONNECTION

Site area (h/a): 0.60
Gross floor area (sqm) 200
GFA not in use (sqm) 0

Open since 2005
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%

Approximate % of total employees working standard 9-5 hours or similar 85%

Percentage Split of Employee Gender
Male 65%
Female 35%

GFA per employee 12.500
Number of units 1

Name of nearest site CHILDCARE PLUS LIMITED
Distance to nearest similar site 125 Km

OPENING TIMES (24 Hour format)

Mon to Thurs	09:00	to	17:00
Friday	09:00	to	17:00
Saturday	00:00	to	00:00
Sunday	00:00	to	00:00

Comments
The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: COPED HALL MANAGEMENT COMPANY LIMITED

Site area (h/a): 0.60
Gross floor area (sqm) 350
GFA not in use (sqm) 0

Open since 2005
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%

Approximate % of total employees working standard 9-5 hours or similar 85%

Percentage Split of Employee Gender
Male 65%
Female 35%

GFA per employee 12.500
Number of units 1
Name of nearest site BUSINESS SPACE SERV.
Distance to nearest similar site 8 Km

OPENING TIMES (24 Hour format)
Mon to Thurs 09:00 to 17:00
Friday 09:00 to 17:00
Saturday 00:00 to 00:00
Sunday 00:00 to 00:00

Comments
The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: BRITISH RED CROSS

Site area (h/a): 0.60
Gross floor area (sqm) 500
GFA not in use (sqm) 0

Open since 2006
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%

Approximate % of total employees working standard 9-5 hours or similar 85%

Percentage Split of Employee Gender
Male 65%
Female 35%

GFA per employee 12.500
Number of units 2
Name of nearest site BRITISH RED CROSS
Distance to nearest similar site 80 Km

OPENING TIMES (24 Hour format)
Mon to Thurs 09:00 to 17:00
Friday 09:00 to 17:00
Saturday 00:00 to 00:00
Sunday 00:00 to 00:00

Comments
The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

Site reference: WL-02-B-01 Multi-Modal survey site
Trade name: INFOSUPPORT (GOWI SERVICES)

Site area (h/a):
Gross floor area (sqm) 0.60
GFA not in use (sqm) 325
0

Open since 2006
Total Employees 26
Full Time Employees 22 84%
Part Time Employees 4 16%
Approximate % of total employees working standard 9-5 hours or similar 85%
Percentage Split of Employee Gender
Male 65%
Female 35%
12,500

GFA per employee 1
Number of units INTELLECT, ST ALBANS
Name of nearest site 110 Km
Distance to nearest similar site

OPENING TIMES (24 Hour format)
Mon to Thurs 09:00 to 17:00
Friday 09:00 to 17:00
Saturday 00:00 to 00:00
Sunday 00:00 to 00:00

Comments
The site area shown is the total for the whole site.
This unit is a company providing specific HR software.
Shiftwork is not undertaken at this unit.

On-Site parking
Total no. of parking spaces 111
Spaces Per 100m2 GFA 4.269

Number of spaces
Employee 107
Disabled 4
Visitor/Customer 0
OGV parking bays 0
Cycle racks 8
OGV loading bays 0
Mother & Toddler 0
Motorcycle spaces 0

Parking charges No
Comments about the management of the site car park, along with enforcement measures
Some of the parking spaces are marked out for individual companies within the site.

Site parking surface or non-surface (multi-storey/underground)
Surface

Off-Site parking details
Is there off-site parking available Yes
Off-Site parking included in the counts Yes
Free On-Street parking available nearby Yes
If yes, considered easy to find a space Yes
If prepared to pay, easy to find somewhere to park off-site all day No

Parking restrictions
Area subject to parking restrictions (controlled parking zone - CPZ) No

Off-Street parking
Off-Street parking available NO

Park & Ride
Park & Ride Type Facility providing relevant means of accessing the site No

Site reference: WL-02-B-01 Survey date: 02/10/06 Day of week: Monday
Multi-Modal survey site
Vehicles surveyed: Total vehicles
Survey type: Manual Count
AM weather: Mild and Windy
PM weather: Mild and Windy
Initial car park occupancy: 3 Final car park occupancy: 15
BRACKETED ACCUMULATION FIGURES ARE NOT ABSOLUTE

Data proportions in %
Motor cars 87 Motor cycles 1 Public service 0
Light goods 11 OGV (1) 1 Taxis 0

Time	Arrivals 184	Departures 172	Totals	Parking Accum
00:00-00:30				
00:30-01:00				
01:00-01:30				
01:30-02:00				
02:00-02:30				
02:30-03:00				
03:00-03:30				
03:30-04:00				
04:00-04:30				
04:30-05:00				
05:00-05:30				
05:30-06:00				
06:00-06:30				
06:30-07:00				
07:00-07:30	1	2	3	2
07:30-08:00	14	1	15	15
08:00-08:30	14	3	17	26
08:30-09:00	49	7	56	68
09:00-09:30	16	0	16	84
09:30-10:00	11	1	12	94
10:00-10:30	10	10	20	94
10:30-11:00	5	5	10	94
11:00-11:30	9	12	21	91
11:30-12:00	6	11	17	86
12:00-12:30	6	15	21	77
12:30-13:00	7	4	11	80
13:00-13:30	11	6	17	85
13:30-14:00	1	0	1	86
14:00-14:30	3	1	4	88
14:30-15:00	1	1	2	88
15:00-15:30	3	6	9	85
15:30-16:00	5	5	10	85
16:00-16:30	4	8	12	81
16:30-17:00	1	17	18	65
17:00-17:30	2	34	36	33
17:30-18:00	2	18	20	17
18:00-18:30	3	3	6	17
18:30-19:00	0	2	2	15
19:00-19:30				
19:30-20:00				
20:00-20:30				
20:30-21:00				
21:00-21:30				
21:30-22:00				
22:00-22:30				
22:30-23:00				
23:00-23:30				
23:30-24:00				

Comments
No PSV's or taxis entered or exited the site during this survey.
OGV's parked in the general parking areas, as there are no specific OGV parking spaces/loading bays available.
There are occasions when the number of vehicles exceeds the number of vehicle occupants. This can be explained by the fact that vehicles picking up/dropping off people at the site are included as both vehicle arrivals and departures, but drivers of such vehicles are excluded from the vehicle occupants count.

Site reference: WL-02-B-01
Multi-Modal survey site
Vehicles surveyed: OGV
Survey date: 02/10/06
Day of week: Monday

Data proportions in %	OGV (1)	OGV (2)	0
1 occupant per OGV is assumed, and included in the vehicle occupants count			

Time	Arrivals 1	Departures 1	Totals	Accumulation
00:00-00:30				
00:30-01:00				
01:00-01:30				
01:30-02:00				
02:00-02:30				
02:30-03:00				
03:00-03:30				
03:30-04:00				
04:00-04:30				
04:30-05:00				
05:00-05:30				
05:30-06:00				
06:00-06:30				
06:30-07:00				
07:00-07:30	0	0	0	(0)
07:30-08:00	0	0	0	(0)
08:00-08:30	0	0	0	(0)
08:30-09:00	0	0	0	(0)
09:00-09:30	0	0	0	(0)
09:30-10:00	0	0	0	(0)
10:00-10:30	0	0	0	(0)
10:30-11:00	1	0	1	(1)
11:00-11:30	0	1	1	(0)
11:30-12:00	0	0	0	(0)
12:00-12:30	0	0	0	(0)
12:30-13:00	0	0	0	(0)
13:00-13:30	0	0	0	(0)
13:30-14:00	0	0	0	(0)
14:00-14:30	0	0	0	(0)
14:30-15:00	0	0	0	(0)
15:00-15:30	0	0	0	(0)
15:30-16:00	0	0	0	(0)
16:00-16:30	0	0	0	(0)
16:30-17:00	0	0	0	(0)
17:00-17:30	0	0	0	(0)
17:30-18:00	0	0	0	(0)
18:00-18:30	0	0	0	(0)
18:30-19:00	0	0	0	(0)
19:00-19:30				
19:30-20:00				
20:00-20:30				
20:30-21:00				
21:00-21:30				
21:30-22:00				
22:00-22:30				
22:30-23:00				
23:00-23:30				
23:30-24:00				

Site reference: WL-02-B-01
Multi-Modal survey site
Vehicles surveyed: Cycles

Time	Arrivals 3	Departures 3	Totals	Accumulation
00:00-00:30				
00:30-01:00				
01:00-01:30				
01:30-02:00				
02:00-02:30				
02:30-03:00				
03:00-03:30				
03:30-04:00				
04:00-04:30				
04:30-05:00				
05:00-05:30				
05:30-06:00				
06:00-06:30				
06:30-07:00				
07:00-07:30	0	0	0	(0)
07:30-08:00	0	0	0	(0)
08:00-08:30	0	0	0	(0)
08:30-09:00	1	0	1	(1)
09:00-09:30	1	0	1	(2)
09:30-10:00	0	0	0	(2)
10:00-10:30	0	0	0	(2)
10:30-11:00	0	0	0	(2)
11:00-11:30	0	0	0	(2)
11:30-12:00	0	0	0	(2)
12:00-12:30	0	1	1	(1)
12:30-13:00	0	0	0	(1)
13:00-13:30	1	0	1	(2)
13:30-14:00	0	0	0	(2)
14:00-14:30	0	1	1	(1)
14:30-15:00	0	0	0	(1)
15:00-15:30	0	0	0	(1)
15:30-16:00	0	0	0	(1)
16:00-16:30	0	0	0	(1)
16:30-17:00	0	0	0	(1)
17:00-17:30	0	0	0	(1)
17:30-18:00	0	1	1	(0)
18:00-18:30	0	0	0	(0)
18:30-19:00	0	0	0	(0)
19:00-19:30				
19:30-20:00				
20:00-20:30				
20:30-21:00				
21:00-21:30				
21:30-22:00				
22:00-22:30				
22:30-23:00				
23:00-23:30				
23:30-24:00				

Site reference: WL-02-B-01 Survey date: 02/10/06 Day of week: Monday
Multi-Modal survey site
People Surveyed: Car/LGV/Motorcycle occupants

This count consists of car occupants, light goods vehicle occupants, motorcycle riders and OGV occupants
Taxi drivers and drivers of private vehicles picking up/dropping off passengers at the site are excluded from the count

Time	Arrivals 202	Departures 184	Totals	Accumulation
00:00-00:30				
00:30-01:00				
01:00-01:30				
01:30-02:00				
02:00-02:30				
02:30-03:00				
03:00-03:30				
03:30-04:00				
04:00-04:30				
04:30-05:00				
05:00-05:30				
05:30-06:00				
06:00-06:30				
06:30-07:00				
07:00-07:30	1	2	3	(-1)
07:30-08:00	15	0	15	(14)
08:00-08:30	14	2	16	(26)
08:30-09:00	50	6	56	(70)
09:00-09:30	17	0	17	(87)
09:30-10:00	11	1	12	(97)
10:00-10:30	10	10	20	(97)
10:30-11:00	6	5	11	(98)
11:00-11:30	12	16	28	(94)
11:30-12:00	6	11	17	(89)
12:00-12:30	6	17	23	(78)
12:30-13:00	7	4	11	(81)
13:00-13:30	15	7	22	(89)
13:30-14:00	2	0	2	(91)
14:00-14:30	4	1	5	(94)
14:30-15:00	2	1	3	(95)
15:00-15:30	3	6	9	(92)
15:30-16:00	5	6	11	(91)
16:00-16:30	5	9	14	(87)
16:30-17:00	1	17	18	(71)
17:00-17:30	1	35	36	(37)
17:30-18:00	3	20	23	(20)
18:00-18:30	6	3	9	(23)
18:30-19:00	0	5	5	(18)
19:00-19:30				
19:30-20:00				
20:00-20:30				
20:30-21:00				
21:00-21:30				
21:30-22:00				
22:00-22:30				
22:30-23:00				
23:00-23:30				
23:30-24:00				

Site reference: WL-02-B-01 Survey date: 02/10/06 Day of week: Monday
Multi-Modal survey site
People Surveyed: Pedestrians

Time	Arrivals 27	Departures 28	Totals	Accumulation
00:00-00:30				
00:30-01:00				
01:00-01:30				
01:30-02:00				
02:00-02:30				
02:30-03:00				
03:00-03:30				
03:30-04:00				
04:00-04:30				
04:30-05:00				
05:00-05:30				
05:30-06:00				
06:00-06:30				
06:30-07:00				
07:00-07:30	0	0	0	(0)
07:30-08:00	0	0	0	(0)
08:00-08:30	1	1	2	(0)
08:30-09:00	1	0	1	(1)
09:00-09:30	0	0	0	(1)
09:30-10:00	0	0	0	(1)
10:00-10:30	0	0	0	(1)
10:30-11:00	0	1	1	(0)
11:00-11:30	1	0	1	(1)
11:30-12:00	0	0	0	(1)
12:00-12:30	1	1	1	(0)
12:30-13:00	1	5	6	(-4)
13:00-13:30	5	12	17	(-1)
13:30-14:00	14	4	18	(-1)
14:00-14:30	2	0	2	(1)
14:30-15:00	0	0	0	(1)
15:00-15:30	0	0	0	(1)
15:30-16:00	0	0	0	(1)
16:00-16:30	0	0	0	(1)
16:30-17:00	0	1	1	(0)
17:00-17:30	1	3	4	(-2)
17:30-18:00	1	0	1	(-1)
18:00-18:30	0	0	0	(-1)
18:30-19:00	0	0	0	(-1)
19:00-19:30				
19:30-20:00				
20:00-20:30				
20:30-21:00				
21:00-21:30				
21:30-22:00				
22:00-22:30				
22:30-23:00				
23:00-23:30				
23:30-24:00				

Site reference: WL-02-B-01 Survey date: 02/10/06 Day of week: Monday
Multi-Modal survey site
People Surveyed: Public transport Users

Time	Arrivals 7	Departures 6	Totals	Accumulation
00:00-00:30				
00:30-01:00				
01:00-01:30				
01:30-02:00				
02:00-02:30				
02:30-03:00				
03:00-03:30				
03:30-04:00				
04:00-04:30				
04:30-05:00				
05:00-05:30				
05:30-06:00				
06:00-06:30				
06:30-07:00				
07:00-07:30	0	0	0	(0)
07:30-08:00	1	0	1	(1)
08:00-08:30	1	0	1	(2)
08:30-09:00	2	0	2	(4)
09:00-09:30	1	0	1	(5)
09:30-10:00	0	1	1	(4)
10:00-10:30	0	0	0	(4)
10:30-11:00	1	0	1	(5)
11:00-11:30	0	0	0	(5)
11:30-12:00	0	0	0	(5)
12:00-12:30	0	0	0	(5)
12:30-13:00	0	0	0	(5)
13:00-13:30	0	0	0	(5)
13:30-14:00	0	0	0	(5)
14:00-14:30	0	0	0	(5)
14:30-15:00	0	0	0	(5)
15:00-15:30	1	0	1	(6)
15:30-16:00	0	0	0	(6)
16:00-16:30	0	1	1	(5)
16:30-17:00	0	3	3	(2)
17:00-17:30	0	0	0	(2)
17:30-18:00	0	1	1	(1)
18:00-18:30	0	0	0	(1)
18:30-19:00	0	0	0	(1)
19:00-19:30				
19:30-20:00				
20:00-20:30				
20:30-21:00				
21:00-21:30				
21:30-22:00				
22:00-22:30				
22:30-23:00				
23:00-23:30				
23:30-24:00				

Site reference: WL-02-B-01 Survey date: 02/10/06 Day of week: Monday
Multi-Modal survey site
People Surveyed: Bus/Tram Passengers

Time	Arrivals 7	Departures 6	Totals	Accumulation
00:00-00:30				
00:30-01:00				
01:00-01:30				
01:30-02:00				
02:00-02:30				
02:30-03:00				
03:00-03:30				
03:30-04:00				
04:00-04:30				
04:30-05:00				
05:00-05:30				
05:30-06:00				
06:00-06:30				
06:30-07:00				
07:00-07:30	0	0	0	(0)
07:30-08:00	1	0	1	(1)
08:00-08:30	1	0	1	(2)
08:30-09:00	2	0	2	(4)
09:00-09:30	1	0	1	(5)
09:30-10:00	0	1	1	(4)
10:00-10:30	0	0	0	(4)
10:30-11:00	1	0	1	(5)
11:00-11:30	0	0	0	(5)
11:30-12:00	0	0	0	(5)
12:00-12:30	0	0	0	(5)
12:30-13:00	0	0	0	(5)
13:00-13:30	0	0	0	(5)
13:30-14:00	0	0	0	(5)
14:00-14:30	0	0	0	(5)
14:30-15:00	0	0	0	(5)
15:00-15:30	1	0	1	(6)
15:30-16:00	0	0	0	(6)
16:00-16:30	0	1	1	(5)
16:30-17:00	0	3	3	(2)
17:00-17:30	0	0	0	(2)
17:30-18:00	0	1	1	(1)
18:00-18:30	0	0	0	(1)
18:30-19:00	0	0	0	(1)
19:00-19:30				
19:30-20:00				
20:00-20:30				
20:30-21:00				
21:00-21:30				
21:30-22:00				
22:00-22:30				
22:30-23:00				
23:00-23:30				
23:30-24:00				

Site reference: WL-02-B-01 Survey date: 02/10/06 Day of week: Monday
Multi-Modal survey site
People Surveyed: Total people

Time	Arrivals 239	Departures 221	Totals	Accumulation
00:00-00:30				
00:30-01:00				
01:00-01:30				
01:30-02:00				
02:00-02:30				
02:30-03:00				
03:00-03:30				
03:30-04:00				
04:00-04:30				
04:30-05:00				
05:00-05:30				
05:30-06:00				
06:00-06:30				
06:30-07:00				
07:00-07:30	1	2	3	(-1)
07:30-08:00	16	0	16	(15)
08:00-08:30	16	3	19	(28)
08:30-09:00	54	6	60	(76)
09:00-09:30	19	0	19	(95)
09:30-10:00	11	2	13	(104)
10:00-10:30	10	10	20	(104)
10:30-11:00	7	6	13	(105)
11:00-11:30	13	16	29	(102)
11:30-12:00	6	11	17	(97)
12:00-12:30	6	19	25	(84)
12:30-13:00	8	9	17	(83)
13:00-13:30	21	19	40	(85)
13:30-14:00	16	4	20	(97)
14:00-14:30	6	2	8	(101)
14:30-15:00	2	1	3	(102)
15:00-15:30	4	6	10	(100)
15:30-16:00	5	6	11	(99)
16:00-16:30	5	10	15	(94)
16:30-17:00	1	21	22	(74)
17:00-17:30	2	38	40	(38)
17:30-18:00	4	22	26	(20)
18:00-18:30	6	3	9	(23)
18:30-19:00	0	5	5	(18)
19:00-19:30				
19:30-20:00				
20:00-20:30				
20:30-21:00				
21:00-21:30				
21:30-22:00				
22:00-22:30				
22:30-23:00				
23:00-23:30				
23:30-24:00				

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : B - BUSINESS PARK
MULTI-MODAL VEHICLES
Selected regions and areas:
03 SOUTH WEST
WL WILTSHIRE
1 days

Filtering Stage 2 selection:
Parameter: Gross floor area
Range: 2600 to 2600 (units: sqm)
Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/00 to 17/07/08
Selected survey days:
Monday 1 days
Selected survey types:
Manual count 1 days
Directional ATC Count 0 days
Selected Locations:
Edge of Town 1
Selected Location Sub Categories:
Residential Zone 1

LIST OF SITES relevant to selection parameters

1

WIL-02-B-01
HIGH STREET
COPED HALL
WOOTTON BASSETT
Total Gross floor area:
Survey date: MONDAY

BUSINESS PK,WOOTTON BASSETT

WILTSHIRE

2600 sqm
02/10/06

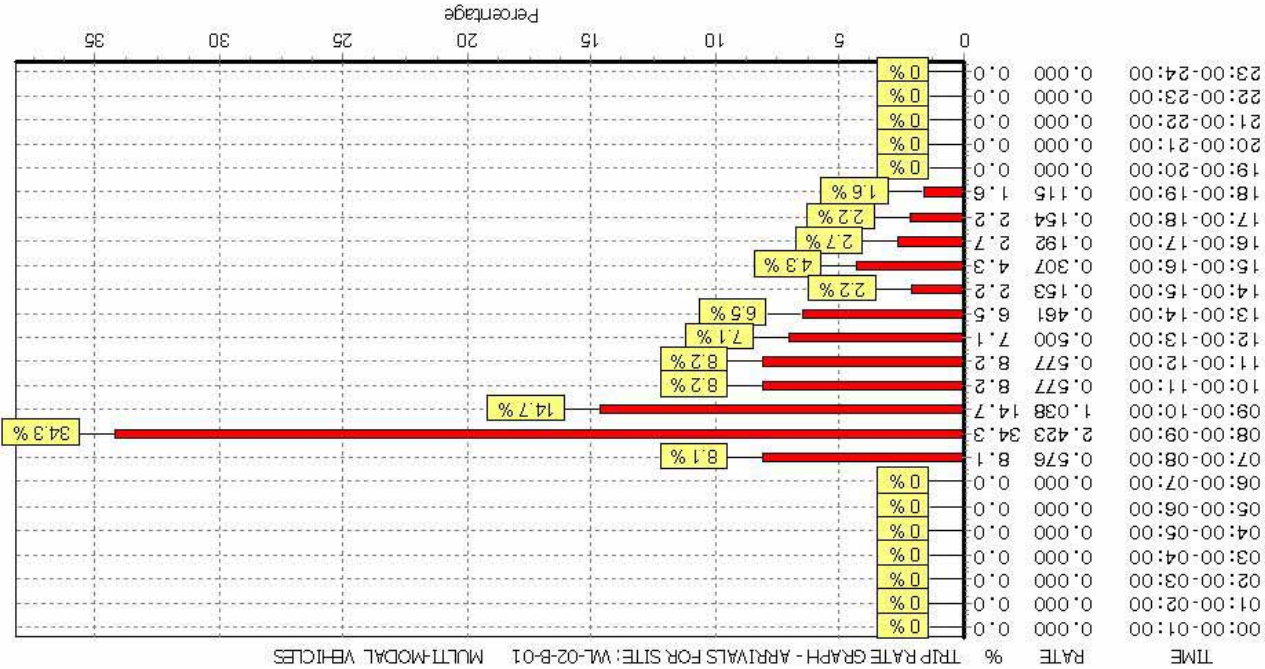
Survey Type: MANUAL

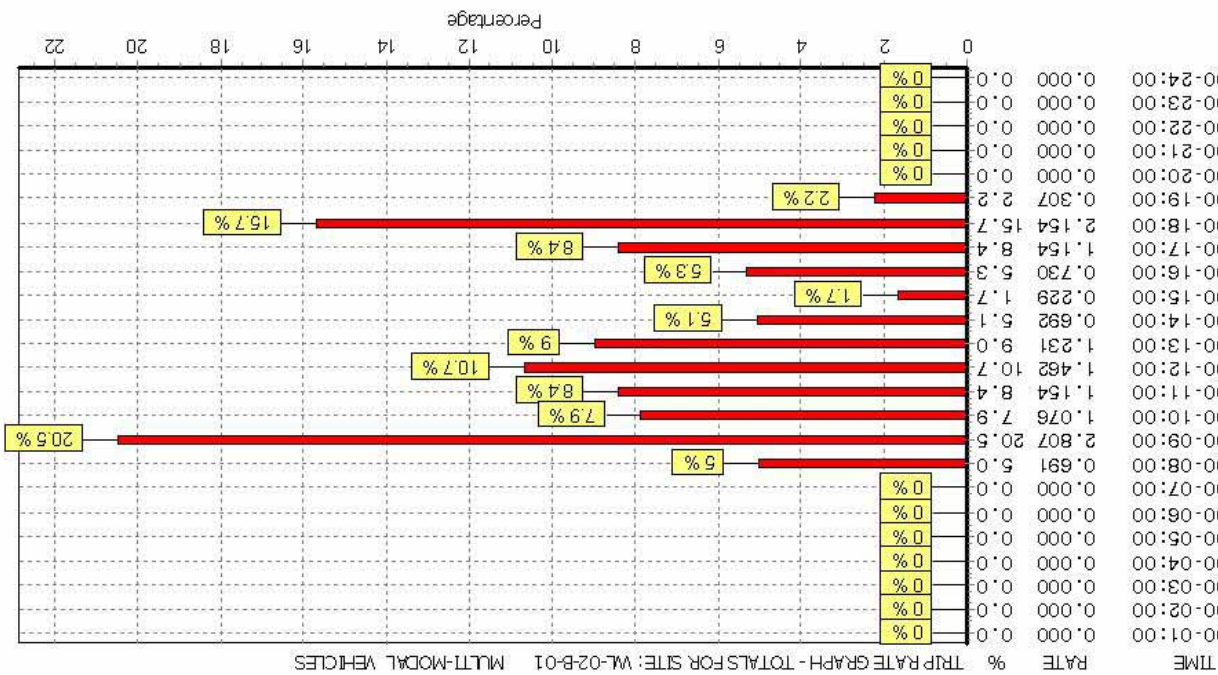
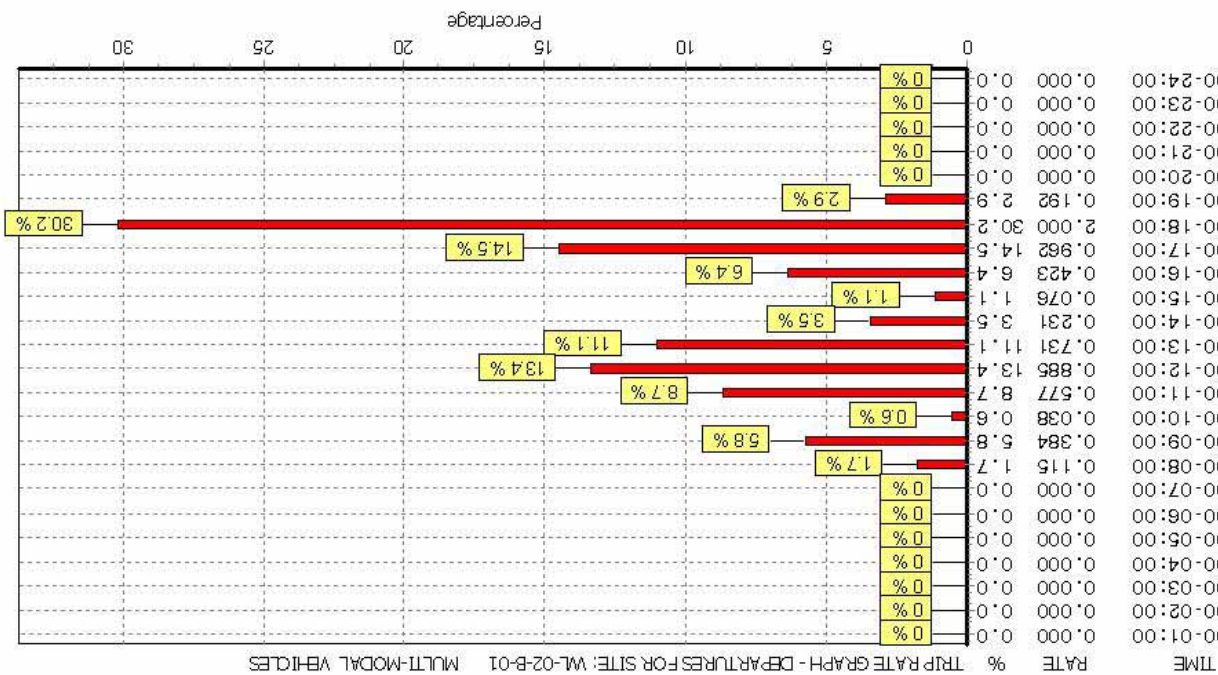
TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK
MULTI-MODAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

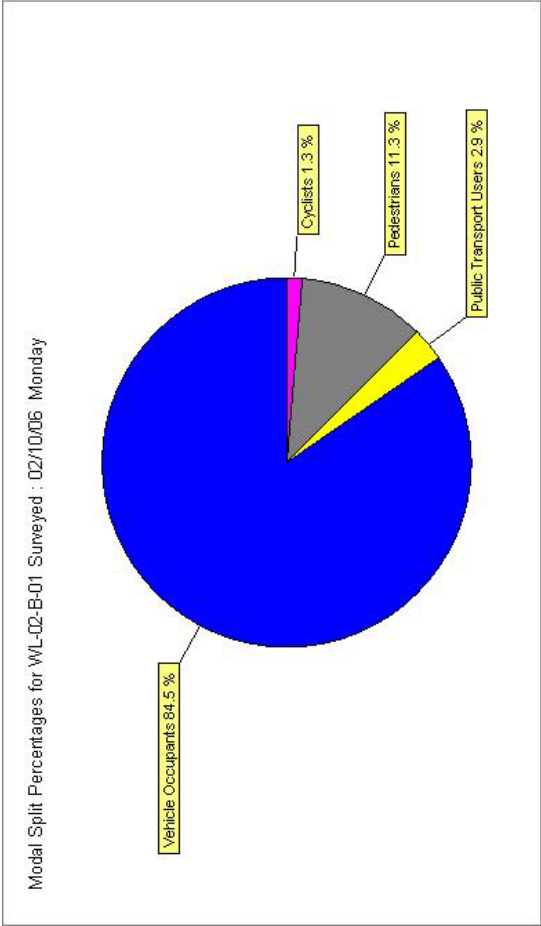
ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA
00:00 - 00:30	0	0	0.000	0	0	0.000	0	0
00:30 - 01:00	0	0	0.000	0	0	0.000	0	0
01:00 - 01:30	0	0	0.000	0	0	0.000	0	0
01:30 - 02:00	0	0	0.000	0	0	0.000	0	0
02:00 - 02:30	0	0	0.000	0	0	0.000	0	0
02:30 - 03:00	0	0	0.000	0	0	0.000	0	0
03:00 - 03:30	0	0	0.000	0	0	0.000	0	0
03:30 - 04:00	0	0	0.000	0	0	0.000	0	0
04:00 - 04:30	0	0	0.000	0	0	0.000	0	0
04:30 - 05:00	0	0	0.000	0	0	0.000	0	0
05:00 - 05:30	0	0	0.000	0	0	0.000	0	0
05:30 - 06:00	0	0	0.000	0	0	0.000	0	0
06:00 - 06:30	0	0	0.000	0	0	0.000	0	0
06:30 - 07:00	0	0	0.000	0	0	0.000	0	0
07:00 - 07:30	1	2600	0.038	1	2600	0.077	1	2600
07:30 - 08:00	1	2600	0.538	1	2600	0.038	1	2600
08:00 - 08:30	1	2600	0.538	1	2600	0.115	1	2600
08:30 - 09:00	1	2600	1.885	1	2600	0.269	1	2600
09:00 - 09:30	1	2600	0.615	1	2600	0.000	1	2600
09:30 - 10:00	1	2600	0.423	1	2600	0.038	1	2600
10:00 - 10:30	1	2600	0.385	1	2600	0.385	1	2600
10:30 - 11:00	1	2600	0.192	1	2600	0.192	1	2600
11:00 - 11:30	1	2600	0.346	1	2600	0.462	1	2600
11:30 - 12:00	1	2600	0.231	1	2600	0.423	1	2600
12:00 - 12:30	1	2600	0.231	1	2600	0.577	1	2600
12:30 - 13:00	1	2600	0.269	1	2600	0.154	1	2600
13:00 - 13:30	1	2600	0.423	1	2600	0.231	1	2600
13:30 - 14:00	1	2600	0.038	1	2600	0.000	1	2600
14:00 - 14:30	1	2600	0.115	1	2600	0.038	1	2600
14:30 - 15:00	1	2600	0.038	1	2600	0.038	1	2600
15:00 - 15:30	1	2600	0.115	1	2600	0.231	1	2600
15:30 - 16:00	1	2600	0.192	1	2600	0.192	1	2600
16:00 - 16:30	1	2600	0.154	1	2600	0.308	1	2600
16:30 - 17:00	1	2600	0.038	1	2600	0.654	1	2600
17:00 - 17:30	1	2600	0.077	1	2600	1.308	1	2600
17:30 - 18:00	1	2600	0.077	1	2600	0.692	1	2600
18:00 - 18:30	1	2600	0.115	1	2600	0.115	1	2600
18:30 - 19:00	1	2600	0.000	1	2600	0.077	1	2600
19:00 - 19:30	0	0	0.000	0	0	0.000	0	0
19:30 - 20:00	0	0	0.000	0	0	0.000	0	0
20:00 - 20:30	0	0	0.000	0	0	0.000	0	0
20:30 - 21:00	0	0	0.000	0	0	0.000	0	0
21:00 - 21:30	0	0	0.000	0	0	0.000	0	0
21:30 - 22:00	0	0	0.000	0	0	0.000	0	0
22:00 - 22:30	0	0	0.000	0	0	0.000	0	0
22:30 - 23:00	0	0	0.000	0	0	0.000	0	0
23:00 - 23:30	0	0	0.000	0	0	0.000	0	0
23:30 - 24:00	0	0	0.000	0	0	0.000	0	0
Total Rates:			7.073	6.614			13.687	

Parameter summary

Trip rate parameter range selected: 2600 - 2600 (units: sqm)
Survey date date range: 01/01/00 - 17/07/08
Number of weekdays (Monday-Friday): 1
Number of Saturdays: 0
Number of Sundays: 0
Surveys manually removed from selection: 9





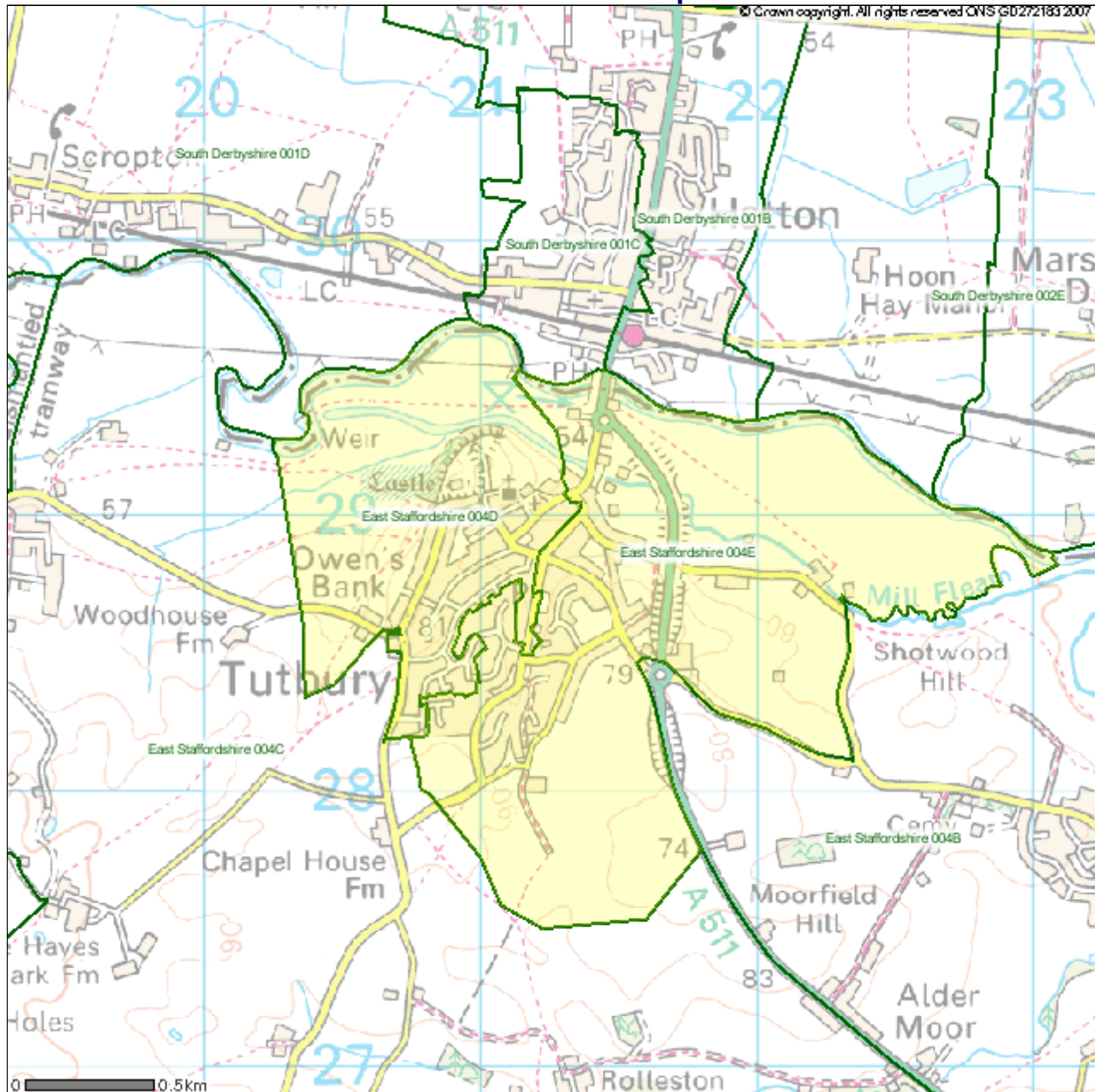


**APPENDIX F – NATIONAL STATISTICS DATA – TRAVEL
TO WORK DISTANCES**

Neighbourhood Statistics



Selectable Area Map



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Neighbourhood Statistics

	East Staffordshire 004D ³ <i>Super Output Area Lower Layer</i>	East Staffordshire 004E ³ <i>Super Output Area Lower Layer</i>
Less than 2km ^{1 2} <i>Persons Count Apr01</i>	151	92
2km to less than 5km ^{1 2} <i>Persons Count Apr01</i>	63	75
5km to less than 10km ^{1 2} <i>Persons Count Apr01</i>	203	250
10km to less than 20km ^{1 2} <i>Persons Count Apr01</i>	87	110
20km to less than 30km ^{1 2} <i>Persons Count Apr01</i>	30	35
30km to less than 40km ^{1 2} <i>Persons Count Apr01</i>	15	26
40km to less than 60km ^{1 2} <i>Persons Count Apr01</i>	11	20
60km and over ^{1 2} <i>Persons Count Apr01</i>	9	24

Last Updated: 18 November 2004
Source: Office for National Statistics

Notes

- ¹ From the dataset: Distance Travelled to Work (UV35)
² National Statistics
³ Part of the NeSS Geography Hierarchy

Caution:

using statistics from different sets of data means that you may not be comparing like with like.

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APPENDIX G – PICADY, ARCADY, AND LINSIG RESULTS

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

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RUN TITLE

Proposed Burton Road/site access junction 2018 design year am with development

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)

```

      I
      I
      I
      I
      I
      I
MINOR ROAD (ARM B)
```

ARM A IS Burton Road S
ARM B IS Site Access
ARM C IS Burton Road N

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.

TRAFFIC DEMAND DATA

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

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)
07.30-07.45								
B-AC	0.50	8.56	0.058		0.0	0.1	0.9	
C-AB	0.18	11.76	0.015		0.0	0.0	0.3	
C-A	3.56							
A-B	0.11							
A-C	2.83							

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)
07.45-08.00								
B-AC	0.60	8.32	0.072		0.1	0.1	1.1	
C-AB	0.23	12.10	0.019		0.0	0.0	0.3	
C-A	4.24							
A-B	0.13							
A-C	3.37							

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)
08.00-08.15								
B-AC	0.73	8.00	0.091		0.1	0.1	1.5	
C-AB	0.30	12.57	0.024		0.0	0.0	0.4	
C-A	5.16							
A-B	0.16							
A-C	4.13							

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)
08.15-08.30								
B-AC	0.73	8.00	0.091		0.1	0.1	1.5	
C-AB	0.30	12.57	0.024		0.0	0.0	0.4	
C-A	5.16							
A-B	0.16							
A-C	4.13							

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)
08.30-08.45								
B-AC	0.60	8.32	0.072		0.1	0.1	1.2	
C-AB	0.23	12.10	0.019		0.0	0.0	0.3	
C-A	4.24							
A-B	0.13							
A-C	3.37							

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)
08.45-09.00								
B-AC	0.50	8.56	0.058		0.1	0.1	1.0	
C-AB	0.18	11.76	0.015		0.0	0.0	0.3	
C-A	3.56							
A-B	0.11							
A-C	2.83							

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

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I	* DELAY *	I	* DELAY *	I
I		I		I		I		I
I		I	(VEH)	I	(MIN)	I	(MIN)	I
I		I	(VEH/H)	I	(MIN/VEH)	I	(MIN/VEH)	I
I	B-AC	I	54.8	I	36.6	I	7.1	I
I	C-AB	I	21.1	I	14.1	I	2.1	I
I	C-A	I	388.9	I	259.2	I		I
I	A-B	I	12.3	I	8.2	I		I
I	A-C	I	309.9	I	206.6	I		I
I	ALL	I	787.1	I	524.7	I	9.2	I

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

END OF JOB

***** PICADY 4 run completed.

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

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

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Run with file:- "c:\Program Files\PICADY 4.1\site access 1 pm peak tutbury.vpi" (drive-on-the-left) at 21:37:27 on Thursday, 2

RUN TITLE

Proposed Burton Road/site access junction 2018 design year pm with development

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS Burton Road S
ARM B IS Site Access
ARM C IS Burton Road N

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.

TRAFFIC DEMAND DATA

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

I	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)	I
I	16.30-16.45									I
I	B-AC	0.30	8.55	0.035		0.0	0.0	0.5		I
I	C-AB	0.19	11.27	0.017		0.0	0.0	0.3		I
I	C-A	3.16								I
I	A-B	0.26								I
I	A-C	4.13								I

I	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)	I
I	16.45-17.00									I
I	B-AC	0.36	8.27	0.043		0.0	0.0	0.7		I
I	C-AB	0.24	11.52	0.021		0.0	0.0	0.4		I
I	C-A	3.76								I
I	A-B	0.31								I
I	A-C	4.93								I

I	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)	I
I	17.00-17.15									I
I	B-AC	0.44	7.88	0.056		0.0	0.1	0.9		I
I	C-AB	0.32	11.87	0.027		0.0	0.0	0.5		I
I	C-A	4.58								I
I	A-B	0.38								I
I	A-C	6.03								I

I	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)	I
I	17.15-17.30									I
I	B-AC	0.44	7.88	0.056		0.1	0.1	0.9		I
I	C-AB	0.32	11.87	0.027		0.0	0.0	0.5		I
I	C-A	4.58								I
I	A-B	0.38								I
I	A-C	6.03								I

I	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)	I
I	17.30-17.45									I
I	B-AC	0.36	8.27	0.043		0.1	0.0	0.7		I
I	C-AB	0.24	11.52	0.021		0.0	0.0	0.4		I
I	C-A	3.76								I
I	A-B	0.31								I
I	A-C	4.93								I

I	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)	I
I	17.45-18.00									I
I	B-AC	0.30	8.55	0.035		0.0	0.0	0.6		I
I	C-AB	0.19	11.27	0.017		0.0	0.0	0.3		I
I	C-A	3.16								I
I	A-B	0.26								I
I	A-C	4.13								I

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

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.1
17.30	0.1
17.45	0.0
18.00	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL	I	DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I		I	* DELAY *	I	* DELAY *	I
I		I		I		I		I		I
I		I	(VEH)	I	(VEH/H)	I	(MIN)	I	(MIN)	I
I		I		I		I	(MIN/VEH)	I	(MIN/VEH)	I
I	B-AC	I	32.9	I	21.9	I	4.2	I	0.13	I
I	C-AB	I	22.6	I	15.1	I	2.4	I	0.11	I
I	C-A	I	344.9	I	229.9	I	I	I	I	I
I	A-B	I	28.8	I	19.2	I	I	I	I	I
I	A-C	I	452.5	I	301.7	I	I	I	I	I
I	ALL	I	881.7	I	587.8	I	6.6	I	0.01	I

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

END OF JOB

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Run with file:- "c:\Program Files\PICADY 4.1\site access 2 am peak tutbury.vpi" (drive-on-the-left) at 21:38:10 on Thursday, 2

RUN TITLE

Proposed A511/site access junction 2018 design year am with development

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS A511 S
ARM B IS Site Access
ARM C IS A511 N

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.

TRAFFIC DEMAND DATA

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

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)
07.30-07.45								
B-AC	0.98	7.69	0.127		0.0	0.1	2.1	
C-A	7.25							
C-B	0.35	11.98	0.029		0.0	0.0	0.4	
A-B	0.43							
A-C	4.76							

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)
07.45-08.00								
B-AC	1.16	7.20	0.162		0.1	0.2	2.8	
C-A	8.66							
C-B	0.42	11.66	0.036		0.0	0.0	0.5	
A-B	0.51							
A-C	5.69							

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)
08.00-08.15								
B-AC	1.43	6.52	0.219		0.2	0.3	4.0	
C-A	10.60							
C-B	0.51	11.20	0.046		0.0	0.0	0.7	
A-B	0.62							
A-C	6.96							

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)
08.15-08.30								
B-AC	1.43	6.52	0.219		0.3	0.3	4.2	
C-A	10.60							
C-B	0.51	11.20	0.046		0.0	0.0	0.7	
A-B	0.62							
A-C	6.96							

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)
08.30-08.45								
B-AC	1.16	7.20	0.162		0.3	0.2	3.0	
C-A	8.66							
C-B	0.42	11.66	0.036		0.0	0.0	0.6	
A-B	0.51							
A-C	5.69							

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)
08.45-09.00								
B-AC	0.98	7.69	0.127		0.2	0.1	2.3	
C-A	7.25							
C-B	0.35	11.98	0.029		0.0	0.0	0.5	
A-B	0.43							
A-C	4.76							

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.1
08.00	0.2
08.15	0.3
08.30	0.3
08.45	0.2
09.00	0.1

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL	I	DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I		I	* DELAY *	I	* DELAY *	I
I		I		I		I		I		I
I		I	(VEH)	I	(VEH/H)	I	(MIN)	I	(MIN)	I
I		I		I		I	(MIN/VEH)	I	(MIN/VEH)	I
I	B-AC	I	107.0	I	71.3	I	18.3	I	18.3	I
I	C-A	I	795.3	I	530.2	I		I		I
I	C-B	I	38.4	I	25.6	I	3.4	I	3.4	I
I	A-B	I	46.6	I	31.1	I		I		I
I	A-C	I	522.4	I	348.3	I		I		I
I	ALL	I	1509.7	I	1006.5	I	21.7	I	21.7	I

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

END OF JOB

***** PICADY 4 run completed.

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

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

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 4.0 (NOV 2003)

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Run with file:- "c:\Program Files\PICADY 4.1\site access 2 pm peak tutbury.vpi" (drive-on-the-left) at 21:39:08 on Thursday, 2

RUN TITLE

Proposed A511/site access junction 2018 design year pm with development

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
I
I
I
I
I
I
MINOR ROAD (ARM B)

ARM A IS A511 S
ARM B IS Site Access
ARM C IS A511 N

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	
I		I	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	6.50 M.
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.
I		I	I
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.50 M.
I	- VISIBILITY	I (VC-B)	250.0 M.
I	- BLOCKS TRAFFIC	I	NO
I		I	I
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	28.0 M.
I	- VISIBILITY TO RIGHT	I (VB-A)	23.0 M.
I	- LANE 1 WIDTH	I (WB-C)	4.19 M.
I	- LANE 2 WIDTH	I (WB-A)	0.00 M.

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

NUMBER OF MINUTES FROM START WHEN		RATE OF FLOW (VEH/MIN)	
I	I	I	I
I	ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS	I BEFORE I AT TOP I AFTER	I
I	I TO RISE I IS REACHED I FALLING	I PEAK I OF PEAK I PEAK	I
I		I	I
I	ARM A I 15.00 I 45.00 I 75.00	I 8.49 I 12.73 I 8.49	I
I	ARM B I 15.00 I 45.00 I 75.00	I 0.86 I 1.29 I 0.86	I
I	ARM C I 15.00 I 45.00 I 75.00	I 5.93 I 8.89 I 5.93	I

TURNING PROPORTIONS		TURNING COUNTS (VEH/HR)	
I	I	I	I
I		I	I
I		I	I
I		I	I
I	TIME	I FROM/TO I	I
I		I	I
I	16.30 - 18.00	I	I
I		I	I
I	ARM A	I 0.000 I 0.059 I 0.941	I
I		I 0.0 I 40.0 I 639.0	I
I		I (0.0) I (0.0) I (2.8)	I
I		I	I
I	ARM B	I 0.565 I 0.000 I 0.435	I
I		I 39.0 I 0.0 I 30.0	I
I		I (0.0) I (0.0) I (0.0)	I
I		I	I
I	ARM C	I 0.951 I 0.049 I 0.000	I
I		I 451.0 I 23.0 I 0.0	I
I		I (2.4) I (0.0) I (0.0)	I
I		I	I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

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)
16.30-16.45								
B-AC	0.86	7.31	0.118		0.0	0.1	1.9	
C-A	5.64							
C-B	0.29	10.97	0.026		0.0	0.0	0.4	
A-B	0.50							
A-C	7.99							

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)
16.45-17.00								
B-AC	1.03	6.71	0.154		0.1	0.2	2.6	
C-A	6.73							
C-B	0.34	10.44	0.033		0.0	0.0	0.5	
A-B	0.60							
A-C	9.54							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.00-17.15								
B-AC	1.26	5.86	0.215		0.2	0.3	3.9	
C-A	8.24							
C-B	0.42	9.71	0.043		0.0	0.0	0.7	
A-B	0.73							
A-C	11.68							

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)
17.15-17.30								
B-AC	1.26	5.86	0.215		0.3	0.3	4.1	
C-A	8.24							
C-B	0.42	9.71	0.043		0.0	0.0	0.7	
A-B	0.73							
A-C	11.68							

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)
17.30-17.45								
B-AC	1.03	6.71	0.154		0.3	0.2	2.9	
C-A	6.73							
C-B	0.34	10.44	0.033		0.0	0.0	0.5	
A-B	0.60							
A-C	9.54							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.45-18.00								
B-AC	0.86	7.31	0.118		0.2	0.1	2.1	
C-A	5.64							
C-B	0.29	10.97	0.026		0.0	0.0	0.4	
A-B	0.50							
A-C	7.99							

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.1

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I	* DELAY *	I	* DELAY *	I
I		I		I		I		I
I		I	(VEH)	I	(MIN)	I	(MIN)	I
I		I	(VEH/H)	I	(MIN/VEH)	I	(MIN/VEH)	I
I	B-AC	I	94.6	I	63.1	I	17.4	I
I	C-A	I	618.4	I	412.3	I		I
I	C-B	I	31.5	I	21.0	I	3.2	I
I	A-B	I	54.8	I	36.6	I		I
I	A-C	I	876.2	I	584.1	I		I
I	ALL	I	1675.6	I	1117.1	I	20.6	I
							0.01	
							20.6	
							0.01	

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

END OF JOB

***** PICADY 4 run completed.

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

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

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 4.0 (NOV 2003)

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Run with file:-
"c:\Program Files\PICADY 4.1\Derby Road Uttoxeter Road 2018 no development pm.vpi"
(drive-on-the-left) at 21:34:49 on Thursday, 28 October 2010

RUN TITLE

Derby Road/Uttoxeter Road T junction 2018 design year pm no development

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
 I
 I
 I
 I
 I
 I
 I
 MINOR ROAD (ARM B)

ARM A IS Derby Road (west)
ARM B IS Uttoxeter Road
ARM C IS Derby Road (east)

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	
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I (W)	6.50 M.
I	CENTRAL RESERVE WIDTH	I (WCR)	0.00 M.
I	MAJOR ROAD RIGHT TURN - WIDTH	I (WC-B)	3.50 M.
I	- VISIBILITY	I (VC-B)	100.0 M.
I	- BLOCKS TRAFFIC	I	NO
I	MINOR ROAD - VISIBILITY TO LEFT	I (VB-C)	37.0 M.
I	- VISIBILITY TO RIGHT	I (VB-A)	49.0 M.
I	- LANE 1 WIDTH	I (WB-C)	-
I	- LANE 2 WIDTH	I (WB-A)	-
I	- WIDTH AT 0 M FROM JUNC.	I	10.00 M.
I	- WIDTH AT 5 M FROM JUNC.	I	7.50 M.
I	- WIDTH AT 10 M FROM JUNC.	I	5.50 M.
I	- WIDTH AT 15 M FROM JUNC.	I	5.00 M.
I	- WIDTH AT 20 M FROM JUNC.	I	3.00 M.
I	- LENGTH OF FLARED SECTION	I	1 VEHS

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

NUMBER OF MINUTES FROM START WHEN		RATE OF FLOW (VEH/MIN)	
I	ARM I FLOW STARTS I TOP OF PEAK I FLOW STOPS	I	BEFORE I AT TOP I AFTER I
I	I TO RISE I IS REACHED I FALLING	I	PEAK I OF PEAK I PEAK I
I	ARM A I 15.00 I 45.00 I 75.00	I	5.40 I 8.10 I 5.40 I
I	ARM B I 15.00 I 45.00 I 75.00	I	5.46 I 8.19 I 5.46 I
I	ARM C I 15.00 I 45.00 I 75.00	I	1.27 I 1.91 I 1.27 I

TURNING PROPORTIONS	
TURNING COUNTS (VEH/HR)	
(PERCENTAGE OF H.V.S)	
TIME	FROM/TO I ARM A I ARM B I ARM C I
I 16.30 - 18.00	I
I	I ARM A I 0.000 I 0.715 I 0.285 I
I	I I 0.0 I 309.0 I 123.0 I
I	I (0.0) I (6.1) I (10.5) I
I	I I I I I
I	I ARM B I 0.890 I 0.000 I 0.110 I
I	I I 389.0 I 0.0 I 48.0 I
I	I (4.0) I (0.0) I (0.0) I
I	I I I I I
I	I ARM C I 0.853 I 0.147 I 0.000 I
I	I I 87.0 I 15.0 I 0.0 I
I	I (1.9) I (0.0) I (0.0) I
I	I I I I I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

I	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)	I
I	16.30-16.45									I
I	B-C	0.60	6.48	0.093		0.0	0.1	1.4		I
I	B-A	4.86	8.32	0.584		0.0	1.3	18.3		I
I	C-A	1.09								I
I	C-B	0.19	10.44	0.018		0.0	0.0	0.3		I
I	A-B	3.86								I
I	A-C	1.54								I

I	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)	I
I	16.45-17.00									I
I	B-C	0.72	4.87	0.147		0.1	0.2	2.4		I
I	B-A	5.81	8.09	0.718		1.3	2.3	31.6		I
I	C-A	1.30								I
I	C-B	0.22	10.13	0.022		0.0	0.0	0.3		I
I	A-B	4.61								I
I	A-C	1.84								I

I	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)	I
I	17.00-17.15									I
I	B-C	0.88	1.91	0.461		0.2	0.8	9.8		I
I	B-A	7.11	7.73	0.920		2.3	6.6	76.2		I
I	C-A	1.59								I
I	C-B	0.27	9.70	0.028		0.0	0.0	0.4		I
I	A-B	5.65								I
I	A-C	2.25								I

I	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)	I
I	17.15-17.30									I
I	B-C	0.88	1.30	0.677		0.8	1.6	19.3		I
I	B-A	7.11	7.71	0.922		6.6	8.0	110.1		I
I	C-A	1.59								I
I	C-B	0.27	9.70	0.028		0.0	0.0	0.4		I
I	A-B	5.65								I
I	A-C	2.25								I

I	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)	I
I	17.30-17.45									I
I	B-C	0.72	4.20	0.171		1.6	0.2	3.8		I
I	B-A	5.81	8.07	0.720		8.0	2.8	54.6		I
I	C-A	1.30								I
I	C-B	0.22	10.13	0.022		0.0	0.0	0.3		I
I	A-B	4.61								I
I	A-C	1.84								I

I	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)	I
I	17.45-18.00									I
I	B-C	0.60	6.26	0.096		0.2	0.1	1.7		I
I	B-A	4.86	8.32	0.584		2.8	1.5	23.9		I
I	C-A	1.09								I
I	C-B	0.19	10.44	0.018		0.0	0.0	0.3		I
I	A-B	3.86								I
I	A-C	1.54								I
I										I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	0.1	
17.00	0.2	
17.15	0.8	*
17.30	1.6	**
17.45	0.2	
18.00	0.1	

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	1.3	*
17.00	2.3	**
17.15	6.6	*****
17.30	8.0	*****
17.45	2.8	***
18.00	1.5	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	0.0	
17.00	0.0	
17.15	0.0	
17.30	0.0	
17.45	0.0	
18.00	0.0	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL	DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I			I	* DELAY *	I	* DELAY *	I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	B-C	I	65.8	I 43.9	I	38.5	I 0.59	I 38.5	I 0.59
I	B-A	I	533.4	I 355.6	I	314.8	I 0.59	I 314.9	I 0.59
I	C-A	I	119.3	I 79.5	I		I	I	I
I	C-B	I	20.6	I 13.7	I	2.1	I 0.10	I 2.1	I 0.10
I	A-B	I	423.7	I 282.5	I		I	I	I
I	A-C	I	168.7	I 112.4	I		I	I	I
I	ALL	I	1331.4	I 887.6	I	355.4	I 0.27	I 355.5	I 0.27

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END OF JOB

***** PICADY 4 run completed.

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

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

PICADY 4.1 ANALYSIS PROGRAM
RELEASE 4.0 (NOV 2003)

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Run with file:-
"c:\Program Files\PICADY 4.1\Derby Road Uttoxeter Road 2018 am.vpi"
(drive-on-the-left) at 21:32:39 on Thursday, 28 October 2010

RUN TITLE

Derby Road/Uttoxeter Road T-junction 2018 design year pm with development

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
 I
 I
 I
 I
 I
 I
 I
 MINOR ROAD (ARM B)

ARM A IS Derby Road (west)
ARM B IS Uttoxeter Road
ARM C IS Derby Road (east)

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.

TRAFFIC DEMAND DATA

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

I	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)	I
I	07.30-07.45									I
I	B-C	0.14	7.92	0.017		0.0	0.0	0.3		I
I	B-A	3.10	8.11	0.382		0.0	0.6	8.5		I
I	C-A	1.49								I
I	C-B	0.50	10.19	0.049		0.0	0.1	0.7		I
I	A-B	4.70								I
I	A-C	0.71								I

I	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)	I
I	07.45-08.00									I
I	B-C	0.16	7.23	0.023		0.0	0.0	0.3		I
I	B-A	3.70	7.89	0.469		0.6	0.9	12.3		I
I	C-A	1.78								I
I	C-B	0.60	9.89	0.060		0.1	0.1	0.9		I
I	A-B	5.61								I
I	A-C	0.85								I

I	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)	I
I	08.00-08.15									I
I	B-C	0.20	5.99	0.034		0.0	0.0	0.5		I
I	B-A	4.53	7.59	0.598		0.9	1.4	19.7		I
I	C-A	2.18								I
I	C-B	0.73	9.48	0.077		0.1	0.1	1.2		I
I	A-B	6.87								I
I	A-C	1.04								I

I	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)	I
I	08.15-08.30									I
I	B-C	0.20	5.95	0.034		0.0	0.0	0.5		I
I	B-A	4.53	7.59	0.598		1.4	1.4	21.5		I
I	C-A	2.18								I
I	C-B	0.73	9.48	0.077		0.1	0.1	1.2		I
I	A-B	6.87								I
I	A-C	1.04								I

I	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)	I
I	08.30-08.45									I
I	B-C	0.16	7.18	0.023		0.0	0.0	0.4		I
I	B-A	3.70	7.89	0.469		1.4	0.9	14.5		I
I	C-A	1.78								I
I	C-B	0.60	9.89	0.060		0.1	0.1	1.0		I
I	A-B	5.61								I
I	A-C	0.85								I

I	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)	I
I	08.45-09.00									I
I	B-C	0.14	7.88	0.017		0.0	0.0	0.3		I
I	B-A	3.10	8.11	0.382		0.9	0.6	9.9		I
I	C-A	1.49								I
I	C-B	0.50	10.19	0.049		0.1	0.1	0.8		I
I	A-B	4.70								I
I	A-C	0.71								I
I										I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.45	0.6	*
08.00	0.9	*
08.15	1.4	*
08.30	1.4	*
08.45	0.9	*
09.00	0.6	*

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL	DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I			I	* DELAY *	I	* DELAY *	I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	B-C	I	15.1	10.1	I	2.2	0.15	I	2.2
I	B-A	I	340.1	226.7	I	86.4	0.25	I	86.5
I	C-A	I	163.2	108.8	I			I	
I	C-B	I	54.8	36.6	I	5.9	0.11	I	5.9
I	A-B	I	515.6	343.7	I			I	
I	A-C	I	78.2	52.1	I			I	
I	ALL	I	1166.9	777.9	I	94.6	0.08	I	94.6

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

END OF JOB

***** PICADY 4 run completed.

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

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.

TRAFFIC DEMAND DATA

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

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)
16.30-16.45								
B-C	0.60	6.24	0.096		0.0	0.1	1.5	
B-A	4.97	8.23	0.605		0.0	1.5	19.7	
C-A	1.29							
C-B	0.19	10.34	0.018		0.0	0.0	0.3	
A-B	3.97							
A-C	1.74							

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)
16.45-17.00								
B-C	0.72	4.48	0.160		0.1	0.2	2.7	
B-A	5.94	7.97	0.746		1.5	2.6	35.3	
C-A	1.54							
C-B	0.22	10.02	0.022		0.0	0.0	0.3	
A-B	4.75							
A-C	2.07							

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)
17.00-17.15								
B-C	0.88	1.18	0.746		0.2	1.8	19.9	
B-A	7.28	7.58	0.960		2.6	8.4	92.5	
C-A	1.88							
C-B	0.27	9.57	0.029		0.0	0.0	0.4	
A-B	5.81							
A-C	2.54							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.15-17.30								
B-C	0.88	0.96	0.911		1.8	3.2	38.8	
B-A	7.28	7.55	0.963		8.4	10.9	146.3	
C-A	1.88							
C-B	0.27	9.57	0.029		0.0	0.0	0.4	
A-B	5.81							
A-C	2.54							

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)
17.30-17.45								
B-C	0.72	3.44	0.208		3.2	0.3	6.6	
B-A	5.94	7.92	0.750		10.9	3.4	75.3	
C-A	1.54							
C-B	0.22	10.02	0.022		0.0	0.0	0.4	
A-B	4.75							
A-C	2.07							

I	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)	I
I	17.45-18.00									I
I	B-C	0.60	5.96	0.101		0.3	0.1	1.8		I
I	B-A	4.97	8.22	0.605		3.4	1.6	26.7		I
I	C-A	1.29								I
I	C-B	0.19	10.34	0.018		0.0	0.0	0.3		I
I	A-B	3.97								I
I	A-C	1.74								I
I										I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	0.1	
17.00	0.2	
17.15	1.8	**
17.30	3.2	***
17.45	0.3	
18.00	0.1	

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	1.5	*
17.00	2.6	***
17.15	8.4	*****
17.30	10.9	*****
17.45	3.4	***
18.00	1.6	**

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.45	0.0	
17.00	0.0	
17.15	0.0	
17.30	0.0	
17.45	0.0	
18.00	0.0	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I	* DELAY *	I	* DELAY *	I
I		I	(VEH)	I	(MIN)	I	(MIN)	I
I		I	(VEH/H)	I	(MIN/VEH)	I	(MIN/VEH)	I
I	B-C	I	65.8	I	43.9	I	71.2	I
I	B-A	I	545.7	I	363.8	I	395.8	I
I	C-A	I	141.2	I	94.2	I		I
I	C-B	I	20.6	I	13.7	I	2.1	I
I	A-B	I	436.0	I	290.7	I		I
I	A-C	I	190.6	I	127.1	I		I
I	ALL	I	1400.0	I	933.3	I	469.1	I
							0.34	
							469.3	
							0.34	

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

END OF JOB

***** PICADY 4 run completed.

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

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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Run with file:-
"C:\Program Files\ARCADY 5\A511 Burton Road Rolleston Lane Roundabout 2018 am.vai"
(drive-on-the-left) at 21:22:32 on Thursday, 28 October 2010

ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

A511/Burton Road/Rolleston Lane Roundabout 2018 design year am with development

INPUT DATA

ARM A - A511 (north)
ARM B - Rolleston Lane
ARM C - A511 (south)
ARM D - Burton Road

GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I	ARM A	I	5.25	I	8.00	I	17.00	I	30.00	I	49.00	I	36.0	I	0.693	I	35.502	I
I	ARM B	I	3.00	I	5.00	I	6.50	I	17.50	I	49.00	I	47.0	I	0.486	I	18.904	I
I	ARM C	I	5.00	I	8.00	I	5.50	I	34.00	I	49.00	I	32.0	I	0.649	I	31.174	I
I	ARM D	I	3.75	I	8.00	I	7.00	I	15.00	I	49.00	I	59.0	I	0.520	I	23.163	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

		NUMBER OF MINUTES FROM START WHEN					RATE OF FLOW (VEH/MIN)						
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER
I	I	I	TO RISE	I	IS REACHED	I	IF FALLING	I	PEAK	I	OF PEAK	I	PEAK
I	ARM A	I	15.00	I	45.00	I	75.00	I	6.13	I	9.19	I	6.13
I	ARM B	I	15.00	I	45.00	I	75.00	I	1.73	I	2.59	I	1.73
I	ARM C	I	15.00	I	45.00	I	75.00	I	5.11	I	7.67	I	5.11
I	ARM D	I	15.00	I	45.00	I	75.00	I	3.94	I	5.91	I	3.94

I I I I I	I	TURNING PROPORTIONS										I
		TURNING COUNTS (VEH/HR)										
		(PERCENTAGE OF H.V.S)										
TIME		I	FROM/TO	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	07.30 - 09.00	I		I		I		I		I		I
I		I	ARM A	I	0.006	I	0.106	I	0.837	I	0.051	I
I		I		I	3.0	I	52.0	I	410.0	I	25.0	I
I		I		I	(0.0)	I	(3.8)	I	(2.7)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.420	I	0.000	I	0.043	I	0.536	I
I		I		I	58.0	I	0.0	I	6.0	I	74.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(6.8)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.648	I	0.002	I	0.002	I	0.347	I
I		I		I	265.0	I	1.0	I	1.0	I	142.0	I
I		I		I	(2.6)	I	(0.0)	I	(0.0)	I	(9.2)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.175	I	0.216	I	0.610	I	0.000	I
I		I		I	55.0	I	68.0	I	192.0	I	0.0	I
I		I		I	(0.0)	I	(8.8)	I	(3.6)	I	(0.0)	I
I		I		I		I		I		I		I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	I
I	07.30-07.45									I
I	ARM A	6.13	32.26	0.190		0.0	0.2	3.5		I
I	ARM B	1.73	14.44	0.119		0.0	0.1	2.0		I
I	ARM C	5.11	28.45	0.180		0.0	0.2	3.2		I
I	ARM D	3.94	20.16	0.195		0.0	0.2	3.5		I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	I
I	07.45-08.00									I
I	ARM A	7.31	31.81	0.230		0.2	0.3	4.4		I
I	ARM B	2.06	13.70	0.150		0.1	0.2	2.6		I
I	ARM C	6.10	28.20	0.216		0.2	0.3	4.1		I
I	ARM D	4.70	19.76	0.238		0.2	0.3	4.6		I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	I
I	08.00-08.15									I
I	ARM A	8.96	31.19	0.287		0.3	0.4	5.9		I
I	ARM B	2.52	12.68	0.199		0.2	0.2	3.6		I
I	ARM C	7.48	27.86	0.268		0.3	0.4	5.4		I
I	ARM D	5.76	19.20	0.300		0.3	0.4	6.3		I

I	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)	I
I	08.15-08.30									I
I	ARM A	8.96	31.19	0.287		0.4	0.4	6.0		I
I	ARM B	2.52	12.68	0.199		0.2	0.2	3.7		I
I	ARM C	7.48	27.86	0.268		0.4	0.4	5.5		I
I	ARM D	5.76	19.19	0.300		0.4	0.4	6.4		I
I										I

I	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)	I
I	08.30-08.45									I
I	ARM A	7.31	31.81	0.230		0.4	0.3	4.6		I
I	ARM B	2.06	13.69	0.150		0.2	0.2	2.7		I
I	ARM C	6.10	28.20	0.217		0.4	0.3	4.2		I
I	ARM D	4.70	19.75	0.238		0.4	0.3	4.8		I
I										I

I	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)	I
I	08.45-09.00									I
I	ARM A	6.13	32.25	0.190		0.3	0.2	3.6		I
I	ARM B	1.73	14.42	0.120		0.2	0.1	2.1		I
I	ARM C	5.11	28.44	0.180		0.3	0.2	3.3		I
I	ARM D	3.94	20.15	0.195		0.3	0.2	3.7		I
I										I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.2
08.00	0.3
08.15	0.4
08.30	0.4
08.45	0.3
09.00	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.1
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.2
08.00	0.3
08.15	0.4
08.30	0.4
08.45	0.3
09.00	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.2
08.00	0.3
08.15	0.4
08.30	0.4
08.45	0.3
09.00	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I
I		I		I	* DELAY *	I	* DELAY *	I
I		I		I		I		I
I		I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
I	A	I	671.9	I 447.9	I 27.9	I 0.04	I 27.9	I 0.04
I	B	I	189.2	I 126.2	I 16.7	I 0.09	I 16.7	I 0.09
I	C	I	560.8	I 373.9	I 25.7	I 0.05	I 25.7	I 0.05
I	D	I	431.9	I 288.0	I 29.3	I 0.07	I 29.3	I 0.07
I	ALL	I	1853.9	I 1235.9	I 99.7	I 0.05	I 99.7	I 0.05

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

END OF JOB

***** ARCADY 5 run completed.
===== end of file =====

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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EMAIL: SoftwareBureau@trl.co.uk

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IN NO WAY RELIEVED OF HIS RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"C:\Program Files\ARCADY 5\A511 Burton Road Rolleston Lane Roundabout 2018 pm.vai"
(drive-on-the-left) at 21:23:37 on Thursday, 28 October 2010

ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

A511/Burton Road/Rolleston Lane Roundabout 2018 design year pm with development

INPUT DATA

ARM A - A511 (north)
ARM B - Rolleston Lane
ARM C - A511 (south)
ARM D - Burton Road

GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I	ARM A	I	5.25	I	8.00	I	17.00	I	30.00	I	49.00	I	36.0	I	0.693	I	35.502	I
I	ARM B	I	3.00	I	5.00	I	6.50	I	17.50	I	49.00	I	47.0	I	0.486	I	18.904	I
I	ARM C	I	5.00	I	8.00	I	5.50	I	34.00	I	49.00	I	32.0	I	0.649	I	31.174	I
I	ARM D	I	3.75	I	8.00	I	7.00	I	15.00	I	49.00	I	59.0	I	0.520	I	23.163	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	I	NUMBER OF MINUTES FROM START WHEN					RATE OF FLOW (VEH/MIN)					I		
		I	I	I	I	I	I	I	I	I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I	I	I	TO RISE	I	IS REACHED	I	IF FALLING	I	PEAK	I	OF PEAK	I	PEAK	I
I	ARM A	I	15.00	I	45.00	I	75.00	I	5.22	I	7.84	I	5.22	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	1.45	I	2.18	I	1.45	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	8.16	I	12.24	I	8.16	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	3.40	I	5.10	I	3.40	I

I	I	TURNING PROPORTIONS										I
		TURNING COUNTS (VEH/HR)										
		(PERCENTAGE OF H.V.S)										
TIME		FROM/TO	ARM A	ARM B	ARM C	ARM D						
16.30 - 18.00												
	ARM A	0.002	0.158	0.746	0.093							
		1.0	66.0	312.0	39.0							
		(0.0)	(3.8)	(3.5)	(0.0)							
	ARM B	0.388	0.000	0.112	0.500							
		45.0	0.0	13.0	58.0							
		(2.2)	(0.0)	(0.0)	(3.4)							
	ARM C	0.625	0.008	0.000	0.368							
		408.0	5.0	0.0	240.0							
		(2.6)	(20.0)	(0.0)	(2.5)							
	ARM D	0.162	0.279	0.559	0.000							
		44.0	76.0	152.0	0.0							
		(2.2)	(6.6)	(0.0)	(0.0)							

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	I
I	16.30-16.45									I
I	ARM A	5.22	32.40	0.161		0.0	0.2	2.8		I
I	ARM B	1.45	15.39	0.094		0.0	0.1	1.5		I
I	ARM C	8.16	29.21	0.279		0.0	0.4	5.7		I
I	ARM D	3.40	19.68	0.173		0.0	0.2	3.1		I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	I
I	16.45-17.00									I
I	ARM A	6.24	32.00	0.195		0.2	0.2	3.6		I
I	ARM B	1.73	14.79	0.117		0.1	0.1	1.9		I
I	ARM C	9.75	28.98	0.336		0.4	0.5	7.4		I
I	ARM D	4.06	19.09	0.213		0.2	0.3	4.0		I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	I
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	I
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	I
I	17.00-17.15									I
I	ARM A	7.64	31.47	0.243		0.2	0.3	4.7		I
I	ARM B	2.12	13.98	0.152		0.1	0.2	2.6		I
I	ARM C	11.94	28.67	0.416		0.5	0.7	10.4		I
I	ARM D	4.97	18.28	0.272		0.3	0.4	5.5		I

I	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)	I
I	17.15-17.30									I
I	ARM A	7.64	31.46	0.243		0.3	0.3	4.8		I
I	ARM B	2.12	13.97	0.152		0.2	0.2	2.7		I
I	ARM C	11.94	28.67	0.416		0.7	0.7	10.7		I
I	ARM D	4.97	18.28	0.272		0.4	0.4	5.6		I

I	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)	I
I	17.30-17.45									I
I	ARM A	6.24	32.00	0.195		0.3	0.2	3.7		I
I	ARM B	1.73	14.79	0.117		0.2	0.1	2.0		I
I	ARM C	9.75	28.98	0.336		0.7	0.5	7.8		I
I	ARM D	4.06	19.08	0.213		0.4	0.3	4.2		I

I	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)	I
I	17.45-18.00									I
I	ARM A	5.22	32.39	0.161		0.2	0.2	2.9		I
I	ARM B	1.45	15.38	0.094		0.1	0.1	1.6		I
I	ARM C	8.16	29.20	0.280		0.5	0.4	5.9		I
I	ARM D	3.40	19.66	0.173		0.3	0.2	3.2		I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.2
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.1
18.00	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.4
17.00	0.5 *
17.15	0.7 *
17.30	0.7 *
17.45	0.5 *
18.00	0.4

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.2
17.00	0.3
17.15	0.4
17.30	0.4
17.45	0.3
18.00	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I		I			I	* DELAY *		I	* DELAY *		I
I		I			I			I			I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	A	I	573.2	I 382.1	I	22.6	I 0.04	I	22.6	I 0.04	I
I	B	I	159.1	I 106.0	I	12.4	I 0.08	I	12.4	I 0.08	I
I	C	I	895.4	I 596.9	I	47.9	I 0.05	I	47.9	I 0.05	I
I	D	I	373.0	I 248.6	I	25.4	I 0.07	I	25.4	I 0.07	I
I	ALL	I	2000.6	I 1333.7	I	108.3	I 0.05	I	108.3	I 0.05	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
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* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

***** ARCADY 5 run completed.
===== end of file =====

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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Run with file:-
"C:\Program Files\ARCADY 5\A511 Bridge Street Roundabout 2018 am.vai"
(drive-on-the-left) at 21:21:27 on Thursday, 28 October 2010

ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

 A511/Bridge Street Roundabout 2018 design year am with development

INPUT DATA

ARM A - A511 (north)
ARM B - A511 (east)
ARM C - Bridge Street
ARM D - Tutbury Mill

GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I	ARM A	I	3.50	I	6.50	I	10.00	I	18.00	I	35.00	I	44.0	I	0.583	I	24.032	I
I	ARM B	I	5.25	I	7.00	I	13.00	I	25.00	I	35.00	I	38.0	I	0.692	I	32.101	I
I	ARM C	I	4.50	I	5.50	I	9.00	I	10.00	I	35.00	I	26.0	I	0.607	I	25.524	I
I	ARM D	I	2.65	I	3.25	I	5.00	I	13.00	I	35.00	I	16.0	I	0.507	I	15.918	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

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

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)
08.00-08.15								
ARM A	13.20	23.26	0.568		0.9	1.3	18.7	
ARM B	7.42	28.93	0.257		0.3	0.3	5.1	
ARM C	4.33	19.91	0.218		0.2	0.3	4.1	
ARM D	0.04	9.88	0.004		0.0	0.0	0.1	

I	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)	I
I	08.15-08.30									I
I	ARM A	13.20	23.26	0.568		1.3	1.3	19.5		I
I	ARM B	7.42	28.92	0.257		0.3	0.3	5.2		I
I	ARM C	4.33	19.91	0.218		0.3	0.3	4.2		I
I	ARM D	0.04	9.87	0.004		0.0	0.0	0.1		I

I	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)	I
I	08.30-08.45									I
I	ARM A	10.78	23.28	0.463		1.3	0.9	13.4		I
I	ARM B	6.06	29.32	0.207		0.3	0.3	4.0		I
I	ARM C	3.54	20.71	0.171		0.3	0.2	3.2		I
I	ARM D	0.03	10.98	0.003		0.0	0.0	0.0		I

I	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)	I
I	08.45-09.00									I
I	ARM A	9.02	23.30	0.387		0.9	0.6	9.8		I
I	ARM B	5.07	29.61	0.171		0.3	0.2	3.1		I
I	ARM C	2.96	21.29	0.139		0.2	0.2	2.5		I
I	ARM D	0.03	11.78	0.002		0.0	0.0	0.0		I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.6 *
08.00	0.9 *
08.15	1.3 *
08.30	1.3 *
08.45	0.9 *
09.00	0.6 *

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.3
08.45	0.3
09.00	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.2
08.00	0.2
08.15	0.3
08.30	0.3
08.45	0.2
09.00	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I			
I		I			I	* DELAY *		I	* DELAY *		I			
I		I			I			I			I			
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I			
I	A	I	990.0	I	660.0	I	83.1	I	0.08	I	83.1	I	0.08	I
I	B	I	556.7	I	371.1	I	24.3	I	0.04	I	24.3	I	0.04	I
I	C	I	325.0	I	216.7	I	19.3	I	0.06	I	19.3	I	0.06	I
I	D	I	2.7	I	1.8	I	0.3	I	0.09	I	0.3	I	0.09	I
I	ALL	I	1874.4	I	1249.6	I	126.8	I	0.07	I	126.8	I	0.07	I

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
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END OF JOB

***** ARCADY 5 run completed.
===== end of file =====

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
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Run with file:-
"C:\Program Files\ARCADY 5\A511 Bridge Street Roundabout 2018 pm.vai"
(drive-on-the-left) at 20:13:36 on Thursday, 28 October 2010

ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

A511/Bridge Street Roundabout 2018 design year pm with development

INPUT DATA

ARM A - A511 (north)
ARM B - A511 (east)
ARM C - Bridge Street
ARM D - Tutbury Mill

GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I	ARM A	I	3.50	I	6.50	I	10.00	I	18.00	I	35.00	I	44.0	I	0.583	I	24.032	I
I	ARM B	I	5.25	I	7.00	I	13.00	I	25.00	I	35.00	I	38.0	I	0.692	I	32.101	I
I	ARM C	I	4.50	I	5.50	I	9.00	I	10.00	I	35.00	I	26.0	I	0.607	I	25.524	I
I	ARM D	I	2.65	I	3.25	I	5.00	I	13.00	I	35.00	I	16.0	I	0.507	I	15.918	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I
		FLOW STARTS	TOP OF PEAK	FLOW STOPS		BEFORE	AT TOP	AFTER	
I	I	TO RISE	IS REACHED	IF FALLING	I	PEAK	OF PEAK	PEAK	I
I	ARM A	I 15.00	I 45.00	I 75.00	I	8.46	I 12.69	I 8.46	I
I	ARM B	I 15.00	I 45.00	I 75.00	I	6.65	I 9.98	I 6.65	I
I	ARM C	I 15.00	I 45.00	I 75.00	I	3.38	I 5.06	I 3.38	I
I	ARM D	I 15.00	I 45.00	I 75.00	I	0.11	I 0.17	I 0.11	I

I I I I I	I	TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)						I
		TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D	
I	07.30 - 09.00	I	I	I	I	I	I	I
I		I	ARM A	I 0.006	I 0.620	I 0.366	I 0.007	I
I		I		I 4.0	I 420.0	I 248.0	I 5.0	I
I		I		I (0.0)	I (3.1)	I (3.2)	I (25.0)	I
I		I		I	I	I	I	I
I		I	ARM B	I 0.966	I 0.000	I 0.026	I 0.008	I
I		I		I 514.0	I 0.0	I 14.0	I 4.0	I
I		I		I (3.5)	I (0.0)	I (0.0)	I (0.0)	I
I		I		I	I	I	I	I
I		I	ARM C	I 0.937	I 0.056	I 0.000	I 0.007	I
I		I		I 253.0	I 15.0	I 0.0	I 2.0	I
I		I		I (2.7)	I (0.0)	I (0.0)	I (0.0)	I
I		I		I	I	I	I	I
I		I	ARM D	I 0.111	I 0.667	I 0.222	I 0.000	I
I		I		I 1.0	I 6.0	I 2.0	I 0.0	I
I		I		I (0.0)	I (0.0)	I (50.0)	I (0.0)	I
I		I		I	I	I	I	I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	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)	I
I	07.30-07.45									I
I	ARM A	8.46	23.10	0.366		0.0	0.6	8.4		I
I	ARM B	6.65	28.81	0.231		0.0	0.3	4.4		I
I	ARM C	3.38	20.87	0.162		0.0	0.2	2.8		I
I	ARM D	0.11	9.71	0.012		0.0	0.0	0.2		I

I	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)	I
I	07.45-08.00									I
I	ARM A	10.11	23.07	0.438		0.6	0.8	11.3		I
I	ARM B	7.94	28.37	0.280		0.3	0.4	5.7		I
I	ARM C	4.03	20.07	0.201		0.2	0.2	3.7		I
I	ARM D	0.13	8.80	0.015		0.0	0.0	0.2		I

I	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)	I
I	08.00-08.15									I
I	ARM A	12.38	23.02	0.538		0.8	1.1	16.7		I
I	ARM B	9.73	27.76	0.350		0.4	0.5	7.9		I
I	ARM C	4.94	18.99	0.260		0.2	0.3	5.1		I
I	ARM D	0.16	7.56	0.022		0.0	0.0	0.3		I

I	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)	I
I	08.15-08.30									I
I	ARM A	12.38	23.02	0.538		1.1	1.2	17.3		I
I	ARM B	9.73	27.76	0.350		0.5	0.5	8.1		I
I	ARM C	4.94	18.99	0.260		0.3	0.4	5.2		I
I	ARM D	0.16	7.56	0.022		0.0	0.0	0.3		I

I	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)	I
I	08.30-08.45									I
I	ARM A	10.11	23.07	0.438		1.2	0.8	12.1		I
I	ARM B	7.94	28.36	0.280		0.5	0.4	6.0		I
I	ARM C	4.03	20.06	0.201		0.4	0.3	3.9		I
I	ARM D	0.13	8.79	0.015		0.0	0.0	0.2		I

I	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)	I
I	08.45-09.00									I
I	ARM A	8.46	23.10	0.366		0.8	0.6	8.9		I
I	ARM B	6.65	28.80	0.231		0.4	0.3	4.6		I
I	ARM C	3.38	20.85	0.162		0.3	0.2	3.0		I
I	ARM D	0.11	9.69	0.012		0.0	0.0	0.2		I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.6 *
08.00	0.8 *
08.15	1.1 *
08.30	1.2 *
08.45	0.8 *
09.00	0.6 *

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.3
08.00	0.4
08.15	0.5 *
08.30	0.5 *
08.45	0.4
09.00	0.3

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.2
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.3
09.00	0.2

 QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0

 QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I		I		I	* DELAY *	I	* DELAY *	I	
I		I		I		I		I	
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	
I		I			I			I	
I	A	I	928.3	I	618.9	I	74.7	I	0.08
I	B	I	729.5	I	486.3	I	36.6	I	0.05
I	C	I	370.2	I	246.8	I	23.7	I	0.06
I	D	I	12.3	I	8.2	I	1.5	I	0.12
I	ALL	I	2040.4	I	1360.2	I	136.5	I	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.

END OF JOB

***** ARCADY 5 run completed.

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

[Printed at 21:20:59 on 28/10/2010]

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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Run with file:-
"C:\Program Files\ARCADY 5\A516 A5132 roundabout 2018 am no dev.vai"
(drive-on-the-left) at 21:29:44 on Thursday, 28 October 2010

ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

A516/A5132 roundabout 2018 design year am no development

INPUT DATA

ARM A - A516 north
ARM B - A5132
ARM C - A516 west

GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I	ARM A	I	3.65	I	6.70	I	7.00	I	53.00	I	40.00	I	34.0	I	0.610	I	25.277	I
I	ARM B	I	3.65	I	6.50	I	6.50	I	26.50	I	40.00	I	57.0	I	0.546	I	22.427	I
I	ARM C	I	3.75	I	6.00	I	15.00	I	33.00	I	40.00	I	27.0	I	0.640	I	27.405	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I
		I FLOW STARTS	I TOP OF PEAK	I FLOW STOPS		I BEFORE	I AT TOP	I AFTER	
I	I	I TO RISE	I IS REACHED	I FALLING	I	I PEAK	I OF PEAK	I PEAK	I
I ARM A	I	15.00	I 45.00	I 75.00	I	4.95	I 7.42	I 4.95	I
I ARM B	I	15.00	I 45.00	I 75.00	I	12.63	I 18.94	I 12.63	I
I ARM C	I	15.00	I 45.00	I 75.00	I	7.60	I 11.40	I 7.60	I

		TURNING PROPORTIONS				
		TURNING COUNTS (VEH/HR)				
		(PERCENTAGE OF H.V.S)				
TIME		FROM/TO	ARM A	ARM B	ARM C	
07.30 - 09.00		ARM A	0.003	0.598	0.399	
			1.0	237.0	158.0	
			(0.0)	(8.5)	(6.8)	
		ARM B	0.837	0.000	0.163	
			845.0	0.0	165.0	
			(3.6)	(0.0)	(10.3)	
		ARM C	0.977	0.023	0.000	
			594.0	14.0	0.0	
			(6.0)	(7.0)	(0.0)	

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	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)	I
I	07.30-07.45									I
I	ARM A	4.95	23.34	0.212		0.0	0.3	3.9		I
I	ARM B	12.63	20.32	0.621		0.0	1.6	22.6		I
I	ARM C	7.60	19.29	0.394		0.0	0.6	9.3		I

I	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)	I
I	07.45-08.00									I
I	ARM A	5.91	23.32	0.253		0.3	0.3	5.0		I
I	ARM B	15.08	20.10	0.750		1.6	2.9	39.7		I
I	ARM C	9.08	18.00	0.504		0.6	1.0	14.5		I

I	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)	I
I	08.00-08.15									I
I	ARM A	7.24	23.29	0.311		0.3	0.4	6.6		I
I	ARM B	18.46	19.80	0.932		2.9	9.3	109.2		I
I	ARM C	11.11	16.40	0.678		1.0	2.0	28.3		I

I	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)	I
I	08.15-08.30									I
I	ARM A	7.24	23.29	0.311		0.4	0.4	6.7		I
I	ARM B	18.46	19.80	0.932		9.3	10.7	151.6		I
I	ARM C	11.11	16.23	0.685		2.0	2.1	31.3		I
I										I

I	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)	I
I	08.30-08.45									I
I	ARM A	5.91	23.32	0.253		0.4	0.3	5.2		I
I	ARM B	15.08	20.10	0.750		10.7	3.2	58.8		I
I	ARM C	9.08	17.69	0.513		2.1	1.1	16.8		I
I										I

I	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)	I
I	08.45-09.00									I
I	ARM A	4.95	23.34	0.212		0.3	0.3	4.1		I
I	ARM B	12.63	20.31	0.622		3.2	1.7	26.6		I
I	ARM C	7.60	19.19	0.396		1.1	0.7	10.2		I
I										I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.3
08.00	0.3
08.15	0.4
08.30	0.4
08.45	0.3
09.00	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	1.6 **
08.00	2.9 ***
08.15	9.3 *****
08.30	10.7 *****
08.45	3.2 ***
09.00	1.7 **

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.6 *
08.00	1.0 *
08.15	2.0 **
08.30	2.1 **
08.45	1.1 *
09.00	0.7 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I		I			I	* DELAY *		I	* DELAY *		I
I		I	-----		I	-----		I	-----		I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I

I	A	I	543.0	I 362.0	I	31.6	I 0.06	I	31.6	I 0.06	I
I	B	I	1384.9	I 923.3	I	408.6	I 0.30	I	408.6	I 0.30	I
I	C	I	833.7	I 555.8	I	110.5	I 0.13	I	110.5	I 0.13	I

I	ALL	I	2761.6	I 1841.1	I	550.6	I 0.20	I	550.7	I 0.20	I

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

END OF JOB

***** ARCADY 5 run completed.
===== end of file =====

[Printed at 21:31:10 on 28/10/2010]

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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Run with file:- "C:\Program Files\ARCADY 5\A516 A5132 roundabout 2018 am.vai" (drive-on-the-left) at 21:24:49 on Thursday, 28

ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

A516/A5132 roundabout 2018 design year am with development

INPUT DATA

ARM A - A516 north
ARM B - A5132
ARM C - A516 west

GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I	ARM A	I	3.65	I	6.70	I	7.00	I	53.00	I	40.00	I	34.0	I	0.610	I	25.277	I
I	ARM B	I	3.65	I	6.50	I	6.50	I	26.50	I	40.00	I	57.0	I	0.546	I	22.427	I
I	ARM C	I	3.75	I	6.00	I	15.00	I	33.00	I	40.00	I	27.0	I	0.640	I	27.405	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 07.30 AND ENDS 09.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

NUMBER OF MINUTES FROM START WHEN								
ARM	FLOW STARTS	TOP OF PEAK	FLOW STOPS	BEFORE	AT TOP	AFTER	RATE OF FLOW (VEH/MIN)	
	TO RISE	IS REACHED	IF FALLING	PEAK	OF PEAK	PEAK		
ARM A	15.00	45.00	75.00	5.13	7.69	5.13		
ARM B	15.00	45.00	75.00	12.63	18.94	12.63		
ARM C	15.00	45.00	75.00	7.66	11.49	7.66		

TURNING PROPORTIONS						
TURNING COUNTS (VEH/HR)						
(PERCENTAGE OF H.V.S)						
TIME	FROM/TO	ARM A	ARM B	ARM C		
07.30 - 09.00	ARM A	0.002	0.602	0.395		
		1.0	247.0	162.0		
		(0.0)	(8.5)	(6.8)		
	ARM B	0.837	0.000	0.163		
		845.0	0.0	165.0		
		(3.6)	(0.0)	(10.3)		
	ARM C	0.977	0.023	0.000		
		599.0	14.0	0.0		
		(6.0)	(7.0)	(0.0)		

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

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)
07.30-07.45								
ARM A	5.13	23.34	0.220		0.0	0.3	4.1	
ARM B	12.63	20.29	0.622		0.0	1.6	22.7	
ARM C	7.66	19.29	0.397		0.0	0.7	9.5	

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)
07.45-08.00								
ARM A	6.12	23.32	0.262		0.3	0.4	5.2	
ARM B	15.08	20.07	0.751		1.6	2.9	39.9	
ARM C	9.15	18.00	0.508		0.7	1.0	14.8	

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)
08.00-08.15								
ARM A	7.50	23.29	0.322		0.4	0.5	7.0	
ARM B	18.46	19.76	0.934		2.9	9.4	110.6	
ARM C	11.21	16.41	0.683		1.0	2.1	29.0	

I	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)	I
I	08.15-08.30									I
I	ARM A	7.50	23.29	0.322		0.5	0.5	7.1		I
I	ARM B	18.46	19.76	0.934		9.4	11.0	154.4		I
I	ARM C	11.21	16.23	0.690		2.1	2.2	32.1		I

I	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)	I
I	08.30-08.45									I
I	ARM A	6.12	23.32	0.262		0.5	0.4	5.5		I
I	ARM B	15.08	20.06	0.751		11.0	3.2	59.6		I
I	ARM C	9.15	17.68	0.517		2.2	1.1	17.1		I

I	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)	I
I	08.45-09.00									I
I	ARM A	5.13	23.34	0.220		0.4	0.3	4.3		I
I	ARM B	12.63	20.28	0.622		3.2	1.7	26.7		I
I	ARM C	7.66	19.19	0.399		1.1	0.7	10.4		I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.3
08.00	0.4
08.15	0.5
08.30	0.5
08.45	0.4
09.00	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	1.6 **
08.00	2.9 ***
08.15	9.4 *****
08.30	11.0 *****
08.45	3.2 ***
09.00	1.7 **

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.45	0.7 *
08.00	1.0 *
08.15	2.1 **
08.30	2.2 **
08.45	1.1 *
09.00	0.7 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I		I			I	* DELAY *		I	* DELAY *		I
I		I	-----		I	-----		I	-----		I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I

I	A	I	562.2	I 374.8	I	33.1	I 0.06	I	33.1	I 0.06	I
I	B	I	1384.9	I 923.3	I	413.9	I 0.30	I	414.0	I 0.30	I
I	C	I	840.6	I 560.4	I	112.7	I 0.13	I	112.7	I 0.13	I

I	ALL	I	2787.7	I 1858.4	I	559.8	I 0.20	I	559.9	I 0.20	I

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

END OF JOB

***** ARCADY 5 run completed.
===== end of file =====

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CAPACITIES, QUEUES AND DELAYS AT ROUNDABOUTS

ARCADY 5.0 ANALYSIS PROGRAM
RELEASE 1.1 (MAY 2001)

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Run with file:- "C:\Program Files\ARCADY 5\A516 A5132 roundabout 2018 pm.vai" (drive-on-the-left) at 21:31:32 on Thursday, 28

ROUNDABOUT CAPACITY AND DELAY

RUN TITLE

A516/A5132 roundabout 2018 design year pm with development

INPUT DATA

ARM A - A516 north
ARM B - A5132
ARM C - A516 west

GEOMETRIC DATA

I	ARM	I	V (M)	I	E (M)	I	L (M)	I	R (M)	I	D (M)	I	PHI (DEG)	I	SLOPE	I	INTERCEPT (PCU/MIN)	I
I	ARM A	I	3.65	I	6.70	I	7.00	I	53.00	I	40.00	I	34.0	I	0.610	I	25.277	I
I	ARM B	I	3.65	I	6.50	I	6.50	I	26.50	I	40.00	I	57.0	I	0.546	I	22.427	I
I	ARM C	I	3.75	I	6.00	I	15.00	I	33.00	I	40.00	I	27.0	I	0.640	I	27.405	I

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	I	NUMBER OF MINUTES FROM START WHEN			RATE OF FLOW (VEH/MIN)			I
		I FLOW STARTS	I TOP OF PEAK	I FLOW STOPS	I BEFORE	I AT TOP	I AFTER	
I	I	I TO RISE	I IS REACHED	I FALLING	I PEAK	I OF PEAK	I PEAK	I
I ARM A	I	15.00	I 45.00	I 75.00	I 13.07	I 19.61	I 13.07	I
I ARM B	I	15.00	I 45.00	I 75.00	I 5.71	I 8.57	I 5.71	I
I ARM C	I	15.00	I 45.00	I 75.00	I 4.09	I 6.13	I 4.09	I

		TURNING PROPORTIONS					
		TURNING COUNTS (VEH/HR)					
		(PERCENTAGE OF H.V.S)					
TIME		FROM/TO	ARM A	ARM B	ARM C		
16.30 - 18.00							
		ARM A	0.001	0.630	0.369		
			1.0	659.0	386.0		
			(0.0)	(3.4)	(6.4)		
		ARM B	0.630	0.000	0.370		
			288.0	0.0	169.0		
			(3.8)	(0.0)	(0.6)		
		ARM C	0.914	0.083	0.003		
			299.0	27.0	1.0		
			(8.6)	(0.0)	(0.0)		

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

I	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)	I
I	16.30-16.45									I
I	ARM A	13.07	23.98	0.545		0.0	1.2	17.0		I
I	ARM B	5.71	19.12	0.299		0.0	0.4	6.2		I
I	ARM C	4.09	23.19	0.176		0.0	0.2	3.1		I

I	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)	I
I	16.45-17.00									I
I	ARM A	15.61	23.94	0.652		1.2	1.8	26.3		I
I	ARM B	6.82	18.58	0.367		0.4	0.6	8.4		I
I	ARM C	4.88	22.76	0.214		0.2	0.3	4.0		I

I	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)	I
I	17.00-17.15									I
I	ARM A	19.12	23.89	0.800		1.8	3.8	51.4		I
I	ARM B	8.35	17.86	0.468		0.6	0.9	12.6		I
I	ARM C	5.98	22.16	0.270		0.3	0.4	5.4		I

I	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)	I
I	17.15-17.30									I
I	ARM A	19.12	23.89	0.800		3.8	3.9	57.5		I
I	ARM B	8.35	17.84	0.468		0.9	0.9	13.1		I
I	ARM C	5.98	22.15	0.270		0.4	0.4	5.5		I

I	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)	I
I	17.30-17.45									I
I	ARM A	15.61	23.94	0.652		3.9	1.9	30.4		I
I	ARM B	6.82	18.55	0.368		0.9	0.6	9.0		I
I	ARM C	4.88	22.74	0.215		0.4	0.3	4.2		I

I	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)	I
I	17.45-18.00									I
I	ARM A	13.07	23.98	0.545		1.9	1.2	18.9		I
I	ARM B	5.71	19.10	0.299		0.6	0.4	6.6		I
I	ARM C	4.09	23.18	0.176		0.3	0.2	3.3		I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	1.2 *
17.00	1.8 **
17.15	3.8 *****
17.30	3.9 *****
17.45	1.9 **
18.00	1.2 *

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.4
17.00	0.6 *
17.15	0.9 *
17.30	0.9 *
17.45	0.6 *
18.00	0.4

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.2
17.00	0.3
17.15	0.4
17.30	0.4
17.45	0.3
18.00	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	ARM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I		I			I	* DELAY *		I	* DELAY *		I
I		I	-----		I	-----		I	-----		I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I

I	A	I	1434.3	I 956.2	I	201.6	I 0.14	I	201.6	I 0.14	I
I	B	I	626.6	I 417.8	I	55.9	I 0.09	I	55.9	I 0.09	I
I	C	I	448.4	I 298.9	I	25.5	I 0.06	I	25.5	I 0.06	I

I	ALL	I	2509.3	I 1672.9	I	283.0	I 0.11	I	283.1	I 0.11	I

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

END OF JOB

***** ARCADY 5 run completed.
===== end of file =====

**Report
10051**

**LinSig Modelling
Tutbury**

29 October 2010



Ref: 10051A-1.0



Client: Armstrong Stokes and Clayton

Tutbury

Job Reference: 10051

	Prepared by:	Approved by:
Name:	Ian M. Robinson	Helen J. Robinson
Position:	Engineer	Director
Date:	28.10.2010	29.10.2010
Signature:		

Previous Revisions

Previous Issue:	Date Issued:	Prepared by:	Approved by:

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4.1	Harehedge	5
4.2	Malthouse	5

Appendix A – LinSig Output – A511 / Harehedge Ln / Beam Hill Rd

Appendix B – LinSig Output – Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln

Appendix C – Base and Base Plus Development Flows

1 Introduction

JCT Consultancy Ltd. has been engaged by Armstrong Stokes and Clayton to model two signalled junctions at the periphery of a proposed development in Tutbury, Staffordshire. The two junctions have been modelled with LinSig Version 3 using supplied 2009 base, 2018 base, and 2018 base plus development flows.

The junction of the A511, Harehedge Lane and Beam Hill Road exists towards the South of Tutbury and will subsequently be referred to as the 'Harehedge junction' in this report. Located towards the North, the junction of Uttoxeter Road, Derby Road, Station Road and Malthouse Lane will be referred to simply as the 'Malthouse junction'.

This report contains the modelling approach, the data used to construct the models, the assumptions made and includes the model output reports.

2 Data Supplied

The following data has been supplied by Armstrong Stokes and Clayton and used in the analysis presented here:

- Harehedge 2009 base flows for AM and PM peak scenarios (Appendix C).
- Harehedge 2018 base flows for AM and PM peak scenarios (Appendix C).
- Harehedge 2018 base plus development flows for AM and PM peak scenarios (Appendix C).
- Malthouse 2009 base flows for AM and PM peak scenarios (Appendix C).
- Malthouse 2018 base flows for AM and PM peak scenarios (Appendix C).
- Malthouse 2018 base plus development flows for AM and PM peak scenarios (Appendix C).
- A LinSig Version 2 model of Harehedge.
- A LinSig Version 2 model of Malthouse.

3 Method & Assumptions

As requested, both junctions have been modelled using LinSig (Version 3) using the supplied LinSig Version 2 models as a starting point. Due to the simple nature of these junctions, no additional measures were necessary to convert between versions; the different levels in functionality between versions sometimes requires a different approach to modelling a given situation on-street but this was not the case here. Nevertheless, some

opportunities to provide more robust or accurate versions of the supplied models were identified and implemented:

- Giveaway turning co-efficients in both models were adjusted to match industry standards (based on Webster and Cobbe, Road Research Technical Paper 56).
- The Malthouse junction has a flared lane for the west arm entering the junction. The Linsig model was adjusted to include a flare on this lane.
- At the Malthouse junction the vehicle storage ahead of stop lines for the east and west arms entering the junction was increased from 2 PCUs to 3 PCUs in both cases, to represent distances measured using Google Earth.
- The Harehedge junction has a flared lane on its south arm entering the junction. The LinSig model was modified to include this flare.
- The vehicle storage ahead of the stop line for the east arm of the Harehedge junction was increased from 2 PCUs to 3 PCUs with 2 PCUs of that storage configured as non-blocking.

The assumptions made to support the models of these junctions are listed as follows:

- i) Saturation flows are based upon RR67 and are estimated as a function of lane width, gradient and curvature although in this case the gradient data was not supplied and has been ignored. Saturation flows from the original Version 2 models have been used here; a random sample shows good agreement with measurements from aerial views of the junctions.
- ii) It is assumed that pedestrian phases are not called every cycle and are called no more frequently than once every two cycles. The stage sequence for the Harehedge model utilises a multiple-cycling technique to replicate this. Less frequent pedestrian phases would liberate additional junction capacity.
- iii) The pedestrian phases at Malthouse are also not expected to be called every cycle and should operate no more than once every three cycles. Again, a multiple-cycling technique models this effect where less frequent pedestrian activity will increase the available junction capacity.
- iv) The Malthouse Lane approach will only need to be called once or twice in the whole peak period for both peaks, and has therefore been ignored in the model, flows have been set to zero and the stage not called. If the stage were to be included in the model it would not realistically affect reality.

Origin-Destination matrices (OD matrices) are used by LinSig to define the flow of traffic through the junction. All OD matrices used in these models were transcribed from the supplied turning counts.

4 Summary of Model Output

The following summarises the modelled junction capacity for both junctions, a full break down of the modelled output is presented in Appendices A and B.

4.1 Harehedge

The summary of Harehedge's modelled behaviour is given in Table 1. This suggests the junction would operate well within capacity in 2018 in both peak periods both with and without development. The PRC indicates the amount by which traffic demand can grow before the junction is assumed to work inefficiently and the delay starts to rise abruptly as saturation increases; this turning point in efficiency is generally taken when the worst degree of saturation reaches 90%. The AM peak 2018 with development has the worst PRC at 6.5 %, the worst degree of saturation in this scenario is 84.5 % on Harehedge lane, well below the 90% threshold.

Table 1. Summary of model characteristics for the Harehedge junction

Scenario	Cycle-time (s)	PRC(%)	Delay(PCU Hr)
2009 AM Base	90 (180 double cycled)	58.4	10.48
2009 PM Base	90 (180 double cycled)	31.8	11.08
2018 AM Base	90 (180 double cycled)	31.7	14.42
2018 PM Base	90 (180 double cycled)	10.1	16.81
2018 AM Base + Dev	90 (180 double cycled)	24.9	15.57
2018 PM Base + Dev	90 (180 double cycled)	6.5	18.22

4.2 Malthouse

The summary of modelled behaviour for the Malthouse junction is shown in

Table 2. The junction works within capacity in the AM Peak periods in all scenarios. However, the PM Peak in 2018 for the Malthouse junction is only just within capacity (1.3% PRC) without development flows, and exceeds capacity for 2018 with development flows included (-7.4 % PRC). The PRC indicates the amount by which traffic demand can grow before the junction is assumed to work inefficiently and the delay starts to rise abruptly as

saturation increases; this turning point in efficiency is generally taken as 90% junction saturation.

Negative PRC values indicate that the 90% saturation level has been surpassed and in this sense the existing junction layout is starting to work inefficiently in the PM peak in 2018 once the development flows are included. The worst degrees of saturation in the 2018 PM Peak with development scenario are Uttoxeter Road at 95.4% and Station Road at 96.6%.

Table 2. Summary of model characteristics for the Malthouse junction

Scenario	Cycle-time (s)	PRC(%)	Delay(PCU Hr)
2009 AM Base	90 (270 triple cycled)	30.0	10.62
2009 PM Base	90 (270 triple cycled)	19.8	12.76
2018 AM Base	90 (270 triple cycled)	9.6	16.08
2018 PM Base	90 (270 triple cycled)	1.3	21.39
2018 AM Base + Dev	90 (270 triple cycled)	3.0	19.67
2018 PM Base + Dev	90 (270 triple cycled)	-7.4	28.53

Appendix A

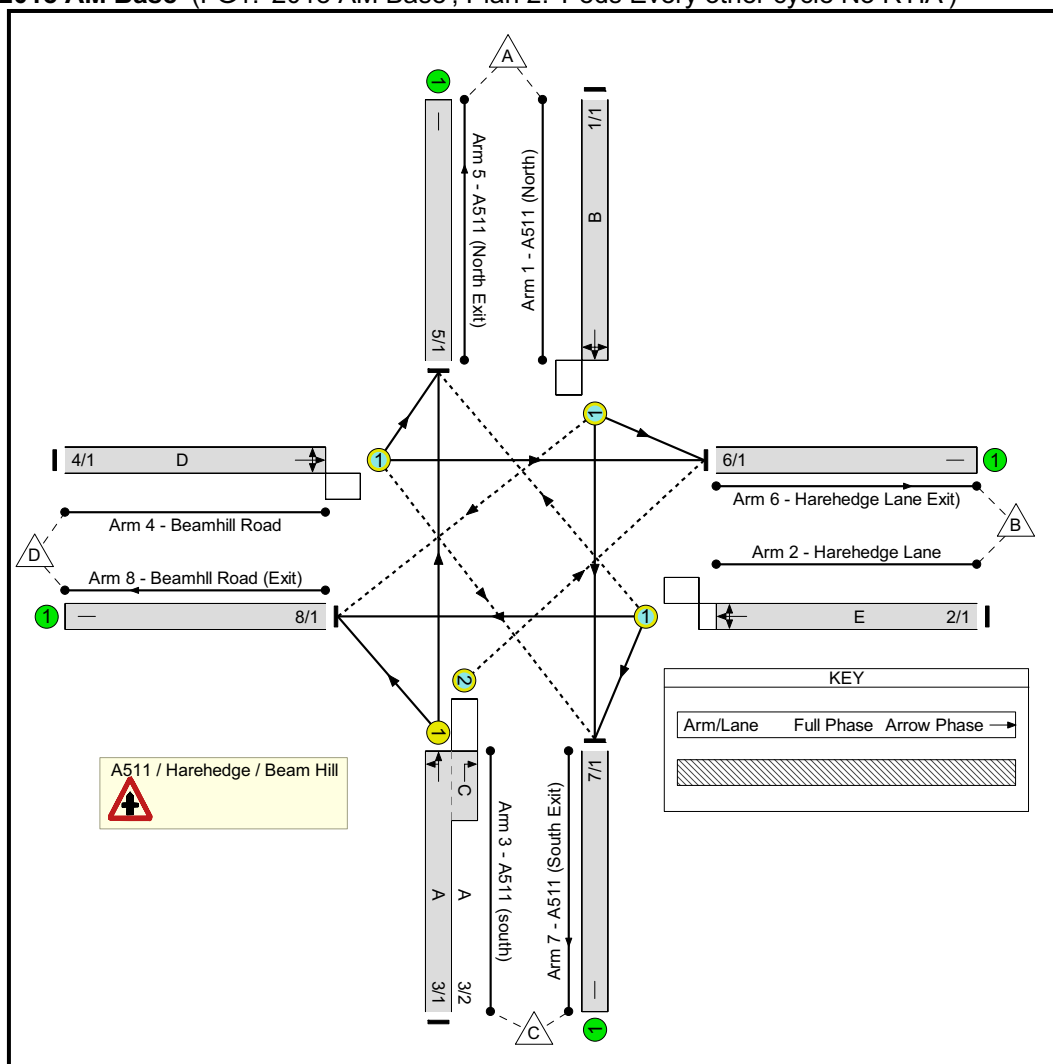
Project and User Details

Project:	10051 - Tutbury
Title:	Tutbury A511 / Harehedge 2018
Location:	A511 / Harehedge Lane/ Beamhill Road
File name:	A511 - Harehedge.lsg3x
Author:	Ian Robinson
Company:	JCT Consultancy Ltd.
Address:	LinSig House, Deepdale Enterprise Park, Nettleham Lincoln LN2 2LL
Notes:	

Scenarios

Number	Scenario Name	Flow Group	Network Control Plan	Time	Cycle Time (s)	PRC (%)	Delay (pcuHr)
1	2018 AM Base	2018 AM Base	Peds Every other cycle No RTIA	07:45 - 08:45	180	31.7	14.42
2	2018 PM Base	2018 PM Base	Peds Every other cycle No RTIA	16:45 - 17:45	180	10.1	16.81
3	2018 AM Base+Dev	2018 AM Base+Dev	Peds Every other cycle No RTIA	07:45 - 08:45	180	24.9	15.57
4	2018 PM Base+Dev	2018 PM Base+Dev	Peds Every other cycle No RTIA	16:45 - 17:45	180	6.5	18.22
5	2009 AM	2009 AM	Peds Every other cycle No RTIA	07:45 - 08:45	180	58.4	10.48
6	2009 PM	2009 PM	Peds Every other cycle No RTIA	16:45 - 17:45	180	31.8	11.08

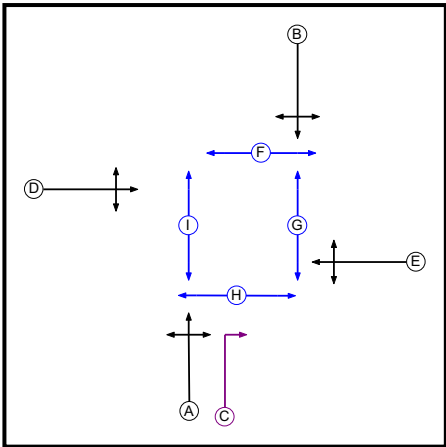
Scenario 1: '2018 AM Base' (FG1: '2018 AM Base', Plan 2: 'Peds Every other cycle No RTIA')



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Ind. Arrow	A	4	4
D	Traffic		7	7
E	Traffic		7	7
F	Pedestrian		8	8
G	Pedestrian		8	8
H	Pedestrian		8	8
I	Pedestrian		8	8

Phase Diagram



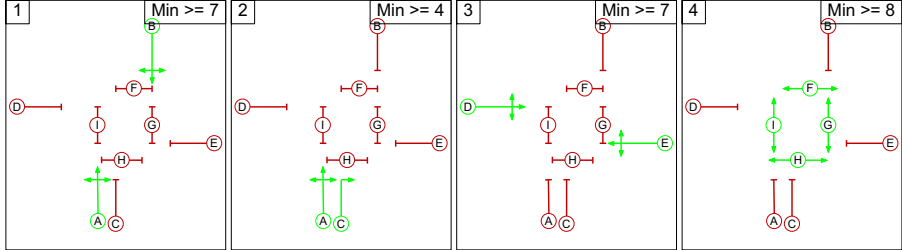
Phase Intergreens Matrix

Terminating Phase	Starting Phase									
		A	B	C	D	E	F	G	H	I
	A		-	-	7	7	8	8	8	8
	B	-		5	7	7	8	8	8	8
	C	-	7		7	7	8	8	8	8
	D	7	7	7		-	8	8	8	8
	E	7	7	7	-		8	8	8	8
	F	8	8	8	8	8		-	-	-
	G	8	8	8	8	8	-		-	-
	H	8	8	8	8	8	-	-		-
	I	8	8	8	8	8	-	-	-	

Phase Delays

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

Stages Diagram



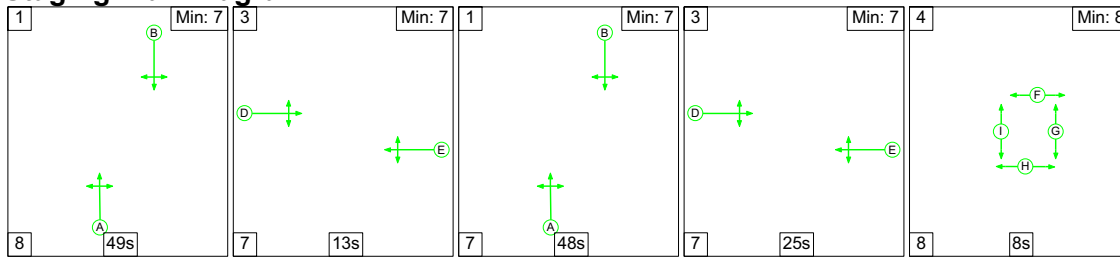
Lane Input Data

Junction: A511 / Harehedge / Beam Hill												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (A511 (North))	O	B	2	3	60.0	Geom	-	3.90	0.00	Y	Arm 6 Left	12.00
											Arm 7 Ahead	Inf
											Arm 8 Right	15.00
2/1 (Harehedge Lane)	O	E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Right	10.00
											Arm 7 Left	10.00
											Arm 8 Ahead	Inf
3/1 (A511 (south))	U	A	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Ahead	Inf
											Arm 8 Left	13.00
3/2 (A511 (south))	O	A C	2	3	4.0	Geom	-	3.00	0.00	N	Arm 6 Right	10.00
4/1 (Beamhill Road)	O	D	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Left	10.00
											Arm 6 Ahead	Inf
											Arm 7 Right	13.00

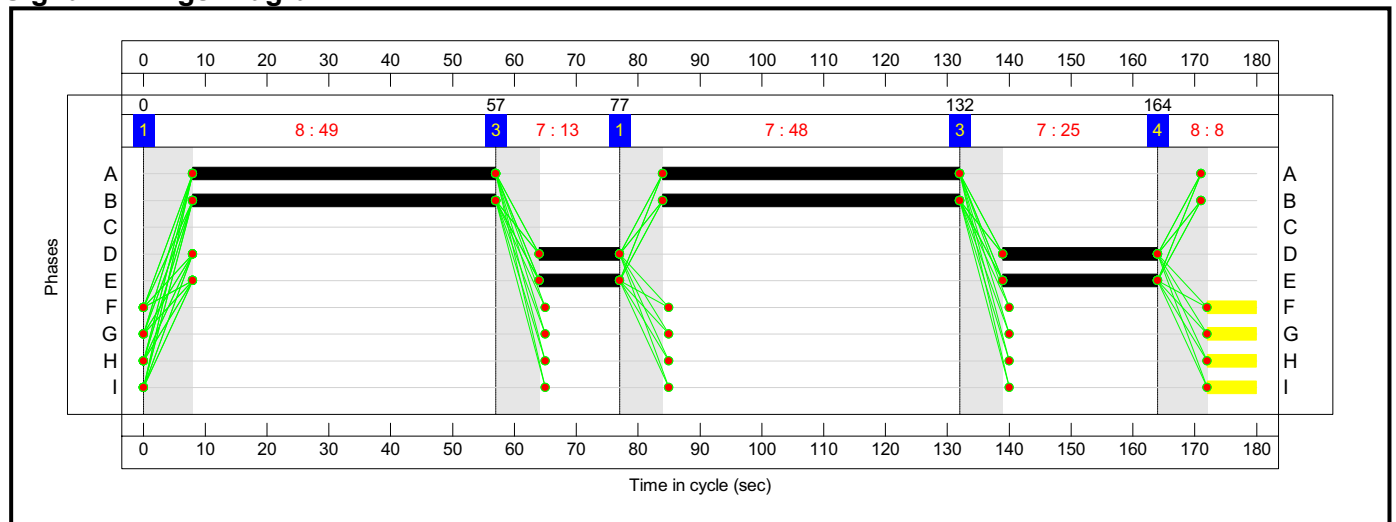
Give-Way Lane Input Data

Junction: A511 / Harehedge / Beam Hill										
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (A511 (North))	8/1 (Right)	1439	3/1	1.09	3/1	2.00	2.00	0.50	2	2.00
2/1 (Harehedge Lane)	5/1 (Right)	1400	4/1	1.10	4/1	3.00	2.00	0.50	3	3.00
3/2 (A511 (south))	6/1 (Right)	1439	1/1	1.09	1/1	3.00	-	0.50	3	3.00
4/1 (Beamhill Road)	7/1 (Right)	1439	2/1	1.09	2/1	2.00	2.00	0.50	2	2.00

Staging Plan Diagram



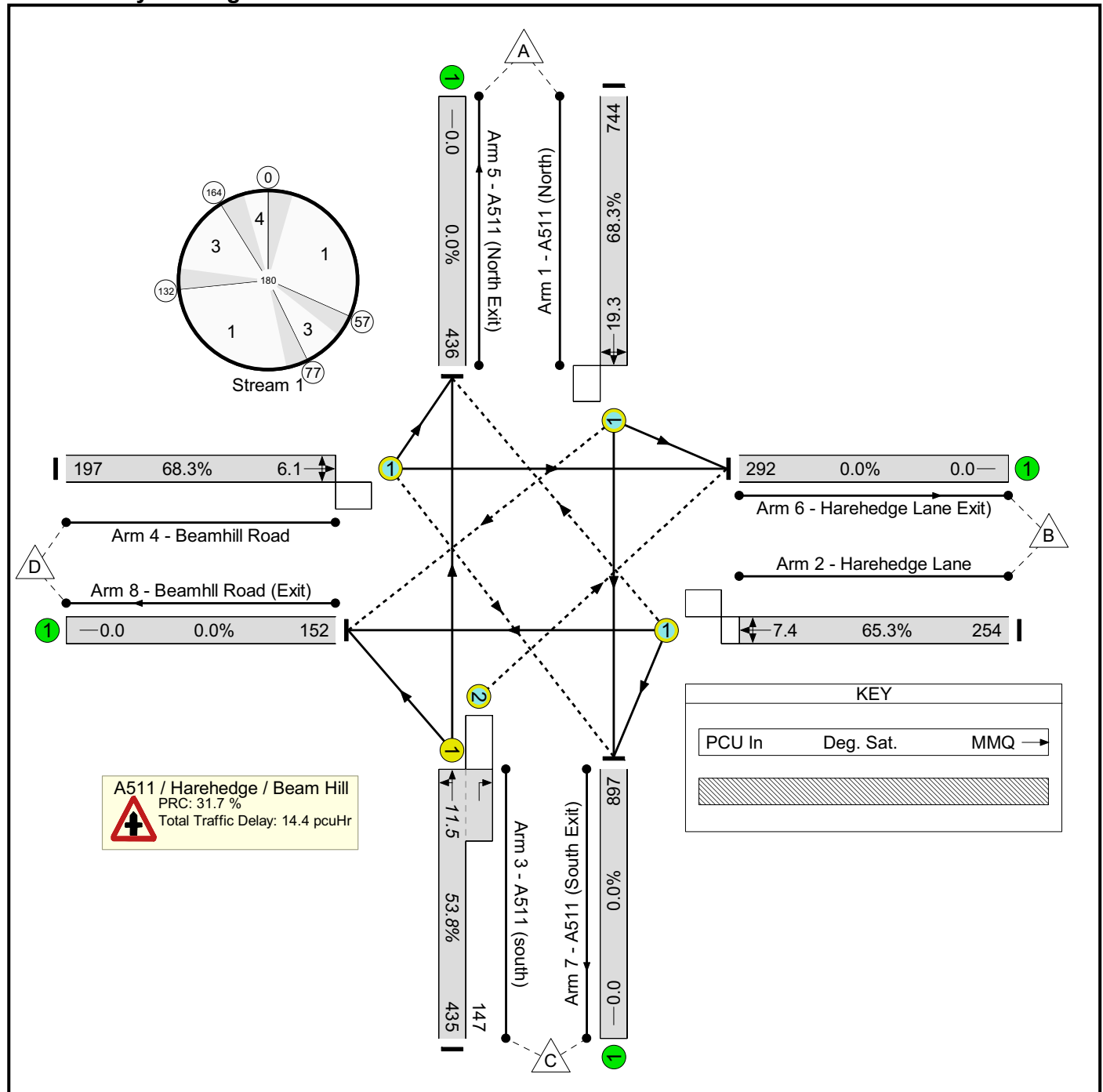
Signal Timings Diagram



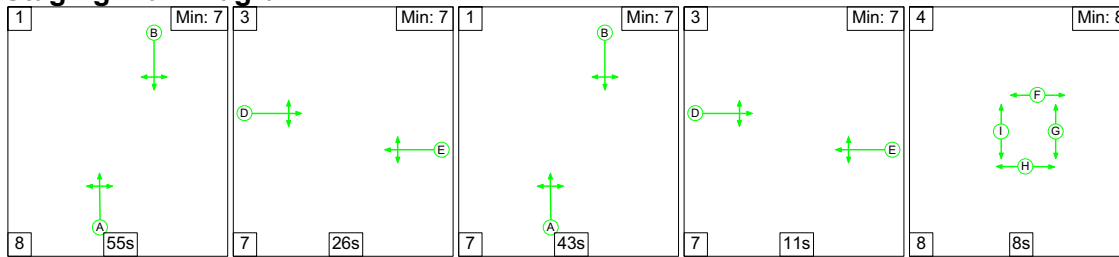
Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Tutbury A511 / Harehedge 2018		-	N/A	-	-	-	-	-	-	-	-	68.3%	14.4	-	-
A511 / Harehedge / Beam Hill		-	N/A	-	-	-	-	-	-	-	-	68.3%	14.4	-	-
1/1	A511 (North) Left Ahead Right	O	N/A	B	2	97	8(84)	57(132)	37.2	1980	54.5	68.3%	4.5	18.2	19.3
2/1	Harehedge Lane Right Left Ahead	O	N/A	E	2	38	64(139)	77(164)	12.7	1751	19.5	65.3%	3.2	6.5	7.4
3/1+3/2	A511 (south) Ahead Right Left	U+O	N/A	A	2	97	-	-	29.1	1914:1787	54.1	53.8%	3.6	10.9	11.5
4/1	Beamhill Road Left Ahead Right	O	N/A	D	2	38	64(139)	77(164)	9.8	1785	14.4	68.3%	3.1	5.1	6.1
C1										Total Delay for Signalled Lanes (pcuHr): 14.42 Total Delay Over All Lanes(pcuHr): 14.42					
										PRC for Signalled Lanes (%): 31.7 PRC Over All Lanes (%): 31.7					
										Cycle Time (s): 180					

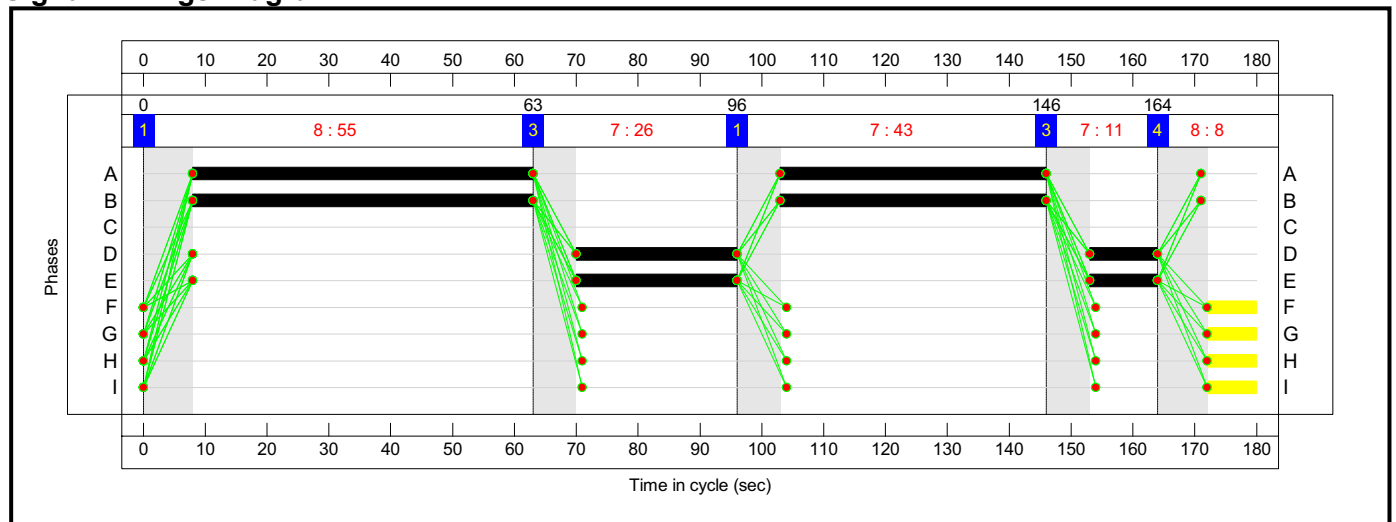
Junction Layout Diagram : Results



Staging Plan Diagram



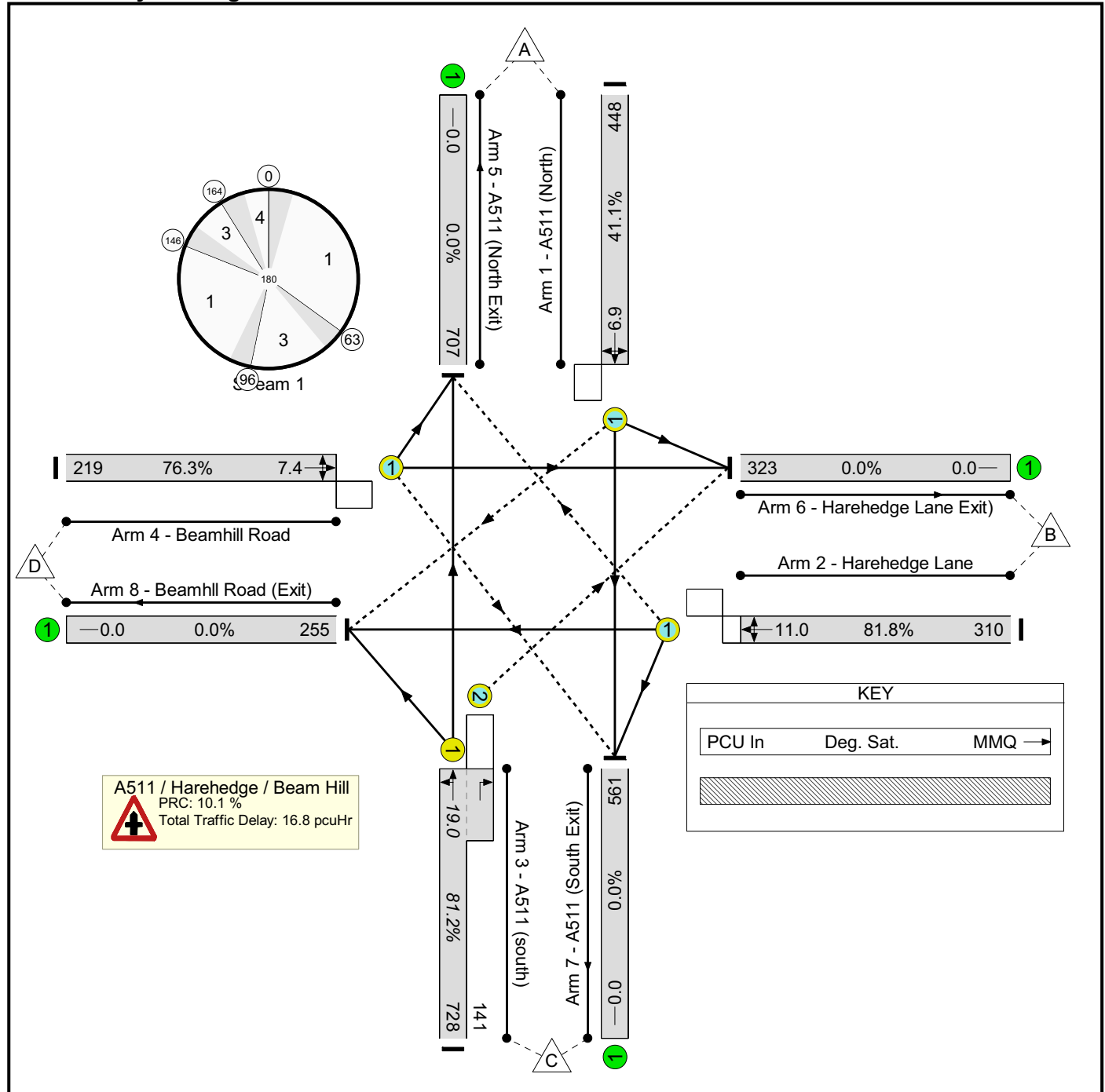
Signal Timings Diagram



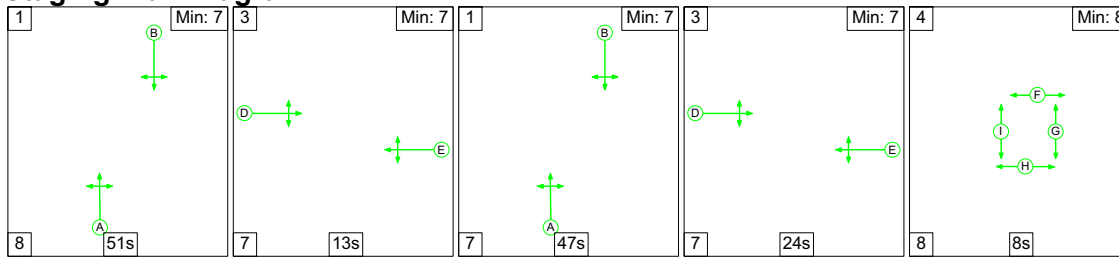
Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Tutbury A511 / Harehedge 2018	-	-	N/A	-	-	-	-	-	-	-	-	81.8%	16.8	-	-
	-	-	N/A	-	-	-	-	-	-	-	-	81.8%	16.8	-	-
1/1	A511 (North) Left Ahead Right	O	N/A	B	2	98	8(103)	63(146)	22.4	1961	54.5	41.1%	1.9	6.6	6.9
2/1	Harehedge Lane Right Left Ahead	O	N/A	E	2	37	70(153)	96(164)	15.5	1750	19.0	81.8%	5.2	8.9	11.0
3/1+3/2	A511 (south) Ahead Right Left	U+O	N/A	A	2	98	-	-	43.5	1905:1787	53.5	81.2%	6.0	16.8	19.0
4/1	Beamhill Road Left Ahead Right	O	N/A	D	2	37	70(153)	96(164)	10.9	1814	14.4	76.3%	3.7	5.8	7.4
C1															
PRC for Signalled Lanes (%): 10.1						Total Delay for Signalled Lanes (pcuHr): 16.81		Cycle Time (s): 180							
PRC Over All Lanes (%): 10.1						Total Delay Over All Lanes (pcuHr): 16.81									

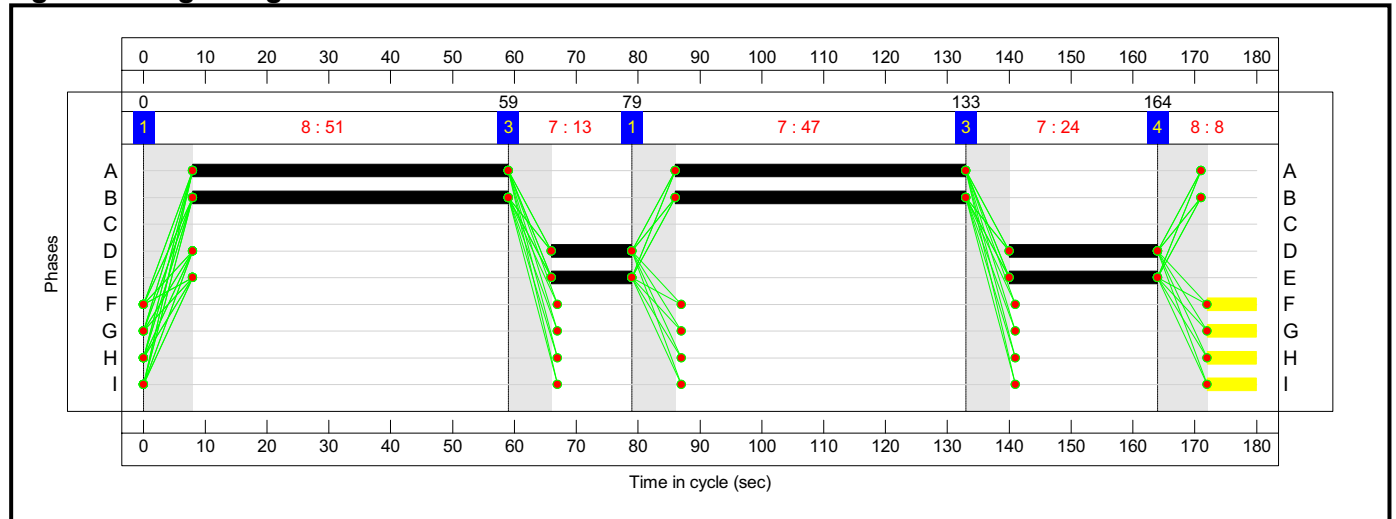
Junction Layout Diagram : Results



Staging Plan Diagram



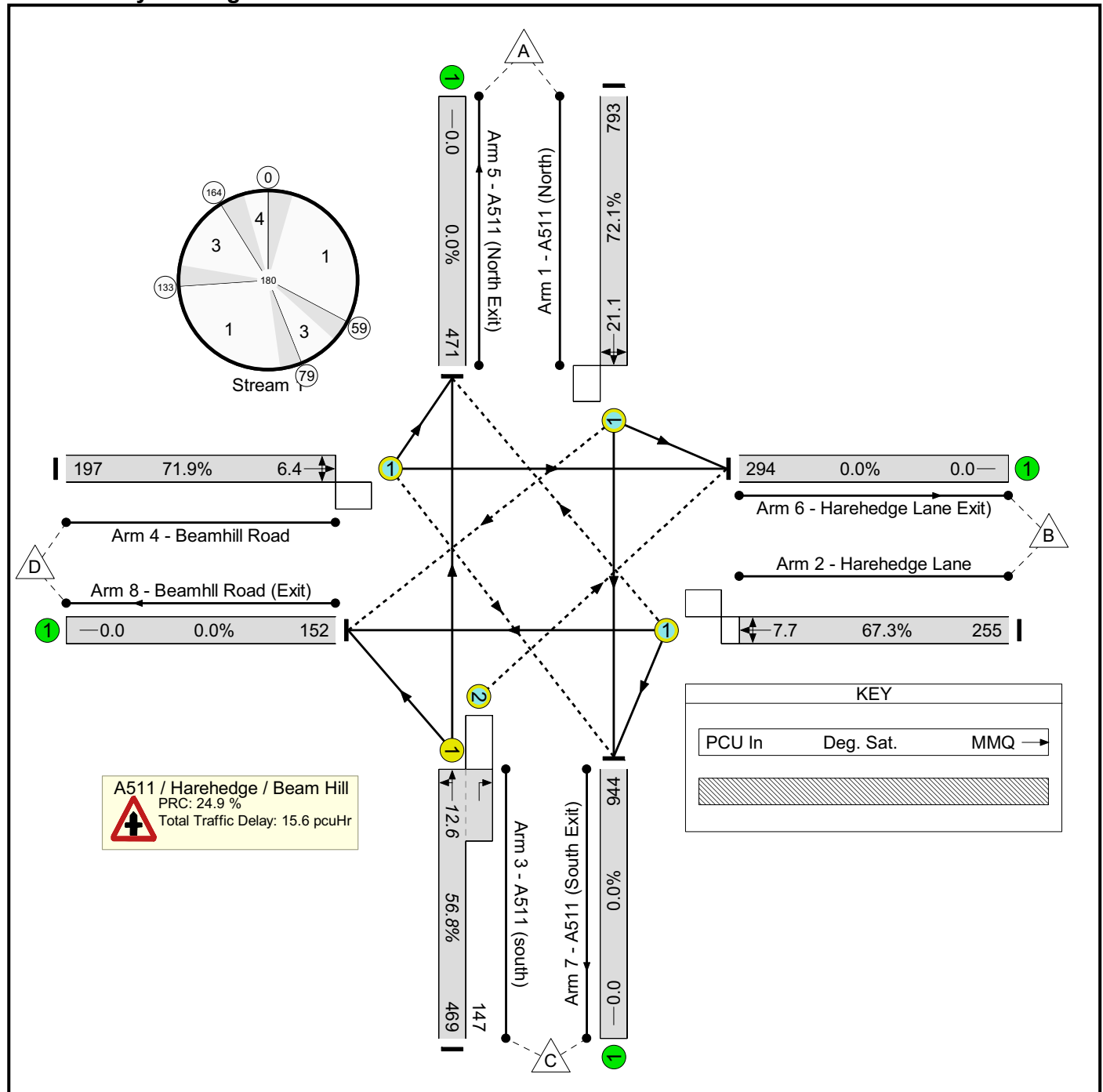
Signal Timings Diagram



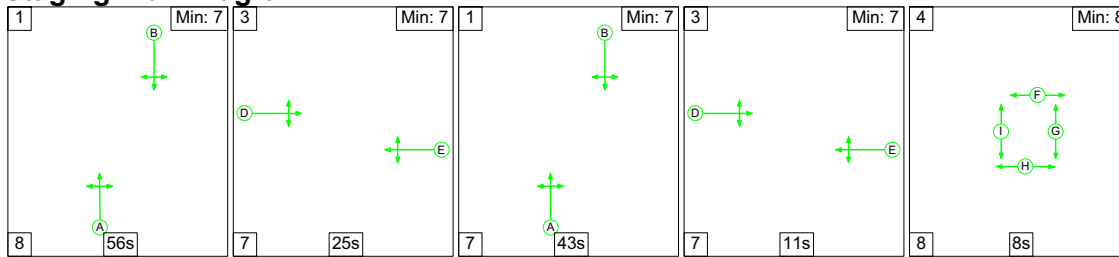
Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Tutbury A511 / Harehedge 2018	-	-	N/A	-	-	-	-	-	-	-	-	72.1%	15.6	-	-
	-	-	N/A	-	-	-	-	-	-	-	-	72.1%	15.6	-	-
1/1	A511 (North) Left Ahead Right	O	N/A	B	2	98	8(86)	59(133)	39.6	1981	55.0	72.1%	4.9	19.8	21.1
2/1	Harehedge Lane Right Left Ahead	O	N/A	E	2	37	66(140)	79(164)	12.8	1750	19.0	67.3%	3.4	6.7	7.7
3/1+3/2	A511 (south) Ahead Right Left	U+O	N/A	A	2	98	-	-	30.8	1916:1787	54.3	56.8%	3.9	11.9	12.6
4/1	Beamhill Road Left Ahead Right	O	N/A	D	2	37	66(140)	79(164)	9.8	1785	13.7	71.9%	3.4	5.2	6.4
C1															
PRC for Signalled Lanes (%): 24.9						Total Delay for Signalled Lanes (pcuHr): 15.57		Cycle Time (s): 180							
PRC Over All Lanes (%): 24.9						Total Delay Over All Lanes (pcuHr): 15.57									

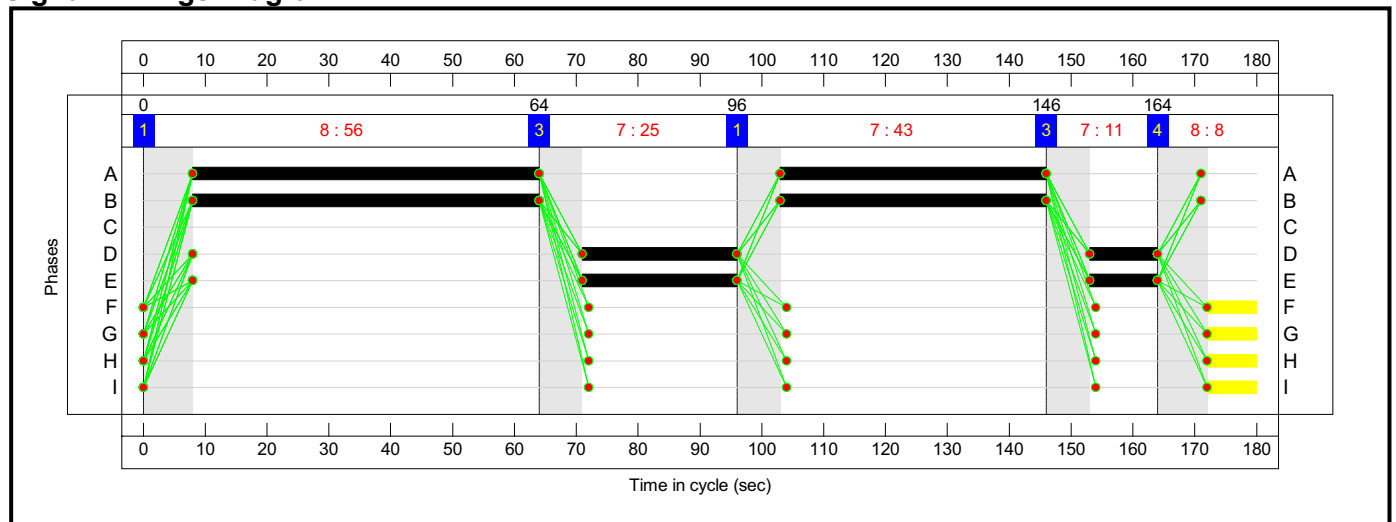
Junction Layout Diagram : Results



Staging Plan Diagram



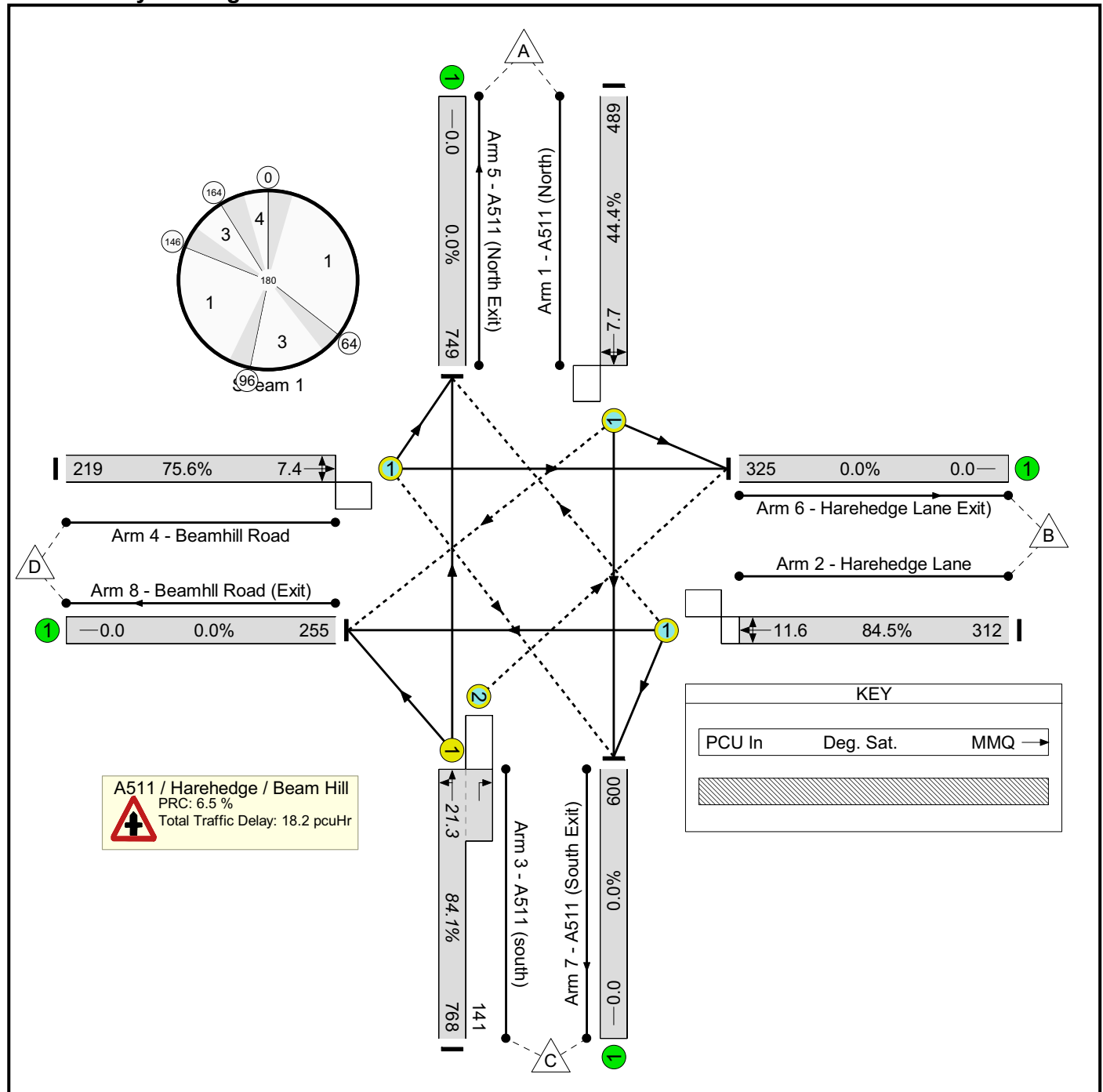
Signal Timings Diagram



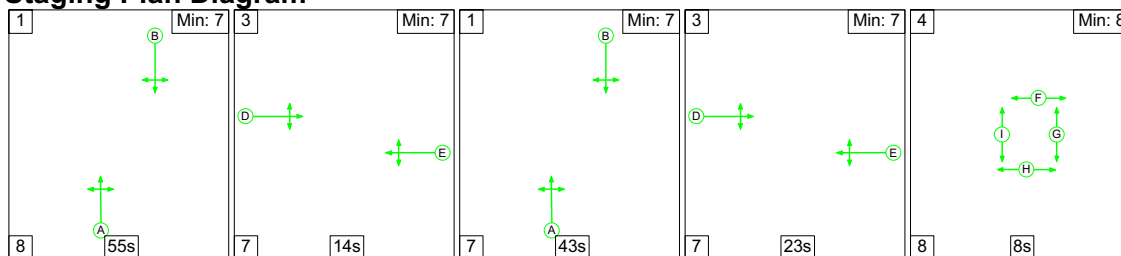
Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)		
Network: Tutbury A511 / Harehedge 2018		-	N/A	-	-	-	-	-	-	-	-	84.5%	18.2	-	-		
A511 / Harehedge / Beam Hill	-	-	N/A	-	-	-	-	-	-	-	-	84.5%	18.2	-	-		
1/1	A511 (North) Left Ahead Right	O	N/A	B	2	99	8(103)	64(146)	24.4	1964	55.1	44.4%	2.1	7.3	7.7		
2/1	Harehedge Lane Right Left Ahead	O	N/A	E	2	36	71(153)	96(164)	15.6	1749	18.5	84.5%	5.7	9.1	11.6		
3/1+3/2	A511 (south) Ahead Right Left	U+O	N/A	A	2	99	-	-	45.5	1906:1787	54.0	84.1%	6.7	18.7	21.3		
4/1	Beamhill Road Left Ahead Right	O	N/A	D	2	36	71(153)	96(164)	10.9	1814	14.5	75.6%	3.7	5.9	7.4		
C1													Total Delay for Signalled Lanes (pcuHr): 18.22 Total Delay Over All Lanes(pcuHr): 18.22			Cycle Time (s): 180	
PRC for Signalled Lanes (%): 6.5 PRC Over All Lanes (%): 6.5																	

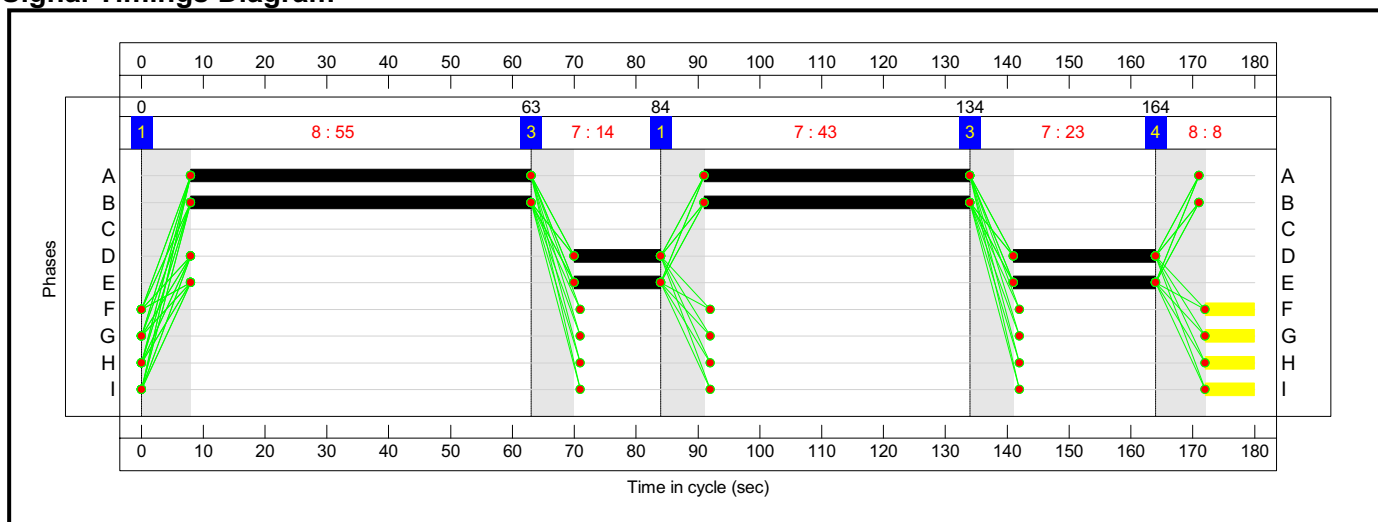
Junction Layout Diagram : Results



Staging Plan Diagram



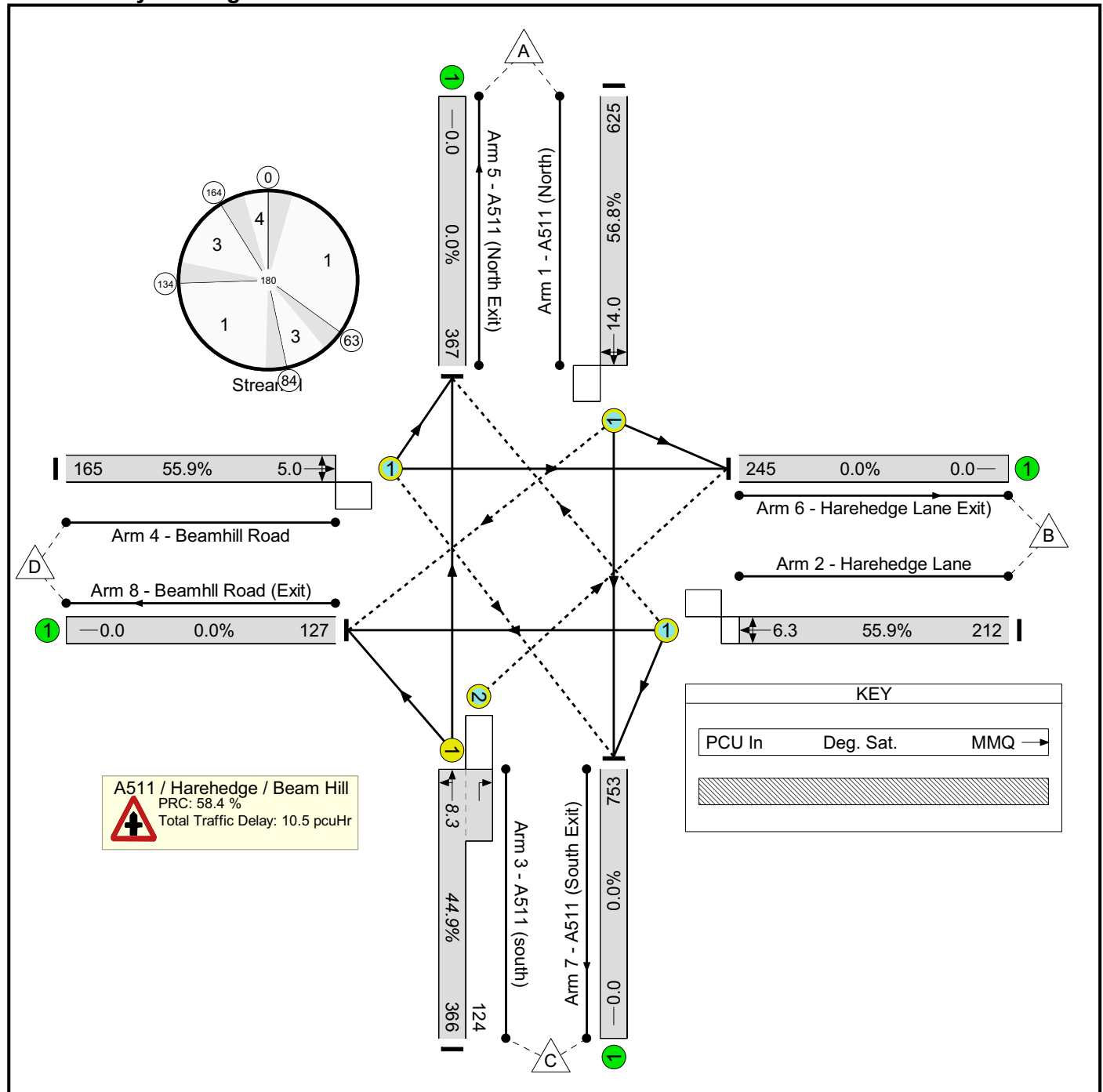
Signal Timings Diagram



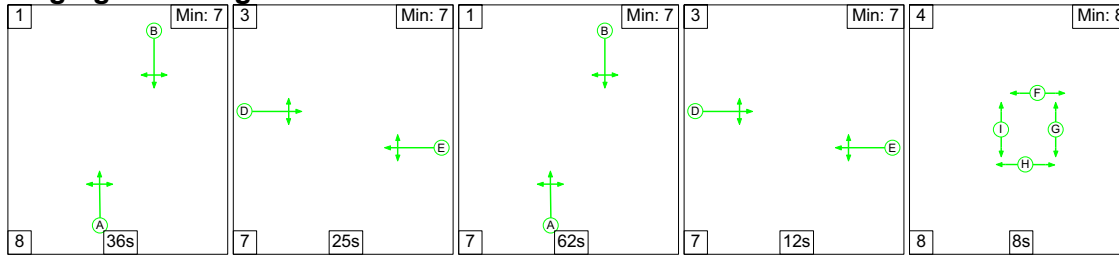
Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Tutbury A511 / Harehedge 2018	-	-	N/A	-	-	-	-	-	-	-	-	56.8%	10.5	-	-
	-	-	N/A	-	-	-	-	-	-	-	-	56.8%	10.5	-	-
1/1	A511 (North) Left Ahead Right	O	N/A	B	2	98	8(91)	63(134)	31.3	1980	55.0	56.8%	3.2	13.4	14.0
2/1	Harehedge Lane Right Left Ahead	O	N/A	E	2	37	70(141)	84(164)	10.6	1750	19.0	55.9%	2.6	5.7	6.3
3/1+3/2	A511 (south) Ahead Right Left	U+O	N/A	A	2	98	-	-	24.5	1914:1787	54.6	44.9%	2.5	7.9	8.3
4/1	Beamhill Road Left Ahead Right	O	N/A	D	2	37	70(141)	84(164)	8.3	1784	14.8	55.9%	2.3	4.4	5.0
C1															
PRC for Signalled Lanes (%): 58.4						Total Delay for Signalled Lanes (pcuHr): 10.48		Cycle Time (s): 180							
PRC Over All Lanes (%): 58.4						Total Delay Over All Lanes (pcuHr): 10.48									

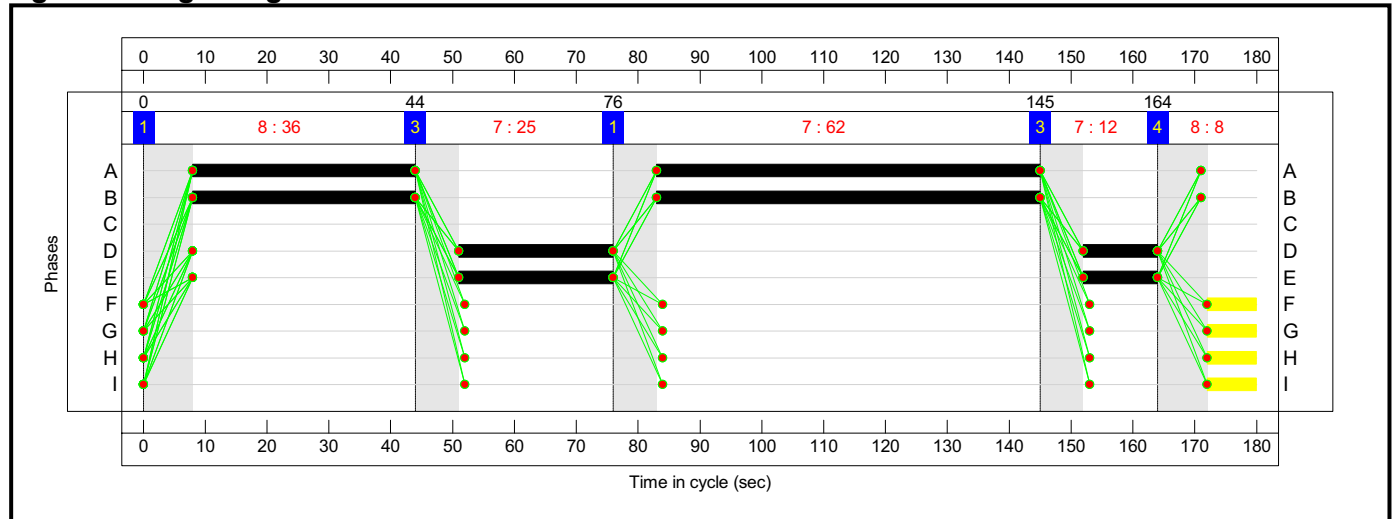
Junction Layout Diagram : Results



Staging Plan Diagram



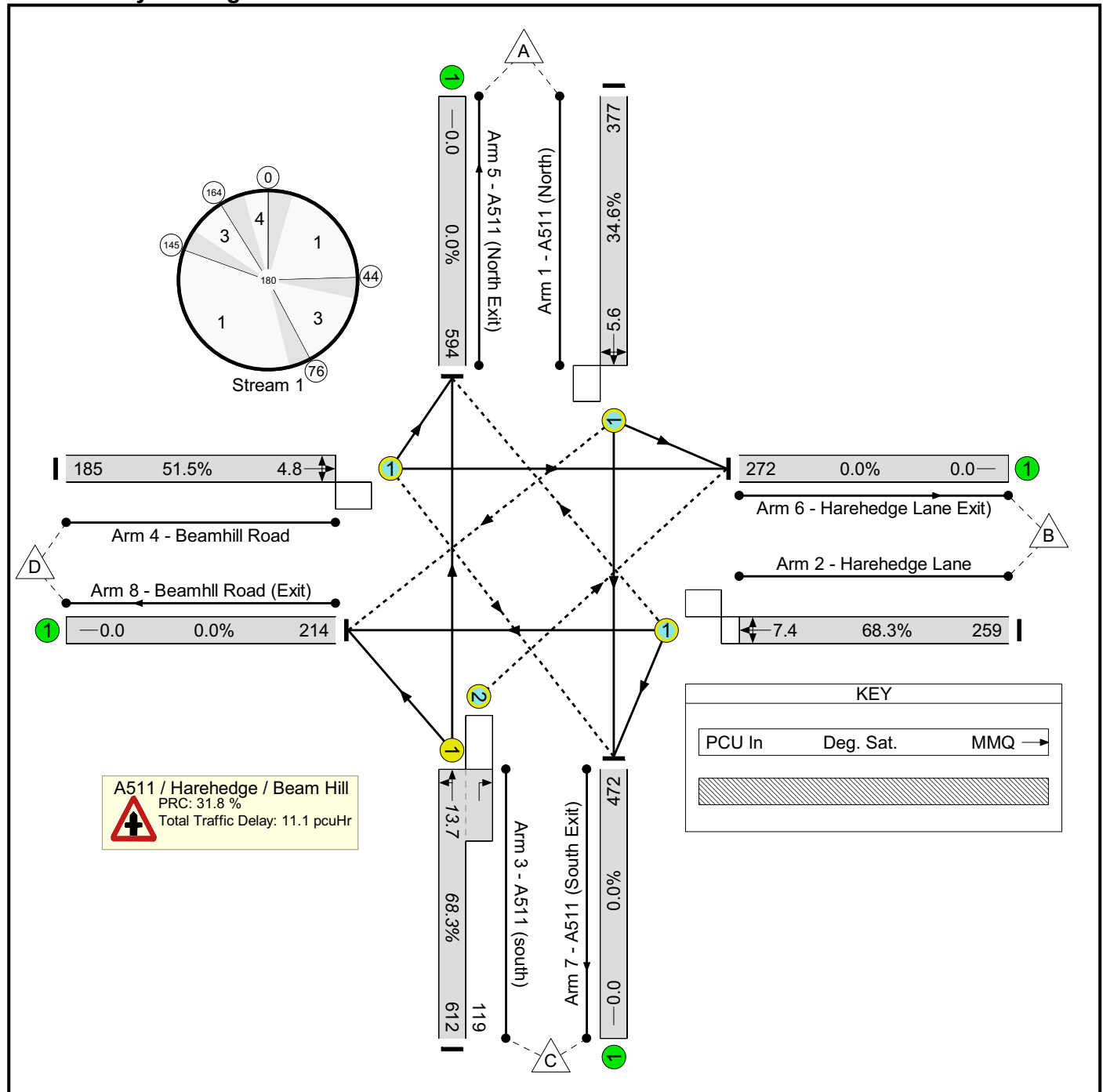
Signal Timings Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Tutbury A511 / Harehedge 2018		-	N/A	-	-	-	-	-	-	-	-	68.3%	11.1	-	-
A511 / Harehedge / Beam Hill	-	-	N/A	-	-	-	-	-	-	-	-	68.3%	11.1	-	-
1/1	A511 (North) Left Ahead Right	O	N/A	B	2	98	8(83)	44(145)	18.9	1961	54.5	34.6%	1.5	5.3	5.6
2/1	Harehedge Lane Right Left Ahead	O	N/A	E	2	37	51(152)	76(164)	12.9	1750	19.0	68.3%	3.4	6.3	7.4
3/1+3/2	A511 (south) Ahead Right Left	U+O	N/A	A	2	98	-	-	36.5	1905:1787	53.5	68.3%	3.9	12.6	13.7
4/1	Beamhill Road Left Ahead Right	O	N/A	D	2	37	51(152)	76(164)	9.3	1814	18.0	51.5%	2.2	4.3	4.8
C1													Total Delay for Signalled Lanes (pcuHr): 11.08 Total Delay Over All Lanes(pcuHr): 11.08		
PRC for Signalled Lanes (%): 31.8 PRC Over All Lanes (%): 31.8													Cycle Time (s): 180		

Junction Layout Diagram : Results



Appendix B

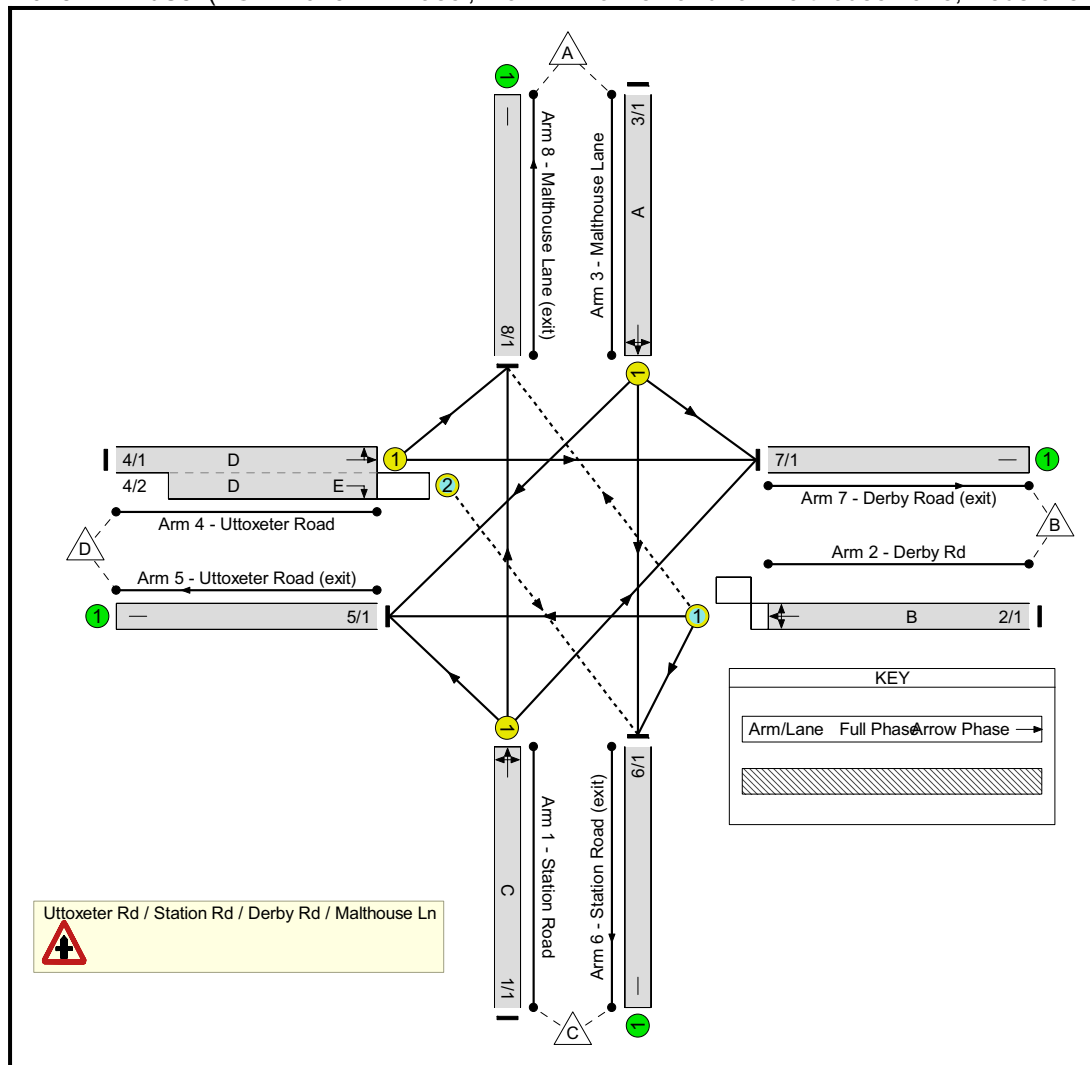
Project and User Details

Project:	10051 Tutbury
Title:	Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln
Location:	Station Road/Derby Road/Uttoxeter Road Crossroads
File name:	Uttoxeter - Station - Derby - Malthouse.lsg3x
Author:	Ian Robinson
Company:	JCT Consultancy Ltd
Address:	LinSig House, Deepdale Enterprise Park, Nettleham, Lincoln LN2 2LL
Notes:	

Scenarios

Number	Scenario Name	Flow Group	Network Control Plan	Time	Cycle Time (s)	PRC (%)	Delay (pcuHr)
1	2018 AM Base	2018 AM Base	No Demand for Malthouse Lane, Peds every 3rd cycle	07:45 - 08:45	270	9.6	16.08
2	2018 PM Base	2018 PM Base	No Demand for Malthouse Lane, Peds every 3rd cycle	16:45 - 17:45	270	1.3	21.39
3	2018 AM Base+Dev	2018 AM Base + Dev	No Demand for Malthouse Lane, Peds every 3rd cycle	07:45 - 08:45	270	3.0	19.67
4	2018 PM Base+Dev	2018 PM Base + Dev	No Demand for Malthouse Lane, Peds every 3rd cycle, No RTIA	16:45 - 17:45	270	-7.4	28.53
5	2009 AM	2009 AM	No Demand for Malthouse Lane, Peds every 3rd cycle	07:45 - 08:45	270	30.0	10.62
6	2009 PM	2009 PM	No Demand for Malthouse Lane, Peds every 3rd cycle	16:45 - 17:45	270	19.8	12.76

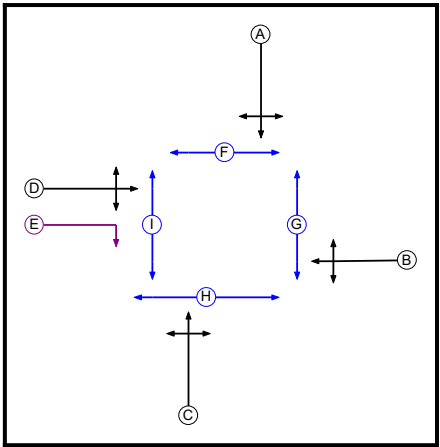
Scenario 1: '2018 AM Base' (FG1: '2018 AM Base', Plan 2: 'No Demand for Malthouse Lane, Peds every 3rd cycle')



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Traffic		7	7
E	Ind. Arrow	D	7	7
F	Pedestrian		7	7
G	Pedestrian		7	7
H	Pedestrian		7	7
I	Pedestrian		7	7

Phase Diagram



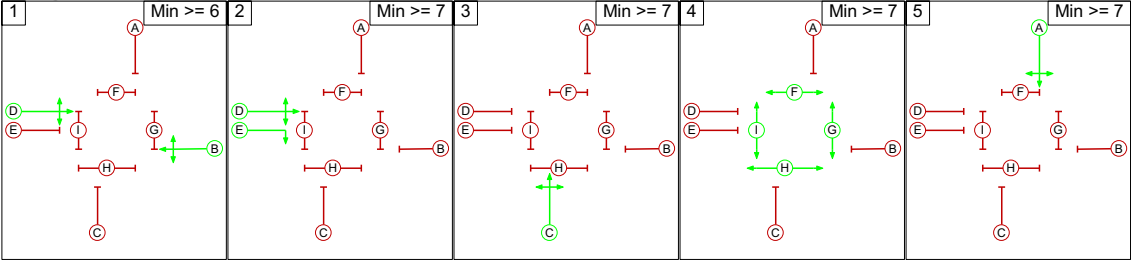
Phase Intergreens Matrix

Terminating Phase	Starting Phase								
	A	B	C	D	E	F	G	H	I
	A	5	5	5	5	11	9	10	
	B	6	5	-	6	11	5	9	10
	C	7	5	6	6	10	12	6	9
	D	5	-	5	-	7	10	-	5
	E	5	5	-	-	-	11	5	
	F	9	9	9	-	-	-	-	
	G	9	9	9	-	-	-	-	
	H	10	10	-	10	-	-	-	
	I	10	10	10	10	-	-	-	

Phase Delays

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

Stages Diagram



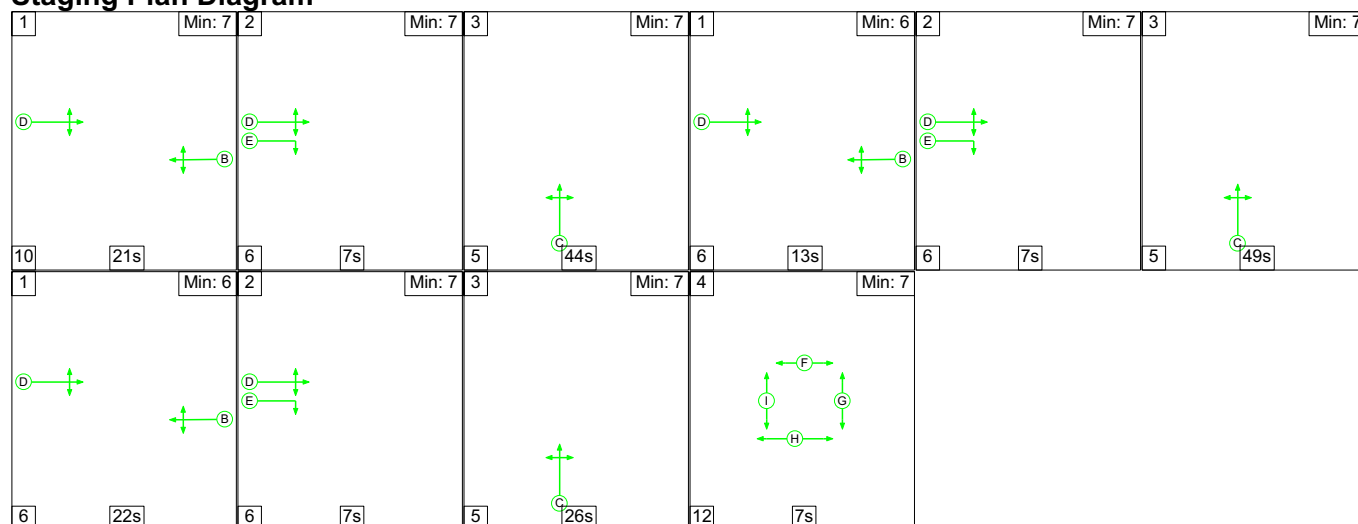
Lane Input Data

Junction: Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln												
Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Station Road)	U	C	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 5 Left	15.00
											Arm 7 Right	15.00
											Arm 8 Ahead	Inf
2/1 (Derby Rd)	O	B	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Left	13.00
											Arm 8 Right	12.00
3/1 (Malthouse Lane)	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Right	10.00
											Arm 6 Ahead	Inf
											Arm 7 Left	8.00
4/1 (Uttoxeter Road)	U	D	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 7 Ahead	Inf
											Arm 8 Left	8.00
4/2 (Uttoxeter Road)	O	D E	2	3	25.0	Geom	-	3.10	0.00	Y	Arm 6 Right	14.00

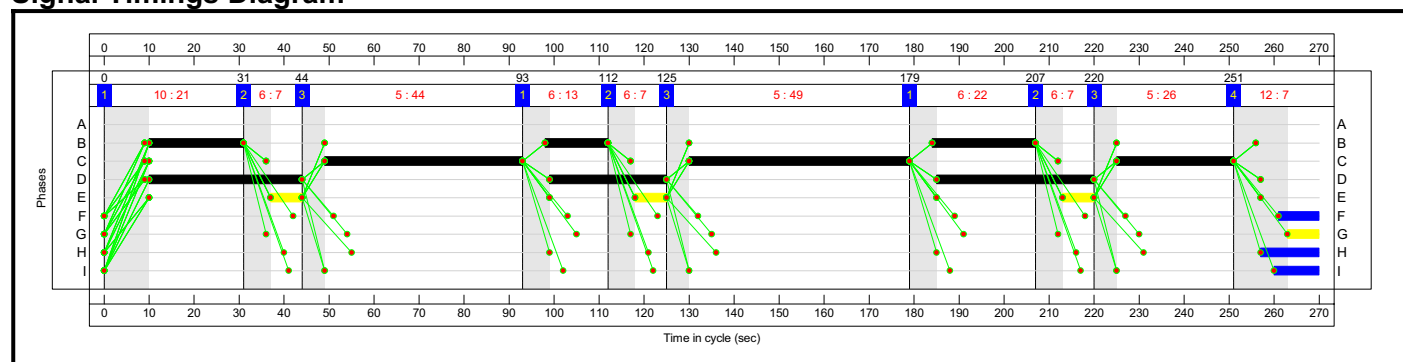
Give-Way Lane Input Data

Junction: Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln										
Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
2/1 (Derby Rd)	8/1 (Right)	1439	4/1	1.09	4/1	3.00	2.00	0.50	3	3.00
4/2 (Uttoxeter Road)	6/1 (Right)	1439	2/1	1.09	2/1	3.00	-	0.50	3	3.00

Staging Plan Diagram



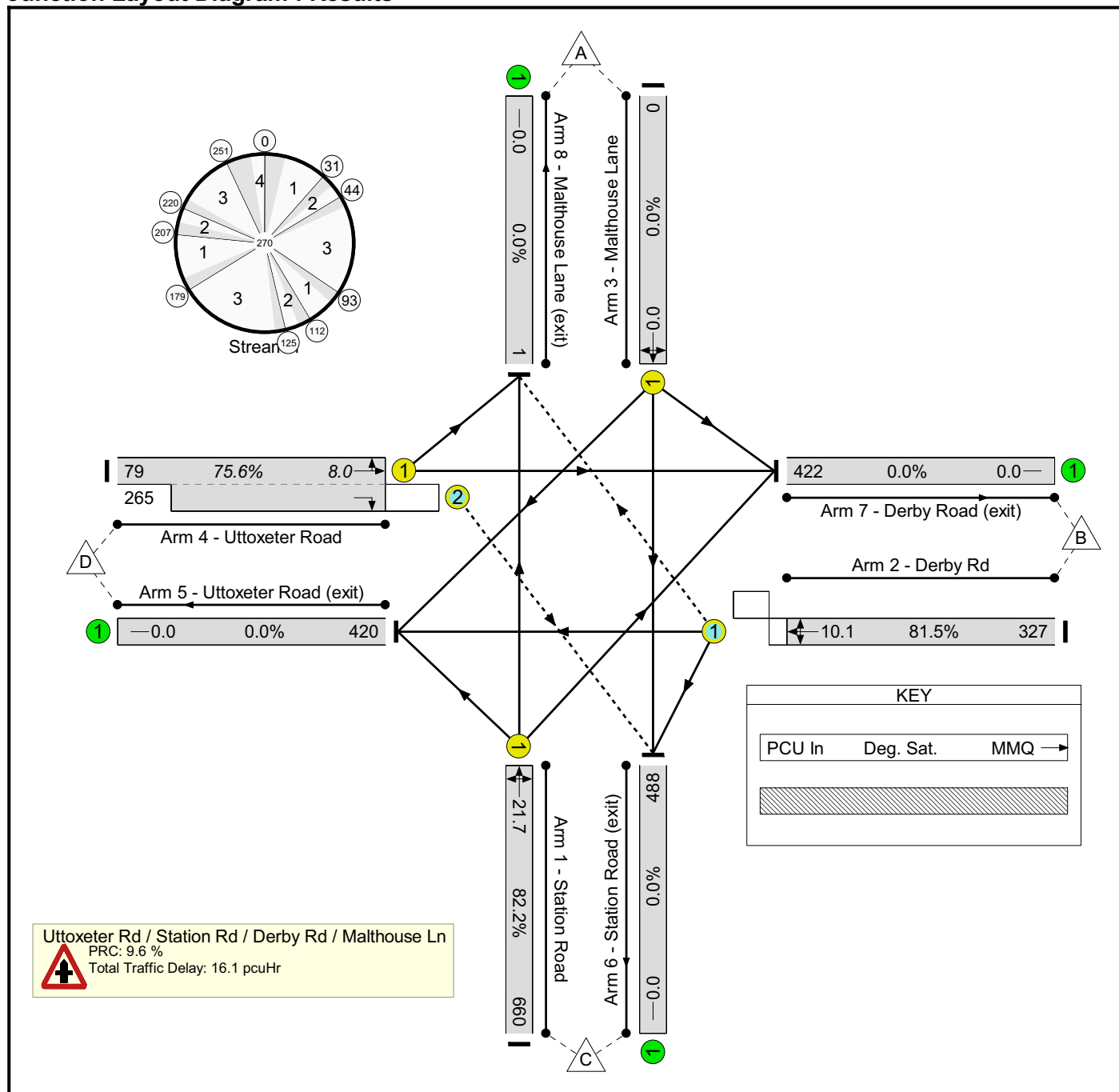
Signal Timings Diagram



Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln															
	-	-	N/A	-	-	-	-	-	-	-	-	82.2%	16.1	-	-
Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln															
1/1	Station Road Left Right Ahead	U	N/A	C	3	119	49(130,225)	93(179,251)	49.5	1778	60.3	82.2%	6.4	19.4	21.7
2/1	Derby Rd Ahead Left Right	O	N/A	B	3	58	10(98,184)	31(112,207)	24.5	1775	30.1	81.5%	5.1	8.0	10.1
3/1	Malthouse Lane Right Ahead Left	U	N/A	A	0	0	X	X	0.0	1915	0.0	0.0%	0.0	0.0	0.0
4/1+4/2	Uttoxeter Road Right Ahead Left	U+O	N/A	D	3	95	0	0	25.8	1940:1739	34.1	75.6%	4.5	6.5	8.0
C1															
PRC for Signalised Lanes (%): 9.6						9.6	Total Delay for Signalised Lanes (pcuHr): 16.08			16.08	Cycle Time (s): 270				
PRC Over All Lanes (%): 9.6						9.6	Total Delay Over All Lanes (pcuHr): 16.08			16.08					

LinSig Report - Tutbury - Uttoxeter Rd, Malthouse Lane
Junction Layout Diagram : Results



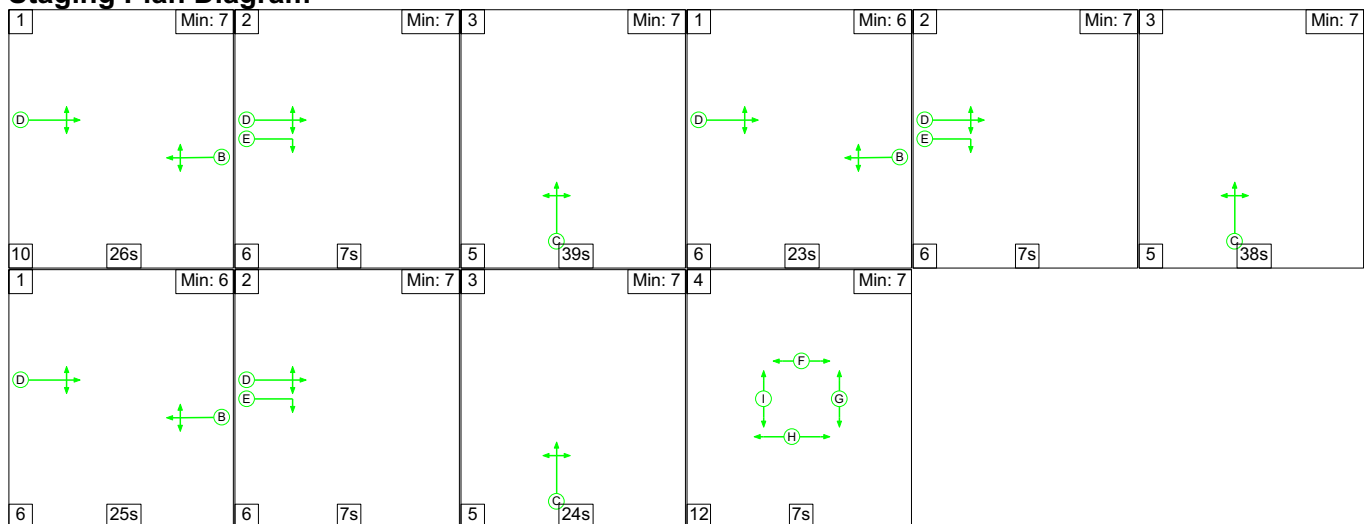


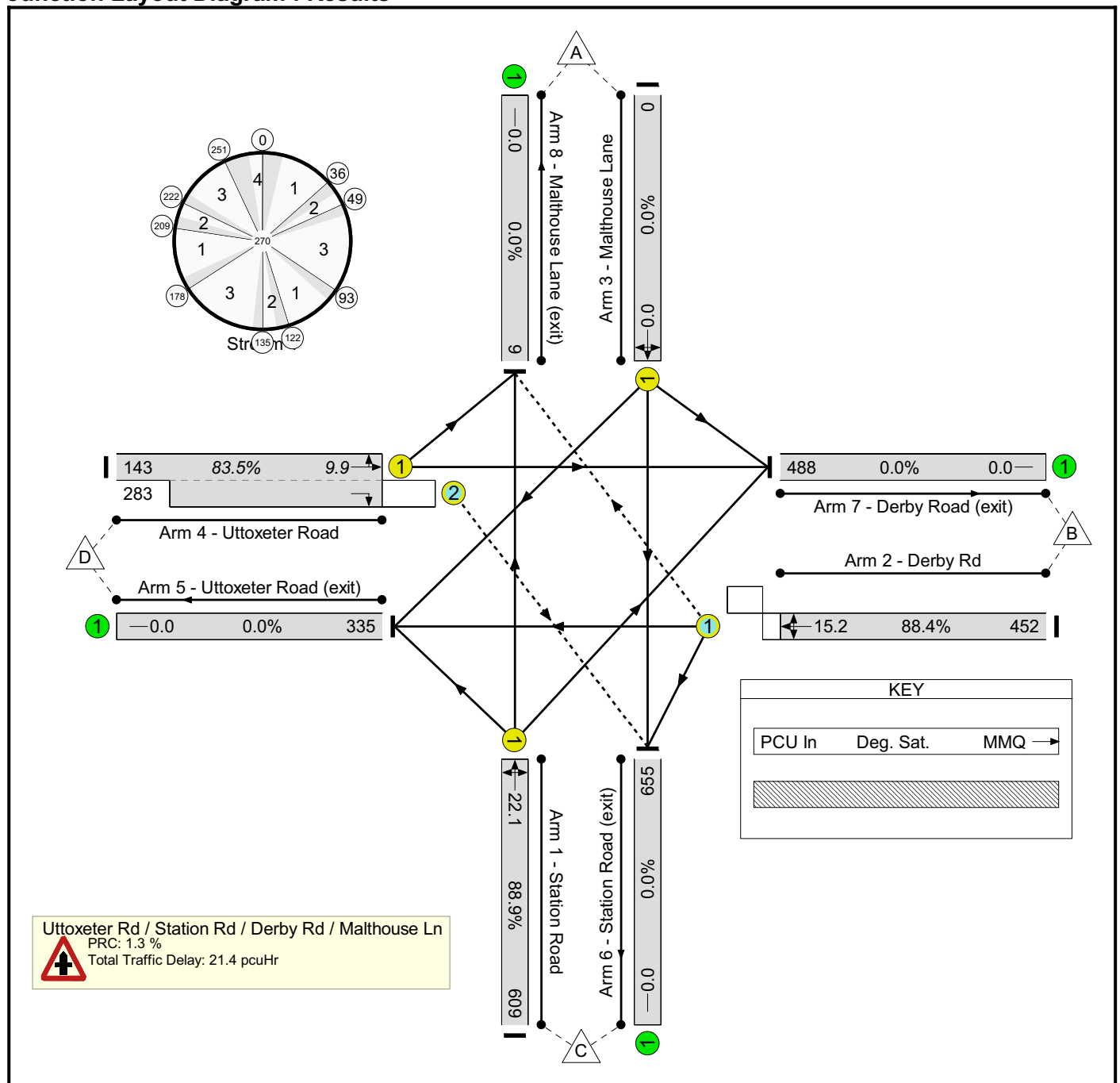
Figure 10 is a detailed Gantt chart showing the time allocation of the 10 phases (A-I) of the 1000 Hz test protocol. The chart is divided into four segments, each representing a 90-second cycle. The phases are represented by colored bars (A: blue, B: yellow, C: green, D: red, E: purple, F: orange, G: pink, H: light blue, I: light green) and connected by lines indicating the sequence of phases. The time allocation for each phase is shown in the top row of the chart.

Phase	Segment 1 (0-90s)	Segment 2 (90-180s)	Segment 3 (180-270s)
A	0-10:26	0-6:23	0-6:25
B	10:26-36:7	6:23-12:2	6:25-20:9
C	36:7-49:3	12:2-13:5	20:9-22:5
D	49:3-5:39	13:5-5:38	22:5-5:24
E	5:39-93:1	5:38-178:1	5:24-251:4
F	93:1-6:23	178:1-6:25	251:4-12:7
G	6:23-12:2	6:25-20:9	12:7-260:1
H	12:2-13:5	20:9-22:5	260:1-270:0
I	13:5-140:0	22:5-230:0	270:0-270:0

Link Results

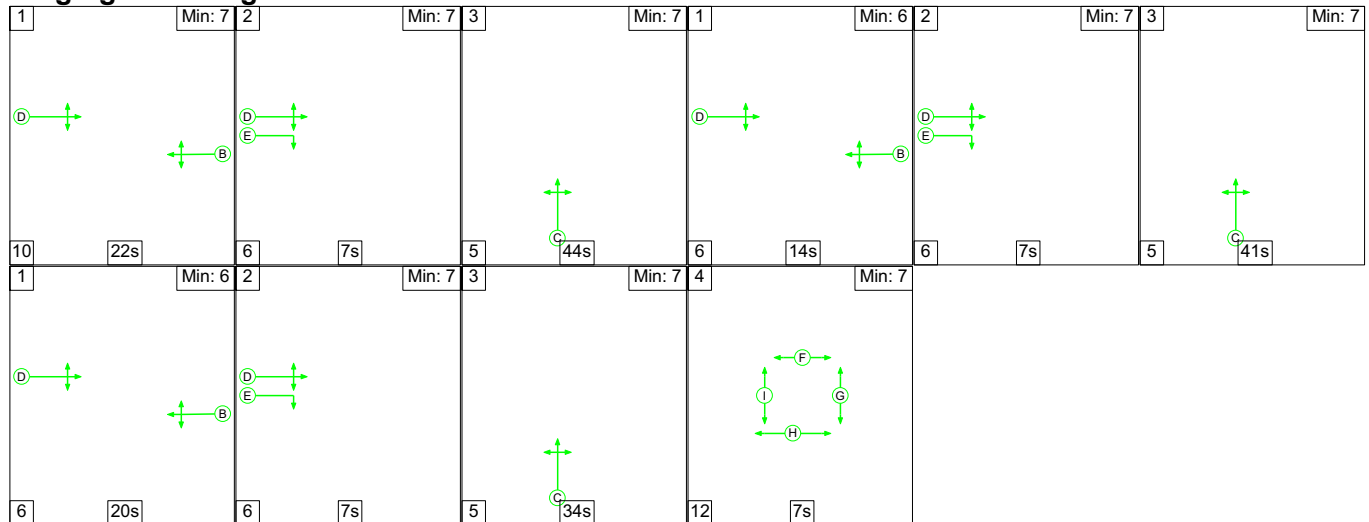
Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln															
	-	-	N/A	-	-	-	-	-	-	-	-	88.9%	21.4	-	-
	-	-	N/A	-	-	-	-	-	-	-	-	88.9%	21.4	-	-
1/1	Station Road Left Right Ahead	U	N/A	C	3	101	54(140,227)	93(178,251)	45.7	1779	51.4	88.9%	8.2	18.4	22.1
2/1	Derby Rd Ahead Left Right	O	N/A	B	3	76	10(98,183)	36(122,209)	33.9	1748	38.4	88.4%	7.2	11.8	15.2
3/1	Malthouse Lane Right Ahead Left	U	N/A	A	0	0	X	X	0.0	1915	0.0	0.0%	0.0	0.0	0.0
4/1+4/2	Uttoxeter Road Right Ahead Left	U+O	N/A	D	3	113	0	0	31.9	1937:1739	38.3	83.5%	5.9	7.5	9.9
<div> <div>C1</div> <div> <div>PRC for Signalled Lanes (%): 1.3</div> <div>Total Delay for Signalled Lanes (pcuHr): 21.39</div> </div> <div> <div>PRC Over All Lanes (%): 1.3</div> <div>Total Delay Over All Lanes (pcuHr): 21.39</div> </div> <div>Cycle Time (s): 270</div> </div>															

LinSig Report - Tutbury - Uttoxeter Rd, Malthouse Lane
Junction Layout Diagram : Results

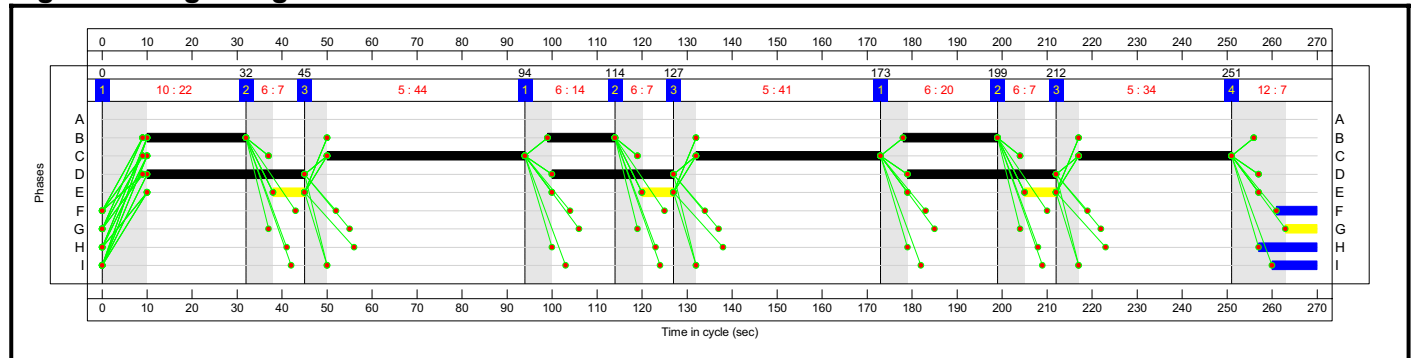


Scenario 3: '2018 AM Base+Dev' (FG3: '2018 AM Base + Dev', Plan 2: 'No Demand for Malthouse Lane, Peds every 3rd cycle')

Staging Plan Diagram



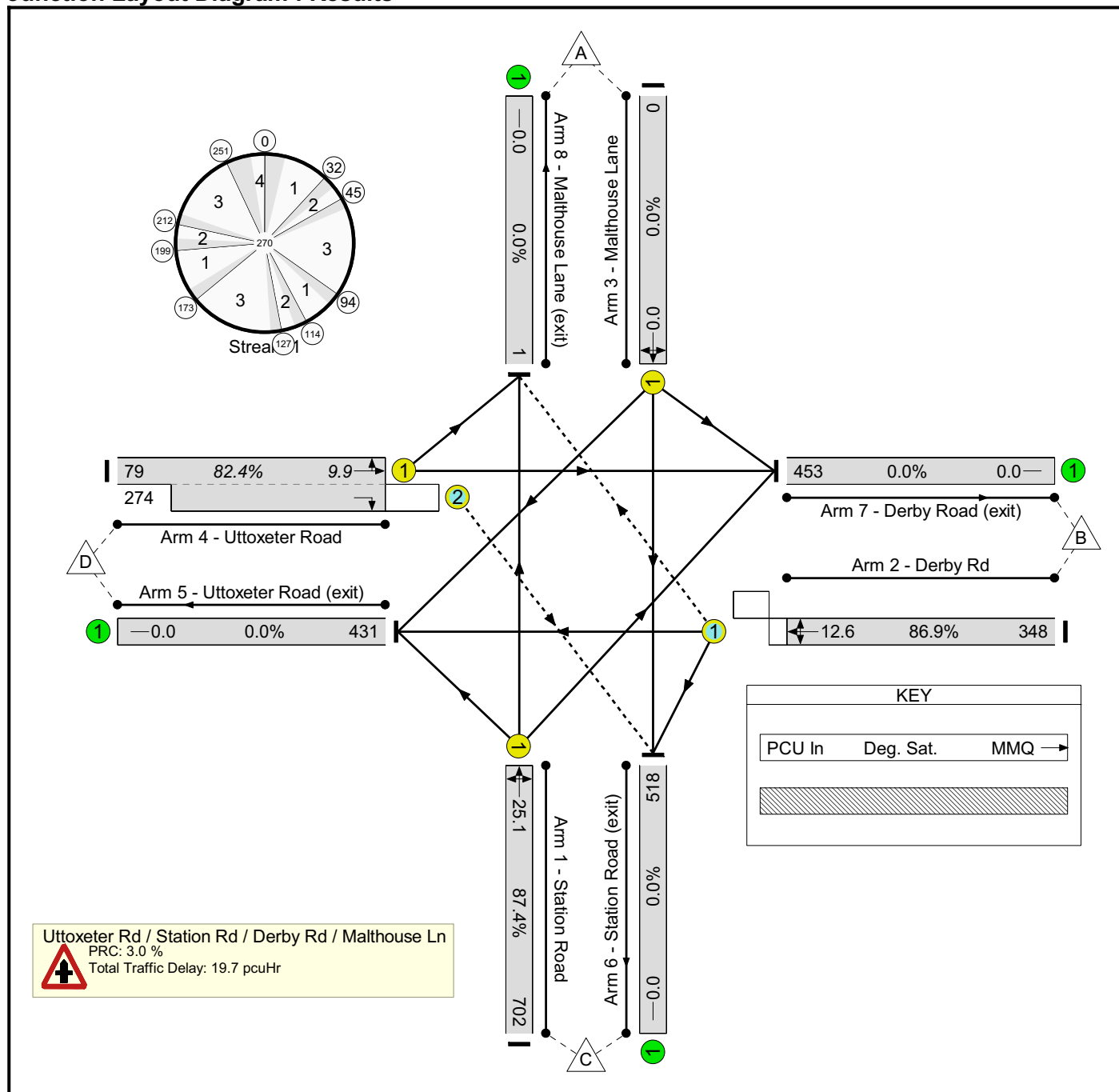
Signal Timings Diagram



Link Results

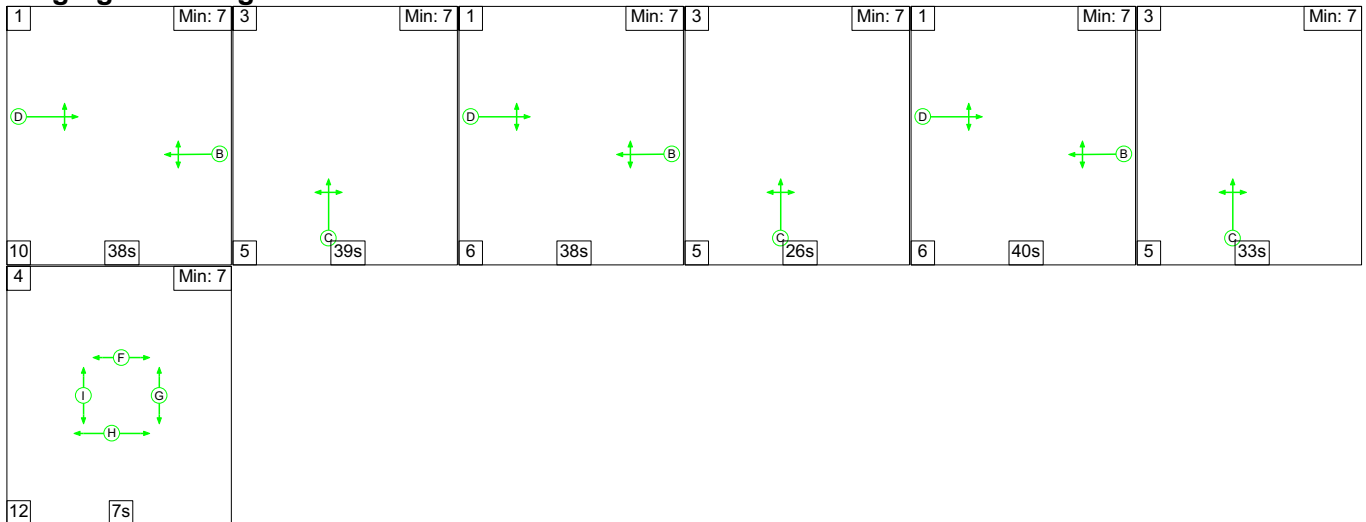
Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln															
	-	-	N/A	-	-	-	-	-	-	-	-	87.4%	19.7	-	-
	-	-	N/A	-	-	-	-	-	-	-	-	87.4%	19.7	-	-
1/1	Station Road Left Right Ahead	U	N/A	C	3	119	50(132,217)	94(173,251)	52.6	1778	60.3	87.4%	7.9	21.8	25.1
2/1	Derby Rd Ahead Left Right	O	N/A	B	3	58	10(99,178)	32(114,199)	26.1	1772	30.0	86.9%	6.3	9.6	12.6
3/1	Malthouse Lane Right Ahead Left	U	N/A	A	0	0	X	X	0.0	1915	0.0	0.0%	0.0	0.0	0.0
4/1+4/2	Uttoxeter Road Right Ahead Left	U+O	N/A	D	3	95	0	0	26.5	1940:1739	32.1	82.4%	5.5	7.7	9.9
<div> <div>C1</div> <div> <div>PRC for Signalised Lanes (%): 3.0</div> <div>Total Delay for Signalised Lanes (pcuHr): 19.67</div> </div> <div> <div>PRC Over All Lanes (%): 3.0</div> <div>Total Delay Over All Lanes (pcuHr): 19.67</div> </div> <div>Cycle Time (s): 270</div> </div>															

LinSig Report - Tutbury - Uttoxeter Rd, Malthouse Lane
Junction Layout Diagram : Results

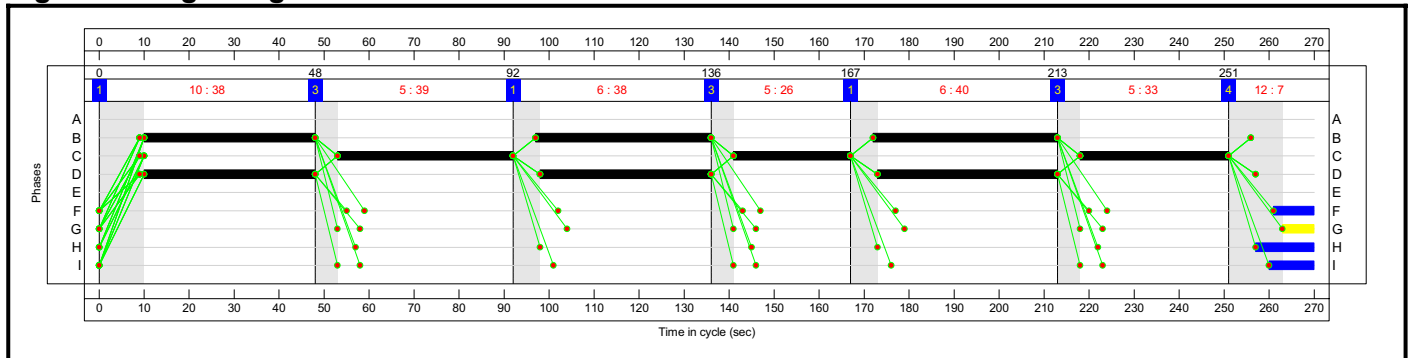


Scenario 4: '2018 PM Base+Dev' (FG4: '2018 PM Base + Dev', Plan 3: 'No Demand for Malthouse Lane, Peds every 3rd cycle, No RTIA')

Staging Plan Diagram



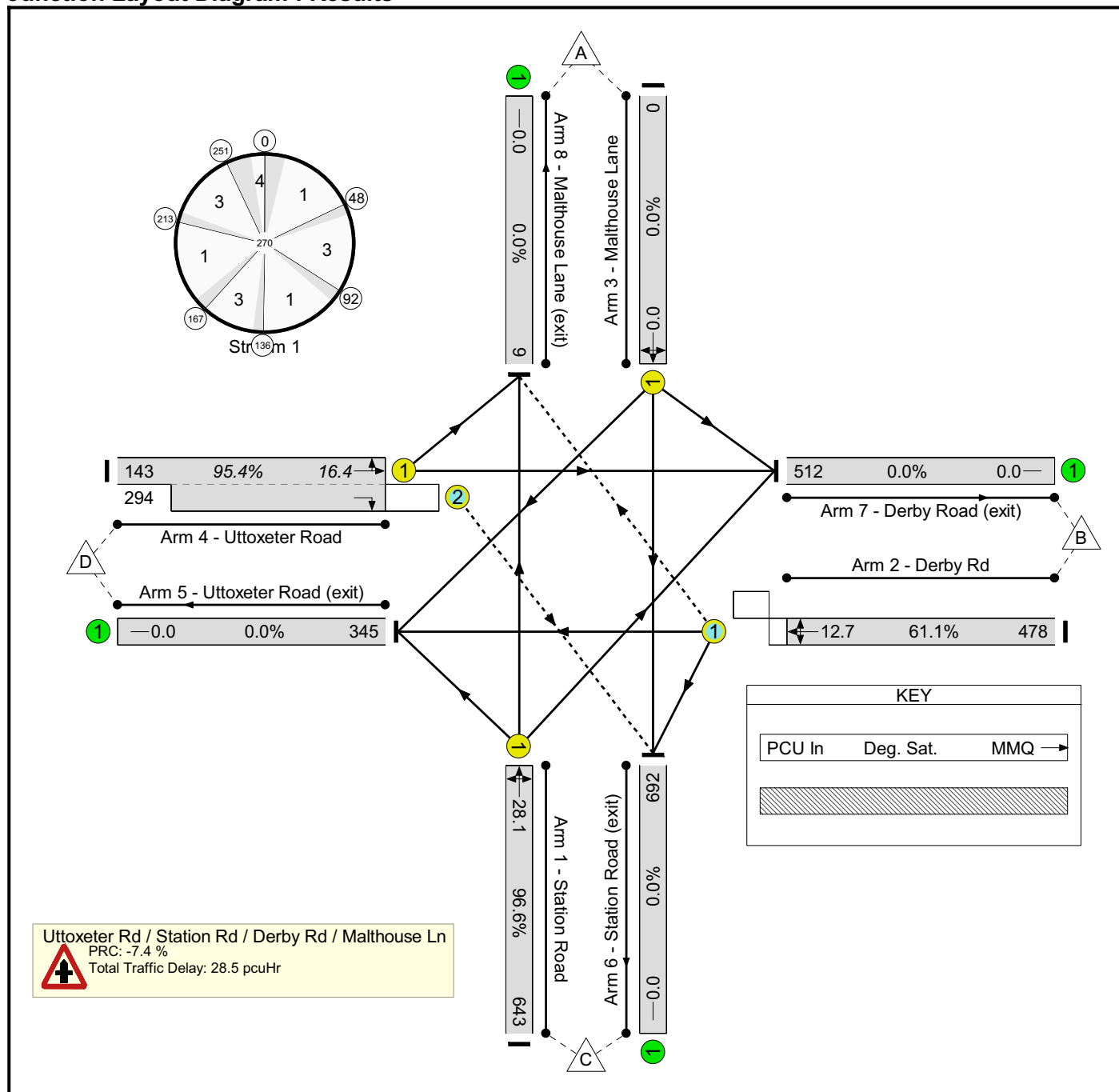
Signal Timings Diagram



Link Results

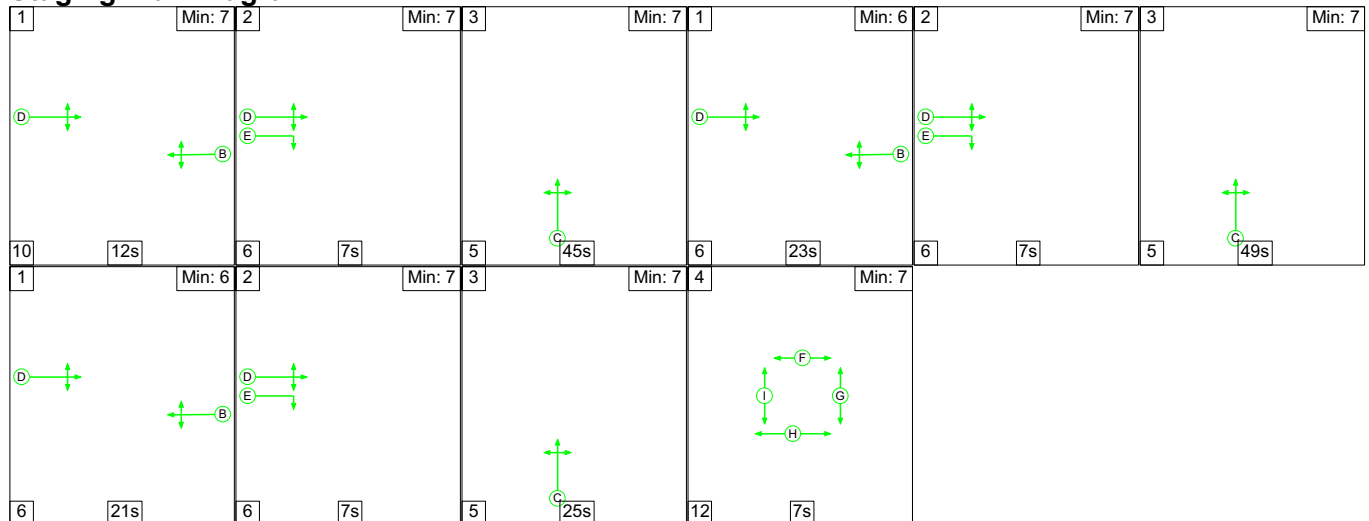
Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln															
	-	-	N/A	-	-	-	-	-	-	-	-	96.6%	28.5	-	-
	-	-	N/A	-	-	-	-	-	-	-	-	96.6%	28.5	-	-
1/1	Station Road Left Right Ahead	U	N/A	C	3	98	53(141,218)	92(167,251)	48.2	1779	49.9	96.6%	13.4	19.8	28.1
2/1	Derby Rd Ahead Left Right	O	N/A	B	3	118	10(97,172)	48(136,213)	35.9	1746	58.7	61.1%	3.5	12.0	12.7
3/1	Malthouse Lane Right Ahead Left	U	N/A	A	0	0	X	X	0.0	1915	0.0	0.0%	0.0	0.0	0.0
4/1+4/2	Uttoxeter Road Right Ahead Left	U+O	N/A	D	3	116	0	0	32.8	1937:1739	34.3	95.4%	11.7	10.0	16.4
<div> <div>C1</div> <div> <div>PRC for Signalled Lanes (%): -7.4</div> <div>Total Delay for Signalled Lanes (pcuHr): 28.53</div> </div> </div> <div> <div>PRC Over All Lanes (%): -7.4</div> <div>Total Delay Over All Lanes (pcuHr): 28.53</div> </div> <div> <div>Cycle Time (s): 270</div> </div>															

LinSig Report - Tutbury - Uttoxeter Rd, Malthouse Lane
Junction Layout Diagram : Results

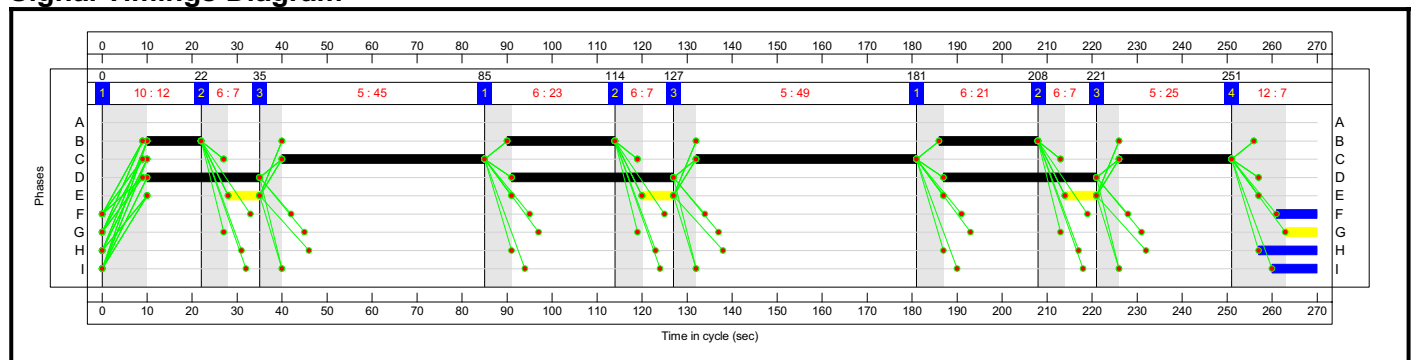


Scenario 5: '2009 AM' (FG5: '2009 AM', Plan 2: 'No Demand for Malthouse Lane, Peds every 3rd cycle')

Staging Plan Diagram



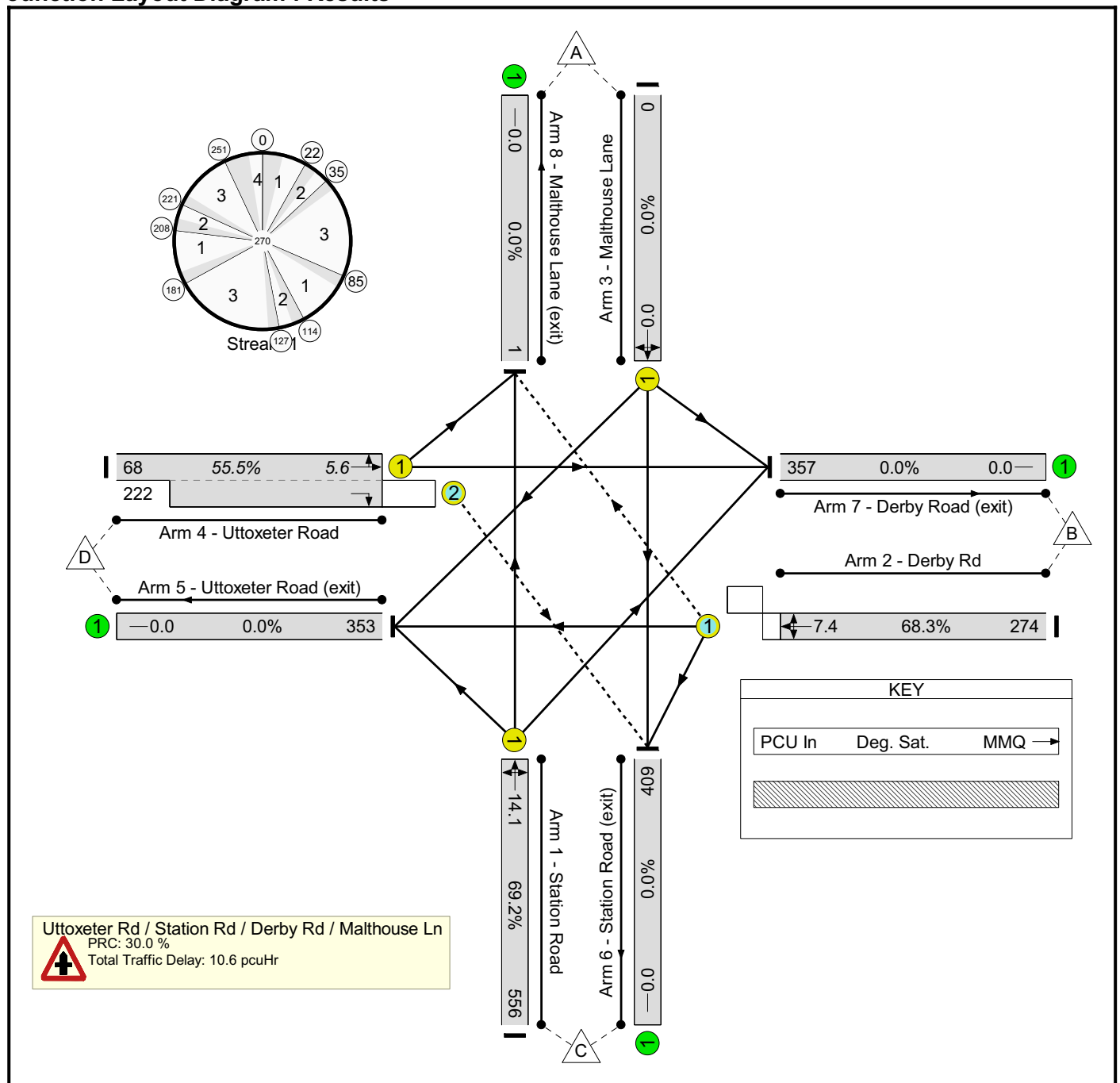
Signal Timings Diagram



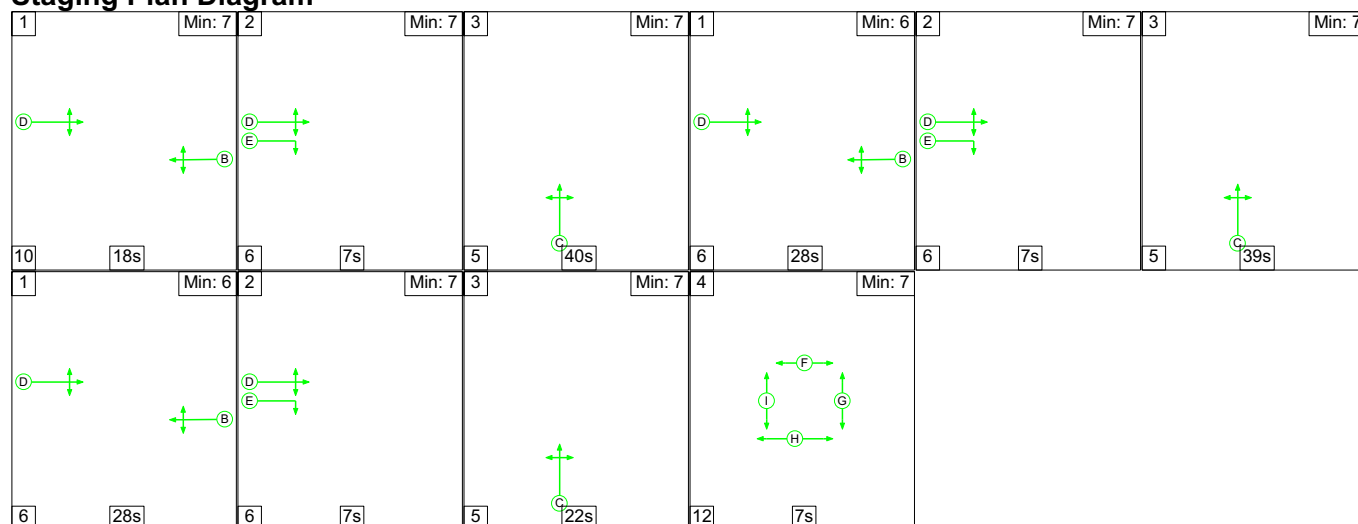
Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln	-	-	N/A	-	-	-	-	-	-	-	-	69.2%	10.6	-	-
	-	-	N/A	-	-	-	-	-	-	-	-	69.2%	10.6	-	-
1/1	Station Road Left Right Ahead	U	N/A	C	3	119	40(132,226)	85(181,251)	41.7	1778	60.3	69.2%	4.2	13.0	14.1
2/1	Derby Rd Ahead Left Right	O	N/A	B	3	58	10(90,186)	22(114,208)	20.6	1775	30.1	68.3%	3.5	6.3	7.4
3/1	Malthouse Lane Right Ahead Left	U	N/A	A	0	0	X	X	0.0	1915	0.0	0.0%	0.0	0.0	0.0
4/1+4/2	Uttoxeter Road Right Ahead Left	U+O	N/A	D	3	95	0	0	21.8	1940:1739	39.2	55.5%	2.9	5.0	5.6
C1															
PRC for Signalled Lanes (%): 30.0 Total Delay for Signalled Lanes (pcuHr): 10.62 Cycle Time (s): 270															
PRC Over All Lanes (%): 30.0 Total Delay Over All Lanes (pcuHr): 10.62															

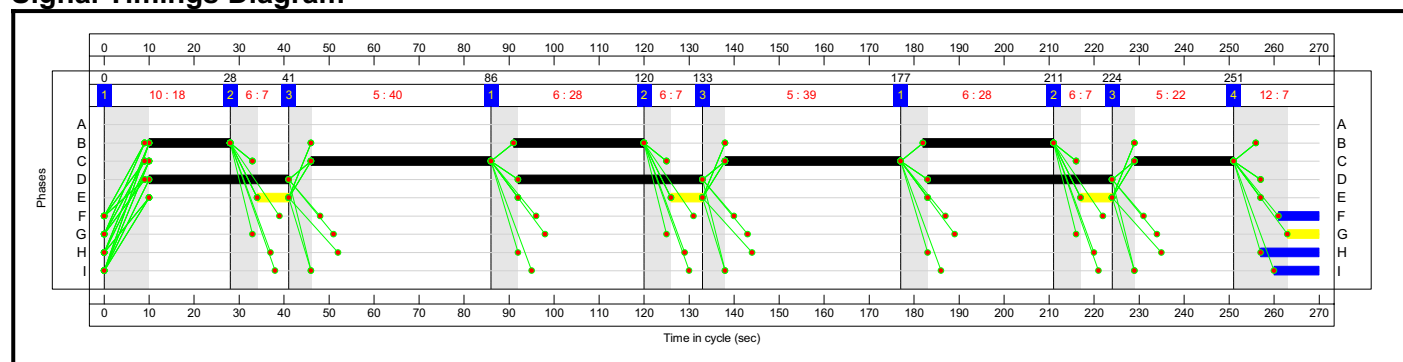
LinSig Report - Tutbury - Uttoxeter Rd, Malthouse Lane
Junction Layout Diagram : Results



Staging Plan Diagram



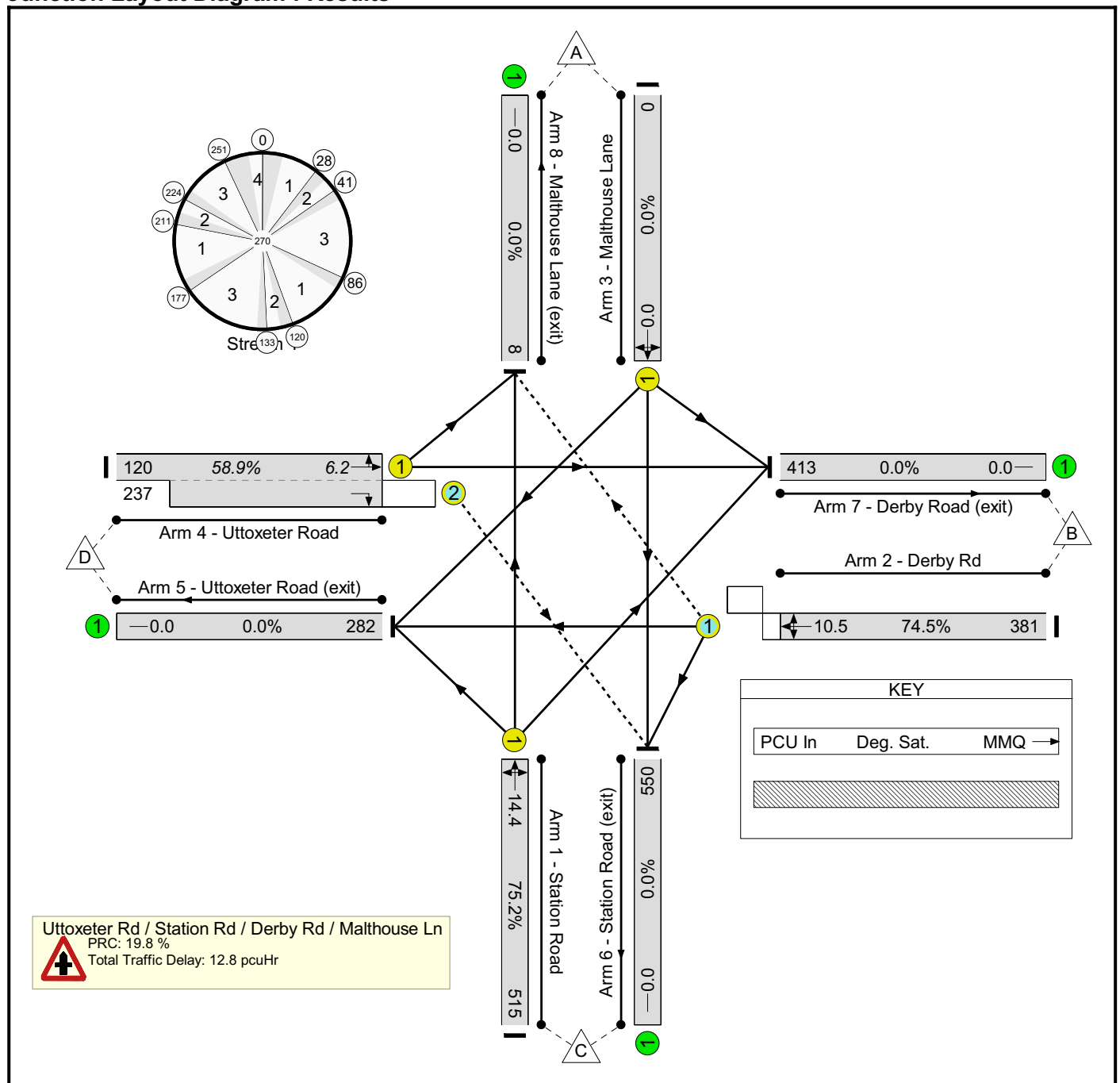
Signal Timings Diagram



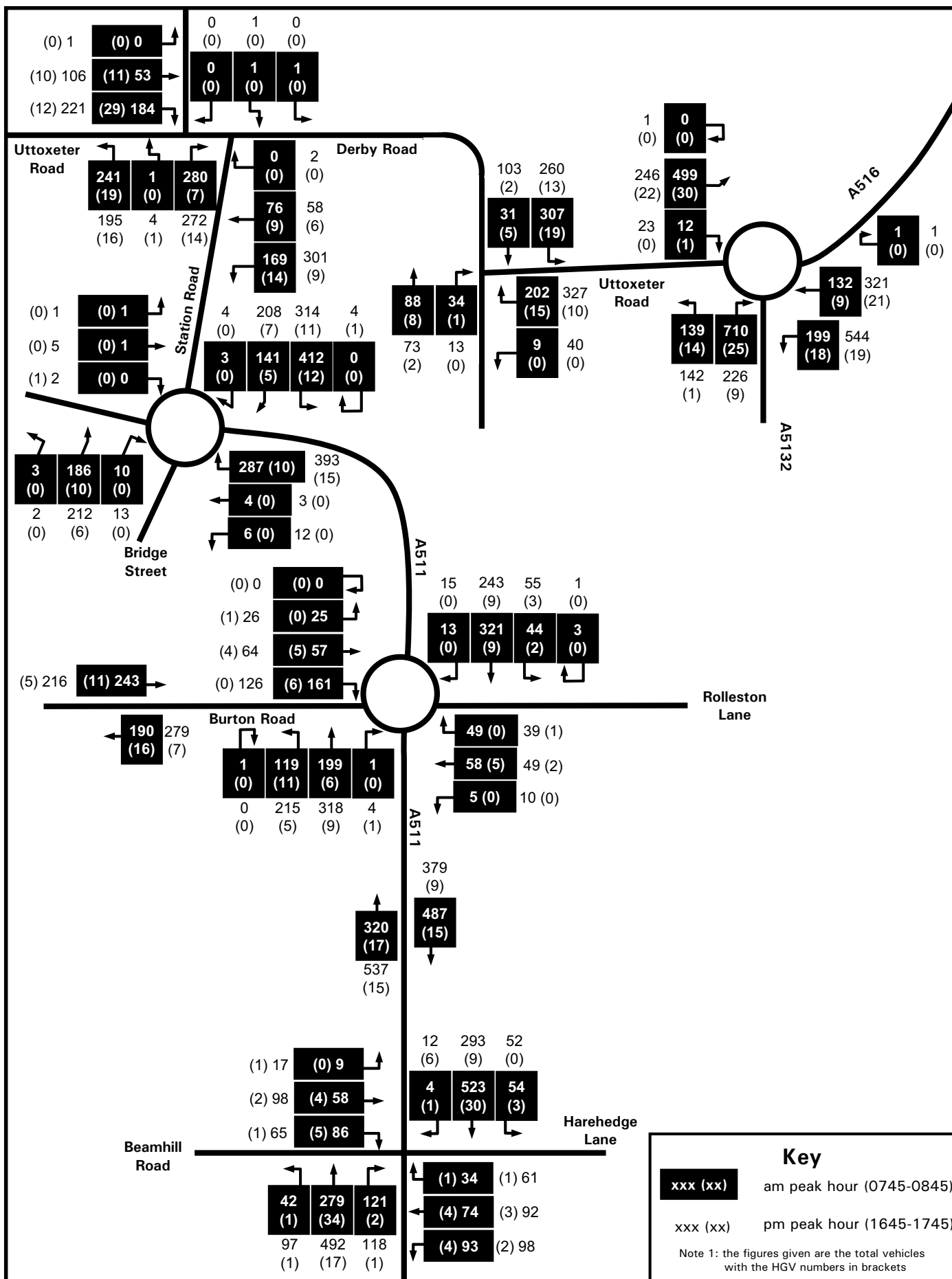
Link Results

Item	Lane Description	Lane Type	Controller Stream	Full Phase	Num Greens	Total Green (s)	Start Green (s)	End Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Max. Back of Uniform Queue (pcu)	Mean Max Queue (pcu)
Network: Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln															
	-	-	N/A	-	-	-	-	-	-	-	-	75.2%	12.8	-	-
Uttoxeter Rd / Station Rd / Derby Rd / Malthouse Ln															
1/1	Station Road Left Right Ahead	U	N/A	C	3	101	46(138,229)	86(177,251)	38.6	1779	51.4	75.2%	5.0	12.9	14.4
2/1	Derby Rd Ahead Left Right	O	N/A	B	3	76	10(91,182)	28(120,211)	28.6	1748	38.4	74.5%	4.5	9.1	10.5
3/1	Malthouse Lane Right Ahead Left	U	N/A	A	0	0	X	X	0.0	1915	0.0	0.0%	0.0	0.0	0.0
4/1+4/2	Uttoxeter Road Right Ahead Left	U+O	N/A	D	3	113	0	0	26.8	1937:1739	45.5	58.9%	3.3	5.5	6.2
Summary															
C1						19.8	Total Delay for Signalled Lanes (pcuHr):		12.76	Total Delay Over All Lanes (pcuHr):		12.76	Cycle Time (s): 270		
						19.8	PRC for Signalled Lanes (%):			PRC Over All Lanes (%):					

LinSig Report - Tutbury - Uttoxeter Rd, Malthouse Lane
Junction Layout Diagram : Results

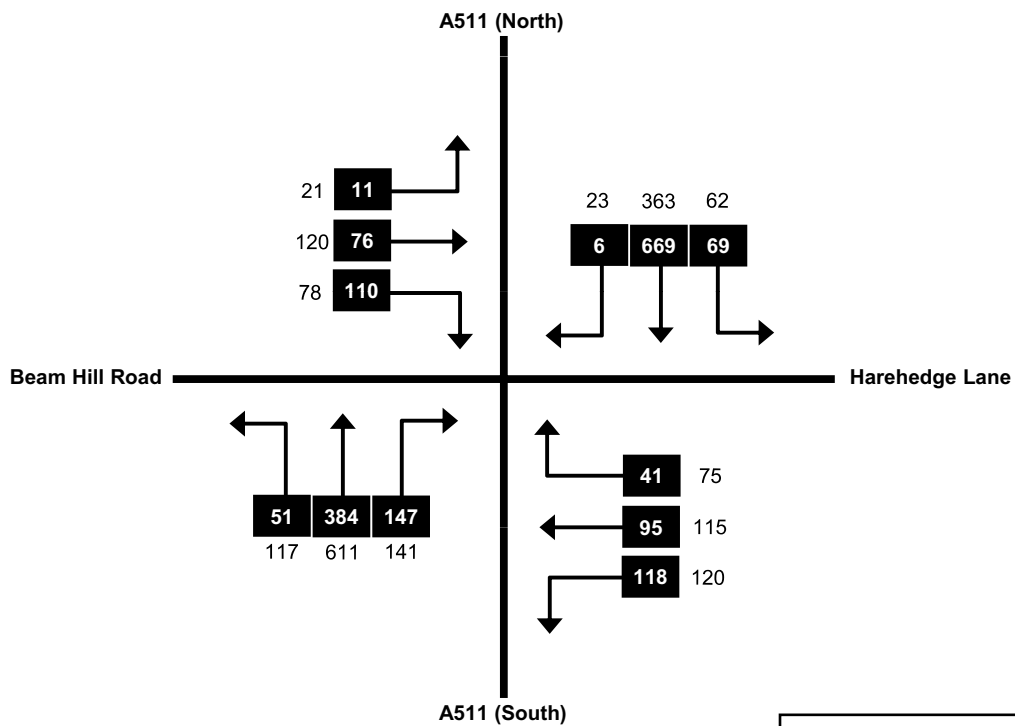


Appendix C



SCALE: Do Not Scale	CLIENT: Peveril Homes Ltd	JOB TITLE: Land at Tutbury		
DATE: 09/09/2009				
DRAWN: AG	TITLE: 2009 OBSERVED PEAK HOUR TRAFFIC FLOWS		JOB NUMBER: F09049	FIGURE: 5

WITHOUT DEVELOPMENT

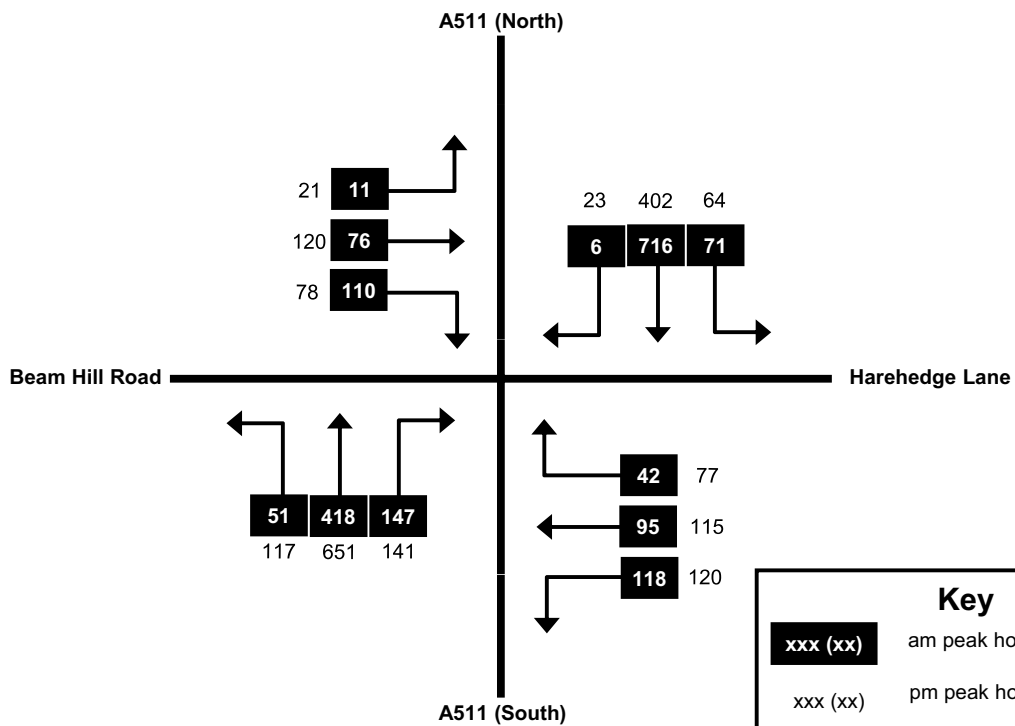


NOTE:

Light vehicle = 1 PCU

Heavy vehicles = 2.3 PCUs

WITH DEVELOPMENT



Key

xxx (xx)

am peak hour (0745-0845)

xxx (xx)

pm peak hour (1645-1745)

SCALE: **Do Not Scale**

CLIENT:

Peveril Homes Ltd

JOB TITLE:

Land at Tutbury

DATE: **09/09/2009**

DRAWN: **AG**

TITLE:

A511/HAREHEDGE LANE/BEAMHILL ROAD SIGNAL CONTROLLED CROSSROADS JUNCTION 2018 DESIGN YEAR PCU FLOWS

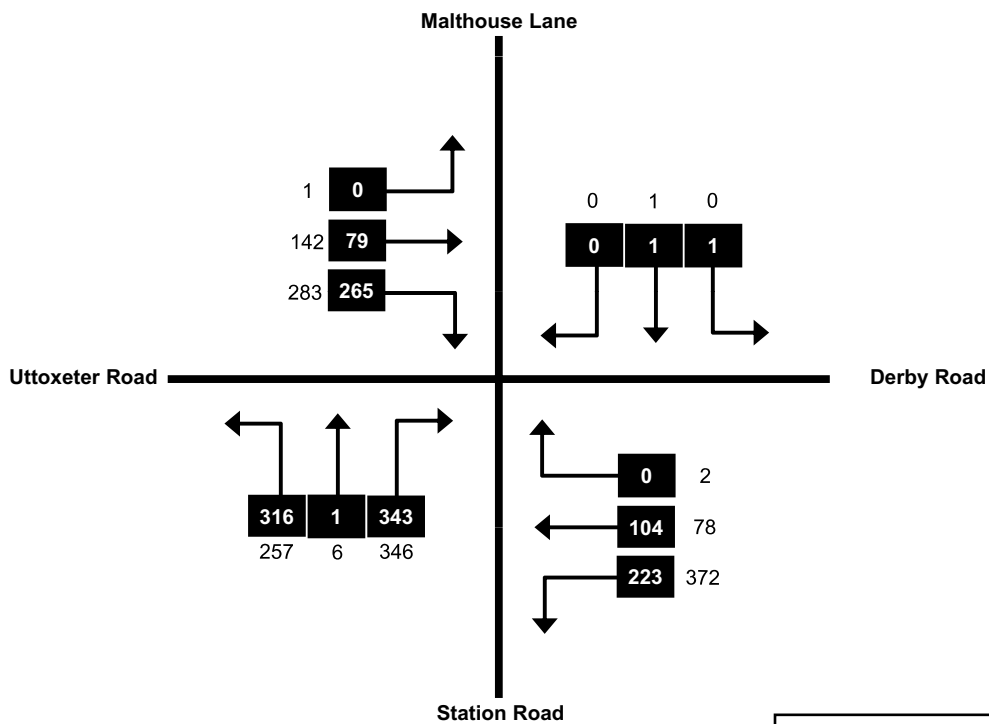
JOB NUMBER:

F09049

FIGURE:

14

WITHOUT DEVELOPMENT

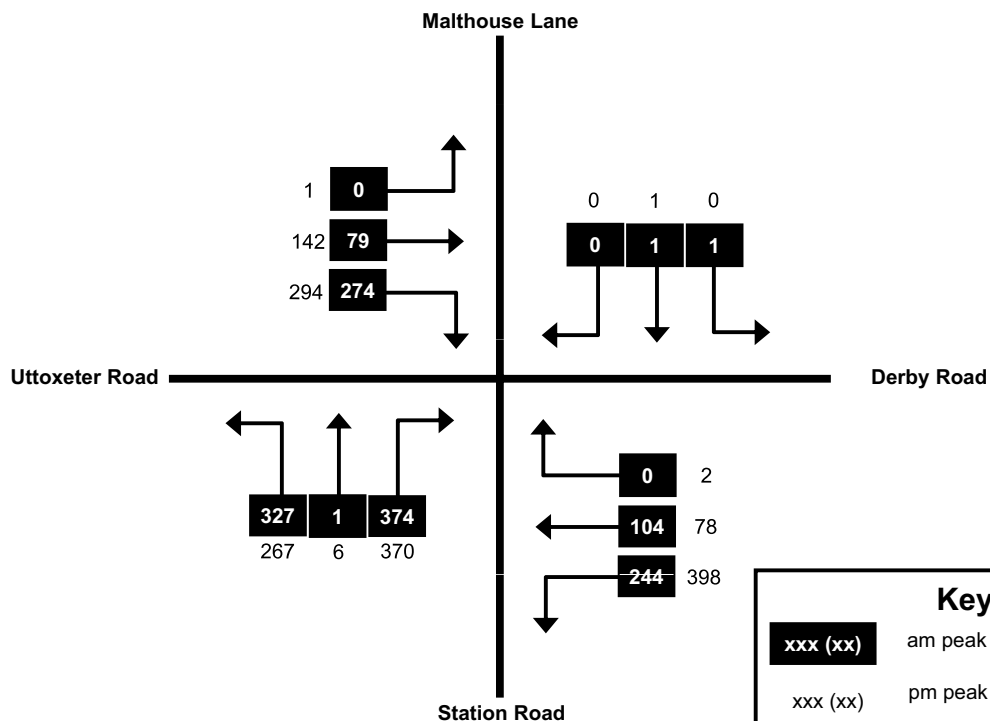


NOTE:

Light vehicle = 1 PCU

Heavy vehicles = 2.3 PCUs

WITH DEVELOPMENT



Key

xxx (xx)

am peak hour (0745-0845)

xxx (xx)

pm peak hour (1645-1745)

SCALE: **Do Not Scale**

CLIENT:

Peveril Homes Ltd

JOB TITLE:

Land at Tutbury

DATE: **09/09/2009**

DRAWN: **AG**

TITLE:

**DERBY ROAD/UTTOXETER ROAD/STATION ROAD/
MALHOUSE LANE SIGNAL CONTROLLED CROSSROADS
JUNCTION 2018 DESIGN YEAR PCU FLOWS**

JOB NUMBER:

F09049

FIGURE:

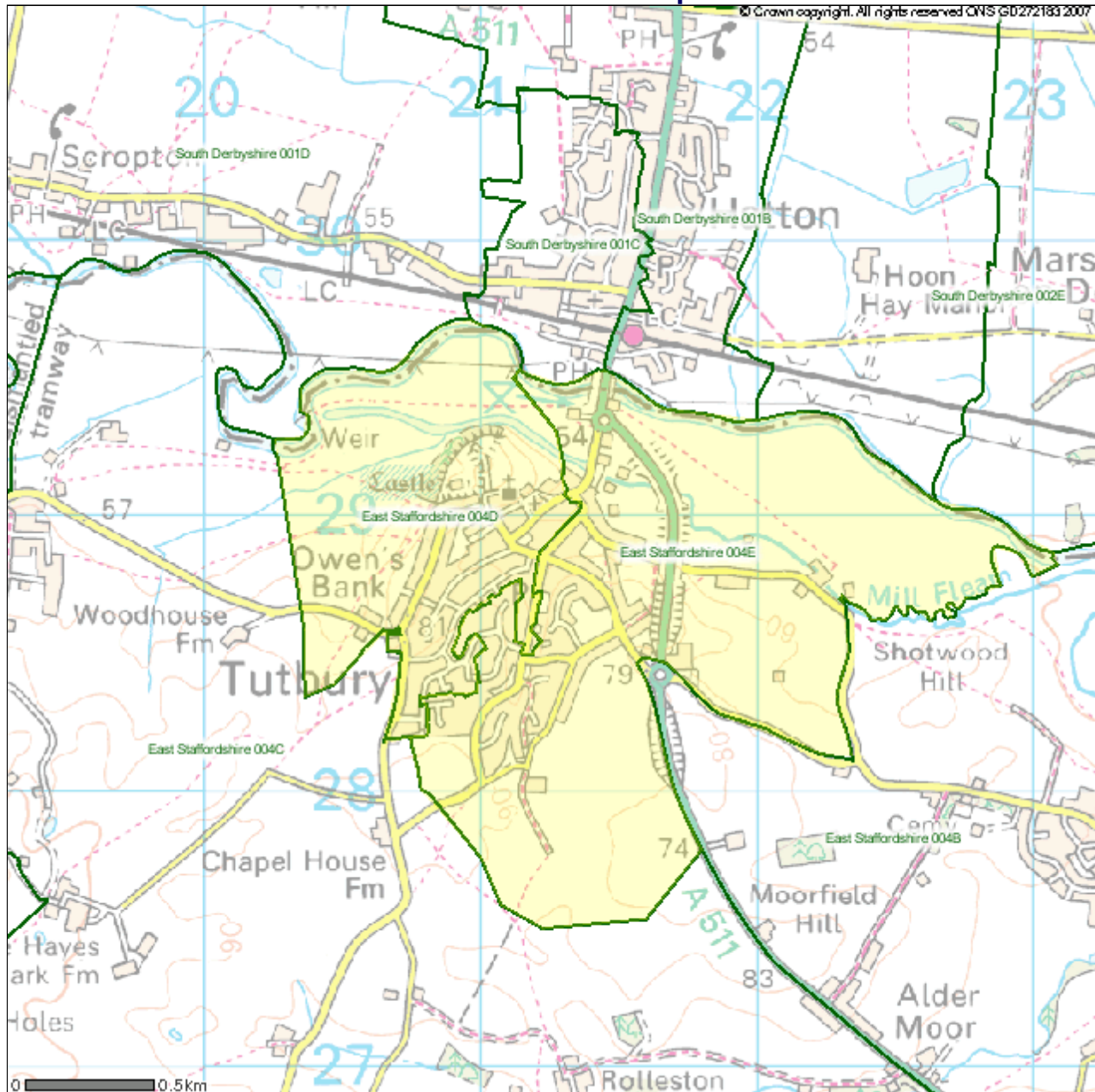
13

**APPENDIX H – NATIONAL STATISTICS DATA – MODAL
SPLIT DETAILS**

Neighbourhood Statistics



Selectable Area Map



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Neighbourhood Statistics



	East Staffordshire 004D ³ <i>Super Output Area Lower Layer</i>	East Staffordshire 004E ³ <i>Super Output Area Lower Layer</i>
People who work mainly at or from home ^{1 2} <i>Persons Percentage Apr01</i>	10.00	9.71
People aged 16-74 who usually travel to work by: Underground, Metro, Light Rail or Tram ^{1 2} <i>Persons Percentage Apr01</i>	0.00	0.00
People aged 16-74 who usually travel to work by: Train ^{1 2} <i>Persons Percentage Apr01</i>	0.45	1.37
People aged 16-74 who usually travel to work by: Bus, Mini Bus or Coach ^{1 2} <i>Persons Percentage Apr01</i>	7.12	4.24
People aged 16-74 who usually travel to work by: Motorcycle, Scooter or Moped ^{1 2} <i>Persons Percentage Apr01</i>	1.21	1.37
People aged 16-74 who usually travel to work by: Driving a Car or Van ^{1 2} <i>Persons Percentage Apr01</i>	57.42	68.26
People aged 16-74 who usually travel to work by: Passenger in a Car or Van ^{1 2} <i>Persons Percentage Apr01</i>	8.18	6.29
People aged 16-74 who travel to work by: Taxi or Minicab ^{1 2} <i>Persons Percentage Apr01</i>	0.61	0.41
People aged 16-74 who usually travel to work by: Bicycle ^{1 2} <i>Persons Percentage Apr01</i>	2.58	1.64
People aged 16-74 who usually travel to work by: On foot ^{1 2} <i>Persons Percentage Apr01</i>	11.97	6.29
People aged 16-74 who usually travel to work by: Other ^{1 2} <i>Persons Percentage Apr01</i>	0.45	0.41

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Last Updated: 02 June 2006

Source: Office for National Statistics

Notes

¹ From the dataset: Travel to Work (KS15)

² National Statistics

³ Part of the NeSS Geography Hierarchy

Caution:

using statistics from different sets of data means that you may not be comparing like with like.

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