

Magna Park Extension: Hybrid Application
APP 15/01531/OUT

**Cover Report and Summary:
Amended Application, Update of the
Environmental Statement and Supplemental
Information**

21 April 2016

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Appendix 1: Amended Submission Plans 15/01531/OUT

Parameter Plan 1 (amended) 364734-18

Parameter Plan 2 (amended) 3657-36-0

Landscape Masterplan (amended) MPL 410-AL-A01-MP-0-001

Illustrative Masterplan (amended) MPL 410-AL-A01-MP-0-001

Overlay of submitted and amended illustrative masterplans 3657-41-\$

1 THE 15/01531/OUT AMENDMENT, ES UPDATE AND SUPPLEMENTAL INFORMATION

Introduction

- 1.1 This report introduces and summarises the following in respect to IDI Gazeley's planning application to extend Magna Park (15/01531/OUT):
- i. the separately submitted minor amendment made on 21 April 2016 to the planning application;
 - ii. the further additional information provided in support of the application.
- 1.2 The application is supported by an Environmental Statement, and this further information is provided voluntarily by IDI Gazeley in accordance with Regulation 22 of the Environmental Impact Assessment Regulations (EIA) 2011 (as amended). Regulation 22 obliges Harborough District Council (HDC) as planning authority to notify this additional information to all those who have an interest, or who have expressed an interest, in the planning application, and to give them not less than 21 days to make any representations they may wish on this additional information.

The Information Notified

- 1.3 IDI Gazeley published a Public Notice notifying the submission of the following further information on 21 April 2016 in the Harborough Mail and the Lutterworth Mail:
- i. The amendment to application 15/01531/OUT to allow for the retention of Bittesby House as follows:
 - a) Amended 1 APP form for the two changes to the development description:
 - "demolition of existing buildings" is amended to read "demolition of Lodge, Emmanuel and Bittesby Cottages"; and
 - the maximum quantum of distribution warehousing is reduced to "up to 419,800 sq m" from "up to 427,200 sq m".
 - b) Amended submission plans:
 - Parameter Plan 1 (364734-18) which shows the siting, extent and use of each development parcel. The amendment creates a new parcel that retains Bittesby House, the principal outbuildings and grounds; and reduces the area of Parcel I – proposed for distribution warehousing use (B8) – to 4.76 ha (from 6.03 ha) and the quantum of distribution floorspace to a maximum of 23,100 sq m (from 30,500 sq m).
 - Parameter Plan 2 (3657-36-06), which shows the maximum heights of new buildings and the restrictions on the siting of yards, is amended to show the new parcel for Bittesby House and the change in the extent of Parcel I.
 - The amended illustrative masterplan (3657-33-11)
 - The amended landscape plan (MPL 410-AL-A01-MP-0-001)
 - Overlay of submitted and amended illustrative masterplans (3657-41-\$).

- c) To assist the understanding of the hybrid application (15/01531/OUT), an overlay of the permitted DHL Supply Chain application (15/00919/FUL) on the amended Illustrative Masterplan.
- ii. Updated ES chapters to take account of the amendment to retain Bittesby House and its grounds:
 - a) Chapter 9: Landscape & Visual Effects
 - b) Chapter 11: Heritage & Archaeology
- iii. The clarification sought by The Landscape Partnership (TLP) on behalf of HDC in the comments on the submitted ES Chapter 9 together with responses to a number of the points made by TLP.
- iv. A Supplemental Transport Assessment to respond to Highways England's Technical Note 5.
- v. The Traffic Survey Report which sets out the findings of an Automatic Traffic Count survey in eight locations around Magna Park carried out over the two weeks, 24 hours per day, between 2 March and 15 March. The survey was undertaken to establish whether the shift changeovers at Magna Park coincide with an increase in traffic flows through local villages and Lutterworth town centre.

The Scope and Structure of this Cover Report

1.4 This report is structured as follows:

- Section 2 sets out and explains the amendment to the planning application to allow for the retention of Bittesby House;
- Section 3 provides a non-technical summary of the updates to Chapters 9 and 11 of the ES;
- Section 4 summarises the clarification of the landscape and visual impact evidence requested by TLP together with responses to a number of the points made by TLP in their response on the submitted ES chapter 9;
- Section 5 summarises the response to Highways England's Technical Note 5;
- Section 6 summarises the findings of the Traffic Survey Report; and
- Section 7 concludes with an account of how the amendment to the planning application and the further information provided on 21 April 2016 bear on the case for the grant of planning permission.

1.5 Appendix 1 to the Cover Report provides:

- A3 versions of the plans submitted at scale to amend the planning application (listed at 1.3.i.b above)
- A3 plans to assist the understanding of the amendment (listed at 1.3.i.c above).

2 THE AMENDMENT TO THE HYBRID PLANNING APPLICATION

The Provisions for Amending a Planning Application

- 2.1 The provisions for amending a planning application prior to its determination are set out in National Planning Practice Guidance (Paragraph: 061 Reference ID: 14-061-20140306) as follows:

“It is possible for an applicant to suggest changes to an application before the local planning authority has determined the proposal. It is equally possible after the consultation period for the local planning authority to ask the applicant if it would be possible to revise the application to overcome a possible objection. It is at the discretion of the local planning authority whether to accept such changes, to determine if the changes need to be reconsulted upon, or if the proposed changes are so significant as to materially alter the proposal such that a new application should be submitted.” Revision date: 06 03 2014

- 2.2 HDC have accepted the amendment to the application.

The Amendment to Retain Bittesby House

- 2.3 The amendment to the planning application:
- i. retains Bittesby House together with its principal outbuildings, grounds and trees to leave a 35-60m buffer between the House and the maximum extent of Parcel I;
 - ii. reduces the area of the distribution warehousing Parcel I to 4.76 ha (from 6.03 ha) and the maximum size of the built quantum to 23,100 sq m (from 30,500 sq m);
 - iii. reduces the area of warehousing development within the application site as a whole to 82.24 ha (from 83.51 ha) – 60.38 ha after allowing for the 21.86 ha parcel for DHL Supply Chain¹ which HDC has already resolved to permit subject to the S106 agreement; and
 - iv. reduces the quantum of distribution warehousing within the application site as a whole to 419,800 sq m (from 427,200 sq m) – 318,956 sq m after allowing for the DHL Supply Chain building.
- 2.4 While the amendment to retain Bittesby House compromises the commercial value of the Parcel I, that compromise is no longer sufficient to justify, primarily on heritage but also on landscape grounds, the demolition of Bittesby House. Although Bittesby House is a non-designated heritage asset of local interest, the Level 4 Survey evidence makes a connection between (the oldest part of) Bittesby House and the Bittesby Deserted Medieval Village Scheduled Monument (SM). That connection makes Bittesby House part of the

¹ The site of the DHL Supply Chain application (15/00919/FUL) site totals 55.41 ha; of this total, the area of the DHL Supply Chain demise is 21.86 ha – and is exactly the same area as Parcel G in the hybrid planning application (15/01531/OUT). The rest of the 55.41 ha DHL Supply Chain application site is made up of 1.16 ha of internal access corridor; 12.59 ha of structural landscape/amenity land; 6.58 ha of public highway; and 13.22 ha of land that is already part of Magna Park.

setting of the SM and a contributor to its significance. There is therefore a compelling case for amending the application to retain Bittesby House.

The Reasons for the Amendment to Retain Bittesby House

- 2.5 The Level 4 Survey of Bittesby House was commissioned by IDI Gazeley with the objective of providing a full historic buildings record of the House and its outbuildings in advance of the original proposal to demolish the buildings.² Up to that point, the best available evidence provided no convincing basis for connecting the SM to the largely 19th C building; instead the evidence showed that the house was of local interest only, principally for its connection to John Charles Bond (1856-1933), an eminent Leicestershire surgeon who was born in the house.
- 2.6 Set against that evidence were the gains entailed in the demolition of the house and its outbuildings for the following:
- i. the efficiency with which the site could be laid out for the arrangement of uses, its operation for distribution warehousing and the quantum of development that could be accommodated; plus
 - ii. the contributions to achieving the other objectives for the site's development:
 - the preservation of the SM and what the evidence at the time showed was its setting;
 - the greatest feasible protection, given the principal use of the site, of the site's main landscape features and view corridors;
 - significantly increasing (over its use for arable agricultural) the site's bio-diversity;
 - significantly increasing the public's access to the site and improving the links with footpaths and bridleways outwith it; and
 - removing from the developable area *and* from arable agricultural use the most sensitive area of the site archaeologically. The evidence showed that the below ground artefacts in this part of the site (now the Parcel given to meadowland) do relate to the SM, contribute to its significance and form part of the setting of the SM.
- 2.7 The optioneering work, having regard to all these considerations, came out in favour of the demolition of Bittesby House as the best, albeit still a compromise, solution to achieving all of the objectives for the development.³
- 2.8 The evidence on Bittesby House uncovered by the Level 4 Survey, however, reversed that balance. The Level 4 Survey established a narrative link between the desertion of the Bittesby medieval village and the construction, albeit much later, of Bittesby House (the

² IDI Gazeley's 3 March 2016 issue of further information issue included the Level 4 Survey report, a summary of it in the Cover Report, the updated ES Chapter 11 (Heritage & Archaeology Chapter 11) and Desk Based Assessment.

³ The optioneering work in respect to Bittesby House is set out in the submitted Design and Access Statement (DAS) at Section 5.2.23 and in the submitted Planning Statement at Section 6, paragraphs 6.39-6.44.

oldest part of the house); and Historic England and LCC Archaeology are convinced by that evidence. It follows that Bittesby House contributes to the significance of the SM.

- 2.9 The Level 4 Survey triggered the following process leading up to IDI Gazeley's decision to retain Bittesby House:
- i. A discussion of the findings of the Survey by IDI Gazeley with Historic England, LCC's Principal Archaeologist and HDC at a meeting on 11 April. The principal conclusion of the discussions was that, although IDI Gazeley's heritage specialists (CgMS) remain of the view that any link between Bittesby House and the SM is tenuous, the two statutory consultees are convinced by Level 4 Survey narrative: there has been a continuous settlement of the parish that links Bittesby House to the SM.
 - ii. A review of the optioneering work we had carried out prior to the 2 October 2015 submission of the planning application (referenced here in Footnote 3).
 - iii. The suggestion at the same time by HDC's case officer – in line with the best practice obligations placed upon local planning authorities by the National Planning Policy Framework (NPPF)⁴ – that we explore an amendment to the planning application to retain Bittesby House (broadly in line with what had been Option C in the submitted Design and Access Statement), together with confirmation that Historic England and LCC's Principal Archaeologist would support the amendment.
 - iv. The decision by IDI Gazeley to amend the planning application to retain Bittesby House in the ways submitted and described here.
- 2.10 Once IDI Gazeley made that decision, the detail of the proposal was worked up with the aim of achieving the following further objectives:
- the inclusion with the house of:
 - the important outbuildings in the retained area, together with the use of the existing yard for parking for the buildings' future use;
 - as much of the grounds of Bittesby House as technically possible;
 - as many of the existing trees as possible;
 - the retention of existing views towards Bittesby House;
 - an optimal visual relationship between Bittesby House and the SM, the retained buildings and their grounds;
 - the use of the retained building and its existing landscape to help screen the new warehousing buildings from their impact on the view from the SM (view 7 in ES Chapter 9), particularly during the period when the new planting will still be establishing;
 - the use of the physical (visual), plus the potential for a functional, relationship of Bittesby House to the "Hub" (the site of the Logistics Institute of Technology, Innovation Centre and estate office with its Local Heritage Centre) and to the Country Park – with a view to the options for re-using Bittesby House;

⁴ NPPF paragraph 187 states that local planning authorities "should look for solutions rather than problems"; and that "decision takers at every level should seek to approve applications for sustainable development where possible" and "work proactively with applicants to secure developments that improve the economic, social and environmental conditions of the area."

- the retention of as much of the avenue of trees as possible, including the limited area of ridge and furrow that remains in the avenue (the only part of the application site in which there are any earthwork ridge and furrow remains);
- a minimal impact on Parcel I – both the quantum of floorspace lost and the compromises needed to the layout of the Parcel; and
- minimal change to the access arrangements for the site as a whole as well as to Bittesby House and Parcel I.

2.11 The submitted amendment achieves all but one of these objectives – the retention of the whole of the avenue of trees and the remaining area of ridge and furrow. The discussion below explains.

The Amendment to the Planning Application

2.12 Appendix 1 provides A3 plans of the amendments to the application. The excerpts below in Figures 2.1-2.5 show the detail.

2.13 Figure 2.1 shows an excerpt from amended Parameter Plan 1. The plot of the retained Bittesby House is shaded yellow-green at the top of (the lavender-shaded) Parcel I.

Figure 2.1: Excerpt from amended Parameter Plan 1 – Bittesby House and reduced Parcel I



2.14 Figure 2.2 shows an excerpt from the amended landscape masterplan: Bittesby House is accessed from the principal transport corridor and is screened by a mix of retained existing trees, together with new trees and other planting from the (scaled down) Parcel I and its car park. The arrangement allows for the existing yard to be used for park in a suitably landscaped setting. As shown in more detail in Figure 2.4, part of the tree-lined avenue is retained.

Figure 2.2: The amended landscape masterplan: Bittesby House and grounds retained



2.15 Figure 2.3 shows the extent of the buffer between Bittesby House and the curtilage of Parcel I (60m from the building and 35-40m from the car and HGV parks).

Figure 2.3 The amended illustrative masterplan: Bittesby House and the buffer zones



2.16 Figure 2.4 shows the amended masterplan overlaid on the Tree Survey plan (provided in the ES, October 2015, Volume 3, Appendix F.6). The amendment to retain Bittesby House allows 14 existing trees to be retained (including about 5% of the L-shaped avenue of trees

Figure 2.4: Bittesby House: the retained trees



Figure 2.5: The tree-lined avenue (edged red) and remaining ridge and furrow (shaded green)



The avenue

- 2.18 While there is inherent value in the trees that make up the tree-lined avenue, the principal interest of the avenue is its coherence as a landscape feature. The landscape feature would be lost. The better trees in the avenue, however, are the trees most distant from Bittesby House: the Category A and B trees are concentrated in the “elbow” and short section of the L-shape where the remaining part of the ridge and furrow; while the long section of the L closest to Bittesby House contains mainly Category C trees.
- 2.19 The preference of Historic England, other things being equal, is to retain the ridge and furrow. But Historic England also take the view that the isolated remnant has little heritage value, most particularly as it is divorced from any meaningful context (the avenue was probably planted in the early part of the 19th C).
- 2.20 These considerations were set against the implications for the wider development and its viability of retaining the avenue. As Figure 2.5 shows, both the avenue as a whole and the small area of remaining ridge and furrow (shaded green) lies across a large part of both distribution warehousing Parcels I and H. As Figure 2.5 illustrates, retaining the avenue as a whole would both effectively remove Parcel I from distribution warehousing use and substantially reduce the developable area of Parcel H; retaining just the section with the ridge and furrow would affect both parcels and also remove any context. The losses to the developable areas of H and I could not be made up by increasing the developable area in another part of the site without, at the same time, sacrificing the achievement of still more important objectives for the site’s sustainable development.
- 2.21 Thus the consequence of retaining the avenue and ridge and furrow would both compromise the masterplanning of the site and entail a very substantial reduction in the proposed quantum of warehousing floorspace. The consequence in turn would to undermine the viability of the whole of the development. The quantum of warehousing space and the market appeal of the offer (i.e., the size, configuration and layout of the distribution parcels, their accessibility and their relationship to operations in the existing Magna Park) is what makes the development viable. The value of the warehousing is what makes it feasible for IDI Gazeley to give 44.36% of the site to the Country Park, meadowland and other publicly accessible open space and green infrastructure (i.e., 102.95 ha of the full 232.1 ha Zone 1 site⁵); to invest in the public’s access to this land and to enrich its biodiversity; and to coordinate and deliver the other uses which capture the cluster value of the extended Magna Park (the Logistics Institute of Technology (giving South Leicestershire its first further and higher education institute, the Innovation Centre, the Railfreight Shuttle and Terminal and the Driver Training Centre.
- 2.22 The balance of all of these considerations led us to conclude that the disadvantages of retaining the avenue would significantly outweigh the merits. Historic England’s priority is the retention of Bittesby House itself; and, in landscape terms, the loss of the tree-lined

⁵ The make up of the 232.1 ha Zone 1 site is: 1.27 ha Bittesby House and grounds; 82.24 ha distribution warehousing; 102.95 open space, structural landscape, footpaths and bridleways; 6.58 ha Hub with the LIT campus, Innovation Centre and estate office with the Local Heritage Centre; 2.68 ha Holovis expansion; 1.71 ha reed beds / biodiscs; 15.40 ha internal road corridor, buffer landscape and SUDS; 9.15 ha land in the public highway; and 10.12 ha land within Magna Park now (including part of the Mere Lane lagoon area, the Services Farm and the Argosy Way area and south/east of Mere Lane).

avenue is at least partly compensated by the very substantial net gain in proposed tree planting both in the immediate area of Parcels I and H and across the site as a whole. The new trees, in time, will become Category A trees; and these will also have the additional value of compensating for the Category C trees for which there is no replacement plan with the ending of the High Level Stewardship Scheme in 2017.

The Benefits for the Development

- 2.23 The principal benefit that follows from the retention of Bittesby House is the preservation of its contribution to the significance of the Scheduled Monument.
- 2.24 There are also other benefits, as follows:
- Bittesby House is a visible artefact of the narrative of the site's continued use following the desertion of the medieval village. That visibility contrasts with the below ground, buried, archaeology. Thus its visibility assists the public's appreciation of the SM and its wider landscape context.
 - The retention of the trees around Bittesby House (and the retention of Bittesby House itself) helps to contain the visual impact of the warehouse buildings at Parcels I and H on views towards Bittesby House. The 14 trees (1 Category A tree, 6 category B trees and 7 category C trees) will also reduce the visual impact during the construction phase with no time delay in that area for the proposed new tree planting to mature.
 - Because Bittesby House is located on the "elbow" between the site of the new Magna Park Hub (the site of LIT, estate office – and unless it is moved to Bittesby House – the Local Heritage Centre) and the concentration of proposed small business space (the Innovation Centre and Holovis expansion building), its retention creates a range of opportunities to improve the functional as well as the visual relationship between these and between these and the Country Park. Candidate uses include further facilities for LIT, more workspace, public amenities to support the Country Park and a home (instead of the new estate office) for the Local Heritage Centre.
- 2.25 From a wider perspective, the retention of Bittesby House – with its candidate future uses – reinforces IDI Gazeley's original vision for a development that will open the whole of Magna Park, its assets and opportunities to the communities it neighbours and affects. That vision is:
- An exemplar, on the international stage, of a sustainable distribution park that captures the social, economic and environmental advantages of a logistics cluster for local communities as well as for the industry and its employees.*
- 2.26 Overall, the retention of Bittesby House results in a loss from Parcel I of 7,400 sq m of distribution floorspace. The effect is to reduce the maximum quantum of distribution floorspace for which planning permission is sought to up to 419,800 sq m (from the submitted maximum of up to 427,200 sq m).
- 2.27 The maximum land area given to distribution warehousing is amended to up to 82.24 ha from up to 83.51 ha in the submitted application.

- 2.28 Of the total area of the application site for distribution warehousing (82.24 ha), HDC has already granted planning permission for the DHL Supply Chain facility on the 21.86 ha parcel that in this application is Parcel G.⁶
- 2.29 In effect, therefore, this amended hybrid application seeks planning permission for the speculative development (as opposed for a named occupier) for distribution warehousing of the remaining 60.38 ha after allowing for the DHL Supply Chain parcel. In floorspace terms, the further quantum of warehousing after allowing for DHL Supply Chain is a maximum of 318,956 sq m (i.e., 418,900 sq m less the 100,844 sq m for DHL Supply Chain).
- 2.30 It is this speculative quanta – 60.38 ha and 318,956 sq m – that is comparable to the 53.6 ha / 278,709 sq m, also additional to the DHL Supply Chain facility, that is proposed by db symmetry to create a second distribution park to the south (application 15/00865/OUT).⁷ The quantitative difference in the warehousing proposals between the IDI Gazeley and db symmetry schemes is just 6.78 ha / 40,247 sq m – equivalent to (probably) no more than one, and possibly two, warehouse buildings. The proposals for symmetry park, however, include no other uses than warehousing (save for an HGV park which IDI Gazeley's application also proposes).

⁶ HDC resolved to permit Application 15/00919/FUL, subject to the S10, on 28 January 2016.

⁷ 53.6 ha is the sum of the warehousing development parcels in the symmetry park parameter plan (15/00865/OUT, 13-107 Rev R)

3 UPDATES OF ES CHAPTERS 9 AND 11

Introduction

- 3.1 The retention of Bittesby House changes the assessments of the impact of the application proposals on the environment in terms of:
- landscape and visual effects (Chapter 9 of the ES); and
 - heritage and archaeology effects (Chapter 11 of the ES).
- 3.2 Updates of both chapters to take into account the amendments to the planning application are submitted separately. This section provides a short non-technical summary of the updates to those chapters.

Landscape and Visual Effects

- 3.3 The scope of the updated landscape effects assessment has been informed by a review of potential changes with the retention of Bittesby House, outbuildings and grounds (as shown in the plans in the Appendix to the Cover Report and excerpted in Section 2 Figures 2.1-2.5), and is limited to a consideration of changes to judgements associated with direct effects on the low lying clay vale arable farmland landscape type which lies within the Upper Soar Landscape character area and falls within the Zone 1 application site.
- 3.4 There would also be some indirect effects on the Soar tributary flat floodplains and terrace landscape type. These, however, are considered to be limited and not to affect previous judgements, having regard to the intervening railway, woodland blocks and the other proposed changes around Bittesby House. We take the same view of the anticipated indirect effects on the High Cross plateau offsite to the west of the A5. There are also no effects anticipated on the Lutterworth Lowlands Character Area. The judgements on these also remain unchanged. The scale and nature of effects are also not anticipated to change judgements previously reached regarding the level of landscape cumulative effects.
- 3.5 The update to ES Chapter 9 finds and concludes as follows with regard to the retention of Bittesby House, its principal outbuildings, grounds and the 14 trees shown as shown in Figures 1-5 in Section 2 of this Cover Report:
- The degree of earthworks, principally fill, previously anticipated to create a level platform for Parcel I to the east would now be limited with the retention Bittesby House. The footprint of construction activity will be reduced on the site and within this landscape type. Creation of an additional attenuation area would be limited to former arable land set away from Bittesby House to the north-west.
 - Therefore, a reduction in the scale of adverse effects on the landscape and existing positive features during construction would be anticipated. The changes to the scheme have provided an opportunity to conserve some trees of value and to maintain a built feature that will contribute positively in terms of a sense of place. The positive influences of the retention of the Bittesby house and existing mature trees are also considered to extend beyond the low lying clay vales landscape type into the Soar tributary flat floodplains and terrace landscape type, including the Bittesby Scheduled Monument to the north and east.

- These effects are considered to give rise to a reduction in the size/scale of effect anticipated that would reduce the previous judgement of the scale of effects, at a site level, from high adverse to high to medium. The changes, however, are not considered to be great enough to alter judgements regarding the geographic extent (medium) or the duration of construction effects (medium) across the whole of the low lying clay vale landscape type in Zone 1 of the application site.
- Therefore, the overall magnitude of construction effects on the landscape of the low lying clay vale farmland is considered to remain as high at the Site level as the scheme updates are not considered to be a large enough positive change to alter judgements previously reached regarding the level of landscape effect. The level of landscape effect judgement therefore would remain as locally significant (moderate to major adverse), at the site level in the construction stage.
- During construction, the size/scale of visual effect on users of the permissive right of way and permissive open access land represented by view 7 (see the submitted Chapter 9) would be reduced in a southerly direction where Bittesby House and trees in the vicinity would now be retained. These features would also now partially filter views toward Parcel H beyond and some of the construction activity at lower levels including along the A5. These changes to the scheme are anticipated to have the effect of reducing the scale of effect to medium adverse from medium to high. However, the geographic extent of visible activity is anticipated to remain as medium to high adverse, given the widespread nature of activities and the visibility of building works and cranes at higher levels beyond the Bittesby House and in the wider scene. The duration of effect would also remain the same. Therefore, during construction, despite a reduction in the scale of construction effect experienced from view 7, this is not anticipated to change the conclusions previously reached regarding magnitude (medium to high) nor the judgement regarding level of effect which would continue to be major to moderate and significant at this stage.
- During operation, the changes to retain Bittesby House, surrounding trees and immediate grounds would conserve these elements of local distinctiveness that contribute positively in terms of visual amenity. Through the incorporation of extended grounds an open setting will be conserved to the north, and lines of sight maintained between a part of the Bittesby Deserted Medieval Village Scheduled Monument (SM) and between parts of Mere lane and the house. An additional new landscape framework established between the house and adjacent logistics building parcels will establish by the mid-term to provide further containment between the house, its grounds and adjacent parking areas and building units. An open landscape setting will also be maintained in the adjacent valley bottom to the east.
- During operation in the short term, the presence of Bittesby House and mature trees in the vicinity would reduce the scale of adverse visual effects in a southerly direction experienced from view 7. Bittesby House would remain as a feature of the view and existing large scale trees will provide some filtering of the view beyond to Parcel H. The shortening of Parcel I and the associated building has the effect of reducing the apparent height of the building ridge line from this angle of view. There would therefore be positive visual effects arising from the retention of these features.

- The change in scale of adverse effects is noticeable but together with the geographic extent of the view affected, is not anticipated to reduce enough to change the submitted judgements on the magnitude of effect (high to medium) in the short to medium term. This is principally due to the limitations to the establishment in the short term of new planting in the surrounding area, including alongside Parcels I.
- However, in the mid-term, once the new landscape framework has established around Parcel I and in the LIT Parcel E, the magnitude of visual effect, with the addition of the retention of Bittesby House and the large scale trees around it, is anticipated to reduce from medium to medium to low adverse.
- Therefore, locally significant adverse effects during operation continue to be anticipated in views experienced from the *worst* case location at viewpoint 7 until the mid-term. Thereafter, visual effects are still considered to be not significant, and would be anticipated to reduce from moderate to moderate to minor adverse, from the worst case location represented by view 7 with the retention of Bittesby House and trees in the vicinity. The visual effects would also continue to be not significant from elsewhere, where there is currently permissive access in and alongside the SM.

- 3.6 Given this assessment, the only residual level of effect that will change is the level of visual effect associated with walkers on a permissive path and permissive open access land, represented by View 7 in the vicinity of the SM. The amendments to the application (the retention of Bittesby House, principal outbuildings and grounds) would reduce effects by the mid-term from moderate to moderate to minor adverse.
- 3.7 By year 10, with the retention of the Bittesby House and the existing and developing landscape around it, these effects are judged to be not significant by year 10 in line with the submitted ES.

Heritage and Archaeology

- 3.8 The update of ES Chapter 11, Heritage and Archaeology, finds and concludes as follows as a result of the amended proposal to retain Bittesby House and its principal outbuildings and grounds is as follows:
- The impact of the amended development on Bittesby House is no longer large adverse, but instead minor adverse;
 - The significance of the impact is minor rather than moderate; and
 - No change in mitigation is required – save to provide the Level 4 Survey as part of the historic record.

4 CLARIFICATION AND RESPONSE TO THE REVIEW OF LANDSCAPE IMPACTS

Introduction

- 4.1 The Landscape Partnership (TLP) provides HDC with specialist advice on landscape issues to assist its assessment of the planning application, and has reviewed the submitted ES Chapter 9 (landscape and visual impact) and its appendices. This section of the Cover Report provides a non-technical summary of the response to TLP's review together with the clarifications sought by TLP. A separately submitted report by Nicholas Pearson Associates (NPA; also notified on 21 April 2016) provides the full detail of the clarifications and responses.
- 4.2 The scope and methodology of the submitted ES on the scheme's landscape and visual effects was agreed with TLP in advance of the conduct of the ES. TLP have participated in all of the pre-application meetings in which landscape issues were discussed, as well as in the post-submission meeting with LCC's footpath officer on the assessment of the visual experience of users of the site's existing public rights of way and the permissive routes.⁸

The Clarifications and Other Responses to TLP

- 4.3 The principal points in the clarifications and other responses by NPA to the TLP review are, briefly, as follows:
- i. TLP suggests that the impact of the application proposals on the Green Belt in Rugby (on the other side of the A5) is material in planning terms. There is, however, no basis in planning policy – either in the development plan (HDC's Core Strategy) or in the National Planning Policy Framework (NPPF) – for construing any impact from development outside the Rugby Green Belt as a "harm" (or a benefit) to that Green Belt. TLP have misconstrued what NPPF paragraph 88 means by "other harm".
 - ii. TLP's assessment of the proposal against criteria set by HDC's 2001 saved Local Plan policy EV/7 (sic)⁹ should also be set aside. HDC did not consider, saved policy EV/5 to be relevant to the determination of the DHL Supply Chain application, and it is not relevant here:
 - Saved policy EV/5 (control of development in the countryside) pre-dates the NPPF by some 11 years and is significantly out of step with its provisions. The Secretary of State obliges HDC to read its saved policies alongside more up to date national policy; NPPF para 215 explains that the weight to be given to policies adopted before the NPPF must be according to the degree of consistency with the policies.
 - Saved policy EV/5 is inconsistent with the NPPF to a significant degree, as is the more up to date Core Strategy Policy CS17 – which HDC acknowledge in its

⁸ IDI Gazeley's response to the Footpath Officer's initial comments was published on 3 March 2016, and forms part of the documentation on HDC's website for this planning application.

⁹ TLP meant EV/5 (the references to EV/7 are a typo).

Committee Report on the DHL Supply Chain application. There is no basis in up to date national policy for a blanket constraint on all development in the countryside (other than, as EV/5 and CS17 would have it, for a narrow range of largely agricultural uses).¹⁰

- obliges HDC to. EV/5 is inconsistent to a significant degree with the NPPF which post-dates HDC's Local Plan (e.g., NPPF paragraph 28), and NPPF paragraph 215 accordingly obliges HDC to accord little weight to the conflict with it. That inconsistency explains why HDC did not consider saved policy EV/5 in its committee report on the DHL Supply Chain application. Core Strategy CS17 serves a similar purpose to saved policy EV/5, but it too preceded the NPPF and is inconsistent with it. Finally, Thus TLP's assessment of the application proposals against saved policy EV/5 is not material and should be set aside.
- iii. The width of tree planting varies between 10 metres and 25 metres in off-site planting belt areas.
- iv. TLP, though correct in assuming a 10 year construction period, do not appear to recognise that the development will be *phased* over the 10 years. Thus large parts of the site will remain untouched for years. That fact means that mitigation planting can begin at year one on the more sensitive and later parts of the site so that, by the time the construction begins in these areas, there will have been 8-10 years of mitigating planting growth. IDI Gazeley is content to accept a condition that obliges, for example, the northern part of the site to be developed last and that the mitigation planting in this area be implemented in year 1. There is, in this area, already a substantial buffer between the closest warehouse development Parcel L and the White House Farm complex; and the open space and long views are maintained where there are direct views from the properties. As a consequence, NPA stands by its judgments.
- v. TLP would appear not to have considered, in reaching a view on the levels of sensitivity of the views experienced by users of some footpaths, the intervening features that already moderate the views at issue – including the A5 (already visible and busy), the disused rail line through the site and the existing Magna Park buildings and the effects of distance. As a consequence, NPA stands by its judgements.
- vi. The retention of Bittesby House and the trees will further reduce the magnitude of adverse effects from view 7 (from the SM) in the short term; and bridleway users would also experience some beneficial effects in the short term. In the longer term, the mitigation planting will confer further beneficial effects.
- vii. NPA consider TLP to have overplayed the effects on the Upper Soar landscape during construction and operation because TLP do not take into account key moderating factors:
 - the intensive arable production of much of the site that has had some notable and detrimental effects on the landscape;

¹⁰ Nonetheless, as the submitted Planning Statement sets out in full, the application proposals contribute to most of the objectives for the narrow range of development which CS17 allows in the countryside.

- the effect of the disused rail line on the sensitivity of the landscape, which has also truncated the SM and this part of the Soar tributary flat floodplains and terrace;
- the fact that the application proposals wholly avoid the most sensitive parts of the Soar tributary flat floodplains and terrace, including the SM and the large areas of land adjoining it;
- the fact that the geographic extent of the indirect effects of the construction works on the Soar tributary flat floodplains including the SM are limited by the containment afforded by the valley bottom location, railway embankment and existing tree belts; and
- the impact of the busy A5 on the character and sensitivity of the western parts of the Upper Soar low lying clay vale farmland and Soar tributary flat floodplains and terrace.

4.4 NPA also disagree with some of TLP's views on the cumulative impact of the hybrid proposals. NPA consider the cumulative impact of the hybrid application with the *committed* developments to be not significant by the mid-term; but that the combination with symmetry park would trigger some significant adverse effects.

- 4.5 Further to NPA's clarifications and responses, we also note that TLP, in reaching their judgment on the landscape relative merits of an extension to Magna Park versus a second and separate distribution park to the south, seem not to have accounted the following:
- i. Though the extension to Magna Park is larger at 211.56 ha (excluding 9.15 ha within the public highway, the 10.12 ha that is already within Magna Park's footprint – part of the Mere Lane lagoon, the services farm and other land to the south/east of Mere Lane – and the 1.27 ha Bittesby House demise), the areas given to distribution warehousing, by far the main impact on the landscape, are not significantly different. TLP would not appear to have compared like with like.
 - ii. 102.95 ha of the 211.56 ha Magna Park extension site is given to countryside and structural landscape: 48.7% (the landscape buffer alongside the internal highway is additional to the structural landscape this figure accounts for).
 - iii. 82.24 ha of the extension site is given to warehouse development – 38.2% of the 211.56 ha site – in Parcels G-L (35.4% of the full 232.1 ha in the application red line). Parcel G is 21.86 ha, and is already permitted for DHL Supply Chain (subject to completing the S106 agreement). The remaining distribution Parcels H-L together total a maximum of 60.38 ha (for up to 318,056 sq m).
 - iv. The comparable figures for warehousing development at symmetry park (i.e., development in addition to DHL Supply Chain) are a maximum of 53.6 ha and up to 279,708 sq m (53.6 ha is 68% of the 79 ha symmetry park site, a figure that excludes the land needed for symmetry park in the public highway).
 - v. Thus the maximum difference in the quantum of additional distribution warehousing between the two schemes is 6.78 ha and 40,247 sq m – typically amounting to one or perhaps two warehouse buildings. While the Magna Park extension also includes the

Hub with the LIT campus and Innovation Centre, these lie low within the landscape; and the Holovis expansion buildings are in the lee of the now permitted DHL Supply Chain building. The area of the site proposed for development including these parcels rises from 82.24 ha to 91.5 ha.

- vi. The landscape proposals for the extension to Magna Park (which build on and extend Magna Wood to wrap the whole of the park in a publicly accessible green envelope) will very significantly enrich the site's biodiversity over its present use and *increase* the public's access to the site. The proposals (through the S106) also protect and manage this land in perpetuity both for its biodiversity and habitat value and for public access, not just replacing but substantially adding to the extent of the area that has benefited from the High Level Stewardship Scheme that comes to an end in 2017.
 - vii. The 25.4 ha of the symmetry park scheme that is not given to warehousing parcels is allocated to internal highways and structural landscape. The symmetry park scheme offers no public access to the land within the scheme that is not developed for warehousing or reserved for internal highways.
 - viii. TLP appear not to acknowledge, or account in the Magna Park proposals' favour, that the Soar Valley tributary is retained in its existing course and placed at the centre of the 42 ha Country Park and alongside the 28 ha meadow. (The proposals now also retain further parts of the setting of the SM and now also the contribution of Bittesby House to that setting.)
 - ix. TLP however note, in favour of symmetry park, that the proposal retain the watercourse in its existing setting – but do not acknowledge that it is only part of the watercourse and its existing setting that is retained. The symmetry park proposals move the remainder of the water course to a new alignment and *fill in* a large part of the affected valley in order to level that land for development.
- 4.6 NPA, further, do not consider that TLP's conclusions on the level cumulative effects of the hybrid proposals with symmetry park would change due to the order in which, if both were consented, the developments would be constructed.
- 4.7 Thus, in these instances too, we take the view that TLP have overplayed the differences in the landscape effects of the two applications. To conclude that the extension to Magna Park is de facto more harmful due to its greater size is to overstate that difference. To ignore the fact that the symmetry park proposal removes a large part of a local watercourse and valley and re-introduces a watercourse in a wholly new setting while filling the rest, and while failing to acknowledge that the IDI Gazeley scheme conserves the tributary valley watercourse and enhances it with new wetlands is inexplicable.
- 4.8 Finally, TLP will need to consider further its commentary that contrasts the cumulative landscape effect of the IDI Gazeley scheme with symmetry park to take into account the amendment of the application to retain Bittesby House and the benefits that follow for the setting of the SM and views from it towards Parcels I and H.

5 SUPPLEMENTAL TRANSPORT ASSESSMENT

Introduction

5.1 Highways England, in Technical Note 5 on the hybrid planning application raised the points and requested the information below:

- Amended geometric parameters at A5 northern access roundabout.
- Assignment of Logistics Institute trips at A5 northern access roundabout.
- A5 Gibbet Hill roundabout – cost sharing agreement.
- A4303/ A426 roundabout – queuing to M1 Junction 20.
- Scale and size of HGV Training Centre.

5.2 We address each in the supplemental transport assessment.

The Supplemental Transport Assessment

5.3 It was reported in paragraph 4.4 of the Supplementary Transport Assessment (STA) that there were a number of errors identified in the original measurements of the geometric parameters at the proposed A5 northern access roundabout. The most significant error related to the entry radius which had been measured incorrectly on each entry arm. Minor changes to other parameters were also made and a comparison of the original and revised measurements was set out in Table 4.1 of the STA. All subsequent ARCADY analysis was based on the revised measurements. No changes have been made to the design of the A5 northern access roundabout which was included as Appendix E in the original Transport Assessment for the hybrid application.

5.4 The expectation is that LIT will be signed via the A5/ Mere Lane roundabout for traffic approaching from both directions on the A5. This is to avoid potential conflict with the four units in the north western corner of the site. However it is acknowledged that some visitors approaching the Logistics Institute on the A5 from the north may choose to ignore the signage, turn left at the proposed northern access roundabout and drive southbound within the site to reach the Logistics Institute.

5.5 To represent this potential situation, a sensitivity test has been undertaken whereby all traffic associated with the Logistics Institute with an origin or a destination to the northwest has been reassigned via the northern access roundabout. ARCADY has been rerun on this basis and the northern access roundabout is predicted to operate within capacity during both peaks. During the AM peak a maximum RFC of 0.69 is predicted on the A5 northern arm while during the PM peak a maximum RFC of 0.59 is predicted on the A5 southern arm. Predicted queue lengths are two vehicles and one vehicle respectively. The revised ARCADY output is attached.

5.6 In relation to Gibbet Hill, IDI Gazeley have agreed with HE that a satisfactory resolution can be achieved by the S106 either through a capped sum contribution to a specific scheme pro rata to the anticipated share of the application's estimated peak hour impact, or through a condition that places a cap on the quantum of development that can be occupied before a suitable improvement scheme is in place to which IDI Gazeley contribute proportionately.

Once contributions are agreed and secured it would be up to Highways England in consultation with other highway authorities to decide when to implement the scheme.

- 5.7 Further discussions are underway, but the already submitted (3 March 2016) Supplementary Transport Assessment (STA) sets out the ARCADY results at the A4303/ A426 roundabout and indicates that the junction would be operating within capacity in 2026 with the proposed development and with the agreed junction improvements. A maximum queue of 31 vehicles is predicted on the A4303 east arm.
- 5.8 This arm is of concern to Highways England because excessive queuing could extend to affect the operation of M1 Junction 20. However when spread over two lanes, a queue of 31 vehicles would extend to around 90 metres. The distance between the A4303/ A426 roundabout and M1 Junction 20 is around 350m and therefore the queue on the A4303 east approach should not extend to the Motorway junction even if queues were to form unequally on the approach.
- 5.9 The HGV Training Centre is proposed to the south of the A4303 and would lie between the gatehouse, the railfreight shuttle terminal and the HGV parking area. It would occupy an area of 0.427 hectares and provide 16 car parking spaces. There would be a small two storey office within the gatehouse to administer and manage the training facility. As its name suggests the purpose of the facility is to train drivers to allow them to acquire a HGV licence to drive legally on the public highway. Given the size of the facility and the limited car parking, the peak hour trip generation associated with this use will be small and unlikely to have a material impact on the surrounding highway network.

6 THE TRAFFIC SURVEY REPORT

The Survey

- 6.1 IDI Gazeley commissioned AECOM to undertake Automatic Traffic Counts (ATC) at eight locations surrounding Magna Park near Lutterworth between Wednesday 2 March and Tuesday 15 March 2016 to provide 24 hour data for a continuous two week period. The sites were:
- Site 1 – Highcross Road, Claybrooke Magna
 - Site 2 – Woodway Lane, Claybrooke Prva
 - Site 3 – Lutterworth Road, Ullesthorpe
 - Site 4 – Ullesthorpe Road, Ashby Parva
 - Site 5 – Mere Lane, Ullesthorpe
 - Site 6 – Ullesthorpe Road, Bitteswell
 - Site 7 – A426 Rugby Road, Lutterworth
 - Site 8 – Coal Pit Lane, Willey.
- 6.2 The primary purpose of the surveys was to establish whether an increase in traffic volumes on roads that pass through some local villages, particularly those situated to the north of Magna Park coincides with the main shift changeovers at Magna Park. Residents of Ullesthorpe, Bitteswell and Ashby Parva are especially concerned about the impact of Magna Park and there is a local perception that large numbers of employees cut through these villages to avoid travelling through Lutterworth and on the A4303 as part of their journey to and from work.
- 6.3 Vehicles were classified based on axle length although for the purposes of analysing traffic patterns during the shift changeover. Vehicle types were also combined in the analysis to show the general trend for all vehicles.
- 6.4 To provide an indication if routes prohibited by the routing agreement are being used by significant numbers of HGVs, the ATC data was classified by vehicle type to allow the number of HGVs to be identified. Although this does not provide a direct link to Magna Park, it does provide a basis for establishing if there are higher than expected volumes of HGVs which could be an indication of the breach of the agreement.
- 6.5 The full survey and analysis of the findings is provided in a report also published on 21 April 2016.

The Findings

- 6.6 The data collected on the A4303 just to the east of Magna Park clearly identifies spikes in demand at 6am, 2pm and 10pm confirming that flows on roads immediately adjacent to the Park are influenced by the shift changeover.
- 6.7 However, at all sites to the north of Magna Park including at sites close to the villages of Ullesthorpe, Bitteswell and Ashby Parva, there was no evidence of a significant increase in traffic to coincide with the shift changeovers at Magna Park.

- 6.8 This indicates that Magna Park employees are *not* routinely using the minor roads to the north of the Park to travel to and from work.
- 6.9 The ATC data also allowed the number of HGVs to be identified, and it is also clear that there are very few HGVs using the minor road network to the north of Magna Park. The expectation is that the vast majority of the very few HGVs that were recorded were not related to Magna Park and would have had a legitimate reason to be using these roads.

Next Steps

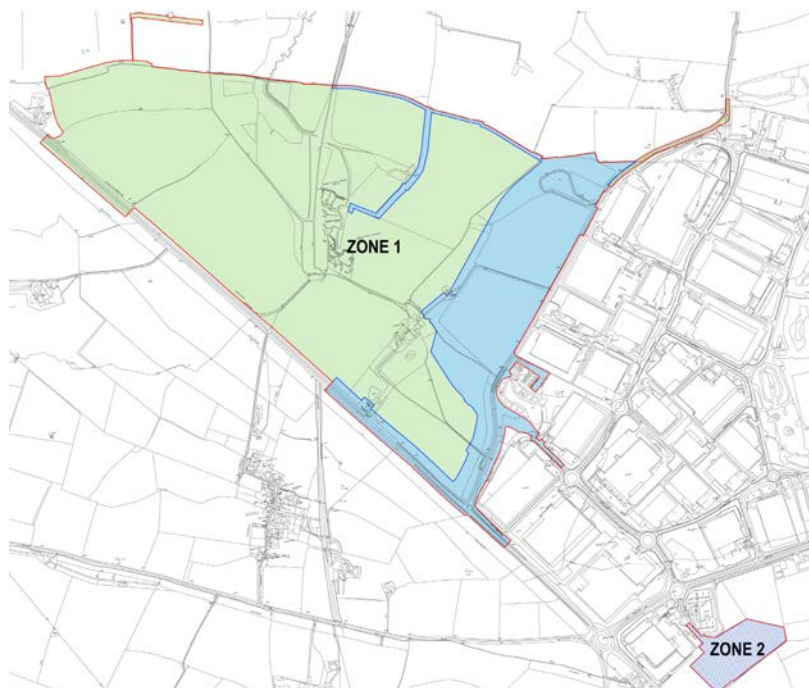
- 6.10 There is also a perception that large numbers of heavy goods vehicles (HGVs) use the minor road network to the north of Magna Park and that the majority have either an origin or destination at the Park. To investigate this perception further, IDI Gazeley has committed to undertaking Automatic Number Plate Recognition (ANPR) surveys during April 2016. The ANPR survey, which will last for one complete week, will identify if HGVs that are related to Magna Park are using roads that are prohibited through the Magna Park Routing Agreement. The results of this survey will be reported in a separate report that will be prepared following completion of the ANPR survey at the end of April.

7 THE CASE FOR THE GRANT OF PLANNING PERMISSION

The Context: the Implications of the DHL Supply Chain Planning Permission

- 7.1 The amended planning application is for up to 419,800 sq m of distribution floorspace on parcels totalling 82.24 ha out of the full 232.1 ha proposed extension site to Magna Park. The full site, however, includes land that is already within Magna Park's footprint (10.12 ha – the Services Farm, land south/west of Mere Lane/around Argosy Way and part of the Mere Lane Lagoon area), land in the public highway (9.15 ha), and the retained Bittesby House and grounds (1.27 ha).
- 7.2 Excluding these areas – i.e., land that is “new” and in the countryside – the hybrid application site is 211.56 ha. Of this 211.56 ha, 102.95 ha – 48.67% – is given to open space that is also publicly accessible.
- 7.3 The 82.24 ha in the six parcels (G-L) allocated for distribution warehousing accounts for 35.43% of the full 232.1 ha site and compares to the 44.36% of the full site that is given to accessible open space. If the Hub and Holovis Parcels are also added, the share of the full site given to development (91.5 ha) rises to 39.42% (cf the 44.36% given to open space). Parameter Plan 1 (in Appendix 1 to this report) shows the location and extent of the Parcels.
- 7.4 Figure 7.1 below shows, shaded blue, the part of the application site that has been granted planning permission for the DHL Supply Chain facility (subject to the completion of the S106). The whole site totals 55.41 ha which (like the full 230.3 ha Zone 1 extension site) includes existing parts of Magna Park (10.12 ha) and land in the public highway (6.58 ha).

Figure 7.1: The DHL Supply Chain planning permission overlaid on the full extension site



- 7.5 The demise for DHL Supply Chain – Parcel G in the hybrid application – is 21.86 ha. The remainder of the 55.41 ha blue-shaded area (the area of the DHL Supply Chain application site) is accounted by: a) 10.12 ha that is already part of Magna Park (the Mere Lane lagoon, Services Farm, land to the south and west of Mere Lane and Argosy Way); b) the 1.16 ha internal access corridor (which also provides access to Bittesby House); c) 15.69 ha of structural landscape, footpaths and bridleways; and 6.58 ha of land in the public highway (Mere Lane and A5).
- 7.6 Thus, of the six parcels G-L for distribution warehousing in the amended hybrid planning application, Parcel G at 21.86 ha already has planning permission for DHL Supply Chain. The further increment of distribution warehousing for which planning permission is sought – i.e., that is additional to the permitted quantum – is a maximum of 60.38 ha in five parcels together totalling up to a maximum of 318,956 sq m for speculative warehousing development (speculative because the occupiers are not yet known).
- 7.7 The additional 60.38 ha of land and 318,956 sq m for additional distribution development compares to extend Magna Park beyond the DHL Supply Chain site compares to the additional 53.6 ha and 278,709 sq m sought to create a second distribution warehousing park to the south (symmetry park).
- 7.8 The grant of planning permission for the DHL Supply Chain is material to the planning case for the hybrid application for a number of reasons:
- It is accepted that Core Strategy policies CS7h (preventing further expansion of Magna Park beyond its existing footprint) and CS17 (preventing development in the countryside other than for a narrow range of principally agricultural purposes) are inconsistent with the provisions of the NPPF to a significant degree. As a consequence, very little weight can be given to these parts of the development plan in the planning determination.
 - The principle of the acceptability of extending Magna Park has been established.
 - The market's need for additional distribution floorspace is accepted, as is the suitability of an extension to Magna Park to meet that need.
 - It is accepted that DHL Supply Chain could in principle meet its needs elsewhere in the East Midlands, but its preference is to expand at Magna Park where it already has three operations, and environmental and economic efficiency advantages
 - It is accepted that an extension to Magna Park makes use of the park's existing infrastructure and builds on its critical mass of existing employees – with commercial gains for occupiers and environmental gains in the wider public interest.
 - It is accepted that the single management of the extended Magna Park creates the opportunity both to coordinate these efficiencies and environmental gains (e.g., more efficient use of HGV fleets, more attractive bus services that will benefit from the shorter journey times through the extended park, the take up of car sharing schemes) and to redress existing concerns (e.g., the impact of the existing park's lighting).
 - The impact of the DHL development on the SM amounts to less than substantial harm, and that this harm is offset by the benefits of the development in the public interest.
 - The impact of the development on Bittesby House is acceptable.

- The demolition of Lodge and Emmanuel Cottages is acceptable.
- The fact that the low level of unemployment locally is not a reason to discount the value of the jobs created by the scheme in the balance of considerations.
- The residual highways impacts after the improvements are acceptable.
- It is accepted that the DHL Supply Chain proposals accord with:
 - the relevant parts of the development plan that are consistent with the provisions of the NPPF.
 - the relevant parts of the NPPF and thus constitute sustainable development in the terms of the NPPF taken as a whole.

7.9 The grant of permission for the DHL Supply Chain means that the full extension will add incrementally, albeit cumulatively, to the already permitted development proposals.

7.10 What remains to be permitted, having regard to these established principles, are:

- the northern roundabout on the A5;
- the internal highway corridor;
- the further 60.38 ha of land given to distribution warehousing for a further 318,956 sq m of buildings;
- the 42 ha Country Park and the 28 ha meadowland, together with the realignment and landscape improvements to the public rights of way and the making permanent of the currently permissive footpaths and bridleways, with both aligned to link with the wider network;
- the up to 3,700 sq m Logistics Institute of Technology and its campus, to give Harborough (and South West Leicestershire) its only further and higher education institution and applied research facility, with its emphases on industry collaboration for the education and research programmes, “work while learning” and dual use of LIT’s campus facilities with the community – with an estimated 400 on-site student head count on site (equating to a throughput of c 1,000 individuals per year taking courses/gaining qualifications/pursuing degrees etc in any year) and c 85% in the 18+ age group and a high proportion already in work (including within Magna Park);
- the up to 2,300 sq m Innovation Centre to provide easy-in, easy-out space for small and medium-sized businesses, both providing opportunities to capture the commercial potential of the LIT’s applied research output and filling a gap in the local property market;
- the up to 7,000 sq m building to allow Holovis, a hugely successful local high tech business, to expand on site;
- the Local Heritage Centre to exhibit and interpret the site’s history – making use of the very significant new information put together from the site work (the historic buildings record, the archaeological work and related surveys and the archive IDI Gazeley hold on the Bitteswell air field); and
- the demolition of the existing buildings other than Bittesby House and its outbuildings in line with the amendment to the planning application.

The Case for the Grant of Planning Permission

- 7.11 As the Planning Statement submitted with the application in October 2015 sets out, the application proposals constitute sustainable development in the terms of the NPPF. To the extent that the Harborough District Core Strategy 2011-2028 is consistent with the NPPF, the application proposals accord with it and are wholly in accordance with the relevant provisions of the NPPF and the related national planning guidance.
- 7.12 The application proposals generate significant economic as well as social and environmental benefits. We understand that HDC's evidence base on the need in the county for additional distribution floorspace is being refreshed. In that context, we stress that the hybrid application contributes, including the DHL scheme, 82.2 ha to that need if the one-off, single user, requirement for DHL Supply Chain is included.
- 7.13 It should not be, however, as their need might have been met anywhere in the region..
- 7.14 If the already permitted DHL Supply Chain scheme is excluded (as it should be) the amended application proposal contributes 60.38 ha to the need.
- 7.15 Moreover, the application site extends an existing park: that is, it makes use of the Magna Park's existing infrastructure and would be brought within Magna Park's single management. That fact makes it feasible (as the application proposes) to capture, deliver and manage the scale advantages of the extended park for occupiers (e.g., efficient use of HGV fleets), their employees (career ladders, job security, on the job training, professional qualifications, access to alternatives to single car use etc) and for the community (LIT, the jobs, the country park, the protection in perpetuity of the currently only permissive bridleways and footpaths, the conservation of the scheduled monument).
- 7.16 For example, the fact that the existing Magna Park and the proposed extension share the existing and proposed highway infrastructure will allow bus services to enter the park at one end and exit at another to pick up passengers rather than loop back on themselves through the park. The result is maximised passenger pick up and reduced journey times – making it much more likely that the proposed bus services will be commercially viable. The two new bus services introduced this spring will serve the existing park (one to Leicester and one to Rugby) and its c 9,300 employees. The extension would make those services more viable still because of the reduced running time through the park and the greater number of employees.
- 7.17 The application's economic, social and environmental benefits have been pursued in tandem to capture the gains that only an extension to Magna Park on the scale proposed is capable of securing and which the proposals promote. Chief among those benefits are the delivery of what would be the only further and higher education institute in Harborough (and in South Leicestershire) targeted on a growing, increasingly skilled and economically critical sector to the UK which is also uniquely important to the future prosperity of the local area and county.
- 7.18 As the environmental evidence demonstrates, the proposals cause no harm that would significantly and demonstrably outweigh those benefits. The amendment of the planning application to retain Bittesby House protects its contribution to the significance of the SM,

and confers a range of further benefits for the realisation of the vision for the scheme and the local communities which, with the industry, lie at the heart of that vision.

- 7.19 Thus, as the documents accompanying the application show, there are no reasons why planning permission should be withheld.

APPENDIX 1
AMENDED SUBMISSION PLANS (A3)



PARAMETER SCHEDULE - ZONE 1

PARCELS A1, A2, A3 - STRUCTURAL LANDSCAPE

- Parcel Area: up to 32.51 Ha
- to include: footpaths, bridleways, cyclepaths, service routes, verges, swales/ watercourses/ ponds and supporting landscape
- landscape corridor widths: 10m min between Parcel L&M2 and from 20m to >25m elsewhere

PARCEL B - PRINCIPAL ACCESS CORRIDOR

- Parcel Area: up to 34.67 Ha
- to include: main road, footpaths, bridleways, service routes, verges, swales/ watercourses/ ponds and supporting landscape

PARCEL C - BITTESBY COUNTRY PARK

- Parcel Area: up to 42.32 Ha
- to include: public footpaths/bridleway (with some sections repositioned), watercourses, wetlands, strategic attenuation basins and Medieval Village of Bittesby

PARCEL D - THE MEADOW LAND

- Parcel Area: up to 28.12 Ha
- to include: existing permissive and a public bridleway

PARCEL E - MAGNA PARK HUB

- Parcel Area: up to 6.58 Ha
- Proposed Use: D1 Logistics Institute of Technology + B1(a) & D1 Estate Office + B1 (a) & (b) Innovation Centre
- Maximum floor area - National Centre for Logistics Qualifications (D1): up to 3,700 sqm (GIA)
- Maximum floor area - Innovation Centre (B1a, B1b): up to 2,325 sqm (GIA)
- Maximum floor area - Estate office (B1a, D1): up to 300 sqm (GIA)
- Max unit height: up to 125.00m AOD
- Unit FFL: up to 110.5m(NW) and up to 113.00m (NE)

PARCEL F - SMALL BUSINESS

- Parcel Area: up to 2.68 Ha
- Use: B1 (a) & (b) - Holovis
- Maximum floor area: up to 7,000 sqm (GIA)
- Max unit height: up to 122.5m AOD
- Unit FFL: up to 111.5m

PARCEL G

- Parcel Area: up to 21.86 Ha
- Use: B8 Storage & Distribution and ancillary office (B1)
- Maximum floor area: up to 100,844sqm (GIA)
- Max unit height: up to 142.6m AOD
- Unit FFL: up to 119.6m

PARCEL H

- Parcel Area: up to 13.85 Ha
- Use: B8 Storage & Distribution and ancillary office (B1)
- Maximum floor area: up to 69,850 sqm (GIA)
- Max unit height: up to 139.00m AOD
- Unit FFL: up to 120.5m

PARCEL I

- Parcel Area: up tp 4.76 Ha
- Use: B8 Storage & Distribution and ancillary office (B1)
- Maximum floor area: up to 23,100sqm (GIA)
- Max unit height: up to 135.50m AOD
- Unit FFL: up to 119.00m

PARCEL J

- Parcel Area: up to 5.19 Ha
- Use: B8 Storage & Distribution and ancillary office (B1)
- Maximum floor area: up to 28,000sqm (GIA)
- Max unit height: up to 130.70m AOD
- Unit FFL: up to 114.20m

PARCEL K

- Parcel Area: up to 28.57 Ha
- Use: B8 Storage & Distribution and ancillary office (B1)
- Maximum floor area: up to 163,000 sqm (GIA)
- Max unit height: up to 132.70m AOD
- Unit FFL: up to 114.20m

PARCEL L

- Parcel Area: up to 8.01 Ha
- Use: B8 Storage & Distribution and ancillary office (B1)
- Maximum floor area: up to 35,000 sqm (GIA)
- Max unit height: up to 132.20m AOD
- Unit FFL: up to 115.70m

PARCEL M1 - Reed beds and Bio-discs

- Existing Rees beds and Bio-discs plot expanded
- Parcel Area: up to 0.58 Ha

PARCEL M2 - Reed beds and Bio-discs

- Parcel Area: up to 1.13 Ha

Legend:

- Planning Boundary
- Parcel Boundary
- Redirected Watercourse
- Existing Watercourse

- Water attenuation Zones / Wetlands

ZONE 1: B8, B1, D1 AND PUBLIC OPEN SPACE (OUTLINE)

- Structural Landscape - Parcels A1, A2, A3
- Principal Access Corridor - Parcel B
- Bittesby Country Park - Parcel C
- Bittesby Deserted Medieval Village Schedule Monument
- The Meadow Land - Parcel D
- Magna Park Hub - Parcel E
- Small Business - Parcel F
- B8 Storage & Distribution and ancillary office (B1) - Parcels G, H, I, J, K, L
- Reed beds & Bio-discs - Parcels M1 & M2
- Bittesby House & Grounds

ZONE 2 - RAILFREIGHT SHUTTLE TERMINAL, HGV PARKING AND HGV TRAINING CENTRE (DETAILED)

- Railfreight Shuttle Terminal

AREA SUMMARY - ZONE 1 (GIA)

- RED LINE AREA: 232.10 Ha
- Bittesby Country Park: 42.32 Ha
- Bittesby House & Grounds: 1.26 Ha
- Meadow Land: 28.12 Ha
- Other open space, structural landscaping and access: 67.18 Ha
- Storage & Distribution (B8): up to 419,800 sqm
- Logistics Institute of Technology and campus(D1): up to 3,700 sqm
- Estate Office, conference facility and heritage exhibition(B1a, D1): up to 300 sqm
- Innovation Centre (B1a, B1b): up to 2,325 sqm
- Holovis (B1a, B1b): up to 7,000 sqm

ZONE 2

- RAILFREIGHT SHUTTLE TERMINAL
- HGV PARKING
- HGV TRAINING CENTRE
- SUBJECT TO DETAILED PLANNING APPLICATION

0m

PLANNING
c h e t w o o d s
a r c h i t e c t s
22 Frederick Street, Birmingham B1 3HH
T: +44 (0) 121 234 7500 F: +44 (0) 121 234 7501

Project: Job Number: 3657
MAGNA PARK EXTENSION:
HYBRID PLANNING APPLICATION
IDI Gazeley
Brookfield Logistics Properties
Drawing Title: Drawing No.:
PARAMETER PLAN (1 of 2)
Drawing Size A0

Drawn RS: Date: 06.07.15 Scale: 1:4000
Reviewed by: Drawing No.: 3657-34
Rev: 18



- Legend:**
- Planning Boundary
 - Parcel Boundary
 - No Yard Zone / HGV circulation only
 - No Yard Zone & no HGV circulation
 - Max Unit Height - up to 122.5m AOD
 - Max Unit Height - up to 125.0m AOD
 - Max Unit Height - up to 130.7m AOD
 - Max Unit Height - up to 132.2m AOD
 - Max Unit Height - up to 132.7m AOD
 - Max Unit Height - up to 135.5m AOD
 - Max Unit Height - up to 139.0m AOD
 - Max Unit Height - up to 142.6m AOD
 - Bittesby House & Grounds

BUILDING HEIGHT AND YARD RESTRICTIONS - ZONE 1

PARCEL E - MAGNA PARK HUB

- Max unit height: up to 125.00m AOD
- Unit FFL: up to 110.5m(NW) and up to 113.00m (NE)

PARCEL F - SMALL BUSINESS

- Max unit height: up to 122.5m AOD
- Unit FFL: up to 111.5m

PARCEL G

- Max unit height: up to 142.6m AOD
- Unit FFL: up to 119.6m
- Yards to be positioned on NW & SE elevations only.
- Carparking only to SW elevation
- Offices to face Principal Access Corridor

PARCEL H

- Max unit height: up to 139.00m AOD
- Unit FFL: up to 120.5m
- Yards to be positioned on NW & SE elevations only
- Carparking only to NE elevation
- Offices to face Principal Access Corridor
- Where parcels subdivided into plots, min. 10m landscape zone will be introduced between plots.

PARCEL I

- Max unit height: up to 135.50m AOD
- Unit FFL: up to 119.00m
- Yards to be positioned on SE elevation only
- Carparking only to NE elevation
- Offices to face Principal Access Corridor
- Where parcels subdivided into plots, min. 10m landscape zone will be introduced between plots.

PARCEL J

- Max unit height: up to 130.70m AOD
- Unit FFL: up to 114.20m
- Yards to be positioned on NW elevation only
- Carparking only to SW & SE elevations
- Offices only to SW elevation / western end of the unit.
- Where parcels subdivided into plots, min. 10m landscape zone will be introduced between plots.

PARCEL K

- Max unit height: up to 132.70m AOD
- Unit FFL: up to 114.20m
- Yards to be positioned on NW & SE elevation
- Hgv circulation only to NE elevation
- Carparking only to SW elevation
- Offices to face Principal Access Corridor
- Where parcels subdivided into plots, min. 10m landscape zone will be introduced between plots.

PARCEL L

- Max unit height: up to 132.20m AOD
- Unit FFL: up to 115.70m
- Yards to be positioned on SE elevation
- No yard or regularly circulating traffic on NW elevation
- Carparking only to SW elevation
- Offices to face Principal Access Corridor

ZONE 2

- RAILFREIGHT SHUTTLE TERMINAL
- HGV PARKING
- HGV DRIVER TRAINING CENTRE
- SUBJECT TO DETAILED PLANNING APPLICATION

Notes:
Consultants must verify all dimensions on site before commencing any work on shop drawings. This drawing is not to be scaled. See typical dimensions only.
Subject to statutory approvals and survey.
Notes:
Building areas are liable to adjustment over the course of the design process due to the ongoing construction of developments.



MAGNA PARK Extension

HYBRID PLANNING APPLICATION:

15/01531/OUT

**Addendum to the Environmental Statement –
the Grant of Planning Permission for DHL Supply Chain 15/00919/FUL**

Volume 3B.1: Addendum Transport Assessment

Volume 3B.2: Appendices 1 and 2 to the Addendum ES Section 7: Air Quality

1 November 2016

Magna Park Extension: Hybrid Application

Addendum Transport Assessment
Report plus Appendices A - I

October 2016

Revision Schedule

Rev	Date	Details	Prepared by	Reviewed by	Approved by
	October 31st 2016	Final	Jon Ashcroft Associate	Paget Fulcher Technical Director	Paget Fulcher Technical Director

AECOM
URS House, Horne Lane
Bedford
MK40 1TS
United Kingdom
Tel: +44 (0)1234 349 641
Fax: +44 (0)1234 216 268
www.ursglobal.com

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1. INTRODUCTION

1.1 General

- 1.1.1 This Addendum Transport Assessment has been prepared in support of the Hybrid planning application to account for the granting of planning permission for the DHL Supply Chain on 25 October 2016. The permission for DHL is for up to 100,844, sq.m. of distribution floorspace in the B8 storage and distribution employment category on land to the north and west of Mere Lane and to the east of the A5(T).
- 1.1.2 Prior to the award of planning permission on 25 October 2016, the DHL scheme had twice received a resolution to grant permission at planning committees in January and July 2016. The requirement to reconsider the Council's original decision arose because of the need to apply the appropriate level of weight to the harm to the designated heritage assets.
- 1.1.3 To account for its confirmed planning status this Transport Assessment (TA) has been prepared on the basis that DHL is now a committed development. This includes all associated highway improvements including the new roundabout on Mere Lane linking DHL to the existing Magna Park, the new A5/ Mere Lane roundabout and the capacity improvements at the A426/ A4303 junction (Whittle roundabout). The proposed improvements at the Gibbet Hill roundabout will be triggered by the Hybrid application and therefore do not form part of the mitigation package being provided in support of DHL.
- 1.1.4 The scope of this addendum TA has been discussed with both Highways England and Leicestershire County Council (LCC) and the key assessment parameters that have been agreed are summarised below:
- To ensure that the impact of DHL as a committed development is not overestimated, average rather than 85th percentile trip rates have been adopted;
 - M6 Junction 1 and M69 Junction 1 have been excluded from the assessment as it was agreed by Highways England that the impact of the development at these junctions is not material;
 - The geometric parameters used in the ARCADY assessments will be reviewed in light of comments received from LCC;
 - Assessments have been undertaken for both the manual and LLITM assessments; and
 - The impact of symmetry park will be considered as a sensitivity test.
- 1.1.5 To consider the impact of the Hybrid development, two Transport Assessments were prepared. The first was based on a manual assignment of development related trips and was accepted by Highways England as being a reasonable basis for the assessment of the Hybrid scheme. The TA based on a manual assessment was submitted with the application in October 2015. The second TA was based on output from the Leicester and Leicestershire Integrated Transport Model (LLITM) which was a requirement of LCC. This TA was submitted in March 2016.
- 1.1.6 Between the preparation of the TAs for the manual and LLITM assessments, DHL received its first resolution to grant planning permission and at that point it effectively became a committed development. Therefore for the TA based on the LLITM output, a manual adjustment was made to the 2026 'without development' flows to reflect the fact that DHL had been approved and was a committed scheme. The DHL flows that were used to make the adjustment were based on 85th percentile trip rates and therefore for this assessment these have been replaced by the use of average trip rates to ensure the impact of DHL as a committed development is not overestimated.

- 1.1.7 This document also reviews the change in public transport provision that has taken place at Magna Park and also presents the findings of a survey that was undertaken to establish the number of HGV movements through Pailton.

1.2 Layout of Report

- 1.2.1 Following this introduction, Section 2 provides a brief description of the derivation of the revised traffic flows used in this assessment.
- 1.2.2 Section 3 presents a review of the geometric parameters used in the ARCADY assessments in light of comments received by LCC.
- 1.2.3 Section 4 presents the revised highway impact assessments on the basis that DHL is a committed development. Both the manual and LLITM assessments are presented.
- 1.2.4 Section 5 provides a summary of the progress that has been made on other transport related matters since the resolution to grant planning permission on 13 July 2016
- 1.2.5 A summary and conclusions are set out in Section 6.

2. REVISED TRAFFIC FLOWS & HIGHWAY NETWORK

2.1 Manual Assessment

2.1.1 To reflect the fact that DHL is now a committed development, the following adjustments have been made to the traffic flows and highway network in the vicinity of Magna Park:

- Traffic generated by DHL has been added to the total committed development flows based on the use of average trip rates;
- The amount of B8 development floorspace being promoted by the Hybrid has been reduced by 100,844 sq.m. to 326,507 sq.m;
- The 'without development' scenario includes amendments to the highway network to reflect the fact that with DHL as a committed development, there will be a link to the existing Magna Park via an extension of Argosy Way.

2.1.2 Based on these parameters the revised traffic flows are presented in Appendix A.

2.2 LLITM Assessment

2.2.1 To reflect the fact that DHL is now a committed development, the following adjustments have been made to the traffic flows and highway network in the vicinity of Magna Park:

- Traffic generated by DHL has been manually added to the 2026 'without development' traffic flows from LLITM based on the use of average trip rates;
- The 2026 'without development' traffic flows from LLITM have been manually adjusted to reflect the fact that with DHL as a committed development, there will be a link to the existing Magna Park via an extension of Argosy Way.

2.2.2 Based on these parameters the revised traffic flows are presented in Appendix B.

3. REVIEW OF ARCADY GEOMETRIC PARAMETERS

3.1 General

- 3.1.1 LCC sent an email on 29 September 2016 providing comments on the Transport Assessment and Travel Plan prepared for the Hybrid planning application. One of the comments relates to the geometric parameters that have been used in the ARCADY models and at each junction where a discrepancy in the geometric parameters is identified LCC recommends an amendment to specific measurements.
- 3.1.2 In light of these comments, the geometric parameters that were input to the original ARCADY models have been revisited to verify the values. Measurements have been taken in CAD based on the geometric design criteria of roundabouts set out in Section 7 of TD 16/07 'Geometric Design of Roundabouts'. In some instances the amendments suggested by LCC have been accepted and the ARCADY models have been updated accordingly. However in other instances AECOM has identified a different measurement and has used these values as the basis for the revised assessment.
- 3.1.3 A summary of the changes that have been made to the geometric parameters is provided below.

3.2 A4303/ Hunter Boulevard

- 3.2.1 The approach from the south (George Clothing HQ) has had the entry width reduced to 7.3m and the flare set to 0m in accordance with LCC comments.

3.3 A4303/ Coventry Road

- 3.3.1 The approach from the north (Coventry Road) has had the entry width increased to 3.9m and the flare reduced to 20m in accordance with LCC comments. However the entry radius has been re-measured by AECOM at 18.7m not 10.5m as suggested by LCC.
- 3.3.2 At the approach from the east (A4303 east) the approach half width and the entry width have been re-measured by AECOM at 7.8m not 7.7m as suggested by LCC. The flare has been set to 0m in accordance with LCC comments.
- 3.3.3 The approach from the west (A4303 west) has had the flare length reduced to 18m in accordance with LCC comments.

3.4 A4303/ A426 (Whittle Roundabout)

- 3.4.1 Previously LCC has expressed concerns that the capacity benefits achieved by the improvement scheme proposed as part of the DHL application would be absorbed by the additional traffic associated with the Hybrid application.
- 3.4.2 In response a further improvement has been prepared by Hydrock and is shown on Drawing No. C161222 – LCC1004 Rev P1 presented in Appendix C. Hydrock is the consultant progressing the detailed design of the highways works that have been agreed as part of the planning approval for DHL. The main enhancement of the Hydrock scheme is an increase in the flare length on the A4303 eastern arm to approximately 80m allowing three lanes of traffic to form over a longer distance on the approach to the give way line.
- 3.4.3 To avoid any abortive works and to minimise the duration of the roadworks required to upgrade the junction, the proposal is to provide a single improvement based on the Hydrock scheme. It is considered that this will not only provide an appropriate level of mitigation to offset the impact of both

DHL and the Hybrid application but will also provide significant relief to a capacity issue that would occur even if the Hybrid development were not to proceed.

3.5 M1 Junction 20

- 3.5.1 The inscribed circle diameter has been reduced to 103m for all arms in accordance with LCC comments.
- 3.5.2 The entry width at the southbound off-slip has been reduced to 12m in accordance with LCC comments.
- 3.5.3 The entry width at the A4303 approach has been reduced to 8.2m in accordance with LCC comments. However AECOM has measured the flare length at 10m rather than 3m as suggested by LCC.
- 3.5.4 AECOM has measured the flare length on the A304 at 67m not 51m as suggested by LCC.

3.6 A5/ Mere Lane

- 3.6.1 As part of the detailed design process Hydrock has made some minor amendments to the geometric parameters of this roundabout and the revised layout is presented in Appendix D. The ARCADY parameters have been re-measured by AECOM using CAD and these have been used as the basis for the revised assessments presented in this TA.
- 3.6.2 LCC has requested a revision to the ARCADY model at this junction to reflect the situation whereby all southbound traffic on the A5 uses the outside lane only. LCC suggests that the ARCADY model is amended with the left turn flow removed and the southbound A5 approach modelled as a single lane. The implication is that there will be direction arrows on the southbound approach with all north-south traffic directed to the offside lane and all left turning traffic to the nearside lane.
- 3.6.3 AECOM does not accept this proposal on the basis that both lanes will be available to all southbound traffic and that particularly during the peaks when traffic flows are at their highest, the expectation is that both lanes will be well used. The proposal to restrict the southbound movement to a single lane would therefore significantly underestimate the capacity.
- 3.6.4 During discussions with Highways England and LCC it has been established that the A5/ Mere Lane roundabout has been designed in accordance with TD 9/93 (Highway Link Design) and TD 16/07 (Geometric Design of Roundabouts) of Volume 6 of the DMRB.
- 3.6.5 In accordance with design standards the dual carriageway has been terminated at the roundabout with lane merging requirements applied on the exit. It is not proposed to incorporate lane designation arrows as it is considered that not providing them will encourage traffic to use both lanes to continue straight ahead and merge into the single carriageway at the exit in accordance with standard practice. Hydrock discussed the issue of lane designation arrows with Highways England at a recent meeting regarding departure applications and in the view of Highways England designation arrows were not required and they did not want them to be included in the design submission.
- 3.6.6 Whilst AECOM acknowledges LCC's concerns regarding the perceived conflicts of traffic merging on the exit to the roundabout, this is standard practice and occurs at many similar roundabouts. It is considered that the proposal to apply lane designation arrows at the roundabout would lead to more serious conflicts between traffic on the section of dual carriageway approaching the roundabout as slower moving drivers realise they are in the wrong lane and at the last moment attempt to move into the offside lane to go straight on.

- 3.6.7 There is also the potential for drivers to abuse the left turn lane in peak periods and force their way onto the roundabout to travel straight on. In light of these concerns it is considered that in common with Highways England, the use of lane designation arrows at the A5/ Mere Lane roundabout is not appropriate.

3.7 Mere Lane/ Argosy Way/ Site Access

- 3.7.1 As part of the detailed design process Hydrock has made some minor amendments to the geometric parameters of this roundabout and the revised layout is presented in Appendix D. The ARCADY parameters have been re-measured by AECOM using CAD and these have been used as the basis for the revised assessments presented in this TA.

4. REVISED HIGHWAY IMPACT ASSESSMENT

4.1 General

- 4.1.1 The revised highway impact assessment has been undertaken on the basis that DHL is now a committed development using both the manual and LLITM traffic flows presented in Appendices A and B respectively. Assessments have been undertaken for three scenarios,
- The 'without development' scenarios include all committed development including DHL;
 - The 'with development' scenarios include all committed development plus the Hybrid;
 - The 'with development + symmetry park' scenarios include all committed development plus the Hybrid plus symmetry park.
- 4.1.2 The assessments including symmetry park have been provided as a sensitivity test as the development does not have a planning consent. Where mitigation measures have been proposed to accommodate symmetry park, the junction models have been updated to reflect the proposed improvements.
- 4.1.3 Capacity assessments have been undertaken using junction modelling software packages ARCADY and TRANSYT.
- 4.1.4 ARCADY calculates queues and delays at roundabouts. The critical outputs are the Ratio of flow to capacity (RFC) and the maximum queue predicted for each arm. If the RFC is below 1.00 then the junction is operating within capacity and little or no queuing will result. In order to allow for a performance margin, a value of 0.85 is more typically considered to represent the desirable maximum RFC value.
- 4.1.5 TRANSYT 12 has been used to test the capacity of the proposed traffic signal scheme at the Gibbet Hill roundabout. The TRANSYT programme is the most commonly used method for optimising signal timings in signal networks where benefits can be obtained by co-ordination between adjacent junctions. The method is suitable for roundabouts where some or all of the arms are signalised. By using various facilities that are available within TRANSYT, such as link weightings and queue penalties, the programme can be used model traffic behaviour on the roundabout, control queue lengths and find signal timings such that queues do not from to block upstream junctions.
- 4.1.6 The method of applying TRANSYT to signalised roundabouts has been designed to arrive at timings that keep the circulating sections of the roundabout free flowing without resulting in significant congestion on entry arms. The method results in entry links running at high degrees of saturation, ideally 85 to 95 per cent, which should result in circulatory links having lower degrees of saturation, ideally below 80 per cent.

4.2 Manual Assessment

- 4.2.1 The series of tables below summarise the output from the capacity assessments based on the manual assignment of traffic flows. These are presented in Appendix A.

Proposed Northern Access Roundabout on the A5

- 4.2.2 Access to the northern part of the development is proposed via a new roundabout on the A5 approximately 260 metres south of White House Farm. This roundabout is not required for DHL and will be delivered towards the latter stages of the Hybrid development.

- 4.2.3 The results of the ARCADY assessments in 2026 are summarised in the tables below. Full model printouts from this analysis are presented in Appendix E.

Table 4.1: Summary of Main Performance Indicators at A5 North Access – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.689	2	0.324	0
Site Access	0.153	0	0.214	0
A5 South	0.512	1	0.608	2

- 4.2.4 Table 4.1 indicates that with development the new access roundabout on the A5 would operate within capacity in 2026 with a maximum RFC of 0.689 on the A5 north during the AM peak.

Table 4.2: Summary of Main Performance Indicators at A5 North Access – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Site Access	0.729	3	0.337	1
Mere Lane East	0.161	0	0.216	0
Argosy Way	0.524	1	0.639	2

- 4.2.5 Table 4.2 indicates that this junction would continue to operate within capacity with the addition of symmetry park.

Mere Lane/ Argosy Way/ Site Access

- 4.2.6 Access to DHL will be provided via a new roundabout on Mere Lane that will connect the site to Magna Park to the south and the A5 to the west. The connection to Magna Park is achieved by an extension to Argosy Way between existing plots 1400 and 1500. To access the site a new access road will be constructed to form the north western arm of the roundabout.
- 4.2.7 A drawing showing the access arrangements is presented in Appendix D.
- 4.2.8 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix E.

Table 4.3: Summary of Main Performance Indicators at Mere Lane Site Access – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Site Access	0.055	0	0.103	0
Mere Lane East	0.086	0	0.040	0
Argosy Way	0.077	0	0.083	0
Mere Lane West	0.160	0	0.074	0

- 4.2.9 Table 4.3 indicates that without development the new access roundabout on Mere Lane would operate well within capacity in 2026 with no queues predicted on any arm.

Table 4.4: Summary of Main Performance Indicators at Mere Lane Site Access – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Site Access	0.248	0	0.436	1
Mere Lane East	0.109	0	0.053	0
Argosy Way	0.233	0	0.162	0
Mere Lane West	0.340	1	0.153	0

- 4.2.10 Table 4.4 indicates that with development the new access roundabout on Mere Lane would continue to operate within capacity in 2026 with a maximum RFC of 0.436 on the site access during the PM peak.

Table 4.5: Summary of Main Performance Indicators at Mere Lane Site Access – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Site Access	0.248	0	0.439	1
Mere Lane East	0.115	0	0.055	0
Argosy Way	0.233	0	0.162	0
Mere Lane West	0.342	1	0.164	0

- 4.2.11 Table 4.5 indicates that symmetry park would have very little impact on the operation of this junction with very small increases in RFC predicted on the Mere Lane arms.

A5/ Mere Lane

- 4.2.12 As part of the planning consent for DHL the existing A5/ Mere Lane priority junction will be upgraded to a roundabout,. The detailed design of the roundabout is being progressed by Hydrock and the latest layout which has been approved by Highways England, is presented in Appendix D.
- 4.2.13 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix E.

Table 4.6: Summary of Main Performance Indicators at A5/ Mere Lane Junction – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.609	2	0.352	1
Mere Lane	0.165	0	0.159	0
A5 South	0.502	1	0.679	2

- 4.2.14 Table 4.6 indicates that the A5/ Mere Lane junction would operate within capacity without development with a maximum RFC of 0.679 on the A5 south in the PM peak.

Table 4.7: Summary of Main Performance Indicators at A5/ Mere Lane Junction – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.754	3	0.502	1
Mere Lane	0.314	0	0.378	1
A5 South	0.765	3	0.812	4

- 4.2.15 Table 4.7 indicates that with the addition of the Hybrid development, the A5/ Mere Lane junction would continue to operate within capacity with a maximum RFC of 0.812 of the A5 south during the PM peak.

Table 4.8: Summary of Main Performance Indicators at A5/ Mere Lane Junction – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.795	4	0.517	1
Mere Lane	0.338	1	0.385	1
A5 South	0.781	3	0.863	6

- 4.2.16 Table 4.8 indicates that the A5/ Mere Lane junction would continue to operate within capacity with the addition of symmetry park albeit with an RFC in excess of 0.85 on the A5 south during the PM peak.

Cross in Hand Roundabout

- 4.2.17 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix E.
- 4.2.18 To accommodate symmetry park improvements are proposed at this junction and the ARCADY model has been updated accordingly.
- A5 north – entry width increased to 8.6m
 - A5 north – flare length increased to 60m
 - A4303 – entry width increased to 8.6m

Table 4.9: Summary of Main Performance Indicators at the Cross in Hand Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.796	4	0.504	1
A4303	0.596	1	0.580	1
A5 South	0.575	1	0.649	2
B4027 Lutterworth Road	0.227	0	0.419	1
Coal Pit Lane	0.474	1	0.330	0

- 4.2.19 Table 4.9 indicates that without development the Cross in Hand roundabout would operate within capacity with a maximum RFC of 0.796 on the A5 north during the AM peak.

Table 4.10: Summary of Main Performance Indicators at the Cross in Hand Roundabout – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.931	11	0.737	3
A4303	0.719	3	0.658	2
A5 South	0.687	2	0.731	3
B4027 Lutterworth Road	0.367	1	0.508	1
Coal Pit Lane	0.704	2	0.412	1

- 4.2.20 Table 4.10 indicates that the addition of the Hybrid development, the Cross in Hand roundabout would continue to operate within capacity albeit with an RFC in excess of 0.85 on the A5 north during the AM peak.

Table 4.11: Summary of Main Performance Indicators at the Cross in Hand Roundabout – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.906	9	0.665	2
A4303	0.752	3	0.761	3
A5 South	0.855	6	0.885	7
B4027 Lutterworth Road	0.378	1	0.515	1
Coal Pit Lane	0.876	6	0.490	1

- 4.2.21 Table 4.11 indicates that the Cross in Hand roundabout would continue to operate within capacity with the addition of symmetry park although in the AM peak there are three arms with an RFC in excess of 0.85. In the PM peak the RFC on the A5 south is also predicted to be above the 0.85 threshold.

A4303/ Hunter Boulevard

- 4.2.22 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix E.
- 4.2.23 To accommodate symmetry park improvements are proposed at this junction and the ARCADY model has been updated accordingly.
- A4303 west – entry width increased to 11.0m
 - A4303 west – flare length increased to 45m

Table 4.12: Summary of Main Performance Indicators at the A4303/ Hunter Boulevard Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Hunter Boulevard	0.215	0	0.436	1
A4303 East	0.675	2	0.376	1
Access to George HQ	0.075	0	0.291	0
A4303 West	0.583	1	0.446	1

- 4.2.24 Table 4.12 indicates that without development the A4303/ Hunter Boulevard roundabout would operate within capacity with a maximum RFC of 0.675 on the A4303 east during the AM peak.

Table 4.13: Summary of Main Performance Indicators at the A4303/ Hunter Boulevard Roundabout – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Hunter Boulevard	0.271	0	0.559	1
A4303 East	0.831	5	0.445	1
Access to George HQ	0.096	0	0.313	0
A4303 West	0.664	2	0.525	1

- 4.2.25 Table 4.13 indicates that with the addition of the Hybrid development the A4303/ Hunter Boulevard roundabout would continue to operate within capacity with a maximum RFC of 0.831 on the A4303 east during the AM peak.

Table 4.14: Summary of Main Performance Indicators at the A4303/ Hunter Boulevard Roundabout – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Hunter Boulevard	0.319	0	0.630	2
A4303 East	0.873	7	0.545	1
Access to George HQ	0.094	0	0.321	0
A4303 West	0.649	2	0.461	1

- 4.2.26 Table 4.14 indicates that the A4303/ Hunter Boulevard roundabout would continue to operate within capacity with the addition of symmetry park albeit with an RFC in excess of 0.85 on the A4303 east during the AM peak.

A4303/ Coventry Road

- 4.2.27 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix E.

Table 4.15: Summary of Main Performance Indicators at the A4303/ Coventry Road Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Coventry Road	0.709	2	0.401	1
A4303 East	0.682	2	0.426	1
Mobile Home Park	0.052	0	0.017	0
A4303 West	0.365	1	0.695	2

- 4.2.28 Table 4.15 indicates that without development the A4303/ Coventry Road roundabout would operate within capacity with a maximum RFC of 0.709 on Coventry Road in the AM peak.

Table 4.16: Summary of Main Performance Indicators at the A4303/ Coventry Road Roundabout – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Coventry Road	0.847	5	0.495	1
A4303 East	0.885	7	0.496	1
Mobile Home Park	0.100	0	0.019	0
A4303 West	0.440	1	0.832	5

- 4.2.29 Table 4.16 indicates that with the addition of the Hybrid development the A4303/ Coventry Road roundabout would continue to operate within capacity albeit with an RFC in excess of 0.85 on the A4303 east during the AM peak.

Table 4.17: Summary of Main Performance Indicators at the A4303/ Coventry Road Roundabout – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Coventry Road	0.918	9	0.566	1
A4303 East	1.035	40	0.534	1
Mobile Home Park	0.188	0	0.020	0
A4303 West	0.473	1	0.922	10

- 4.2.30 Table 4.17 indicates that symmetry park would have a significant impact at the A4303/ Coventry Road roundabout. The critical arm is the A4303 east which during the AM peak is predicted to be operating above capacity with a queue of 40 vehicles. During the PM peak the A4303 west is predicted to have a RFC above the 0.85 threshold.

A4303/ A426 (Whittle Roundabout)

- 4.2.31 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix E.
- 4.2.32 It should be noted that all three assessments are based on the revised Hydrock layout presented in Appendix C.

Table 4.18: Summary of Main Performance Indicators at the Whittle Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A426 North	0.803	4	0.719	3
A4303 East	0.775	3	0.630	2
A426 South	0.585	1	0.576	1
A4303 West	0.489	1	0.655	2

- 4.2.33 Table 4.18 indicates that without development the Whittle roundabout would operate within capacity with a maximum RFC of 0.803 on the A426 north during the AM peak.

Table 4.19: Summary of Main Performance Indicators at the Whittle Roundabout – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A426 North	0.879	7	0.797	4
A4303 East	0.868	6	0.679	2
A426 South	0.663	2	0.610	2
A4303 West	0.571	1	0.792	4

- 4.2.34 Table 4.19 indicates that with the addition of the Hybrid development the Whittle roundabout would continue to operate within capacity although during the AM peak the A426 north and the A4303 east are predicted to have RFC values in excess of 0.85.

Table 4.20: Summary of Main Performance Indicators at the Whittle Roundabout – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A426 North	0.916	9	0.859	6
A4303 East	0.943	14	0.695	2
A426 South	0.736	3	0.622	2
A4303 West	0.607	2	0.889	7

- 4.2.35 Table 4.20 indicates that the Whittle roundabout would continue to operate within capacity with the addition of symmetry park. There is a small deterioration in the performance of the A426 north and A4303 east arms in the AM peak which are both predicted to have RFC values above 0.90. In the PM peak the RFC values on the A426 north and the A4303 west are predicted to exceed the 0.85 threshold.

M1 Junction 20

- 4.2.36 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix E.
- 4.2.37 To accommodate symmetry park improvements are proposed at this junction and the ARCADY model has been updated accordingly.
- A4304 – entry width increased to 9.0m
 - A4304 – flare length increased to 150m

Table 4.21: Summary of Main Performance Indicators at M1 Junction 20 – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
M1 Southbound off-slip	0.485	1	0.485	1
A4304	0.712	2	0.450	1
M1 Northbound off-slip	0.401	1	0.331	0
A4303	0.591	1	0.700	2

- 4.2.38 Table 4.21 indicates that without development M1 Junction 20 would operate within capacity with a maximum RFC of 0.712 on the A4304 during the AM peak.

Table 4.22: Summary of Main Performance Indicators at M1 Junction 20 – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
M1 Southbound off-slip	0.560	1	0.540	1
A4304	0.814	4	0.487	1
M1 Northbound off-slip	0.478	1	0.357	1
A4303	0.655	2	0.771	3

- 4.2.39 Table 4.22 indicates that with the addition of the Hybrid development M1 Junction 20 would continue to operate within capacity with a maximum RFC of 0.814 on the A4034 during the AM peak.

Table 4.23: Summary of Main Performance Indicators at M1 Junction 20 – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
M1 Southbound off-slip	0.772	3	0.723	3
A4304	0.771	3	0.433	1
M1 Northbound off-slip	0.609	2	0.405	1
A4303	0.733	3	0.891	8

- 4.2.40 Table 4.23 indicates that M1 Junction 20 would continue to operate within capacity with the addition of symmetry park although the RFC on the A4303 is predicted to exceed the 0.85 threshold during the PM peak.

Gibbet Hill Roundabout

- 4.2.41 To support the Hybrid development, IDI Gazeley is proposing junction improvements at the Gibbet Hill roundabout. The scheme includes carriageway widening, improved carriageway markings and the signalisation of the approach and circulatory carriageways of all arms except Gibbet Lane. The proposed improvements are shown on a drawing presented in Appendix F.
- 4.2.42 The scheme has been discussed with Highways England and Warwickshire County Council (WCC) and both authorities are satisfied that it provides an acceptable degree of mitigation and that the trigger for the scheme is any further warehousing on the Hybrid site beyond what has already been consented for DHL.
- 4.2.43 It has been agreed that IDI Gazeley will cover the full cost of the junction, and agree with Highways England and WCC a mechanism for calculating proportionate contributions that would be repaid to IDI Gazeley from other developments relying on the improvement scheme. These developments include DIRFT III, Rugby Gateway and, if consented, symmetry park.
- 4.2.44 In the 'without development' scenario i.e. with DHL only, the junction has been modelled in ARCADY and the results are shown in the first table below with full model printouts presented in Appendix E.
- 4.2.45 In the 'with development' and 'with development + symmetry park' scenarios the improved layout has been modelled using TRANSYT and the TRANSYT link/node diagram is presented in Appendix G. The TRANSYT results of the 'with development' and 'with development + symmetry park' scenarios are presented in the second and third tables below. Approach links are shown in italics.

Table 4.24: Summary of Main Performance Indicators at Gibbet Hill Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.806	4	0.634	2
A426 North	0.731	3	0.672	2
Gibbet Lane	0.325	0	0.200	0
A5 South	0.601	1	0.687	2
A426 South	0.907	8	1.023	31

- 4.2.46 Table 4.24 indicates that without development the Gibbet Hill roundabout would operate above capacity in the PM peak with a maximum RFC of 1.023 on the A426 south. During the AM peak the junction is predicted to be operating within capacity albeit with an RFC in excess of the 0.85 threshold on the A426 south.

Table 4.25: Summary of Main Performance Indicators at Gibbet Hill Roundabout – 2026 with Development

Link		AM Peak		PM Peak	
No.	Description	Sat %	Queue	Sat %	Queue
10	A5 north – inside lane	83	9	79	7
11	A5 north – outside lane	82	9	76	7
12	Circulating – inside lane	68	3	71	4
13	Circulating - outside lane	18	1	17	0
20	A426 north – inside lane	79	6	75	6
21	A426 north – outside lane	74	6	70	5
22	Circulating – inside lane	61	3	55	3
23	Circulating – outside lane	48	5	40	3
30	Gibbet Lane – all lanes	23	1	16	0
31	Circulating – all lanes	33	0	29	0
40	A5 south – inside lane	85	9	86	10
41	A5 south - outside lane	25	2	28	2
42	Circulating – inside lane	60	4	59	4
43	Circulating – outside lane	56	4	53	3
50	A426 south – all lanes	85	14	90	16

Link		AM Peak		PM Peak	
No.	Description	Sat %	Queue	Sat %	Queue
51	Circulating – inside lane	54	1	65	1
52	Circulating – outside lane	23	1	26	0

4.2.47 Table 4.25 indicates that with the addition of the Hybrid development and the proposed junction improvement scheme, the Gibbet Hill roundabout would operate within capacity during both peaks.

Table 4.26: Summary of Main Performance Indicators at Gibbet Hill Roundabout – 2026 with Development + symmetry park

Link		AM Peak		PM Peak	
No.	Description	Sat %	Queue	Sat %	Queue
10	A5 north – inside lane	84	9	80	7
11	A5 north – outside lane	86	10	87	9
12	Circulating – inside lane	68	4	71	4
13	Circulating - outside lane	18	1	16	0
20	A426 north – inside lane	79	6	75	6
21	A426 north – outside lane	74	6	70	5
22	Circulating – inside lane	61	3	56	3
23	Circulating – outside lane	50	5	45	5
30	Gibbet Lane – all lanes	24	1	17	0
31	Circulating – all lanes	33	0	31	0
40	A5 south – inside lane	87	10	87	10
41	A5 south - outside lane	25	2	28	2
42	Circulating – inside lane	61	4	62	5
43	Circulating – outside lane	57	4	57	4
50	A426 south – all lanes	88	16	92	18
51	Circulating – inside lane	58	1	65	1
52	Circulating – outside lane	25	1	26	0

4.2.48 Table 4.26 indicates that with the addition of symmetry park the improved Gibbet Hill roundabout would continue to operate within capacity during both peaks.

4.3 LLITM Assessment

- 4.3.1 The series of tables below summarise the output from the capacity assessments based on output from LLITM. The traffic flows that have been used for this assessment are presented in Appendix B.

Proposed Northern Access Roundabout on the A5

- 4.3.2 Access to the northern part of the development is proposed via a new roundabout on the A5 approximately 260 metres south of White House Farm. This roundabout is not required for DHL and will be delivered towards the latter stages of the Hybrid development.
- 4.3.3 The results of the ARCADY assessments in 2026 are summarised in the tables below. Full model printouts from this analysis are presented in Appendix H.

Table 4.27: Summary of Main Performance Indicators at A5 North Access – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.708	2	0.354	1
Site Access	0.095	0	0.118	0
A5 South	0.426	1	0.648	2

- 4.3.4 Table 4.27 indicates that with development the new access roundabout on the A5 would operate within capacity in 2026 with a maximum RFC of 0.708 on the A5 north during the AM peak.

Table 4.28: Summary of Main Performance Indicators at A5 North Access – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Site Access	0.712	2	0.355	1
Mere Lane East	0.096	0	0.118	0
Argosy Way	0.432	1	0.665	2

- 4.3.5 Table 4.28 indicates that this junction would continue to operate within capacity with the addition of symmetry park.

Mere Lane/ Argosy Way/ Site Access

- 4.3.6 Access to DHL will be provided via a new roundabout on Mere Lane that will connect the site to Magna Park to the south and the A5 to the west. The connection to Magna Park is achieved by an extension to Argosy Way between existing plots 1400 and 1500. To access the site a new access road will be constructed to form the north western arm of the roundabout.
- 4.3.7 A drawing showing the access arrangements is presented in Appendix D.

- 4.3.8 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix H.

Table 4.29: Summary of Main Performance Indicators at Mere Lane Site Access – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Site Access	0.055	0	0.103	0
Mere Lane East	0.084	0	0.059	0
Argosy Way	0.077	0	0.084	0
Mere Lane West	0.171	0	0.077	0

- 4.3.9 Table 4.29 indicates that without development the new access roundabout on Mere Lane would operate well within capacity in 2026 with no queues predicted on any arm.

Table 4.30: Summary of Main Performance Indicators at Mere Lane Site Access – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Site Access	0.155	0	0.270	0
Mere Lane East	0.152	0	0.080	0
Argosy Way	0.162	0	0.191	0
Mere Lane West	0.272	0	0.111	0

- 4.3.10 Table 4.30 indicates that with development the new access roundabout on Mere Lane would continue to operate within capacity in 2026 with a maximum RFC of 0.272 on Mere Lane west during the AM peak.

Table 4.31: Summary of Main Performance Indicators at Mere Lane Site Access – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Site Access	0.155	0	0.272	0
Mere Lane East	0.170	0	0.078	0
Argosy Way	0.161	0	0.192	0
Mere Lane West	0.259	0	0.111	0

- 4.3.11 Table 4.31 indicates that the new access roundabout on Mere Lane would continue to operate within capacity with the addition of symmetry park.

A5/ Mere Lane

- 4.3.12 As part of the planning consent for DHL the existing A5/ Mere Lane priority junction will be upgraded to a roundabout, The detailed design of the roundabout is being progressed by Hydrock and the latest layout which has been approved by Highways England, is presented in Appendix D.
- 4.3.13 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix H.

Table 4.32: Summary of Main Performance Indicators at A5/ Mere Lane Junction – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.554	1	0.305	0
Mere Lane	0.155	0	0.171	0
A5 South	0.450	1	0.640	2

- 4.3.14 Table 4.32 indicates that the A5/ Mere Lane junction would operate within capacity without development with a maximum RFC of 0.640 on the A5 south in the PM peak.

Table 4.33: Summary of Main Performance Indicators at A5/ Mere Lane Junction – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.695	2	0.454	1
Mere Lane	0.247	0	0.262	0
A5 South	0.535	1	0.698	2

- 4.3.15 Table 4.33 indicates that with the addition of the Hybrid development, the A5/ Mere Lane junction would continue to operate within capacity with a maximum RFC of 0.698 of the A5 south during the PM peak.

Table 4.34: Summary of Main Performance Indicators at A5/ Mere Lane Junction – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.697	2	0.456	1
Mere Lane	0.250	0	0.261	0
A5 South	0.543	1	0.721	3

- 4.3.16 Table 4.34 indicates that the A5/ Mere Lane junction would continue to operate within capacity with the addition of symmetry park with a maximum RFC of 0.721 on the A5 south during the PM peak.

Cross in Hand Roundabout

- 4.3.17 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix H.
- 4.3.18 To accommodate symmetry park improvements are proposed at this junction and the ARCADY model has been updated accordingly.
- A5 north – entry width increased to 8.6m
 - A5 north – flare length increased to 60m
 - A4303 – entry width increased to 8.6m

Table 4.35: Summary of Main Performance Indicators at the Cross in Hand Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.838	5	0.511	1
A4303	0.814	4	0.725	3
A5 South	0.675	2	0.767	3
B4027 Lutterworth Road	0.470	1	0.777	3
Coal Pit Lane	0.664	2	0.471	1

- 4.3.19 Table 4.35 indicates that without development the Cross in Hand roundabout would operate within capacity with a maximum RFC of 0.838 on the A5 north during the AM peak.

Table 4.36: Summary of Main Performance Indicators at the Cross in Hand Roundabout – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.830	5	0.536	1
A4303	0.826	5	0.671	2
A5 South	0.710	2	0.746	3
B4027 Lutterworth Road	0.528	1	0.752	3
Coal Pit Lane	0.595	1	0.522	1

- 4.3.20 Table 4.36 indicates that the addition of the Hybrid development, the Cross in Hand roundabout would continue to operate within capacity with a maximum RFC of 0.83 on the A5 north during the AM peak.

Table 4.37: Summary of Main Performance Indicators at the Cross in Hand Roundabout – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.773	3	0.475	1
A4303	0.815	4	0.715	2
A5 South	0.803	4	0.857	6
B4027 Lutterworth Road	0.504	1	0.676	2
Coal Pit Lane	0.733	3	0.622	2

- 4.3.21 Table 4.37 indicates that the Cross in Hand roundabout would continue to operate within capacity with the addition of symmetry park although the RFC on the A5 south is predicted to marginally exceed the 0.85 threshold during the PM peak.

A4303/ Hunter Boulevard

- 4.3.22 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix H.
- 4.3.23 To accommodate symmetry park improvements are proposed at this junction and the ARCADY model has been updated accordingly.
- A4303 west – entry width increased to 11.0m
 - A4303 west – flare length increased to 45m

Table 4.38: Summary of Main Performance Indicators at the A4303/ Hunter Boulevard Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Hunter Boulevard	0.304	0	0.432	1
A4303 East	0.786	4	0.444	1
Access to George HQ	0.041	0	0.273	0
A4303 West	0.739	3	0.495	1

- 4.3.24 Table 4.38 indicates that without development the A4303/ Hunter Boulevard roundabout would operate within capacity with a maximum RFC of 0.786 on the A4303 east during the AM peak.

Table 4.39: Summary of Main Performance Indicators at the A4303/ Hunter Boulevard Roundabout – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Hunter Boulevard	0.336	1	0.427	1
A4303 East	0.819	4	0.446	1
Access to George HQ	0.037	0	0.289	0
A4303 West	0.723	3	0.489	1

- 4.3.25 Table 4.39 indicates that with the addition of the Hybrid development the A4303/ Hunter Boulevard roundabout would continue to operate within capacity with a maximum RFC of 0.819 on the A4303 east during the AM peak.

Table 4.40: Summary of Main Performance Indicators at the A4303/ Hunter Boulevard Roundabout – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Hunter Boulevard	0.382	1	0.474	1
A4303 East	0.822	5	0.500	1
Access to George HQ	0.034	0	0.282	0
A4303 West	0.638	2	0.415	1

- 4.3.26 Table 4.40 indicates that the A4303/ Hunter Boulevard roundabout would continue to operate within capacity with the addition of symmetry park with a maximum RFC of 0.822 on the A4303 east during the AM peak.

A4303/ Coventry Road

- 4.3.27 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix H.

Table 4.41: Summary of Main Performance Indicators at the A4303/ Coventry Road Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Coventry Road	0.791	4	0.542	1
A4303 East	0.782	3	0.517	1
Mobile Home Park	0.068	0	0.020	0
A4303 West	0.447	1	0.755	3

- 4.3.28 Table 4.41 indicates that without development the A4303/ Coventry Road roundabout would operate within capacity with a maximum RFC of 0.791 on Coventry Road in the AM peak.

Table 4.42: Summary of Main Performance Indicators at the A4303/ Coventry Road Roundabout – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Coventry Road	0.772	3	0.555	1
A4303 East	0.845	5	0.560	1
Mobile Home Park	0.079	0	0.021	0
A4303 West	0.472	1	0.787	4

- 4.3.29 Table 4.42 indicates that with the addition of the Hybrid development the A4303/ Coventry Road roundabout would continue to operate within capacity with a maximum RFC of 0.845 on the A4303 east during the AM peak.

Table 4.43: Summary of Main Performance Indicators at the A4303/ Coventry Road Roundabout – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Coventry Road	0.777	3	0.578	1
A4303 East	0.878	7	0.571	1
Mobile Home Park	0.089	0	0.021	0
A4303 West	0.479	1	0.824	5

- 4.3.30 Table 4.43 indicates that with the addition of symmetry park, the A4303/ Coventry Road roundabout would continue to operate within capacity albeit with an RFC in excess of 0.85 on the A4303 east during the AM peak.

A4303/ A426 (Whittle Roundabout)

- 4.3.31 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix H.
- 4.3.32 It should be noted that all three assessments are based on the revised Hydrock layout presented in Appendix C.

Table 4.44: Summary of Main Performance Indicators at the Whittle Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A426 North	0.866	6	0.855	5
A4303 East	0.842	5	0.676	2
A426 South	0.628	2	0.682	2
A4303 West	0.574	1	0.783	4

- 4.3.33 Table 4.44 indicates that without development the Whittle roundabout would operate within capacity albeit with an RFC in excess of 0.85 on the A426 north during both peaks.

Table 4.45: Summary of Main Performance Indicators at the Whittle Roundabout – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A426 North	0.917	9	0.920	9
A4303 East	0.900	8	0.711	2
A426 South	0.681	2	0.707	2
A4303 West	0.629	2	0.857	6

- 4.3.34 Table 4.45 indicates that with the addition of the Hybrid development the Whittle roundabout would continue to operate within capacity although during the AM peak the A426 north and the A4303 east are predicted to have RFC values in excess of 0.85. During the PM peak the A426 north and the A4303 west are predicted to have RFC values in excess of 0.85.

Table 4.46: Summary of Main Performance Indicators at the Whittle Roundabout – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A426 North	0.931	11	0.940	11
A4303 East	0.917	10	0.718	3
A426 South	0.710	2	0.720	3
A4303 West	0.643	2	0.892	8

- 4.3.35 Table 4.46 indicates that the Whittle roundabout would continue to operate within capacity with the addition of symmetry park. There is a small deterioration in the performance of the A426 north and A4303 east arms in the AM peak which are both predicted to have RFC values above 0.90. In the

PM peak the RFC value on the A426 north is also predicted to exceed 0.90 while the value on the A4303 west is just below at 0.892.

M1 Junction 20

- 4.3.36 The results of the ARCADY assessments in 2026 for the three development scenarios are summarised in the tables below. Full model printouts from this analysis are presented in Appendix H.
- 4.3.37 To accommodate symmetry park improvements are proposed at this junction and the ARCADY model has been updated accordingly.
- A4304 – entry width increased to 9.0m
 - A4304 – flare length increased to 150m

Table 4.47: Summary of Main Performance Indicators at M1 Junction 20 – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
M1 Southbound off-slip	0.588	1	0.467	1
A4304	0.868	6	0.507	1
M1 Northbound off-slip	0.542	1	0.475	1
A4303	0.696	2	0.733	3

- 4.3.38 Table 4.47 indicates that without development M1 Junction 20 would operate within capacity albeit with an RFC value in excess of 0.85 on the A4304 during the AM peak.

Table 4.48: Summary of Main Performance Indicators at M1 Junction 20 – 2026 with Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
M1 Southbound off-slip	0.642	2	0.489	1
A4304	0.943	12	0.523	1
M1 Northbound off-slip	0.587	1	0.492	1
A4303	0.723	3	0.770	3

- 4.3.39 Table 4.48 indicates that with the addition of the Hybrid development M1 Junction 20 would continue to operate within capacity albeit with an RFC value of 0.943 on the A4034 during the AM peak.

Table 4.49: Summary of Main Performance Indicators at M1 Junction 20 – 2026 with Development + symmetry park

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
M1 Southbound off-slip	0.830	5	0.628	2
A4304	0.785	4	0.446	1
M1 Northbound off-slip	0.668	2	0.538	1
A4303	0.790	4	0.855	6

- 4.3.40 Table 4.49 indicates that M1 Junction 20 would continue to operate within capacity with the addition of symmetry park although the RFC on the A4303 is predicted to marginally exceed the 0.85 threshold during the PM peak.

Gibbet Hill Roundabout

- 4.3.41 To support the Hybrid development, IDI Gazeley is proposing junction improvements at the Gibbet Hill roundabout. The scheme includes carriageway widening, improved carriageway markings and the signalisation of the approach and circulatory carriageways of all arms except Gibbet Lane. The proposed improvements are shown on a drawing presented in Appendix F.
- 4.3.42 The scheme has been discussed with Highways England and Warwickshire County Council (WCC) and both authorities are satisfied that it provides an acceptable degree of mitigation and that the trigger for the scheme is any further warehousing on the Hybrid site beyond what has already been consented for DHL.
- 4.3.43 It has been agreed that IDI Gazeley will cover the full cost of the junction, and agree with Highways England and WCC a mechanism for calculating proportionate contributions that would be repaid to IDI Gazeley from other developments relying on the improvement scheme. These developments include DIRFT III, Rugby Gateway and, if consented, symmetry park.
- 4.3.44 In the 'without development' scenario i.e. with DHL only, the junction has been modelled in ARCADY and the results are shown in the first table below with full model printouts presented in Appendix H.
- 4.3.45 In the 'with development' and 'with development + symmetry park' scenarios the improved layout has been modelled using TRANSYT and the TRANSYT link/node diagram is presented in Appendix G. The TRANSYT results of the 'with development' and 'with development + symmetry park' scenarios are presented in the second and third tables below. Approach links are shown in italics.

Table 4.50: Summary of Main Performance Indicators at Gibbet Hill Roundabout – 2026 without Development

Approach Arm	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
A5 North	0.742	3	0.623	2
A426 North	0.624	2	0.616	2
Gibbet Lane	0.283	0	0.240	0
A5 South	0.411	1	0.636	2
A426 South	1.119	93	1.098	72

- 4.3.46 Table 4.50 indicates that without development the Gibbet Hill roundabout would operate above capacity during both peaks with queues of 93 and 72 vehicles on the A426 south in the AM and PM peaks respectively.

Table 4.51: Summary of Main Performance Indicators at Gibbet Hill Roundabout – 2026 with Development

Link		AM Peak		PM Peak	
No.	Description	Sat %	Queue	Sat %	Queue
10	A5 north – inside lane	92	12	78	6
11	A5 north – outside lane	66	6	93	11
12	Circulating – inside lane	72	4	80	11
13	Circulating - outside lane	15	1	13	1
20	A426 north – inside lane	71	5	71	5
21	A426 north – outside lane	66	5	66	5
22	Circulating – inside lane	60	3	44	2
23	Circulating – outside lane	36	3	38	3
30	Gibbet Lane – all lanes	22	1	19	0
31	Circulating – all lanes	29	0	26	0
40	A5 south – inside lane	77	6	84	9
41	A5 south - outside lane	16	1	24	2
42	Circulating – inside lane	44	2	60	3
43	Circulating – outside lane	39	2	50	2
50	A426 south – all lanes	94	23	91	18

Link		AM Peak		PM Peak	
No.	Description	Sat %	Queue	Sat %	Queue
51	Circulating – inside lane	57	1	68	1
52	Circulating – outside lane	17	0	22	0

4.3.47 Table 4.51 indicates that with the addition of the Hybrid development and the proposed junction improvement scheme, the Gibbet Hill roundabout would operate within capacity during both peaks. It is apparent therefore that the proposed roundabout improvements would provide the necessary capacity to accommodate the traffic associated with all committed development and the proposed development.

Table 4.52: Summary of Main Performance Indicators at Gibbet Hill Roundabout – 2026 with Development + symmetry park

Link		AM Peak		PM Peak	
No.	Description	Sat %	Queue	Sat %	Queue
10	A5 north – inside lane	92	12	90	10
11	A5 north – outside lane	66	6	74	6
12	Circulating – inside lane	73	5	82	8
13	Circulating - outside lane	15	1	18	1
20	A426 north – inside lane	78	5	76	6
21	A426 north – outside lane	73	5	71	5
22	Circulating – inside lane	58	2	59	3
23	Circulating – outside lane	35	3	36	3
30	Gibbet Lane – all lanes	22	1	13	0
31	Circulating – all lanes	29	0	29	0
40	A5 south – inside lane	84	7	88	10
41	A5 south - outside lane	17	1	10	1
42	Circulating – inside lane	43	2	50	2
43	Circulating – outside lane	38	2	46	2
50	A426 south – all lanes	95	24	102	48
51	Circulating – inside lane	61	1	86	4
52	Circulating – outside lane	17	0	12	0

- 4.3.48 Table 4.52 indicates that with the addition of symmetry park the improved Gibbet Hill roundabout would operate above capacity during the PM peak. The critical part of the junction is the A426 south where a degree of saturation of 102% and a queue of 48 pcus is predicted on the approach arm.

5. OTHER TRANSPORT ISSUES

5.1 Traffic Flows on Pailton Road

- 5.1.1 Residents of Pailton have expressed their concern about the number of heavy goods vehicles (HGVs) passing through their village on the B4027 (Lutterworth Road). It would appear that there is a local perception that HGVs are using Lutterworth Road as an alternative route between the A5 and Rugby in order to avoid congestion on the A5 and on the A426 and specifically at the Gibbet Hill roundabout. Many residents of Pailton are also of the view that the majority of these HGVs are related to Magna Park.
- 5.1.2 Residents of Montilo Lane, an unclassified road that joins Lutterworth Road approximately midway between the A5 and Pailton village, are also concerned about the number of HGVs using their road as an alternative route to and from Rugby.
- 5.1.3 In order to quantify the scale of the issue, automatic traffic counters (ATCs) were installed at two locations on Lutterworth Road for a continuous seven day period beginning Saturday 1 October 2016. The ATCs were located either side of Montilo Lane. The survey data and a plan showing where the ATCs were positioned are presented in Appendix I.
- 5.1.4 ATCs allow vehicles to be classified based on axle length allowing the number of HGVs to be established. In this survey any vehicle from a transit type van with double wheels on the rear axle and larger was classified as a HGV. This will therefore include large vans and small two and three axle HGVs which it is understood are not the primary cause of concern of the residents of Pailton and Montilo Lane.
- 5.1.5 The purpose of installing ATCs either side of Montilo Lane was to identify the number of HGVs using Montilo Lane so that an informed judgement can be made as to whether this is a tangible issue that needs to be addressed.
- 5.1.6 The data has been summarised into a series of tables and charts set out below. Each table shows the total flow and the number and percentage of HGVs on Pailton Road for each day of the survey. The 12-hour period referred to in the tables was from 7am to 7pm.
- 5.1.7 The charts focus on the ATC to the west of Montilo Lane and show the number of HGVs as a proportion of the total flow for the average weekday and Saturday and Sunday.

Table 5.1: Summary of Traffic Flows on Pailton Road – Monday 3 October 2016

	ATC West of Montilo Lane			ATC East of Montilo Lane		
	Eastbnd	Westbnd	2-way	Eastbnd	Westbnd	2-way
24 hour All Vehicles	1474	1424	2898	2171	1973	4144
24 hour HGV	32	28	60	46	37	83
24 hour HGV %	2.17%	1.97%	2.07%	2.12%	1.88%	2.00%
12 hour All Vehicles	1210	1165	2375	1834	1641	3475
12 hour HGV	27	25	52	40	34	74
12 hour HGV %	2.23%	2.15%	2.19%	2.18%	2.07%	2.13%

Table 5.2: Summary of Traffic Flows on Pailton Road – Tuesday 4 October 2016

	ATC West of Montilo Lane			ATC East of Montilo Lane		
	Eastbnd	Westbnd	2-way	Eastbnd	Westbnd	2-way
24 hour All Vehicles	2060	1531	3591	2856	2159	5015
24 hour HGV	45	26	71	53	32	85
24 hour HGV %	2.18%	1.70%	1.98%	1.86%	1.48%	1.69%
12 hour All Vehicles	1766	1234	3000	2485	1785	4270
12 hour HGV	39	22	61	47	26	73
12 hour HGV %	2.21%	1.78%	2.03%	1.89%	1.46%	1.71%

Table 5.3: Summary of Traffic Flows on Pailton Road – Wednesday 5 October 2016

	ATC West of Montilo Lane			ATC East of Montilo Lane		
	Eastbnd	Westbnd	2-way	Eastbnd	Westbnd	2-way
24 hour All Vehicles	1561	1495	3056	2340	2082	4422
24 hour HGV	25	34	59	52	40	92
24 hour HGV %	1.60%	2.27%	1.93%	2.22%	1.92%	2.08%
12 hour All Vehicles	1286	1195	2481	1977	1696	3673
12 hour HGV	20	27	47	42	32	74
12 hour HGV %	1.56%	2.26%	1.89%	2.12%	1.89%	2.01%

Table 5.4: Summary of Traffic Flows on Pailton Road – Thursday 6 October 2016

	ATC West of Montilo Lane			ATC East of Montilo Lane		
	Eastbnd	Westbnd	2-way	Eastbnd	Westbnd	2-way
24 hour All Vehicles	1573	1460	3033	2328	2025	4353
24 hour HGV	34	25	59	57	28	85
24 hour HGV %	2.16%	1.71%	1.95%	2.45%	1.38%	1.95%
12 hour All Vehicles	1307	1160	2467	2008	1652	3660
12 hour HGV	30	20	50	49	24	73
12 hour HGV %	2.30%	1.72%	2.03%	2.44%	1.45%	1.99%

Table 5.5: Summary of Traffic Flows on Pailton Road – Friday 7 October 2016

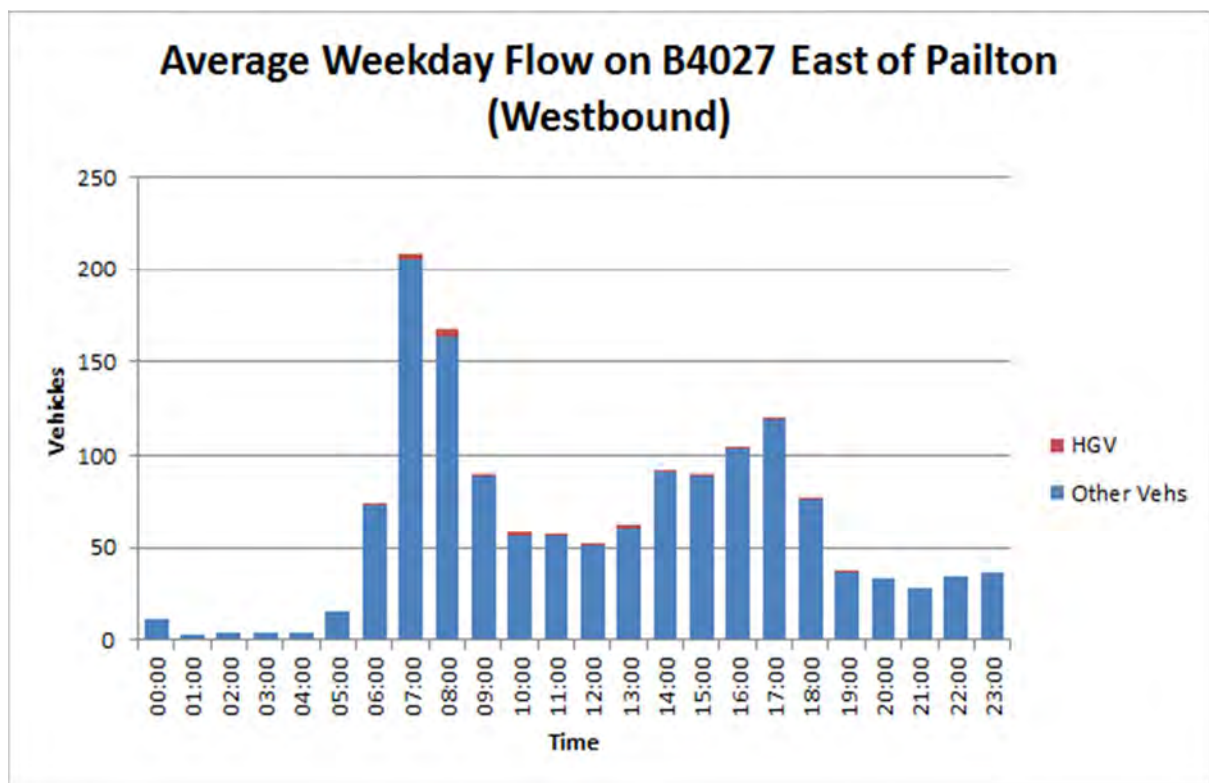
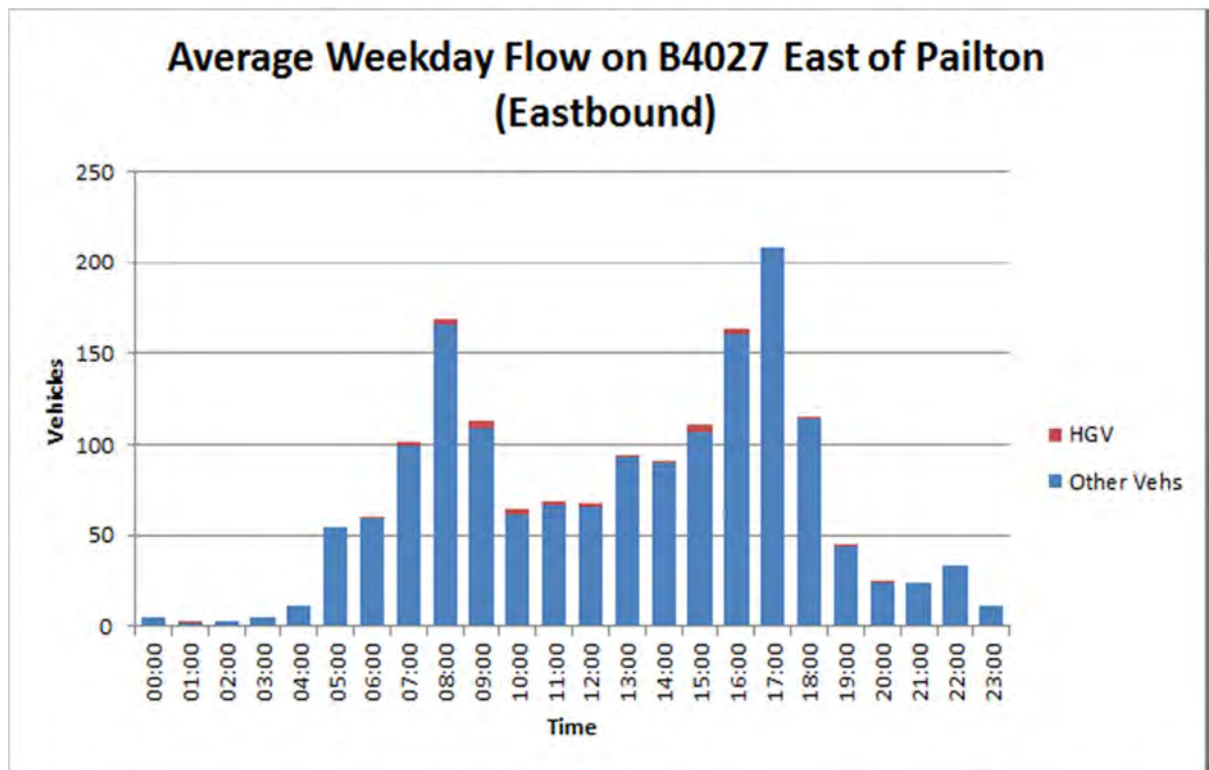
	ATC West of Montilo Lane			ATC East of Montilo Lane		
	Eastbnd	Westbnd	2-way	Eastbnd	Westbnd	2-way
24 hour All Vehicles	1596	1463	3059	2371	2030	4401
24 hour HGV	24	20	44	30	26	56
24 hour HGV %	1.50%	1.37%	1.44%	1.27%	1.28%	1.27%
12 hour All Vehicles	1279	1170	2449	1993	1660	3653
12 hour HGV	17	15	32	22	23	45
12 hour HGV %	1.33%	1.28%	1.31%	1.10%	1.39%	1.23%

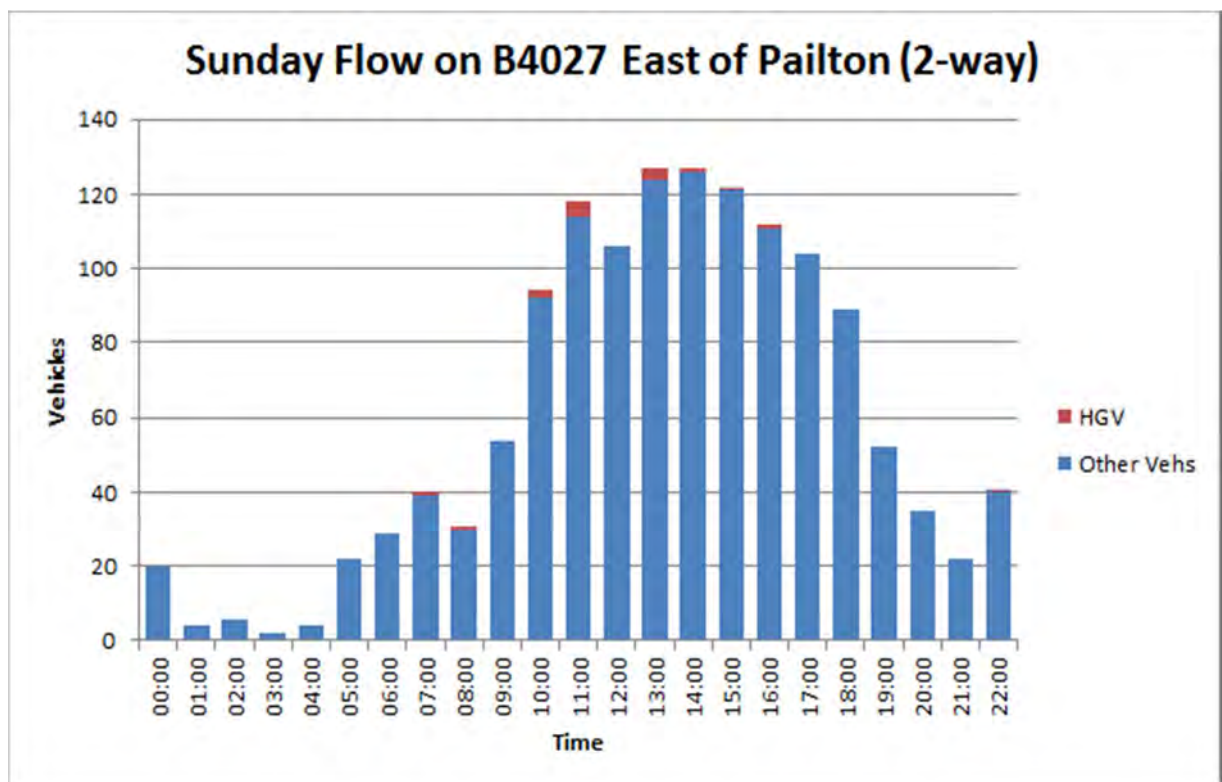
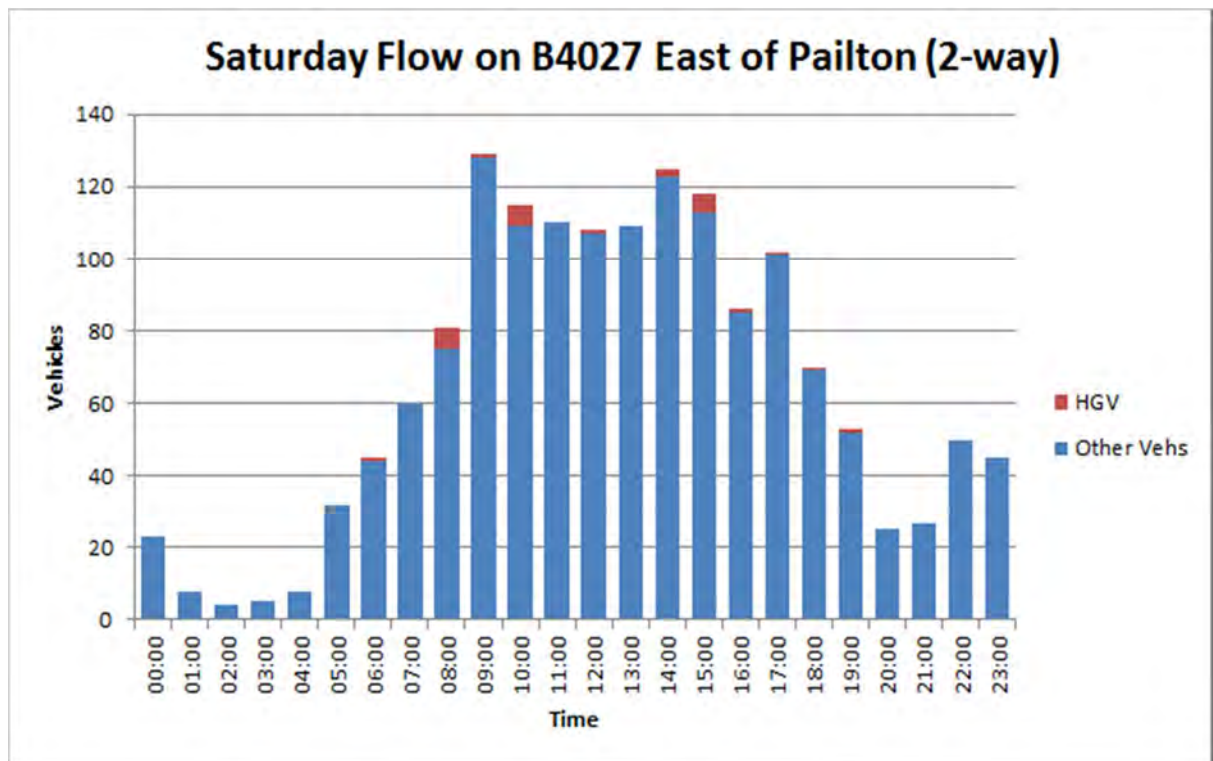
Table 5.6: Summary of Traffic Flows on Pailton Road – Saturday 1 October 2016

	ATC West of Montilo Lane			ATC East of Montilo Lane		
	Eastbnd	Westbnd	2-way	Eastbnd	Westbnd	2-way
24 hour All Vehicles	752	786	1538	1004	1075	2079
24 hour HGV	15	11	26	18	22	40
24 hour HGV %	1.99%	1.40%	1.69%	1.79%	2.05%	1.92%
12 hour All Vehicles	578	635	1213	798	880	1678
12 hour HGV	14	10	24	16	20	36
12 hour HGV %	2.42%	1.57%	1.98%	2.01%	2.27%	2.15%

Table 5.7: Summary of Traffic Flows on Pailton Road – Sunday 2 October 2016

	ATC West of Montilo Lane			ATC East of Montilo Lane		
	Eastbnd	Westbnd	2-way	Eastbnd	Westbnd	2-way
24 hour All Vehicles	690	691	1381	869	838	1707
24 hour HGV	9	6	15	16	6	22
24 hour HGV %	1.30%	0.87%	1.09%	1.84%	0.72%	1.29%
12 hour All Vehicles	555	569	1124	705	689	1394
12 hour HGV	9	5	14	14	5	19
12 hour HGV %	1.62%	0.88%	1.25%	1.99%	0.73%	1.36%





- 5.1.8 Focusing on the tables and the ATC to the west of Montilo Lane and therefore HGVs that pass through Pailton, it can be seen that typically during the week there were 60 HGVs per day recorded on Lutterworth Road (two-way) which represents around 2% of the total flow. The number of HGVs is much lower at the weekend with 26 and 15 recorded on Saturday and Sunday respectively. It should be noted that this is not a high proportion for a B class road.

- 5.1.9 The ATC to the east of Montilo Lane recorded around 85 HGVs per weekday indicating that there are typically around 25 two-way HGV movements on Montilo Lane on a daily basis. The survey indicates that there were fewer HGVs on Montilo Lane at the weekend with 14 and 7 recorded on a Saturday and Sunday respectively.
- 5.1.10 The charts demonstrate that traffic flows on Lutterworth Road are dominated by vehicles other than HGVs and that in any single hour the actual number of HGVs is not at a level that could be considered material.
- 5.1.11 It should be remembered that the ATC survey classified a HGV as any vehicle between a transit type van with double wheels on the rear axle and the largest articulated vehicle. The number of HGVs recorded on Lutterworth Road will therefore include a reasonable proportion of large vans and 2 and 3 axle HGVs. The actual number of large articulated HGVs using Lutterworth Road, which are the vehicles of greatest concern and the ones most likely to be associated with Magna Park, will therefore be much lower than indicated by the tables above.
- 5.1.12 As part of the original Transport Assessment undertaken for DHL, a traffic count was undertaken at the Cross in Hand roundabout. The survey, undertaken in 2014, covered a total of six hours, three in the morning (7am to 10am) and three in the evening (4pm to 7pm). Over those six hours, the proportion of HGVs recorded on Lutterworth Road was 2% and is therefore consistent with the more recent ATC surveys.
- 5.1.13 Of greater significance is that of all the HGVs recorded entering and leaving the Cross in Hand roundabout on Lutterworth Road, only half of those vehicles also travelled on the A4303 which would be necessary if they were to be associated with Magna Park. The A4303 is also the route to and from the M1 and it is therefore likely that some of the HGVs that were recorded travelling between the A4303 and Lutterworth Road had originated or were destined for the Motorway.
- 5.1.14 There is no reason to suggest that the pattern of activity recorded during the manual count will have changed between 2014 and the recent 2016 ATC surveys or that it will vary significantly during other times of the day. On this basis and coupled with the method used to classify a HGV in the ATC surveys, it is most unlikely that HGVs associated with Magna Park form a significant proportion of vehicles passing through Pailton.

5.2 Other HGV Routing Issues

- 5.2.1 IDI Gazeley wishes to be seen by all as being a 'good neighbour' and is very keen to ensure that all HGVs related to Magna Park use the strategic road network rather than more sensitive local routes when arriving or departing from Magna Park. To this end the HGV Routing Plan that has been issued to all Magna Park businesses has been amended to remove the B4027 (Lutterworth Road) as a permitted route for Magna Park HGVs within the area subject to the Routing Agreement. The revised Routing Plan is presented in Appendix J.
- 5.2.2 Although the evidence from the ATC surveys indicates that the number of HGVs using Lutterworth Road and having an origin or destination at Magna Park is very small, IDI Gazeley is willing to implement and fund any practicable measures to further discourage the use of sensitive routes by HGVs. IDI Gazeley is currently undertaking an inventory of existing signage to identify any gaps in the signage strategy that may be resulting in some HGVs not following prescribed routes. The image below is of an existing sign on the approach to the Cross in Hand roundabout directing HGVs to the Motorway network. If it is considered that more signs of this type are required to reinforce the use of the strategic road network or there is a need for more prominent site specific signs to deter the use

of sensitive routes by HGVs then IDI Gazeley has indicated a willingness to fund their implementation.



Figure 5.1: Sign Directing HGVs to Motorway Network on A4303 Approach to Cross in Hand Roundabout

5.3 Public Transport

- 5.3.1 The planning consent for DHL will safeguard a bus service at Magna Park for a minimum of five years. As a minimum the service will coincide with the main shift changeovers at 6am, 2pm and 10pm and office hours at 9am and 5pm. It will operate on all days including weekends and Bank Holidays and will serve new stops that will be provided on Argosy Way.
- 5.3.2 To maximise potential patronage, the expectation is that the bus service will also serve the existing Magna Park where recently six new or upgraded bus stops have been installed. The location of the stops is shown on a plan presented in Appendix K. All the stops provide a flag, a pole and updated timetable information and most have a shelter with seating.
- 5.3.3 To encourage the use of the new bus service, DHL employees will be offered a bus pass which would provide free travel for a period of six months. The free bus pass will be made available to a maximum of 30 per cent of the confirmed employees at DHL and the scheme will run for a period of five years from first occupation. The expectation is that establishing travel behaviour during the early stages of the development will encourage employees to continue using public transport beyond the first six months when a free bus pass is available.
- 5.3.4 It was reported in the Second Supplementary Transport Assessment for the Hybrid application, dated 4 March 2016, that two new bus services were to be introduced at Magna Park. Both are now operational and the early indications are that the X45 operated by Arriva between Leicester and Magna Park is being well used. The Stagecoach service from Rugby has been less successful and it

is understood that the timetable is currently under review in order to rationalise the service and focus on the busiest times of the day. It is hoped that this will provide more time for the service to become established and ultimately to be extended to operate a more complete service covering all the shift changeovers and the office hours.

- 5.3.5 In support of the Hybrid development further improvements to public transport will be secured. One opportunity is to enhance the existing Route 8 between Hinckley and Lutterworth with the potential of extending it to serve Nuneaton, where based on Census data and on recent surveys undertaken at Magna Park, a significant proportion of the Magna Park workforce resides.

5.4 Travel Survey and Car Sharing

- 5.4.1 IDI Gazeley has been working closely with the Sustainable Travel Team at LCC with the overriding objective of promoting sustainable transport opportunities at Magna Park. As part of this collaboration a site wide travel survey was undertaken during March 2016. A key part of the travel survey was to establish where employees live and how they travel to work. This information was then plotted on a map allowing clusters of employee residence locations to be identified that used to identify the potential for car sharing. At distribution parks where large numbers of employees work fixed shift patterns, car sharing is seen as having great potential in encouraging a reduction in single car occupancy.
- 5.4.2 IDI Gazeley recognises the potential of car sharing at Magna Park and together with LCC has introduced a site wide car sharing scheme operated by Liftshare. The scheme enables all employees to submit their names to a car sharing database with the objective of identifying individual travel patterns and making the opportunity for car sharing more visible. The introduction of a site wide scheme expands the opportunity for car sharing between employees of different businesses at Magna Park.
- 5.4.3 To date more than half the businesses at Magna Park have signed up to the car sharing scheme and the early indications are that is proving successful.

7. SUMMARY & CONCLUSIONS

- 7.1.1 This Addendum Transport Assessment (TA) has been prepared in support of the Hybrid planning application to account for the granting of planning permission for the DHL Supply Chain on 25 October 2016. DHL is now a committed development including all the associated highway improvements that will be delivered as part of the planning consent. These include the new roundabout on Mere Lane linking DHL to the existing Magna Park, the new A5 / Mere Lane roundabout and the capacity improvements at the A426 / A4303 junction (Whittle roundabout).
- 7.1.2 To avoid any abortive works and to minimise the duration of the roadworks required to upgrade the junction, there will be a single improvement at the Whittle roundabout based on the Hydrock scheme that has been designed to accommodate traffic associated with the Hybrid. It is considered that this will not only provide an appropriate level of mitigation to offset the impact of both DHL and the Hybrid application but will also provide significant relief to a capacity issue that would occur even if no further development were to proceed.
- 7.1.3 In support of the Hybrid development, junction improvements are proposed at the Gibbet Hill roundabout. The scheme includes carriageway widening, improved carriageway markings and the signalisation of the approach and circulatory carriageways of all arms except Gibbet Lane.
- 7.1.4 IDI Gazeley has agreed to cover the full cost of the improvements at Gibbet Hill on the basis of agreeing a mechanism for calculating proportionate contributions that would be repaid to IDI Gazeley from other developments relying on the improvement scheme.
- 7.1.5 The scheme at Gibbet Hill has been discussed with Highways England and Warwickshire County Council and both authorities are satisfied that it provides an acceptable degree of mitigation and that the trigger for the scheme is any further warehousing on the Hybrid site beyond what has already been consented for DHL.
- 7.1.6 The scope of the Addendum TA has been discussed with both Highways England and Leicestershire County Council (LCC) and the key assessment parameters that were agreed are summarised below:
- Average rather than 85th percentile trip rates have been adopted for DHL;
 - M6 Junction 1 and M69 Junction 1 have been excluded from the assessment;
 - The geometric parameters used in the ARCADY assessments have been reviewed in light of comments received from LCC;
 - Assessments have been undertaken for both the manual and LLITM assessments; and
 - The impact of symmetry park has been considered as a sensitivity test.
- 7.1.7 A revised highway impact assessment has been undertaken for three scenarios:
- The 'without development' scenarios include all committed development including DHL;
 - The 'with development' scenarios include all committed development plus the Hybrid;
 - The 'with development + symmetry park' scenarios include all committed development plus the Hybrid plus symmetry park.
- 7.1.8 The capacity assessments indicate that with the Hybrid development all the junctions would be operating within capacity using both the manual and LLITM traffic forecasts. This includes the Gibbet Hill and Whittle roundabouts where it is apparent that proposed and consented junction improvements funded by IDI Gazeley will provide the necessary additional capacity to accommodate the traffic associated with a combination of the committed development and the proposed development.

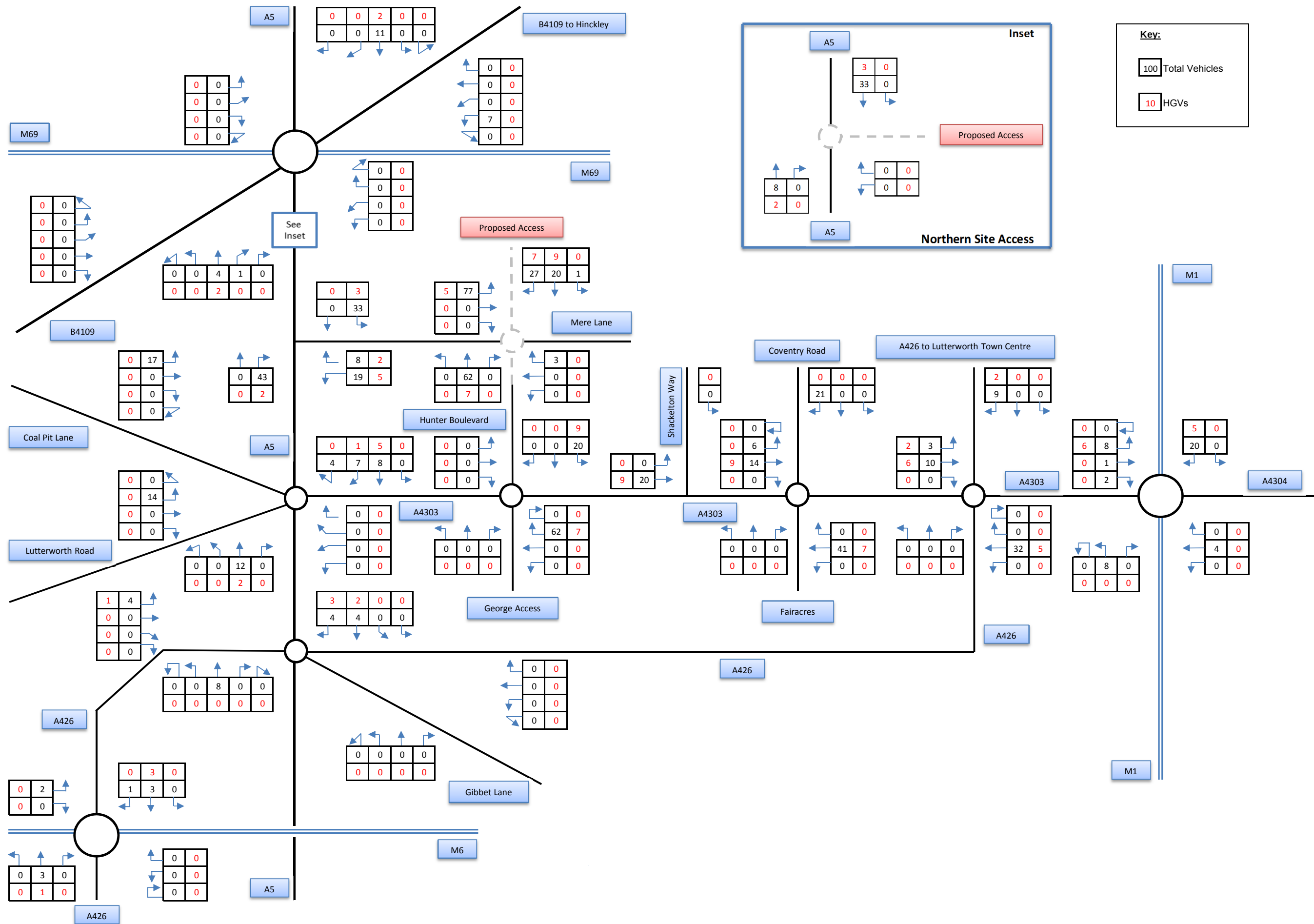
- 7.1.9 With the addition of symmetry park all the junctions are predicted to be operating within capacity with the exception of the A4303/ Coventry Road roundabout. The problem occurs during the AM peak on the A4303 east arm using the manual traffic forecasts. Using the LIITM traffic forecasts the A4303/ Coventry Road roundabout is predicted to be operating within capacity with symmetry park.
- 7.1.10 In response to concerns from the residents of Pailton about the number of heavy goods vehicles (HGVs) passing through their village, IDI Gazeley commissioned traffic surveys on the B4027 (Lutterworth Road). The surveys which recorded traffic flows, including the number of HGVs, over a period of one week indicated that the proportion of HGVs using Lutterworth Road on a daily basis was around 2%. This is not considered to be a high proportion for a B class road.
- 7.1.11 When other factors are taken into account including the method used to classify HGVs and the very strong likelihood that of the HGVs recorded on Lutterworth Road only around half also travelled on the A4303, it is considered most unlikely that HGVs associated with Magna Park form a significant proportion of vehicles passing through Pailton.
- 7.1.12 Notwithstanding, IDI Gazeley is very concerned about any inappropriate use of local roads in the vicinity of Magna Park and has reissued the HGV Routing Plan to all Magna Park businesses with the B4027 removed from the list of permitted routes for HGVs. IDI Gazeley is also reviewing existing signage in and around Magna Park to ensure that there are no gaps in the signage strategy that may be resulting in some HGVs not following prescribed routes. If additional signage is required IDI Gazeley has indicated a willingness to fund their implementation.
- 7.1.13 The planning consent for DHL will safeguard a bus service at Magna Park for a minimum of five years. As a minimum it will serve the main shift changeovers and office hours and operate on all days including weekends and Bank Holidays. To encourage use of the service and to establish travel behaviour during the early stages of the development, up to 30% of DHL employees will be offered a free bus pass for a period of six months.
- 7.1.14 In addition to the above planning obligations for DHL, both Arriva and Stagecoach have introduced new bus services at Magna Park targeting the shift changeover and the office hours. In support of the Hybrid development further improvements to public transport will be secured. One opportunity is to enhance the existing Route 8 between Hinckley and Lutterworth with the potential of extending it to serve Nuneaton.
- 7.1.15 IDI Gazeley is continuing to work closely with the Sustainable Travel Team at LCC with the overriding objective of promoting sustainable transport opportunities at Magna Park. As part of this collaboration a site wide travel survey was undertaken during March 2016 and a key part of the survey was to establish where employees live and how they travel to work.
- 7.1.16 IDI Gazeley recognises the potential of car sharing at Magna Park and together with LCC has introduced a site wide car sharing scheme operated by Liftshare. To date more than half the businesses at Magna Park have signed up to the car sharing scheme and the early indications are that is proving successful.
- 7.1.17 The ongoing travel planning initiatives at Magna Park are helping to foster a culture of collaboration between public transport operators, Liftshare, LCC, IDI Gazeley and the Magna Park businesses and demonstrate the shared determination that exists to improve the opportunities for sustainable travel at Magna Park.
- 7.1.18 In summary it is concluded that the proposed development will provide a catalyst to encourage and maintain modal shift with less environmental impact in accordance with the Government's key aims and objectives promoted at central and local levels.

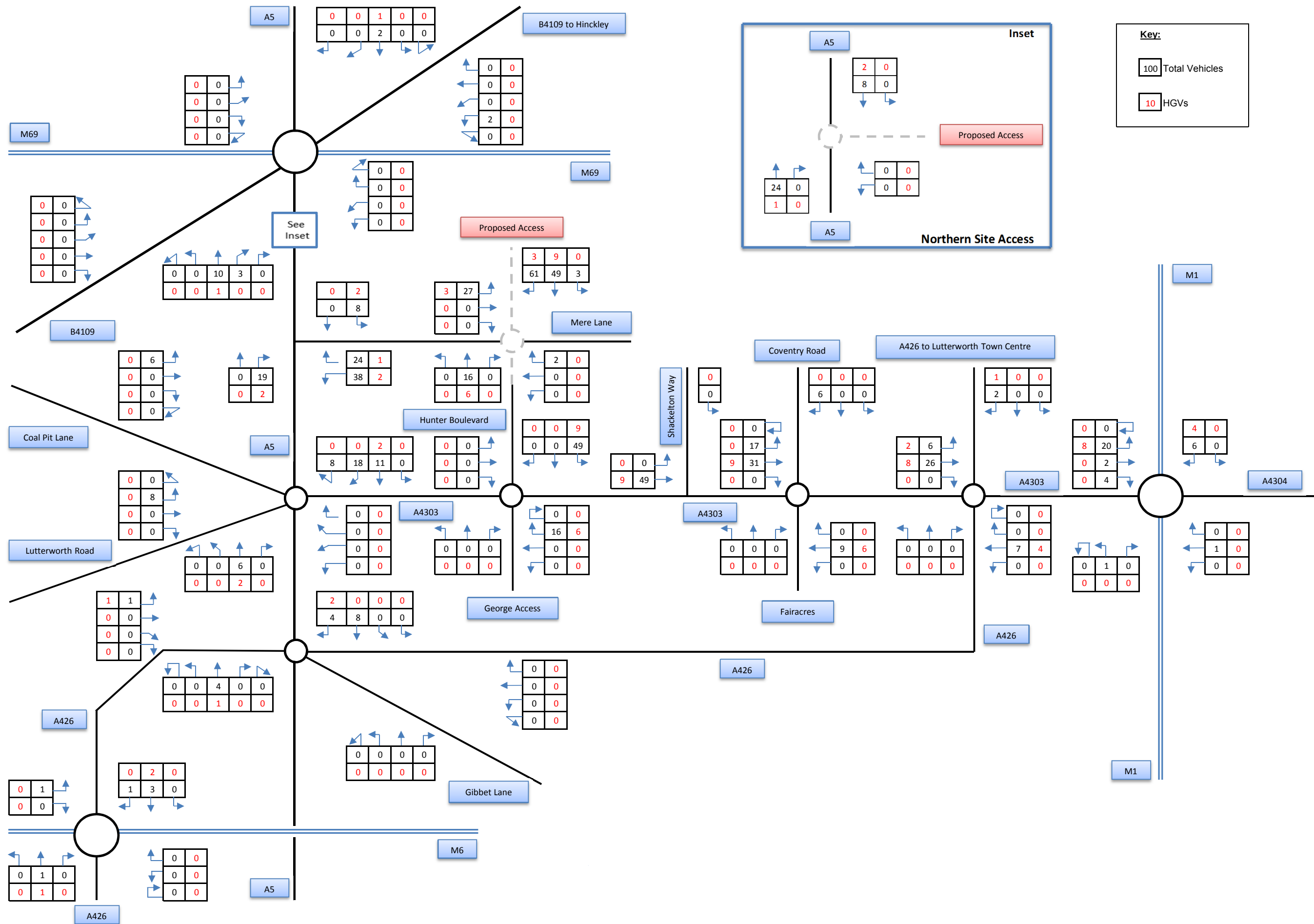


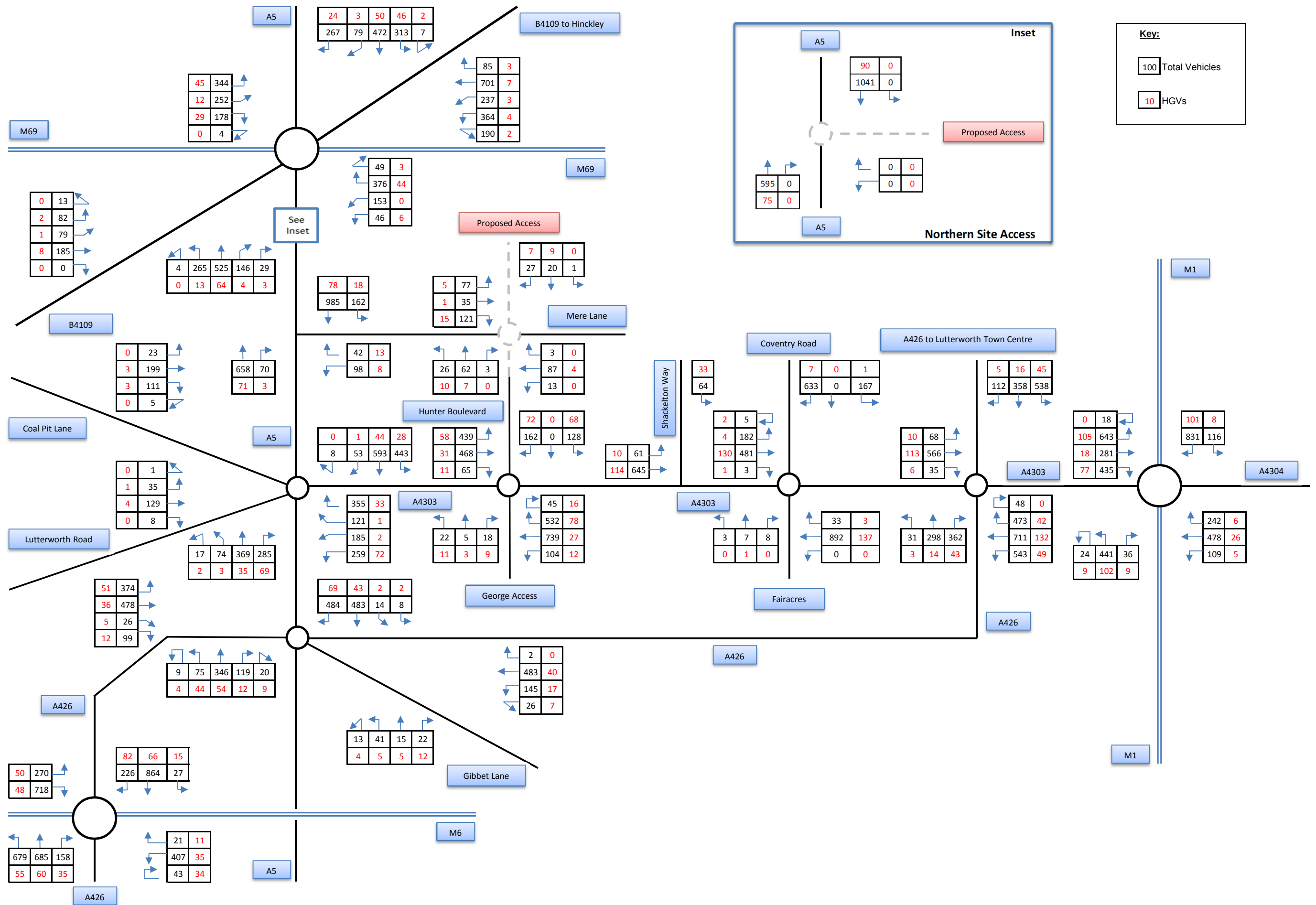
Magna Park Extension: Hybrid Application

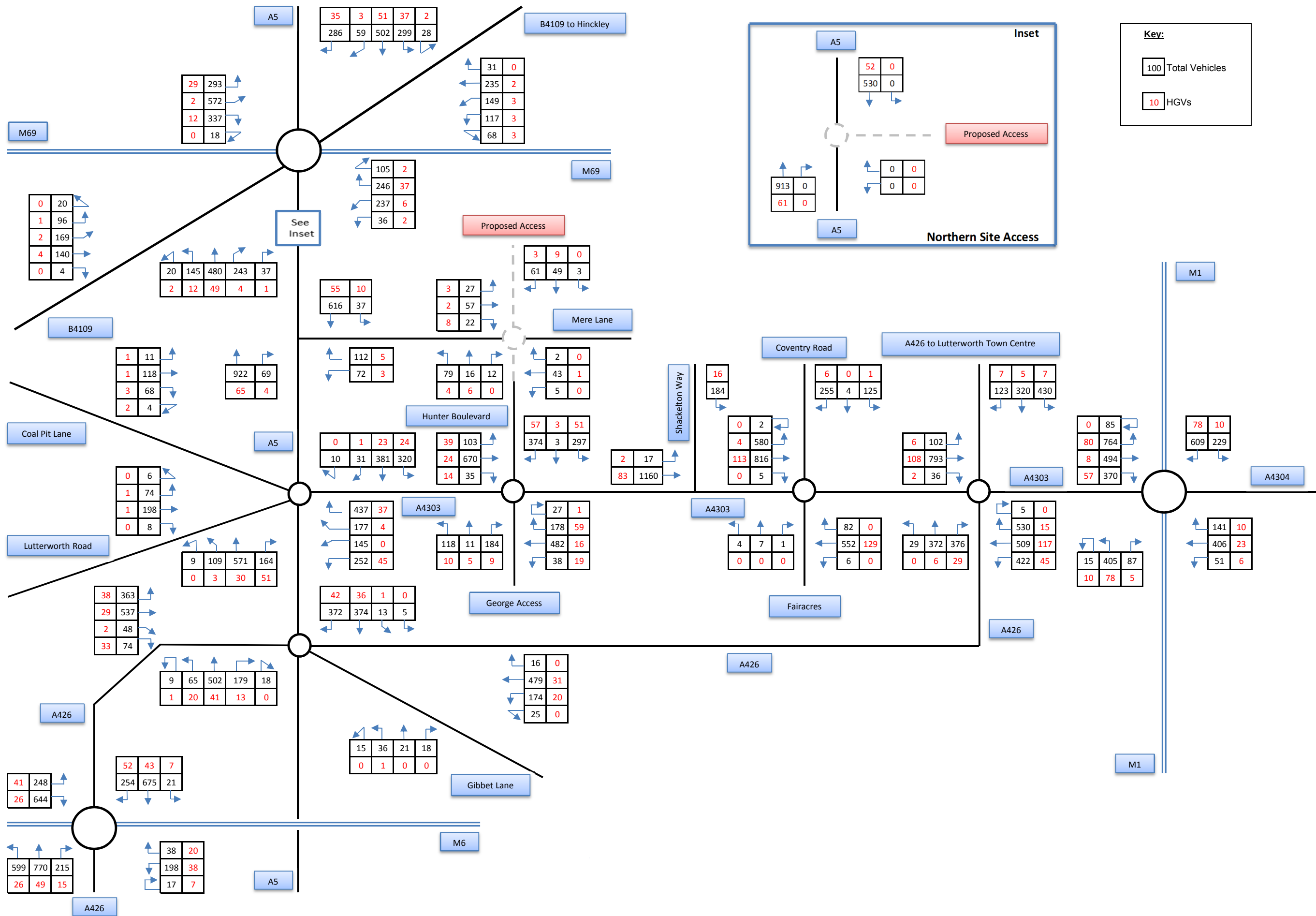
Addendum Transport Assessment

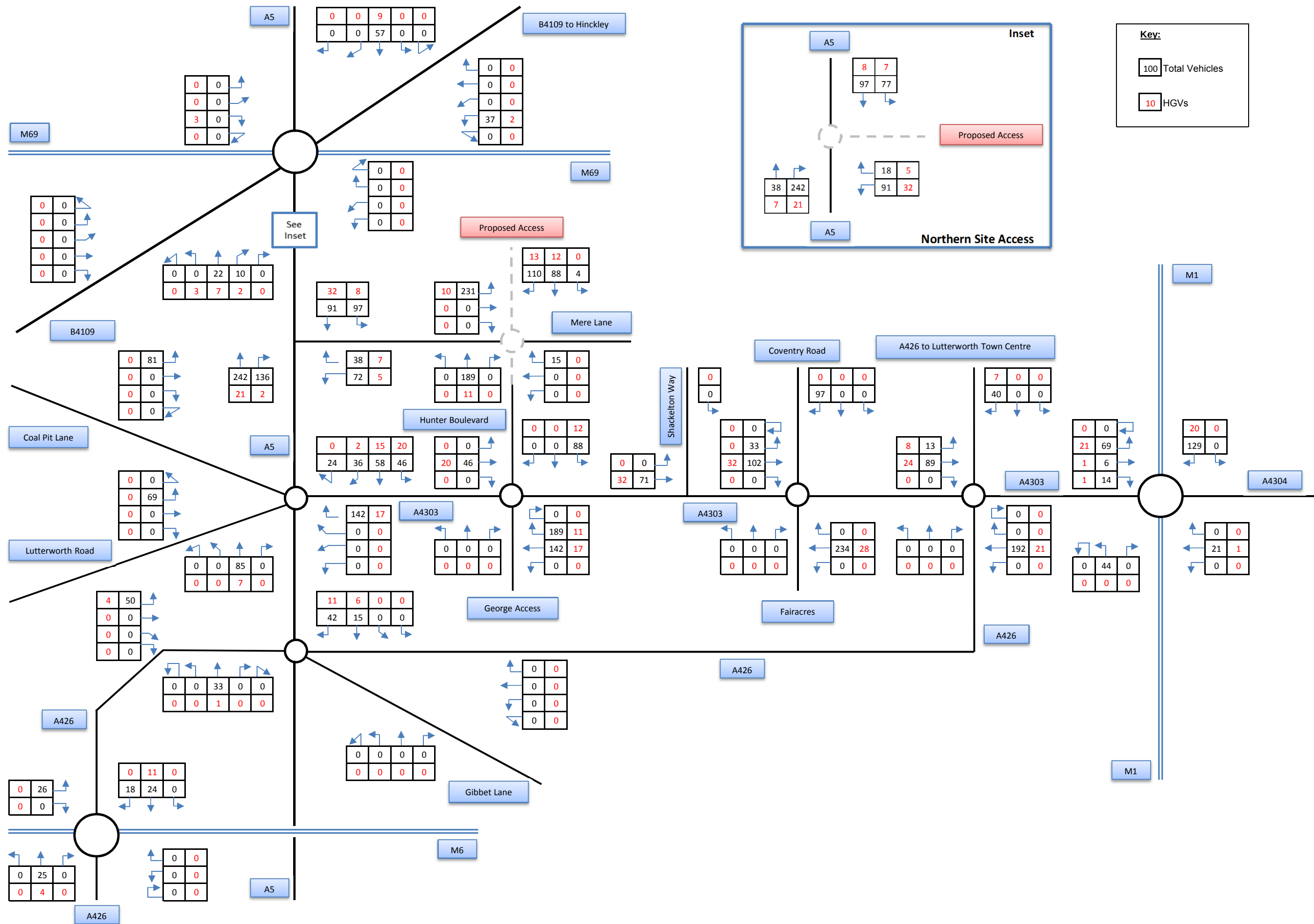
Appendix A – Traffic Forecasts Based on Manual Assignment

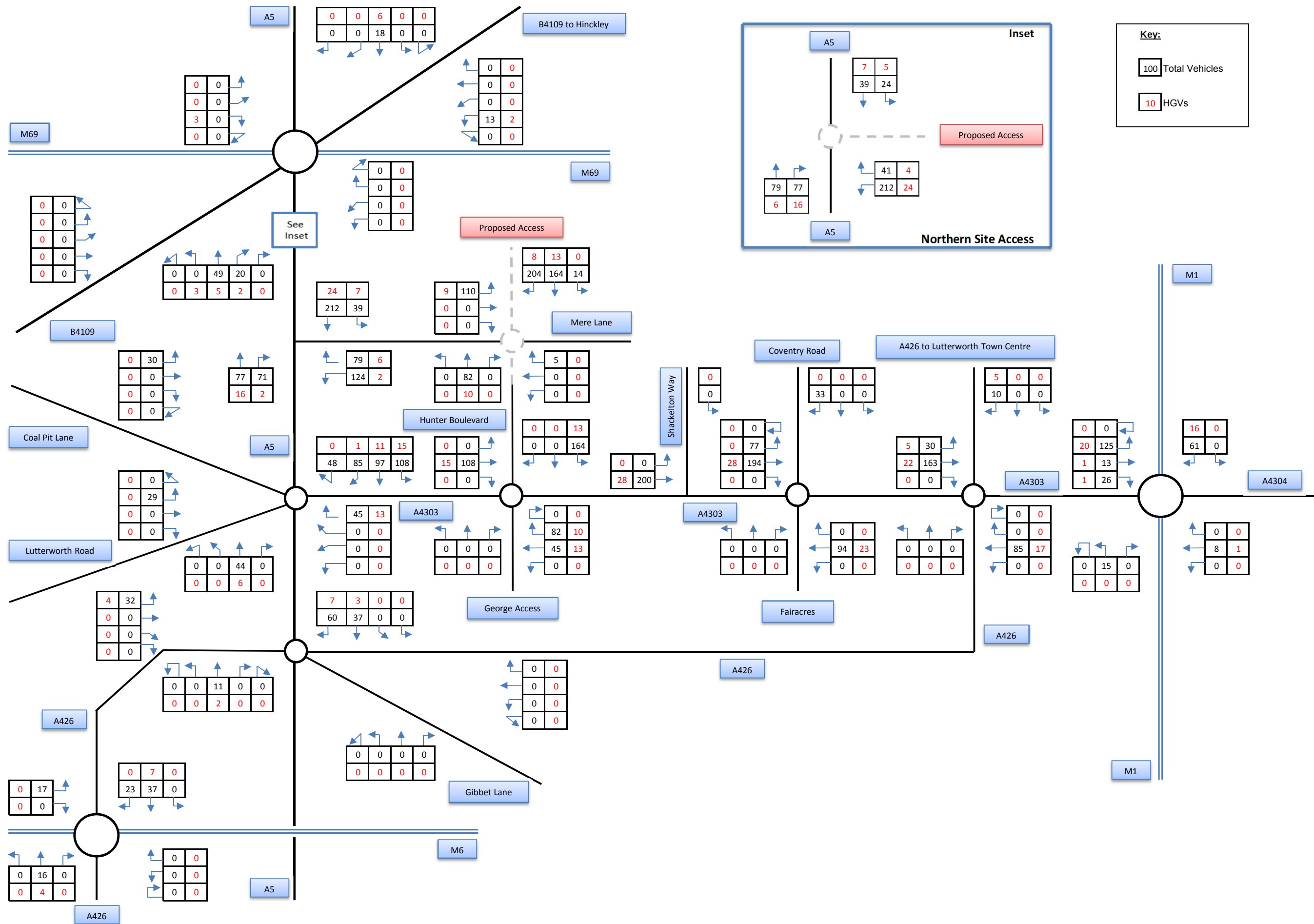


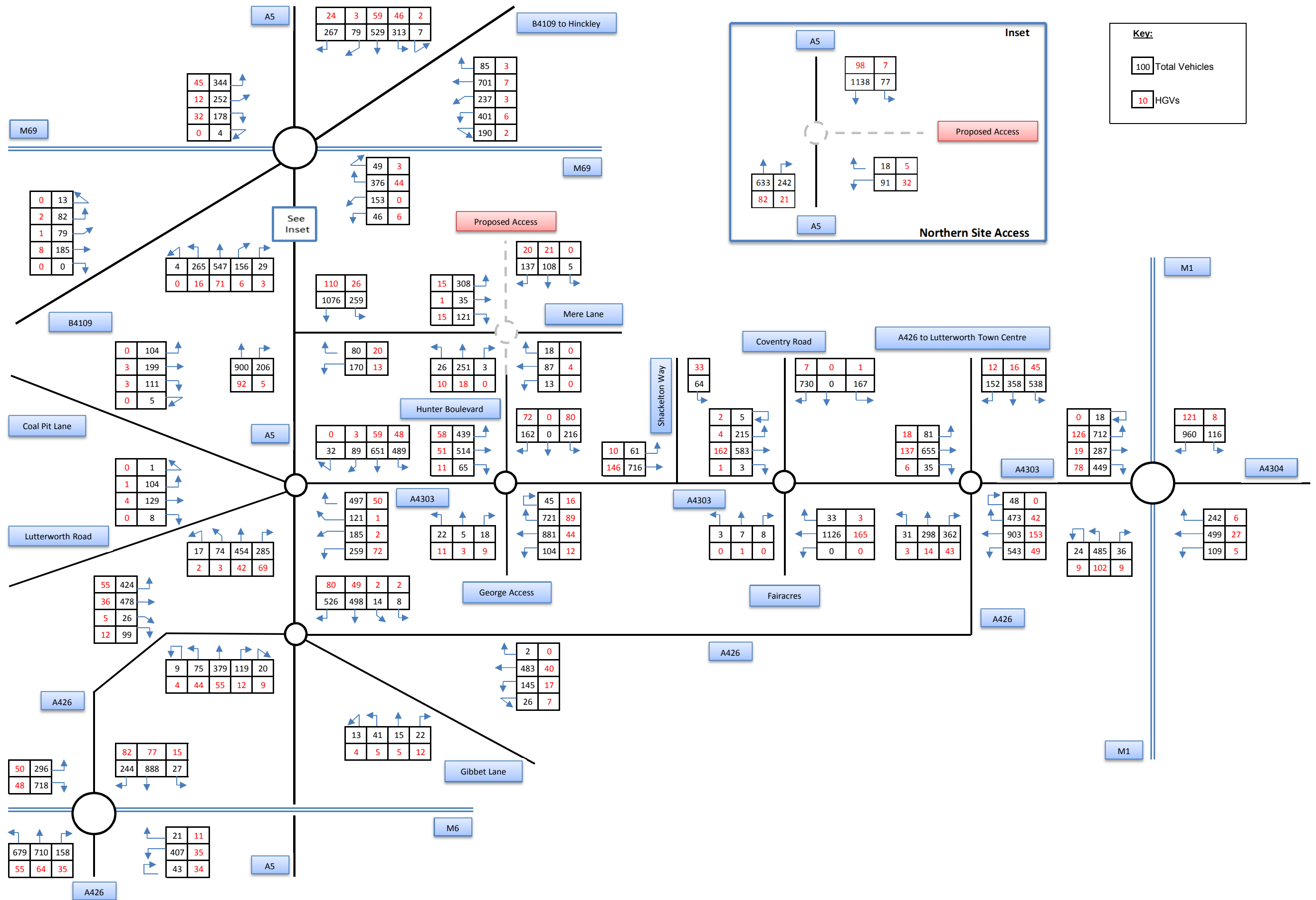


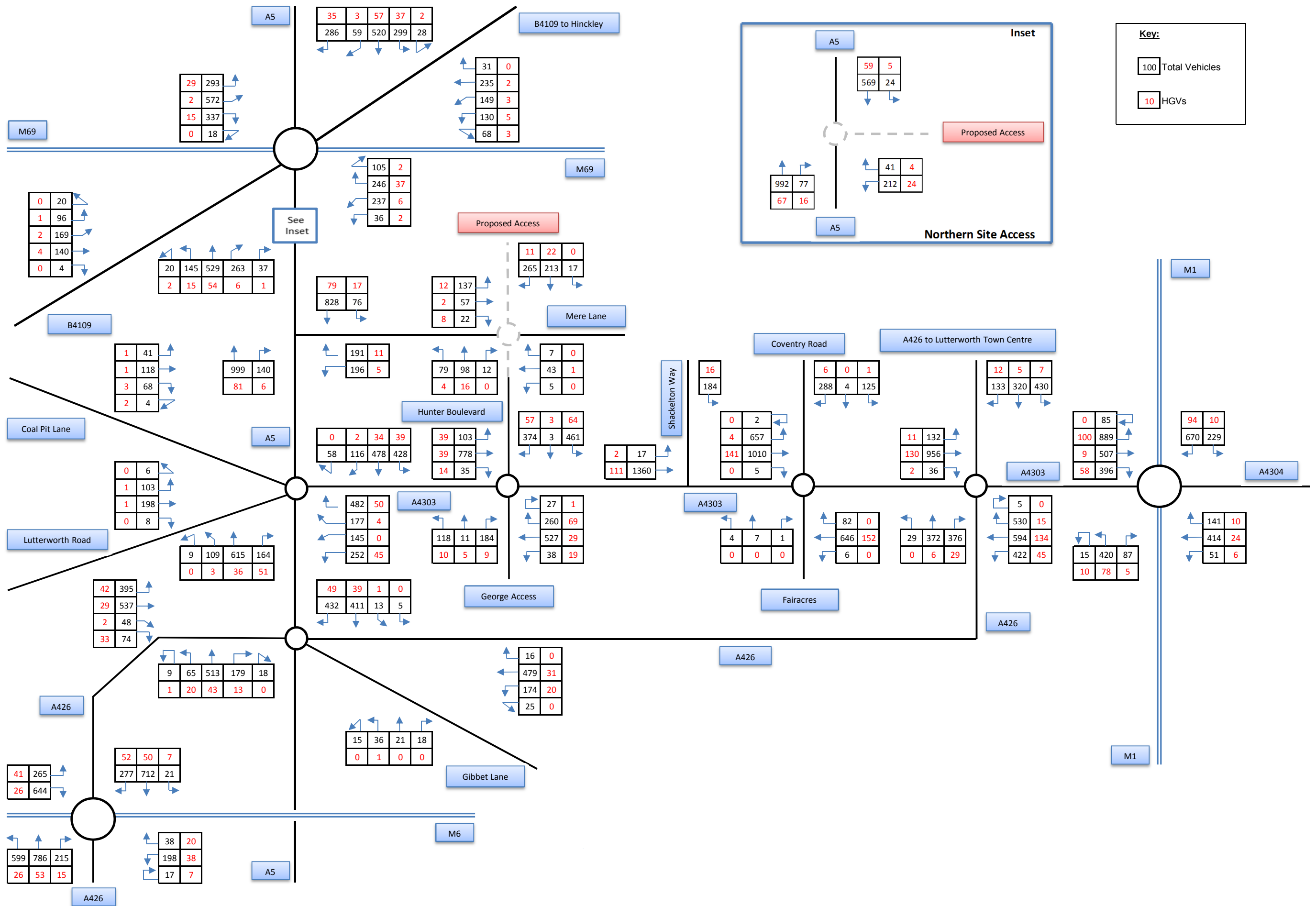


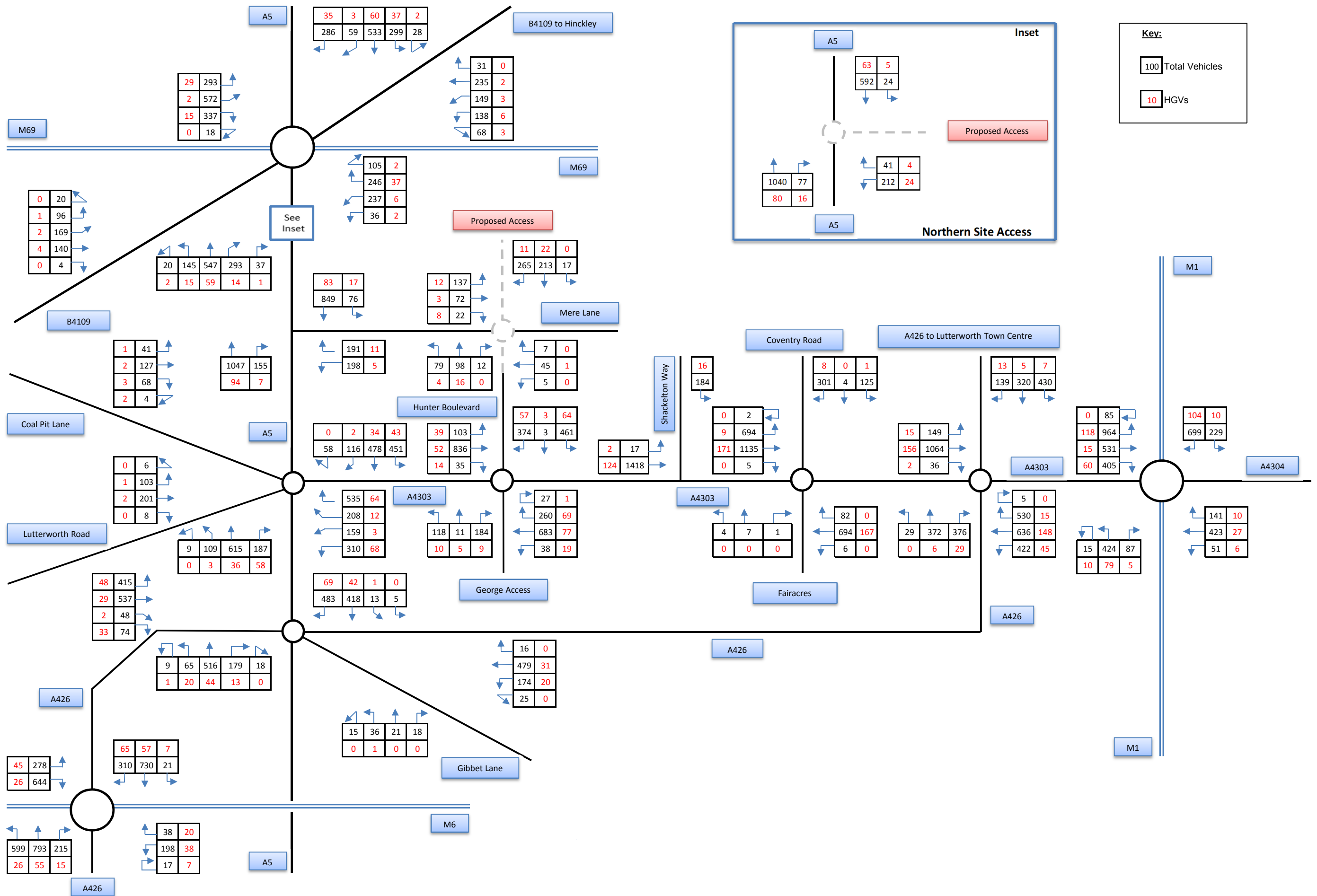












Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix B – Traffic Forecasts Based on LLITM

DHL Committed Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	0	0	13	0	0
B4109 North	0	0	0	7	0	0
M69 East	0	0	0	0	0	0
A5 South	6	1	0	0	0	0
B4109 South	0	0	0	0	0	0
M69 West	0	0	0	0	0	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	36	0
Mere Lane	10	0	24
A5 South	0	45	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	0	13	8	4
A4303	0	0	0	0	0
A5 South	14	0	0	0	0
Lutterworth Road	14	0	0	0	0
Coal Pit Lane	17	0	0	0	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	0	0	6	7
A426 North	0	0	0	0	0
Gibbet Lane	0	0	0	0	0
A5 South	8	0	0	0	0
A426 South	5	0	0	0	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	6	1
M6 East	0	0	0	0
A426 South	4	0	0	0
M6 West	2	0	0	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	29	0	0
A4303 East	69	0	0	0
George Access	0	0	0	0
A4303 West	0	0	0	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	1	29	34
Mere Lane East	3	0	0	0
Hunter Boulevard	69	0	0	0
Mere Lane West	82	0	0	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	0	0
A4303 East	0	0	0
A4303 West	0	29	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	0	0	21
A4303 East	0	0	0	48
Fairacres	0	0	0	0
A4303 West	6	23	0	0

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	0	0	11
A4303 East	0	0	0	37
A426 South	0	0	0	0
A4303 West	5	16	0	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	0	0	25
A4304	0	0	0	4
M1 South	0	0	0	8
A4303	14	1	2	0

Largest Growth in Turning Movement from LLITM - 2026 Without Development

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	11	382	420	129	292
B4109 North	88	0	159	280	339	654
M69 East	452	62	0	57	338	0
A5 South	482	138	33	0	6	247
B4109 South	101	130	292	0	0	19
M69 West	361	297	0	189	7	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	13	1078
Mere Lane	14	0	91
A5 South	668	45	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	620	526	53	4
A4303	404	0	601	415	62
A5 South	340	464	0	67	67
Lutterworth Road	38	292	30	0	1
Coal Pit Lane	6	295	100	5	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	7	14	560	436
A426 North	1	0	22	214	407
Gibbet Lane	30	23	0	25	45
A5 South	333	70	22	9	79
A426 South	613	656	56	72	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	42	803
M6 East	31	77	828	0
A426 South	1009	247	0	551
M6 West	390	0	647	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	141	0	433
A4303 East	592	61	98	903
George Access	8	7	0	14
A4303 West	691	727	76	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	0	0	0
Mere Lane East	0	0	0	101
Hunter Boulevard	0	0	0	0
Mere Lane West	0	56	0	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	97	0
A4303 East	0	0	1671
A4303 West	71	953	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	163	0	664
A4303 East	58	0	0	1094
Fairacres	8	8	0	3
A4303 West	227	716	4	7

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	651	335	141
A4303 East	615	0	639	880
A426 South	314	384	0	49
A4303 West	90	770	45	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	154	0	931
A4304	260	0	129	501
M1 South	0	57	33	732
A4303	696	317	748	0

Network Adjutments for Connection to Existing Magna Park

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	0	0	0	0	0
B4109 North	0	0	0	0	0	0
M69 East	0	0	0	0	0	0
A5 South	0	0	0	0	0	0
B4109 South	0	0	0	0	0	0
M69 West	0	0	0	0	0	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	137	-137
Mere Lane	36	0	-13
A5 South	-36	-3	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	-150	0	0	0
A4303	-39	0	0	0	0
A5 South	0	0	0	0	0
Lutterworth Road	0	0	0	0	0
Coal Pit Lane	0	0	0	0	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	0	0	0	0
A426 North	0	0	0	0	0
Gibbet Lane	0	0	0	0	0
A5 South	0	0	0	0	0
A426 South	0	0	0	0	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	0	0
M6 East	0	0	0	0
A426 South	0	0	0	0
M6 West	0	0	0	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	0	0	-39
A4303 East	0	0	0	0
George Access	0	0	0	0
A4303 West	-150	0	0	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	0	0	0
Mere Lane East	0	0	13	-13
Hunter Boulevard	0	3	0	36
Mere Lane West	0	-3	137	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	0	0
A4303 East	0	0	0
A4303 West	0	0	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	0	0	0
A4303 East	0	0	0	0
Fairacres	0	0	0	0
A4303 West	0	0	0	0

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	0	0	0
A4303 East	0	0	0	0
A426 South	0	0	0	0
A4303 West	0	0	0	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	0	0	0
A4304	0	0	0	0
M1 South	0	0	0	0
A4303	0	0	0	0

Final AM Peak 2026 Without Development Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	11	382	433	129	292
B4109 North	88	0	159	287	339	654
M69 East	452	62	0	57	338	0
A5 South	488	139	33	0	6	247
B4109 South	101	130	292	0	0	19
M69 West	361	297	0	189	7	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	186	941
Mere Lane	60	0	102
A5 South	632	87	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	470	539	61	8
A4303	365	0	601	415	62
A5 South	354	464	0	67	67
Lutterworth Road	52	292	30	0	1
Coal Pit Lane	23	295	100	5	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	7	14	566	443
A426 North	1	0	22	214	407
Gibbet Lane	30	23	0	25	45
A5 South	341	70	22	9	79
A426 South	618	656	56	72	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	42	809
M6 East	31	77	828	0
A426 South	1013	247	0	551
M6 West	392	0	647	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	170	0	395
A4303 East	661	61	98	903
George Access	8	7	0	14
A4303 West	541	727	76	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	1	29	34
Mere Lane East	3	0	13	88
Hunter Boulevard	69	3	0	36
Mere Lane West	82	53	137	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	97	0
A4303 East	0	0	1671
A4303 West	71	982	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	163	0	685
A4303 East	58	0	0	1142
Fairacres	8	8	0	3
A4303 West	233	739	4	7

A4303/ A426 Roundabout

DHL Committed Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	0	0	3	0	0
B4109 North	0	0	0	2	0	0
M69 East	0	0	0	0	0	0
A5 South	11	3	0	0	0	0
B4109 South	0	0	0	0	0	0
M69 West	0	0	0	0	0	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	10	0
Mere Lane	25	0	40
A5 South	0	21	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	0	13	18	8
A4303	0	0	0	0	0
A5 South	8	0	0	0	0
Lutterworth Road	8	0	0	0	0
Coal Pit Lane	6	0	0	0	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	0	0	8	6
A426 North	0	0	0	0	0
Gibbet Lane	0	0	0	0	0
A5 South	5	0	0	0	0
A426 South	2	0	0	0	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	5	1
M6 East	0	0	0	0
A426 South	2	0	0	0
M6 West	1	0	0	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	58	0	0
A4303 East	22	0	0	0
George Access	0	0	0	0
A4303 West	0	0	0	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	3	58	64
Mere Lane East	2	0	0	0
Hunter Boulevard	22	0	0	0
Mere Lane West	30	0	0	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	0	0
A4303 East	0	0	0
A4303 West	0	58	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	0	0	6
A4303 East	0	0	0	15
Fairacres	0	0	0	0
A4303 West	17	40	0	0

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	0	0	3
A4303 East	0	0	0	11
A426 South	0	0	0	0
A4303 West	8	34	0	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	0	0	10
A4304	0	0	0	1
M1 South	0	0	0	1
A4303	28	2	4	0

Largest Growth in Turning Movement from LLITM - 2026 Without Development

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	31	330	433	97	266
B4109 North	28	0	66	79	246	194
M69 East	295	84	0	38	493	0
A5 South	442	202	43	0	37	134
B4109 South	131	225	234	3	0	24
M69 West	298	577	0	287	32	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	12	600
Mere Lane	16	0	57
A5 South	1003	67	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	347	347	24	2
A4303	643	0	279	414	124
A5 South	578	277	0	44	90
Lutterworth Road	81	343	83	0	6
Coal Pit Lane	6	169	46	6	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	3	17	335	426
A426 North	8	0	16	158	523
Gibbet Lane	20	12	0	24	65
A5 South	539	124	37	7	57
A426 South	299	817	47	76	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	28	859	295
M6 East	93	24	689	0
A426 South	771	276	0	403
M6 West	330	0	435	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	279	6	510
A4303 East	203	28	23	708
George Access	16	172	0	102
A4303 West	195	822	12	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	0	0	0
Mere Lane East	0	0	0	72
Hunter Boulevard	0	0	0	0
Mere Lane West	0	76	0	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	200	0
A4303 East	0	0	1017
A4303 West	19	1369	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	186	4	300
A4303 East	84	0	6	814
Fairacres	7	1	0	4
A4303 West	582	1004	5	2

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	493	337	134
A4303 East	517	0	451	761
A426 South	383	492	0	39
A4303 West	162	956	64	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	256	0	635
A4304	162	0	78	511
M1 South	0	87	25	764
A4303	912	525	469	0

Network Adjutments for Connection to Existing Magna Park

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	0	0	0	0	0
B4109 North	0	0	0	0	0	0
M69 East	0	0	0	0	0	0
A5 South	0	0	0	0	0	0
B4109 South	0	0	0	0	0	0
M69 West	0	0	0	0	0	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	30	-30
Mere Lane	83	0	-5
A5 South	-83	-12	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	-35	0	0	0
A4303	-94	0	0	0	0
A5 South	0	0	0	0	0
Lutterworth Road	0	0	0	0	0
Coal Pit Lane	0	0	0	0	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	0	0	0	0
A426 North	0	0	0	0	0
Gibbet Lane	0	0	0	0	0
A5 South	0	0	0	0	0
A426 South	0	0	0	0	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	0	0
M6 East	0	0	0	0
A426 South	0	0	0	0
M6 West	0	0	0	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	0	0	-94
A4303 East	0	0	0	0
George Access	0	0	0	0
A4303 West	-35	0	0	0

Proposed Access at Mere Lane

	#VALUE!	#VALUE!	#VALUE!	#VALUE!
New Access	0	0	0	0
Mere Lane East	0	0	5	-5
Hunter Boulevard	0	12	0	83
Mere Lane West	0	-12	30	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	0	0
A4303 East	0	0	0
A4303 West	0	0	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	0	0	0
A4303 East	0	0	0	0
Fairacres	0	0	0	0
A4303 West	0	0	0	0

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	0	0	0
A4303 East	0	0	0	0
A426 South	0	0	0	0
A4303 West	0	0	0	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	0	0	0
A4304	0	0	0	0
M1 South	0	0	0	0
A4303	0	0	0	0

Final PM Peak 2026 Without Development Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	31	330	436	97	266
B4109 North	28	0	66	81	246	194
M69 East	295	84	0	38	493	0
A5 South	453	205	43	0	37	134
B4109 South	131	225	234	3	0	24
M69 West	298	577	0	287	32	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	52	570
Mere Lane	124	0	93
A5 South	920	77	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	312	360	42	10
A4303	549	0	279	414	124
A5 South	586	277	0	44	90
Lutterworth Road	89	343	83	0	6
Coal Pit Lane	12	169	46	6	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	3	17	343	432
A426 North	8	0	16	158	523
Gibbet Lane	20	12	0	24	65
A5 South	544	124	37	7	57
A426 South	301	817	47	76	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	28	864	296
M6 East	93	24	689	0
A426 South	773	276	0	403
M6 West	331	0	435	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	337	6	415
A4303 East	225	28	23	708
George Access	16	172	0	102
A4303 West	160	822	12	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	3	58	64
Mere Lane East	2	0	5	68
Hunter Boulevard	22	12	0	83
Mere Lane West	30	64	30	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	200	0
A4303 East	0	0	1017
A4303 West	19	1427	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	186	4	306
A4303 East	84	0	6	829
Fairacres	7	1	0	4
A4303 West	599	1044	5	2

A4303/ A426 Roundabout

Logistics Institute Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	0	0	9	0	0
B4109 North	0	0	0	6	0	0
M69 East	0	0	0	0	0	0
A5 South	4	4	0	0	0	6
B4109 South	0	0	0	0	0	0
M69 West	0	0	0	6	0	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	32	0
Mere Lane	18	0	14
A5 South	0	31	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	0	10	3	3
A4303	0	0	0	0	0
A5 South	17	0	0	0	0
Lutterworth Road	8	0	0	0	0
Coal Pit Lane	8	0	0	0	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	0	0	0	10
A426 North	0	0	0	0	0
Gibbet Lane	0	0	0	0	0
A5 South	2	0	0	0	0
A426 South	15	0	0	0	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	6	4
M6 East	0	0	0	0
A426 South	8	0	0	0
M6 West	7	0	0	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	26	0	0
A4303 East	51	0	0	0
George Access	0	0	0	0
A4303 West	0	0	0	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	0	26	34
Mere Lane East	2	0	0	0
Hunter Boulevard	51	0	0	0
Mere Lane West	65	0	0	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	0	0
A4303 East	0	0	0
A4303 West	0	8	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	0	0	9
A4303 East	0	0	0	42
Fairacres	0	0	0	0
A4303 West	3	23	0	0

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	0	0	3
A4303 East	0	0	0	38
A426 South	0	0	0	0
A4303 West	0	23	0	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	0	0	28
A4304	0	0	0	5
M1 South	0	0	0	6
A4303	17	3	2	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	0	32
Site Access	0	0	0
A5 South	18	0	0

Largest Growth in Turning Movement from LUTM - 2026 With Development

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	11	370	445	132	298
B4109 North	86	0	152	291	338	654
M69 East	450	61	0	62	350	0
A5 South	481	137	32	0	6	253
B4109 South	101	130	287	0	0	21
M69 West	356	289	0	200	7	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	337	908
Mere Lane	122	0	132
A5 South	654	137	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	433	568	75	4
A4303	368	0	615	398	60
A5 South	388	464	0	66	67
Lutterworth Road	92	285	25	0	1
Coal Pit Lane	6	239	100	5	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	7	14	569	441
A426 North	1	0	22	210	408
Gibbet Lane	31	23	0	24	45
A5 South	347	67	22	9	78
A426 South	644	661	55	71	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	42	806	281
M6 East	31	77	821	0
A426 South	1034	244	0	558
M6 West	400	0	623	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	201	5	396
A4303 East	712	61	93	878
George Access	9	6	0	10
A4303 West	480	719	70	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	15	68	64
Mere Lane East	52	0	44	78
Hunter Boulevard	121	13	0	35
Mere Lane West	105	42	189	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	97	0
A4303 East	0	0	1754
A4303 West	71	1015	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	158	0	637
A4303 East	58	0	0	1218
Fairacres	8	8	0	3
A4303 West	229	772	4	7

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	662	334	148
A4303 East	615	0	633	990
A426 South	317	383	0	48
A4303 West	94	834	43	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	152	0	1000
A4304	257	0	127	507
M1 South	0	62	33	760
A4303	720	323	780	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	123	1286
Site Access	51	0	0
A5 South	691	0	0

Final AM Peak 2026 With Development Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	11	370	454	132	298
B4109 North	86	0	152	297	338	654
M69 East	450	61	0	62	350	0
A5 South	485	141	32	0	6	259
B4109 South	101	130	287	0	0	21
M69 West	356	289	0	206	7	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	455	959
Mere Lane	161	0	95
A5 South	737	85	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	433	578	78	7
A4303	368	0	615	398	60
A5 South	405	464	0	66	67
Lutterworth Road	100	285	25	0	1
Coal Pit Lane	14	239	100	5	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	7	14	569	451
A426 North	1	0	22	210	408
Gibbet Lane	31	23	0	24	45
A5 South	349	67	22	9	78
A426 South	659	661	55	71	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	42	812	285
M6 East	31	77	821	0
A426 South	1042	244	0	558
M6 West	407	0	623	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	227	5	396
A4303 East	763	61	93	878
George Access	9	6	0	10
A4303 West	480	719	70	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	15	94	68
Mere Lane East	54	0	44	78
Hunter Boulevard	172	13	0	35
Mere Lane West	173	42	189	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	97	0
A4303 East	0	0	1754
A4303 West	71	1023	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	158	0	646
A4303 East	58	0	0	1260
Fairacres	8	8	0	3
A4303 West	232	795	4	7

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	662	334	151
A4303 East	615	0	633	1028
A426 South	317	383	0	48
A4303 West	94	857	43	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	152	0	1028
A4304	257	0	127	512
M1 South	0	62	33	766
A4303	737	326	782	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	37	1404
Site Access	30	0	51
A5 South	730	83	0

Manual Adjustment

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North		86	51
Mere Lane	21		-51
A5 South	83	-83	

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access				-30
Mere Lane East				
Hunter Boulevard				
Mere Lane West	3			

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North		-86	86
Site Access	-21		51
A5 South	21	83	

Logistics Institute Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	0	0	2	0	0
B4109 North	0	0	0	2	0	0
M69 East	0	0	0	0	0	0
A5 South	7	3	0	0	0	0
B4109 South	0	0	0	0	0	0
M69 West	0	0	0	0	0	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	8	0
Mere Lane	21	0	32
A5 South	0	14	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	0	16	10	7
A4303	0	0	0	0	0
A5 South	8	0	0	0	0
Lutterworth Road	3	0	0	0	0
Coal Pit Lane	3	0	0	0	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	0	0	2	13
A426 North	0	0	0	0	0
Gibbet Lane	0	0	0	0	0
A5 South	0	0	0	0	0
A426 South	8	0	0	0	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	6	7
M6 East	0	0	0	0
A426 South	4	0	0	0
M6 West	4	0	0	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	43	0	0
A4303 East	18	0	0	0
George Access	0	0	0	0
A4303 West	0	0	0	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	2	43	53
Mere Lane East	0	0	0	0
Hunter Boulevard	18	0	0	0
Mere Lane West	22	0	0	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	0	0
A4303 East	0	0	0
A4303 West	0	16	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	0	0	3
A4303 East	0	0	0	15
Fairacres	0	0	0	0
A4303 West	10	33	0	0

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	0	0	0
A4303 East	0	0	0	15
A426 South	0	0	0	0
A4303 West	3	30	0	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	0	0	11
A4304	0	0	0	1
M1 South	0	0	0	2
A4303	23	3	5	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	0	8
Site Access	0	0	0
A5 South	21	0	0

Largest Growth in Turning Movement from LUTM - 2026 With Development

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	30	324	429	94	262
B4109 North	29	0	70	83	257	205
M69 East	300	85	0	39	508	0
A5 South	444	201	44	0	38	137
B4109 South	131	222	241	3	0	25
M69 West	301	577	0	295	32	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	297	494
Mere Lane	162	0	156
A5 South	911	111	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	251	404	64	2
A4303	453	0	275	399	108
A5 South	590	272	0	44	90
Lutterworth Road	117	342	68	0	6
Coal Pit Lane	6	212	46	6	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	3	17	337	444
A426 North	8	0	16	152	533
Gibbet Lane	19	12	0	22	65
A5 South	531	132	36	7	57
A426 South	297	839	46	76	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	28	928	296
M6 East	59	24	712	0
A426 South	777	278	0	420
M6 West	332	0	444	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	354	7	347
A4303 East	262	28	22	678
George Access	51	168	0	94
A4303 West	127	816	12	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	48	101	117
Mere Lane East	21	0	19	53
Hunter Boulevard	65	29	0	148
Mere Lane West	61	58	65	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	200	0
A4303 East	0	0	1057
A4303 West	19	1447	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	197	4	276
A4303 East	82	0	6	902
Fairacres	7	1	0	4
A4303 West	568	1103	5	2

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	497	338	148
A4303 East	513	0	448	827
A426 South	385	489	0	39
A4303 West	172	1038	96	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	254	0	662
A4304	160	0	77	515
M1 South	0	87	25	779
A4303	987	532	490	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	52	667
Site Access	107	0	0
A5 South	1092	0	0

Final PM Peak 2026 With Development Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	30	324	431	94	262
B4109 North	29	0	70	85	257	205
M69 East	300	85	0	39	508	0
A5 South	451	204	44	0	38	137
B4109 South	131	222	241	3	0	25
M69 West	301	577	0	295	32	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	325	602
Mere Lane	247	0	80
A5 South	964	72	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	251	420	74	9
A4303	453	0	275	399	108
A5 South	598	272	0	44	90
Lutterworth Road	120	342	68	0	6
Coal Pit Lane	9	212	46	6	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	3	17	339	457
A426 North	8	0	16	152	533
Gibbet Lane	19	12	0	22	65
A5 South	531	132	36	7	57
A426 South	305	839	46	76	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	28	934	303
M6 East	59	24	712	0
A426 South	781	278	0	420
M6 West	336	0	444	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	397	7	347
A4303 East	280	28	22	678
George Access	51	168	0	94
A4303 West	127	816	12	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	50	144	126
Mere Lane East	21	0	19	53
Hunter Boulevard	83	29	0	148
Mere Lane West	50	58	65	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	200	0
A4303 East	0	0	1057
A4303 West	19	1463	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	197	4	279
A4303 East	82	0	6	917
Fairacres	7	1	0	4
A4303 West	578	1136	5	2

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	497	338	148
A4303 East	513	0	448	842
A426 South	385	489	0	39
A4303 West	175	1068	96	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	254	0	673
A4304	160	0	77	516
M1 South	0	87	25	781
A4303	1010	535	495	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	32	695
Site Access	43	0	108
A5 South	1177	53	0

Manual Adjustment

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North		20	108
Mere Lane	64		-108
A5 South	53	-53	

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access				-44
Mere Lane East				
Hunter Boulevard				
Mere Lane West	-33			

Logistics Institute Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	0	0	9	0	0
B4109 North	0	0	0	6	0	0
M69 East	0	0	0	0	0	0
A5 South	4	4	0	0	0	6
B4109 South	0	0	0	0	0	0
M69 West	0	0	0	6	0	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	32	0
Mere Lane	18	0	14
A5 South	0	31	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	0	10	3	3
A4303	0	0	0	0	0
A5 South	17	0	0	0	0
Lutterworth Road	8	0	0	0	0
Coal Pit Lane	8	0	0	0	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	0	0	0	10
A426 North	0	0	0	0	0
Gibbet Lane	0	0	0	0	0
A5 South	2	0	0	0	0
A426 South	15	0	0	0	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	6	4
M6 East	0	0	0	0
A426 South	8	0	0	0
M6 West	7	0	0	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	26	0	0
A4303 East	51	0	0	0
George Access	0	0	0	0
A4303 West	0	0	0	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	0	26	34
Mere Lane East	2	0	0	0
Hunter Boulevard	51	0	0	0
Mere Lane West	65	0	0	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	0	0
A4303 East	0	0	0
A4303 West	0	8	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	0	0	9
A4303 East	0	0	0	42
Fairacres	0	0	0	0
A4303 West	3	23	0	0

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	0	0	3
A4303 East	0	0	0	38
A426 South	0	0	0	0
A4303 West	0	23	0	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	0	0	28
A4304	0	0	0	5
M1 South	0	0	0	6
A4303	17	3	2	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	0	32
Site Access	0	0	0
A5 South	18	0	0

Largest Growth in Turning Movement from LUTM - 2026 With Development + Symmetry Park

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	11	370	451	134	299
B4109 North	86	0	152	294	343	657
M69 East	448	61	0	63	355	0
A5 South	481	137	32	0	6	255
B4109 South	100	128	284	0	0	20
M69 West	354	287	0	202	7	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	309	939
Mere Lane	121	0	132
A5 South	665	138	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	473	555	74	4
A4303	372	0	639	388	53
A5 South	389	486	0	70	67
Lutterworth Road	93	307	26	0	1
Coal Pit Lane	6	287	100	5	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	7	13	570	442
A426 North	1	0	22	206	408
Gibbet Lane	32	23	0	24	44
A5 South	347	61	20	9	78
A426 South	686	677	55	71	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	42	811	282
M6 East	31	77	816	0
A426 South	1075	245	0	541
M6 West	417	0	623	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	206	5	399
A4303 East	687	61	94	883
George Access	9	6	0	10
A4303 West	501	806	70	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	16	69	63
Mere Lane East	52	0	66	78
Hunter Boulevard	119	14	0	35
Mere Lane West	106	42	170	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	97	0
A4303 East	0	0	1735
A4303 West	71	1124	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	160	0	634
A4303 East	55	0	0	1274
Fairacres	8	8	0	3
A4303 West	229	788	4	7

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	659	336	155
A4303 East	611	0	631	1032
A426 South	322	384	0	55
A4303 West	95	851	47	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	151	0	1035
A4304	257	0	129	493
M1 South	0	62	33	772
A4303	732	321	780	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	122	1296
Site Access	51	0	0
A5 South	701	0	0

Final AM Peak 2026 With Development Flows + Symmetry Park

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	11	370	460	134	299
B4109 North	86	0	152	300	343	657
M69 East	448	61	0	63	355	0
A5 South	485	141	32	0	6	261
B4109 South	100	128	284	0	0	20
M69 West	354	287	0	208	7	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	427	990
Mere Lane	160	0	95
A5 South	748	86	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	473	565	77	7
A4303	372	0	639	388	53
A5 South	406	486	0	70	67
Lutterworth Road	101	307	26	0	1
Coal Pit Lane	14	287	100	5	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	7	13	570	452
A426 North	1	0	22	206	408
Gibbet Lane	32	23	0	24	44
A5 South	349	61	20	9	78
A426 South	701	677	55	71	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	42	817	286
M6 East	31	77	816	0
A426 South	1083	245	0	541
M6 West	424	0	623	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	232	5	399
A4303 East	738	61	94	883
George Access	9	6	0	10
A4303 West	501	806	70	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	16	95	67
Mere Lane East	54	0	66	78
Hunter Boulevard	170	14	0	35
Mere Lane West	174	42	170	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	97	0
A4303 East	0	0	1735
A4303 West	71	1132	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	160	0	643
A4303 East	55	0	0	1316
Fairacres	8	8	0	3
A4303 West	232	811	4	7

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	659	336	158
A4303 East	611	0	631	1070
A426 South	322	384	0	55
A4303 West	95	874	47	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	151	0	1063
A4304	257	0	129	498
M1 South	0	62	33	778
A4303	749	324	782	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	36	1414
Site Access	30	0	51
A5 South	740	83	0

Manual Adjustment

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North		86	51
Mere Lane	21		-51
A5 South	83	-83	

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access				-30
Mere Lane East				
Hunter Boulevard				
Mere Lane West	3			

Logistics Institute Flows

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	0	0	2	0	0
B4109 North	0	0	0	2	0	0
M69 East	0	0	0	0	0	0
A5 South	7	3	0	0	0	0
B4109 South	0	0	0	0	0	0
M69 West	0	0	0	0	0	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	8	0
Mere Lane	21	0	32
A5 South	0	14	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	0	16	10	7
A4303	0	0	0	0	0
A5 South	8	0	0	0	0
Lutterworth Road	3	0	0	0	0
Coal Pit Lane	3	0	0	0	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	0	0	2	13
A426 North	0	0	0	0	0
Gibbet Lane	0	0	0	0	0
A5 South	0	0	0	0	0
A426 South	8	0	0	0	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	0	6	7
M6 East	0	0	0	0
A426 South	4	0	0	0
M6 West	4	0	0	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	43	0	0
A4303 East	18	0	0	0
George Access	0	0	0	0
A4303 West	0	0	0	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	2	43	53
Mere Lane East	0	0	0	0
Hunter Boulevard	18	0	0	0
Mere Lane West	22	0	0	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	0	0
A4303 East	0	0	0
A4303 West	0	16	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	0	0	3
A4303 East	0	0	0	15
Fairacres	0	0	0	0
A4303 West	10	33	0	0

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	0	0	0
A4303 East	0	0	0	15
A426 South	0	0	0	0
A4303 West	3	30	0	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	0	0	11
A4304	0	0	0	1
M1 South	0	0	0	2
A4303	23	3	5	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	0	8
Site Access	0	0	0
A5 South	21	0	0

Largest Growth in Turning Movement from LUTM - 2026 With Development + Symmetry Park

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	31	325	439	95	264
B4109 North	28	0	66	82	248	198
M69 East	303	86	0	40	506	0
A5 South	452	205	44	0	38	137
B4109 South	132	225	237	3	0	24
M69 West	298	573	0	295	32	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	295	501
Mere Lane	160	0	155
A5 South	945	111	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	260	394	64	2
A4303	495	0	319	414	120
A5 South	559	305	0	43	90
Lutterworth Road	115	337	58	0	6
Coal Pit Lane	6	236	45	6	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	3	25	466	422
A426 North	8	0	16	222	509
Gibbet Lane	19	12	0	13	33
A5 South	517	34	29	6	55
A426 South	518	903	108	70	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	28	971	303
M6 East	91	24	674	0
A426 South	780	275	0	421
M6 West	343	0	430	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	357	7	350
A4303 East	267	28	22	783
George Access	51	166	0	96
A4303 West	130	841	12	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	50	101	117
Mere Lane East	20	0	19	52
Hunter Boulevard	67	31	0	145
Mere Lane West	61	58	65	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	200	0
A4303 East	0	0	1178
A4303 West	19	1472	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	194	4	282
A4303 East	82	0	6	921
Fairacres	7	1	0	4
A4303 West	594	1158	5	2

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	495	343	142
A4303 East	512	0	450	851
A426 South	392	490	0	44
A4303 West	175	1089	96	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	255	0	679
A4304	156	0	76	511
M1 South	0	87	25	779
A4303	1029	534	497	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	51	670
Site Access	106	0	0
A5 South	1124	0	0

Final PM Peak 2026 With Development Flows + Symmetry Park

PCUs

M69 Junction 1

	A5 North	B4109 North	M69 East	A5 South	B4109 South	M69 West
A5 North	0	31	325	441	95	264
B4109 North	28	0	66	84	248	198
M69 East	303	86	0	40	506	0
A5 South	459	208	44	0	38	137
B4109 South	132	225	237	3	0	24
M69 West	298	573	0	295	32	0

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North	0	323	609
Mere Lane	245	0	79
A5 South	998	72	0

Cross in Hand Roundabout

	A5 North	A4303	A5 South	Lutterworth Road	Coal Pit Lane
A5 North	0	260	410	74	9
A4303	495	0	319	414	120
A5 South	567	305	0	43	90
Lutterworth Road	118	337	58	0	6
Coal Pit Lane	9	236	45	6	0

A5/ A426/ Gibbet Lane Roundabout

	A5 North	A426 North	Gibbet Lane	A5 South	A426 South
A5 North	0	3	25	468	435
A426 North	8	0	16	222	509
Gibbet Lane	19	12	0	13	33
A5 South	517	34	29	6	55
A426 South	526	903	108	70	0

M6 Junction 1

	A426 North	M6 East	A426 South	M6 West
A426 North	0	28	977	310
M6 East	91	24	674	0
A426 South	784	275	0	421
M6 West	347	0	430	0

Magna Park Access Roundabout

	Hunter Boulevard	A4303 East	George Access	A4303 West
Hunter Boulevard	0	400	7	350
A4303 East	285	28	22	783
George Access	51	166	0	96
A4303 West	130	841	12	0

Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access	0	52	144	126
Mere Lane East	20	0	19	52
Hunter Boulevard	85	31	0	145
Mere Lane West	50	58	65	0

Magna Park Left In Left Out

	Shackelton Way	A4303 East	A4303 West
Shackelton Way	0	200	0
A4303 East	0	0	1178
A4303 West	19	1488	0

A4303/ Coventry Road Roundabout

	Coventry Road	A4303 East	Fairacres	A4303 West
Coventry Road	0	194	4	285
A4303 East	82	0	6	936
Fairacres	7	1	0	4
A4303 West	604	1191	5	2

A4303/ A426 Roundabout

	A426 North	A4303 East	A426 South	A4303 West
A426 North	0	495	343	142
A4303 East	512	0	450	866
A426 South	392	490	0	44
A4303 West	178	1119	96	0

M1 Junction 20

	M1 North	A4304	M1 South	A4303
M1 North	0	255	0	690
A4304	156	0	76	512
M1 South	0	87	25	781
A4303	1052	537	502	0

Northern A5 Access

	A5 North	Site Access	A5 South
A5 North	0	31	698
Site Access	42	0	108
A5 South	1209	53	0

Manual Adjustment

A5/ Mere Lane

	A5 North	Mere Lane	A5 South
A5 North		20	108
Mere Lane	64		-108
A5 South	53	-53	

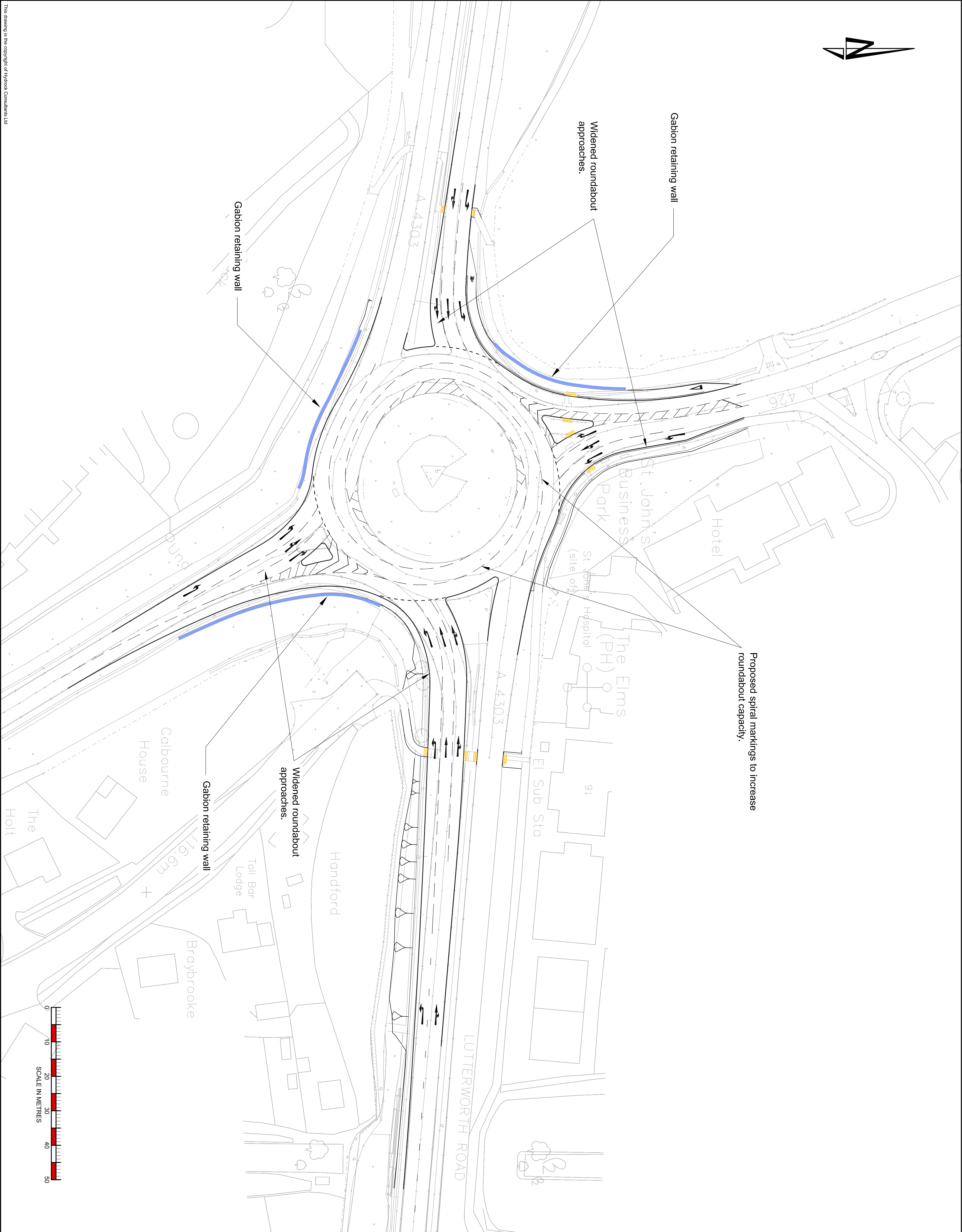
Proposed Access at Mere Lane

	New Access	Mere Lane East	Hunter Boulevard	Mere Lane West
New Access				-44
Mere Lane East				
Hunter Boulevard				
Mere Lane West	-33			

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix C – Hydrock Junction Improvements at A4303/A426 Roundabout



Notes:

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Project Manager for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Contract Issue drawings and specifications.

SAFETY, HEALTH AND

ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDOUS WASTE ACT ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING CONSTRUCTION

MAINTENANCE / CLEANING

DECOMMISSIONING / DEMOLITION

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT

Rev	Date	Description	By	Chd
P1	25-10-2016	First Issue	CHH	A/C

VolkerFitzpatrick

Hydrock
Hydrock Consultants Ltd
239 Ashby Road
WATTS
T +44 (0)161 233 0768
www.hydrock.com

IDI Gazeley
Brookfield Logistics Properties

Project Title:
**MAGNA PARK EXTENSION, LUTTERWORTH
PHASE 1 SECTION 278 WORKS**

Drawing Title:
**GENERAL ARRANGEMENT
SHEET 4 of 8
RUGBY ROAD ROUNDABOUT**

Drawing Status:
PRELIMINARY

Hydrock Job No:	C161222		
Drawn	Checked	Scale @ A1	Date
CHH	A/C	1 : 500	25-10-2016
Drawing Number:	C161222 - LCC1004		Revision:
			P1

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

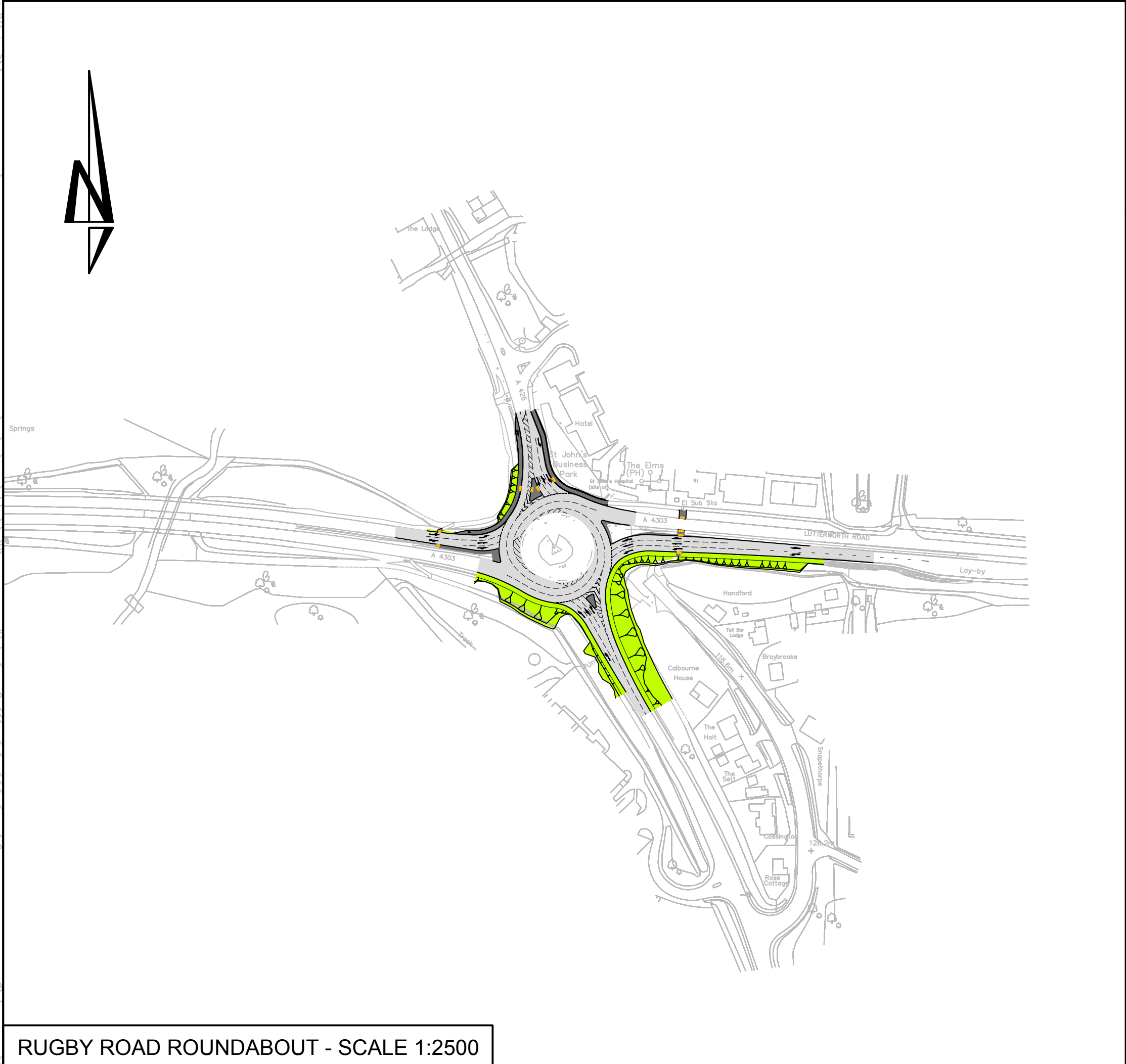
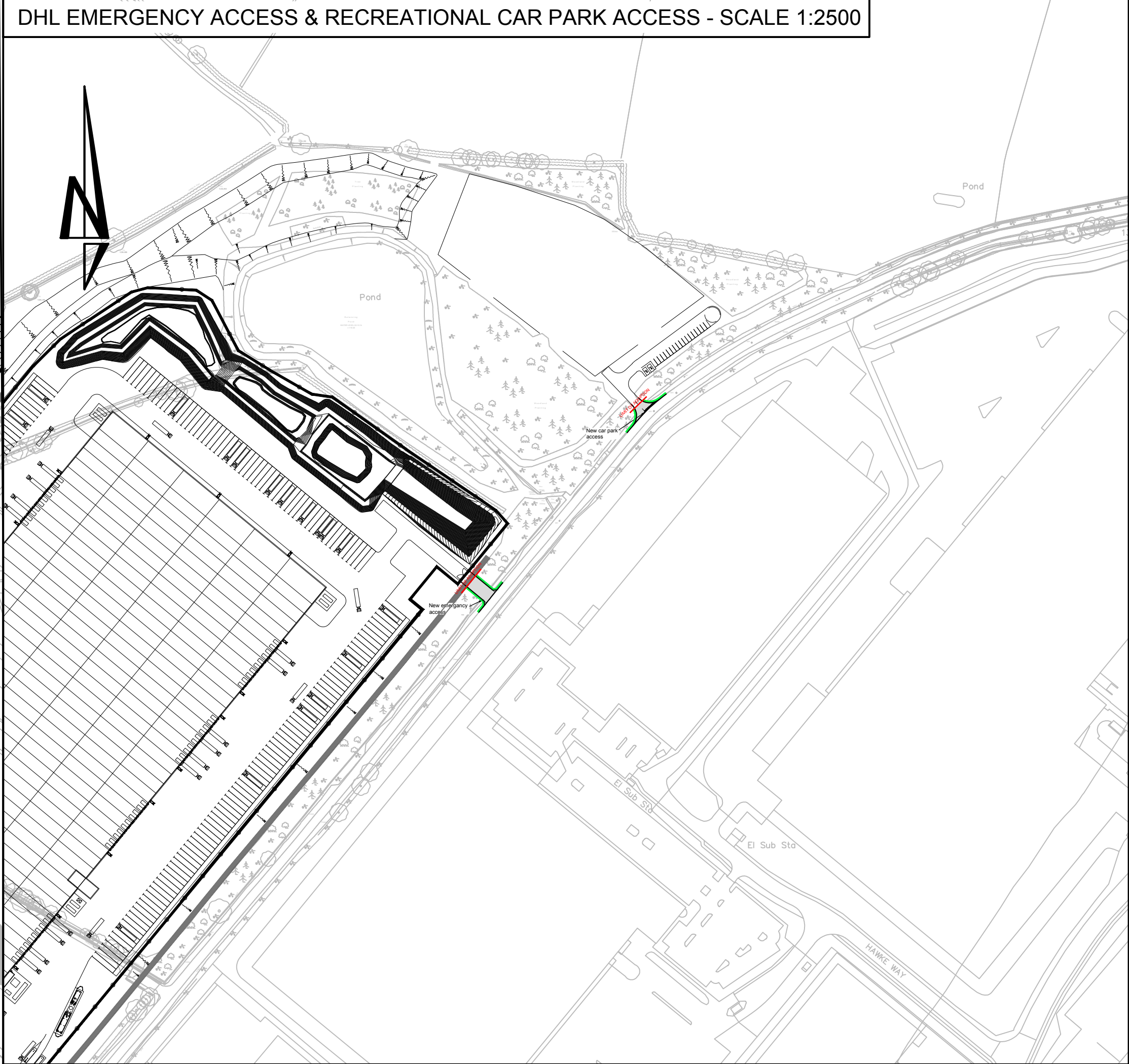
Appendix D – DHL Site Access Arrangements and A5/Mere Lane Improvements

A5 & MERE LANE - SCALE 1:2500



This drawing is the copyright of Hydrack Consultants Ltd

DHL EMERGENCY ACCESS & RECREATIONAL CAR PARK ACCESS - SCALE 1:2500



RUGBY ROAD ROUNDABOUT - SCALE 1:2500

Notes:

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Project Manager for verification. Figured dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Contract Issue drawings and specifications.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION

MAINTENANCE / CLEANING

DECOMMISSIONING / DEMOLITION

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

P1	06-10-2016	First Issue	CJH	AJC
Rev	Date	Description	By	Ckd

VolkerFitzpatrick

Hydrack

Hydrack Consultants Ltd
St Baldin's Hall
239 Ashley Road
Wals, Cheshire
WA15 8NE
T +44 (0)161 233 0746
www.hydrack.com

Client : **IDI Gazeley**
Brookfield Logistics Properties

Project Title : **MAGNA PARK EXTENSION, LUTTERWORTH PHASE 1 SECTION 278 WORKS**

Drawing Title : **EXTENT OF HIGHWAY WORKS**

Drawing Status : **PRELIMINARY**

Hydrack Job No: **C161222**

Drawn	Checked	Scale @ A1	Date	Issue Date
CJH	AJC	SEE PLAN	05-10-2016	06-10-2016

Drawing Number:	Revision:
C161222 - 1010	P1

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix E – Output from Capacity Assessments for Manual Assignment

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
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Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New A5 North Rbt\
ES Addendum Oct 2016\Manual\S4 2026 AM Peak + Dev.vai"
(drive-on-the-left) at 15:53:49 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 New A5 North Access- 2026 AM With Development
LOCATION: New A5 North Roundabout
DATE: 09/01/15
CLIENT: IDI Gazeley
ENUMERATOR: JM
JOB NUMBER: 47071103
STATUS: Final Version
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Proposed Access
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.00	I	5.00	I	26.00	I	58.00	I	40.0	I	0.668	I	38.386	I
I	ARM	B	I	4.00	I	7.00	I	25.00	I	30.00	I	58.00	I	36.0	I	0.595	I	31.006	I
I	ARM	C	I	7.30	I	7.50	I	5.00	I	18.00	I	58.00	I	47.0	I	0.625	I	35.328	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD - (90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

													T15		
I			NUMBER OF MINUTES FROM START WHEN			RATE OF FLOW (VEH/MIN)			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	ARM	A	I	15.00	I	45.00	I	75.00	I	15.19	I	22.78	I	15.19	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.36	I	2.04	I	1.36	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	10.94	I	16.41	I	10.94	I

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C					
07.15 - 08.45	ARM A	0.000	0.063	0.937					
		0.0	77.0	1138.0					
		(0.0)	(9.1)	(8.6)					
	ARM B	0.165	0.000	0.835					
		18.0	0.0	91.0					
		(27.8)	(0.0)	(35.2)					
	ARM C	0.723	0.277	0.000					
		633.0	242.0	0.0					
		(13.0)	(8.7)	(0.0)					

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	15.25	33.31	0.458	-	0.0	0.8	12.2	-	0.055	
ARM B	1.37	16.28	0.084	-	0.0	0.1	1.3	-	0.067	
ARM C	10.98	31.44	0.349	-	0.0	0.5	7.8	-	0.049	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	18.20	32.91	0.553	-	0.8	1.2	17.9	-	0.068	
ARM B	1.63	14.93	0.109	-	0.1	0.1	1.8	-	0.075	
ARM C	13.11	31.40	0.417	-	0.5	0.7	10.5	-	0.055	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	22.30	32.37	0.689	-	1.2	2.2	31.1	-	0.098	
ARM B	2.00	13.09	0.153	-	0.1	0.2	2.6	-	0.090	
ARM C	16.06	31.36	0.512	-	0.7	1.0	15.2	-	0.065	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	22.30	32.37	0.689	-	2.2	2.2	32.7	-	0.099	
ARM B	2.00	13.07	0.153	-	0.2	0.2	2.7	-	0.090	
ARM C	16.06	31.36	0.512	-	1.0	1.0	15.6	-	0.065	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	18.20	32.91	0.553	-	2.2	1.3	19.4	-	0.069	
ARM B	1.63	14.89	0.110	-	0.2	0.1	1.9	-	0.076	
ARM C	13.11	31.40	0.417	-	1.0	0.7	11.0	-	0.055	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.30-08.45										
ARM A	15.25	33.30	0.458	-	1.3	0.8	13.0	-	0.056	
ARM B	1.37	16.24	0.084	-	0.1	0.1	1.4	-	0.067	
ARM C	10.98	31.43	0.349	-	0.7	0.5	8.2	-	0.049	

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.8	*
07.45	1.2	*
08.00	2.2	**
08.15	2.2	**
08.30	1.3	*
08.45	0.8	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.1	
07.45	0.1	
08.00	0.2	
08.15	0.2	
08.30	0.1	
08.45	0.1	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.7	*
08.00	1.0	*
08.15	1.0	*
08.30	0.7	*
08.45	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I		I		I	* DELAY *	I	* DELAY *	I	
I		I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1672.4	I	1114.9	I	126.3	I	0.08
I	B	I	150.0	I	100.0	I	11.8	I	0.08
I	C	I	1204.4	I	802.9	I	68.5	I	0.06
I	ALL	I	3026.8	I	2017.8	I	206.6	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New A5 North Rbt\
ES Addendum Oct 2016\Manual\S4 2026 PM Peak + Dev.vai"
(drive-on-the-left) at 15:53:56 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 New A5 North Access- 2026 PM With Development
LOCATION: New A5 North Roundabout
DATE: 09/01/15
CLIENT: IDI Gazeley
ENUMERATOR: JM
JOB NUMBER: 47071103
STATUS: Final Version
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Proposed Access
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.00	I	5.00	I	26.00	I	58.00	I	40.0	I	0.668	I	38.386	I
I	ARM	B	I	4.00	I	7.00	I	25.00	I	30.00	I	58.00	I	36.0	I	0.595	I	31.006	I
I	ARM	C	I	7.30	I	7.50	I	5.00	I	18.00	I	58.00	I	47.0	I	0.625	I	35.328	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

													T15					
I	ARM	I	NUMBER OF MINUTES FROM START WHEN	I	RATE OF FLOW (VEH/MIN)	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		I		I		I
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	I		I		I
I	ARM	A	I	15.00	I	45.00	I	75.00	I	7.41	I	11.12	I	7.41	I			I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	3.16	I	4.74	I	3.16	I			I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	13.36	I	20.04	I	13.36	I			I

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

					T33
		TURNING PROPORTIONS			
		TURNING COUNTS			
		(PERCENTAGE OF H.V.S)			
TIME	FROM/T	ARM A	ARM B	ARM C	
16.45 - 18.15	ARM A	0.000	0.040	0.960	
		0.0	24.0	569.0	
		(0.0)	(20.8)	(10.4)	
	ARM B	0.162	0.000	0.838	
		41.0	0.0	212.0	
		(9.8)	(0.0)	(11.3)	
	ARM C	0.928	0.072	0.000	
		992.0	77.0	0.0	
		(6.8)	(20.8)	(0.0)	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70												
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	16.45-17.00										I	
I	ARM A	7.44	33.94	0.219	- -	-	0.0	0.3	4.1	-	0.038	I
I	ARM B	3.17	23.70	0.134	- -	-	0.0	0.2	2.3	-	0.049	I
I	ARM C	13.41	32.44	0.413	- -	-	0.0	0.7	10.3	-	0.052	I
I											I	

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
I											
I	17.00-17.15										
I	ARM A	8.88	33.80	0.263	-	-	0.3	0.4	5.3	-	0.040
I	ARM B	3.79	22.88	0.166	-	-	0.2	0.2	2.9	-	0.052
I	ARM C	16.02	32.38	0.495	-	-	0.7	1.0	14.3	-	0.061
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	17.15-17.30									
	ARM A	10.88	33.61	0.324	-	-	0.4	0.5	-	0.044
	ARM B	4.64	21.74	0.214	-	-	0.2	0.3	-	0.058
	ARM C	19.62	32.29	0.608	-	-	1.0	1.5	-	0.079

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	17.30-17.45									
I	ARM A	10.88	33.61	0.324	-	-	0.5	7.2	-	0.044
I	ARM B	4.64	21.74	0.214	-	-	0.3	4.1	-	0.059
I	ARM C	19.62	32.29	0.608	-	-	1.5	23.0	-	0.079

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	17.45-18.00									
ARM A		8.88	33.80	0.263	-	-	0.5	0.4	-	0.040
ARM B		3.79	22.87	0.166	-	-	0.3	0.2	-	0.052
ARM C		16.02	32.38	0.495	-	-	1.5	1.0	-	0.061

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	18.00-18.15									
	ARM A	7.44	33.93	0.219	-	-	0.4	0.3	-	0.038
	ARM B	3.17	23.69	0.134	-	-	0.2	0.2	-	0.049
	ARM C	13.41	32.44	0.413	-	-	1.0	0.7	-	0.053

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.5
17.45	0.5
18.00	0.4
18.15	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.7 *
17.15	1.0 **
17.30	1.5 **
17.45	1.5 **
18.00	1.0 *
18.15	0.7 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I		I		I	* DELAY *	I	* DELAY *	I		I
I		I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)	I
I	A	I	816.2	I	33.3	I	33.3	I	0.04	I
I	B	I	348.2	I	18.6	I	18.6	I	0.05	I
I	C	I	1471.4	I	95.7	I	95.7	I	0.07	I
I	ALL	I	2635.9	I	147.7	I	147.7	I	0.06	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

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Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New A5 North Rbt\
ES Addendum Oct 2016\Manual\S5 2026 AM Peak + Dev + SP.vai"
(drive-on-the-left) at 15:54:03 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 New A5 North Access- 2026 AM With Development + Symmetry Park
LOCATION: New A5 North Roundabout
DATE: 01/09/15
CLIENT: IDI Gazeley
ENUMERATOR: JM
JOB NUMBER: 47071103
STATUS: Final Version
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Proposed Access
ARM C - A5 South

GEOMETRIC DATA

T5																			
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	7.30	I	8.00	I	5.00	I	26.00	I	58.00	I	40.0	I	0.668	I	38.386	I
I	ARM	B	I	4.00	I	7.00	I	25.00	I	30.00	I	58.00	I	36.0	I	0.595	I	31.006	I
I	ARM	C	I	7.30	I	7.50	I	5.00	I	18.00	I	58.00	I	47.0	I	0.625	I	35.328	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

															T15
I		I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			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	ARM	A	I	15.00	I	45.00	I	75.00	I	16.01	I	24.02	I	16.01	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.36	I	2.04	I	1.36	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	11.16	I	16.74	I	11.16	I

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

T33

T70

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.4	*
08.00	2.6	***
08.15	2.7	***
08.30	1.4	*
08.45	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.1	
07.45	0.1	
08.00	0.2	
08.15	0.2	
08.30	0.1	
08.45	0.1	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.7	*
08.00	1.1	*
08.15	1.1	*
08.30	0.8	*
08.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I		I		I	* DELAY *	I	* DELAY *	I	
I		I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1763.2	I	1175.5	I	147.6	I	0.08
I	B	I	150.0	I	100.0	I	12.3	I	0.08
I	C	I	1229.1	I	819.4	I	71.4	I	0.06
I	ALL	I	3142.4	I	2094.9	I	231.4	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New A5 North Rbt\
ES Addendum Oct 2016\Manual\S5 2026 PM Peak + Dev + SP.vai"
(drive-on-the-left) at 15:54:12 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 New A5 North Access- 2026 PM With Development + Symmetry Park
LOCATION: New A5 North Roundabout
DATE: 01/09/15
CLIENT: IDI Gazeley
ENUMERATOR: JM
JOB NUMBER: 47071103
STATUS: Final Version
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Proposed Access
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.00	I	5.00	I	26.00	I	58.00	I	40.0	I	0.668	I	38.386	I
I	ARM	B	I	4.00	I	7.00	I	25.00	I	30.00	I	58.00	I	36.0	I	0.595	I	31.006	I
I	ARM	C	I	7.30	I	7.50	I	5.00	I	18.00	I	58.00	I	47.0	I	0.625	I	35.328	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD - (90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

													T15		
I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I							
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
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	7.70	I	11.55	I	7.70	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	3.16	I	4.74	I	3.16	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	13.96	I	20.94	I	13.96	I

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

T33										
I	I	TURNING PROPORTIONS						I		
I	I	TURNING COUNTS						I		
I	I	(PERCENTAGE OF H.V.S)						I		
I	-----									
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I
I	16.45 - 18.15	I		I		I		I		I
I		I	ARM A	I	0.000	I	0.039	I	0.961	I
I		I		I	0.0	I	24.0	I	592.0	I
I		I		I	(0.0)	I	(20.8)	I	(10.6)	I
I		I		I		I		I		I
I		I	ARM B	I	0.162	I	0.000	I	0.838	I
I		I		I	41.0	I	0.0	I	212.0	I
I		I		I	(9.8)	I	(0.0)	I	(11.3)	I
I		I		I		I		I		I
I		I	ARM C	I	0.931	I	0.069	I	0.000	I
I		I		I	1040.0	I	77.0	I	0.0	I
I		I		I	(7.7)	I	(20.8)	I	(0.0)	I
I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	7.73	33.88	0.228	-	0.0	0.3	4.4	-	0.038	
ARM B	3.17	23.53	0.135	-	0.0	0.2	2.3	-	0.049	
ARM C	14.02	32.21	0.435	-	0.0	0.8	11.2	-	0.055	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	9.23	33.74	0.274	-	0.3	0.4	5.6	-	0.041	
ARM B	3.79	22.66	0.167	-	0.2	0.2	3.0	-	0.053	
ARM C	16.74	32.14	0.521	-	0.8	1.1	15.8	-	0.065	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	11.30	33.56	0.337	-	0.4	0.5	7.5	-	0.045	
ARM B	4.64	21.48	0.216	-	0.2	0.3	4.1	-	0.059	
ARM C	20.50	32.05	0.639	-	1.1	1.7	25.2	-	0.086	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	11.30	33.55	0.337	-	0.5	0.5	7.6	-	0.045	
ARM B	4.64	21.48	0.216	-	0.3	0.3	4.1	-	0.059	
ARM C	20.50	32.05	0.639	-	1.7	1.8	26.3	-	0.086	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.45-18.00										
ARM A	9.23	33.74	0.274	-	0.5	0.4	5.7	-	0.041	
ARM B	3.79	22.66	0.167	-	0.3	0.2	3.1	-	0.053	
ARM C	16.74	32.14	0.521	-	1.8	1.1	16.9	-	0.065	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
18.00-18.15										
ARM A	7.73	33.88	0.228	-	0.4	0.3	4.5	-	0.038	
ARM B	3.17	23.51	0.135	-	0.2	0.2	2.4	-	0.049	
ARM C	14.02	32.20	0.435	-	1.1	0.8	11.9	-	0.055	

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.5 *
17.45	0.5 *
18.00	0.4
18.15	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.8 *
17.15	1.1 *
17.30	1.7 **
17.45	1.8 **
18.00	1.1 *
18.15	0.8 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	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	A	I	847.9	I	565.3	I	35.2	I	0.04
I	B	I	348.2	I	232.2	I	18.9	I	0.05
I	C	I	1537.5	I	1025.0	I	107.3	I	0.07
I	ALL	I	2733.6	I	1822.4	I	161.4	I	0.06

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

END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\Manual\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 15:54:40 on Friday, 7 October 2016

FILE PROPERTIES *****

RUN TITLE: S2 New Access Roundabout on Mere Lane AM Peak 2026 No Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA *****

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA -----

															T5	
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I	23.179 I
I ARM B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I	24.717 I
I ARM C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I	27.052 I
I ARM D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I	30.033 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 -----

Only sets included in the current run are shown

SCALING FACTORS

				T13	
IARM	I	FLOW	SCALE(%)	I	
I A	I	100	I		
I B	I	100	I		
I C	I	100	I		
I D	I	100	I		

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

T15															
		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		I		I		I		I		I		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	0.60	I	0.90	I	0.60	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.29	I	1.93	I	1.29	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	1.14	I	1.71	I	1.14	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	2.91	I	4.37	I	2.91	I

T33									
		TURNING PROPORTIONS							
		TURNING COUNTS							
		(PERCENTAGE OF H.V.S)							
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D			
07.15	08.45	ARM A	0.000	0.021	0.417	0.563			
			0.0	1.0	20.0	27.0			
			(0.0)	(0.0)	(45.0)	(25.9)			
		ARM B	0.029	0.000	0.126	0.845			
			3.0	0.0	13.0	87.0			
			(0.0)	(0.0)	(0.0)	(4.6)			
		ARM C	0.681	0.033	0.000	0.286			
			62.0	3.0	0.0	26.0			
			(11.3)	(0.0)	(0.0)	(38.5)			
		ARM D	0.330	0.150	0.519	0.000			
			77.0	35.0	121.0	0.0			
			(6.5)	(2.9)	(12.4)	(0.0)			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	0.60	16.55	0.036	-	-	0.0	0.6	-	0.063
ARM B	1.29	22.47	0.058	-	-	0.0	0.9	-	0.047
ARM C	1.14	22.03	0.052	-	-	0.0	0.8	-	0.048
ARM D	2.92	27.01	0.108	-	-	0.0	1.8	-	0.041

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	07.30-07.45										I	
I	ARM A	0.72	16.38	0.044	- -	-	0.0	0.0	0.7	-	0.064	I
I	ARM B	1.54	22.21	0.069	- -	-	0.1	0.1	1.1	-	0.048	I
I	ARM C	1.36	21.88	0.062	- -	-	0.1	0.1	1.0	-	0.049	I
I	ARM D	3.49	26.90	0.130	- -	-	0.1	0.1	2.2	-	0.043	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	0.88	16.16	0.055	-	0.0	0.1	0.8	-	0.065
ARM B	1.89	21.86	0.086	-	0.1	0.1	1.4	-	0.050
ARM C	1.67	21.67	0.077	-	0.1	0.1	1.2	-	0.050
ARM D	4.28	26.76	0.160	-	0.1	0.2	2.8	-	0.044

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	08.00-08.15										
I	ARM A	0.88	16.16	0.055	- -	-	0.1	0.1	0.9	-	0.066
I	ARM B	1.89	21.86	0.086	- -	-	0.1	0.1	1.4	-	0.050
I	ARM C	1.67	21.67	0.077	- -	-	0.1	0.1	1.2	-	0.050
I	ARM D	4.28	26.76	0.160	- -	-	0.2	0.2	2.8	-	0.044

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.15-08.30									
	ARM A	0.72	16.38	0.044	-	0.1	0.0	0.7	-	0.064
	ARM B	1.54	22.21	0.069	-	0.1	0.1	1.1	-	0.048
	ARM C	1.36	21.88	0.062	-	0.1	0.1	1.0	-	0.049
	ARM D	3.49	26.90	0.130	-	0.2	0.1	2.3	-	0.043

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	0.60	16.55	0.036	- -	-	0.0	0.0	0.6	0.063	I
I	ARM B	1.29	22.47	0.058	- -	-	0.1	0.1	0.9	0.047	I
I	ARM C	1.14	22.03	0.052	- -	-	0.1	0.1	0.8	0.048	I
I	ARM D	2.92	27.01	0.108	- -	-	0.1	0.1	1.8	0.042	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.1
08.15	0.1
08.30	0.0
08.45	0.0

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.2
08.15	0.2
08.30	0.1
08.45	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	66.1	I 44.0	I 4.2	I 0.06	I 4.2	I 0.06	I
I	B	I	141.8	I 94.5	I 6.9	I 0.05	I 6.9	I 0.05	I
I	C	I	125.3	I 83.5	I 6.1	I 0.05	I 6.1	I 0.05	I
I	D	I	320.7	I 213.8	I 13.8	I 0.04	I 13.8	I 0.04	I
I	ALL	I	653.8	I 435.9	I 31.0	I 0.05	I 31.0	I 0.05	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\Manual\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 15:54:49 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 New Access Roundabout on Mere Lane PM Peak 2026 No Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

T5																		
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I	23.179	I
I	ARM B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I	24.717	I
I	ARM C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I	27.052	I
I	ARM D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I	30.033	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
IARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	1.41	I	2.12	I	1.41	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	0.63	I	0.94	I	0.63	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	1.34	I	2.01	I	1.34	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	1.33	I	1.99	I	1.33	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

I											T33	
I	I	TURNING PROPORTIONS								I		
I	I	TURNING COUNTS								I		
I	I	(PERCENTAGE OF H.V.S)								I		
I												
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.027	I	0.434	I	0.540	I
I		I		I	0.0	I	3.0	I	49.0	I	61.0	I
I		I		I	(0.0)	I	(0.0)	I	(18.4)	I	(4.9)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.040	I	0.000	I	0.100	I	0.860	I
I		I		I	2.0	I	0.0	I	5.0	I	43.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(2.3)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.150	I	0.112	I	0.000	I	0.738	I
I		I		I	16.0	I	12.0	I	0.0	I	79.0	I
I		I		I	(37.5)	I	(0.0)	I	(0.0)	I	(5.1)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.255	I	0.538	I	0.208	I	0.000	I
I		I		I	27.0	I	57.0	I	22.0	I	0.0	I
I		I		I	(11.1)	I	(3.5)	I	(36.4)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	16.45-17.00										I	
I	ARM A	1.42	20.37	0.070	- -	-	0.0	0.1	1.1	-	0.053	I
I	ARM B	0.63	23.21	0.027	- -	-	0.0	0.0	0.4	-	0.044	I
I	ARM C	1.34	24.02	0.056	- -	-	0.0	0.1	0.9	-	0.044	I
I	ARM D	1.33	26.50	0.050	- -	-	0.0	0.1	0.8	-	0.040	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.00-17.15										I
I	ARM A	1.69	20.26	0.084	- -	-	0.1	0.1	1.3	-	0.054
I	ARM B	0.75	23.01	0.033	- -	-	0.0	0.0	0.5	-	0.045
I	ARM C	1.60	23.88	0.067	- -	-	0.1	0.1	1.1	-	0.045
I	ARM D	1.59	26.45	0.060	- -	-	0.1	0.1	0.9	-	0.040
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I											I
I											I
I	17.15-17.30										I
I	ARM A	2.07	20.10	0.103	- -	-	0.1	0.1	1.7	-	0.055
I	ARM B	0.92	22.73	0.040	- -	-	0.0	0.0	0.6	-	0.046
I	ARM C	1.96	23.69	0.083	- -	-	0.1	0.1	1.3	-	0.046
I	ARM D	1.95	26.38	0.074	- -	-	0.1	0.1	1.2	-	0.041
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I											I
-											-
I	17.30-17.45										I
I	ARM A	2.07	20.10	0.103	- -	-	0.1	0.1	1.7	-	0.055
I	ARM B	0.92	22.73	0.040	- -	-	0.0	0.0	0.6	-	0.046
I	ARM C	1.96	23.69	0.083	- -	-	0.1	0.1	1.4	-	0.046
I	ARM D	1.95	26.38	0.074	- -	-	0.1	0.1	1.2	-	0.041
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I											I
I											I
I	17.45-18.00										I
I	ARM A	1.69	20.26	0.084	- -	-	0.1	0.1	1.4	-	0.054
I	ARM B	0.75	23.01	0.033	- -	-	0.0	0.0	0.5	-	0.045
I	ARM C	1.60	23.88	0.067	- -	-	0.1	0.1	1.1	-	0.045
I	ARM D	1.59	26.45	0.060	- -	-	0.1	0.1	1.0	-	0.040
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	1.42	20.37	0.070	- -	-	0.1	0.1	1.1	0.053	I
I	ARM B	0.63	23.21	0.027	- -	-	0.0	0.0	0.4	0.044	I
I	ARM C	1.34	24.02	0.056	- -	-	0.1	0.1	0.9	0.044	I
I	ARM D	1.33	26.50	0.050	- -	-	0.1	0.1	0.8	0.040	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	155.5	I	103.7	I	8.4	I	0.05
I	B	I	68.8	I	45.9	I	3.1	I	0.04
I	C	I	147.3	I	98.2	I	6.6	I	0.04
I	D	I	145.9	I	97.3	I	5.9	I	0.04
I	ALL	I	517.5	I	345.0	I	24.0	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
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RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\Manual\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 15:54:55 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 New Access Roundabout on Mere Lane AM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

															T5	
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I 23.179 I
I	ARM B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I 24.717 I
I	ARM C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I 27.052 I
I	ARM D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I 30.033 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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
I											
I	08.15-08.30										
I	ARM A	3.75	18.77	0.200	- -	-	0.3	0.3	3.8	-	0.067
I	ARM B	1.77	20.55	0.086	- -	-	0.1	0.1	1.4	-	0.053
I	ARM C	4.20	22.55	0.186	- -	-	0.3	0.2	3.5	-	0.055
I	ARM D	6.95	25.60	0.272	- -	-	0.5	0.4	5.7	-	0.054
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	3.14	18.95	0.166	- -	-	0.3	0.2	3.0	0.063	I
I	ARM B	1.48	21.08	0.070	- -	-	0.1	0.1	1.2	0.051	I
I	ARM C	3.51	22.87	0.154	- -	-	0.2	0.2	2.8	0.052	I
I	ARM D	5.82	26.01	0.224	- -	-	0.4	0.3	4.4	0.050	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.3
08.45	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.3
07.45	0.4
08.00	0.5 *
08.15	0.5 *
08.30	0.4
08.45	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	344.1	I	229.4	I	23.2	I	0.07	I
I	B	I	162.4	I	108.3	I	8.7	I	0.05	I
I	C	I	385.4	I	256.9	I	21.3	I	0.06	I
I	D	I	638.7	I	425.8	I	35.1	I	0.05	I
I	ALL	I	1530.6	I	1020.4	I	88.2	I	0.06	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\Manual\S4 2026 PM + Dev.vai"
(drive-on-the-left) at 15:55:07 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 New Access Roundabout on Mere Lane PM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

															T5	
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508 I 23.179 I
I	ARM	B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548 I 24.717 I
I	ARM	C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563 I 27.052 I
I	ARM	D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624 I 30.033 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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100	I	
I	B	I	100	I	
I	C	I	100	I	
I	D	I	100	I	

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERIOD SET LEVEL AT PEAK 2000 GROSS FLOWS											T15			
I	I	I	NUMBER OF MINUTES FROM START WHEN	I	I	I	RATE OF FLOW (VEH/MIN)	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	I	I	I	I	I	I	I	I	I	I	I	I
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	6.19	I	9.28	I	6.19	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	0.69	I	1.03	I	0.69	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	2.36	I	3.54	I	2.36	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	2.70	I	4.05	I	2.70	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T33
I											I
I	I	TURNING PROPORTIONS								I	
I	I	TURNING COUNTS								I	
I	I	(PERCENTAGE OF H.V.S)								I	

I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D

I	16.45 - 18.15	I		I		I		I		I	
I		I	ARM A	I	0.000	I	0.034	I	0.430	I	0.535
I		I		I	0.0	I	17.0	I	213.0	I	265.0
I		I		I	(0.0)	I	(0.0)	I	(10.3)	I	(4.2)
I		I		I		I		I		I	
I		I	ARM B	I	0.127	I	0.000	I	0.091	I	0.782
I		I		I	7.0	I	0.0	I	5.0	I	43.0
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(2.3)
I		I		I		I		I		I	
I		I	ARM C	I	0.519	I	0.063	I	0.000	I	0.418
I		I		I	98.0	I	12.0	I	0.0	I	79.0
I		I		I	(16.3)	I	(0.0)	I	(0.0)	I	(5.1)
I		I		I		I		I		I	
I		I	ARM D	I	0.634	I	0.264	I	0.102	I	0.000
I		I		I	137.0	I	57.0	I	22.0	I	0.0
I		I		I	(8.8)	I	(3.5)	I	(36.4)	I	(0.0)
I		I		I		I		I		I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	16.45-17.00										I	I
I	ARM A	6.21	21.13	0.294	- -	-	0.0	0.4	6.1	-	0.067	I
I	ARM B	0.69	20.64	0.033	- -	-	0.0	0.0	0.5	-	0.050	I
I	ARM C	2.37	22.38	0.106	- -	-	0.0	0.1	1.7	-	0.050	I
I	ARM D	2.71	26.31	0.103	- -	-	0.0	0.1	1.7	-	0.042	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.00-17.15										I	I
I	ARM A	7.42	21.01	0.353	- -	-	0.4	0.5	8.0	-	0.073	I
I	ARM B	0.82	19.92	0.041	- -	-	0.0	0.0	0.6	-	0.052	I
I	ARM C	2.83	21.97	0.129	- -	-	0.1	0.1	2.2	-	0.052	I
I	ARM D	3.24	26.12	0.124	- -	-	0.1	0.1	2.1	-	0.044	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.15-17.30										I	I
I	ARM A	9.08	20.84	0.436	- -	-	0.5	0.8	11.2	-	0.085	I
I	ARM B	1.01	18.94	0.053	- -	-	0.0	0.1	0.8	-	0.056	I
I	ARM C	3.47	21.41	0.162	- -	-	0.1	0.2	2.8	-	0.056	I
I	ARM D	3.96	25.87	0.153	- -	-	0.1	0.2	2.7	-	0.046	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.30-17.45										I	I
I	ARM A	9.08	20.84	0.436	- -	-	0.8	0.8	11.5	-	0.085	I
I	ARM B	1.01	18.93	0.053	- -	-	0.1	0.1	0.8	-	0.056	I
I	ARM C	3.47	21.41	0.162	- -	-	0.2	0.2	2.9	-	0.056	I
I	ARM D	3.96	25.87	0.153	- -	-	0.2	0.2	2.7	-	0.046	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.45-18.00										I	I
I	ARM A	7.42	21.01	0.353	- -	-	0.8	0.5	8.4	-	0.074	I
I	ARM B	0.82	19.91	0.041	- -	-	0.1	0.0	0.7	-	0.052	I
I	ARM C	2.83	21.97	0.129	- -	-	0.2	0.1	2.3	-	0.052	I
I	ARM D	3.24	26.12	0.124	- -	-	0.2	0.1	2.2	-	0.044	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	6.21	21.12	0.294	- -	-	0.5	0.4	6.4	0.067	I
I	ARM B	0.69	20.62	0.033	- -	-	0.0	0.0	0.5	0.050	I
I	ARM C	2.37	22.37	0.106	- -	-	0.1	0.1	1.8	0.050	I
I	ARM D	2.71	26.30	0.103	- -	-	0.1	0.1	1.7	0.042	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.8 *
17.45	0.8 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.1
17.45	0.1
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	681.3	I	454.2	I	51.6	I	0.08	I
I	B	I	75.7	I	50.5	I	4.0	I	0.05	I
I	C	I	260.1	I	173.4	I	13.7	I	0.05	I
I	D	I	297.3	I	198.2	I	13.1	I	0.04	I
I	ALL	I	1314.5	I	876.3	I	82.4	I	0.06	I

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\Manual\S5 2026 AM + Dev + SP.vai"
(drive-on-the-left) at 15:55:14 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 New Access Roundabout on Mere Lane AM Peak 2026 With Development + Symmetry P
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

T5																		
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I	23.179	I
I	ARM B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I	24.717	I
I	ARM C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I	27.052	I
I	ARM D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I	30.033	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
IARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	3.13	4.69	3.13			
ARM B	15.00	45.00	75.00	1.55	2.32	1.55			
ARM C	15.00	45.00	75.00	3.50	5.25	3.50			
ARM D	15.00	45.00	75.00	5.82	8.74	5.82			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.020	0.432	0.548				
		0.0	5.0	108.0	137.0				
		(0.0)	(0.0)	(19.4)	(14.6)				
	ARM B	0.145	0.000	0.105	0.750				
		18.0	0.0	13.0	93.0				
		(0.0)	(0.0)	(0.0)	(4.3)				
	ARM C	0.896	0.011	0.000	0.093				
		251.0	3.0	0.0	26.0				
		(7.2)	(0.0)	(0.0)	(38.5)				
	ARM D	0.661	0.079	0.260	0.000				
		308.0	37.0	121.0	0.0				
		(4.9)	(2.7)	(12.4)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	3.14	18.95	0.166	-	0.0	0.2	2.9	-	0.063	
ARM B	1.56	21.13	0.074	-	0.0	0.1	1.2	-	0.051	
ARM C	3.51	22.84	0.154	-	0.0	0.2	2.7	-	0.052	
ARM D	5.85	26.02	0.225	-	0.0	0.3	4.2	-	0.049	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	3.75	18.76	0.200	-	0.2	0.2	3.7	-	0.067	
ARM B	1.86	20.59	0.090	-	0.1	0.1	1.5	-	0.053	
ARM C	4.20	22.50	0.186	-	0.2	0.2	3.4	-	0.055	
ARM D	6.98	25.61	0.273	-	0.3	0.4	5.5	-	0.054	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	4.59	18.50	0.248	-	0.2	0.3	4.8	-	0.072	
ARM B	2.28	19.84	0.115	-	0.1	0.1	1.9	-	0.057	
ARM C	5.14	22.04	0.233	-	0.2	0.3	4.5	-	0.059	
ARM D	8.55	25.04	0.341	-	0.4	0.5	7.6	-	0.061	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	4.59	18.50	0.248	-	0.3	0.3	4.9	-	0.072	
ARM B	2.28	19.83	0.115	-	0.1	0.1	1.9	-	0.057	
ARM C	5.14	22.03	0.233	-	0.3	0.3	4.5	-	0.059	
ARM D	8.55	25.04	0.342	-	0.5	0.5	7.7	-	0.061	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	3.75	18.76	0.200	-	0.3	0.3	3.8	-	0.067	
ARM B	1.86	20.58	0.090	-	0.1	0.1	1.5	-	0.053	
ARM C	4.20	22.50	0.186	-	0.3	0.2	3.5	-	0.055	
ARM D	6.98	25.61	0.273	-	0.5	0.4	5.7	-	0.054	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	3.14	18.94	0.166	-	0.3	0.2	3.0	-	0.063
ARM B	1.56	21.12	0.074	-	0.1	0.1	1.2	-	0.051
ARM C	3.51	22.83	0.154	-	0.2	0.2	2.8	-	0.052
ARM D	5.85	26.02	0.225	-	0.4	0.3	4.4	-	0.050

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.3
08.45	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.3
07.45	0.4
08.00	0.5 *
08.15	0.5 *
08.30	0.4
08.45	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	344.1	23.2	0.07
B	170.7	9.2	0.05
C	385.4	21.3	0.06
D	641.4	35.3	0.05
ALL	1541.6	89.0	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

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

END OF JOB

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\Manual\S5 2026 PM + Dev + SP.vai"
(drive-on-the-left) at 15:55:24 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 New Access Roundabout on Mere Lane PM Peak 2026 With Development + Symmetry P
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

														T5	
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I 23.179 I
I ARM B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I 24.717 I
I ARM C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I 27.052 I
I ARM D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I 30.033 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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
IARM	I	FLOW	SCALE(%)	I	
I A	I	100		I	
I B	I	100		I	
I C	I	100		I	
I D	I	100		I	

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15														
		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		I		I		I		I		I		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	6.19	I	9.28	I	6.19	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	0.71	I	1.07	I	0.71	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	2.36	I	3.54	I	2.36	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	2.89	I	4.33	I	2.89	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
		TURNING PROPORTIONS							
		TURNING COUNTS							
		(PERCENTAGE OF H.V.S)							
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D			
16.45	18.15	ARM A	0.000	0.034	0.430	0.535			
			0.0	17.0	213.0	265.0			
			(0.0)	(0.0)	(10.3)	(4.2)			
		ARM B	0.123	0.000	0.088	0.789			
			7.0	0.0	5.0	45.0			
			(0.0)	(0.0)	(0.0)	(2.2)			
		ARM C	0.519	0.063	0.000	0.418			
			98.0	12.0	0.0	79.0			
			(16.3)	(0.0)	(0.0)	(5.1)			
		ARM D	0.593	0.312	0.095	0.000			
			137.0	72.0	22.0	0.0			
			(8.8)	(4.2)	(36.4)	(0.0)			

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL
	16.45-17.00										
ARM A	6.21	21.03	0.295	-	-	0.0	0.4	6.1	-	0.067	
ARM B	0.72	20.65	0.035	-	-	0.0	0.0	0.5	-	0.050	
ARM C	2.37	22.37	0.106	-	-	0.0	0.1	1.7	-	0.050	
ARM D	2.90	26.36	0.110	-	-	0.0	0.1	1.8	-	0.043	

[illegible]

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.15-17.30										
I	ARM A	9.08	20.70	0.439	- -	-	0.5	0.8	11.3	-	0.086
I	ARM B	1.05	18.95	0.055	- -	-	0.0	0.1	0.9	-	0.056
I	ARM C	3.47	21.40	0.162	- -	-	0.1	0.2	2.9	-	0.056
I	ARM D	4.24	25.92	0.164	- -	-	0.2	0.2	2.9	-	0.046

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	17.30-17.45									
I	ARM A	9.08	20.70	0.439	-	-	0.8	0.8	11.6	0.086
I	ARM B	1.05	18.95	0.055	-	-	0.1	0.1	0.9	0.056
I	ARM C	3.47	21.39	0.162	-	-	0.2	0.2	2.9	0.056
I	ARM D	4.24	25.92	0.164	-	-	0.2	0.2	2.9	0.046

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
	17.45-18.00										
	ARM A	7.42	20.89	0.355	- -	-	0.8	0.6	8.5	-	0.074
	ARM B	0.85	19.92	0.043	- -	-	0.1	0.0	0.7	-	0.052
	ARM C	2.83	21.95	0.129	- -	-	0.2	0.1	2.3	-	0.052
	ARM D	3.46	26.17	0.132	- -	-	0.2	0.2	2.3	-	0.044

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	6.21	21.03	0.295	- -	-	0.6	0.4	6.4	0.068	I
I	ARM B	0.72	20.63	0.035	- -	-	0.0	0.0	0.5	0.050	I
I	ARM C	2.37	22.36	0.106	- -	-	0.1	0.1	1.8	0.050	I
I	ARM D	2.90	26.36	0.110	- -	-	0.2	0.1	1.9	0.043	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.8 *
17.45	0.8 *
18.00	0.6 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.1
17.45	0.1
18.00	0.0
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	681.3	I	454.2	I	52.0	I	0.08	I
I	B	I	78.5	I	52.3	I	4.2	I	0.05	I
I	C	I	260.1	I	173.4	I	13.7	I	0.05	I
I	D	I	318.0	I	212.0	I	14.1	I	0.04	I
I	ALL	I	1337.9	I	891.9	I	84.0	I	0.06	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\Manual\S2 2026 AM No Dev .vai"
(drive-on-the-left) at 15:45:53 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 New A5/ Mere Lane Rbt AM Peak 2026 No Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD - (90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

															T15
I			I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		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	14.34	I	21.51	I	14.34	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.75	I	2.63	I	1.75	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	9.10	I	13.65	I	9.10	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C					
07.15 - 08.45	ARM A	0.000	0.141	0.859					
		0.0	162.0	985.0					
		(0.0)	(11.1)	(7.9)					
	ARM B	0.300	0.000	0.700					
		42.0	0.0	98.0					
		(31.0)	(0.0)	(8.2)					
	ARM C	0.904	0.096	0.000					
		658.0	70.0	0.0					
		(10.8)	(4.3)	(0.0)					

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	14.39	34.84	0.413	- -	0.0	0.7	10.3	-	0.049	
ARM B	1.76	18.75	0.094	- -	0.0	0.1	1.5	-	0.059	
ARM C	9.13	26.81	0.341	- -	0.0	0.5	7.5	-	0.056	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	17.19	34.73	0.495	- -	0.7	1.0	14.3	-	0.057	
ARM B	2.10	17.40	0.121	- -	0.1	0.1	2.0	-	0.065	
ARM C	10.91	26.74	0.408	- -	0.5	0.7	10.1	-	0.063	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	21.05	34.58	0.609	- -	1.0	1.5	22.3	-	0.074	
ARM B	2.57	15.57	0.165	- -	0.1	0.2	2.9	-	0.077	
ARM C	13.36	26.64	0.502	- -	0.7	1.0	14.6	-	0.075	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	21.05	34.58	0.609	- -	1.5	1.5	23.1	-	0.074	
ARM B	2.57	15.55	0.165	- -	0.2	0.2	3.0	-	0.077	
ARM C	13.36	26.64	0.502	- -	1.0	1.0	15.0	-	0.075	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	17.19	34.73	0.495	- -	1.5	1.0	15.2	-	0.057	
ARM B	2.10	17.38	0.121	- -	0.2	0.1	2.1	-	0.065	
ARM C	10.91	26.74	0.408	- -	1.0	0.7	10.6	-	0.063	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.30-08.45										
ARM A	14.39	34.84	0.413	- -	1.0	0.7	10.8	-	0.049	
ARM B	1.76	18.72	0.094	- -	0.1	0.1	1.6	-	0.059	
ARM C	9.13	26.81	0.341	- -	0.7	0.5	7.9	-	0.057	

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.7	*
07.45	1.0	*
08.00	1.5	**
08.15	1.5	**
08.30	1.0	*
08.45	0.7	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.1	
07.45	0.1	
08.00	0.2	
08.15	0.2	
08.30	0.1	
08.45	0.1	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.7	*
08.00	1.0	*
08.15	1.0	*
08.30	0.7	*
08.45	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I		I		I	* DELAY *	I	* DELAY *	I	
I		I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1578.8	I	96.0	I	96.0	I	0.06
I	B	I	192.7	I	13.1	I	13.1	I	0.07
I	C	I	1002.0	I	65.7	I	65.7	I	0.07
I	ALL	I	2773.5	I	174.8	I	174.8	I	0.06

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

END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\Manual\S2 2026 PM No Dev .vai"
(drive-on-the-left) at 15:46:09 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 New A5/ Mere Lane Rbt PM Peak 2026 No Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

															T15
I			I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		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	8.16	I	12.24	I	8.16	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	2.30	I	3.45	I	2.30	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	12.39	I	18.58	I	12.39	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33										
I			I	TURNING PROPORTIONS				I		
I			I	TURNING COUNTS				I		
I			I	(PERCENTAGE OF H.V.S)				I		
I			-----							
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I
I	16.45 - 18.15	I		I		I		I		I
I		I	ARM A	I	0.000	I	0.057	I	0.943	I
I		I		I	0.0	I	37.0	I	616.0	I
I		I		I	(0.0)	I	(27.0)	I	(8.9)	I
I		I		I		I		I		I
I		I	ARM B	I	0.609	I	0.000	I	0.391	I
I		I		I	112.0	I	0.0	I	72.0	I
I		I		I	(4.5)	I	(0.0)	I	(4.2)	I
I		I		I		I		I		I
I		I	ARM C	I	0.930	I	0.070	I	0.000	I
I		I		I	922.0	I	69.0	I	0.0	I
I		I		I	(7.1)	I	(5.8)	I	(0.0)	I
I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	8.19	34.34	0.239	-	0.0	0.3	4.6	-	0.038	
ARM B	2.31	23.44	0.099	-	0.0	0.1	1.6	-	0.047	
ARM C	12.43	27.17	0.458	-	0.0	0.8	12.2	-	0.067	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	9.78	34.24	0.286	-	0.3	0.4	5.9	-	0.041	
ARM B	2.76	22.50	0.123	-	0.1	0.1	2.1	-	0.051	
ARM C	14.85	27.01	0.550	-	0.8	1.2	17.6	-	0.082	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	11.98	34.09	0.352	-	0.4	0.5	8.0	-	0.045	
ARM B	3.38	21.22	0.159	-	0.1	0.2	2.8	-	0.056	
ARM C	18.19	26.79	0.679	-	1.2	2.1	29.5	-	0.115	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	11.98	34.09	0.352	-	0.5	0.5	8.1	-	0.045	
ARM B	3.38	21.22	0.159	-	0.2	0.2	2.8	-	0.056	
ARM C	18.19	26.78	0.679	-	2.1	2.1	31.2	-	0.116	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.45-18.00										
ARM A	9.78	34.23	0.286	-	0.5	0.4	6.1	-	0.041	
ARM B	2.76	22.49	0.123	-	0.2	0.1	2.1	-	0.051	
ARM C	14.85	27.00	0.550	-	2.1	1.2	19.2	-	0.083	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
18.00-18.15										
ARM A	8.19	34.34	0.239	-	0.4	0.3	4.8	-	0.038	
ARM B	2.31	23.42	0.099	-	0.1	0.1	1.7	-	0.047	
ARM C	12.43	27.17	0.458	-	1.2	0.9	13.1	-	0.068	

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.5 *
17.45	0.5 *
18.00	0.4
18.15	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.8 *
17.15	1.2 *
17.30	2.1 **
17.45	2.1 **
18.00	1.2 *
18.15	0.9 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I		I	DEMAND	I	* DELAY *	I	* DELAY *	I	
I		I		I		I		I	
I		I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	898.8	I	37.5	I	37.5	I	0.04
I	B	I	253.3	I	13.1	I	13.1	I	0.05
I	C	I	1364.0	I	122.8	I	122.8	I	0.09
I	ALL	I	2516.1	I	173.3	I	173.4	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\Manual\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 15:46:34 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 New A5/ Mere Lane Rbt AM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

T5																			
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

															T15
I		I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			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		I		I		I		I		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	16.69	I	25.03	I	16.69	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	3.13	I	4.69	I	3.13	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	13.82	I	20.74	I	13.82	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

							T33
		I	TURNING PROPORTIONS				I
		I	TURNING COUNTS				I
		I	(PERCENTAGE OF H.V.S)				I
TIME		I FROM/T	I	ARM A I	ARM B I	ARM C I	
I	07.15 - 08.45	I	I	I	I	I	I
I		I	ARM A	I 0.000 I	0.194 I	0.806 I	I
I		I		I 0.0 I	259.0 I	1076.0 I	I
I		I		I (0.0)I	(10.0)I	(10.2)I	I
I		I		I I	I I	I I	I
I		I	ARM B	I 0.320 I	0.000 I	0.680 I	I
I		I		I 80.0 I	0.0 I	170.0 I	I
I		I		I (25.0)I	(0.0)I	(7.7)I	I
I		I		I I	I I	I I	I
I		I	ARM C	I 0.814 I	0.186 I	0.000 I	I
I		I		I 900.0 I	206.0 I	0.0 I	I
I		I		I (10.2)I	(2.4) I	(0.0)I	I
I		I		I I	I I	I I	I

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	T70
I	07.15-07.30										
I	ARM A	16.75	33.23	0.504	- -	-	0.0	1.0	14.7	-	0.060
I	ARM B	3.14	18.25	0.172	- -	-	0.0	0.2	3.0	-	0.066
I	ARM C	13.88	26.85	0.517	- -	-	0.0	1.1	15.3	-	0.076

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	07.30-07.45										I
I	ARM A	20.00	32.91	0.608	- -	1.0	1.5	22.2	-	0.077	I
I	ARM B	3.75	16.72	0.224	- -	0.2	0.3	4.2	-	0.077	I
I	ARM C	16.57	26.72	0.620	- -	1.1	1.6	23.2	-	0.098	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	07.45-08.00									
	ARM A	24.50	32.49	0.754	- -	1.5	3.0	41.8	-	0.122
	ARM B	4.59	14.67	0.313	- -	0.3	0.5	6.6	-	0.099
	ARM C	20.30	26.53	0.765	- -	1.6	3.1	43.5	-	0.155

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.00-08.15									
	ARM A	24.50	32.48	0.754	- -	3.0	3.0	45.0	-	0.125
	ARM B	4.59	14.62	0.314	- -	0.5	0.5	6.8	-	0.100
	ARM C	20.30	26.53	0.765	- -	3.1	3.2	47.4	-	0.160

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.15-08.30									
	ARM A	20.00	32.90	0.608	-	3.0	1.6	24.5	-	0.079
	ARM B	3.75	16.66	0.225	-	0.5	0.3	4.5	-	0.078
	ARM C	16.57	26.71	0.620	-	3.2	1.7	26.1	-	0.101

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	16.75	33.22	0.504	- -	1.6	1.0	15.8	-	0.061	I
I	ARM B	3.14	18.20	0.172	-	0.3	0.2	3.2	-	0.066	I
I	ARM C	13.88	26.85	0.517	- -	1.7	1.1	16.7	-	0.078	I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.0	*
07.45	1.5	**
08.00	3.0	***
08.15	3.0	***
08.30	1.6	**
08.45	1.0	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.2	
07.45	0.3	
08.00	0.5	
08.15	0.5	
08.30	0.3	
08.45	0.2	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	1.6	**
08.00	3.1	***
08.15	3.2	***
08.30	1.7	**
08.45	1.1	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1837.5	I	1225.0	I	164.0	I	0.09
I	B	I	344.1	I	229.4	I	28.3	I	0.08
I	C	I	1522.3	I	1014.9	I	172.2	I	0.11
I	ALL	I	3704.0	I	2469.3	I	364.5	I	0.10

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END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\Manual\S4 2026 PM + Dev .vai"
(drive-on-the-left) at 15:46:44 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 New A5/ Mere Lane Rbt PM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD - (90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERMANENT FLOW AT PEAK 2000 BASIC FLOWS																T15
I		I	NUMBER OF MINUTES FROM START WHEN	I		I	RATE OF FLOW (VEH/MIN)	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		I		I		I		I		I		I		I
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	I		I
I	ARM	A	I	15.00	I	45.00	I	75.00	I	11.30	I	16.95	I	11.30	I	
I	ARM	B	I	15.00	I	45.00	I	75.00	I	4.84	I	7.26	I	4.84	I	
I	ARM	C	I	15.00	I	45.00	I	75.00	I	14.24	I	21.36	I	14.24	I	

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33						
TURNING PROPORTIONS						
TURNING COUNTS						
(PERCENTAGE OF H.V.S)						
TIME	FROM/T	ARM A	ARM B	ARM C		
16.45 - 18.15	ARM A	0.000	0.084	0.916		
		0.0	76.0	828.0		
		(0.0)	(22.4)	(9.5)		
	ARM B	0.494	0.000	0.506		
		191.0	0.0	196.0		
		(5.8)	(0.0)	(2.6)		
	ARM C	0.877	0.123	0.000		
		999.0	140.0	0.0		
		(8.1)	(4.3)	(0.0)		

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	11.34	33.59	0.338	-	0.0	0.5	7.5	-	0.045
ARM B	4.86	21.81	0.223	-	0.0	0.3	4.2	-	0.059
ARM C	14.29	26.42	0.541	-	0.0	1.2	16.8	-	0.081

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	13.54	33.37	0.406	-	0.5	0.7	10.0	-	0.050
ARM B	5.80	20.54	0.282	-	0.3	0.4	5.8	-	0.068
ARM C	17.07	26.14	0.653	-	1.2	1.8	26.5	-	0.109

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	16.59	33.09	0.501	-	0.7	1.0	14.6	-	0.060
ARM B	7.10	18.81	0.377	-	0.4	0.6	8.8	-	0.085
ARM C	20.90	25.76	0.811	-	1.8	4.0	54.8	-	0.194

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	16.59	33.07	0.502	-	1.0	1.0	15.0	-	0.061
ARM B	7.10	18.80	0.378	-	0.6	0.6	9.0	-	0.086
ARM C	20.90	25.76	0.812	-	4.0	4.2	61.6	-	0.205

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	13.54	33.36	0.406	-	1.0	0.7	10.5	-	0.051
ARM B	5.80	20.52	0.283	-	0.6	0.4	6.1	-	0.068
ARM C	17.07	26.13	0.653	-	4.2	1.9	30.6	-	0.114

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	11.34	33.58	0.338	-	0.7	0.5	7.8	-	0.045
ARM B	4.86	21.78	0.223	-	0.4	0.3	4.4	-	0.059
ARM C	14.29	26.41	0.541	-	1.9	1.2	18.5	-	0.083

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	*
17.15	0.7	*
17.30	1.0	*
17.45	1.0	*
18.00	0.7	*
18.15	0.5	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.6	*
17.45	0.6	*
18.00	0.4	
18.15	0.3	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.2	*
17.15	1.8	**
17.30	4.0	****
17.45	4.2	****
18.00	1.9	**
18.15	1.2	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1244.3	I	829.5	I	65.4	I	0.05
I	B	I	532.7	I	355.1	I	38.2	I	0.07
I	C	I	1567.7	I	1045.2	I	208.8	I	0.13
I	ALL	I	3344.7	I	2229.8	I	312.4	I	0.09

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

END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\Manual\S5 2026 AM + Dev + SP.vai"
(drive-on-the-left) at 15:47:24 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 New A5/ Mere Lane Rbt AM Peak 2026 With Development + Symmetry Park
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERMANENT FLOW RATE AT PEAK 2000 BASIC FLOWS																	T15
I		I	NUMBER OF MINUTES FROM START WHEN	I		I	RATE OF FLOW (VEH/MIN)	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		I		I		I		I		I		I		I	
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	I		I	
I	ARM	A	I	15.00	I	45.00	I	75.00	I	17.51	I	26.27	I	17.51	I		
I	ARM	B	I	15.00	I	45.00	I	75.00	I	3.20	I	4.80	I	3.20	I		
I	ARM	C	I	15.00	I	45.00	I	75.00	I	14.07	I	21.11	I	14.07	I		

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	1.8	**
08.00	3.7	****
08.15	3.8	****
08.30	1.8	**
08.45	1.1	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.2	
07.45	0.3	
08.00	0.5	*
08.15	0.5	*
08.30	0.3	
08.45	0.2	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	1.7	**
08.00	3.4	***
08.15	3.5	***
08.30	1.8	**
08.45	1.1	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1928.4	I	1285.6	I	195.4	I	0.10
I	B	I	352.4	I	234.9	I	30.9	I	0.09
I	C	I	1549.9	I	1033.2	I	184.5	I	0.12
I	ALL	I	3830.6	I	2553.7	I	410.7	I	0.11

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\Manual\S5 2026 PM + Dev + SP.vai"
(drive-on-the-left) at 15:47:45 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 New A5/ Mere Lane Rbt PM Peak 2026 With Development + Symmetry park
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

															T15
I			I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		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	11.56	I	17.34	I	11.56	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	4.86	I	7.29	I	4.86	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	15.02	I	22.54	I	15.02	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33	
I			I	TURNING PROPORTIONS						I	
I			I	TURNING COUNTS						I	
I			I	(PERCENTAGE OF H.V.S)						I	
I											
I	TIME		I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I
I	16.45 - 18.15		I		I		I		I		I
I			I	ARM A	I	0.000	I	0.082	I	0.918	I
I			I		I	0.0	I	76.0	I	849.0	I
I			I		I	(0.0)	I	(22.4)	I	(9.8)	I
I			I		I		I		I		I
I			I	ARM B	I	0.491	I	0.000	I	0.509	I
I			I		I	191.0	I	0.0	I	198.0	I
I			I		I	(5.8)	I	(0.0)	I	(2.5)	I
I			I		I		I		I		I
I			I	ARM C	I	0.871	I	0.129	I	0.000	I
I			I		I	1047.0	I	155.0	I	0.0	I
I			I		I	(9.0)	I	(4.5)	I	(0.0)	I
I			I		I		I		I		I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	*
17.15	0.7	*
17.30	1.1	*
17.45	1.1	*
18.00	0.7	*
18.15	0.5	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.6	*
17.45	0.6	*
18.00	0.4	
18.15	0.3	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.3	*
17.15	2.2	**
17.30	5.6	*****
17.45	5.9	*****
18.00	2.3	**
18.15	1.4	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1273.2	I	69.0	I	69.1	I	0.05
I	B	I	535.4	I	39.2	I	39.2	I	0.07
I	C	I	1654.5	I	269.9	I	269.9	I	0.16
I	ALL	I	3463.1	I	378.1	I	378.2	I	0.11

* 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.
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END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

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RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\Manual\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 15:49:53 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 Cross in Hand Roundabout AM Peak 2026 Without Development
LOCATION: Cross In Hand Roundabout
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

T5																		
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	4.70	I	7.50	I	47.00	I	45.00	I	98.00	I	48.0	I	0.494	I	34.354	I
I	ARM B	I	7.10	I	8.80	I	25.00	I	35.00	I	79.00	I	54.0	I	0.566	I	40.232	I
I	ARM C	I	5.10	I	7.50	I	50.00	I	37.00	I	98.00	I	54.0	I	0.486	I	34.056	I
I	ARM D	I	3.20	I	6.20	I	24.00	I	40.00	I	88.00	I	64.0	I	0.405	I	24.458	I
I	ARM E	I	3.50	I	7.20	I	9.00	I	19.00	I	88.00	I	64.0	I	0.384	I	22.641	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	13.71	20.57	13.71			
ARM B	15.00	45.00	75.00	11.50	17.25	11.50			
ARM C	15.00	45.00	75.00	9.31	13.97	9.31			
ARM D	15.00	45.00	75.00	2.16	3.24	2.16			
ARM E	15.00	45.00	75.00	4.22	6.34	4.22			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
07.15 - 08.45	ARM A	0.000	0.404	0.541	0.048	0.007			
		0.0	443.0	593.0	53.0	8.0			
		(0.0)	(6.3)	(7.4)	(1.9)	(0.0)			
	ARM B	0.386	0.000	0.282	0.201	0.132			
		355.0	0.0	259.0	185.0	121.0			
		(9.3)	(0.0)	(27.8)	(1.1)	(0.8)			
	ARM C	0.495	0.383	0.000	0.023	0.099			
		369.0	285.0	0.0	17.0	74.0			
		(9.5)	(24.2)	(0.0)	(11.8)	(4.1)			
	ARM D	0.202	0.746	0.046	0.000	0.006			
		35.0	129.0	8.0	0.0	1.0			
		(2.9)	(3.1)	(0.0)	(0.0)	(0.0)			
	ARM E	0.068	0.589	0.328	0.015	0.000			
		23.0	199.0	111.0	5.0	0.0			
		(0.0)	(1.5)	(2.7)	(0.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	13.76	27.50	0.501	-	0.0	1.0	14.4	-	0.072	
ARM B	11.54	30.78	0.375	-	0.0	0.6	8.8	-	0.052	
ARM C	9.35	25.66	0.364	-	0.0	0.6	8.3	-	0.061	
ARM D	2.17	17.11	0.127	-	0.0	0.1	2.1	-	0.067	
ARM E	4.24	16.01	0.265	-	0.0	0.4	5.2	-	0.085	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	16.44	26.57	0.619	-	1.0	1.6	23.0	-	0.098	
ARM B	13.78	29.75	0.463	-	0.6	0.9	12.6	-	0.062	
ARM C	11.16	24.86	0.449	-	0.6	0.8	11.8	-	0.073	
ARM D	2.59	15.80	0.164	-	0.1	0.2	2.9	-	0.076	
ARM E	5.06	14.78	0.343	-	0.4	0.5	7.5	-	0.103	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	20.13	25.31	0.795	-	1.6	3.7	50.2	-	0.183	
ARM B	16.88	28.38	0.595	-	0.9	1.4	21.0	-	0.086	
ARM C	13.67	23.78	0.575	-	0.8	1.3	19.3	-	0.098	
ARM D	3.17	14.02	0.226	-	0.2	0.3	4.3	-	0.092	
ARM E	6.20	13.12	0.473	-	0.5	0.9	12.7	-	0.144	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	20.13	25.29	0.796	-	3.7	3.8	56.1	-	0.193	
ARM B	16.88	28.33	0.596	-	1.4	1.5	21.9	-	0.087	
ARM C	13.67	23.77	0.575	-	1.3	1.3	20.1	-	0.099	
ARM D	3.17	14.00	0.227	-	0.3	0.3	4.4	-	0.092	
ARM E	6.20	13.09	0.474	-	0.9	0.9	13.3	-	0.145	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	16.44	26.54	0.619	- -	-	3.8	1.7	26.2	0.102	I
I	ARM B	13.78	29.69	0.464	- -	-	1.5	0.9	13.4	0.063	I
I	ARM C	11.16	24.84	0.449	- -	-	1.3	0.8	12.7	0.073	I
I	ARM D	2.59	15.76	0.164	- -	-	0.3	0.2	3.0	0.076	I
I	ARM E	5.06	14.75	0.343	- -	-	0.9	0.5	8.2	0.104	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	13.76	27.47	0.501	- -	-	1.7	1.0	15.7	0.073	I
I	ARM B	11.54	30.74	0.376	- -	-	0.9	0.6	9.2	0.052	I
I	ARM C	9.35	25.64	0.365	- -	-	0.8	0.6	8.8	0.062	I
I	ARM D	2.17	17.07	0.127	- -	-	0.2	0.1	2.2	0.067	I
I	ARM E	4.24	15.98	0.265	- -	-	0.5	0.4	5.6	0.085	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.0	*
07.45	1.6	**
08.00	3.7	****
08.15	3.8	****
08.30	1.7	**
08.45	1.0	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.9	*
08.00	1.4	*
08.15	1.5	*
08.30	0.9	*
08.45	0.6	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.8	*
08.00	1.3	*
08.15	1.3	*
08.30	0.8	*
08.45	0.6	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.1	
07.45	0.2	
08.00	0.3	
08.15	0.3	
08.30	0.2	
08.45	0.1	

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.5	*
08.00	0.9	*
08.15	0.9	*
08.30	0.5	*
08.45	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		
I		I		I	* DELAY *	I	* DELAY *	I		
I		I								
I		I	(VEH)	(VEH/H)	I (MIN)	(MIN/VEH)	I (MIN)	(MIN/VEH)	I	
I	A	I	1509.9	I 1006.6	I 185.6	I 0.12	I 185.6	I 0.12	I	
I	B	I	1266.3	I 844.2	I 86.9	I 0.07	I 86.9	I 0.07	I	
I	C	I	1025.4	I 683.6	I 81.0	I 0.08	I 81.0	I 0.08	I	
I	D	I	238.1	I 158.7	I 18.9	I 0.08	I 18.9	I 0.08	I	
I	E	I	465.2	I 310.2	I 52.5	I 0.11	I 52.5	I 0.11	I	
I	ALL	I	4505.0	I 3003.4	I 424.9	I 0.09	I 424.9	I 0.09	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\Manual\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 15:50:01 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 Cross in Hand Roundabout PM Peak 2026 Without Development
LOCATION: Cross In Hand Roundabout
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

														T5	
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	4.70	I	7.50	I	47.00	I	45.00	I	98.00	I	48.0	I	0.494	I 34.354
I ARM B	I	7.10	I	8.80	I	25.00	I	35.00	I	79.00	I	54.0	I	0.566	I 40.232
I ARM C	I	5.10	I	7.50	I	50.00	I	37.00	I	98.00	I	54.0	I	0.486	I 34.056
I ARM D	I	3.20	I	6.20	I	24.00	I	40.00	I	88.00	I	64.0	I	0.405	I 24.458
I ARM E	I	3.50	I	7.20	I	9.00	I	19.00	I	88.00	I	64.0	I	0.384	I 22.641

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15				
I		I	NUMBER OF MINUTES FROM START WHEN				I	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		I		I		I		I		I		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	9.27	I	13.91	I	9.27	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	12.64	I	18.96	I	12.64	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	10.66	I	15.99	I	10.66	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	3.58	I	5.36	I	3.58	I
I	ARM	E	I	15.00	I	45.00	I	75.00	I	2.51	I	3.77	I	2.51	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

															T33
I		I	TURNING PROPORTIONS									I			
I		I	TURNING COUNTS									I			
I		I	(PERCENTAGE OF H.V.S)									I			

I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	ARM E	I	

I	16.45 - 18.15	I		I		I		I		I		I		I	
I		I	ARM A	I	0.000	I	0.431	I	0.513	I	0.042	I	0.013	I	
I		I		I	0.0	I	320.0	I	381.0	I	31.0	I	10.0	I	
I		I		I	(0.0)	I	(7.5)	I	(6.0)	I	(3.2)	I	(0.0)	I	
I		I		I		I		I		I		I		I	
I		I	ARM B	I	0.432	I	0.000	I	0.249	I	0.143	I	0.175	I	
I		I		I	437.0	I	0.0	I	252.0	I	145.0	I	177.0	I	
I		I		I	(8.5)	I	(0.0)	I	(17.9)	I	(0.0)	I	(2.3)	I	
I		I		I		I		I		I		I		I	
I		I	ARM C	I	0.669	I	0.192	I	0.000	I	0.011	I	0.128	I	
I		I		I	571.0	I	164.0	I	0.0	I	9.0	I	109.0	I	
I		I		I	(5.3)	I	(31.1)	I	(0.0)	I	(0.0)	I	(2.8)	I	
I		I		I		I		I		I		I		I	
I		I	ARM D	I	0.259	I	0.692	I	0.028	I	0.000	I	0.021	I	
I		I		I	74.0	I	198.0	I	8.0	I	0.0	I	6.0	I	
I		I		I	(1.4)	I	(0.5)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I		I		I		I		I		I		I		I	
I		I	ARM E	I	0.055	I	0.587	I	0.338	I	0.020	I	0.000	I	
I		I		I	11.0	I	118.0	I	68.0	I	4.0	I	0.0	I	
I		I		I	(9.1)	I	(0.9)	I	(4.4)	I	(50.0)	I	(0.0)	I	
I		I		I		I		I		I		I		I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING	I	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
I	16.45-17.00											I
I	ARM A	9.31	28.69	0.324	- -	-	0.0	0.5	7.0	-	0.051	I
I	ARM B	12.69	33.61	0.377	- -	-	0.0	0.6	8.9	-	0.048	I
I	ARM C	10.70	26.30	0.407	- -	-	0.0	0.7	9.9	-	0.064	I
I	ARM D	3.59	16.27	0.221	- -	-	0.0	0.3	4.1	-	0.079	I
I	ARM E	2.52	14.59	0.173	- -	-	0.0	0.2	3.0	-	0.083	I
I												I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING	I	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
I												
I	17.00-17.15											
I	ARM A	11.12	27.99	0.397	- -	-	0.5	0.7	9.6	-	0.059	I
I	ARM B	15.15	32.92	0.460	- -	-	0.6	0.8	12.5	-	0.056	I
I	ARM C	12.78	25.38	0.504	- -	-	0.7	1.0	14.7	-	0.079	I
I	ARM D	4.29	14.70	0.292	- -	-	0.3	0.4	6.0	-	0.096	I
I	ARM E	3.01	13.15	0.229	- -	-	0.2	0.3	4.3	-	0.099	I
I												I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
I	17.15-17.30											I
I	ARM A	13.62	27.03	0.504	- -	-	0.7	1.0	14.7	-	0.074	I
I	ARM B	18.55	32.00	0.580	- -	-	0.8	1.4	19.8	-	0.074	I
I	ARM C	15.65	24.13	0.649	- -	-	1.0	1.8	25.8	-	0.117	I
I	ARM D	5.25	12.56	0.418	- -	-	0.4	0.7	10.2	-	0.136	I
I	ARM E	3.69	11.21	0.329	- -	-	0.3	0.5	7.0	-	0.133	I
I												I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
I	-											
I	17.30-17.45											
I	ARM A	13.62	27.01	0.504	- -	-	1.0	1.0	15.1	-	0.075	I
I	ARM B	18.55	31.99	0.580	- -	-	1.4	1.4	20.5	-	0.074	I
I	ARM C	15.65	24.11	0.649	- -	-	1.8	1.8	27.3	-	0.118	I
I	ARM D	5.25	12.53	0.419	- -	-	0.7	0.7	10.7	-	0.137	I
I	ARM E	3.69	11.18	0.330	- -	-	0.5	0.5	7.3	-	0.134	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	11.12	27.96	0.398	- -	1.0	0.7	10.2	-	0.060	I
I	ARM B	15.15	32.91	0.460	- -	1.4	0.9	13.2	-	0.056	I
I	ARM C	12.78	25.36	0.504	- -	1.8	1.0	15.9	-	0.080	I
I	ARM D	4.29	14.65	0.292	- -	0.7	0.4	6.4	-	0.097	I
I	ARM E	3.01	13.11	0.230	- -	0.5	0.3	4.6	-	0.099	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	9.31	28.67	0.325	- -	0.7	0.5	7.4	-	0.052	I
I	ARM B	12.69	33.59	0.378	- -	0.9	0.6	9.3	-	0.048	I
I	ARM C	10.70	26.28	0.407	- -	1.0	0.7	10.6	-	0.064	I
I	ARM D	3.59	16.23	0.221	- -	0.4	0.3	4.4	-	0.079	I
I	ARM E	2.52	14.55	0.173	- -	0.3	0.2	3.2	-	0.083	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5
17.15	0.7 *
17.30	1.0 *
17.45	1.0 *
18.00	0.7 *
18.15	0.5

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.8 *
17.30	1.4 *
17.45	1.4 *
18.00	0.9 *
18.15	0.6 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.7 *
17.15	1.0 **
17.30	1.8 **
17.45	1.8 **
18.00	1.0 *
18.15	0.7 *

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.7 *
17.45	0.7 *
18.00	0.4
18.15	0.3

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.5
17.45	0.5
18.00	0.3
18.15	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1021.3	I 680.9	I 64.0	I 0.06	I 64.0	I 0.06	I	
I	B	I	1391.6	I 927.7	I 84.2	I 0.06	I 84.2	I 0.06	I	
I	C	I	1174.1	I 782.7	I 104.3	I 0.09	I 104.3	I 0.09	I	
I	D	I	393.7	I 262.4	I 41.8	I 0.11	I 41.8	I 0.11	I	
I	E	I	276.7	I 184.4	I 29.6	I 0.11	I 29.6	I 0.11	I	
I	ALL	I	4257.3	I 2838.2	I 323.9	I 0.08	I 323.9	I 0.08	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\Manual\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 15:50:11 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4Cross in Hand Roundabout AM Peak 2026 With Development
LOCATION: Cross In Hand Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

														T5	
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	4.70	I	7.50	I	47.00	I	45.00	I	98.00	I	48.0	I	0.494	I 34.354 I
I ARM B	I	7.10	I	8.80	I	25.00	I	35.00	I	79.00	I	54.0	I	0.566	I 40.232 I
I ARM C	I	5.10	I	7.50	I	50.00	I	37.00	I	98.00	I	54.0	I	0.486	I 34.056 I
I ARM D	I	3.20	I	6.20	I	24.00	I	40.00	I	88.00	I	64.0	I	0.405	I 24.458 I
I ARM E	I	3.50	I	7.20	I	9.00	I	19.00	I	88.00	I	64.0	I	0.384	I 22.641 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	15.76	23.64	15.76			
ARM B	15.00	45.00	75.00	13.27	19.91	13.27			
ARM C	15.00	45.00	75.00	10.38	15.56	10.38			
ARM D	15.00	45.00	75.00	3.03	4.54	3.03			
ARM E	15.00	45.00	75.00	5.24	7.86	5.24			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
07.15 - 08.45	ARM A	0.000	0.388	0.516	0.071	0.025			
		0.0	489.0	651.0	89.0	32.0			
		(0.0)	(9.8)	(9.1)	(3.4)	(0.0)			
	ARM B	0.468	0.000	0.244	0.174	0.114			
		497.0	0.0	259.0	185.0	121.0			
		(10.1)	(0.0)	(27.8)	(1.1)	(0.8)			
	ARM C	0.547	0.343	0.000	0.020	0.089			
		454.0	285.0	0.0	17.0	74.0			
		(9.3)	(24.2)	(0.0)	(11.8)	(4.1)			
	ARM D	0.430	0.533	0.033	0.000	0.004			
		104.0	129.0	8.0	0.0	1.0			
		(1.0)	(3.1)	(0.0)	(0.0)	(0.0)			
	ARM E	0.248	0.475	0.265	0.012	0.000			
		104.0	199.0	111.0	5.0	0.0			
		(0.0)	(1.5)	(2.7)	(0.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	15.82	26.97	0.587	-	0.0	1.4	20.1	-	0.088	
ARM B	13.33	29.92	0.445	-	0.0	0.8	11.6	-	0.060	
ARM C	10.41	24.63	0.423	-	0.0	0.7	10.6	-	0.070	
ARM D	3.04	15.89	0.191	-	0.0	0.2	3.4	-	0.078	
ARM E	5.26	14.56	0.361	-	0.0	0.6	8.1	-	0.107	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	18.89	26.06	0.725	-	1.4	2.6	36.0	-	0.137	
ARM B	15.91	28.73	0.554	-	0.8	1.2	17.9	-	0.078	
ARM C	12.44	23.60	0.527	-	0.7	1.1	16.0	-	0.089	
ARM D	3.63	14.30	0.254	-	0.2	0.3	4.9	-	0.094	
ARM E	6.28	13.03	0.482	-	0.6	0.9	13.1	-	0.147	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	23.14	24.85	0.931	-	2.6	9.7	114.4	-	0.394	
ARM B	19.49	27.24	0.716	-	1.2	2.4	34.5	-	0.127	
ARM C	15.23	22.22	0.685	-	1.1	2.1	29.9	-	0.140	
ARM D	4.44	12.16	0.365	-	0.3	0.6	8.2	-	0.129	
ARM E	7.69	10.96	0.701	-	0.9	2.2	30.0	-	0.290	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	23.14	24.80	0.933	-	9.7	11.2	158.0	-	0.516	
ARM B	19.49	27.09	0.719	-	2.4	2.5	37.4	-	0.131	
ARM C	15.23	22.18	0.687	-	2.1	2.2	32.1	-	0.144	
ARM D	4.44	12.11	0.367	-	0.6	0.6	8.6	-	0.130	
ARM E	7.69	10.92	0.704	-	2.2	2.3	33.9	-	0.307	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	18.89	26.00	0.727	- -	-	11.2	2.8	50.6	0.165	I
I	ARM B	15.91	28.49	0.558	- -	-	2.5	1.3	19.9	0.080	I
I	ARM C	12.44	23.53	0.528	- -	-	2.2	1.1	17.7	0.091	I
I	ARM D	3.63	14.22	0.255	- -	-	0.6	0.3	5.3	0.095	I
I	ARM E	6.28	12.96	0.484	- -	-	2.3	1.0	15.3	0.154	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	15.82	26.93	0.588	- -	-	2.8	1.4	22.6	0.092	I
I	ARM B	13.33	29.85	0.446	- -	-	1.3	0.8	12.5	0.061	I
I	ARM C	10.41	24.59	0.424	- -	-	1.1	0.7	11.4	0.071	I
I	ARM D	3.04	15.83	0.192	- -	-	0.3	0.2	3.7	0.078	I
I	ARM E	5.26	14.50	0.363	- -	-	1.0	0.6	8.9	0.109	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.4	*
07.45	2.6	***
08.00	9.7	*****
08.15	11.2	*****
08.30	2.8	***
08.45	1.4	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.8	*
07.45	1.2	*
08.00	2.4	**
08.15	2.5	***
08.30	1.3	*
08.45	0.8	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.7	*
07.45	1.1	*
08.00	2.1	**
08.15	2.2	**
08.30	1.1	*
08.45	0.7	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.2	
07.45	0.3	
08.00	0.6	*
08.15	0.6	*
08.30	0.3	
08.45	0.2	

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.9	*
08.00	2.2	**
08.15	2.3	**
08.30	1.0	*
08.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1735.7	I 1157.1	I 401.7	I 0.23	I 401.7	I 0.23	I	
I	B	I	1461.8	I 974.5	I 133.8	I 0.09	I 133.8	I 0.09	I	
I	C	I	1142.4	I 761.6	I 117.7	I 0.10	I 117.7	I 0.10	I	
I	D	I	333.1	I 222.1	I 34.2	I 0.10	I 34.2	I 0.10	I	
I	E	I	576.7	I 384.5	I 109.3	I 0.19	I 109.3	I 0.19	I	
I	ALL	I	5249.7	I 3499.8	I 796.7	I 0.15	I 796.7	I 0.15	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\Manual\S4 2026 PM + Dev.vai"
(drive-on-the-left) at 15:50:21 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 Cross in Hand Roundabout PM Peak 2026 With Development
LOCATION: Cross In Hand Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

														T5	
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	4.70	I	7.50	I	47.00	I	45.00	I	98.00	I	48.0	I	0.494	I 34.354 I
I ARM B	I	7.10	I	8.80	I	25.00	I	35.00	I	79.00	I	54.0	I	0.566	I 40.232 I
I ARM C	I	5.10	I	7.50	I	50.00	I	37.00	I	98.00	I	54.0	I	0.486	I 34.056 I
I ARM D	I	3.20	I	6.20	I	24.00	I	40.00	I	88.00	I	64.0	I	0.405	I 24.458 I
I ARM E	I	3.50	I	7.20	I	9.00	I	19.00	I	88.00	I	64.0	I	0.384	I 22.641 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER	TO RISE	IS REACHED	FALLING
				PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	13.50	20.25	13.50			
ARM B	15.00	45.00	75.00	13.20	19.80	13.20			
ARM C	15.00	45.00	75.00	11.21	16.82	11.21			
ARM D	15.00	45.00	75.00	3.94	5.91	3.94			
ARM E	15.00	45.00	75.00	2.89	4.33	2.89			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
16.45 - 18.15	ARM A	0.000	0.396	0.443	0.107	0.054			
		0.0	428.0	478.0	116.0	58.0			
		(0.0)	(9.1)	(7.1)	(1.7)	(0.0)			
	ARM B	0.456	0.000	0.239	0.137	0.168			
		482.0	0.0	252.0	145.0	177.0			
		(10.4)	(0.0)	(17.9)	(0.0)	(2.3)			
	ARM C	0.686	0.183	0.000	0.010	0.122			
		615.0	164.0	0.0	9.0	109.0			
		(5.9)	(31.1)	(0.0)	(0.0)	(2.8)			
	ARM D	0.327	0.629	0.025	0.000	0.019			
		103.0	198.0	8.0	0.0	6.0			
		(1.0)	(0.5)	(0.0)	(0.0)	(0.0)			
	ARM E	0.177	0.511	0.294	0.017	0.000			
		41.0	118.0	68.0	4.0	0.0			
		(2.4)	(0.9)	(4.4)	(50.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	13.55	28.57	0.474	-	0.0	0.9	13.0	-	0.066	
ARM B	13.25	31.78	0.417	-	0.0	0.7	10.4	-	0.054	
ARM C	11.26	25.20	0.447	-	0.0	0.8	11.6	-	0.071	
ARM D	3.95	15.50	0.255	-	0.0	0.3	4.9	-	0.086	
ARM E	2.90	14.02	0.207	-	0.0	0.3	3.8	-	0.090	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	16.18	27.86	0.581	-	0.9	1.4	19.9	-	0.085	
ARM B	15.82	30.79	0.514	-	0.7	1.0	15.3	-	0.067	
ARM C	13.44	24.07	0.558	-	0.8	1.2	18.1	-	0.093	
ARM D	4.72	13.77	0.343	-	0.3	0.5	7.5	-	0.110	
ARM E	3.46	12.45	0.278	-	0.3	0.4	5.6	-	0.111	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	19.82	26.92	0.736	-	1.4	2.7	37.9	-	0.137	
ARM B	19.38	29.47	0.658	-	1.0	1.9	27.1	-	0.098	
ARM C	16.46	22.54	0.730	-	1.2	2.6	36.4	-	0.159	
ARM D	5.78	11.44	0.505	-	0.5	1.0	14.2	-	0.175	
ARM E	4.24	10.35	0.410	-	0.4	0.7	9.8	-	0.163	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	19.82	26.89	0.737	-	2.7	2.8	41.0	-	0.141	
ARM B	19.38	29.44	0.658	-	1.9	1.9	28.5	-	0.099	
ARM C	16.46	22.52	0.731	-	2.6	2.7	39.6	-	0.165	
ARM D	5.78	11.38	0.508	-	1.0	1.0	15.2	-	0.178	
ARM E	4.24	10.29	0.412	-	0.7	0.7	10.3	-	0.165	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	16.18	27.82	0.582	- -	-	2.8	1.4	22.0	0.087	I
I	ARM B	15.82	30.75	0.515	- -	-	1.9	1.1	16.5	0.068	I
I	ARM C	13.44	24.04	0.559	- -	-	2.7	1.3	20.1	0.096	I
I	ARM D	4.72	13.69	0.345	- -	-	1.0	0.5	8.3	0.112	I
I	ARM E	3.46	12.38	0.280	- -	-	0.7	0.4	6.1	0.113	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	13.55	28.54	0.475	- -	-	1.4	0.9	14.0	0.067	I
I	ARM B	13.25	31.74	0.417	- -	-	1.1	0.7	11.0	0.054	I
I	ARM C	11.26	25.17	0.447	- -	-	1.3	0.8	12.6	0.072	I
I	ARM D	3.95	15.45	0.256	- -	-	0.5	0.3	5.3	0.087	I
I	ARM E	2.90	13.97	0.208	- -	-	0.4	0.3	4.1	0.091	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.9	*
17.15	1.4	*
17.30	2.7	***
17.45	2.8	***
18.00	1.4	*
18.15	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.7	*
17.15	1.0	*
17.30	1.9	**
17.45	1.9	**
18.00	1.1	*
18.15	0.7	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.2	*
17.30	2.6	***
17.45	2.7	***
18.00	1.3	*
18.15	0.8	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.5	*
17.30	1.0	*
17.45	1.0	*
18.00	0.5	*
18.15	0.3	

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.7	*
17.45	0.7	*
18.00	0.4	
18.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1486.5	I 991.0	I 147.8	I 0.10	I 147.8	I 0.10	I	
I	B	I	1453.5	I 969.0	I 108.8	I 0.07	I 108.9	I 0.07	I	
I	C	I	1234.7	I 823.1	I 138.4	I 0.11	I 138.4	I 0.11	I	
I	D	I	433.6	I 289.0	I 55.4	I 0.13	I 55.4	I 0.13	I	
I	E	I	318.0	I 212.0	I 39.6	I 0.12	I 39.6	I 0.12	I	
I	ALL	I	4926.2	I 3284.2	I 490.0	I 0.10	I 490.1	I 0.10	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\Manual\S5 2026 AM + Dev + SP.vai"
(drive-on-the-left) at 15:50:30 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 Cross in Hand Roundabout AM Peak 2026 With Development + Symmetry Park
LOCATION: Cross In Hand Roundabout
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

																	T5	
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	5.00	I	8.60	I	60.00	I	60.00	I	73.00	I	44.0	I	0.596	I	39.854	I
I	ARM B	I	7.00	I	8.60	I	29.50	I	48.00	I	80.00	I	47.0	I	0.577	I	40.948	I
I	ARM C	I	4.50	I	7.00	I	23.00	I	48.00	I	80.00	I	41.0	I	0.500	I	31.782	I
I	ARM D	I	3.50	I	6.00	I	18.00	I	70.00	I	80.00	I	20.0	I	0.487	I	28.255	I
I	ARM E	I	3.00	I	7.00	I	14.00	I	23.00	I	73.00	I	56.0	I	0.430	I	23.547	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I
I	E	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	16.66	24.99	16.66			
ARM B	15.00	45.00	75.00	14.00	21.00	14.00			
ARM C	15.00	45.00	75.00	11.26	16.89	11.26			
ARM D	15.00	45.00	75.00	3.14	4.71	3.14			
ARM E	15.00	45.00	75.00	5.59	8.38	5.59			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
07.15 - 08.45	ARM A	0.000	0.421	0.488	0.067	0.024			
		0.0	561.0	651.0	89.0	32.0			
		(0.0)	(10.7)	(9.1)	(3.4)	(0.0)			
	ARM B	0.462	0.000	0.250	0.170	0.119			
		517.0	0.0	280.0	190.0	133.0			
		(10.6)	(0.0)	(28.6)	(1.6)	(3.0)			
	ARM C	0.504	0.395	0.000	0.019	0.082			
		454.0	356.0	0.0	17.0	74.0			
		(9.3)	(25.8)	(0.0)	(11.8)	(4.1)			
	ARM D	0.414	0.550	0.032	0.000	0.004			
		104.0	138.0	8.0	0.0	1.0			
		(1.0)	(4.4)	(0.0)	(0.0)	(0.0)			
08.00 - 08.15	ARM E	0.233	0.508	0.248	0.011	0.000			
		104.0	227.0	111.0	5.0	0.0			
		(0.0)	(3.1)	(2.7)	(0.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	16.73	30.02	0.557	-	0.0	1.2	18.0	-	0.074	
ARM B	14.05	30.20	0.465	-	0.0	0.9	12.6	-	0.061	
ARM C	11.31	21.95	0.515	-	0.0	1.0	15.1	-	0.093	
ARM D	3.15	17.06	0.185	-	0.0	0.2	3.3	-	0.072	
ARM E	5.61	13.73	0.409	-	0.0	0.7	9.8	-	0.122	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	19.97	28.75	0.695	-	1.2	2.2	31.7	-	0.112	
ARM B	16.78	29.00	0.579	-	0.9	1.4	19.7	-	0.081	
ARM C	13.50	20.85	0.647	-	1.0	1.8	25.6	-	0.134	
ARM D	3.76	15.01	0.251	-	0.2	0.3	4.9	-	0.089	
ARM E	6.70	11.90	0.563	-	0.7	1.3	17.7	-	0.190	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	24.46	27.13	0.901	-	2.2	7.6	94.4	-	0.299	
ARM B	20.55	27.46	0.748	-	1.4	2.9	40.1	-	0.141	
ARM C	16.53	19.38	0.853	-	1.8	5.1	65.7	-	0.306	
ARM D	4.61	12.32	0.374	-	0.3	0.6	8.5	-	0.129	
ARM E	8.20	9.48	0.865	-	1.3	4.9	59.4	-	0.584	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	24.46	26.99	0.906	-	7.6	8.5	121.8	-	0.368	
ARM B	20.55	27.34	0.752	-	2.9	3.0	43.9	-	0.147	
ARM C	16.53	19.34	0.855	-	5.1	5.5	79.8	-	0.347	
ARM D	4.61	12.18	0.378	-	0.6	0.6	9.0	-	0.132	
ARM E	8.20	9.37	0.876	-	4.9	5.8	81.6	-	0.757	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	19.97	28.52	0.700	- -	-	8.5	2.4	41.0	0.129	I
I	ARM B	16.78	28.80	0.583	- -	-	3.0	1.4	22.1	0.085	I
I	ARM C	13.50	20.78	0.650	- -	-	5.5	1.9	31.4	0.147	I
I	ARM D	3.76	14.81	0.254	- -	-	0.6	0.3	5.3	0.091	I
I	ARM E	6.70	11.73	0.571	- -	-	5.8	1.4	24.7	0.223	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	16.73	29.94	0.559	- -	-	2.4	1.3	19.9	0.077	I
I	ARM B	14.05	30.14	0.466	- -	-	1.4	0.9	13.5	0.062	I
I	ARM C	11.31	21.91	0.516	- -	-	1.9	1.1	16.8	0.095	I
I	ARM D	3.15	16.97	0.186	- -	-	0.3	0.2	3.5	0.072	I
I	ARM E	5.61	13.64	0.411	- -	-	1.4	0.7	11.1	0.126	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.2	*
07.45	2.2	**
08.00	7.6	*****
08.15	8.5	*****
08.30	2.4	**
08.45	1.3	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.4	*
08.00	2.9	***
08.15	3.0	***
08.30	1.4	*
08.45	0.9	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.0	*
07.45	1.8	**
08.00	5.1	*****
08.15	5.5	*****
08.30	1.9	**
08.45	1.1	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.2	
07.45	0.3	
08.00	0.6	*
08.15	0.6	*
08.30	0.3	
08.45	0.2	

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.7	*
07.45	1.3	*
08.00	4.9	*****
08.15	5.8	*****
08.30	1.4	*
08.45	0.7	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1834.8	I	1223.2	I	326.7	I	0.18	I
I	B	I	1541.6	I	1027.7	I	152.0	I	0.10	I
I	C	I	1240.2	I	826.8	I	234.4	I	0.19	I
I	D	I	345.5	I	230.3	I	34.5	I	0.10	I
I	E	I	615.3	I	410.2	I	204.3	I	0.33	I
I	ALL	I	5577.3	I	3718.2	I	951.8	I	0.17	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\Manual\S5 2026 PM + Dev + SP.vai"
(drive-on-the-left) at 15:50:44 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 Cross in Hand Roundabout PM Peak 2026 With Development + Symmetry Park
LOCATION: Cross In Hand Roundabout
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

																	T5	
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	5.00	I	8.60	I	60.00	I	60.00	I	73.00	I	44.0	I	0.596	I	39.854	I
I	ARM B	I	7.00	I	8.60	I	29.50	I	48.00	I	80.00	I	47.0	I	0.577	I	40.948	I
I	ARM C	I	4.50	I	7.00	I	23.00	I	48.00	I	80.00	I	41.0	I	0.500	I	31.782	I
I	ARM D	I	3.50	I	6.00	I	18.00	I	70.00	I	80.00	I	20.0	I	0.487	I	28.255	I
I	ARM E	I	3.00	I	7.00	I	14.00	I	23.00	I	73.00	I	56.0	I	0.430	I	23.547	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I
I	E	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	13.79	20.68	13.79			
ARM B	15.00	45.00	75.00	15.15	22.72	15.15			
ARM C	15.00	45.00	75.00	11.50	17.25	11.50			
ARM D	15.00	45.00	75.00	3.97	5.96	3.97			
ARM E	15.00	45.00	75.00	3.00	4.50	3.00			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
16.45 - 18.15	ARM A	0.000	0.409	0.433	0.105	0.053			
		0.0	451.0	478.0	116.0	58.0			
		(0.0)	(9.5)	(7.1)	(1.7)	(0.0)			
	ARM B	0.441	0.000	0.256	0.131	0.172			
		535.0	0.0	310.0	159.0	208.0			
		(12.0)	(0.0)	(21.9)	(1.9)	(5.8)			
	ARM C	0.668	0.203	0.000	0.010	0.118			
		615.0	187.0	0.0	9.0	109.0			
		(5.9)	(31.0)	(0.0)	(0.0)	(2.8)			
	ARM D	0.324	0.632	0.025	0.000	0.019			
		103.0	201.0	8.0	0.0	6.0			
		(1.0)	(1.0)	(0.0)	(0.0)	(0.0)			
	ARM E	0.171	0.529	0.283	0.017	0.000			
		41.0	127.0	68.0	4.0	0.0			
		(2.4)	(1.6)	(4.4)	(50.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	13.84	32.61	0.424	-	0.0	0.7	10.7	-	0.053	
ARM B	15.21	31.55	0.482	-	0.0	0.9	13.5	-	0.061	
ARM C	11.54	22.16	0.521	-	0.0	1.1	15.4	-	0.093	
ARM D	3.99	16.63	0.240	-	0.0	0.3	4.6	-	0.079	
ARM E	3.01	13.39	0.225	-	0.0	0.3	4.2	-	0.096	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	16.53	31.70	0.521	-	0.7	1.1	15.8	-	0.066	
ARM B	18.16	30.57	0.594	-	0.9	1.4	21.0	-	0.080	
ARM C	13.78	20.87	0.661	-	1.1	1.9	26.9	-	0.139	
ARM D	4.76	14.40	0.331	-	0.3	0.5	7.1	-	0.104	
ARM E	3.60	11.54	0.312	-	0.3	0.4	6.5	-	0.126	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	20.24	30.52	0.663	-	1.1	1.9	27.8	-	0.096	
ARM B	22.24	29.25	0.760	-	1.4	3.1	42.7	-	0.138	
ARM C	16.88	19.13	0.883	-	1.9	6.2	77.6	-	0.361	
ARM D	5.84	11.49	0.508	-	0.5	1.0	14.3	-	0.175	
ARM E	4.40	9.13	0.482	-	0.4	0.9	12.9	-	0.208	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	20.24	30.46	0.665	-	1.9	2.0	29.2	-	0.098	
ARM B	22.24	29.22	0.761	-	3.1	3.1	46.5	-	0.143	
ARM C	16.88	19.08	0.885	-	6.2	6.8	98.8	-	0.430	
ARM D	5.84	11.33	0.515	-	1.0	1.0	15.5	-	0.182	
ARM E	4.40	8.99	0.490	-	0.9	0.9	14.0	-	0.218	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	16.53	31.61	0.523	- -	2.0	1.1	17.1	-	0.067	I
I	ARM B	18.16	30.54	0.595	- -	3.1	1.5	23.2	-	0.082	I
I	ARM C	13.78	20.81	0.662	- -	6.8	2.0	34.4	-	0.156	I
I	ARM D	4.76	14.15	0.337	- -	1.0	0.5	8.0	-	0.107	I
I	ARM E	3.60	11.34	0.317	- -	0.9	0.5	7.3	-	0.130	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	13.84	32.56	0.425	- -	1.1	0.7	11.4	-	0.054	I
I	ARM B	15.21	31.52	0.483	- -	1.5	0.9	14.5	-	0.062	I
I	ARM C	11.54	22.12	0.522	- -	2.0	1.1	17.2	-	0.096	I
I	ARM D	3.99	16.53	0.241	- -	0.5	0.3	4.9	-	0.080	I
I	ARM E	3.01	13.30	0.226	- -	0.5	0.3	4.5	-	0.097	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.7	*
17.15	1.1	*
17.30	1.9	**
17.45	2.0	**
18.00	1.1	*
18.15	0.7	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.9	*
17.15	1.4	*
17.30	3.1	***
17.45	3.1	***
18.00	1.5	*
18.15	0.9	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.1	*
17.15	1.9	**
17.30	6.2	*****
17.45	6.8	*****
18.00	2.0	**
18.15	1.1	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.5	
17.30	1.0	*
17.45	1.0	*
18.00	0.5	*
18.15	0.3	

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.9	*
17.45	0.9	*
18.00	0.5	
18.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1518.2	I 1012.1	I 112.0	I 0.07	I 112.0	I 0.07	I	
I	B	I	1668.2	I 1112.2	I 161.3	I 0.10	I 161.3	I 0.10	I	
I	C	I	1266.3	I 844.2	I 270.4	I 0.21	I 270.4	I 0.21	I	
I	D	I	437.7	I 291.8	I 54.5	I 0.12	I 54.5	I 0.12	I	
I	E	I	330.3	I 220.2	I 49.4	I 0.15	I 49.4	I 0.15	I	
I	ALL	I	5220.8	I 3480.5	I 647.6	I 0.12	I 647.6	I 0.12	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\Manual\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 15:44:25 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 Magna Park Access Roundabout AM Peak 2026 Without Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

T5																		
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	7.20	I	10.70	I	31.00	I	19.00	I	67.00	I	57.0	I	0.654	I	44.594	I
I	ARM B	I	7.30	I	10.20	I	32.00	I	100.00	I	67.00	I	54.0	I	0.681	I	46.088	I
I	ARM C	I	7.30	I	7.30	I	0.00	I	25.00	I	67.00	I	62.0	I	0.541	I	33.132	I
I	ARM D	I	7.60	I	10.00	I	11.00	I	42.00	I	67.00	I	60.0	I	0.632	I	41.945	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERIOD SET LEVEL AT YEAR 2000 BASE FLOWS											T15				
I	I	NUMBER OF MINUTES FROM START WHEN				RATE OF FLOW (VEH/MIN)				I					
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I		AT TOP	I	AFTER	I
I	I	I	I	I	I	I	I	I	I	I		I	I	I	I
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	3.63	I	5.44	I	3.63	I	
I	ARM B	I	15.00	I	45.00	I	75.00	I	17.75	I	26.63	I	17.75	I	
I	ARM C	I	15.00	I	45.00	I	75.00	I	0.56	I	0.84	I	0.56	I	
I	ARM D	I	15.00	I	45.00	I	75.00	I	12.15	I	18.22	I	12.15	I	

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33		
I	I	TURNING PROPORTIONS								I		
I	I	TURNING COUNTS								I		
I	I	(PERCENTAGE OF H.V.S)								I		
I	I									I		
I	TIME	I FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	
I	07.15 - 08.45	I		I	I	I	I	I	I	I	I	
I		I	ARM A	I	0.000	I	0.441	I	0.000	I	0.559	I
I		I		I	0.0	I	128.0	I	0.0	I	162.0	I
I		I		I	(0.0)	I	(53.1)	I	(0.0)	I	(44.4)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM B	I	0.375	I	0.032	I	0.073	I	0.520	I
I		I		I	532.0	I	45.0	I	104.0	I	739.0	I
I		I		I	(14.7)	I	(35.6)	I	(11.5)	I	(3.7)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM C	I	0.111	I	0.400	I	0.000	I	0.489	I
I		I		I	5.0	I	18.0	I	0.0	I	22.0	I
I		I		I	(60.0)	I	(50.0)	I	(0.0)	I	(50.0)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM D	I	0.452	I	0.481	I	0.067	I	0.000	I
I		I		I	439.0	I	468.0	I	65.0	I	0.0	I
I		I		I	(13.2)	I	(6.6)	I	(16.9)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	07.15-07.30										I	I
I	ARM A	3.64	26.43	0.138	- -	-	0.0	0.2	2.3	-	0.044	I
I	ARM B	17.82	39.71	0.449	- -	-	0.0	0.8	11.9	-	0.045	I
I	ARM C	0.56	14.44	0.039	- -	-	0.0	0.0	0.6	-	0.072	I
I	ARM D	12.20	32.97	0.370	- -	-	0.0	0.6	8.6	-	0.048	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	07.30-07.45										I	I
I	ARM A	4.35	25.71	0.169	- -	-	0.2	0.2	3.0	-	0.047	I
I	ARM B	21.28	39.24	0.542	- -	-	0.8	1.2	17.2	-	0.055	I
I	ARM C	0.67	12.96	0.052	- -	-	0.0	0.1	0.8	-	0.081	I
I	ARM D	14.56	31.98	0.455	- -	-	0.6	0.8	12.2	-	0.057	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	07.45-08.00										I	I
I	ARM A	5.32	24.73	0.215	- -	-	0.2	0.3	4.0	-	0.051	I
I	ARM B	26.06	38.59	0.675	- -	-	1.2	2.0	29.5	-	0.079	I
I	ARM C	0.83	10.96	0.075	- -	-	0.1	0.1	1.2	-	0.099	I
I	ARM D	17.84	30.62	0.582	- -	-	0.8	1.4	20.0	-	0.078	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	08.00-08.15										I	I
I	ARM A	5.32	24.72	0.215	- -	-	0.3	0.3	4.1	-	0.052	I
I	ARM B	26.06	38.59	0.675	- -	-	2.0	2.1	30.8	-	0.080	I
I	ARM C	0.83	10.94	0.075	- -	-	0.1	0.1	1.2	-	0.099	I
I	ARM D	17.84	30.61	0.583	- -	-	1.4	1.4	20.8	-	0.078	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	08.15-08.30										I	I
I	ARM A	4.35	25.69	0.169	- -	-	0.3	0.2	3.1	-	0.047	I
I	ARM B	21.28	39.23	0.542	- -	-	2.1	1.2	18.4	-	0.056	I
I	ARM C	0.67	12.93	0.052	- -	-	0.1	0.1	0.8	-	0.082	I
I	ARM D	14.56	31.95	0.456	- -	-	1.4	0.8	13.0	-	0.058	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	3.64	26.41	0.138	-	0.2	0.2	2.4	-	0.044
ARM B	17.82	39.70	0.449	-	1.2	0.8	12.5	-	0.046
ARM C	0.56	14.40	0.039	-	0.1	0.0	0.6	-	0.072
ARM D	12.20	32.95	0.370	-	0.8	0.6	9.0	-	0.048

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.2
08.00	0.3
08.15	0.3
08.30	0.2
08.45	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.8 *
07.45	1.2 **
08.00	2.0 **
08.15	2.1 **
08.30	1.2 *
08.45	0.8 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.6 *
07.45	0.8 *
08.00	1.4 *
08.15	1.4 *
08.30	0.8 *
08.45	0.6 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	399.2	19.0	0.05
B	1954.5	120.4	0.06
C	61.9	5.3	0.09
D	1337.9	83.5	0.06
ALL	3753.5	228.2	0.06

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

END OF JOB

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\Manual\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 15:44:33 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 Magna Park Access Roundabout PM Peak 2026 Without Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

T5																		
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	7.20	I	10.70	I	31.00	I	19.00	I	67.00	I	57.0	I	0.654	I	44.594	I
I	ARM B	I	7.30	I	10.20	I	32.00	I	100.00	I	67.00	I	54.0	I	0.681	I	46.088	I
I	ARM C	I	7.30	I	7.30	I	0.00	I	25.00	I	67.00	I	62.0	I	0.541	I	33.132	I
I	ARM D	I	7.60	I	10.00	I	11.00	I	42.00	I	67.00	I	60.0	I	0.632	I	41.945	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13				
I	ARM	I	FLOW SCALE(%)	I

I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERMANENT FLOW RATE AT PEAK 2000 GROSS FLOWS										T15			
I	I	I	NUMBER OF MINUTES FROM START WHEN	I	I	RATE OF FLOW (VEH/MIN)	I	I	I	I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	BEFORE	I	AT TOP	I	AFTER		
I	I	I	I	I	I	I	I	I	I	I	I		
I	I	I	TO RISE	I	IS REACHED	I	PEAK	I	OF PEAK	I	PEAK		
I	ARM A	I	15.00	I	45.00	I	75.00	I	8.43	I	12.64	I	8.43
I	ARM B	I	15.00	I	45.00	I	75.00	I	9.06	I	13.59	I	9.06
I	ARM C	I	15.00	I	45.00	I	75.00	I	3.91	I	5.87	I	3.91
I	ARM D	I	15.00	I	45.00	I	75.00	I	10.10	I	15.15	I	10.10

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33										
		TURNING PROPORTIONS								
		TURNING COUNTS								
		(PERCENTAGE OF H.V.S)								
TIME		FROM/T	ARM	A	ARM	B	ARM	C	ARM	D
16.45	18.15	ARM A	0.000	0.441	0.004	0.555				
			0.0	297.0	3.0	374.0				
			(0.0)	(17.2)	(100.0)	(15.2)				
		ARM B	0.246	0.037	0.052	0.665				
			178.0	27.0	38.0	482.0				
			(33.2)	(3.7)	(50.0)	(3.3)				
		ARM C	0.035	0.588	0.000	0.377				
			11.0	184.0	0.0	118.0				
			(45.5)	(4.9)	(0.0)	(8.5)				
		ARM D	0.127	0.829	0.043	0.000				
			103.0	670.0	35.0	0.0				
			(37.9)	(3.6)	(40.0)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

[illegible][illegible]

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.15-17.30										
I	ARM A	12.37	28.37	0.436	- -	-	0.5	0.8	11.3	-	0.062
I	ARM B	13.30	35.39	0.376	- -	-	0.4	0.6	8.9	-	0.045
I	ARM C	5.74	19.77	0.291	- -	-	0.3	0.4	6.0	-	0.071
I	ARM D	14.83	33.27	0.446	- -	-	0.5	0.8	11.8	-	0.054

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	17.30-17.45									
	ARM A	12.37	28.36	0.436	-	-	0.8	0.8	11.5	0.063
	ARM B	13.30	35.38	0.376	-	-	0.6	0.6	9.0	0.045
	ARM C	5.74	19.76	0.291	-	-	0.4	0.4	6.1	0.071
	ARM D	14.83	33.27	0.446	-	-	0.8	0.8	12.0	0.054

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
	17.45-18.00										
	ARM A	10.10	30.17	0.335	- -	-	0.8	0.5	7.7	-	0.050
	ARM B	10.86	36.36	0.299	- -	-	0.6	0.4	6.5	-	0.039
	ARM C	4.69	21.76	0.215	- -	-	0.4	0.3	4.2	-	0.059
	ARM D	12.11	34.18	0.354	- -	-	0.8	0.6	8.4	-	0.045

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	8.46	31.49	0.269	- -	-	0.5	0.4	5.6	0.043	I
I	ARM B	9.10	37.07	0.245	- -	-	0.4	0.3	4.9	0.036	I
I	ARM C	3.93	23.23	0.169	- -	-	0.3	0.2	3.1	0.052	I
I	ARM D	10.14	34.85	0.291	- -	-	0.6	0.4	6.3	0.041	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.8 *
17.45	0.8 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.6 *
17.45	0.6 *
18.00	0.4
18.15	0.3

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.8 *
17.45	0.8 *
18.00	0.6 *
18.15	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	927.7	I	618.5	I	48.9	I	0.05
I	B	I	997.9	I	665.3	I	40.4	I	0.04
I	C	I	430.8	I	287.2	I	26.4	I	0.06
I	D	I	1112.2	I	741.4	I	52.5	I	0.05
I	ALL	I	3468.6	I	2312.4	I	168.2	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\Manual\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 15:44:42 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 Magna Park Access Roundabout AM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

T5																		
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	7.20	I	10.70	I	31.00	I	19.00	I	67.00	I	57.0	I	0.654	I	44.594	I
I	ARM B	I	7.30	I	10.20	I	32.00	I	100.00	I	67.00	I	54.0	I	0.681	I	46.088	I
I	ARM C	I	7.30	I	7.30	I	0.00	I	25.00	I	67.00	I	62.0	I	0.541	I	33.132	I
I	ARM D	I	7.60	I	10.00	I	11.00	I	42.00	I	67.00	I	60.0	I	0.632	I	41.945	I

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

WARNING ARM A Effective flare length is outside normal range.
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TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	4.72	7.09	4.72			
ARM B	15.00	45.00	75.00	21.89	32.83	21.89			
ARM C	15.00	45.00	75.00	0.56	0.84	0.56			
ARM D	15.00	45.00	75.00	12.73	19.09	12.73			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
I	I								
I	TURNING PROPORTIONS								
I	TURNING COUNTS								
I	(PERCENTAGE OF H.V.S)								
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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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	4.74	27.56	0.172	-	0.0	0.2	3.1	-	0.044
ARM B	21.97	39.80	0.552	-	0.0	1.2	17.8	-	0.056
ARM C	0.56	12.84	0.044	-	0.0	0.0	0.7	-	0.081
ARM D	12.77	31.12	0.410	-	0.0	0.7	10.1	-	0.054

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	5.66	26.73	0.212	-	0.2	0.3	4.0	-	0.047
ARM B	26.24	39.32	0.667	-	1.2	2.0	28.6	-	0.076
ARM C	0.67	11.05	0.061	-	0.0	0.1	0.9	-	0.096
ARM D	15.25	29.86	0.511	-	0.7	1.0	15.1	-	0.068

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	6.94	25.60	0.271	-	0.3	0.4	5.5	-	0.054
ARM B	32.13	38.67	0.831	-	2.0	4.6	63.6	-	0.145
ARM C	0.83	8.65	0.095	-	0.1	0.1	1.5	-	0.128
ARM D	18.68	28.18	0.663	-	1.0	1.9	27.6	-	0.104

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	6.94	25.58	0.271	-	0.4	0.4	5.6	-	0.054
ARM B	32.13	38.67	0.831	-	4.6	4.8	70.9	-	0.152
ARM C	0.83	8.59	0.096	-	0.1	0.1	1.6	-	0.129
ARM D	18.68	28.13	0.664	-	1.9	2.0	29.2	-	0.106

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	5.66	26.70	0.212	-	0.4	0.3	4.1	-	0.048
ARM B	26.24	39.31	0.667	-	4.8	2.0	32.2	-	0.079
ARM C	0.67	10.96	0.061	-	0.1	0.1	1.0	-	0.097
ARM D	15.25	29.80	0.512	-	2.0	1.1	16.4	-	0.069

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	4.74	27.54	0.172	- -	-	0.3	0.2	3.2	0.044	I
I	ARM B	21.97	39.79	0.552	- -	-	2.0	1.2	19.2	0.056	I
I	ARM C	0.56	12.78	0.044	- -	-	0.1	0.0	0.7	0.082	I
I	ARM D	12.77	31.08	0.411	- -	-	1.1	0.7	10.7	0.055	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.3
08.00	0.4
08.15	0.4
08.30	0.3
08.45	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.2	*
07.45	2.0	**
08.00	4.6	*****
08.15	4.8	*****
08.30	2.0	**
08.45	1.2	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.7
07.45	1.0
08.00	1.9
08.15	2.0
08.30	1.1
08.45	0.7

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
	I		I	* DELAY *	I	* DELAY *	I		I
	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
A	I	520.3	I	346.9	I	25.3	I	0.05	I
B	I	2410.1	I	1606.7	I	232.2	I	0.10	I
C	I	61.9	I	41.3	I	6.5	I	0.10	I
D	I	1401.2	I	934.1	I	109.2	I	0.08	I
ALL	I	4393.6	I	2929.0	I	373.1	I	0.08	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
 ===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\Manual\S4 2026 PM + Dev.vai"
(drive-on-the-left) at 15:44:51 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 Magna Park Access Roundabout PM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	7.20	I	10.70	I	31.00	I	19.00	I	67.00	I	57.0	I	0.654	I	44.594	I
I	ARM B	I	7.30	I	10.20	I	32.00	I	100.00	I	67.00	I	54.0	I	0.681	I	46.088	I
I	ARM C	I	7.30	I	7.30	I	0.00	I	25.00	I	67.00	I	62.0	I	0.541	I	33.132	I
I	ARM D	I	7.60	I	10.00	I	11.00	I	42.00	I	67.00	I	60.0	I	0.632	I	41.945	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13				
I	ARM	I	FLOW SCALE(%)	I

I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base FlowsT33

QUESTIONS HAVE BEEN ASKED FOR CLARIFICATION FOR WHICH NO FURTHER COMMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	10.51	31.07	0.338	-	0.7	0.5	7.8	-	0.049
ARM B	10.69	36.83	0.290	-	0.5	0.4	6.2	-	0.038
ARM C	3.93	22.28	0.176	-	0.3	0.2	3.3	-	0.055
ARM D	11.49	34.03	0.338	-	0.7	0.5	7.8	-	0.044

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5 *
17.15	0.7 *
17.30	1.3 *
17.45	1.3 *
18.00	0.7 *
18.15	0.5 *

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.8 *
17.45	0.8 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.5
17.45	0.5
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5 *
17.15	0.7 *
17.30	1.1 *
17.45	1.1 *
18.00	0.7 *
18.15	0.5 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	1153.4	74.6	0.06
B	1172.7	52.3	0.04
C	430.8	28.6	0.07
D	1260.8	68.6	0.05
ALL	4017.8	224.1	0.06

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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\Manual\S5 2026 AM + Dev + SP.vai"
(drive-on-the-left) at 15:44:59 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 Magna Park Access Roundabout AM Peak 2026 With Development + Symmetry Park
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	7.00	I	9.00	I	29.00	I	22.50	I	66.50	I	45.0	I	0.640	I	41.590	I
I	ARM B	I	7.00	I	9.50	I	26.50	I	36.00	I	66.50	I	32.0	I	0.695	I	45.714	I
I	ARM C	I	7.00	I	7.50	I	15.50	I	20.00	I	66.50	I	44.0	I	0.583	I	35.810	I
I	ARM D	I	7.50	I	11.00	I	45.00	I	39.00	I	66.50	I	45.0	I	0.732	I	50.559	I

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

WARNING ARM D Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW SCALE(%)	I	
I	A	I	100	I	
I	B	I	100	I	
I	C	I	100	I	
I	D	I	100	I	

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	4.72	7.09	4.72			
ARM B	15.00	45.00	75.00	22.61	33.92	22.61			
ARM C	15.00	45.00	75.00	0.56	0.84	0.56			
ARM D	15.00	45.00	75.00	14.98	22.46	14.98			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45									
	ARM A	0.000	0.571	0.000	0.429				
		0.0	216.0	0.0	162.0				
		(0.0)	(37.0)	(0.0)	(44.4)				
	ARM B	0.399	0.025	0.057	0.519				
		721.0	45.0	104.0	939.0				
		(12.3)	(35.6)	(11.5)	(6.5)				
	ARM C	0.111	0.400	0.000	0.489				
		5.0	18.0	0.0	22.0				
		(60.0)	(50.0)	(0.0)	(50.0)				
	ARM D	0.366	0.579	0.054	0.000				
		439.0	694.0	65.0	0.0				
		(13.2)	(13.3)	(16.9)	(0.0)				

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	4.74	24.25	0.196	-	0.0	0.2	3.6	-	0.051
ARM B	22.70	39.17	0.579	-	0.0	1.4	19.8	-	0.060
ARM C	0.56	13.55	0.042	-	0.0	0.0	0.6	-	0.077
ARM D	15.03	37.26	0.403	-	0.0	0.7	9.9	-	0.045

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	5.66	23.18	0.244	-	0.2	0.3	4.8	-	0.057
ARM B	27.10	38.69	0.701	-	1.4	2.3	33.0	-	0.086
ARM C	0.67	11.56	0.058	-	0.0	0.1	0.9	-	0.092
ARM D	17.95	35.83	0.501	-	0.7	1.0	14.6	-	0.056

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	6.94	21.74	0.319	-	0.3	0.5	6.9	-	0.067
ARM B	33.20	38.03	0.873	-	2.3	6.3	82.6	-	0.187
ARM C	0.83	8.91	0.093	-	0.1	0.1	1.5	-	0.124
ARM D	21.98	33.93	0.648	-	1.0	1.8	26.1	-	0.083

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	6.94	21.71	0.319	-	0.5	0.5	7.0	-	0.068
ARM B	33.20	38.03	0.873	-	6.3	6.5	96.3	-	0.204
ARM C	0.83	8.81	0.094	-	0.1	0.1	1.5	-	0.125
ARM D	21.98	33.85	0.649	-	1.8	1.8	27.4	-	0.084

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	5.66	23.15	0.245	-	0.5	0.3	5.0	-	0.057
ARM B	27.10	38.68	0.701	-	6.5	2.4	38.5	-	0.091
ARM C	0.67	11.42	0.059	-	0.1	0.1	1.0	-	0.093
ARM D	17.95	35.72	0.502	-	1.8	1.0	15.7	-	0.057

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	4.74	24.22	0.196	- -	-	0.3	0.2	3.7	0.051	I
I	ARM B	22.70	39.16	0.580	- -	-	2.4	1.4	21.5	0.061	I
I	ARM C	0.56	13.48	0.042	- -	-	0.1	0.0	0.7	0.077	I
I	ARM D	15.03	37.21	0.404	- -	-	1.0	0.7	10.4	0.045	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.3
08.00	0.5
08.15	0.5
08.30	0.3
08.45	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.4	*
07.45	2.3	**
08.00	6.3	*****
08.15	6.5	*****
08.30	2.4	**
08.45	1.4	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.7
07.45	1.0
08.00	1.8
08.15	1.8
08.30	1.0
08.45	0.7

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	520.3	I	346.9	I	30.9	I	0.06
I	B	I	2490.0	I	1660.0	I	291.8	I	0.12
I	C	I	61.9	I	41.3	I	6.2	I	0.10
I	D	I	1649.0	I	1099.3	I	104.1	I	0.06
I	ALL	I	4721.1	I	3147.4	I	433.0	I	0.09

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

END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Nine Mile Ride Email: software@trl.co.uk
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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\Manual\S5 2026 PM + Dev + SP.vai"
(drive-on-the-left) at 15:45:09 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 Magna Park Access Roundabout PM Peak 2026 With Development + Symmetry Park
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	7.00	I	9.00	I	29.00	I	22.50	I	66.50	I	45.0	I	0.640	I	41.590	I
I	ARM B	I	7.00	I	9.50	I	26.50	I	36.00	I	66.50	I	32.0	I	0.695	I	45.714	I
I	ARM C	I	7.00	I	7.50	I	15.50	I	20.00	I	66.50	I	44.0	I	0.583	I	35.810	I
I	ARM D	I	7.50	I	11.00	I	45.00	I	39.00	I	66.50	I	45.0	I	0.732	I	50.559	I

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

WARNING ARM D Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW SCALE(%)	I	
I	A	I	100	I	
I	B	I	100	I	
I	C	I	100	I	
I	D	I	100	I	

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

												T15		
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	10.48	I	15.71	I	10.48	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	12.60	I	18.90	I	12.60	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	3.91	I	5.87	I	3.91	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	12.18	I	18.26	I	12.18	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33		
I										I		
I	TURNING PROPORTIONS									I		
I	TURNING COUNTS									I		
I	(PERCENTAGE OF H.V.S)									I		
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.550	I	0.004	I	0.446	I
I		I		I	0.0	I	461.0	I	3.0	I	374.0	I
I		I		I	(0.0)	I	(13.9)	I	(100.0)	I	(15.2)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.258	I	0.027	I	0.038	I	0.678	I
I		I		I	260.0	I	27.0	I	38.0	I	683.0	I
I		I		I	(26.5)	I	(3.7)	I	(50.0)	I	(11.3)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.035	I	0.588	I	0.000	I	0.377	I
I		I		I	11.0	I	184.0	I	0.0	I	118.0	I
I		I		I	(45.5)	I	(4.9)	I	(0.0)	I	(8.5)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.106	I	0.858	I	0.036	I	0.000	I
I		I		I	103.0	I	836.0	I	35.0	I	0.0	I
I		I		I	(37.9)	I	(6.2)	I	(40.0)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	16.45-17.00										I	I
I	ARM A	10.51	28.16	0.373	- -	-	0.0	0.6	8.7	-	0.056	I
I	ARM B	12.65	35.62	0.355	- -	-	0.0	0.5	8.1	-	0.043	I
I	ARM C	3.93	22.77	0.172	- -	-	0.0	0.2	3.1	-	0.053	I
I	ARM D	12.22	40.97	0.298	- -	-	0.0	0.4	6.3	-	0.035	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.00-17.15										I	I
I	ARM A	12.56	26.57	0.473	- -	-	0.6	0.9	13.0	-	0.071	I
I	ARM B	15.10	34.91	0.433	- -	-	0.5	0.8	11.2	-	0.050	I
I	ARM C	4.69	20.71	0.226	- -	-	0.2	0.3	4.3	-	0.062	I
I	ARM D	14.59	40.05	0.364	- -	-	0.4	0.6	8.5	-	0.039	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.15-17.30										I	I
I	ARM A	15.38	24.40	0.630	- -	-	0.9	1.7	23.9	-	0.110	I
I	ARM B	18.50	33.94	0.545	- -	-	0.8	1.2	17.3	-	0.065	I
I	ARM C	5.74	17.91	0.321	- -	-	0.3	0.5	6.9	-	0.082	I
I	ARM D	17.87	38.80	0.461	- -	-	0.6	0.8	12.5	-	0.048	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.30-17.45										I	I
I	ARM A	15.38	24.39	0.630	- -	-	1.7	1.7	25.2	-	0.111	I
I	ARM B	18.50	33.93	0.545	- -	-	1.2	1.2	17.9	-	0.065	I
I	ARM C	5.74	17.88	0.321	- -	-	0.5	0.5	7.1	-	0.082	I
I	ARM D	17.87	38.79	0.461	- -	-	0.8	0.9	12.8	-	0.048	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.45-18.00										I	I
I	ARM A	12.56	26.55	0.473	- -	-	1.7	0.9	14.0	-	0.072	I
I	ARM B	15.10	34.89	0.433	- -	-	1.2	0.8	11.8	-	0.051	I
I	ARM C	4.69	20.67	0.227	- -	-	0.5	0.3	4.5	-	0.063	I
I	ARM D	14.59	40.03	0.365	- -	-	0.9	0.6	8.8	-	0.039	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	10.51	28.13	0.374	- -	0.9	0.6	9.2	-	0.057	I
I	ARM B	12.65	35.60	0.355	- -	0.8	0.6	8.4	-	0.044	I
I	ARM C	3.93	22.73	0.173	- -	0.3	0.2	3.2	-	0.053	I
I	ARM D	12.22	40.95	0.298	- -	0.6	0.4	6.5	-	0.035	I
I											I

QUEUE AT ARM A

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.9 *
17.30	1.7 **
17.45	1.7 **
18.00	0.9 *
18.15	0.6 *

QUEUE AT ARM B

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
17.00	0.5 *
17.15	0.8 *
17.30	1.2 *
17.45	1.2 *
18.00	0.8 *
18.15	0.6 *

QUEUE AT ARM C

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.5
17.45	0.5
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	0.8 *
17.45	0.9 *
18.00	0.6 *
18.15	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1153.4	I	769.0	I	94.0	I	0.08	I
I	B	I	1387.4	I	925.0	I	74.6	I	0.05	I
I	C	I	430.8	I	287.2	I	29.0	I	0.07	I
I	D	I	1340.6	I	893.8	I	55.2	I	0.04	I
I	ALL	I	4312.3	I	2874.9	I	252.9	I	0.06	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
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RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\Manual\S2 AM 2026 No Dev.vai"
(drive-on-the-left) at 14:15:15 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 A4303/Coventry Road Roundabout AM Peak 2026 No Development
LOCATION: A4303_Coventry Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																		T5	
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	10.00	15.00	10.00			
ARM B	15.00	45.00	75.00	11.56	17.34	11.56			
ARM C	15.00	45.00	75.00	0.22	0.34	0.22			
ARM D	15.00	45.00	75.00	8.39	12.58	8.39			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45									
	ARM A	0.000	0.209	0.000	0.791				
		0.0	167.0	0.0	633.0				
		(0.0)	(0.6)	(0.0)	(1.1)				
	ARM B	0.036	0.000	0.000	0.964				
		33.0	0.0	0.0	892.0				
		(9.1)	(0.0)	(0.0)	(15.4)				
	ARM C	0.389	0.444	0.000	0.167				
		7.0	8.0	0.0	3.0				
		(14.3)	(0.0)	(0.0)	(0.0)				
	ARM D	0.271	0.717	0.004	0.007				
		182.0	481.0	3.0	5.0				
		(2.2)	(27.0)	(33.3)	(40.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	10.04	22.66	0.443	-	0.0	0.8	11.4	-	0.079	
ARM B	11.61	27.04	0.429	-	0.0	0.7	10.9	-	0.064	
ARM C	0.23	11.15	0.020	-	0.0	0.0	0.3	-	0.091	
ARM D	8.42	33.94	0.248	-	0.0	0.3	4.9	-	0.039	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	11.99	21.84	0.549	-	0.8	1.2	17.4	-	0.101	
ARM B	13.86	26.14	0.530	-	0.7	1.1	16.3	-	0.081	
ARM C	0.27	9.15	0.029	-	0.0	0.0	0.4	-	0.113	
ARM D	10.05	33.86	0.297	-	0.3	0.4	6.2	-	0.042	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	14.68	20.72	0.708	-	1.2	2.3	32.9	-	0.161	
ARM B	16.97	24.94	0.681	-	1.1	2.1	29.6	-	0.124	
ARM C	0.33	6.46	0.051	-	0.0	0.1	0.8	-	0.163	
ARM D	12.31	33.76	0.365	-	0.4	0.6	8.4	-	0.047	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	14.68	20.72	0.709	-	2.3	2.4	35.6	-	0.165	
ARM B	16.97	24.90	0.682	-	2.1	2.1	31.5	-	0.126	
ARM C	0.33	6.40	0.052	-	0.1	0.1	0.8	-	0.165	
ARM D	12.31	33.76	0.365	-	0.6	0.6	8.6	-	0.047	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	11.99	21.83	0.549	-	2.4	1.2	19.3	-	0.103	
ARM B	13.86	26.09	0.531	-	2.1	1.1	17.8	-	0.083	
ARM C	0.27	9.06	0.030	-	0.1	0.0	0.5	-	0.114	
ARM D	10.05	33.86	0.297	-	0.6	0.4	6.4	-	0.042	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	10.04	22.65	0.443	- -	1.2	0.8	12.4	-	0.080	I
I	ARM B	11.61	27.00	0.430	- -	1.1	0.8	11.7	-	0.065	I
I	ARM C	0.23	11.08	0.020	- -	0.0	0.0	0.3	-	0.092	I
I	ARM D	8.42	33.94	0.248	- -	0.4	0.3	5.0	-	0.039	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.8	*
07.45	1.2	*
08.00	2.3	**
08.15	2.4	**
08.30	1.2	*
08.45	0.8	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.7	*
07.45	1.1	*
08.00	2.1	**
08.15	2.1	**
08.30	1.1	*
08.45	0.8	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.0	
07.45	0.0	
08.00	0.1	
08.15	0.1	
08.30	0.0	
08.45	0.0	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.6	*
08.15	0.6	*
08.30	0.4	
08.45	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1101.1	I	734.1	I	129.0	I	0.12	I
I	B	I	1273.2	I	848.8	I	117.7	I	0.09	I
I	C	I	24.8	I	16.5	I	3.1	I	0.13	I
I	D	I	923.6	I	615.7	I	39.6	I	0.04	I
I	ALL	I	3322.7	I	2215.1	I	289.4	I	0.09	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\Manual\S2 PM 2026 No Dev.vai"
(drive-on-the-left) at 14:15:48 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 A4303/Coventry Road Roundabout PM Peak 2026 No Development
LOCATION: A4303_Coventry Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 7071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																		T5	
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

----- T13				
I	ARM	I	FLOW SCALE(%)	I

I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	4.80	I	7.20	I	4.80	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	8.00	I	12.00	I	8.00	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	0.15	I	0.23	I	0.15	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	17.54	I	26.31	I	17.54	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

I	I	TURNING PROPORTIONS										I	T33
I	I	TURNING COUNTS										I	
I	I	(PERCENTAGE OF H.V.S)										I	
I	-----												
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	
I	-----												
I	16.45 - 18.15	I		I		I		I		I		I	
I		I	ARM A	I	0.000	I	0.326	I	0.010	I	0.664	I	
I		I		I	0.0	I	125.0	I	4.0	I	255.0	I	
I		I		I	(0.0)	I	(0.8)	I	(0.0)	I	(2.4)	I	
I		I		I		I		I		I		I	
I		I	ARM B	I	0.128	I	0.000	I	0.009	I	0.863	I	
I		I		I	82.0	I	0.0	I	6.0	I	552.0	I	
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(23.4)	I	
I		I		I		I		I		I		I	
I		I	ARM C	I	0.583	I	0.083	I	0.000	I	0.333	I	
I		I		I	7.0	I	1.0	I	0.0	I	4.0	I	
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I		I		I		I		I		I		I	
I		I	ARM D	I	0.413	I	0.582	I	0.004	I	0.001	I	
I		I		I	580.0	I	816.0	I	5.0	I	2.0	I	
I		I		I	(0.7)	I	(13.9)	I	(0.0)	I	(0.0)	I	
I		I		I		I		I		I		I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	16.45-17.00										I	I
I	ARM A	4.82	20.45	0.236	- -	-	0.0	0.3	4.5	-	0.064	I
I	ARM B	8.03	28.45	0.282	- -	-	0.0	0.4	5.8	-	0.049	I
I	ARM C	0.15	16.06	0.009	- -	-	0.0	0.0	0.1	-	0.063	I
I	ARM D	17.60	37.39	0.471	- -	-	0.0	0.9	12.9	-	0.050	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.00-17.15										I	I
I	ARM A	5.75	19.25	0.299	- -	-	0.3	0.4	6.2	-	0.074	I
I	ARM B	9.59	28.09	0.341	- -	-	0.4	0.5	7.6	-	0.054	I
I	ARM C	0.18	14.79	0.012	- -	-	0.0	0.0	0.2	-	0.068	I
I	ARM D	21.02	37.25	0.564	- -	-	0.9	1.3	18.8	-	0.061	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.15-17.30										I	I
I	ARM A	7.05	17.60	0.400	- -	-	0.4	0.7	9.6	-	0.094	I
I	ARM B	11.74	27.60	0.425	- -	-	0.5	0.7	10.8	-	0.063	I
I	ARM C	0.22	13.07	0.017	- -	-	0.0	0.0	0.3	-	0.078	I
I	ARM D	25.75	37.05	0.695	- -	-	1.3	2.2	32.1	-	0.088	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.30-17.45										I	I
I	ARM A	7.05	17.58	0.401	- -	-	0.7	0.7	10.0	-	0.095	I
I	ARM B	11.74	27.60	0.426	- -	-	0.7	0.7	11.1	-	0.063	I
I	ARM C	0.22	13.05	0.017	- -	-	0.0	0.0	0.3	-	0.078	I
I	ARM D	25.75	37.05	0.695	- -	-	2.2	2.3	33.7	-	0.088	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.45-18.00										I	I
I	ARM A	5.75	19.21	0.299	- -	-	0.7	0.4	6.6	-	0.074	I
I	ARM B	9.59	28.08	0.341	- -	-	0.7	0.5	8.0	-	0.054	I
I	ARM C	0.18	14.77	0.012	- -	-	0.0	0.0	0.2	-	0.069	I
I	ARM D	21.02	37.25	0.564	- -	-	2.3	1.3	20.2	-	0.062	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	4.82	20.42	0.236	- -	-	0.4	0.3	4.7	0.064	I
I	ARM B	8.03	28.44	0.282	- -	-	0.5	0.4	6.0	0.049	I
I	ARM C	0.15	16.03	0.009	- -	-	0.0	0.0	0.1	0.063	I
I	ARM D	17.60	37.39	0.471	- -	-	1.3	0.9	13.7	0.051	I
I											I

QUEUE AT ARM A

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.7 *
17.45	0.7 *
18.00	0.4
18.15	0.3

QUEUE AT ARM B

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.7 *
17.45	0.7 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM C

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
17.00	0.9 *
17.15	1.3 *
17.30	2.2 **
17.45	2.3 **
18.00	1.3 *
18.15	0.9 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	528.5	I	352.4	I	41.7	I	0.08
I	B	I	880.9	I	587.3	I	49.2	I	0.06
I	C	I	16.5	I	11.0	I	1.2	I	0.07
I	D	I	1931.1	I	1287.4	I	131.5	I	0.07
I	ALL	I	3357.1	I	2238.1	I	223.5	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\Manual\S4 AM 2026 + Dev.vai"
(drive-on-the-left) at 14:16:17 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S4 A4303/Coventry Road Roundabout AM Peak 2026 With Development
LOCATION: A4303_Coventry Road
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																		T5	
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

T13				
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	11.21	16.82	11.21			
ARM B	15.00	45.00	75.00	14.49	21.73	14.49			
ARM C	15.00	45.00	75.00	0.22	0.34	0.22			
ARM D	15.00	45.00	75.00	10.07	15.11	10.07			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.186	0.000	0.814				
		0.0	167.0	0.0	730.0				
		(0.0)	(0.6)	(0.0)	(1.0)				
	ARM B	0.028	0.000	0.000	0.972				
		33.0	0.0	0.0	1126.0				
		(9.1)	(0.0)	(0.0)	(14.7)				
	ARM C	0.389	0.444	0.000	0.167				
		7.0	8.0	0.0	3.0				
		(14.3)	(0.0)	(0.0)	(0.0)				
	ARM D	0.267	0.723	0.004	0.006				
		215.0	583.0	3.0	5.0				
		(1.9)	(27.8)	(33.3)	(40.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	11.26	21.79	0.517	-	0.0	1.1	15.2	-	0.094	
ARM B	14.54	26.51	0.549	-	0.0	1.2	17.3	-	0.083	
ARM C	0.23	9.04	0.025	-	0.0	0.0	0.4	-	0.113	
ARM D	10.11	33.78	0.299	-	0.0	0.4	6.3	-	0.042	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	13.44	20.79	0.646	-	1.1	1.8	25.4	-	0.134	
ARM B	17.37	25.48	0.682	-	1.2	2.1	29.8	-	0.122	
ARM C	0.27	6.63	0.041	-	0.0	0.0	0.6	-	0.157	
ARM D	12.08	33.70	0.358	-	0.4	0.6	8.2	-	0.046	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	16.46	19.43	0.847	-	1.8	4.9	63.6	-	0.297	
ARM B	21.27	24.13	0.881	-	2.1	6.4	80.9	-	0.294	
ARM C	0.33	3.51	0.094	-	0.0	0.1	1.4	-	0.313	
ARM D	14.79	33.60	0.440	-	0.6	0.8	11.5	-	0.053	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	16.46	19.43	0.847	-	4.9	5.2	76.1	-	0.329	
ARM B	21.27	24.04	0.885	-	6.4	7.0	100.8	-	0.346	
ARM C	0.33	3.30	0.100	-	0.1	0.1	1.6	-	0.337	
ARM D	14.79	33.60	0.440	-	0.8	0.8	11.7	-	0.053	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	13.44	20.78	0.647	-	5.2	1.9	30.8	-	0.145	
ARM B	17.37	25.35	0.685	-	7.0	2.2	37.4	-	0.136	
ARM C	0.27	6.32	0.043	-	0.1	0.0	0.7	-	0.166	
ARM D	12.08	33.69	0.358	-	0.8	0.6	8.6	-	0.046	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	11.26	21.77	0.517	-	1.9	1.1	16.9	-	0.096
ARM B	14.54	26.45	0.550	-	2.2	1.2	19.2	-	0.085
ARM C	0.23	8.91	0.025	-	0.0	0.0	0.4	-	0.115
ARM D	10.11	33.77	0.299	-	0.6	0.4	6.5	-	0.042

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.1 *
07.45	1.8 **
08.00	4.9 *****
08.15	5.2 *****
08.30	1.9 **
08.45	1.1 *

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.2 *
07.45	2.1 **
08.00	6.4 *****
08.15	7.0 *****
08.30	2.2 **
08.45	1.2 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.1
08.15	0.1
08.30	0.0
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.4
07.45	0.6 *
08.00	0.8 *
08.15	0.8 *
08.30	0.6 *
08.45	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	1234.7	823.1	0.18
B	1595.3	1063.5	0.18
C	24.8	16.5	0.21
D	1109.4	739.6	0.05
ALL	3964.1	2642.7	0.14

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
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Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\Manual\S4 PM 2026 + Dev.vai"
(drive-on-the-left) at 14:16:44 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S4 A4303/Coventry Road Roundabout PM Peak 2026 With Development
LOCATION: A4303_Coventry Road
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 7071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																	T5		
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15															
I	ARM	I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I					
			I	I	I		I	I	I						
											FLOW STARTS	TOP OF PEAK	FLOW STOPS	BEFORE	AT TOP
I	I	I	I	I	I	I	I	I	I						
I	I	I	TO RISE	IS REACHED	FALLING	I	PEAK	OF PEAK	PEAK						
I	ARM	A	I	15.00	I	45.00	I	75.00	I	5.21	I	7.82	I	5.21	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	9.18	I	13.76	I	9.18	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	0.15	I	0.23	I	0.15	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	20.92	I	31.39	I	20.92	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
		TURNING PROPORTIONS							
		TURNING COUNTS							
		(PERCENTAGE OF H.V.S)							
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D			
16.45	- 18.15	ARM A	0.000	0.300	0.010	0.691			
			0.0	125.0	4.0	288.0			
			(0.0)	(0.8)	(0.0)	(2.1)			
		ARM B	0.112	0.000	0.008	0.880			
			82.0	0.0	6.0	646.0			
			(0.0)	(0.0)	(0.0)	(23.5)			
		ARM C	0.583	0.083	0.000	0.333			
			7.0	1.0	0.0	4.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM D	0.392	0.603	0.003	0.001			
			657.0	1010.0	5.0	2.0			
			(0.6)	(14.0)	(0.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

[illegible]

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.00-17.15										
I	ARM A	6.25	17.54	0.356	- -	-	0.4	0.5	8.0	-	0.088
I	ARM B	11.00	27.71	0.397	- -	-	0.5	0.7	9.6	-	0.060
I	ARM C	0.18	13.67	0.013	- -	-	0.0	0.0	0.2	-	0.074
I	ARM D	25.08	37.14	0.675	- -	-	1.3	2.0	29.5	-	0.082

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	17.15-17.30									
I	ARM A	7.65	15.53	0.493	- -	-	0.5	1.0	13.8	0.126
I	ARM B	13.47	27.17	0.496	- -	-	0.7	1.0	14.2	0.073
I	ARM C	0.22	11.70	0.019	- -	-	0.0	0.0	0.3	0.087
I	ARM D	30.72	36.94	0.831	- -	-	2.0	4.7	63.6	0.152

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	17.30-17.45									
I	ARM A	7.65	15.47	0.495	-	1.0	1.0	14.5	-	0.128
I	ARM B	13.47	27.16	0.496	-	1.0	1.0	14.7	-	0.073
I	ARM C	0.22	11.68	0.019	-	0.0	0.0	0.3	-	0.087
I	ARM D	30.72	36.94	0.832	-	4.7	4.8	71.0	-	0.160

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
	17.45-18.00										
	ARM A	6.25	17.45	0.358	-	-	1.0	0.6	8.7	-	0.090
	ARM B	11.00	27.70	0.397	-	-	1.0	0.7	10.2	-	0.060
	ARM C	0.18	13.64	0.013	-	-	0.0	0.0	0.2	-	0.074
	ARM D	25.08	37.14	0.675	-	-	4.8	2.1	33.5	-	0.085

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	5.23	18.98	0.276	- -	0.6	0.4	5.9	-	0.073	I
I	ARM B	9.21	28.10	0.328	- -	0.7	0.5	7.5	-	0.053	I
I	ARM C	0.15	15.08	0.010	- -	0.0	0.0	0.2	-	0.067	I
I	ARM D	21.00	37.28	0.563	- -	2.1	1.3	20.1	-	0.062	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	1.0 *
17.45	1.0 *
18.00	0.6 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5
17.15	0.7 *
17.30	1.0 *
17.45	1.0 *
18.00	0.7 *
18.15	0.5

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	1.3 *
17.15	2.0 **
17.30	4.7 *****
17.45	4.8 *****
18.00	2.1 **
18.15	1.3 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	574.0	I	382.6	I	56.3	I	0.10	I
I	B	I	1010.3	I	673.5	I	63.3	I	0.06	I
I	C	I	16.5	I	11.0	I	1.3	I	0.08	I
I	D	I	2304.1	I	1536.1	I	236.3	I	0.10	I
I	ALL	I	3904.9	I	2603.3	I	357.2	I	0.09	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\Manual\S5 AM 2026 + Dev + SP.vai"
(drive-on-the-left) at 14:17:19 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S5 A4303/Coventry Road Roundabout AM Peak 2026 With Development + Symmetry Park
LOCATION: A4303_Coventry Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

T5																			
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

----- T13				
I	ARM	I	FLOW SCALE(%)	I

I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	11.71	17.57	11.71			
ARM B	15.00	45.00	75.00	16.33	24.49	16.33			
ARM C	15.00	45.00	75.00	0.22	0.34	0.22			
ARM D	15.00	45.00	75.00	10.82	16.24	10.82			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.178	0.000	0.822				
		0.0	167.0	0.0	770.0				
		(0.0)	(0.6)	(0.0)	(1.8)				
	ARM B	0.025	0.000	0.000	0.975				
		33.0	0.0	0.0	1273.0				
		(9.1)	(0.0)	(0.0)	(16.9)				
	ARM C	0.389	0.444	0.000	0.167				
		7.0	8.0	0.0	3.0				
		(14.3)	(0.0)	(0.0)	(0.0)				
	ARM D	0.263	0.727	0.003	0.006				
		228.0	630.0	3.0	5.0				
		(2.6)	(27.6)	(33.3)	(40.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	11.76	21.26	0.553	-	0.0	1.2	17.4	-	0.103	
ARM B	16.39	25.70	0.638	-	0.0	1.7	24.5	-	0.105	
ARM C	0.23	7.62	0.030	-	0.0	0.0	0.4	-	0.135	
ARM D	10.87	33.74	0.322	-	0.0	0.5	7.0	-	0.044	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	14.04	20.19	0.695	-	1.2	2.2	31.1	-	0.159	
ARM B	19.57	24.63	0.795	-	1.7	3.7	50.0	-	0.188	
ARM C	0.27	4.95	0.055	-	0.0	0.1	0.8	-	0.213	
ARM D	12.98	33.67	0.385	-	0.5	0.6	9.2	-	0.048	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	17.19	18.74	0.917	-	2.2	8.1	96.0	-	0.446	
ARM B	23.97	23.30	1.029	-	3.7	24.7	236.8	-	0.815	
ARM C	0.33	2.08	0.159	-	0.1	0.2	2.5	-	0.568	
ARM D	15.89	33.59	0.473	-	0.6	0.9	13.1	-	0.056	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	17.19	18.73	0.918	-	8.1	9.2	130.5	-	0.572	
ARM B	23.97	23.15	1.035	-	24.7	40.4	490.8	-	1.572	
ARM C	0.33	1.76	0.188	-	0.2	0.2	3.2	-	0.698	
ARM D	15.89	33.58	0.473	-	0.9	0.9	13.4	-	0.057	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	14.04	20.18	0.696	-	9.2	2.4	43.0	-	0.189	
ARM B	19.57	24.39	0.802	-	40.4	4.5	222.6	-	0.671	
ARM C	0.27	3.35	0.081	-	0.2	0.1	1.4	-	0.326	
ARM D	12.98	33.62	0.386	-	0.9	0.6	9.6	-	0.049	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	11.76	21.24	0.554	- -	2.4	1.3	19.7	-	0.107	I
I	ARM B	16.39	25.63	0.639	- -	4.5	1.8	29.0	-	0.112	I
I	ARM C	0.23	7.39	0.031	- -	0.1	0.0	0.5	-	0.140	I
I	ARM D	10.87	33.73	0.322	- -	0.6	0.5	7.3	-	0.044	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.2	*
07.45	2.2	**
08.00	8.1	*****
08.15	9.2	*****
08.30	2.4	**
08.45	1.3	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.7	**
07.45	3.7	****
08.00	24.7	*****
08.15	40.4	*****
08.30	4.5	*****
08.45	1.8	**

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.0	
07.45	0.1	
08.00	0.2	
08.15	0.2	
08.30	0.1	
08.45	0.0	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	
07.45	0.6	*
08.00	0.9	*
08.15	0.9	*
08.30	0.6	*
08.45	0.5	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	1289.7	I	859.8	I	337.8	I	0.26
I	B	I	1797.6	I	1198.4	I	1053.6	I	0.59
I	C	I	24.8	I	16.5	I	8.8	I	0.36
I	D	I	1192.0	I	794.7	I	59.6	I	0.05
I	ALL	I	4304.1	I	2869.4	I	1459.9	I	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\Manual\S5 PM 2026 + Dev + SP.vai"
(drive-on-the-left) at 14:17:43 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S5 A4303/Coventry Road Roundabout PM Peak 2026 With Development + Symmetry Park
LOCATION: A4303_Coventry Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 7071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																	T5		
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

														T15
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			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		I		I		I		I		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	5.38	I	8.06	I	5.38	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	9.77	I	14.66	I	9.77	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	0.15	I	0.23	I	0.15	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	22.95	I	34.43	I	22.95	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

I	I	TURNING PROPORTIONS										I
I	I	TURNING COUNTS										I
I	I	(PERCENTAGE OF H.V.S)										I
I	I											I
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I	I	I	I	I	I	I	I	I	I	I
I	I	I	ARM A	I	0.000	I	0.291	I	0.009	I	0.700	I
I	I	I	I	I	0.0	I	125.0	I	4.0	I	301.0	I
I	I	I	I	I	(0.0)	I	(0.8)	I	(0.0)	I	(2.7)	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	ARM B	I	0.105	I	0.000	I	0.008	I	0.887	I
I	I	I	I	I	82.0	I	0.0	I	6.0	I	694.0	I
I	I	I	I	I	(0.0)	I	(0.0)	I	(0.0)	I	(24.1)	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	ARM C	I	0.583	I	0.083	I	0.000	I	0.333	I
I	I	I	I	I	7.0	I	1.0	I	0.0	I	4.0	I
I	I	I	I	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	ARM D	I	0.378	I	0.618	I	0.003	I	0.001	I
I	I	I	I	I	694.0	I	1135.0	I	5.0	I	2.0	I
I	I	I	I	I	(1.3)	I	(15.1)	I	(0.0)	I	(0.0)	I
I	I	I	I	I	I	I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	16.45-17.00										I	
I	ARM A	5.40	17.95	0.301	- -	-	0.0	0.4	6.2	-	0.079	I
I	ARM B	9.81	27.85	0.352	- -	-	0.0	0.5	7.9	-	0.055	I
I	ARM C	0.15	14.63	0.010	- -	-	0.0	0.0	0.2	-	0.069	I
I	ARM D	23.04	36.90	0.624	- -	-	0.0	1.6	23.6	-	0.071	I
I												I

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)
I	17.00-17.15									
I	ARM A	6.44	16.26	0.396	- -	-	0.4	0.6	-	0.101
I	ARM B	11.72	27.43	0.427	- -	-	0.5	0.7	-	0.063
I	ARM C	0.18	13.09	0.014	- -	-	0.0	0.0	-	0.077
I	ARM D	27.51	36.76	0.748	- -	-	1.6	2.9	-	0.106
I										

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
I	17.15-17.30										
I	ARM A	7.89	14.08	0.561	- -	-	0.6	1.2	17.7	-	0.160
I	ARM B	14.35	26.87	0.534	- -	-	0.7	1.1	16.5	-	0.079
I	ARM C	0.22	10.99	0.020	- -	-	0.0	0.0	0.3	-	0.093
I	ARM D	33.69	36.56	0.922	- -	-	2.9	9.5	117.5	-	0.273
I											

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)
I	17.30-17.45									
I	ARM A	7.89	13.94	0.566	- -	-	1.2	1.3	19.1	-
I	ARM B	14.35	26.86	0.534	- -	-	1.1	1.1	17.1	-
I	ARM C	0.22	10.96	0.020	- -	-	0.0	0.0	0.3	-
I	ARM D	33.69	36.56	0.922	- -	-	9.5	10.4	150.3	-
I										
I										

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
I	17.45-18.00										
I	ARM A	6.44	16.05	0.402	- -	-	1.3	0.7	10.6	-	0.105
I	ARM B	11.72	27.41	0.427	- -	-	1.1	0.8	11.5	-	0.064
I	ARM C	0.18	13.04	0.014	- -	-	0.0	0.0	0.2	-	0.078
I	ARM D	27.51	36.75	0.748	- -	-	10.4	3.1	52.5	-	0.120
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	5.40	17.87	0.302	- -	-	0.7	0.4	6.7	0.080	I
I	ARM B	9.81	27.84	0.353	- -	-	0.8	0.5	8.4	0.056	I
I	ARM C	0.15	14.59	0.010	- -	-	0.0	0.0	0.2	0.069	I
I	ARM D	23.04	36.90	0.624	- -	-	3.1	1.7	26.2	0.073	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	1.2 *
17.45	1.3 *
18.00	0.7 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5 *
17.15	0.7 *
17.30	1.1 *
17.45	1.1 *
18.00	0.8 *
18.15	0.5 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	1.6 **
17.15	2.9 ***
17.30	9.5 *****
17.45	10.4 *****
18.00	3.1 ***
18.15	1.7 **

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	591.9	I	394.6	I	69.7	I	0.12
I	B	I	1076.4	I	717.6	I	72.3	I	0.07
I	C	I	16.5	I	11.0	I	1.3	I	0.08
I	D	I	2527.1	I	1684.7	I	411.3	I	0.16
I	ALL	I	4211.9	I	2807.9	I	554.6	I	0.13

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\Manual\S2 AM 2026 No Dev.vai"
(drive-on-the-left) at 15:41:43 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 A4303/ A426 Rbt AM Peak 2026 No Development + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

T5																		
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I	36.532	I
I	ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I	54.463	I
I	ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I	39.841	I
I	ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I	44.668	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13				
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T15	
I	I	NUMBER OF MINUTES FROM START WHEN				RATE OF FLOW (VEH/MIN)				I	I
		FLOW STARTS	TOP OF PEAK	FLOW STOPS	BEFORE	AT TOP	AFTER				
I	I	I	I	I	I	I	I	I	I	I	I
I	I	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK	I	I	I	I
I	ARM A	I 15.00	I 45.00	I 75.00	I 12.60	I 18.90	I 12.60	I	I	I	I
I	ARM B	I 15.00	I 45.00	I 75.00	I 22.19	I 33.28	I 22.19	I	I	I	I
I	ARM C	I 15.00	I 45.00	I 75.00	I 8.64	I 12.96	I 8.64	I	I	I	I
I	ARM D	I 15.00	I 45.00	I 75.00	I 8.36	I 12.54	I 8.36	I	I	I	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33		
I	I	TURNING PROPORTIONS								I		
I	I	TURNING COUNTS								I		
I	I	(PERCENTAGE OF H.V.S)								I		
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	07.15 - 08.45	I	I	I	I	I	I	I	I	I	I	I
I		I	ARM A	I	0.000	I	0.534	I	0.355	I	0.111	I
I		I		I	0.0	I	538.0	I	358.0	I	112.0	I
I		I		I	(0.0)	I	(8.4)	I	(4.5)	I	(4.5)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM B	I	0.266	I	0.027	I	0.306	I	0.401	I
I		I		I	473.0	I	48.0	I	543.0	I	711.0	I
I		I		I	(8.9)	I	(0.0)	I	(9.0)	I	(18.6)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM C	I	0.431	I	0.524	I	0.000	I	0.045	I
I		I		I	298.0	I	362.0	I	0.0	I	31.0	I
I		I		I	(4.7)	I	(11.9)	I	(0.0)	I	(9.7)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM D	I	0.102	I	0.846	I	0.052	I	0.000	I
I		I		I	68.0	I	566.0	I	35.0	I	0.0	I
I		I		I	(14.7)	I	(20.0)	I	(17.1)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	07.15-07.30										I	I
I	ARM A	12.65	26.62	0.475	- -	0.0	0.9	13.0	-	0.071	I	I
I	ARM B	22.27	44.06	0.505	- -	0.0	1.0	14.9	-	0.046	I	I
I	ARM C	8.67	26.43	0.328	- -	0.0	0.5	7.1	-	0.056	I	I
I	ARM D	8.39	29.03	0.289	- -	0.0	0.4	6.0	-	0.048	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	07.30-07.45										I	I
I	ARM A	15.10	25.11	0.601	- -	0.9	1.5	21.4	-	0.099	I	I
I	ARM B	26.59	43.22	0.615	- -	1.0	1.6	23.1	-	0.060	I	I
I	ARM C	10.35	24.43	0.424	- -	0.5	0.7	10.7	-	0.071	I	I
I	ARM D	10.02	27.38	0.366	- -	0.4	0.6	8.5	-	0.058	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	07.45-08.00										I	I
I	ARM A	18.50	23.06	0.802	- -	1.5	3.8	51.2	-	0.206	I	I
I	ARM B	32.57	42.09	0.774	- -	1.6	3.3	46.9	-	0.103	I	I
I	ARM C	12.68	21.72	0.584	- -	0.7	1.4	19.8	-	0.110	I	I
I	ARM D	12.28	25.15	0.488	- -	0.6	0.9	13.8	-	0.077	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	08.00-08.15										I	I
I	ARM A	18.50	23.04	0.803	- -	3.8	3.9	58.1	-	0.219	I	I
I	ARM B	32.57	42.04	0.775	- -	3.3	3.4	50.4	-	0.106	I	I
I	ARM C	12.68	21.66	0.585	- -	1.4	1.4	20.9	-	0.111	I	I
I	ARM D	12.28	25.11	0.489	- -	0.9	1.0	14.2	-	0.078	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	08.15-08.30										I	I
I	ARM A	15.10	25.07	0.602	- -	3.9	1.5	24.5	-	0.103	I	I
I	ARM B	26.59	43.15	0.616	- -	3.4	1.6	25.2	-	0.061	I	I
I	ARM C	10.35	24.35	0.425	- -	1.4	0.7	11.5	-	0.072	I	I
I	ARM D	10.02	27.32	0.367	- -	1.0	0.6	8.9	-	0.058	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	12.65	26.58	0.476	-	1.5	0.9	14.1	-	0.072
ARM B	22.27	44.03	0.506	-	1.6	1.0	15.8	-	0.046
ARM C	8.67	26.38	0.329	-	0.7	0.5	7.5	-	0.057
ARM D	8.39	28.99	0.290	-	0.6	0.4	6.2	-	0.049

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.9 *
07.45	1.5 *
08.00	3.8 ****
08.15	3.9 ****
08.30	1.5 **
08.45	0.9 *

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.0 *
07.45	1.6 **
08.00	3.3 ***
08.15	3.4 ***
08.30	1.6 **
08.45	1.0 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.5
07.45	0.7 *
08.00	1.4 *
08.15	1.4 *
08.30	0.7 *
08.45	0.5

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.4
07.45	0.6 *
08.00	0.9 *
08.15	1.0 *
08.30	0.6 *
08.45	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	1387.4	182.5	182.5
B	2443.2	176.3	176.3
C	951.1	77.5	77.6
D	920.8	57.6	57.6
ALL	5702.5	493.9	493.9

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\Manual\S2 PM 2026 No Dev.vai"
(drive-on-the-left) at 15:42:14 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 A4303/ A426 Rbt PM Peak 2026 No Development + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I	36.532	I
I	ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I	54.463	I
I	ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I	39.841	I
I	ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I	44.668	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13				
I	ARM	I	FLOW SCALE(%)	I

I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	10.91	16.37	10.91			
ARM B	15.00	45.00	75.00	18.33	27.49	18.33			
ARM C	15.00	45.00	75.00	9.71	14.57	9.71			
ARM D	15.00	45.00	75.00	11.64	17.46	11.64			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
16.45 - 18.15	ARM A	0.000	0.493	0.367	0.141				
		0.0	430.0	320.0	123.0				
		(0.0)	(1.6)	(1.6)	(5.7)				
	ARM B	0.362	0.003	0.288	0.347				
		530.0	5.0	422.0	509.0				
		(2.8)	(0.0)	(10.7)	(23.0)				
	ARM C	0.479	0.484	0.000	0.037				
		372.0	376.0	0.0	29.0				
		(1.6)	(7.7)	(0.0)	(0.0)				
	ARM D	0.110	0.852	0.039	0.000				
		102.0	793.0	36.0	0.0				
		(5.9)	(13.6)	(5.6)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	10.95	26.57	0.412	-	0.0	0.7	10.2	-	0.064	
ARM B	18.39	44.58	0.413	-	0.0	0.7	10.3	-	0.038	
ARM C	9.75	29.01	0.336	-	0.0	0.5	7.4	-	0.052	
ARM D	11.68	30.44	0.384	-	0.0	0.6	9.1	-	0.053	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	13.08	24.76	0.528	-	0.7	1.1	16.1	-	0.085	
ARM B	21.97	43.79	0.502	-	0.7	1.0	14.7	-	0.046	
ARM C	11.64	27.22	0.428	-	0.5	0.7	10.9	-	0.064	
ARM D	13.95	28.61	0.488	-	0.6	0.9	13.8	-	0.068	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	16.02	22.32	0.718	-	1.1	2.5	34.3	-	0.154	
ARM B	26.90	42.73	0.630	-	1.0	1.7	24.5	-	0.063	
ARM C	14.26	24.78	0.575	-	0.7	1.3	19.3	-	0.094	
ARM D	17.08	26.13	0.654	-	0.9	1.9	26.4	-	0.109	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	16.02	22.27	0.719	-	2.5	2.5	37.3	-	0.160	
ARM B	26.90	42.69	0.630	-	1.7	1.7	25.3	-	0.063	
ARM C	14.26	24.76	0.576	-	1.3	1.3	20.1	-	0.095	
ARM D	17.08	26.10	0.655	-	1.9	1.9	28.0	-	0.111	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.45-18.00										
ARM A	13.08	24.70	0.530	-	2.5	1.1	17.8	-	0.087	
ARM B	21.97	43.74	0.502	-	1.7	1.0	15.6	-	0.046	
ARM C	11.64	27.18	0.428	-	1.3	0.8	11.6	-	0.065	
ARM D	13.95	28.57	0.488	-	1.9	1.0	14.9	-	0.069	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	10.95	26.52	0.413	- -	1.1	0.7	10.9	-	0.064	I
I	ARM B	18.39	44.55	0.413	- -	1.0	0.7	10.8	-	0.038	I
I	ARM C	9.75	28.97	0.337	- -	0.8	0.5	7.8	-	0.052	I
I	ARM D	11.68	30.39	0.384	- -	1.0	0.6	9.6	-	0.054	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.7	*
17.15	1.1	*
17.30	2.5	**
17.45	2.5	***
18.00	1.1	*
18.15	0.7	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.7	*
17.15	1.0	*
17.30	1.7	**
17.45	1.7	**
18.00	1.0	*
18.15	0.7	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	*
17.15	0.7	*
17.30	1.3	*
17.45	1.3	*
18.00	0.8	*
18.15	0.5	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.6	*
17.15	0.9	*
17.30	1.9	**
17.45	1.9	**
18.00	1.0	*
18.15	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	1201.6	I	801.1	I	126.6	I	0.11
I	B	I	2017.8	I	1345.2	I	101.2	I	0.05
I	C	I	1069.5	I	713.0	I	77.1	I	0.07
I	D	I	1281.5	I	854.3	I	101.8	I	0.08
I	ALL	I	5570.4	I	3713.6	I	406.7	I	0.07

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END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\Manual\S4 AM 2026 + Dev.vai"
(drive-on-the-left) at 15:42:24 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 A4303/ A426 Rbt AM Peak 2026 With Development + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

T5																		
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I	36.532	I
I	ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I	54.463	I
I	ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I	39.841	I
I	ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I	44.668	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	13.10	19.65	13.10			
ARM B	15.00	45.00	75.00	24.59	36.88	24.59			
ARM C	15.00	45.00	75.00	8.64	12.96	8.64			
ARM D	15.00	45.00	75.00	9.64	14.46	9.64			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.513	0.342	0.145				
		0.0	538.0	358.0	152.0				
		(0.0)	(8.4)	(4.5)	(7.9)				
	ARM B	0.240	0.024	0.276	0.459				
		473.0	48.0	543.0	903.0				
		(8.9)	(0.0)	(9.0)	(16.9)				
	ARM C	0.431	0.524	0.000	0.045				
		298.0	362.0	0.0	31.0				
		(4.7)	(11.9)	(0.0)	(9.7)				
	ARM D	0.105	0.850	0.045	0.000				
		81.0	655.0	35.0	0.0				
		(22.2)	(20.9)	(17.1)	(0.0)				

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	T70
07.15-07.30										
ARM A	13.15	25.78	0.510	-	0.0	1.0	14.9	-	0.078	
ARM B	24.68	43.76	0.564	-	0.0	1.3	18.7	-	0.052	
ARM C	8.67	24.70	0.351	-	0.0	0.5	7.9	-	0.062	
ARM D	9.67	28.66	0.338	-	0.0	0.5	7.4	-	0.053	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	15.70	24.14	0.651	-	1.0	1.8	26.0	-	0.117	
ARM B	29.47	42.84	0.688	-	1.3	2.2	31.4	-	0.074	
ARM C	10.35	22.36	0.463	-	0.5	0.9	12.5	-	0.083	
ARM D	11.55	27.04	0.427	-	0.5	0.7	10.9	-	0.064	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	19.23	21.92	0.877	-	1.8	6.1	77.2	-	0.310	
ARM B	36.10	41.65	0.867	-	2.2	6.0	80.1	-	0.166	
ARM C	12.68	19.25	0.659	-	0.9	1.9	26.5	-	0.149	
ARM D	14.15	24.86	0.569	-	0.7	1.3	18.8	-	0.093	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	19.23	21.87	0.879	-	6.1	6.6	96.2	-	0.363	
ARM B	36.10	41.57	0.868	-	6.0	6.3	92.7	-	0.180	
ARM C	12.68	19.12	0.663	-	1.9	1.9	28.7	-	0.155	
ARM D	14.15	24.79	0.571	-	1.3	1.3	19.7	-	0.094	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	15.70	24.08	0.652	-	6.6	1.9	32.2	-	0.129	
ARM B	29.47	42.71	0.690	-	6.3	2.3	36.2	-	0.079	
ARM C	10.35	22.18	0.467	-	1.9	0.9	13.8	-	0.086	
ARM D	11.55	26.94	0.429	-	1.3	0.8	11.6	-	0.065	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	13.15	25.73	0.511	-	1.9	1.1	16.4	-	0.080
ARM B	24.68	43.72	0.565	-	2.3	1.3	20.1	-	0.053
ARM C	8.67	24.62	0.352	-	0.9	0.5	8.4	-	0.063
ARM D	9.67	28.61	0.338	-	0.8	0.5	7.8	-	0.053

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.0	*
07.45	1.8	**
08.00	6.1	*****
08.15	6.6	*****
08.30	1.9	**
08.45	1.1	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.3	*
07.45	2.2	**
08.00	6.0	*****
08.15	6.3	*****
08.30	2.3	**
08.45	1.3	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.9	*
08.00	1.9	**
08.15	1.9	**
08.30	0.9	*
08.45	0.5	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.7	*
08.00	1.3	*
08.15	1.3	*
08.30	0.8	*
08.45	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	1442.5	262.9	0.18
B	2707.4	279.3	0.10
C	951.1	97.7	0.10
D	1061.2	76.3	0.07
ALL	6162.3	716.1	0.12

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\Manual\S4 PM 2026 + Dev.vai"
(drive-on-the-left) at 15:42:34 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 A4303/ A426 Rbt PM Peak 2026 With Development + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

														T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I 36.532 I
I ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I 54.463 I
I ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I 39.841 I
I ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I 44.668 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

I	ARM	I	NUMBER OF FLOWS STARTS	I	MINUTES FROM TOP OF PEAK	I	START WHEN FLOW STOPS	I	RATE OF FLOW BEFORE AT TOP	I	(VEH/MIN) AFTER I
I		I		I		I		I		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	11.04	I	16.56 I 11.04 I
I	ARM B	I	15.00	I	45.00	I	75.00	I	19.39	I	29.08 I 19.39 I
I	ARM C	I	15.00	I	45.00	I	75.00	I	9.71	I	14.57 I 9.71 I
I	ARM D	I	15.00	I	45.00	I	75.00	I	14.05	I	21.08 I 14.05 I

		TURNING PROPORTIONS							
		TURNING COUNTS							
		(PERCENTAGE OF H.V.S)							
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D			
16.45	- 18.15	ARM A	0.000 I 0.0 I (0.0) I	0.487 I 430.0 I (1.6) I	0.362 I 320.0 I (1.6) I	0.151 I 133.0 I (9.0) I			
		ARM B	0.342 I 530.0 I (2.8) I	0.003 I 5.0 I (0.0) I	0.272 I 422.0 I (10.7) I	0.383 I 594.0 I (25.6) I			
		ARM C	0.479 I 372.0 I (1.6) I	0.484 I 376.0 I (7.7) I	0.000 I 0.0 I (0.0) I	0.037 I 29.0 I (0.0) I			
		ARM D	0.117 I 132.0 I (8.3) I	0.851 I 956.0 I (13.6) I	0.032 I 36.0 I (5.6) I	0.000 I 0.0 I (0.0) 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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL DELAY (MIN)
16.45-17.00										
ARM A	11.08	25.18	0.440	-	-	0.0	0.8	-	0.070	
ARM B	19.46	43.83	0.444	-	-	0.0	0.8	-	0.041	
ARM C	9.75	28.07	0.347	-	-	0.0	0.5	-	0.054	
ARM D	14.10	30.36	0.464	-	-	0.0	0.9	-	0.061	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	17.00-17.15										I	
I	ARM A	13.23	23.14	0.572	- -	-	0.8	1.3	19.0	-	0.100	I
I	ARM B	23.24	43.03	0.540	- -	-	0.8	1.2	17.1	-	0.050	I
I	ARM C	11.64	26.10	0.446	- -	-	0.5	0.8	11.7	-	0.069	I
I	ARM D	16.84	28.54	0.590	- -	-	0.9	1.4	20.6	-	0.085	I

[illegible]

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
	17.30-17.45										
	ARM A	16.20	20.32	0.797	- -	-	3.6	3.8	55.6	-	0.240
	ARM B	28.46	41.92	0.679	- -	-	2.1	2.1	31.3	-	0.074
	ARM C	14.26	23.38	0.610	- -	-	1.5	1.5	23.1	-	0.110
	ARM D	20.63	26.04	0.792	- -	-	3.6	3.7	54.8	-	0.184

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	17.45-18.00										I	
I	ARM A	13.23	23.02	0.575	- -	-	3.8	1.4	21.9	-	0.106	I
I	ARM B	23.24	42.96	0.541	- -	-	2.1	1.2	18.3	-	0.051	I
I	ARM C	11.64	26.04	0.447	- -	-	1.5	0.8	12.6	-	0.070	I
I	ARM D	16.84	28.49	0.591	- -	-	3.7	1.5	23.2	-	0.088	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	11.08	25.11	0.441	- -	1.4	0.8	12.3	-	0.072	I
I	ARM B	19.46	43.80	0.444	- -	1.2	0.8	12.3	-	0.041	I
I	ARM C	9.75	28.02	0.348	- -	0.8	0.5	8.2	-	0.055	I
I	ARM D	14.10	30.32	0.465	- -	1.5	0.9	13.5	-	0.062	I
I											I

QUEUE AT ARM A

TIME SEGMENT NO. OF
ENDING VEHICLES
IN QUEUE

17.00	0.8	*
17.15	1.3	*
17.30	3.6	****
17.45	3.8	****
18.00	1.4	*
18.15	0.8	*

QUEUE AT ARM B

TIME SEGMENT NO. OF
ENDING VEHICLES
IN QUEUE

17.00	0.8	*
17.15	1.2	*
17.30	2.1	**
17.45	2.1	**
18.00	1.2	*
18.15	0.8	*

QUEUE AT ARM C

TIME SEGMENT NO. OF
ENDING VEHICLES
IN QUEUE

17.00	0.5	*
17.15	0.8	*
17.30	1.5	**
17.45	1.5	**
18.00	0.8	*
18.15	0.5	*

QUEUE AT ARM D

TIME SEGMENT NO. OF
ENDING VEHICLES
IN QUEUE

17.00	0.9	*
17.15	1.4	*
17.30	3.6	****
17.45	3.7	****
18.00	1.5	*
18.15	0.9	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1215.4	I	810.3	I	168.5	I	0.14	I
I	B	I	2134.8	I	1423.2	I	120.6	I	0.06	I
I	C	I	1069.5	I	713.0	I	85.3	I	0.08	I
I	D	I	1547.1	I	1031.4	I	173.6	I	0.11	I
I	ALL	I	5966.8	I	3977.9	I	548.1	I	0.09	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\Manual\S5 AM 2026 + Dev + SP.vai"
(drive-on-the-left) at 15:42:43 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 A4303/ A426 Rbt AM Peak 2026 With Dev + Symmetry park + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

														T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I 36.532 I
I ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I 54.463 I
I ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I 39.841 I
I ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I 44.668 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	13.30	19.95	13.30			
ARM B	15.00	45.00	75.00	26.23	39.34	26.23			
ARM C	15.00	45.00	75.00	8.64	12.96	8.64			
ARM D	15.00	45.00	75.00	10.23	15.34	10.23			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45									
	ARM A	0.000	0.506	0.336	0.158				
		0.0	538.0	358.0	168.0				
		(0.0)	(8.4)	(4.5)	(10.1)				
	ARM B	0.225	0.023	0.259	0.493				
		473.0	48.0	543.0	1034.0				
		(8.9)	(0.0)	(9.0)	(19.2)				
	ARM C	0.431	0.524	0.000	0.045				
		298.0	362.0	0.0	31.0				
		(4.7)	(11.9)	(0.0)	(9.7)				
	ARM D	0.106	0.851	0.043	0.000				
		87.0	696.0	35.0	0.0				
		(23.0)	(21.1)	(17.1)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	13.35	25.37	0.526	-	0.0	1.1	15.8	-	0.082	
ARM B	26.32	43.05	0.612	-	0.0	1.6	22.6	-	0.059	
ARM C	8.67	23.38	0.371	-	0.0	0.6	8.5	-	0.068	
ARM D	10.26	28.60	0.359	-	0.0	0.6	8.2	-	0.054	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	15.94	23.66	0.674	-	1.1	2.0	28.6	-	0.128	
ARM B	31.43	42.11	0.747	-	1.6	2.9	41.0	-	0.092	
ARM C	10.35	20.78	0.498	-	0.6	1.0	14.2	-	0.095	
ARM D	12.26	26.98	0.454	-	0.6	0.8	12.1	-	0.068	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	19.52	21.37	0.913	-	2.0	8.0	96.3	-	0.389	
ARM B	38.50	40.92	0.941	-	2.9	11.8	141.2	-	0.288	
ARM C	12.68	17.47	0.726	-	1.0	2.5	34.7	-	0.201	
ARM D	15.01	24.86	0.604	-	0.8	1.5	21.6	-	0.101	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	19.52	21.32	0.916	-	8.0	9.1	129.9	-	0.498	
ARM B	38.50	40.81	0.943	-	11.8	13.6	193.1	-	0.376	
ARM C	12.68	17.22	0.736	-	2.5	2.7	39.6	-	0.218	
ARM D	15.01	24.75	0.607	-	1.5	1.5	22.7	-	0.103	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	15.94	23.58	0.676	-	9.1	2.1	38.3	-	0.148	
ARM B	31.43	41.93	0.750	-	13.6	3.1	55.5	-	0.109	
ARM C	10.35	20.37	0.508	-	2.7	1.0	16.5	-	0.102	
ARM D	12.26	26.80	0.457	-	1.5	0.8	13.1	-	0.069	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	13.35	25.31	0.527	-	2.1	1.1	17.6	-	0.084
ARM B	26.32	43.00	0.612	-	3.1	1.6	24.7	-	0.061
ARM C	8.67	23.27	0.373	-	1.0	0.6	9.2	-	0.069
ARM D	10.26	28.54	0.360	-	0.8	0.6	8.6	-	0.055

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	2.0	**
08.00	8.0	*****
08.15	9.1	*****
08.30	2.1	**
08.45	1.1	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.6	**
07.45	2.9	***
08.00	11.8	*****
08.15	13.6	*****
08.30	3.1	***
08.45	1.6	**

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	1.0	*
08.00	2.5	***
08.15	2.7	***
08.30	1.0	*
08.45	0.6	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.8	*
08.00	1.5	*
08.15	1.5	**
08.30	0.8	*
08.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	1464.5	326.5	0.22
B	2887.7	478.0	0.17
C	951.1	122.9	0.13
D	1125.9	86.3	0.08
ALL	6429.3	1013.7	0.16

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END OF JOB

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\Manual\S5 PM 2026 + Dev + SP.vai"
(drive-on-the-left) at 15:42:52 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 A4303/ A426 Rbt PM Peak 2026 With Development + Symmetry Park + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

T5																		
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I	36.532	I
I	ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I	54.463	I
I	ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I	39.841	I
I	ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I	44.668	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13				
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	11.11	16.67	11.11			
ARM B	15.00	45.00	75.00	19.91	29.87	19.91			
ARM C	15.00	45.00	75.00	9.71	14.57	9.71			
ARM D	15.00	45.00	75.00	15.61	23.42	15.61			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
16.45 - 18.15									
	ARM A	0.000	0.484	0.360	0.156				
		0.0	430.0	320.0	139.0				
		(0.0)	(1.6)	(1.6)	(9.4)				
	ARM B	0.333	0.003	0.265	0.399				
		530.0	5.0	422.0	636.0				
		(2.8)	(0.0)	(10.7)	(23.3)				
	ARM C	0.479	0.484	0.000	0.037				
		372.0	376.0	0.0	29.0				
		(1.6)	(7.7)	(0.0)	(0.0)				
	ARM D	0.119	0.852	0.029	0.000				
		149.0	1064.0	36.0	0.0				
		(10.1)	(14.7)	(5.6)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	11.15	24.25	0.460	-	0.0	0.8	12.2	-	0.076	
ARM B	19.99	44.01	0.454	-	0.0	0.8	12.2	-	0.041	
ARM C	9.75	27.75	0.351	-	0.0	0.5	7.9	-	0.055	
ARM D	15.67	30.05	0.521	-	0.0	1.1	15.7	-	0.069	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	13.32	22.04	0.604	-	0.8	1.5	21.5	-	0.113	
ARM B	23.87	43.19	0.553	-	0.8	1.2	18.0	-	0.052	
ARM C	11.64	25.72	0.453	-	0.5	0.8	12.0	-	0.071	
ARM D	18.71	28.25	0.662	-	1.1	1.9	27.6	-	0.104	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	16.31	19.15	0.852	-	1.5	5.0	64.7	-	0.305	
ARM B	29.23	42.14	0.694	-	1.2	2.2	32.1	-	0.077	
ARM C	14.26	22.96	0.621	-	0.8	1.6	23.0	-	0.114	
ARM D	22.92	25.81	0.888	-	1.9	6.7	85.1	-	0.287	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	16.31	18.98	0.859	-	5.0	5.6	80.6	-	0.359	
ARM B	29.23	42.07	0.695	-	2.2	2.3	33.7	-	0.078	
ARM C	14.26	22.91	0.622	-	1.6	1.6	24.3	-	0.115	
ARM D	22.92	25.77	0.889	-	6.7	7.3	106.2	-	0.335	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.45-18.00										
ARM A	13.32	21.79	0.611	-	5.6	1.6	26.6	-	0.126	
ARM B	23.87	43.08	0.554	-	2.3	1.3	19.3	-	0.052	
ARM C	11.64	25.65	0.454	-	1.6	0.8	13.0	-	0.072	
ARM D	18.71	28.20	0.664	-	7.3	2.0	33.8	-	0.114	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	11.15	24.16	0.462	- -	-	1.6	0.9	13.4	0.078	I
I	ARM B	19.99	43.97	0.455	- -	-	1.3	0.8	12.8	0.042	I
I	ARM C	9.75	27.70	0.352	- -	-	0.8	0.5	8.4	0.056	I
I	ARM D	15.67	30.01	0.522	- -	-	2.0	1.1	17.1	0.070	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.5	*
17.30	5.0	*****
17.45	5.6	*****
18.00	1.6	**
18.15	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.2	*
17.30	2.2	**
17.45	2.3	**
18.00	1.3	*
18.15	0.8	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	*
17.15	0.8	*
17.30	1.6	**
17.45	1.6	**
18.00	0.8	*
18.15	0.5	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.1	*
17.15	1.9	**
17.30	6.7	*****
17.45	7.3	*****
18.00	2.0	**
18.15	1.1	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1223.6	I	815.8	I	219.1	I	0.18	I
I	B	I	2192.6	I	1461.8	I	128.0	I	0.06	I
I	C	I	1069.5	I	713.0	I	88.5	I	0.08	I
I	D	I	1719.2	I	1146.1	I	285.4	I	0.17	I
I	ALL	I	6204.9	I	4136.6	I	721.1	I	0.12	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\Manual\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 14:28:21 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 M1 Junction 20 AM Peak 2026 Without Development
LOCATION: M1 Junction 20
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

T5																		
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	7.30	I	12.00	I	35.00	I	45.00	I	103.00	I	43.0	I	1.147	I	59.035	I
I	ARM B	I	3.50	I	7.70	I	67.00	I	45.00	I	103.00	I	40.0	I	0.765	I	43.301	I
I	ARM C	I	7.30	I	12.00	I	49.00	I	50.00	I	103.00	I	41.0	I	0.920	I	57.132	I
I	ARM D	I	7.30	I	8.90	I	10.00	I	50.00	I	103.00	I	35.0	I	1.144	I	55.844	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS
ARM CIRFLO SEP
A 16.0 120.0
B 27.0 0.0
C 33.0 120.0
D 6.0 0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13			
I ARM	I	FLOW SCALE(%)	I
I A	I	100	I
I B	I	100	I
I C	I	100	I
I D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	11.84	17.76	11.84			
ARM B	15.00	45.00	75.00	10.36	15.54	10.36			
ARM C	15.00	45.00	75.00	6.26	9.39	6.26			
ARM D	15.00	45.00	75.00	17.21	25.82	17.21			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.122	0.000	0.878				
		0.0	116.0	0.0	831.0				
		(0.0)	(6.9)	(0.0)	(12.2)				
	ARM B	0.292	0.000	0.131	0.577				
		242.0	0.0	109.0	478.0				
		(2.5)	(0.0)	(4.6)	(5.4)				
	ARM C	0.000	0.072	0.048	0.880				
		0.0	36.0	24.0	441.0				
		(0.0)	(25.0)	(37.5)	(23.1)				
	ARM D	0.467	0.204	0.316	0.013				
		643.0	281.0	435.0	18.0				
		(16.3)	(6.4)	(17.7)	(0.0)				

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	T70
07.15-07.30										
ARM A	11.88	41.25	0.288	-	0.0	0.4	6.0	-	0.034	
ARM B	10.40	27.75	0.375	-	0.0	0.6	8.7	-	0.057	
ARM C	6.29	30.29	0.208	-	0.0	0.3	3.9	-	0.042	
ARM D	17.28	44.69	0.387	-	0.0	0.6	9.3	-	0.036	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	14.19	38.96	0.364	-	0.4	0.6	8.4	-	0.040	
ARM B	12.42	25.07	0.496	-	0.6	1.0	14.2	-	0.079	
ARM C	7.51	27.19	0.276	-	0.3	0.4	5.6	-	0.051	
ARM D	20.63	43.90	0.470	-	0.6	0.9	13.0	-	0.043	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	17.38	35.84	0.485	-	0.6	0.9	13.7	-	0.054	
ARM B	15.21	21.39	0.711	-	1.0	2.4	33.2	-	0.157	
ARM C	9.19	23.00	0.400	-	0.4	0.7	9.7	-	0.072	
ARM D	25.27	42.82	0.590	-	0.9	1.4	20.9	-	0.057	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	17.38	35.81	0.485	-	0.9	0.9	14.1	-	0.054	
ARM B	15.21	21.37	0.712	-	2.4	2.4	36.1	-	0.162	
ARM C	9.19	22.92	0.401	-	0.7	0.7	10.0	-	0.073	
ARM D	25.27	42.79	0.591	-	1.4	1.4	21.5	-	0.057	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	14.19	38.93	0.365	- -	-	0.9	0.6	8.8	0.041	I
I	ARM B	12.42	25.02	0.496	- -	-	2.4	1.0	15.6	0.080	I
I	ARM C	7.51	27.09	0.277	- -	-	0.7	0.4	5.9	0.051	I
I	ARM D	20.63	43.85	0.470	- -	-	1.4	0.9	13.7	0.043	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	11.88	41.21	0.288	- -	-	0.6	0.4	6.2	0.034	I
I	ARM B	10.40	27.71	0.375	- -	-	1.0	0.6	9.3	0.058	I
I	ARM C	6.29	30.22	0.208	- -	-	0.4	0.3	4.0	0.042	I
I	ARM D	17.28	44.67	0.387	- -	-	0.9	0.6	9.6	0.037	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.4
07.45	0.6 *
08.00	0.9 *
08.15	0.9 *
08.30	0.6 *
08.45	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.6 *
07.45	1.0 *
08.00	2.4 **
08.15	2.4 **
08.30	1.0 *
08.45	0.6 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.3
07.45	0.4
08.00	0.7 *
08.15	0.7 *
08.30	0.4
08.45	0.3

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.6 *
07.45	0.9 *
08.00	1.4 *
08.15	1.4 *
08.30	0.9 *
08.45	0.6 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I		I		I	* DELAY *	I	* DELAY *	I		I
I		I		I		I		I		I
I		I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1303.5	I 869.0	I 57.1	I 0.04	I 57.1	I 0.04		I
I	B	I	1141.1	I 760.7	I 117.0	I 0.10	I 117.0	I 0.10		I
I	C	I	689.6	I 459.7	I 39.0	I 0.06	I 39.0	I 0.06		I
I	D	I	1895.3	I 1263.6	I 87.9	I 0.05	I 87.9	I 0.05		I
I	ALL	I	5029.5	I 3353.0	I 301.0	I 0.06	I 301.0	I 0.06		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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
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THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\Manual\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 14:29:19 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 M1 Junction 20 PM Peak 2026 Without Development
LOCATION: M1 Junction 20
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

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	T5
I ARM A	I	7.30	I	12.00	I	35.00	I	45.00	I	103.00	I	43.0	I	1.192	I	59.731	I	
I ARM B	I	3.50	I	7.70	I	67.00	I	45.00	I	103.00	I	40.0	I	0.834	I	44.693	I	
I ARM C	I	7.30	I	12.00	I	49.00	I	50.00	I	103.00	I	41.0	I	1.027	I	58.756	I	
I ARM D	I	7.30	I	8.20	I	10.00	I	50.00	I	103.00	I	35.0	I	1.126	I	54.232	I	

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	13.0	120.0
B	21.0	0.0
C	26.0	120.0
D	5.0	0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13			
I ARM	I	FLOW SCALE(%)	I
I A	I	100	I
I B	I	100	I
I C	I	100	I
I D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	10.48	15.71	10.48			
ARM B	15.00	45.00	75.00	7.47	11.21	7.47			
ARM C	15.00	45.00	75.00	6.34	9.51	6.34			
ARM D	15.00	45.00	75.00	21.41	32.12	21.41			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
16.45 - 18.15									
ARM A	0.000	0.273	0.000	0.727					
	0.0	229.0	0.0	609.0					
	(0.0)	(4.4)	(0.0)	(12.8)					
ARM B	0.236	0.000	0.085	0.679					
	141.0	0.0	51.0	406.0					
	(7.1)	(0.0)	(11.8)	(5.7)					
ARM C	0.000	0.172	0.030	0.799					
	0.0	87.0	15.0	405.0					
	(0.0)	(5.8)	(66.7)	(19.3)					
ARM D	0.446	0.288	0.216	0.050					
	764.0	494.0	370.0	85.0					
	(10.5)	(1.6)	(15.4)	(0.0)					

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	10.51	38.79	0.271	-	0.0	0.4	5.5	-	0.035	
ARM B	7.50	29.95	0.251	-	0.0	0.3	4.9	-	0.044	
ARM C	6.36	34.95	0.182	-	0.0	0.2	3.3	-	0.035	
ARM D	21.49	46.51	0.462	-	0.0	0.9	12.6	-	0.040	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	12.56	35.80	0.351	-	0.4	0.5	7.9	-	0.043	
ARM B	8.96	27.60	0.325	-	0.3	0.5	7.1	-	0.054	
ARM C	7.60	32.07	0.237	-	0.2	0.3	4.6	-	0.041	
ARM D	25.67	45.83	0.560	-	0.9	1.3	18.6	-	0.049	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	15.38	31.72	0.485	-	0.5	0.9	13.7	-	0.061	
ARM B	10.97	24.39	0.450	-	0.5	0.8	11.8	-	0.074	
ARM C	9.30	28.14	0.331	-	0.3	0.5	7.2	-	0.053	
ARM D	31.43	44.90	0.700	-	1.3	2.3	33.1	-	0.074	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	15.38	31.68	0.485	-	0.9	0.9	14.1	-	0.061	
ARM B	10.97	24.36	0.450	-	0.8	0.8	12.2	-	0.075	
ARM C	9.30	28.10	0.331	-	0.5	0.5	7.4	-	0.053	
ARM D	31.43	44.89	0.700	-	2.3	2.3	34.6	-	0.074	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	12.56	35.73	0.351	- -	0.9	0.5	8.3	-	0.043	I
I	ARM B	8.96	27.55	0.325	- -	0.8	0.5	7.4	-	0.054	I
I	ARM C	7.60	32.01	0.237	- -	0.5	0.3	4.8	-	0.041	I
I	ARM D	25.67	45.82	0.560	- -	2.3	1.3	19.8	-	0.050	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	10.51	38.73	0.271	- -	0.5	0.4	5.7	-	0.035	I
I	ARM B	7.50	29.91	0.251	- -	0.5	0.3	5.1	-	0.045	I
I	ARM C	6.36	34.89	0.182	- -	0.3	0.2	3.4	-	0.035	I
I	ARM D	21.49	46.50	0.462	- -	1.3	0.9	13.2	-	0.040	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.9 *
17.45	0.9 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.5
17.30	0.8 *
17.45	0.8 *
18.00	0.5
18.15	0.3

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.5
17.45	0.5
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.9 *
17.15	1.3 *
17.30	2.3 **
17.45	2.3 **
18.00	1.3 *
18.15	0.9 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I		I		I	* DELAY *	I	* DELAY *	I		I
I		I		I		I		I		I
I		I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1153.4	I 769.0	I 55.1	I 0.05	I 55.1	I 0.05		I
I	B	I	823.1	I 548.7	I 48.5	I 0.06	I 48.5	I 0.06		I
I	C	I	697.8	I 465.2	I 30.6	I 0.04	I 30.6	I 0.04		I
I	D	I	2357.8	I 1571.9	I 131.8	I 0.06	I 131.8	I 0.06		I
I	ALL	I	5032.2	I 3354.8	I 266.1	I 0.05	I 266.1	I 0.05		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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\Manual\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 14:30:21 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S4 M1 Junction 20 AM Peak 2026 With Development
LOCATION: M1 Junction 20
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

															T5			
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	7.30	I	12.00	I	35.00	I	45.00	I	103.00	I	43.0	I	1.147	I	59.035	I
I	ARM B	I	3.50	I	7.70	I	67.00	I	45.00	I	103.00	I	40.0	I	0.765	I	43.301	I
I	ARM C	I	7.30	I	12.00	I	49.00	I	50.00	I	103.00	I	41.0	I	0.920	I	57.132	I
I	ARM D	I	7.30	I	8.20	I	10.00	I	50.00	I	103.00	I	35.0	I	1.113	I	54.000	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS
ARM CIRFLO SEP
A 16.0 120.0
B 27.0 0.0
C 33.0 120.0
D 6.0 0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

DEMAND SET TITLE: AM Peak 2000 Base Flows														T15
I		I	NUMBER OF MINUTES FROM START WHEN					I	RATE OF FLOW (VEH/MIN)				I	
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	13.45	I	20.17	I	13.45	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	10.63	I	15.94	I	10.63	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	6.81	I	10.22	I	6.81	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	18.33	I	27.49	I	18.33	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33			
I										I			
I	I	TURNING PROPORTIONS							I				
I	I	TURNING COUNTS							I				
I	I	(PERCENTAGE OF H.V.S)							I				
I										I			
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	
I	07.15 - 08.45	I		I		I		I		I		I	
I			I	ARM A	I	0.000	I	0.108	I	0.000	I	0.892	I
I			I		I	0.0	I	116.0	I	0.0	I	960.0	I
I			I		I	(0.0)	I	(6.9)	I	(0.0)	I	(12.6)	I
I			I		I		I		I		I		I
I			I	ARM B	I	0.285	I	0.000	I	0.128	I	0.587	I
I			I		I	242.0	I	0.0	I	109.0	I	499.0	I
I			I		I	(2.5)	I	(0.0)	I	(4.6)	I	(5.4)	I
I			I		I		I		I		I		I
I			I	ARM C	I	0.000	I	0.066	I	0.044	I	0.890	I
I			I		I	0.0	I	36.0	I	24.0	I	485.0	I
I			I		I	(0.0)	I	(25.0)	I	(37.5)	I	(21.0)	I
I			I		I		I		I		I		I
I			I	ARM D	I	0.486	I	0.196	I	0.306	I	0.012	I
I			I		I	712.0	I	287.0	I	449.0	I	18.0	I
I			I		I	(17.7)	I	(6.6)	I	(17.4)	I	(0.0)	I
I		I		I		I		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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	16.12	38.43	0.420	- -	1.3	0.7	11.1	-	0.045	I
I	ARM B	12.74	23.21	0.549	- -	4.2	1.2	19.9	-	0.099	I
I	ARM C	8.17	25.51	0.320	- -	0.9	0.5	7.3	-	0.058	I
I	ARM D	21.97	42.09	0.522	- -	1.9	1.1	16.9	-	0.050	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	13.50	40.76	0.331	- -	0.7	0.5	7.6	-	0.037	I
I	ARM B	10.67	26.19	0.407	- -	1.2	0.7	10.6	-	0.065	I
I	ARM C	6.84	29.07	0.235	- -	0.5	0.3	4.7	-	0.045	I
I	ARM D	18.39	42.90	0.429	- -	1.1	0.8	11.5	-	0.041	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.5
07.45	0.7 *
08.00	1.3 *
08.15	1.3 *
08.30	0.7 *
08.45	0.5

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.7 *
07.45	1.2 *
08.00	4.0 ****
08.15	4.2 ****
08.30	1.2 *
08.45	0.7 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.3
07.45	0.5
08.00	0.9 *
08.15	0.9 *
08.30	0.5
08.45	0.3

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.7 *
07.45	1.1 *
08.00	1.9 **
08.15	1.9 **
08.30	1.1 *
08.45	0.8 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75	
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	1481.0	I 987.4	I	73.8	I 0.05	I	73.8	I 0.05	I
I	B	I	1170.0	I 780.0	I	171.4	I 0.15	I	171.4	I 0.15	I
I	C	I	750.2	I 500.1	I	49.8	I 0.07	I	49.8	I 0.07	I
I	D	I	2017.8	I 1345.2	I	110.4	I 0.05	I	110.4	I 0.05	I
I	ALL	I	5419.0	I 3612.7	I	405.4	I 0.07	I	405.4	I 0.07	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\Manual\S4 2026 PM + Dev.vai"
(drive-on-the-left) at 14:31:10 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S4 M1 Junction 20 PM Peak 2026 With Development
LOCATION: M1 Junction 20
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

																	T5	
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	7.30	I	12.00	I	35.00	I	45.00	I	103.00	I	43.0	I	1.192	I	59.731	I
I	ARM B	I	3.50	I	7.70	I	67.00	I	45.00	I	103.00	I	40.0	I	0.834	I	44.693	I
I	ARM C	I	7.30	I	12.00	I	49.00	I	50.00	I	103.00	I	41.0	I	1.027	I	58.756	I
I	ARM D	I	7.30	I	8.20	I	10.00	I	50.00	I	103.00	I	35.0	I	1.126	I	54.232	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS
ARM CIRFLO SEP
A 13.0 120.0
B 21.0 0.0
C 26.0 120.0
D 5.0 0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	17.30-17.45									
I	ARM A	16.50	30.57	0.540	-	1.2	1.2	17.4	-	0.071
I	ARM B	11.12	22.85	0.487	-	0.9	0.9	14.1	-	0.085
I	ARM C	9.58	26.86	0.357	-	0.5	0.6	8.3	-	0.058
I	ARM D	34.44	44.70	0.771	-	3.3	3.3	49.4	-	0.098

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	13.47	34.71	0.388	- -	1.2	0.6	9.8	-	0.047	I
I	ARM B	9.08	26.30	0.345	- -	0.9	0.5	8.1	-	0.058	I
I	ARM C	7.82	31.03	0.252	- -	0.6	0.3	5.2	-	0.043	I
I	ARM D	28.12	45.62	0.616	- -	3.3	1.6	25.2	-	0.058	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	11.28	37.81	0.298	- -	0.6	0.4	6.5	-	0.038	I
I	ARM B	7.60	28.86	0.263	- -	0.5	0.4	5.5	-	0.047	I
I	ARM C	6.55	34.11	0.192	- -	0.3	0.2	3.6	-	0.036	I
I	ARM D	23.55	46.30	0.509	- -	1.6	1.0	15.9	-	0.044	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	1.2 *
17.45	1.2 *
18.00	0.6 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.9 *
17.45	0.9 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.5 *
17.45	0.6 *
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	1.0 *
17.15	1.6 **
17.30	3.3 ***
17.45	3.3 ***
18.00	1.6 **
18.15	1.0 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75	
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	1237.4	I 824.9	I	66.0	I 0.05	I	66.0	I 0.05	I
I	B	I	834.1	I 556.1	I	54.2	I 0.06	I	54.2	I 0.06	I
I	C	I	718.5	I 479.0	I	33.6	I 0.05	I	33.6	I 0.05	I
I	D	I	2583.6	I 1722.4	I	175.1	I 0.07	I	175.1	I 0.07	I
I	ALL	I	5373.6	I 3582.4	I	328.9	I 0.06	I	328.9	I 0.06	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\Manual\S5 2026 AM Peak + Dev + SP.vai"
(drive-on-the-left) at 15:53:12 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 M1 Junction 20 AM Peak 2026 Base With Development + Symmetry Park
LOCATION: M1 Junction 20
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

																	T5	
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	7.00	I	13.00	I	6.50	I	50.00	I	98.00	I	42.0	I	1.005	I	48.972	I
I	ARM B	I	3.25	I	9.00	I	150.00	I	70.00	I	100.00	I	45.0	I	0.846	I	49.806	I
I	ARM C	I	6.00	I	11.00	I	70.00	I	70.00	I	100.00	I	41.0	I	0.879	I	53.264	I
I	ARM D	I	7.00	I	8.00	I	2.00	I	70.00	I	100.00	I	45.0	I	1.033	I	49.758	I

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

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	16.0	120.0
B	27.0	0.0
C	33.0	120.0
D	6.0	0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERIOD OF TIME AFTER PEAK FLOW WHEN FLOW RATES ARE TO BE USED													T15	
I		I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			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		I		I		I		I		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	14.59	I	21.88	I	14.59	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	10.99	I	16.48	I	10.99	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	6.95	I	10.42	I	6.95	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	18.84	I	28.26	I	18.84	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33
I	TURNING PROPORTIONS									I
I	TURNING COUNTS									I
I	(PERCENTAGE OF H.V.S)									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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	17.49	30.48	0.574	- -	3.3	1.4	21.4	-	0.079	I
I	ARM B	13.17	25.60	0.514	- -	3.3	1.1	16.9	-	0.082	I
I	ARM C	8.33	21.46	0.388	- -	1.5	0.6	9.9	-	0.077	I
I	ARM D	22.58	38.63	0.584	- -	2.7	1.4	22.0	-	0.063	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	14.64	32.55	0.450	- -	1.4	0.8	12.6	-	0.056	I
I	ARM B	11.03	29.19	0.378	- -	1.1	0.6	9.4	-	0.055	I
I	ARM C	6.98	25.17	0.277	- -	0.6	0.4	5.9	-	0.055	I
I	ARM D	18.91	39.38	0.480	- -	1.4	0.9	14.2	-	0.049	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.8	*
07.45	1.3	*
08.00	3.2	***
08.15	3.3	***
08.30	1.4	*
08.45	0.8	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	1.0	*
08.00	3.1	***
08.15	3.3	***
08.30	1.1	*
08.45	0.6	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.6	*
08.00	1.5	*
08.15	1.5	**
08.30	0.6	*
08.45	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.4	*
08.00	2.7	***
08.15	2.7	***
08.30	1.4	*
08.45	0.9	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1606.3	I 1070.9	I 158.9	I 0.10	I 158.9	I 0.10	I	
I	B	I	1209.9	I 806.6	I 140.5	I 0.12	I 140.5	I 0.12	I	
I	C	I	765.3	I 510.2	I 74.2	I 0.10	I 74.2	I 0.10	I	
I	D	I	2074.3	I 1382.8	I 148.6	I 0.07	I 148.6	I 0.07	I	
I	ALL	I	5655.7	I 3770.5	I 522.2	I 0.09	I 522.2	I 0.09	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.
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END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\Manual\S5 2026 PM Peak + Dev + SP.vai"
(drive-on-the-left) at 15:53:23 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 M1 Junction 20 PM Peak 2026 Base With Development + Symmetry Park
LOCATION: M1 Junction 20
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

															T5			
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	7.00	I	13.00	I	6.50	I	50.00	I	98.00	I	42.0	I	1.044	I	49.668	I
I	ARM B	I	3.25	I	9.00	I	150.00	I	70.00	I	100.00	I	45.0	I	0.923	I	51.198	I
I	ARM C	I	6.00	I	11.00	I	70.00	I	70.00	I	100.00	I	41.0	I	0.982	I	54.888	I
I	ARM D	I	7.00	I	8.00	I	2.00	I	70.00	I	100.00	I	45.0	I	1.045	I	49.990	I

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

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	13.0	120.0
B	21.0	0.0
C	26.0	120.0
D	5.0	0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

									T15	
I	I	NUMBER OF MINUTES FROM START WHEN			RATE OF FLOW (VEH/MIN)				I	I
		I	I	I	I	I	I	I		
ARM	FLOW STARTS	TOP OF PEAK	FLOW STOPS	BEFORE	AT TOP	AFTER				
I	I	I	I	I	I	I	I	I	I	I
I	I	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK	I	I	I
ARM A	I	15.00	I	45.00	I	75.00	I	11.60	I	17.40
ARM B	I	15.00	I	45.00	I	75.00	I	7.69	I	11.53
ARM C	I	15.00	I	45.00	I	75.00	I	6.57	I	9.86
ARM D	I	15.00	I	45.00	I	75.00	I	24.81	I	37.22

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33										
		TURNING PROPORTIONS								
		TURNING COUNTS								
		(PERCENTAGE OF H.V.S)								
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D				
16.45 - 18.15										
	ARM A	0.000	0.247	0.000	0.753					
		0.0	229.0	0.0	699.0					
		(0.0)	(4.4)	(0.0)	(14.9)					
	ARM B	0.229	0.000	0.083	0.688					
		141.0	0.0	51.0	423.0					
		(7.1)	(0.0)	(11.8)	(6.4)					
	ARM C	0.000	0.165	0.029	0.806					
		0.0	87.0	15.0	424.0					
		(0.0)	(5.7)	(66.7)	(18.6)					
	ARM D	0.486	0.268	0.204	0.043					
		964.0	531.0	405.0	85.0					
		(12.3)	(2.8)	(14.9)	(0.0)					

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY		I	I
(VEH/MIN)	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING		I	I
			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)		I	I
16.45-17.00											I	I
ARM A	11.64	30.13	0.386	- -	-	0.0	0.6	9.2	-	0.054	I	I
ARM B	7.72	32.98	0.234	- -	-	0.0	0.3	4.5	-	0.040	I	I
ARM C	6.60	31.06	0.212	- -	-	0.0	0.3	4.0	-	0.041	I	I
ARM D	24.91	42.35	0.588	- -	-	0.0	1.4	20.5	-	0.057	I	I

TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY		I	I
(VEH/MIN)	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING		I	I
			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)		I	I
17.00-17.15											I	I
ARM A	13.90	27.37	0.508	- -	-	0.6	1.0	14.9	-	0.074	I	I
ARM B	9.21	30.07	0.306	- -	-	0.3	0.4	6.5	-	0.048	I	I
ARM C	7.88	28.02	0.281	- -	-	0.3	0.4	5.8	-	0.050	I	I
ARM D	29.74	41.73	0.713	- -	-	1.4	2.4	35.0	-	0.083	I	I

TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY		I	I
(VEH/MIN)	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING		I	I
			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)		I	I
17.15-17.30											I	I
ARM A	17.03	23.71	0.718	- -	-	1.0	2.5	34.5	-	0.145	I	I
ARM B	11.29	26.18	0.431	- -	-	0.4	0.8	11.0	-	0.067	I	I
ARM C	9.65	23.92	0.404	- -	-	0.4	0.7	9.8	-	0.070	I	I
ARM D	36.43	40.87	0.891	- -	-	2.4	7.3	94.9	-	0.197	I	I

TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY		I	I
(VEH/MIN)	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING		I	I
			(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)		I	I
17.30-17.45											I	I
ARM A	17.03	23.55	0.723	- -	-	2.5	2.6	37.8	-	0.153	I	I
ARM B	11.29	26.04	0.433	- -	-	0.8	0.8	11.4	-	0.068	I	I
ARM C	9.65	23.83	0.405	- -	-	0.7	0.7	10.1	-	0.071	I	I
ARM D	36.43	40.86	0.891	- -	-	7.3	7.7	113.1	-	0.220	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	13.90	27.15	0.512	- -	-	2.6	1.1	16.5	0.077	I
I	ARM B	9.21	29.87	0.308	- -	-	0.8	0.4	6.8	0.048	I
I	ARM C	7.88	27.89	0.283	- -	-	0.7	0.4	6.0	0.050	I
I	ARM D	29.74	41.71	0.713	- -	-	7.7	2.5	41.3	0.088	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	11.64	30.04	0.388	- -	-	1.1	0.6	9.8	0.055	I
I	ARM B	7.72	32.89	0.235	- -	-	0.4	0.3	4.7	0.040	I
I	ARM C	6.60	30.98	0.213	- -	-	0.4	0.3	4.1	0.041	I
I	ARM D	24.91	42.34	0.588	- -	-	2.5	1.4	22.3	0.058	I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.6	*
17.15	1.0	*
17.30	2.5	**
17.45	2.6	***
18.00	1.1	*
18.15	0.6	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.8	*
17.45	0.8	*
18.00	0.4	
18.15	0.3	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.4	
17.30	0.7	*
17.45	0.7	*
18.00	0.4	
18.15	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.4	*
17.15	2.4	**
17.30	7.3	*****
17.45	7.7	*****
18.00	2.5	***
18.15	1.4	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1277.3	I 851.5	I 122.7	I 0.10	I 122.7	I 0.10	I	
I	B	I	846.5	I 564.3	I 44.9	I 0.05	I 44.9	I 0.05	I	
I	C	I	724.0	I 482.7	I 39.9	I 0.06	I 39.9	I 0.06	I	
I	D	I	2732.2	I 1821.5	I 327.1	I 0.12	I 327.2	I 0.12	I	
I	ALL	I	5580.0	I 3720.0	I 534.6	I 0.10	I 534.6	I 0.10	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Gibbet Hill A5_A426\
ES Addendum Oct 2016\Manual\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 15:51:28 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 Gibbet Hill Roundabout AM Peak 2026 Without Development
LOCATION: Gibbet Hill Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Gibbet Lane
ARM B - A5 South
ARM C - A426 South
ARM D - A5 North
ARM E - Rugby Road

GEOMETRIC DATA

														T5	
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	2.90	I	8.00	I	10.00	I	19.00	I	66.00	I	68.0	I	0.421	I 21.146 I
I ARM B	I	4.70	I	7.30	I	25.00	I	24.00	I	70.00	I	40.0	I	0.540	I 32.695 I
I ARM C	I	3.65	I	6.90	I	20.00	I	44.00	I	70.00	I	56.0	I	0.481	I 27.373 I
I ARM D	I	4.00	I	8.80	I	36.00	I	15.00	I	70.00	I	54.0	I	0.530	I 33.487 I
I ARM E	I	3.65	I	7.20	I	27.00	I	100.00	I	70.00	I	52.0	I	0.511	I 29.895 I

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

WARNING ARM D Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I ARM	I	FLOW	SCALE(%)	I	
I A	I	100		I	
I B	I	100		I	
I C	I	100		I	
I D	I	100		I	
I E	I	100		I	

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN				RATE OF FLOW (VEH/MIN)				I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		I
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	I
I		I		I		I		I		I		I		I
I	ARM A	I	15.00	I	45.00	I	75.00	I	1.14	I	1.71	I	1.14	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	7.11	I	10.67	I	7.11	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	12.21	I	18.32	I	12.21	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	12.36	I	18.54	I	12.36	I
I	ARM E	I	15.00	I	45.00	I	75.00	I	8.20	I	12.30	I	8.20	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

													T33	
I		I	TURNING PROPORTIONS						I					
I		I	TURNING COUNTS						I					
I		I	(PERCENTAGE OF H.V.S)						I					

I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	ARM E	I

I	07.15 - 08.45	I		I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.143	I	0.451	I	0.165	I	0.242	I
I		I		I	0.0	I	13.0	I	41.0	I	15.0	I	22.0	I
I		I		I	(0.0)	I	(33.3)	I	(12.2)	I	(33.3)	I	(54.6)	I
I		I		I		I		I		I		I		I
I		I	ARM B	I	0.035	I	0.016	I	0.132	I	0.608	I	0.209	I
I		I		I	20.0	I	9.0	I	75.0	I	346.0	I	119.0	I
I		I		I	(45.0)	I	(0.0)	I	(58.7)	I	(15.6)	I	(10.1)	I
I		I		I		I		I		I		I		I
I		I	ARM C	I	0.027	I	0.101	I	0.000	I	0.383	I	0.489	I
I		I		I	26.0	I	99.0	I	0.0	I	374.0	I	478.0	I
I		I		I	(19.2)	I	(12.1)	I	(0.0)	I	(13.6)	I	(7.5)	I
I		I		I		I		I		I		I		I
I		I	ARM D	I	0.014	I	0.488	I	0.489	I	0.000	I	0.008	I
I		I		I	14.0	I	483.0	I	484.0	I	0.0	I	8.0	I
I		I		I	(14.3)	I	(8.9)	I	(14.3)	I	(0.0)	I	(25.0)	I
I		I		I		I		I		I		I		I
I		I	ARM E	I	0.040	I	0.221	I	0.736	I	0.003	I	0.000	I
I		I		I	26.0	I	145.0	I	483.0	I	2.0	I	0.0	I
I		I		I	(26.9)	I	(8.3)	I	(8.3)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	07.15-07.30										I	
I	ARM A	1.14	8.73	0.131	- -	-	0.0	0.1	2.2	-	0.131	I
I	ARM B	7.14	20.47	0.349	- -	-	0.0	0.5	7.7	-	0.075	I
I	ARM C	12.26	21.35	0.574	- -	-	0.0	1.3	18.9	-	0.108	I
I	ARM D	12.41	24.89	0.499	- -	-	0.0	1.0	14.2	-	0.079	I
I	ARM E	8.23	19.96	0.412	- -	-	0.0	0.7	10.1	-	0.085	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I											I	
I	07.30-07.45										I	
I	ARM A	1.36	7.22	0.189	- -	-	0.1	0.2	3.3	-	0.170	I
I	ARM B	8.53	19.17	0.445	- -	-	0.5	0.8	11.5	-	0.094	I
I	ARM C	14.64	20.68	0.708	- -	-	1.3	2.3	32.9	-	0.162	I
I	ARM D	14.82	23.88	0.620	- -	-	1.0	1.6	23.1	-	0.109	I
I	ARM E	9.83	18.49	0.532	- -	-	0.7	1.1	16.1	-	0.115	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I											I	
I	07.45-08.00										I	
I	ARM A	1.67	5.23	0.319	- -	-	0.2	0.5	6.5	-	0.278	I
I	ARM B	10.44	17.46	0.598	- -	-	0.8	1.5	20.7	-	0.141	I
I	ARM C	17.93	19.78	0.906	- -	-	2.3	7.5	91.2	-	0.403	I
I	ARM D	18.15	22.61	0.803	- -	-	1.6	3.8	51.4	-	0.211	I
I	ARM E	12.04	16.55	0.727	- -	-	1.1	2.5	34.9	-	0.212	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I											I	
I	08.00-08.15											I
I	ARM A	1.67	5.14	0.325	- -	-	0.5	0.5	7.0	-	0.288	I
I	ARM B	10.44	17.39	0.601	- -	-	1.5	1.5	22.1	-	0.144	I
I	ARM C	17.93	19.76	0.907	- -	-	7.5	8.4	120.0	-	0.497	I
I	ARM D	18.15	22.51	0.806	- -	-	3.8	4.0	58.8	-	0.227	I
I	ARM E	12.04	16.46	0.731	- -	-	2.5	2.6	39.0	-	0.225	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	1.36	7.09	0.192	- -	-	0.5	0.2	3.8	0.176	I
I	ARM B	8.53	19.07	0.447	- -	-	1.5	0.8	12.7	0.096	I
I	ARM C	14.64	20.65	0.709	- -	-	8.4	2.5	44.4	0.189	I
I	ARM D	14.82	23.73	0.625	- -	-	4.0	1.7	27.1	0.116	I
I	ARM E	9.83	18.35	0.536	- -	-	2.6	1.2	18.5	0.120	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	1.14	8.66	0.132	- -	-	0.2	0.2	2.4	0.133	I
I	ARM B	7.14	20.41	0.350	- -	-	0.8	0.5	8.3	0.076	I
I	ARM C	12.26	21.32	0.575	- -	-	2.5	1.4	21.6	0.112	I
I	ARM D	12.41	24.82	0.500	- -	-	1.7	1.0	15.7	0.081	I
I	ARM E	8.23	19.89	0.414	- -	-	1.2	0.7	11.0	0.086	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.5
08.15	0.5
08.30	0.2
08.45	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.5 *
07.45	0.8 *
08.00	1.5 *
08.15	1.5 *
08.30	0.8 *
08.45	0.5 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.3 *
07.45	2.3 **
08.00	7.5 *****
08.15	8.4 *****
08.30	2.5 ***
08.45	1.4 *

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.0 *
07.45	1.6 **
08.00	3.8 ****
08.15	4.0 ****
08.30	1.7 **
08.45	1.0 *

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.7 *
07.45	1.1 *
08.00	2.5 ***
08.15	2.6 ***
08.30	1.2 *
08.45	0.7 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	125.3	I 83.5	I 25.1	I 0.20	I 25.1	I 0.20	I	
I	B	I	783.2	I 522.1	I 83.2	I 0.11	I 83.2	I 0.11	I	
I	C	I	1344.8	I 896.5	I 329.0	I 0.24	I 329.0	I 0.24	I	
I	D	I	1361.3	I 907.5	I 190.3	I 0.14	I 190.3	I 0.14	I	
I	E	I	902.9	I 602.0	I 129.7	I 0.14	I 129.7	I 0.14	I	
I	ALL	I	4517.4	I 3011.6	I 757.2	I 0.17	I 757.3	I 0.17	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Gibbet Hill A5_A426\
ES Addendum Oct 2016\Manual\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 15:51:36 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S2 Gibbet Hill Roundabout PM Peak 2026 Without Development
LOCATION: Gibbet Hill Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Gibbet Lane
ARM B - A5 South
ARM C - A426 South
ARM D - A5 North
ARM E - Rugby Road

GEOMETRIC DATA

														T5	
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	2.90	I	8.00	I	10.00	I	19.00	I	66.00	I	68.0	I	0.421	I 21.146 I
I ARM B	I	4.70	I	7.30	I	25.00	I	24.00	I	70.00	I	40.0	I	0.540	I 32.695 I
I ARM C	I	3.65	I	6.90	I	20.00	I	44.00	I	70.00	I	56.0	I	0.481	I 27.373 I
I ARM D	I	4.00	I	8.80	I	36.00	I	15.00	I	70.00	I	54.0	I	0.530	I 33.487 I
I ARM E	I	3.65	I	7.20	I	27.00	I	100.00	I	70.00	I	52.0	I	0.511	I 29.895 I

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

WARNING ARM D Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I ARM	I	FLOW	SCALE(%)	I	
I A	I	100		I	
I B	I	100		I	
I C	I	100		I	
I D	I	100		I	
I E	I	100		I	

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	1.13	1.69	1.13			
ARM B	15.00	45.00	75.00	9.66	14.49	9.66			
ARM C	15.00	45.00	75.00	12.77	19.16	12.77			
ARM D	15.00	45.00	75.00	9.55	14.33	9.55			
ARM E	15.00	45.00	75.00	8.68	13.01	8.68			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
16.45 - 18.15	ARM A	0.000	0.167	0.400	0.233	0.200			
		0.0	15.0	36.0	21.0	18.0			
		(0.0)	(0.0)	(2.8)	(0.0)	(0.0)			
	ARM B	0.023	0.012	0.084	0.649	0.232			
		18.0	9.0	65.0	502.0	179.0			
		(0.0)	(1.1)	(30.8)	(8.2)	(7.3)			
	ARM C	0.047	0.072	0.000	0.355	0.525			
		48.0	74.0	0.0	363.0	537.0			
		(4.2)	(44.6)	(0.0)	(10.5)	(5.4)			
	ARM D	0.017	0.490	0.487	0.000	0.007			
		13.0	374.0	372.0	0.0	5.0			
		(7.7)	(9.6)	(11.3)	(0.0)	(0.0)			
	ARM E	0.036	0.251	0.690	0.023	0.000			
		25.0	174.0	479.0	16.0	0.0			
		(0.0)	(11.5)	(6.5)	(0.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70									
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	1.13	12.28	0.092	-	0.0	0.1	1.5	-	0.090
ARM B	9.70	23.57	0.411	-	0.0	0.7	10.1	-	0.072
ARM C	12.82	20.42	0.628	-	0.0	1.6	23.3	-	0.128
ARM D	9.59	24.60	0.390	-	0.0	0.6	9.2	-	0.066
ARM E	8.71	21.77	0.400	-	0.0	0.7	9.6	-	0.076

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	1.35	10.58	0.127	-	0.1	0.1	2.1	-	0.108
ARM B	11.58	22.34	0.519	-	0.7	1.1	15.5	-	0.093
ARM C	15.31	19.54	0.784	-	1.6	3.4	46.2	-	0.224
ARM D	11.45	23.48	0.488	-	0.6	0.9	13.7	-	0.083
ARM E	10.40	20.57	0.506	-	0.7	1.0	14.7	-	0.098

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	1.65	8.33	0.198	-	0.1	0.2	3.5	-	0.149
ARM B	14.18	20.67	0.686	-	1.1	2.1	29.9	-	0.151
ARM C	18.75	18.35	1.022	-	3.4	20.0	196.7	-	0.873
ARM D	14.02	22.27	0.630	-	0.9	1.7	23.8	-	0.120
ARM E	12.74	19.02	0.670	-	1.0	2.0	27.7	-	0.156

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	1.65	8.26	0.200	-	0.2	0.2	3.7	-	0.151
ARM B	14.18	20.64	0.687	-	2.1	2.2	32.2	-	0.155
ARM C	18.75	18.32	1.023	-	20.0	30.7	382.8	-	1.572
ARM D	14.02	22.12	0.634	-	1.7	1.7	25.4	-	0.123
ARM E	12.74	18.96	0.672	-	2.0	2.0	29.9	-	0.161

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	1.35	10.43	0.129	- -	-	0.2	0.1	2.3	0.110	I
I	ARM B	11.58	22.28	0.520	- -	-	2.2	1.1	17.1	0.095	I
I	ARM C	15.31	19.49	0.785	- -	-	30.7	4.1	162.8	0.627	I
I	ARM D	11.45	22.82	0.502	- -	-	1.7	1.0	15.8	0.089	I
I	ARM E	10.40	20.39	0.510	- -	-	2.0	1.1	16.5	0.101	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	1.13	12.21	0.092	- -	-	0.1	0.1	1.6	0.090	I
I	ARM B	9.70	23.52	0.412	- -	-	1.1	0.7	10.9	0.073	I
I	ARM C	12.82	20.39	0.629	- -	-	4.1	1.7	27.9	0.138	I
I	ARM D	9.59	24.50	0.391	- -	-	1.0	0.6	9.9	0.067	I
I	ARM E	8.71	21.71	0.401	- -	-	1.1	0.7	10.4	0.077	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.7 *
17.15	1.1 *
17.30	2.1 **
17.45	2.2 **
18.00	1.1 *
18.15	0.7 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	1.6 **
17.15	3.4 ***
17.30	20.0 *****
17.45	30.7 *****
18.00	4.1 ****
18.15	1.7 **

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.9 *
17.30	1.7 **
17.45	1.7 **
18.00	1.0 *
18.15	0.6 *

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.7 *
17.15	1.0 *
17.30	2.0 **
17.45	2.0 **
18.00	1.1 *
18.15	0.7 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	123.9	I	82.6	I	14.7	I	0.12	I
I	B	I	1064.0	I	709.3	I	115.6	I	0.11	I
I	C	I	1406.7	I	937.8	I	839.8	I	0.60	I
I	D	I	1051.6	I	701.1	I	97.9	I	0.09	I
I	E	I	955.2	I	636.8	I	108.8	I	0.11	I
I	ALL	I	4601.4	I	3067.6	I	1176.8	I	0.26	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
===== end of file =====

T R A N S Y T 12

Traffic Network Study Tool

Analysis Program Release 7 (July 2010)
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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited	Tel:	+44 (0) 1344 770758
Crowthorne House	Fax:	+44 (0) 1344 770864
Nine Mile Ride	Email:	softwarebureau@trl.co.uk
Wokingham, Berks.	Web:	www.trlsoftware.co.uk
RG40 3GA, UK		

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "2026 AM+DEV.DAT" at 17:28 on 20160112

TRANSYT 12.0

Gibbet Hill Rbout 2026 AM Peak + Development Dec 15 HE Amends

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	4
NUMBER OF LINKS	=	32
NUMBER OF OPTIMISED NODES	=	4
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	45
MAXIMUM NUMBER OF SHARED STOPLINES	=	4
MAXIMUM NUMBER OF TIMING POINTS	=	2
MAXIMUM LINKS AT ANY NODE	=	11

CORE REQUESTED = 8366 WORDS
CORE AVAILABLE = 72000 WORDS

71)= 32 42 66 0 30 66 43 0 0 0 0 0 0 0 0 0

72)=	32	43	34	0	30	34	43	0	0	0	0	0	0	0	0	0
73)=	32	44	302	0	32	302	43	0	0	0	0	0	0	0	0	0
74)=	32	45	209	0	31	209	43	0	0	0	0	0	0	0	0	0
75)=	32	46	303	0	32	303	43	0	0	0	0	0	0	0	0	0
76)=	32	47	316	0	31	316	43	0	0	0	0	0	0	0	0	0
77)=	32	50	1136	0	0	0	43	0	0	0	0	0	0	0	0	0
78)=	32	51	435	0	40	435	43	0	0	0	0	0	0	0	0	0
79)=	32	52	173	0	41	173	43	0	0	0	0	0	0	0	0	0
80)=	32	53	34	0	43	34	43	0	0	0	0	0	0	0	0	0
81)=	32	54	20	0	42	20	43	0	0	0	0	0	0	0	0	0
82)=	32	55	10	0	47	10	43	0	0	0	0	0	0	0	0	0

LINK CARDS : FLARE SATURATION FLOW DATA																
			..LANE 1..			..LANE 2..			..LANE 3..							
CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	LINK	LIMIT	QUEUE	LINK	LIMIT
NO.	TYPE	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	WEIGHT	NO.	VEH.
83)=	33	50	2155	6	0	0	0	0	0	0	0	0	0	0	0	0
LINK DATA: QUEUE CONSTRAINTS																
CARD	CARD	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE
NO.	TYPE	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT
84)=	38	12	5	4500	13	5	4500	22	1	4500	23	1	4500	42	2	4500
85)=	38	43	2	4500	51	1	4500	52	1	4500	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

45 SECOND CYCLE 45 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	2	0	21								
2	2	0	16								
4	2	0	21								
5	2	0	27								

LINK	FLOW	SAT	DEGREE	MEAN	TIMES	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN	TIMES
NUMBER	INTO	FLOW	OF	PER	PCU	UNIFORM	RANDOM+	COST	MEAN	COST	MAX.	AVERAGE	INDEX.	NODE	START	END
	LINK	(PCU/H)	(PCU/H)	(%)	(SEC)	(U+R+O=	OVERSAT	OF	/PCU	OF	(PCU)	EXCESS	OF ()	VALUES	1ST	2ND
					DELAY	(PCU-H/H)	(%)	(\$/H)	(%)	STOPS	(PCU)	(PCU)	(\$/H)		(SECONDS)	
10	572	2065	73	16.7	20.6	1.9 +	1.4 (	46.5)*	97	(14.3)	7		27.9	1	5	21
11	605	2205	73	16.7	19.8	2.0 +	1.3 (	47.3)*	96	(14.9)	8		28.4	1	5	21
12	513	2050S	75	4.6	21.7	2.0 +	1.1 (	43.8)*	115	(15.2)	8	(1.1)*	282.6	1	26	0
13	143	2100S	20	4.6	12.1	0.4 +	0.1 (	6.8)*	90	(3.3)	2	(0.0)*	37.4	1	26	0
14	34	12L	75	4.6	13.5	0.1 +	0.1 (	1.8)	47	(0.4)	8	+	2.2	1	26	0
15	132	12L	75	4.6	10.6	0.1 +	0.3 (	5.5)	33	(1.1)	8	+	6.7	1	26	0
16	42	13L	20	4.6	5.3	0.0 +	0.0 (	0.9)	18	(0.2)	2		1.1	1	26	0
20	360	2040	66	16.7	24.4	1.5 +	1.0 (	34.6)*	103	(9.6)	5		20.8	2	5	16
21	360	2180	62	16.7	22.6	1.5 +	0.8 (	32.1)*	99	(9.2)	5		19.2	2	5	16
22	562	2050S	66	2.6	17.7	2.1 +	0.7 (	39.3)*	110	(15.9)	10	(3.8)*	382.3	2	21	0
23	605	2100	52	2.6	16.5	2.2 +	0.5 (	39.3)*	107	(16.7)	8	(3.0)*	347.1	2	21	0
24	42	22L	66	2.6	10.1	0.1 +	0.1 (	1.7)	47	(0.5)	10	+	2.2	2	21	0
25	143	22L	66	2.6	9.2	0.2 +	0.2 (	5.2)	93	(3.4)	10	+	8.6	2	21	0
30	117	1169	23	16.7	7.6	0.1 +	0.1 (	3.5)	63	(1.9)	1		5.4			
31	687	6000S	33	4.2	0.4	0.0 +	0.1 (	1.2)	1	(0.2)	0		1.4			
32	1151	31L	33	4.2	0.4	0.0 +	0.1 (	2.0)	1	(0.3)	0		2.3			
33	13	31L	33	4.2	0.4	0.0 +	0.0 (	0.0)	1	(0.0)	0		0.0			
34	112	31L	33	4.2	0.4	0.0 +	0.0 (	0.2)	1	(0.0)	0		0.2			
40	554	2090	70	16.7	19.4	1.8 +	1.2 (	42.4)*	94	(13.4)	7		25.5		5	21
41	173	2230	21	16.7	12.2	0.5 +	0.1 (	8.3)*	68	(3.0)	2		5.0	4	5	21
42	66	2050S	63	2.1	13.7	0.2 +	0.1 (	3.6)*	70	(1.2)	6	(0.9)*	61.7	4	26	0
43	34	2100S	70	2.1	15.3	0.1 +	0.1 (	2.1)*	73	(0.6)	8	(2.0)*	100.1	4	26	0
44	302	42L	63	2.1	6.6	0.1 +	0.4 (	7.8)	45	(3.5)	6	+	11.3	4	26	0
45	209	42L	63	2.1	18.2	0.7 +	0.3 (	15.0)	111	(6.0)	6	+	21.0	4	26	0
46	304	43L	70	2.1	8.9	0.2 +	0.5 (	10.6)	70	(5.4)	8	+	16.1	4	26	0
47	316	43L	70	2.1	20.1	1.2 +	0.6 (	25.1)	114	(9.2)	8	+	34.3	4	26	0
50	1136	3094F	72	16.7	11.3	2.3 +	1.3 (	50.7)*	68	(19.9)	10		30.4	5	5	27
51	435	2050S	73	2.7	33.1	2.8 +	1.2 (	56.8)*	122	(13.6)	7	(3.9)*	471.3	5	32	0
52	173	2100S	32	2.7	26.3	1.1 +	0.2 (	18.0)*	109	(4.8)	3	(0.8)*	129.3	5	32	0
53	34	52L	32	2.7	10.7	0.1 +	0.0 (	1.4)	63	(0.6)	3	+	2.0	5	32	0
54	20	51L	73	2.7	20.9	0.1 +	0.1 (	1.7)	96	(0.5)	7	+	2.1	5	32	0
55	10	51L	73	2.7	20.0	0.0 +	0.0 (	0.8)	120	(0.3)	7	+	1.1	5	32	0

*** f - average saturation flow for flared link ***

TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	DELAY	(\$/H)	STOPS	QUEUES	(\$/H)
1015.1	62.8	16.2	25.1	14.0	(1289.8) + (	104.8)	+ (692.4)	= 2087.1
TOTALS								

CRUISE				DELAY		STOPS		TOTALS
LITRES PER HOUR				LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS				54.4	+	45.0	+	86.2
								= 185.7

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 56

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6
- (SECONDS)

1	2	18	39
2	2	0	16
4	2	24	0
5	2	0	27

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)				(\$/H)	
1015.1	54.9	18.5	17.3	14.0	(678.7) + (	56.4)	+ (226.7)	=	961.8 TOTALS

NO. OF ENTRIES TO SUBPT = 14
NO. OF LINKS RECALCULATED= 328

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18
- (SECONDS)

1	2	18	39
2	2	0	16
4	2	24	0
5	2	0	27

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)				(\$/H)	
1015.1	54.9	18.5	17.3	14.0	(678.7) + (	56.4)	+ (226.7)	=	961.8 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 253

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1
- (SECONDS)

1	2	21	41
2	2	2	16
4	2	26	43
5	2	3	25

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)				(\$/H)	
1015.1	60.9	16.7	18.1	19.2	(601.8) + (	43.4)	+ (91.6)	=	736.8 TOTALS

NO. OF ENTRIES TO SUBPT = 31
NO. OF LINKS RECALCULATED= 697

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6
- (SECONDS)

1	2	27	2
2	2	2	16
4	2	26	43
5	2	3	25

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)				(\$/H)	
1015.1	59.7	17.0	16.9	19.2	(559.0) + (	38.6)	+ (64.9)	=	662.5 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 261

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18
- (SECONDS)

1	2	27	2
2	2	2	16
4	2	26	43
5	2	3	25

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1015.1	59.7	17.0	16.9	19.2	(559.0) + (	38.6)	+ (64.9)	=	662.5 TOTALS

NO. OF ENTRIES TO SUBPT = 10
NO. OF LINKS RECALCULATED= 308

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1
- (SECONDS)

1	2	26	1
2	2	4	18
4	2	23	40
5	2	0	22

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1015.1	59.3	17.1	16.5	19.2	(526.9) + (	35.2)	+ (53.1)	=	615.2 TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 450

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1 -1
- (SECONDS)

1	2	27	1
2	2	4	18
4	2	23	41
5	2	0	22

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1015.1	58.5	17.3	16.6	18.4	(511.3) + (	35.1)	+ (58.9)	=	605.3 TOTALS

NO. OF ENTRIES TO SUBPT = 19
NO. OF LINKS RECALCULATED= 526

Printed at 14:55:24 on 27/10/2016]

T R A N S Y T 12

Traffic Network Study Tool

Analysis Program Release 7 (July 2010)
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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited	Tel:	+44 (0) 1344 770758
Crowthorne House	Fax:	+44 (0) 1344 770864
Nine Mile Ride	Email:	softwarebureau@trl.co.uk
Wokingham, Berks.	Web:	www.trlsoftware.co.uk
RG40 3GA, UK		

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "2026 PM+DEV.DAT" at 17:33 on 20160112

TRANSYT 12.0

Gibbet Hill Rbout 2026 PM Peak + Developemnt Dec 15 HE Amends

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	4
NUMBER OF LINKS	=	32
NUMBER OF OPTIMISED NODES	=	4
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	40
MAXIMUM NUMBER OF SHARED STOPLINES	=	4
MAXIMUM NUMBER OF TIMING POINTS	=	2
MAXIMUM LINKS AT ANY NODE	=	11

CORE REQUESTED = 8146 WORDS
CORE AVAILABLE = 72000 WORDS

71)= 32 42 58 0 30 58 43 0 0 0 0 0 0 0 0 0 0

72)=	32	43	18	0	30	18	43	0	0	0	0	0	0	0	0	0
73)=	32	44	240	0	32	240	43	0	0	0	0	0	0	0	0	0
74)=	32	45	204	0	31	204	43	0	0	0	0	0	0	0	0	0
75)=	32	46	240	0	32	240	43	0	0	0	0	0	0	0	0	0
76)=	32	47	322	0	31	322	43	0	0	0	0	0	0	0	0	0
77)=	32	50	1159	0	0	0	43	0	0	0	0	0	0	0	0	0
78)=	32	51	556	0	40	556	43	0	0	0	0	0	0	0	0	0
79)=	32	52	220	0	41	220	43	0	0	0	0	0	0	0	0	0
80)=	32	53	18	0	43	18	43	0	0	0	0	0	0	0	0	0
81)=	32	54	21	0	42	21	43	0	0	0	0	0	0	0	0	0
82)=	32	55	16	0	47	16	43	0	0	0	0	0	0	0	0	0

LINK CARDS : FLARE SATURATION FLOW DATA																
..LANE 1..			..LANE 2..			..LANE 3..										
	CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC								
83)=	TYPE	NO.	FLOW	VEH.	FLOW	VEH.	FLOW	VEH.								
	33	50	2155	6	0	0	0	0								
LINK DATA: QUEUE CONSTRAINTS																
CARD	CARD	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE
NO.	TYPE	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT
84)=	38	12	5	4500	13	5	4500	22	1	4500	23	1	4500	42	2	4500
85)=	38	43	2	4500	51	1	4500	52	1	4500	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

40 SECOND CYCLE 40 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10								
1	2	0	16																
2	2	0	16																
4	2	0	21																
5	2	0	21																
LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE	TIMES PCU DELAY	-----DELAY-----				----STOPS----		----QUEUE----		PERFORMANCE INDEX.	EXIT NODE	GREEN START	TIMES START	END	
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	UNIFORM (U+R+O=	RANDOM+ MEAN Q	COST OF DELAY	MEAN STOPS /PCU	COST OF STOPS	MEAN MAX.	AVERAGE EXCESS	WEIGHTED SUM OF () VALUES			1ST	2ND		
						(PCU-H/H)		(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	(\$/H)			(SECONDS)			
10	468	2065	76	16.7	24.3	1.6 +	1.5 (	44.9)*	110	(	13.3)	6		26.9	1	5	16		
11	480	2205	73	16.7	22.3	1.7 +	1.3 (	42.2)*	105	(	13.0)	6		25.3	1	5	16		
12	566	2050S	76	4.6	17.8	1.7 +	1.1 (	39.6)*	115	(	16.8)	9	(	1.1)*	263.2	1	21	0	
13	158	2100S	18	4.6	8.4	0.3 +	0.1 (	5.2)*	85	(	3.4)	2	(	0.0)*	29.6	1	21	0	
14	18	12L	76	4.6	12.0	0.0 +	0.0 (	0.9)	51	(	0.2)	9	+	1.1	1	21	0		
15	193	12L	76	4.6	9.6	0.1 +	0.4 (	7.3)	38	(	1.9)	9	+	9.2	1	21	0		
16	28	13L	18	4.6	4.4	0.0 +	0.0 (	0.5)	17	(	0.1)	2		0.6	1	21	0		
20	373	2040	61	16.7	19.5	1.2 +	0.8 (	28.7)*	97	(	9.3)	4		17.2	2	5	16		
21	372	2180	57	16.7	18.2	1.2 +	0.7 (	26.7)*	93	(	8.9)	4		16.0	2	5	16		
22	463	2050S	63	2.6	18.0	1.7 +	0.6 (	33.0)*	112	(	13.3)	8	(	3.0)*	314.7	2	21	0	
23	480	2100	46	2.6	16.5	1.8 +	0.4 (	31.2)*	108	(	13.3)	6	(	2.1)*	264.3	2	21	0	
24	28	22L	63	2.6	10.2	0.0 +	0.0 (	1.1)	48	(	0.3)	8	+	1.5	2	21	0		
25	158	22L	63	2.6	11.0	0.3 +	0.2 (	6.9)	102	(	4.1)	8	+	11.0	2	21	0		
30	91	1169	16	16.7	5.7	0.0 +	0.1 (	2.0)	51	(	1.2)	0		3.2					
31	720	6000S	29	4.2	0.4	0.0 +	0.1 (	1.2)	1	(	0.2)	0		1.4					
32	929	31L	29	4.2	0.4	0.0 +	0.1 (	1.6)	1	(	0.3)	0		1.8					
33	10	31L	29	4.2	0.4	0.0 +	0.0 (	0.0)	1	(	0.0)	0		0.0					
34	107	31L	29	4.2	0.4	0.0 +	0.0 (	0.2)	1	(	0.0)	0		0.2					
40	641	2090	72	16.7	16.7	1.7 +	1.3 (	42.3)*	92	(	15.2)	7		25.4		4	5	21	
41	220	2230	23	16.7	9.8	0.5 +	0.2 (	8.5)*	64	(	3.6)	2		5.1	4	5	21		
42	58	2050S	65	2.1	16.0	0.1 +	0.1 (	3.7)*	82	(	1.2)	5	(	0.8)*	53.5	4	26	0	
43	18	2100S	74	2.1	18.5	0.0 +	0.0 (	1.3)*	87	(	0.4)	7	(	1.8)*	89.1	4	26	0	
44	240	42L	65	2.1	8.0	0.1 +	0.4 (	7.6)	51	(	3.2)	5	+	10.8	4	26	0		
45	204	42L	65	2.1	19.5	0.7 +	0.4 (	15.7)	116	(	6.1)	5	+	21.7	4	26	0		
46	240	43L	74	2.1	11.2	0.2 +	0.6 (	10.6)	81	(	5.0)	7	+	15.6	4	26	0		
47	322	43L	74	2.1	22.2	1.2 +	0.8 (	28.1)	120	(	10.0)	7	+	38.1	4	26	0		
50	1159	3425f	80	16.7	15.0	2.9 +	1.9 (	68.8)*	86	(	25.5)	12		41.3	5	5	21		
51	556	2050S	77	2.7	27.3	2.7 +	1.6 (	60.0)*	124	(	17.7)	8	(	4.3)*	511.7	5	26	0	
52	220	2100S	30	2.7	19.4	1.0 +	0.2 (	16.8)*	107	(	6.1)	3	(	0.7)*	121.3	5	26	0	
53	18	52L	30	2.7	7.3	0.0 +	0.0 (	0.5)	37	(	0.2)	3	+	0.7	5	26	0		
54	21	51L	77	2.7	17.8	0.0 +	0.1 (	1.5)	98	(	0.5)	8	+	2.0	5	26	0		
55	16	51L	77	2.7	15.7	0.0 +	0.0 (	1.0)	109	(	0.5)	8	+	1.4	5	26	0		

*** f - average saturation flow for flared link ***

TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL								
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE								
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX								
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES									
					(\$/H)	(\$/H)	(\$/H)	(\$/H)								
990.6	61.0	16.2	23.0	15.0	(1198.0)	+	(	106.1)	+	(	621.1)	=	1925.1	TOTALS		

	CRUISE		DELAY		STOPS		TOTALS	
	LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR	
FUEL CONSUMPTION PREDICTIONS	53.1	+	43.7	+	88.8	=	185.6	

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 56

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6
- (SECONDS)

1	2	18	34
2	2	0	16
4	2	18	39
5	2	0	21

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
990.6	53.5	18.5	15.5	15.0	(647.5) + (	56.0)	+ (182.2)	= 885.8	

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 307

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16
- (SECONDS)

1	2	18	34
2	2	0	16
4	2	18	39
5	2	0	21

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
990.6	53.5	18.5	15.5	15.0	(647.5) + (	56.0)	+ (182.2)	= 885.8	

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 234

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1
- (SECONDS)

1	2	20	35
2	2	0	13
4	2	20	38
5	2	2	20

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
990.6	59.2	16.7	15.9	20.3	(568.8) + (	38.5)	+ (40.9)	= 648.2	

NO. OF ENTRIES TO SUBPT = 26
NO. OF LINKS RECALCULATED= 587

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1 6
- (SECONDS)

1	2	20	35
2	2	0	13
4	2	20	38
5	2	2	20

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	TOTALS
990.6	59.2	16.7	15.9	20.3	(568.7) + (	38.5)	+ (40.9)	= 648.1	

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 271

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1 6 16
- (SECONDS)

1	2	20	35
2	2	0	13
4	2	20	38
5	2	2	20

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
990.6	59.2	16.7	15.9	20.3	(568.8)	+ (38.5)	+ (40.9)	=	648.2 TOTALS

NO. OF ENTRIES TO SUBPT = 10
NO. OF LINKS RECALCULATED= 304

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1 6 16 1
- (SECONDS)

1	2	23	38
2	2	1	14
4	2	20	38
5	2	1	19

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
990.6	58.4	17.0	15.1	20.3	(527.1)	+ (34.5)	+ (30.5)	=	592.2 TOTALS

NO. OF ENTRIES TO SUBPT = 12
NO. OF LINKS RECALCULATED= 352

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1 6 16 1 -1
- (SECONDS)

1	2	23	38
2	2	1	14
4	2	20	38
5	2	1	19

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
990.6	58.4	17.0	15.1	20.3	(527.1)	+ (34.5)	+ (30.5)	=	592.2 TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 473

```
FINAL SETTINGS OBTAINED WITH INCREMENTS :-      6  16  -1   6  16   1  -1   1
- (SECONDS)
```

LINK NUMBER	FLOW INTO LINK	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN PER CRUISE DELAY (SEC)	TIMES PCU (SEC)	-----DELAY-----			-----STOPS-----		----QUEUE----		PERFORMANCE INDEX. SUM OF () VALUES (\$/H)	EXIT NODE	GREEN START 1ST	TIMES START 2ND
						UNIFORM	RANDOM+	COST OF DELAY	MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	MEAN MAX. (PCU)	AVERAGE EXCESS (PCU)				
						(U+R+0=MEAN Q) (PCU-H/H)	OVERSAT+ Q (%)	(\$/H)								
10	468	2065	82	16.7	30.9	1.8 +	2.2	(57.0)*	125	(15.1)	7		34.2	1	29	39
11	480	2205	79	16.7	27.3	1.8 +	1.8	(51.6)*	117	(14.5)	7		31.0	1	29	39
12	566	2050S	72	4.6	6.4	0.1 +	0.9	(14.3)*	17	(2.5)	4	(0.0)*	73.9	1	4	24
13	158	2100S	17	4.6	2.4	0.0 +	0.1	(1.5)*	7	(0.3)	0	(0.0)*	7.8	1	4	24
14	18	12L	72	4.6	20.7	0.1 +	0.0	(1.5)	114	(0.5)	4		2.0	1	4	24
15	193	12L	72	4.6	14.2	0.4 +	0.3	(10.8)	107	(5.3)	4		16.1	1	4	24
16	28	13L	17	4.6	8.3	0.0 +	0.0	(0.9)	84	(0.6)	0		1.5	1	4	24
20	373	2040	81	16.7	34.7	1.5 +	2.1	(51.0)*	132	(12.7)	6		30.6	2	6	14
21	372	2180	76	16.7	29.3	1.5 +	1.5	(43.0)*	121	(11.6)	5		25.8	2	6	14
22	463	2050S	55	2.6	3.8	0.1 +	0.4	(6.9)*	11	(1.3)	2	(0.2)*	44.2	2	19	1
23	480	2100	40	2.6	2.9	0.1 +	0.3	(5.5)*	11	(1.4)	3	(0.1)*	32.7	2	19	1
24	28	22L	55	2.6	15.5	0.1 +	0.0	(1.7)	107	(0.8)	2	+	2.5	2	19	1
25	158	22L	55	2.6	6.0	0.1 +	0.1	(3.8)	60	(2.4)	2	+	6.2	2	19	1
30	91	1169	16	16.7	5.5	0.0 +	0.1	(2.0)	49	(1.2)	0		3.1			
31	720	6000S	29	4.2	0.4	0.0 +	0.1	(1.2)	1	(0.2)	0		1.4			
32	929	31L	29	4.2	0.4	0.0 +	0.1	(1.6)	1	(0.3)	0		1.8			
33	10	31L	29	4.2	0.4	0.0 +	0.0	(0.0)	1	(0.0)	0		0.0			
34	108	31L	29	4.2	0.4	0.0 +	0.0	(0.2)	1	(0.0)	0		0.2			
40	641	2090	88	16.7	30.7	2.2 +	3.3	(77.7)*	127	(21.0)	10		46.6	4	24	37
41	220	2230	28	16.7	12.6	0.6 +	0.2	(10.9)*	73	(4.2)	2		6.6	4	24	37
42	58	2050S	54	2.1	11.5	0.1 +	0.1	(2.6)*	63	(0.9)	4	(0.1)*	20.8	4	2	19
43	18	2100S	61	2.1	12.1	0.0 +	0.0	(0.9)*	62	(0.3)	3	(0.1)*	10.1	4	2	19
44	240	42L	54	2.1	7.3	0.2 +	0.3	(6.9)	73	(4.5)	4	+	11.4	4	2	19
45	204	42L	54	2.1	6.4	0.1 +	0.2	(5.1)	20	(1.1)	4	+	6.2	4	2	19
46	240	43L	61	2.1	7.7	0.2 +	0.3	(7.3)	71	(4.4)	3	+	11.7	4	2	19
47	322	43L	61	2.1	7.0	0.2 +	0.4	(8.9)	22	(1.8)	3	+	10.7	4	2	19
50	1159	3697F	90	16.7	24.1	3.7 +	4.0	(110.3)*	110	(33.0)	15		66.2	5	6	19
51	556	2050S	64	2.7	5.5	0.0 +	0.8	(12.1)*	14	(1.9)	1	(0.1)*	65.7	5	24	1
52	220	2100S	25	2.7	2.6	0.0 +	0.2	(2.3)*	7	(0.4)	0	(0.0)*	11.7	5	24	1
53	18	52L	25	2.7	17.4	0.1 +	0.0	(1.2)	102	(0.5)	0		1.7	5	24	1
54	21	51L	64	2.7	20.2	0.1 +	0.0	(1.7)	108	(0.6)	1	+	2.3	5	24	1
55	16	51L	64	2.7	12.9	0.0 +	0.0	(0.8)	102	(0.4)	1	+	1.2	5	24	1

ROUTE

NO. OF ENTRIES TO SUBPT = 10
NO. OF LINKS RECALCULATED= 313

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===== end of file =====
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T R A N S Y T 12

Traffic Network Study Tool

Analysis Program Release 7 (July 2010)
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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited	Tel:	+44 (0) 1344 770758
Crowthorne House	Fax:	+44 (0) 1344 770864
Nine Mile Ride	Email:	softwarebureau@trl.co.uk
Wokingham, Berks.	Web:	www.trlsoftware.co.uk
RG40 3GA, UK		

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "2026 AM+DEV+SP.DAT" at 17:37 on 20160112

TRANSYT 12.0

Gibbet Hill Rbout 2026 AM Peak + Development + Symmetry Park Dec 15 HE Amends

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	4
NUMBER OF LINKS	=	32
NUMBER OF OPTIMISED NODES	=	4
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	45
MAXIMUM NUMBER OF SHARED STOPLINES	=	4
MAXIMUM NUMBER OF TIMING POINTS	=	2
MAXIMUM LINKS AT ANY NODE	=	11

CORE REQUESTED = 8366 WORDS
CORE AVAILABLE = 72000 WORDS

71)= 32 42 66 0 30 66 43 0 0 0 0 0 0 0 0 0 0

72)=	32	43	34	0	30	34	43	0	0	0	0	0	0	0	0	0
73)=	32	44	315	0	32	315	43	0	0	0	0	0	0	0	0	0
74)=	32	45	209	0	31	209	43	0	0	0	0	0	0	0	0	0
75)=	32	46	316	0	32	316	43	0	0	0	0	0	0	0	0	0
76)=	32	47	316	0	31	316	43	0	0	0	0	0	0	0	0	0
77)=	32	50	1219	0	0	0	43	0	0	0	0	0	0	0	0	0
78)=	32	51	446	0	40	446	43	0	0	0	0	0	0	0	0	0
79)=	32	52	173	0	41	173	43	0	0	0	0	0	0	0	0	0
80)=	32	53	34	0	43	34	43	0	0	0	0	0	0	0	0	0
81)=	32	54	20	0	42	20	43	0	0	0	0	0	0	0	0	0
82)=	32	55	10	0	47	10	43	0	0	0	0	0	0	0	0	0

LINK CARDS : FLARE SATURATION FLOW DATA																
			..LANE 1..			..LANE 2..			..LANE 3..							
CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	LINK	LIMIT	QUEUE	LINK	LIMIT
NO.	TYPE	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	WEIGHT	NO.	WEIGHT
83)=	33	50	2155	6	0	0	0	0	0	0	0	0	0	0	0	0
LINK DATA: QUEUE CONSTRAINTS																
CARD	CARD	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE
NO.	TYPE	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT
84)=	38	12	5	4500	13	5	4500	22	1	4500	23	1	4500	42	2	4500
85)=	38	43	2	4500	51	1	4500	52	1	4500	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

45 SECOND CYCLE 45 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	2	0	21								
2	2	0	16								
4	2	0	21								
5	2	0	27								

LINK	FLOW	SAT	DEGREE	MEAN	TIMES	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN	TIMES
NUMBER	INTO	FLOW	OF	PER	PCU	UNIFORM	RANDOM+	COST	MEAN	COST	MAX.	AVERAGE	INDEX.	NODE	START	END
	LINK	(PCU/H)	(PCU/H)	(%)	(SEC)	(U+R+0=MEAN	OVERSAT	OF	/PCU	OF	(PCU)	EXCESS	OF () VALUES		1ST	2ND
					DELAY	(PCU-H/H)	(%)	(\$/H)	(%)	STOPS	(\$/H)	(PCU)	(\$/H)		(SECONDS)	
10	575	2065	74	16.7	20.7	1.9 +	1.4	(47.0)*	98	(14.5)	7		28.2	1	5	21
11	631	2205	76	16.7	21.0	2.1 +	1.5	(52.2)*	99	(16.1)	8		31.3	1	5	21
12	514	2050S	75	4.6	21.5	2.0 +	1.1	(43.6)*	115	(15.2)	8	(1.1)*	281.6	1	26	0
13	141	2100S	20	4.6	11.9	0.4 +	0.1	(6.6)*	88	(3.2)	2	(0.0)*	36.4	1	26	0
14	34	12L	75	4.6	13.0	0.1 +	0.1	(1.7)	46	(0.4)	8	+	2.2	1	26	0
15	131	12L	75	4.6	11.0	0.1 +	0.3	(5.7)	35	(1.2)	8	+	6.9	1	26	0
16	42	13L	20	4.6	5.6	0.0 +	0.0	(0.9)	19	(0.2)	2		1.1	1	26	0
20	360	2040	66	16.7	24.4	1.5 +	1.0	(34.6)*	103	(9.6)	5		20.8	2	5	16
21	360	2180	62	16.7	22.6	1.5 +	0.8	(32.1)*	99	(9.2)	5		19.2	2	5	16
22	565	2050S	66	2.6	17.7	2.1 +	0.7	(39.5)*	110	(16.0)	10	(3.8)*	384.6	2	21	0
23	631	2100	54	2.6	16.7	2.3 +	0.6	(41.6)*	107	(17.4)	8	(3.3)*	372.8	2	21	0
24	42	22L	66	2.6	10.3	0.1 +	0.1	(1.7)	48	(0.5)	10	+	2.2	2	21	0
25	141	22L	66	2.6	9.3	0.2 +	0.2	(5.2)	92	(3.4)	10	+	8.5	2	21	0
30	117	1169	23	16.7	7.8	0.1 +	0.1	(3.6)	63	(1.9)	1		5.5			
31	687	6000S	33	4.2	0.4	0.0 +	0.1	(1.2)	1	(0.2)	0		1.4			
32	1180	31L	33	4.2	0.4	0.0 +	0.1	(2.1)	1	(0.3)	0		2.4			
33	13	31L	33	4.2	0.4	0.0 +	0.0	(0.0)	1	(0.0)	0		0.0			
34	111	31L	33	4.2	0.4	0.0 +	0.0	(0.2)	1	(0.0)	0		0.2			
40	565	2090	72	16.7	19.9	1.9 +	1.2	(44.3)*	95	(13.9)	7		26.6	4	5	21
41	173	2230	21	16.7	12.2	0.5 +	0.1	(8.3)*	68	(3.0)	2		5.0	4	5	21
42	66	2050S	65	2.1	14.0	0.2 +	0.1	(3.6)*	71	(1.2)	6	(1.0)*	63.9	4	26	0
43	34	2100S	71	2.1	15.7	0.1 +	0.1	(2.1)*	74	(0.6)	9	(2.0)*	103.0	4	26	0
44	314	42L	65	2.1	6.8	0.1 +	0.5	(8.4)	45	(3.6)	6	+	12.0	4	26	0
45	209	42L	65	2.1	18.4	0.7 +	0.3	(15.2)	111	(6.0)	6	+	21.2	4	26	0
46	316	43L	71	2.1	9.2	0.2 +	0.6	(11.4)	70	(5.7)	9	+	17.1	4	26	0
47	316	43L	71	2.1	20.4	1.2 +	0.6	(25.5)	114	(9.3)	9	+	34.8	4	26	0
50	1219	3094f	77	16.7	12.4	2.5 +	1.7	(59.7)*	72	(22.6)	12		35.8	5	5	27
51	446	2050S	75	2.7	33.8	2.8 +	1.4	(59.5)*	123	(14.1)	7	(4.1)*	494.0	5	32	0
52	173	2100S	32	2.7	26.3	1.1 +	0.2	(18.0)*	109	(4.8)	3	(0.8)*	129.6	5	32	0
53	34	52L	32	2.7	11.4	0.1 +	0.0	(1.5)	166	(0.6)	3	+	2.1	5	32	0
54	20	51L	75	2.7	22.6	0.1 +	0.1	(1.8)	100	(0.5)	7	+	2.3	5	32	0
55	10	51L	75	2.7	21.2	0.0 +	0.0	(0.8)	122	(0.3)	7	+	1.2	5	32	0

*** f - average saturation flow for flared link ***

TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	DELAY	(\$/H)	STOPS	QUEUES	(\$/H)
1043.1	65.1	16.0	25.8	15.1	(1326.8) + (	106.8)	+ (720.3)	= 2153.9
TOTALS								

CRUISE				DELAY		STOPS		TOTALS
LITRES PER HOUR				LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS				55.9	+	47.0	+	89.1
								= 192.0

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 56

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6
- (SECONDS)

1	2	18	39
2	2	0	16
4	2	24	0
5	2	0	27

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1043.1	57.3	18.2	17.9	15.1	(709.7) + (	59.1)	+ (254.6)	=	1023.4 TOTALS

NO. OF ENTRIES TO SUBPT = 14
NO. OF LINKS RECALCULATED= 336

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18
- (SECONDS)

1	2	18	39
2	2	0	16
4	2	24	0
5	2	0	27

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1043.1	57.3	18.2	17.9	15.1	(709.7) + (	59.1)	+ (254.6)	=	1023.4 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 253

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1
- (SECONDS)

1	2	20	40
2	2	2	16
4	2	26	43
5	2	2	25

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1043.1	64.4	16.2	18.7	21.5	(648.1) + (	44.9)	+ (104.6)	=	797.6 TOTALS

NO. OF ENTRIES TO SUBPT = 28
NO. OF LINKS RECALCULATED= 629

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6
- (SECONDS)

1	2	26	1
2	2	2	16
4	2	26	43
5	2	2	25

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1043.1	63.0	16.6	17.3	21.5	(592.3) + (	40.3)	+ (72.2)	=	704.7 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 258

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18
- (SECONDS)

1	2	26	1
2	2	2	16
4	2	26	43
5	2	2	25

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1043.1	63.0	16.6	17.3	21.5	(592.3)	+ (40.3)	+ (72.2)	=	704.7 TOTALS

NO. OF ENTRIES TO SUBPT = 10
NO. OF LINKS RECALCULATED= 308

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1
- (SECONDS)

1	2	26	1
2	2	4	18
4	2	23	40
5	2	44	22

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1043.1	62.6	16.7	16.9	21.5	(563.4)	+ (37.4)	+ (60.9)	=	661.7 TOTALS

NO. OF ENTRIES TO SUBPT = 16
NO. OF LINKS RECALCULATED= 428

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1 -1
- (SECONDS)

1	2	27	1
2	2	4	18
4	2	22	40
5	2	44	22

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1043.1	61.8	16.9	17.1	20.4	(549.9)	+ (36.9)	+ (60.8)	=	647.5 TOTALS

NO. OF ENTRIES TO SUBPT = 18
NO. OF LINKS RECALCULATED= 498

```
FINAL SETTINGS OBTAINED WITH INCREMENTS :-      6  18  -1   6  18   1  -1   1
- (SECONDS)
```

L.NK NUMBER	FLOW INTO LINK	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN PER CRUISE DELAY (SEC)	TIMES PCU DELAY (SEC)	-----DELAY-----			-----STOPS-----		----QUEUE----		PERFORMANCE INDEX. SUM OF () VALUES (\$/H)	EXIT NODE	GREEN START 1ST (SECONDS)	TIMES START 2ND (SECONDS)
						UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE				
						(U+R+O=MEAN PCU+H/H)	OVERSAT Q)	OF DELAY (\$/H)	STOPS /PCU (\$/H)	OF STOPS (\$/H)	MAX. (PCU)	EXCESS (PCU)				
10	575	2065	84	16.7	29.1	2.2 +	2.4	(66.0)*	117	(17.3)	9		39.6	1	32	1
11	631	2205	86	16.7	30.4	2.5 +	2.9	(75.7)*	119	(19.4)	10		45.4	1	32	1
12	514	2050S	68	4.6	6.3	0.1 +	0.8	(12.7)*	17	(2.2)	4	(0.0)*	65.8	1	6	27
13	141	2100S	18	4.6	2.8	0.0 +	0.1	(1.6)*	8	(0.3)	1	(0.0)*	8.2	1	6	27
14	34	12L	68	4.6	23.4	0.2 +	0.1	(3.1)	112	(1.0)	4		4.1	1	6	27
15	131	12L	68	4.6	17.8	0.4 +	0.2	(9.2)	110	(3.7)	4		12.9	1	6	27
16	42	13L	18	4.6	12.4	0.1 +	0.0	(2.1)	99	(1.1)	1		3.1	1	6	27
20	360	2040	79	16.7	35.1	1.7 +	1.9	(49.8)*	126	(11.7)	6		29.9	2	8	17
21	360	2180	74	16.7	30.5	1.6 +	1.4	(43.2)*	116	(10.7)	6		25.9	2	8	17
22	565	2050S	61	2.6	4.0	0.0 +	0.6	(9.0)*	10	(1.4)	3	(0.4)*	64.6	2	22	3
23	631	2100	50	2.6	3.3	0.1 +	0.5	(8.2)*	15	(2.4)	5	(0.4)*	61.6	2	22	3
24	42	22L	61	2.6	17.2	0.2 +	0.0	(2.9)	108	(1.2)	3	+	4.0	2	22	3
25	141	22L	61	2.6	9.3	0.2 +	0.1	(5.2)	82	(3.0)	3	+	8.2	2	22	3
30	117	1169	24	16.7	7.5	0.1 +	0.2	(3.4)	60	(1.8)	1		5.3			
31	687	6000S	33	4.2	0.4	0.0 +	0.1	(1.2)	1	(0.2)	0		1.4			
32	1180	31L	33	4.2	0.4	0.0 +	0.1	(2.1)	1	(0.3)	0		2.4			
33	13	31L	33	4.2	0.4	0.0 +	0.0	(0.0)	1	(0.0)	0		0.0			
34	111	31L	33	4.2	0.4	0.0 +	0.0	(0.2)	1	(0.0)	0		0.2			
40	565	2090	87	16.7	34.3	2.3 +	3.1	(76.5)*	127	(18.5)	10		45.9	4	27	40
41	173	2230	25	16.7	15.1	0.6 +	0.2	(10.3)*	77	(3.4)	2		6.2	4	27	40
42	66	2050S	56	2.1	10.4	0.1 +	0.1	(2.7)*	53	(0.9)	4	(0.2)*	23.6	4	0	22
43	34	2100S	62	2.1	10.8	0.1 +	0.0	(1.4)*	54	(0.5)	4	(0.2)*	15.5	4	0	22
44	314	42L	56	2.1	6.2	0.2 +	0.3	(7.7)	58	(4.7)	4	+	12.4	4	0	22
45	209	42L	56	2.1	5.6	0.1 +	0.2	(4.6)	16	(0.9)	4	+	5.5	4	0	22
46	316	43L	62	2.1	6.6	0.2 +	0.4	(8.2)	56	(4.6)	4	+	12.8	4	0	22
47	316	43L	62	2.1	6.1	0.1 +	0.4	(7.5)	18	(1.4)	4	+	9.0	4	0	22
50	1219	3291f	88	16.7	20.6	3.5 +	3.4	(99.1)*	95	(29.8)	16		59.4	5	5	23
51	446	2050S	58	2.7	5.3	0.0 +	0.6	(9.3)*	11	(1.3)	1	(0.0)*	47.9	5	28	0
52	173	2100S	25	2.7	2.9	0.0 +	0.1	(2.0)*	6	(0.3)	1	(0.0)*	10.1	5	28	0
53	34	52L	25	2.7	20.9	0.2 +	0.0	(2.8)	103	(0.9)	1		3.7	5	28	0
54	20	51L	58	2.7	23.3	0.1 +	0.0	(1.8)	108	(0.6)	1		2.4	5	28	0
55	10	51L	58	2.7	14.4	0.0 +	0.0	(0.6)	105	(0.3)	1		0.8	5	28	0

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
1043.1	61.6	16.9	16.9	20.4	(549.3) + (	34.9)	+ (53.6)	= 637.8
TOTALS								

NO. OF ENTRIES TO SUBPT = 10
NO. OF LINKS RECALCULATED= 309

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===== end of file =====
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T R A N S Y T 12

Traffic Network Study Tool

Analysis Program Release 7 (July 2010)
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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited	Tel:	+44 (0) 1344 770758
Crowthorne House	Fax:	+44 (0) 1344 770864
Nine Mile Ride	Email:	softwarebureau@trl.co.uk
Wokingham, Berks.	Web:	www.trlsoftware.co.uk
RG40 3GA, UK		

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "2026 PM+DEV+SP.DAT" at 17:41 on 20160112

TRANSYT 12.0

Gibbet Hill Rbout 2026 PM Peak + Developemnt + Symmetry Park Dec 15 HE Amends

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	4
NUMBER OF LINKS	=	32
NUMBER OF OPTIMISED NODES	=	4
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	40
MAXIMUM NUMBER OF SHARED STOPLINES	=	4
MAXIMUM NUMBER OF TIMING POINTS	=	2
MAXIMUM LINKS AT ANY NODE	=	11

CORE REQUESTED = 8146 WORDS
CORE AVAILABLE = 72000 WORDS

71)= 32 42 58 0 30 58 43 0 0 0 0 0 0 0 0 0 0

72)=	32	43	18	0	30	18	43	0	0	0	0	0	0	0	0	0
73)=	32	44	275	0	32	275	43	0	0	0	0	0	0	0	0	0
74)=	32	45	204	0	31	204	43	0	0	0	0	0	0	0	0	0
75)=	32	46	276	0	32	276	43	0	0	0	0	0	0	0	0	0
76)=	32	47	322	0	31	322	43	0	0	0	0	0	0	0	0	0
77)=	32	50	1185	0	0	0	43	0	0	0	0	0	0	0	0	0
78)=	32	51	560	0	40	560	43	0	0	0	0	0	0	0	0	0
79)=	32	52	220	0	41	220	43	0	0	0	0	0	0	0	0	0
80)=	32	53	18	0	43	18	43	0	0	0	0	0	0	0	0	0
81)=	32	54	21	0	42	21	43	0	0	0	0	0	0	0	0	0
82)=	32	55	16	0	47	16	43	0	0	0	0	0	0	0	0	0

LINK CARDS : FLARE SATURATION FLOW DATA								
..LANE 1..			..LANE 2..			..LANE 3..		
CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	
TYPE	NO.	FLOW	VEH.	FLOW	VEH.	FLOW	VEH.	
83)=	33	50	2155	6	0	0	0	
LINK DATA: QUEUE CONSTRAINTS								
CARD	CARD	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK
NO.	TYPE	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT	NO.
84)=	38	12	5	4500	13	5	4500	22
85)=	38	43	2	4500	51	1	4500	52

*****END OF SUBROUTINE TINPUT*****

40 SECOND CYCLE 40 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	2	0	17								
2	2	0	16								
4	2	0	20								
5	2	0	21								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE	TIMES PCU DELAY (SEC)	-----DELAY-----				----STOPS----		----QUEUE----		PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES	
						UNIFORM	RANDOM+	COST	OF	MEAN	COST	MEAN	AVERAGE			START	END
	(PCU/H)	(PCU/H)	(%)			(U+R+0=	MEAN Q)	OF	OF	STOPS	OF	STOPS	MAX.	EXCESS		1ST	2ND
						(PCU-H/H)		(\$/H)	(%)	(\$/H)			(PCU)	(PCU)			(SECONDS)
10	478	2065	71	16.7	21.1	1.6	+	1.2	(39.7)*	102	(12.6)		6		23.8	1	5 17
11	551	2205	77	16.7	22.8	1.9	+	1.6	(49.6)*	107	(15.2)		7		29.7	1	5 17
12	566	2050S	80	4.6	20.5	1.8	+	1.4	(45.7)*	120	(17.5)		9	(1.3)*	306.2	1	22 0
13	156	2100S	18	4.6	9.4	0.3	+	0.1	(5.8)*	89	(3.6)		2	(0.0)*	32.5	1	22 0
14	18	12L	80	4.6	12.2	0.0	+	0.0	(0.9)	49	(0.2)		9	+	1.1	1	22 0
15	191	12L	80	4.6	11.9	0.2	+	0.5	(9.0)	48	(2.4)		9	+	11.4	1	22 0
16	28	13L	18	4.6	4.8	0.0	+	0.0	(0.5)	18	(0.1)		2		0.7	1	22 0
20	373	2040	61	16.7	19.5	1.2	+	0.8	(28.7)*	97	(9.3)		4		17.2	2	5 16
21	372	2180	57	16.7	18.2	1.2	+	0.7	(26.7)*	93	(8.9)		4		16.0	2	5 16
22	473	2050S	64	2.6	18.1	1.7	+	0.6	(33.7)*	112	(13.6)		8	(3.0)*	319.5	2	21 0
23	551	2100	52	2.6	17.0	2.1	+	0.6	(37.0)*	109	(15.4)		7	(2.6)*	316.7	2	21 0
24	28	22L	64	2.6	10.3	0.0	+	0.0	(1.1)	49	(0.4)		8	+	1.5	2	21 0
25	156	22L	64	2.6	10.5	0.2	+	0.2	(6.4)	99	(4.0)		8	+	10.4	2	21 0
30	91	1169	17	16.7	6.1	0.1	+	0.1	(2.2)	55	(1.3)		0		3.5		
31	720	6000S	31	4.2	0.4	0.0	+	0.1	(1.2)	1	(0.2)		0		1.4		
32	1010	31L	31	4.2	0.4	0.0	+	0.1	(1.7)	1	(0.3)		0		2.0		
33	10	31L	31	4.2	0.4	0.0	+	0.0	(0.0)	1	(0.0)		0		0.0		
34	107	31L	31	4.2	0.4	0.0	+	0.0	(0.2)	1	(0.0)		0		0.2		
40	645	2090	77	16.7	19.7	1.9	+	1.7	(50.1)*	100	(16.7)		8		30.0	4	5 20
41	220	2230	25	16.7	10.7	0.5	+	0.2	(9.3)*	67	(3.8)		2		5.6	4	5 20
42	58	2050S	66	2.1	15.3	0.1	+	0.1	(3.5)*	81	(1.2)		5	(0.7)*	50.6	4	25 0
43	18	2100S	73	2.1	17.6	0.0	+	0.0	(1.2)*	87	(0.4)		7	(1.7)*	83.5	4	25 0
44	275	42L	66	2.1	7.2	0.1	+	0.5	(7.8)	37	(2.6)		5	+	10.3	4	25 0
45	204	42L	66	2.1	18.1	0.7	+	0.4	(14.6)	114	(6.0)		5	+	20.6	4	25 0
46	277	43L	73	2.1	9.8	0.1	+	0.6	(10.7)	64	(4.5)		7	+	15.2	4	25 0
47	322	43L	73	2.1	20.6	1.1	+	0.7	(26.2)	119	(9.8)		7	+	36.0	4	25 0
50	1185	3425f	81	16.7	15.7	3.0	+	2.2	(73.2)*	87	(26.6)		12		43.9	5	5 21
51	560	2050S	78	2.7	27.7	2.7	+	1.6	(61.2)*	124	(17.9)		8	(4.4)*	522.9	5	26 0
52	220	2100S	30	2.7	19.7	1.0	+	0.2	(17.1)*	108	(6.1)		3	(0.7)*	124.4	5	26 0
53	18	52L	30	2.7	9.2	0.0	+	0.0	(0.7)	48	(0.2)		3	+	0.9	5	26 0
54	21	51L	78	2.7	20.5	0.1	+	0.1	(1.7)	109	(0.6)		8	+	2.3	5	26 0
55	16	51L	78	2.7	17.0	0.0	+	0.0	(1.1)	114	(0.5)		8	+	1.5	5	26 0

*** f - average saturation flow for flared link ***

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX								
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)								
1021.2	63.8	16.0	23.7	16.3	(1278.5)	+	(109.0)	+	(654.2)	=	2041.6	TOTALS				

CRUISE				DELAY		STOPS		TOTALS	
LITRES PER HOUR				LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR	
FUEL CONSUMPTION PREDICTIONS				54.8	+	46.0	+	92.1	= 192.9

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 54

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6
- (SECONDS)

1	2	18	35
2	2	0	16
4	2	18	38
5	2	0	21

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1021.2	55.9	18.3	15.8	16.3	(686.1)	+ (57.8)	+ (190.8)	=	934.7 TOTALS

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 312

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16
- (SECONDS)

1	2	18	35
2	2	0	16
4	2	18	38
5	2	0	21

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1021.2	55.9	18.3	15.8	16.3	(686.1)	+ (57.8)	+ (190.8)	=	934.7 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 234

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1
- (SECONDS)

1	2	20	36
2	2	0	13
4	2	20	38
5	2	2	20

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1021.2	62.2	16.4	16.4	22.0	(616.7)	+ (42.3)	+ (57.8)	=	716.8 TOTALS

NO. OF ENTRIES TO SUBPT = 26
NO. OF LINKS RECALCULATED= 587

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1 6
- (SECONDS)

1	2	20	36
2	2	0	13
4	2	20	38
5	2	2	20

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1021.2	62.2	16.4	16.4	22.0	(616.7)	+ (42.3)	+ (57.8)	=	716.8 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 271

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1 6 16
- (SECONDS)

1	2	20	36
2	2	0	13
4	2	20	38
5	2	2	20

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1021.2	62.2	16.4	16.4	22.0	(616.7) + (	42.3)	+ (57.8)	=	716.8 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 274

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1 6 16 1
- (SECONDS)

1	2	23	39
2	2	1	14
4	2	19	37
5	2	0	18

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1021.2	61.4	16.6	15.6	22.0	(570.8) + (	38.2)	+ (45.9)	=	654.8 TOTALS

NO. OF ENTRIES TO SUBPT = 14
NO. OF LINKS RECALCULATED= 405

40 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 16 -1 6 16 1 -1
- (SECONDS)

1	2	23	39
2	2	1	14
4	2	19	37
5	2	0	18

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1021.2	61.4	16.6	15.6	22.0	(570.8) + (	38.2)	+ (45.9)	=	654.8 TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 471

40 SECOND CYCLE 40 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :- 6 16 -1 6 16 1 -1 1
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	2	23	39								
2	2	1	14								
4	2	19	37								
5	2	0	18								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE	TIMES PCU	-----DELAY----- UNIFORM (U+R+O=MEAN Q)	RANDOM+ OVERSAT DELAY	COST OF DELAY (\$/H)	----STOPS---- MEAN STOPS /PCU	COST OF STOPS (\$/H)	----QUEUE---- MEAN MAX.	AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN START 1ST	TIMES START 2ND
(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)		(PCU-H/H)			(%)		(PCU)	(PCU)			(SECONDS)	
10	478	2065	77	16.7	25.2	1.7 + 1.7	(47.5)*	113	(13.9)		6		28.5	1	28	39
11	551	2205	83	16.7	28.7	2.0 + 2.4	(62.3)*	122	(17.3)		8		37.4	1	28	39
12	566	2050S	76	4.6	7.6	0.1 + 1.1	(17.0)*	20	(2.9)		4	(0.0)*	88.1	1	4	23
13	156	2100S	18	4.6	2.6	0.0 + 0.1	(1.6)*	8	(0.3)		0	(0.0)*	8.2	1	4	23
14	18	12L	76	4.6	22.8	0.1 + 0.0	(1.6)	117	(0.5)		4		2.2	1	4	23
15	191	12L	76	4.6	15.5	0.4 + 0.4	(11.7)	109	(5.4)		4		17.1	1	4	23
16	28	13L	18	4.6	8.5	0.1 + 0.0	(0.9)	85	(0.6)		0		1.6	1	4	23
20	373	2040	81	16.7	34.7	1.5 + 2.1	(51.0)*	132	(12.7)		6		30.6	2	6	14
21	372	2180	76	16.7	29.3	1.5 + 1.5	(43.0)*	121	(11.6)		5		25.8	2	6	14
22	473	2050S	56	2.6	3.8	0.0 + 0.5	(7.0)*	10	(1.3)		2	(0.2)*	46.1	2	19	1
23	551	2100	46	2.6	3.2	0.1 + 0.4	(6.9)*	13	(1.8)		3	(0.2)*	43.4	2	19	1
24	28	22L	56	2.6	15.6	0.1 + 0.0	(1.7)	108	(0.8)		2	+	2.5	2	19	1
25	156	22L	56	2.6	6.8	0.1 + 0.1	(4.2)	69	(2.8)		2	+	7.0	2	19	1
30	91	1169	17	16.7	5.9	0.0 + 0.1	(2.1)	53	(1.2)		0		3.4			
31	720	6000S	31	4.2	0.4	0.0 + 0.1	(1.2)	1	(0.2)		0		1.4			
32	1010	31L	31	4.2	0.4	0.0 + 0.1	(1.7)	1	(0.3)		0		2.0			
33	10	31L	31	4.2	0.4	0.0 + 0.0	(0.0)	1	(0.0)		0		0.0			
34	107	31L	31	4.2	0.4	0.0 + 0.0	(0.2)	1	(0.0)		0		0.2			
40	645	2090	88	16.7	31.5	2.2 + 3.5	(80.1)*	129	(21.4)		10		48.1	4	24	37
41	220	2230	28	16.7	12.6	0.6 + 0.2	(10.9)*	73	(4.2)		2		6.6	4	24	37
42	58	2050S	58	2.1	11.9	0.1 + 0.1	(2.7)*	68	(1.0)		4	(0.3)*	27.7	4	2	19
43	18	2100S	65	2.1	12.6	0.0 + 0.0	(0.9)*	66	(0.3)		4	(0.3)*	16.8	4	2	19
44	275	42L	58	2.1	8.5	0.3 + 0.4	(9.2)	83	(5.9)		4	+	15.1	4	2	19
45	204	42L	58	2.1	6.8	0.1 + 0.3	(5.4)	21	(1.1)		4	+	6.6	4	2	19
46	277	43L	65	2.1	9.1	0.3 + 0.4	(9.9)	82	(5.9)		4	+	15.7	4	2	19
47	322	43L	65	2.1	7.6	0.2 + 0.5	(9.6)	23	(1.9)		4	+	11.5	4	2	19
50	1185	3697f	92	16.7	26.8	3.8 + 5.0	(125.1)*	116	(35.4)		16		75.0	5	5	18
51	560	2050S	65	2.7	5.7	0.0 + 0.9	(12.6)*	14	(2.1)		1	(0.1)*	69.2	5	23	0
52	220	2100S	25	2.7	2.7	0.0 + 0.2	(2.3)*	7	(0.4)		0	(0.0)*	12.1	5	23	0
53	18	52L	25	2.7	16.2	0.1 + 0.0	(1.2)	100	(0.5)		0		1.6	5	23	0
54	21	51L	65	2.7	19.1	0.1 + 0.0	(1.6)	107	(0.6)		1	+	2.2	5	23	0
55	16	51L	65	2.7	12.0	0.0 + 0.0	(0.8)	97	(0.4)		1	+	1.2	5	23	0

*** f - average saturation flow for flared link ***

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
1021.2	61.4	16.6	15.6	22.0	(570.8) + (38.2)	+ (45.9)	=	654.8
TOTALS								

ROUTE

CRUISE		DELAY		STOPS	
LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR	
FUEL CONSUMPTION PREDICTIONS		54.8	+	43.3	+
				70.4	=
				168.4	

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 284

PROGRAM TRANSYT FINISHED

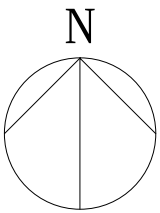
===== end of file =====

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix F – Proposed Junction Improvement at Gibbet Hill Junction

Plot Date: 21/02/16 11:00 AM
Plot Name: SK3



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION.

2. DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.

3. ALL DIMENSIONS IN MILLIMETRES, ALL CHAINAGES, LEVELS AND COORDINATES ARE IN METRES UNLESS DEFINED OTHERWISE.

4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE PROJECT HEALTH & SAFETY FILE FOR ANY IDENTIFIED POTENTIAL RISKS.

Revision Details		By	Date	Suffix
		Check		

Purpose of issue

INFORMATION

Client

IDI Gazeley
Brookfield Logistics Properties™

Project Title

MAGNA PARK EXTENSION
HYBRID APPLICATION

Drawing Title

GIBBET HILL ROUNDABOUT
PROPOSED IMPROVEMENTS

Designed SDW	Drawn ASR	Checked JRA	Approved SCPF	Date 01/02/16
AECOM Internal Project No. 60470988			Suitability	
Scale @ A1 1:500			Zone	

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AECOM Infrastructure & Environment UK Limited
URS House, Home Lane
Bedford
MK40 1TS
Tel: +44 (0)1234 340 641
Fax: +44 (0)1234 216 268
www.aecom.com

Drawing Number

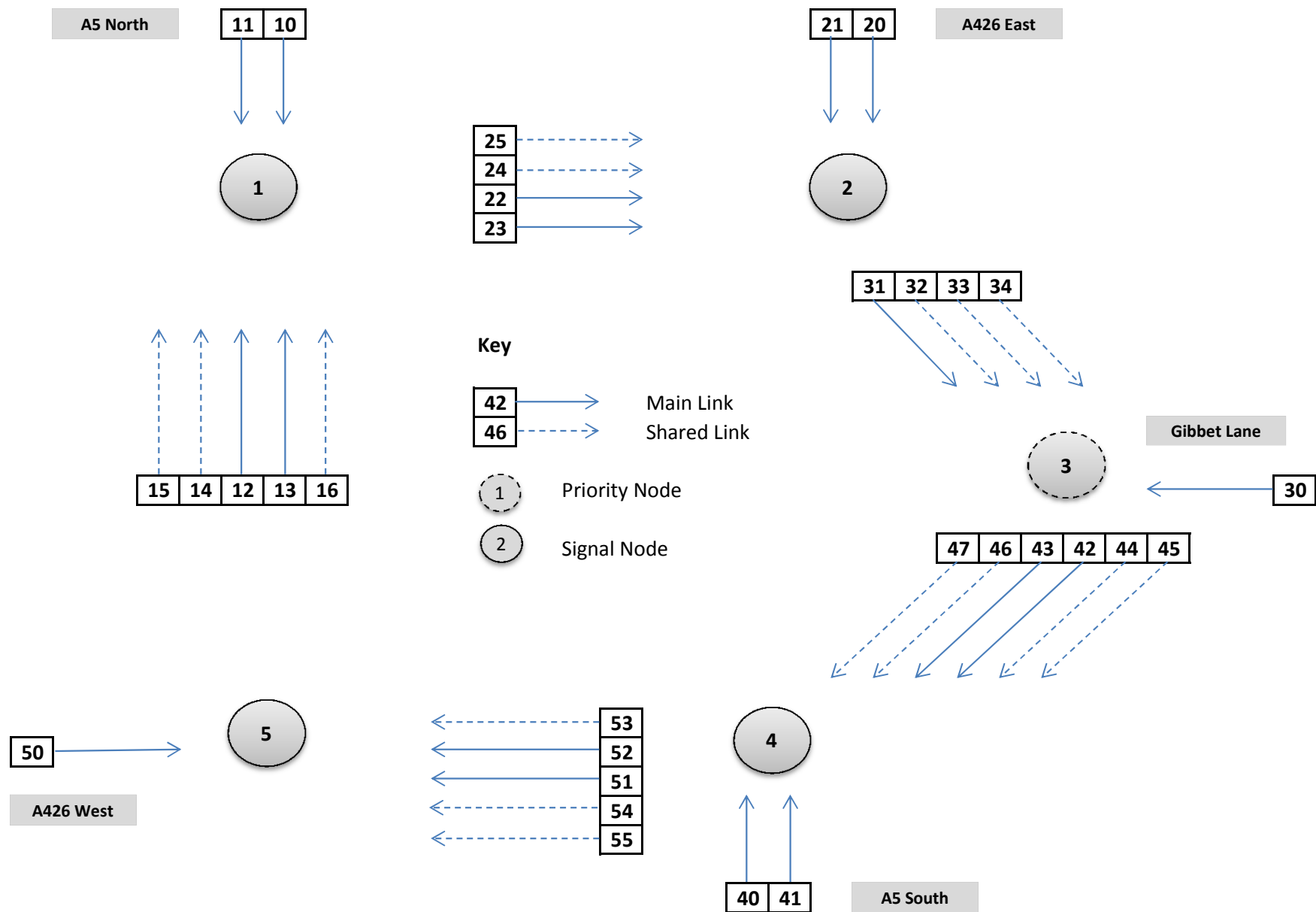
60470988/A001/SK32

Rev

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix G – TRANSYT Link/Node Diagram



Appendix G: Gibbet Hill Junction Improvements - TRANSYT Link/Node Diagram

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix H – Output from Capacity Assessment for LLITM

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New A5 North Rbt\
ES Addendum Oct 2016\LLITM\S4 2026 AM Peak + Dev.vai"
(drive-on-the-left) at 11:42:57 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S4 New A5 North Access- 2026 AM With Development
LOCATION: New A5 North Roundabout
DATE: 01/09/15
CLIENT: IDI Gazeley
ENUMERATOR: JM
JOB NUMBER: 47071103
STATUS: Final Version
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Proposed Access
ARM C - A5 South

GEOMETRIC DATA

T5																			
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	7.30	I	8.00	I	5.00	I	26.00	I	58.00	I	40.0	I	0.668	I	38.386	I
I	ARM	B	I	4.00	I	7.00	I	25.00	I	30.00	I	58.00	I	36.0	I	0.595	I	31.006	I
I	ARM	C	I	7.30	I	7.50	I	5.00	I	18.00	I	58.00	I	47.0	I	0.625	I	35.328	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

															T15
I		I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			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		I		I		I		I		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	18.01	I	27.02	I	18.01	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.01	I	1.52	I	1.01	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	10.16	I	15.24	I	10.16	I

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

					T33
		TURNING PROPORTIONS			
		TURNING COUNTS			
		(PERCENTAGE OF H.V.S)			
TIME	FROM/T	ARM A	ARM B	ARM C	
07.15 - 08.45	ARM A	0.000	0.026	0.974	
		0.0	37.0	1404.0	
		(0.0)	(0.0)	(0.0)	
	ARM B	0.370	0.000	0.630	
		30.0	0.0	51.0	
		(0.0)	(0.0)	(0.0)	
	ARM C	0.898	0.102	0.000	
		730.0	83.0	0.0	
		(0.0)	(0.0)	(0.0)	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	07.15-07.30										I	
I	ARM A	18.08	37.69	0.480	- -	-	0.0	0.9	13.4	-	0.051	I
I	ARM B	1.02	20.55	0.049	- -	-	0.0	0.1	0.8	-	0.051	I
I	ARM C	10.20	35.09	0.291	- -	-	0.0	0.4	6.0	-	0.040	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	07.30-07.45										I
I	ARM A	21.59	37.56	0.575	- -	0.9	1.3	19.6	-	0.062	I
I	ARM B	1.21	18.50	0.066	-	0.1	0.1	1.0	-	0.058	I
I	ARM C	12.18	35.05	0.348	- -	0.4	0.5	7.8	-	0.044	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	07.45-08.00										I
I	ARM A	26.44	37.37	0.708	- -	1.3	2.4	34.0	-	0.090	I
I	ARM B	1.49	15.71	0.095	- -	0.1	0.1	1.5	-	0.070	I
I	ARM C	14.92	34.98	0.426	- -	0.5	0.7	10.9	-	0.050	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.00-08.15										I
I	ARM A	26.44	37.37	0.708	- -	2.4	2.4	35.8	-	0.092	I
I	ARM B	1.49	15.67	0.095	-	0.1	0.1	1.6	-	0.071	I
I	ARM C	14.92	34.98	0.426	- -	0.7	0.7	11.1	-	0.050	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	21.59	37.55	0.575	- -	2.4	1.4	21.1	-	0.063	I
I	ARM B	1.21	18.44	0.066	- -	0.1	0.1	1.1	-	0.058	I
I	ARM C	12.18	35.05	0.348	- -	0.7	0.5	8.2	-	0.044	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	08.30-08.45									
I	ARM A	18.08	37.69	0.480	- -	1.4	0.9	14.2	-	0.051
I	ARM B	1.02	20.50	0.050	- -	0.1	0.1	0.8	-	0.051
I	ARM C	10.20	35.09	0.291	- -	0.5	0.4	6.2	-	0.040

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.3	*
08.00	2.4	**
08.15	2.4	**
08.30	1.4	*
08.45	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.1	
07.45	0.1	
08.00	0.1	
08.15	0.1	
08.30	0.1	
08.45	0.1	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.5	*
08.00	0.7	*
08.15	0.7	*
08.30	0.5	*
08.45	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I	I	I	I	I	* DELAY *	I	* DELAY *	I	
I	I	I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1983.4	I	1322.3	I	138.1	I	0.07
I	B	I	111.5	I	74.3	I	6.8	I	0.06
I	C	I	1119.0	I	746.0	I	50.3	I	0.04
I	ALL	I	3214.0	I	2142.6	I	195.2	I	0.06

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

END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New A5 North Rbt\
ES Addendum Oct 2016\LLITM\S4 2026 PM Peak + Dev.vai"
(drive-on-the-left) at 11:43:32 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S4 New A5 North Access- 2026 PM With Development
LOCATION: New A5 North Roundabout
DATE: 01/09/15
CLIENT: IDI Gazeley
ENUMERATOR: JM
JOB NUMBER: 47071103
STATUS: Final Version
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Proposed Access
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.00	I	5.00	I	26.00	I	58.00	I	40.0	I	0.668	I	38.386	I
I	ARM	B	I	4.00	I	7.00	I	25.00	I	30.00	I	58.00	I	36.0	I	0.595	I	31.006	I
I	ARM	C	I	7.30	I	7.50	I	5.00	I	18.00	I	58.00	I	47.0	I	0.625	I	35.328	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

													T15					
I	ARM	I	NUMBER OF MINUTES FROM START WHEN	I	RATE OF FLOW (VEH/MIN)	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	ARM	A	I	15.00	I	45.00	I	75.00	I	9.09	I	13.63	I	9.09	I			I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.89	I	2.83	I	1.89	I			I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	15.38	I	23.06	I	15.38	I			I

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

T33

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.5 *
17.45	0.5 *
18.00	0.4
18.15	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.8 *
17.15	1.1 *
17.30	1.8 **
17.45	1.8 **
18.00	1.1 *
18.15	0.8 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1000.7	I	667.1	I	37.8	I	0.04
I	B	I	207.8	I	138.6	I	9.4	I	0.05
I	C	I	1693.0	I	1128.7	I	110.8	I	0.07
I	ALL	I	2901.5	I	1934.3	I	158.0	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New A5 North Rbt\
ES Addendum Oct 2016\LLITM\S5 2026 AM Peak + Dev + SP.vai"
(drive-on-the-left) at 11:44:12 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S5 New A5 North Access- 2026 AM With Development + Symmetry Park
LOCATION: New A5 North Roundabout
DATE: 09/01/15
CLIENT: IDI Gazeley
ENUMERATOR: JM
JOB NUMBER: 47071103
STATUS: Final Version
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Proposed Access
ARM C - A5 South

GEOMETRIC DATA

																		T5	
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	7.30	I	8.00	I	5.00	I	26.00	I	58.00	I	40.0	I	0.668	I	38.386	I
I	ARM	B	I	4.00	I	7.00	I	25.00	I	30.00	I	58.00	I	36.0	I	0.595	I	31.006	I
I	ARM	C	I	7.30	I	7.50	I	5.00	I	18.00	I	58.00	I	47.0	I	0.625	I	35.328	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

																	T15
I			NUMBER OF MINUTES FROM START WHEN							RATE OF FLOW (VEH/MIN)					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	ARM	A	I	15.00	I	45.00	I	75.00	I	18.13	I	27.19	I	18.13	I		
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.01	I	1.52	I	1.01	I		
I	ARM	C	I	15.00	I	45.00	I	75.00	I	10.29	I	15.43	I	10.29	I		

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

							T33			
I		I	TURNING PROPORTIONS				I			
I		I	TURNING COUNTS				I			
I		I	(PERCENTAGE OF H.V.S)				I			
I		I					I			
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I
I	07.15 - 08.45	I		I		I		I		I
I		I	ARM A	I	0.000	I	0.025	I	0.975	I
I		I		I	0.0	I	36.0	I	1414.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM B	I	0.370	I	0.000	I	0.630	I
I		I		I	30.0	I	0.0	I	51.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM C	I	0.899	I	0.101	I	0.000	I
I		I		I	740.0	I	83.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL
07.15-07.30											
ARM A		18.19	37.69	0.483	-	0.0	0.9	13.6	-	0.051	
ARM B		1.02	20.48	0.050	-	0.0	0.1	0.8	-	0.051	
ARM C		10.33	35.09	0.294	-	0.0	0.4	6.1	-	0.040	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	07.30-07.45										I
I	ARM A	21.73	37.56	0.578	- -	0.9	1.4	19.9	-	0.063	I
I	ARM B	1.21	18.41	0.066	- -	0.1	0.1	1.0	-	0.058	I
I	ARM C	12.33	35.05	0.352	- -	0.4	0.5	8.0	-	0.044	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00										
ARM A		26.61	37.37	0.712	- -	1.4	2.4	34.7	-	0.092
ARM B		1.49	15.60	0.095	- -	0.1	0.1	1.5	-	0.071
ARM C		15.10	34.98	0.432	- -	0.5	0.8	11.1	-	0.050

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.00-08.15									
	ARM A	26.61	37.37	0.712	- -	2.4	2.4	36.6	-	0.093
	ARM B	1.49	15.56	0.096	- -	0.1	0.1	1.6	-	0.071
	ARM C	15.10	34.98	0.432	- -	0.8	0.8	11.3	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	21.73	37.55	0.579	-	-	2.4	1.4	21.5	0.064
ARM B	1.21	18.35	0.066	-	-	0.1	0.1	1.1	0.058
ARM C	12.33	35.05	0.352	-	-	0.8	0.5	8.3	0.044

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.30-08.45									
	ARM A	18.19	37.69	0.483	-	1.4	0.9	14.4	-	0.051
	ARM B	1.02	20.43	0.050	-	0.1	0.1	0.8	-	0.052
	ARM C	10.33	35.09	0.294	-	0.5	0.4	6.4	-	0.040

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.4	*
08.00	2.4	**
08.15	2.4	**
08.30	1.4	*
08.45	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.1	
07.45	0.1	
08.00	0.1	
08.15	0.1	
08.30	0.1	
08.45	0.1	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.5	*
08.00	0.8	*
08.15	0.8	*
08.30	0.5	*
08.45	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1995.8	I	140.5	I	140.5	I	0.07
I	B	I	111.5	I	6.8	I	6.8	I	0.06
I	C	I	1132.8	I	51.3	I	51.3	I	0.05
I	ALL	I	3240.1	I	198.6	I	198.6	I	0.06

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

END OF JOB
 ===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New A5 North Rbt\
ES Addendum Oct 2016\LLITM\S5 2026 PM Peak + Dev + SP.vai"
(drive-on-the-left) at 11:44:48 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S5 New A5 North Access- 2026 PM With Development + Symmetry Park
LOCATION: New A5 North Roundabout
DATE: 09/01/15
CLIENT: IDI Gazeley
ENUMERATOR: JM
JOB NUMBER: 47071103
STATUS: Final Version
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Proposed Access
ARM C - A5 South

GEOMETRIC DATA

T5																			
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	7.30	I	8.00	I	5.00	I	26.00	I	58.00	I	40.0	I	0.668	I	38.386	I
I	ARM	B	I	4.00	I	7.00	I	25.00	I	30.00	I	58.00	I	36.0	I	0.595	I	31.006	I
I	ARM	C	I	7.30	I	7.50	I	5.00	I	18.00	I	58.00	I	47.0	I	0.625	I	35.328	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

														T15	
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			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	ARM	A	I	15.00	I	45.00	I	75.00	I	9.11	I	13.67	I	9.11	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.88	I	2.81	I	1.88	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	15.77	I	23.66	I	15.77	I

DEMAND SET TITLE: New A5 North Access- S3 2026 Base Plus Proposed Development

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C					
16.45 - 18.15	ARM A	0.000	0.043	0.957					
		0.0	31.0	698.0					
		(0.0)	(0.0)	(0.0)					
	ARM B	0.280	0.000	0.720					
		42.0	0.0	108.0					
		(0.0)	(0.0)	(0.0)					
	ARM C	0.958	0.042	0.000					
		1209.0	53.0	0.0					
		(0.0)	(0.0)	(0.0)					

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	9.15	37.94	0.241	-	0.0	0.3	4.7	-	0.035	
ARM B	1.88	25.80	0.073	-	0.0	0.1	1.2	-	0.042	
ARM C	15.83	35.00	0.452	-	0.0	0.8	12.0	-	0.052	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	10.92	37.86	0.289	-	0.3	0.4	6.0	-	0.037	
ARM B	2.25	24.78	0.091	-	0.1	0.1	1.5	-	0.044	
ARM C	18.91	34.93	0.541	-	0.8	1.2	17.1	-	0.062	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	13.38	37.74	0.354	-	0.4	0.5	8.1	-	0.041	
ARM B	2.75	23.39	0.118	-	0.1	0.1	2.0	-	0.048	
ARM C	23.16	34.85	0.665	-	1.2	1.9	28.1	-	0.085	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	13.38	37.74	0.355	-	0.5	0.5	8.2	-	0.041	
ARM B	2.75	23.38	0.118	-	0.1	0.1	2.0	-	0.048	
ARM C	23.16	34.85	0.665	-	1.9	2.0	29.4	-	0.086	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.45-18.00										
ARM A	10.92	37.85	0.289	-	0.5	0.4	6.2	-	0.037	
ARM B	2.25	24.77	0.091	-	0.1	0.1	1.5	-	0.044	
ARM C	18.91	34.93	0.541	-	2.0	1.2	18.4	-	0.063	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
18.00-18.15										
ARM A	9.15	37.94	0.241	-	0.4	0.3	4.8	-	0.035	
ARM B	1.88	25.79	0.073	-	0.1	0.1	1.2	-	0.042	
ARM C	15.83	35.00	0.452	-	1.2	0.8	12.7	-	0.052	

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.5 *
17.45	0.5 *
18.00	0.4
18.15	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.8 *
17.15	1.2 *
17.30	1.9 **
17.45	2.0 **
18.00	1.2 *
18.15	0.8 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1003.4	I	38.0	I	38.0	I	0.04
I	B	I	206.5	I	9.3	I	9.3	I	0.05
I	C	I	1737.0	I	117.7	I	117.8	I	0.07
I	ALL	I	2946.9	I	165.1	I	165.1	I	0.06

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

END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\LLITM\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 17:26:41 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 New Access Roundabout on Mere Lane AM Peak 2026 No Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

															T5	
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I 0.508	I 23.179
I	ARM	B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I 0.548	I 24.717
I	ARM	C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I 0.563	I 27.052
I	ARM	D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I 0.624	I 30.033

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

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	0.80	I	1.20	I	0.80	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	1.30	I	1.95	I	1.30	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	1.35	I	2.03	I	1.35	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	3.40	I	5.10	I	3.40	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33		
I			TURNING PROPORTIONS						I			
I			TURNING COUNTS						I			
I			(PERCENTAGE OF H.V.S)						I			
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	07.15 - 08.45	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.016	I	0.453	I	0.531	I
I		I		I	0.0	I	1.0	I	29.0	I	34.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.029	I	0.000	I	0.125	I	0.846	I
I		I		I	3.0	I	0.0	I	13.0	I	88.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.639	I	0.028	I	0.000	I	0.333	I
I		I		I	69.0	I	3.0	I	0.0	I	36.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.301	I	0.195	I	0.504	I	0.000	I
I		I		I	82.0	I	53.0	I	137.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	07.15-07.30										I	
I	ARM A	0.80	21.95	0.037	- -	-	0.0	0.0	0.6	-	0.047	I
I	ARM B	1.30	23.34	0.056	- -	-	0.0	0.1	0.9	-	0.045	I
I	ARM C	1.36	26.17	0.052	- -	-	0.0	0.1	0.8	-	0.040	I
I	ARM D	3.41	29.45	0.116	- -	-	0.0	0.1	1.9	-	0.038	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	07.30-07.45										I	
I	ARM A	0.96	21.71	0.044	- -	-	0.0	0.0	0.7	-	0.048	I
I	ARM B	1.56	23.07	0.068	- -	-	0.1	0.1	1.1	-	0.047	I
I	ARM C	1.62	26.00	0.062	- -	-	0.1	0.1	1.0	-	0.041	I
I	ARM D	4.08	29.33	0.139	- -	-	0.1	0.2	2.4	-	0.040	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	07.45-08.00										I	
I	ARM A	1.17	21.37	0.055	- -	-	0.0	0.1	0.9	-	0.049	I
I	ARM B	1.91	22.70	0.084	- -	-	0.1	0.1	1.4	-	0.048	I
I	ARM C	1.98	25.76	0.077	- -	-	0.1	0.1	1.2	-	0.042	I
I	ARM D	4.99	29.17	0.171	- -	-	0.2	0.2	3.1	-	0.041	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	08.00-08.15										I	
I	ARM A	1.17	21.37	0.055	- -	-	0.1	0.1	0.9	-	0.050	I
I	ARM B	1.91	22.70	0.084	- -	-	0.1	0.1	1.4	-	0.048	I
I	ARM C	1.98	25.76	0.077	- -	-	0.1	0.1	1.2	-	0.042	I
I	ARM D	4.99	29.17	0.171	- -	-	0.2	0.2	3.1	-	0.041	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	08.15-08.30										I	
I	ARM A	0.96	21.70	0.044	- -	-	0.1	0.0	0.7	-	0.048	I
I	ARM B	1.56	23.07	0.068	- -	-	0.1	0.1	1.1	-	0.047	I
I	ARM C	1.62	25.99	0.062	- -	-	0.1	0.1	1.0	-	0.041	I
I	ARM D	4.08	29.33	0.139	- -	-	0.2	0.2	2.5	-	0.040	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	0.80	21.94	0.037	-	0.0	0.0	0.6	-	0.047
ARM B	1.30	23.34	0.056	-	0.1	0.1	0.9	-	0.045
ARM C	1.36	26.17	0.052	-	0.1	0.1	0.8	-	0.040
ARM D	3.41	29.44	0.116	-	0.2	0.1	2.0	-	0.038

QUEUE AT ARM A

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.1
08.15	0.1
08.30	0.0
08.45	0.0

QUEUE AT ARM B

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

QUEUE AT ARM C

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1

QUEUE AT ARM D

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	88.1	4.3	0.05
B	143.1	6.7	0.05
C	148.7	6.1	0.04
D	374.4	14.9	0.04
ALL	754.3	32.0	0.04

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\LLITM\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 17:27:38 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 New Access Roundabout on Mere Lane PM Peak 2026 No Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

															T5	
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I	23.179 I
I ARM B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I	24.717 I
I ARM C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I	27.052 I
I ARM D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I	30.033 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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
IARM	I	FLOW	SCALE(%)	I	
I A	I	100		I	
I B	I	100		I	
I C	I	100		I	
I D	I	100		I	

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	1.56	I	2.34	I	1.56	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	0.94	I	1.41	I	0.94	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	1.46	I	2.19	I	1.46	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	1.55	I	2.32	I	1.55	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33			
I			TURNING PROPORTIONS						I				
I			TURNING COUNTS						I				
I			(PERCENTAGE OF H.V.S)						I				
I	TIME		I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15		I		I		I		I		I		I
I			I	ARM A	I	0.000	I	0.024	I	0.464	I	0.512	I
I			I		I	0.0	I	3.0	I	58.0	I	64.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I
I			I	ARM B	I	0.027	I	0.000	I	0.067	I	0.907	I
I			I		I	2.0	I	0.0	I	5.0	I	68.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I
I			I	ARM C	I	0.188	I	0.103	I	0.000	I	0.709	I
I			I		I	22.0	I	12.0	I	0.0	I	83.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I
I			I	ARM D	I	0.242	I	0.516	I	0.242	I	0.000	I
I			I		I	30.0	I	64.0	I	30.0	I	0.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	16.45-17.00										I	
I	ARM A	1.57	22.50	0.070	- -	-	0.0	0.1	1.1	-	0.048	I
I	ARM B	0.94	23.67	0.040	- -	-	0.0	0.0	0.6	-	0.044	I
I	ARM C	1.47	26.11	0.056	- -	-	0.0	0.1	0.9	-	0.041	I
I	ARM D	1.56	29.75	0.052	- -	-	0.0	0.1	0.8	-	0.035	I
T											T	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	17.00-17.15										I	
I	ARM A	1.87	22.37	0.084	- -	-	0.1	0.1	1.4	-	0.049	I
I	ARM B	1.12	23.47	0.048	- -	-	0.0	0.1	0.7	-	0.045	I
I	ARM C	1.75	25.92	0.068	- -	-	0.1	0.1	1.1	-	0.041	I
I	ARM D	1.86	29.70	0.063	- -	-	0.1	0.1	1.0	-	0.036	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	17.15-17.30										I	
I	ARM A	2.29	22.19	0.103	- -	-	0.1	0.1	1.7	-	0.050	I
I	ARM B	1.38	23.18	0.059	- -	-	0.1	0.1	0.9	-	0.046	I
I	ARM C	2.15	25.67	0.084	- -	-	0.1	0.1	1.4	-	0.043	I
I	ARM D	2.28	29.62	0.077	- -	-	0.1	0.1	1.2	-	0.037	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	17.30-17.45										I	
I	ARM A	2.29	22.19	0.103	- -	-	0.1	0.1	1.7	-	0.050	I
I	ARM B	1.38	23.18	0.059	- -	-	0.1	0.1	0.9	-	0.046	I
I	ARM C	2.15	25.66	0.084	- -	-	0.1	0.1	1.4	-	0.043	I
I	ARM D	2.28	29.62	0.077	- -	-	0.1	0.1	1.2	-	0.037	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	-										I	
I	17.45-18.00										I	
I	ARM A	1.87	22.37	0.084	- -	-	0.1	0.1	1.4	-	0.049	I
I	ARM B	1.12	23.46	0.048	- -	-	0.1	0.1	0.8	-	0.045	I
I	ARM C	1.75	25.92	0.068	- -	-	0.1	0.1	1.1	-	0.041	I
I	ARM D	1.86	29.70	0.063	- -	-	0.1	0.1	1.0	-	0.036	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	1.57	22.50	0.070	-	0.1	0.1	1.1	-	0.048
ARM B	0.94	23.67	0.040	-	0.1	0.0	0.6	-	0.044
ARM C	1.47	26.10	0.056	-	0.1	0.1	0.9	-	0.041
ARM D	1.56	29.75	0.052	-	0.1	0.1	0.8	-	0.035

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.0

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	172.1	8.4	8.4
B	103.2	4.6	4.6
C	161.0	6.7	6.7
D	170.7	6.1	6.1
ALL	607.0	25.9	25.9

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\LLITM\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 11:49:32 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S4 New Access Roundabout on Mere Lane AM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

T5																			
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I	23.179	I
I	ARM	B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I	24.717	I
I	ARM	C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I	27.052	I
I	ARM	D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I	30.033	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

T15														
		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		I		I		I		I		I		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	2.21	I	3.32	I	2.21	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	2.20	I	3.30	I	2.20	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	2.75	I	4.13	I	2.75	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	5.05	I	7.58	I	5.05	I

T33									
		TURNING PROPORTIONS							
		TURNING COUNTS							
		(PERCENTAGE OF H.V.S)							
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D			
07.15	08.45	ARM A	0.000	0.085	0.531	0.384			
			0.0	15.0	94.0	68.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM B	0.307	0.000	0.250	0.443			
			54.0	0.0	44.0	78.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM C	0.782	0.059	0.000	0.159			
			172.0	13.0	0.0	35.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM D	0.428	0.104	0.468	0.000			
			173.0	42.0	189.0	0.0			
			(0.0)	(0.0)	(0.0)	(0.0)			

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH·MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH·MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL
07.15-07.30										
ARM A	2.22	21.62	0.103	-	-	0.0	0.1	1.7	0.052	
ARM B	2.21	22.30	0.099	-	-	0.0	0.1	1.6	0.050	
ARM C	2.76	25.64	0.108	-	-	0.0	0.1	1.8	0.044	
ARM D	5.07	28.16	0.180	-	-	0.0	0.2	3.2	0.043	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	07.30-07.45									
I	ARM A	2.65	21.32	0.124	-	0.1	0.1	2.1	-	0.054
I	ARM B	2.64	21.83	0.121	-	0.1	0.1	2.0	-	0.052
I	ARM C	3.30	25.36	0.130	-	0.1	0.1	2.2	-	0.045
I	ARM D	6.05	27.79	0.218	-	0.2	0.3	4.1	-	0.046

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	07.45-08.00										
I	ARM A	3.25	20.90	0.155	- -	-	0.1	0.2	2.7	-	0.057
I	ARM B	3.23	21.19	0.152	- -	-	0.1	0.2	2.7	-	0.056
I	ARM C	4.04	24.99	0.162	- -	-	0.1	0.2	2.8	-	0.048
I	ARM D	7.41	27.30	0.272	- -	-	0.3	0.4	5.5	-	0.050

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	08.00-08.15									
I	ARM A	3.25	20.90	0.155	-	0.2	0.2	2.8	-	0.057
I	ARM B	3.23	21.19	0.152	-	0.2	0.2	2.7	-	0.056
I	ARM C	4.04	24.99	0.162	-	0.2	0.2	2.9	-	0.048
I	ARM D	7.41	27.30	0.272	-	0.4	0.4	5.6	-	0.050

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	08.15-08.30										
I	ARM A	2.65	21.31	0.124	-	-	0.2	0.1	2.2	-	0.054
I	ARM B	2.64	21.82	0.121	-	-	0.2	0.1	2.1	-	0.052
I	ARM C	3.30	25.36	0.130	-	-	0.2	0.1	2.3	-	0.045
I	ARM D	6.05	27.79	0.218	-	-	0.4	0.3	4.3	-	0.046

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	2.22	21.62	0.103	- -	-	0.1	0.1	1.7	0.052	I
I	ARM B	2.21	22.29	0.099	- -	-	0.1	0.1	1.7	0.050	I
I	ARM C	2.76	25.63	0.108	- -	-	0.1	0.1	1.8	0.044	I
I	ARM D	5.07	28.15	0.180	- -	-	0.3	0.2	3.3	0.043	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.2
08.15	0.2
08.30	0.1
08.45	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.2
08.15	0.2
08.30	0.1
08.45	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.2
08.15	0.2
08.30	0.1
08.45	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.3
08.00	0.4
08.15	0.4
08.30	0.3
08.45	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	243.6	I	162.4	I	13.2	I	0.05	I
I	B	I	242.3	I	161.5	I	12.8	I	0.05	I
I	C	I	302.8	I	201.9	I	13.8	I	0.05	I
I	D	I	556.1	I	370.7	I	26.0	I	0.05	I
I	ALL	I	1344.8	I	896.5	I	65.7	I	0.05	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\LLITM\S4 2026 PM + Dev.vai"
(drive-on-the-left) at 11:50:11 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S4 New Access Roundabout on Mere Lane PM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

																	T5	
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I	23.179	I
I	ARM B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I	24.717	I
I	ARM C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I	27.052	I
I	ARM D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I	30.033	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
IARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15																	
I	ARM	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	ARM	A	I	15.00	I	45.00	I	75.00	I	4.00	I	6.00	I	4.00	I		
I	ARM	B	I	15.00	I	45.00	I	75.00	I	1.16	I	1.74	I	1.16	I		
I	ARM	C	I	15.00	I	45.00	I	75.00	I	3.25	I	4.88	I	3.25	I		
I	ARM	D	I	15.00	I	45.00	I	75.00	I	2.16	I	3.24	I	2.16	I		

DEMAND SET TITLE: AM Peak 2006 Base Flows

					T33		
I	I		TURNING PROPORTIONS	I			
I	I		TURNING COUNTS	I			
I	I		(PERCENTAGE OF H.V.S)	I			
I							
I	TIME	I FROM/T	I ARM A I	ARM B I	ARM C I	ARM D I	
I	16.45 - 18.15	I	I	I	I	I	
I		I	ARM A	I 0.000 I	I 0.156 I	I 0.450 I	I 0.394 I
I		I	I	I 0.0 I	I 50.0 I	I 144.0 I	I 126.0 I
I		I	I	I (0.0)I	I (0.0)I	I (0.0)I	I (0.0)I
I		I	I	I I	I I	I I	I I
I		I	ARM B	I 0.226 I	I 0.000 I	I 0.204 I	I 0.570 I
I		I	I	I 21.0 I	I 0.0 I	I 19.0 I	I 53.0 I
I		I	I	I (0.0)I	I (0.0)I	I (0.0)I	I (0.0)I
I		I	I	I I	I I	I I	I I
I		I	ARM C	I 0.319 I	I 0.112 I	I 0.000 I	I 0.569 I
I		I	I	I 83.0 I	I 29.0 I	I 0.0 I	I 148.0 I
I		I	I	I (0.0)I	I (0.0)I	I (0.0)I	I (0.0)I
I		I	I	I I	I I	I I	I I
I		I	ARM D	I 0.289 I	I 0.335 I	I 0.376 I	I 0.000 I
I		I	I	I 50.0 I	I 58.0 I	I 65.0 I	I 0.0 I
I		I	I	I (0.0)I	I (0.0)I	I (0.0)I	I (0.0)I
I		I	I	I I	I I	I I	I I

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	T70
I	16.45-17.00										I
I	ARM A	4.02	22.21	0.181	-	0.0	0.2	3.2	-	0.055	I
I	ARM B	1.17	22.41	0.052	-	0.0	0.1	0.8	-	0.047	I
I	ARM C	3.26	25.64	0.127	-	0.0	0.1	2.1	-	0.045	I
I	ARM D	2.17	28.99	0.075	-	0.0	0.1	1.2	-	0.037	I

[illegible]

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.15-17.30										
I	ARM A	5.87	21.76	0.270	- -	-	0.3	0.4	5.4	-	0.063
I	ARM B	1.71	21.35	0.080	- -	-	0.1	0.1	1.3	-	0.051
I	ARM C	4.77	24.99	0.191	- -	-	0.2	0.2	3.5	-	0.049
I	ARM D	3.17	28.51	0.111	- -	-	0.1	0.1	1.9	-	0.039

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.30-17.45										
I	ARM A	5.87	21.76	0.270	-	-	0.4	0.4	5.5	-	0.063
I	ARM B	1.71	21.35	0.080	-	-	0.1	0.1	1.3	-	0.051
I	ARM C	4.77	24.99	0.191	-	-	0.2	0.2	3.5	-	0.049
I	ARM D	3.17	28.51	0.111	-	-	0.1	0.1	1.9	-	0.039

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
	17.45-18.00										
	ARM A	4.79	22.02	0.218	- -	-	0.4	0.3	4.3	-	0.058
	ARM B	1.39	21.95	0.063	- -	-	0.1	0.1	1.0	-	0.049
	ARM C	3.90	25.36	0.154	- -	-	0.2	0.2	2.8	-	0.047
	ARM D	2.59	28.78	0.090	- -	-	0.1	0.1	1.5	-	0.038

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	4.02	22.21	0.181	- -	-	0.3	0.2	3.4	0.055	I
I	ARM B	1.17	22.40	0.052	- -	-	0.1	0.1	0.8	0.047	I
I	ARM C	3.26	25.63	0.127	- -	-	0.2	0.1	2.2	0.045	I
I	ARM D	2.17	28.99	0.075	- -	-	0.1	0.1	1.2	0.037	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	440.5	I	293.6	I	25.9	I	0.06
I	B	I	128.0	I	85.3	I	6.3	I	0.05
I	C	I	357.9	I	238.6	I	16.8	I	0.05
I	D	I	238.1	I	158.7	I	9.1	I	0.04
I	ALL	I	1164.5	I	776.3	I	58.1	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\LLITM\S5 2026 AM + Dev + SP.vai"
(drive-on-the-left) at 11:50:48 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S5 New Access Roundabout on Mere Lane AM Peak 2026 With Development + Symmetry P
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

T5																			
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I	23.179	I
I	ARM	B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I	24.717	I
I	ARM	C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I	27.052	I
I	ARM	D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I	30.033	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	2.22	3.34	2.22			
ARM B	15.00	45.00	75.00	2.47	3.71	2.47			
ARM C	15.00	45.00	75.00	2.74	4.11	2.74			
ARM D	15.00	45.00	75.00	4.82	7.24	4.82			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.090	0.534	0.376				
		0.0	16.0	95.0	67.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM B	0.273	0.000	0.333	0.394				
		54.0	0.0	66.0	78.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM C	0.776	0.064	0.000	0.160				
		170.0	14.0	0.0	35.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM D	0.451	0.109	0.440	0.000				
		174.0	42.0	170.0	0.0				
		(0.0)	(0.0)	(0.0)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	2.23	21.74	0.103	-	0.0	0.1	1.7	-	0.051	
ARM B	2.48	22.43	0.111	-	0.0	0.1	1.8	-	0.050	
ARM C	2.75	25.65	0.107	-	0.0	0.1	1.8	-	0.044	
ARM D	4.84	28.17	0.172	-	0.0	0.2	3.1	-	0.043	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	2.67	21.45	0.124	-	0.1	0.1	2.1	-	0.053	
ARM B	2.97	21.98	0.135	-	0.1	0.2	2.3	-	0.053	
ARM C	3.28	25.37	0.129	-	0.1	0.1	2.2	-	0.045	
ARM D	5.78	27.80	0.208	-	0.2	0.3	3.9	-	0.045	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	3.27	21.07	0.155	-	0.1	0.2	2.7	-	0.056	
ARM B	3.63	21.38	0.170	-	0.2	0.2	3.0	-	0.056	
ARM C	4.02	25.00	0.161	-	0.1	0.2	2.8	-	0.048	
ARM D	7.08	27.31	0.259	-	0.3	0.3	5.2	-	0.049	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	3.27	21.07	0.155	-	0.2	0.2	2.7	-	0.056	
ARM B	3.63	21.38	0.170	-	0.2	0.2	3.1	-	0.056	
ARM C	4.02	25.00	0.161	-	0.2	0.2	2.9	-	0.048	
ARM D	7.08	27.31	0.259	-	0.3	0.3	5.2	-	0.049	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	2.67	21.45	0.124	-	0.2	0.1	2.2	-	0.053	
ARM B	2.97	21.98	0.135	-	0.2	0.2	2.4	-	0.053	
ARM C	3.28	25.37	0.129	-	0.2	0.1	2.3	-	0.045	
ARM D	5.78	27.80	0.208	-	0.3	0.3	4.0	-	0.045	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	2.23	21.73	0.103	-	0.1	0.1	1.7	-	0.051
ARM B	2.48	22.42	0.111	-	0.2	0.1	1.9	-	0.050
ARM C	2.75	25.64	0.107	-	0.1	0.1	1.8	-	0.044
ARM D	4.84	28.16	0.172	-	0.3	0.2	3.2	-	0.043

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.2
08.15	0.2
08.30	0.1
08.45	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.2
08.15	0.2
08.30	0.2
08.45	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.1
08.00	0.2
08.15	0.2
08.30	0.1
08.45	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.3
08.00	0.3
08.15	0.3
08.30	0.3
08.45	0.2

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	245.0	13.1	0.05
B	272.5	14.5	0.05
C	301.4	13.7	0.05
D	531.3	24.5	0.05
ALL	1350.3	65.9	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\New Rbt on Mere Lane\
ES Addendum Oct 2016\LLITM\S5 2026 PM + Dev + SP.vai"
(drive-on-the-left) at 11:52:33 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S5 New Access Roundabout on Mere Lane PM Peak 2026 With Development + Symmetry P
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Site Access
ARM B - Mere Lane East
ARM C - Hunter Bld
ARM D - Mere Lane West

GEOMETRIC DATA

															T5	
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	3.70	I	7.80	I	7.60	I	20.00	I	52.00	I	64.0	I	0.508	I	23.179 I
I ARM B	I	3.00	I	6.00	I	22.00	I	20.00	I	52.00	I	41.0	I	0.548	I	24.717 I
I ARM C	I	4.75	I	6.00	I	24.00	I	20.00	I	52.00	I	53.0	I	0.563	I	27.052 I
I ARM D	I	3.65	I	7.50	I	16.00	I	35.00	I	52.00	I	30.0	I	0.624	I	30.033 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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
IARM	I	FLOW	SCALE(%)	I	
I A	I	100		I	
I B	I	100		I	
I C	I	100		I	
I D	I	100		I	

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	4.03	I	6.04	I	4.03	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	1.14	I	1.71	I	1.14	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	3.26	I	4.89	I	3.26	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	2.16	I	3.24	I	2.16	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33		
I			TURNING PROPORTIONS							I		
I			TURNING COUNTS							I		
I			(PERCENTAGE OF H.V.S)							I		
I										I		
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.161	I	0.447	I	0.391	I
I		I		I	0.0	I	52.0	I	144.0	I	126.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.220	I	0.000	I	0.209	I	0.571	I
I		I		I	20.0	I	0.0	I	19.0	I	52.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.326	I	0.119	I	0.000	I	0.556	I
I		I		I	85.0	I	31.0	I	0.0	I	145.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.289	I	0.335	I	0.376	I	0.000	I
I		I		I	50.0	I	58.0	I	65.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	16.45-17.00										I	I
I	ARM A	4.04	22.20	0.182	- -	-	0.0	0.2	3.3	-	0.055	I
I	ARM B	1.14	22.41	0.051	- -	-	0.0	0.1	0.8	-	0.047	I
I	ARM C	3.27	25.65	0.128	- -	-	0.0	0.1	2.2	-	0.045	I
I	ARM D	2.17	28.97	0.075	- -	-	0.0	0.1	1.2	-	0.037	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.00-17.15										I	I
I	ARM A	4.82	22.00	0.219	- -	-	0.2	0.3	4.1	-	0.058	I
I	ARM B	1.36	21.96	0.062	- -	-	0.1	0.1	1.0	-	0.049	I
I	ARM C	3.91	25.38	0.154	- -	-	0.1	0.2	2.7	-	0.047	I
I	ARM D	2.59	28.76	0.090	- -	-	0.1	0.1	1.5	-	0.038	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.15-17.30										I	I
I	ARM A	5.91	21.74	0.272	- -	-	0.3	0.4	5.5	-	0.063	I
I	ARM B	1.67	21.35	0.078	- -	-	0.1	0.1	1.3	-	0.051	I
I	ARM C	4.79	25.01	0.192	- -	-	0.2	0.2	3.5	-	0.049	I
I	ARM D	3.17	28.48	0.111	- -	-	0.1	0.1	1.9	-	0.039	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.30-17.45										I	I
I	ARM A	5.91	21.74	0.272	- -	-	0.4	0.4	5.6	-	0.063	I
I	ARM B	1.67	21.35	0.078	- -	-	0.1	0.1	1.3	-	0.051	I
I	ARM C	4.79	25.01	0.192	- -	-	0.2	0.2	3.5	-	0.049	I
I	ARM D	3.17	28.48	0.111	- -	-	0.1	0.1	1.9	-	0.039	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.45-18.00										I	I
I	ARM A	4.82	22.00	0.219	- -	-	0.4	0.3	4.3	-	0.058	I
I	ARM B	1.36	21.95	0.062	- -	-	0.1	0.1	1.0	-	0.049	I
I	ARM C	3.91	25.38	0.154	- -	-	0.2	0.2	2.8	-	0.047	I
I	ARM D	2.59	28.76	0.090	- -	-	0.1	0.1	1.5	-	0.038	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	4.04	22.19	0.182	-	0.3	0.2	3.4	-	0.055
ARM B	1.14	22.40	0.051	-	0.1	0.1	0.8	-	0.047
ARM C	3.27	25.65	0.128	-	0.2	0.1	2.2	-	0.045
ARM D	2.17	28.96	0.075	-	0.1	0.1	1.2	-	0.037

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	443.2	26.1	0.06
B	125.3	6.1	0.05
C	359.2	16.9	0.05
D	238.1	9.1	0.04
ALL	1165.8	58.3	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
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Wokingham, Berks. Web: www.trlsoftware.co.uk
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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\LLITM\S2 2026 AM No Dev .vai"
(drive-on-the-left) at 17:20:47 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 New A5/ Mere Lane Rbt AM Peak 2026 No Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

															T15
I			I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		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	14.09	I	21.13	I	14.09	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	2.03	I	3.04	I	2.03	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	8.99	I	13.48	I	8.99	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

							T33			
I		I	TURNING PROPORTIONS				I			
I		I	TURNING COUNTS				I			
I		I	(PERCENTAGE OF H.V.S)				I			
I		I					I			
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I
I	07.15 - 08.45	I		I		I		I		I
I		I	ARM A	I	0.000	I	0.165	I	0.835	I
I		I		I	0.0	I	186.0	I	941.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM B	I	0.370	I	0.000	I	0.630	I
I		I		I	60.0	I	0.0	I	102.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I
I		I	ARM C	I	0.879	I	0.121	I	0.000	I
I		I		I	632.0	I	87.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	07.15-07.30										I	
I	ARM A	14.14	37.64	0.376	- -	-	0.0	0.6	8.8	-	0.042	I
I	ARM B	2.03	22.46	0.090	- -	-	0.0	0.1	1.5	-	0.049	I
I	ARM C	9.02	29.50	0.306	- -	-	0.0	0.4	6.4	-	0.049	I
I											I	

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
I	07.30-07.45										
I	ARM A	16.89	37.49	0.450	-	-	0.6	0.8	12.0	-	0.048
I	ARM B	2.43	21.10	0.115	-	-	0.1	0.1	1.9	-	0.054
I	ARM C	10.77	29.41	0.366	-	-	0.4	0.6	8.5	-	0.054
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	20.68	37.30	0.554	-	-	0.8	18.1	-	0.060
ARM B	2.97	19.23	0.155	-	-	0.1	2.7	-	0.061
ARM C	13.19	29.29	0.450	-	-	0.6	12.0	-	0.062

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.00-08.15									
	ARM A	20.68	37.30	0.554	-	-	1.2	1.2	-	0.060
	ARM B	2.97	19.21	0.155	-	-	0.2	0.2	-	0.062
	ARM C	13.19	29.29	0.450	-	-	0.8	0.8	-	0.062

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	08.15-08.30									
I	ARM A	16.89	37.49	0.450	-	1.2	0.8	12.6	-	0.049
I	ARM B	2.43	21.08	0.115	-	0.2	0.1	2.0	-	0.054
I	ARM C	10.77	29.41	0.366	-	0.8	0.6	8.9	-	0.054

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	08.30-08.45										I	
I	ARM A	14.14	37.63	0.376	-	-	0.8	0.6	9.2	-	0.043	I
I	ARM B	2.03	22.44	0.091	-	-	0.1	0.1	1.5	-	0.049	I
I	ARM C	9.02	29.50	0.306	-	-	0.6	0.4	6.7	-	0.049	I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.8	*
08.00	1.2	*
08.15	1.2	*
08.30	0.8	*
08.45	0.6	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.1	
07.45	0.1	
08.00	0.2	
08.15	0.2	
08.30	0.1	
08.45	0.1	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.6	*
08.00	0.8	*
08.15	0.8	*
08.30	0.6	*
08.45	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	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	A	I	1551.2	I	79.3	I	79.3	I	0.05
I	B	I	223.0	I	12.3	I	12.3	I	0.06
I	C	I	989.7	I	54.7	I	54.7	I	0.06
I	ALL	I	2763.9	I	146.3	I	146.3	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
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RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\LLITM\S2 2026 PM No Dev .vai"
(drive-on-the-left) at 17:22:32 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 New A5/ Mere Lane Rbt PM Peak 2026 No Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD - (90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

															T15
I			I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		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	7.78	I	11.66	I	7.78	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	2.71	I	4.07	I	2.71	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	12.46	I	18.69	I	12.46	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

							T33			
I		I	TURNING PROPORTIONS				I			
I		I	TURNING COUNTS				I			
I		I	(PERCENTAGE OF H.V.S)				I			
I		I					I			
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I
I	16.45 - 18.15	I		I		I		I		I
I		I	ARM	A	I	0.000	I	0.084	I	0.916
I		I			I	0.0	I	52.0	I	570.0
I		I			I	(0.0)	I	(0.0)	I	(0.0)
I		I			I		I		I	
I		I	ARM	B	I	0.571	I	0.000	I	0.429
I		I			I	124.0	I	0.0	I	93.0
I		I			I	(0.0)	I	(0.0)	I	(0.0)
I		I			I		I		I	
I		I	ARM	C	I	0.923	I	0.077	I	0.000
I		I			I	920.0	I	77.0	I	0.0
I		I			I	(0.0)	I	(0.0)	I	(0.0)
I		I			I		I		I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	16.45-17.00										I	
I	ARM A	7.80	37.72	0.207	- -	-	0.0	0.3	3.8	-	0.033	I
I	ARM B	2.72	25.21	0.108	- -	-	0.0	0.1	1.8	-	0.044	I
I	ARM C	12.51	29.02	0.431	- -	-	0.0	0.8	11.0	-	0.060	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.00-17.15										I
I	ARM A	9.32	37.59	0.248	- -	-	0.3	4.9	-	0.035	I
I	ARM B	3.25	24.38	0.133	- -	-	0.2	2.3	-	0.047	I
I	ARM C	14.94	28.84	0.518	- -	-	0.8	15.6	-	0.072	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.15-17.30										I
I	ARM A	11.41	37.42	0.305	- -	0.3	0.4	6.5	-	0.038	I
I	ARM B	3.98	23.25	0.171	- -	0.2	0.2	3.0	-	0.052	I
I	ARM C	18.30	28.59	0.640	- -	1.1	1.7	25.2	-	0.096	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.30-17.45										I
I	ARM A	11.41	37.42	0.305	- -	0.4	0.4	6.6	-	0.038	I
I	ARM B	3.98	23.24	0.171	- -	0.2	0.2	3.1	-	0.052	I
I	ARM C	18.30	28.58	0.640	- -	1.7	1.8	26.3	-	0.097	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	9.32	37.59	0.248	- -	0.4	0.3	5.0	-	0.035	I
I	ARM B	3.25	24.37	0.133	- -	0.2	0.2	2.3	-	0.047	I
I	ARM C	14.94	28.84	0.518	- -	1.8	1.1	16.8	-	0.072	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	18.00-18.15									
I	ARM A	7.80	37.72	0.207	- -	0.3	0.3	4.0	-	0.033
I	ARM B	2.72	25.20	0.108	- -	0.2	0.1	1.8	-	0.045
I	ARM C	12.51	29.02	0.431	- -	1.1	0.8	11.7	-	0.061

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.2
17.45	0.2
18.00	0.2
18.15	0.1

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.8 *
17.15	1.1 *
17.30	1.7 **
17.45	1.8 **
18.00	1.1 *
18.15	0.8 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	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	A	I	856.1	I	30.8	I	30.8	I	0.04
I	B	I	298.7	I	14.4	I	14.4	I	0.05
I	C	I	1372.3	I	106.6	I	106.6	I	0.08
I	ALL	I	2527.1	I	151.7	I	151.7	I	0.06

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

END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\LLITM\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 11:36:52 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S4 New A5/ Mere Lane Rbt AM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

T5																			
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERMANENT FLOW AT PEAK 2000 BASIC FLOWS												T15
I		I	NUMBER OF MINUTES FROM START WHEN	I		I	RATE OF FLOW (VEH/MIN)	I		I		
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	
I		I		I		I		I		I	AFTER	
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	PEAK	
I	ARM	A	I	15.00	I	45.00	I	75.00	I	17.67	I	17.67
I	ARM	B	I	15.00	I	45.00	I	75.00	I	3.20	I	4.80
I	ARM	C	I	15.00	I	45.00	I	75.00	I	10.27	I	15.41

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33	
I			I	TURNING PROPORTIONS						I	
I			I	TURNING COUNTS						I	
I			I	(PERCENTAGE OF H.V.S)						I	
I											
I	TIME		I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I
I	07.15 - 08.45		I		I		I		I		I
I			I	ARM A	I	0.000	I	0.322	I	0.678	I
I			I		I	0.0	I	455.0	I	959.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I	I	I	I	I	I	I
I			I	ARM B	I	0.629	I	0.000	I	0.371	I
I			I		I	161.0	I	0.0	I	95.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I	I	I	I	I	I	I
I			I	ARM C	I	0.897	I	0.103	I	0.000	I
I			I		I	737.0	I	85.0	I	0.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70												
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	07.15-07.30										I	
I	ARM A	17.74	37.65	0.471	- -	-	0.0	0.9	13.0	-	0.050	I
I	ARM B	3.21	22.33	0.144	- -	-	0.0	0.2	2.5	-	0.052	I
I	ARM C	10.31	28.74	0.359	- -	-	0.0	0.6	8.2	-	0.054	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	07.30-07.45									
	ARM A	21.19	37.51	0.565	-	-	0.9	1.3	-	0.061
	ARM B	3.84	20.94	0.183	-	-	0.2	0.2	-	0.058
	ARM C	12.32	28.50	0.432	-	-	0.6	0.8	-	0.062

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	07.45-08.00									
	ARM A	25.95	37.32	0.695	-	-	1.3	2.2	-	0.087
	ARM B	4.70	19.04	0.247	-	-	0.2	0.3	-	0.070
	ARM C	15.08	28.18	0.535	-	-	0.8	1.1	-	0.076

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.00-08.15									
	ARM A	25.95	37.32	0.695	-	2.2	2.3	33.8	-	0.088
	ARM B	4.70	19.02	0.247	-	0.3	0.3	4.9	-	0.070
	ARM C	15.08	28.18	0.535	-	1.1	1.1	17.2	-	0.076

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.15-08.30									
	ARM A	21.19	37.51	0.565	-	-	2.3	1.3	-	0.062
	ARM B	3.84	20.90	0.183	-	-	0.3	0.2	3.4	0.059
	ARM C	12.32	28.50	0.432	-	-	1.1	0.8	11.8	0.062

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.30-08.45									
ARM A		17.74	37.65	0.471	-	-	1.3	0.9	-	0.050
ARM B		3.21	22.30	0.144	-	-	0.2	0.2	-	0.052
ARM C		10.31	28.74	0.359	-	-	0.8	0.6	-	0.054

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.3	*
08.00	2.2	**
08.15	2.3	**
08.30	1.3	*
08.45	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.2	
07.45	0.2	
08.00	0.3	
08.15	0.3	
08.30	0.2	
08.45	0.2	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.8	*
08.00	1.1	*
08.15	1.1	*
08.30	0.8	*
08.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I		I		I	* DELAY *	I	* DELAY *	I	
I		I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1946.3	I	1297.5	I	131.7	I	0.07
I	B	I	352.4	I	234.9	I	21.5	I	0.06
I	C	I	1131.4	I	754.3	I	73.4	I	0.06
I	ALL	I	3430.1	I	2286.7	I	226.6	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
 ===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\LLITM\S4 2026 PM + Dev .vai"
(drive-on-the-left) at 11:37:47 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S4 New A5/ Mere Lane Rbt PM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5		
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM	B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM	C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

														T15	
I			NUMBER OF MINUTES FROM START WHEN			RATE OF FLOW (VEH/MIN)						I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I			I			I			I			I			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	11.59	I	17.38	I	11.59	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	4.09	I	6.13	I	4.09	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	12.95	I	19.42	I	12.95	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33							
TURNING PROPORTIONS							
TURNING COUNTS							
(PERCENTAGE OF H.V.S)							
TIME	FROM/T	ARM A	ARM B	ARM C			
16.45 - 18.15	ARM A	0.000	0.351	0.649			
		0.0	325.0	602.0			
		(0.0)	(0.0)	(0.0)			
	ARM B	0.755	0.000	0.245			
		247.0	0.0	80.0			
		(0.0)	(0.0)	(0.0)			
	ARM C	0.931	0.069	0.000			
		964.0	72.0	0.0			
		(0.0)	(0.0)	(0.0)			

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	11.63	37.76	0.308	-	0.0	0.4	6.5	-	0.038
ARM B	4.10	24.97	0.164	-	0.0	0.2	2.9	-	0.048
ARM C	13.00	28.09	0.463	-	0.0	0.9	12.4	-	0.066

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	13.89	37.64	0.369	-	0.4	0.6	8.6	-	0.042
ARM B	4.90	24.10	0.203	-	0.2	0.3	3.8	-	0.052
ARM C	15.52	27.73	0.560	-	0.9	1.3	18.3	-	0.082

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	17.01	37.48	0.454	-	0.6	0.8	12.2	-	0.049
ARM B	6.00	22.90	0.262	-	0.3	0.4	5.2	-	0.059
ARM C	19.01	27.23	0.698	-	1.3	2.3	32.1	-	0.120

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	17.01	37.48	0.454	-	0.8	0.8	12.4	-	0.049
ARM B	6.00	22.89	0.262	-	0.4	0.4	5.3	-	0.059
ARM C	19.01	27.23	0.698	-	2.3	2.3	34.1	-	0.122

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	13.89	37.64	0.369	-	0.8	0.6	8.9	-	0.042
ARM B	4.90	24.09	0.203	-	0.4	0.3	3.9	-	0.052
ARM C	15.52	27.72	0.560	-	2.3	1.3	20.0	-	0.083

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	11.63	37.76	0.308	-	0.6	0.4	6.8	-	0.038
ARM B	4.10	24.96	0.164	-	0.3	0.2	3.0	-	0.048
ARM C	13.00	28.09	0.463	-	1.3	0.9	13.4	-	0.067

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	0.8 *
17.45	0.8 *
18.00	0.6 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.9 *
17.15	1.3 *
17.30	2.3 **
17.45	2.3 **
18.00	1.3 *
18.15	0.9 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1275.9	I	850.6	I	55.5	I	0.04
I	B	I	450.1	I	300.1	I	24.1	I	0.05
I	C	I	1426.0	I	950.7	I	130.3	I	0.09
I	ALL	I	3152.0	I	2101.3	I	209.8	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\LLITM\S5 2026 AM + Dev + SP.vai"
(drive-on-the-left) at 11:39:57 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S5 New A5/ Mere Lane Rbt AM Peak 2026 With Development + Symmetry Park
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

																	T5	
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

T13			
I	ARM	I	FLOW SCALE(%)
I	A	I	100
I	B	I	100
I	C	I	100

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

															T15
I			I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		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	17.71	I	26.57	I	17.71	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	3.19	I	4.78	I	3.19	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	10.43	I	15.64	I	10.43	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.3	*
08.00	2.3	**
08.15	2.3	**
08.30	1.3	*
08.45	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.2	
07.45	0.2	
08.00	0.3	
08.15	0.3	
08.30	0.2	
08.45	0.2	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.8	*
08.00	1.2	*
08.15	1.2	*
08.30	0.8	*
08.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I		I		I	* DELAY *	I	* DELAY *	I	
I		I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1950.4	I	1300.3	I	132.5	I	0.07
I	B	I	351.0	I	234.0	I	21.8	I	0.06
I	C	I	1147.9	I	765.3	I	75.4	I	0.07
I	ALL	I	3449.3	I	2299.5	I	229.7	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A5_Mere Lane\
ES Addendum Oct 2016\LLITM\S5 2026 PM + Dev + SP.vai"
(drive-on-the-left) at 11:41:34 on Monday, 10 October 2016

FILE PROPERTIES

RUN TITLE: S5 New A5/ Mere Lane Rbt PM Peak 2026 With Development + Symmetry park
LOCATION: Magna Park Site Access
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - Mere Lane
ARM C - A5 South

GEOMETRIC DATA

															T5			
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	7.30	I	8.90	I	7.00	I	20.00	I	56.00	I	52.0	I	0.667	I	38.361	I
I	ARM B	I	3.65	I	7.30	I	17.00	I	30.00	I	56.00	I	34.0	I	0.592	I	29.429	I
I	ARM C	I	5.00	I	7.30	I	4.00	I	40.00	I	56.00	I	31.0	I	0.602	I	29.955	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

Only sets included in the current run are shown

SCALING FACTORS

T13			
I ARM	I	FLOW SCALE(%)	I
I A	I	100	I
I B	I	100	I
I C	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T15
I ARM		NUMBER OF MINUTES FROM START WHEN			RATE OF FLOW (VEH/MIN)					I
I	I	I FLOW STARTS	I TOP OF PEAK	I FLOW STOPS	I BEFORE	I AT TOP	I AFTER	I	I	I
I	I	I	I	I	I	I	I	I	I	I
I	I	I TO RISE	I IS REACHED	I FALLING	I PEAK	I OF PEAK	I PEAK	I	I	I
I ARM A	I	15.00	I 45.00	I 75.00	I 11.65	I 17.47	I 11.65	I	I	I
I ARM B	I	15.00	I 45.00	I 75.00	I 4.05	I 6.08	I 4.05	I	I	I
I ARM C	I	15.00	I 45.00	I 75.00	I 13.38	I 20.06	I 13.38	I	I	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33							
TURNING PROPORTIONS							
TURNING COUNTS							
(PERCENTAGE OF H.V.S)							
TIME	FROM/T	ARM A	ARM B	ARM C			
16.45 - 18.15	ARM A	0.000	0.347	0.653			
		0.0	323.0	609.0			
		(0.0)	(0.0)	(0.0)			
	ARM B	0.756	0.000	0.244			
		245.0	0.0	79.0			
		(0.0)	(0.0)	(0.0)			
	ARM C	0.933	0.067	0.000			
		998.0	72.0	0.0			
		(0.0)	(0.0)	(0.0)			

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	11.69	37.76	0.310	-	0.0	0.4	6.6	-	0.038
ARM B	4.07	24.92	0.163	-	0.0	0.2	2.9	-	0.048
ARM C	13.43	28.11	0.478	-	0.0	0.9	13.2	-	0.068

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	13.96	37.64	0.371	-	0.4	0.6	8.7	-	0.042
ARM B	4.85	24.04	0.202	-	0.2	0.3	3.7	-	0.052
ARM C	16.03	27.75	0.578	-	0.9	1.4	19.6	-	0.085

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	17.10	37.48	0.456	-	0.6	0.8	12.3	-	0.049
ARM B	5.95	22.82	0.260	-	0.3	0.4	5.2	-	0.059
ARM C	19.63	27.25	0.721	-	1.4	2.5	35.4	-	0.129

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	17.10	37.48	0.456	-	0.8	0.8	12.5	-	0.049
ARM B	5.95	22.82	0.261	-	0.4	0.4	5.3	-	0.059
ARM C	19.63	27.25	0.721	-	2.5	2.5	37.9	-	0.131

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
ARM A	13.96	37.64	0.371	-	0.8	0.6	9.0	-	0.042
ARM B	4.85	24.03	0.202	-	0.4	0.3	3.9	-	0.052
ARM C	16.03	27.74	0.578	-	2.5	1.4	21.6	-	0.087

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
ARM A	11.69	37.76	0.310	-	0.6	0.5	6.8	-	0.038
ARM B	4.07	24.91	0.163	-	0.3	0.2	3.0	-	0.048
ARM C	13.43	28.10	0.478	-	1.4	0.9	14.2	-	0.068

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	0.8 *
17.45	0.8 *
18.00	0.6 *
18.15	0.5

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.9 *
17.15	1.4 *
17.30	2.5 ***
17.45	2.5 ***
18.00	1.4 *
18.15	0.9 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
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)	I	(MIN)	I	(MIN)	I	(MIN/VEH)
I	A	I	1282.8	I	56.0	I	56.0	I	0.04
I	B	I	446.0	I	23.9	I	23.9	I	0.05
I	C	I	1472.8	I	141.9	I	141.9	I	0.10
I	ALL	I	3201.6	I	221.8	I	221.8	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\LLITM\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 17:24:33 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 Cross in Hand Roundabout AM Peak 2026 Without Development
LOCATION: Cross In Hand Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

																	T5	
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	4.70	I	7.50	I	47.00	I	45.00	I	98.00	I	48.0	I	0.494	I	34.354	I
I	ARM B	I	7.10	I	8.80	I	25.00	I	35.00	I	79.00	I	54.0	I	0.566	I	40.232	I
I	ARM C	I	5.10	I	7.50	I	50.00	I	37.00	I	98.00	I	54.0	I	0.486	I	34.056	I
I	ARM D	I	3.20	I	6.20	I	24.00	I	40.00	I	88.00	I	64.0	I	0.405	I	24.458	I
I	ARM E	I	3.50	I	7.20	I	9.00	I	19.00	I	88.00	I	64.0	I	0.384	I	22.641	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	13.48	20.21	13.48			
ARM B	15.00	45.00	75.00	18.04	27.06	18.04			
ARM C	15.00	45.00	75.00	11.90	17.85	11.90			
ARM D	15.00	45.00	75.00	4.69	7.03	4.69			
ARM E	15.00	45.00	75.00	5.29	7.93	5.29			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
07.15 - 08.45	ARM A	0.000	0.436	0.500	0.057	0.007			
		0.0	470.0	539.0	61.0	8.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM B	0.253	0.000	0.416	0.288	0.043			
		365.0	0.0	601.0	415.0	62.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM C	0.372	0.487	0.000	0.070	0.070			
		354.0	464.0	0.0	67.0	67.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM D	0.139	0.779	0.080	0.000	0.003			
		52.0	292.0	30.0	0.0	1.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM E	0.054	0.697	0.236	0.012	0.000			
		23.0	295.0	100.0	5.0	0.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	13.53	27.05	0.500	-	0.0	1.0	14.4	-	0.073	
ARM B	18.11	34.98	0.518	-	0.0	1.1	15.5	-	0.059	
ARM C	11.95	28.50	0.419	-	0.0	0.7	10.5	-	0.060	
ARM D	4.71	17.78	0.265	-	0.0	0.4	5.2	-	0.076	
ARM E	5.31	15.18	0.350	-	0.0	0.5	7.7	-	0.101	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	16.15	25.60	0.631	-	1.0	1.7	24.1	-	0.105	
ARM B	21.62	33.95	0.637	-	1.1	1.7	25.0	-	0.081	
ARM C	14.26	27.40	0.520	-	0.7	1.1	15.7	-	0.076	
ARM D	5.62	16.46	0.341	-	0.4	0.5	7.5	-	0.092	
ARM E	6.34	13.71	0.462	-	0.5	0.8	12.2	-	0.135	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	19.78	23.67	0.836	-	1.7	4.6	61.5	-	0.235	
ARM B	26.48	32.59	0.812	-	1.7	4.1	56.3	-	0.155	
ARM C	17.47	25.94	0.673	-	1.1	2.0	28.7	-	0.116	
ARM D	6.88	14.69	0.468	-	0.5	0.9	12.5	-	0.127	
ARM E	7.76	11.72	0.662	-	0.8	1.9	25.8	-	0.244	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	19.78	23.61	0.838	-	4.6	4.9	72.0	-	0.257	
ARM B	26.48	32.52	0.814	-	4.1	4.2	62.9	-	0.164	
ARM C	17.47	25.90	0.675	-	2.0	2.0	30.5	-	0.119	
ARM D	6.88	14.65	0.470	-	0.9	0.9	13.1	-	0.129	
ARM E	7.76	11.68	0.664	-	1.9	1.9	28.6	-	0.254	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	16.15	25.52	0.633	- -	-	4.9	1.8	28.4	0.112	I
I	ARM B	21.62	33.85	0.639	- -	-	4.2	1.8	28.3	0.084	I
I	ARM C	14.26	27.34	0.522	- -	-	2.0	1.1	17.1	0.077	I
I	ARM D	5.62	16.40	0.343	- -	-	0.9	0.5	8.1	0.093	I
I	ARM E	6.34	13.64	0.464	- -	-	1.9	0.9	13.9	0.139	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	13.53	26.99	0.501	- -	-	1.8	1.0	15.7	0.075	I
I	ARM B	18.11	34.93	0.518	- -	-	1.8	1.1	16.7	0.060	I
I	ARM C	11.95	28.46	0.420	- -	-	1.1	0.7	11.2	0.061	I
I	ARM D	4.71	17.73	0.265	- -	-	0.5	0.4	5.6	0.077	I
I	ARM E	5.31	15.13	0.351	- -	-	0.9	0.5	8.5	0.102	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.0	*
07.45	1.7	**
08.00	4.6	*****
08.15	4.9	*****
08.30	1.8	**
08.45	1.0	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	1.7	**
08.00	4.1	*****
08.15	4.2	*****
08.30	1.8	**
08.45	1.1	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.7	*
07.45	1.1	*
08.00	2.0	**
08.15	2.0	**
08.30	1.1	*
08.45	0.7	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.5	*
08.00	0.9	*
08.15	0.9	*
08.30	0.5	*
08.45	0.4	

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.8	*
08.00	1.9	**
08.15	1.9	**
08.30	0.9	*
08.45	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

----- T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I		I		I	* DELAY *	I	* DELAY *	I		I
I		I	-----							
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)

I	A	I	1483.8	I	989.2	I	216.0	I	0.15	I
I	B	I	1986.2	I	1324.1	I	204.8	I	0.10	I
I	C	I	1310.4	I	873.6	I	113.6	I	0.09	I
I	D	I	516.2	I	344.1	I	52.1	I	0.10	I
I	E	I	582.2	I	388.2	I	96.7	I	0.17	I

I	ALL	I	5878.7	I	3919.1	I	683.2	I	0.12	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\LLITM\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 17:25:25 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 Cross in Hand Roundabout PM Peak 2026 Without Development
LOCATION: Cross In Hand Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

														T5	
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	4.70	I	7.50	I	47.00	I	45.00	I	98.00	I	48.0	I	0.494	I 34.354 I
I ARM B	I	7.10	I	8.80	I	25.00	I	35.00	I	79.00	I	54.0	I	0.566	I 40.232 I
I ARM C	I	5.10	I	7.50	I	50.00	I	37.00	I	98.00	I	54.0	I	0.486	I 34.056 I
I ARM D	I	3.20	I	6.20	I	24.00	I	40.00	I	88.00	I	64.0	I	0.405	I 24.458 I
I ARM E	I	3.50	I	7.20	I	9.00	I	19.00	I	88.00	I	64.0	I	0.384	I 22.641 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15		
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I		
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	
I		I		I		I		I		I		I	
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	
I		I		I		I		I		I		I	
I	ARM A	I	15.00	I	45.00	I	75.00	I	9.05	I	13.58	I	9.05
I	ARM B	I	15.00	I	45.00	I	75.00	I	17.08	I	25.61	I	17.08
I	ARM C	I	15.00	I	45.00	I	75.00	I	12.46	I	18.69	I	12.46
I	ARM D	I	15.00	I	45.00	I	75.00	I	6.51	I	9.77	I	6.51
I	ARM E	I	15.00	I	45.00	I	75.00	I	2.91	I	4.37	I	2.91

DEMAND SET TITLE: AM Peak 2006 Base Flows

													T33
I		I	TURNING PROPORTIONS						I				
I		I	TURNING COUNTS						I				
I		I	(PERCENTAGE OF H.V.S)						I				

I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	ARM E

I	16.45 - 18.15	I		I		I		I		I		I	
I		I	ARM A	I	0.000	I	0.431	I	0.497	I	0.058	I	0.014
I		I		I	0.0	I	312.0	I	360.0	I	42.0	I	10.0
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)
I		I		I		I		I		I		I	
I		I	ARM B	I	0.402	I	0.000	I	0.204	I	0.303	I	0.091
I		I		I	549.0	I	0.0	I	279.0	I	414.0	I	124.0
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)
I		I		I		I		I		I		I	
I		I	ARM C	I	0.588	I	0.278	I	0.000	I	0.044	I	0.090
I		I		I	586.0	I	277.0	I	0.0	I	44.0	I	90.0
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)
I		I		I		I		I		I		I	
I		I	ARM D	I	0.171	I	0.658	I	0.159	I	0.000	I	0.012
I		I		I	89.0	I	343.0	I	83.0	I	0.0	I	6.0
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)
I		I		I		I		I		I		I	
I		I	ARM E	I	0.052	I	0.725	I	0.197	I	0.026	I	0.000
I		I		I	12.0	I	169.0	I	46.0	I	6.0	I	0.0
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)
I		I		I		I		I		I		I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I											I
I	16.45-17.00										I
I	ARM A	9.08	28.67	0.317	- -	0.0	0.5	6.8	-	0.051	I
I	ARM B	17.14	36.36	0.471	- -	0.0	0.9	13.0	-	0.052	I
I	ARM C	12.51	27.10	0.462	- -	0.0	0.9	12.4	-	0.068	I
I	ARM D	6.54	16.18	0.404	- -	0.0	0.7	9.7	-	0.103	I
I	ARM E	2.92	13.41	0.218	- -	0.0	0.3	4.0	-	0.095	I
I											I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)
I	17.00-17.15	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	ARM A	I	10.85	I	27.54	I	0.394	I	- -	I	0.5	I	0.6	I	9.5	I	-	I	0.060
I	ARM B	I	20.47	I	35.60	I	0.575	I	- -	I	0.9	I	1.3	I	19.5	I	-	I	0.066
I	ARM C	I	14.94	I	25.74	I	0.580	I	- -	I	0.9	I	1.4	I	19.8	I	-	I	0.092
I	ARM D	I	7.81	I	14.55	I	0.537	I	- -	I	0.7	I	1.1	I	16.3	I	-	I	0.147
I	ARM E	I	3.49	I	11.59	I	0.301	I	- -	I	0.3	I	0.4	I	6.2	I	-	I	0.123

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)
I	17.15-17.30	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	ARM A	I	13.29	I	26.07	I	0.510	I	- -	I	0.6	I	1.0	I	15.0	I	-	I	0.078
I	ARM B	I	25.07	I	34.57	I	0.725	I	- -	I	1.3	I	2.6	I	36.6	I	-	I	0.103
I	ARM C	I	18.30	I	23.88	I	0.766	I	- -	I	1.4	I	3.1	I	43.1	I	-	I	0.172
I	ARM D	I	9.56	I	12.36	I	0.773	I	- -	I	1.1	I	3.1	I	41.2	I	-	I	0.326
I	ARM E	I	4.28	I	9.18	I	0.466	I	- -	I	0.4	I	0.9	I	12.1	I	-	I	0.202

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)
I	17.30-17.45	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	ARM A	I	13.29	I	25.99	I	0.511	I	- -	I	1.0	I	1.0	I	15.5	I	-	I	0.079
I	ARM B	I	25.07	I	34.55	I	0.725	I	- -	I	2.6	I	2.6	I	38.9	I	-	I	0.105
I	ARM C	I	18.30	I	23.85	I	0.767	I	- -	I	3.1	I	3.2	I	47.6	I	-	I	0.179
I	ARM D	I	9.56	I	12.30	I	0.777	I	- -	I	3.1	I	3.3	I	48.4	I	-	I	0.359
I	ARM E	I	4.28	I	9.08	I	0.471	I	- -	I	0.9	I	0.9	I	13.0	I	-	I	0.208

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	10.85	27.43	0.395	- -	-	1.0	0.7	10.1	0.060	I
I	ARM B	20.47	35.57	0.575	- -	-	2.6	1.4	21.2	0.067	I
I	ARM C	14.94	25.69	0.581	- -	-	3.2	1.4	22.2	0.095	I
I	ARM D	7.81	14.47	0.540	- -	-	3.3	1.2	19.4	0.157	I
I	ARM E	3.49	11.46	0.305	- -	-	0.9	0.4	6.9	0.127	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	9.08	28.61	0.318	- -	-	0.7	0.5	7.1	0.051	I
I	ARM B	17.14	36.34	0.472	- -	-	1.4	0.9	13.8	0.052	I
I	ARM C	12.51	27.07	0.462	- -	-	1.4	0.9	13.4	0.069	I
I	ARM D	6.54	16.12	0.405	- -	-	1.2	0.7	10.7	0.105	I
I	ARM E	2.92	13.33	0.219	- -	-	0.4	0.3	4.4	0.096	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5
17.15	0.6 *
17.30	1.0 *
17.45	1.0 *
18.00	0.7 *
18.15	0.5

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.9 *
17.15	1.3 *
17.30	2.6 ***
17.45	2.6 ***
18.00	1.4 *
18.15	0.9 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.9 *
17.15	1.4 *
17.30	3.1 ***
17.45	3.2 ***
18.00	1.4 *
18.15	0.9 *

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.7 *
17.15	1.1 *
17.30	3.1 ***
17.45	3.3 ***
18.00	1.2 *
18.15	0.7 *

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.3
17.15	0.4
17.30	0.9 *
17.45	0.9 *
18.00	0.4
18.15	0.3

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	996.5	I 664.4	I 64.0	I 0.06	I 64.0	I 0.06	I	
I	B	I	1880.2	I 1253.5	I 143.0	I 0.08	I 143.0	I 0.08	I	
I	C	I	1372.3	I 914.9	I 158.4	I 0.12	I 158.4	I 0.12	I	
I	D	I	717.1	I 478.1	I 145.7	I 0.20	I 145.7	I 0.20	I	
I	E	I	320.7	I 213.8	I 46.6	I 0.15	I 46.6	I 0.15	I	
I	ALL	I	5286.9	I 3524.6	I 557.7	I 0.11	I 557.7	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\LLITM\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 17:05:05 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4Cross in Hand Roundabout AM Peak 2026 With Development
LOCATION: Cross In Hand Roundabout
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

																	T5	
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	4.70	I	7.50	I	47.00	I	45.00	I	98.00	I	48.0	I	0.494	I	34.354	I
I	ARM B	I	7.10	I	8.80	I	25.00	I	35.00	I	79.00	I	54.0	I	0.566	I	40.232	I
I	ARM C	I	5.10	I	7.50	I	50.00	I	37.00	I	98.00	I	54.0	I	0.486	I	34.056	I
I	ARM D	I	3.20	I	6.20	I	24.00	I	40.00	I	88.00	I	64.0	I	0.405	I	24.458	I
I	ARM E	I	3.50	I	7.20	I	9.00	I	19.00	I	88.00	I	64.0	I	0.384	I	22.641	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15				
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		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	13.70	I	20.55	I	13.70	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	18.01	I	27.02	I	18.01	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	12.52	I	18.79	I	12.52	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	5.14	I	7.71	I	5.14	I
I	ARM	E	I	15.00	I	45.00	I	75.00	I	4.47	I	6.71	I	4.47	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

												T33		
I		I	TURNING PROPORTIONS						I					
I		I	TURNING COUNTS						I					
I		I	(PERCENTAGE OF H.V.S)						I					

I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	ARM E	I
I	07.15 - 08.45	I		I		I		I		I		I		I
I		ARM A	I	0.000	I	0.395	I	0.527	I	0.071	I	0.006	I	
I			I	0.0	I	433.0	I	578.0	I	78.0	I	7.0	I	
I			I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I			I <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th>		I		I		I		I		I	
I			ARM B	I	0.255	I	0.000	I	0.427	I	0.276	I	0.042	I
I			I	368.0	I	0.0	I	615.0	I	398.0	I	60.0	I	
I			I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I			I <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th>		I		I		I		I		I	
I			ARM C	I	0.404	I	0.463	I	0.000	I	0.066	I	0.067	I
I			I	405.0	I	464.0	I	0.0	I	66.0	I	67.0	I	
I			I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I			I <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th>		I		I		I		I		I	
I			ARM D	I	0.243	I	0.693	I	0.061	I	0.000	I	0.002	I
I			I	100.0	I	285.0	I	25.0	I	0.0	I	1.0	I	
I			I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I			I <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th>		I		I		I		I		I	
I			ARM E	I	0.039	I	0.668	I	0.279	I	0.014	I	0.000	I
I			I	14.0	I	239.0	I	100.0	I	5.0	I	0.0	I	
I			I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I		I <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th> <td></td> <th>I</th>		I		I		I		I		I		

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I												I
I	07.15-07.30										I	
I	ARM A	13.75	27.47	0.501	- -	-	0.0	1.0	14.4	-	0.072	I
I	ARM B	18.08	34.63	0.522	- -	-	0.0	1.1	15.8	-	0.060	I
I	ARM C	12.57	28.50	0.441	- -	-	0.0	0.8	11.4	-	0.062	I
I	ARM D	5.16	17.52	0.294	- -	-	0.0	0.4	6.0	-	0.080	I
I	ARM E	4.49	14.75	0.305	- -	-	0.0	0.4	6.3	-	0.097	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	07.30-07.45										I	
I	ARM A	16.42	26.10	0.629	- -	-	1.0	1.7	24.0	-	0.102	I
I	ARM B	21.59	33.52	0.644	- -	-	1.1	1.8	25.8	-	0.083	I
I	ARM C	15.01	27.40	0.548	- -	-	0.8	1.2	17.4	-	0.080	I
I	ARM D	6.16	16.15	0.381	- -	-	0.4	0.6	8.9	-	0.100	I
I	ARM E	5.36	13.19	0.407	- -	-	0.4	0.7	9.8	-	0.127	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	07.45-08.00										I	
I	ARM A	20.11	24.28	0.828	- -	-	1.7	4.4	59.2	-	0.221	I
I	ARM B	26.44	32.07	0.825	- -	-	1.8	4.4	60.1	-	0.168	I
I	ARM C	18.39	25.95	0.709	- -	-	1.2	2.4	33.4	-	0.130	I
I	ARM D	7.54	14.32	0.527	- -	-	0.6	1.1	15.6	-	0.146	I
I	ARM E	6.57	11.10	0.592	- -	-	0.7	1.4	19.6	-	0.216	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	08.00-08.15										I	
I	ARM A	20.11	24.23	0.830	- -	-	4.4	4.7	68.6	-	0.240	I
I	ARM B	26.44	32.00	0.826	- -	-	4.4	4.6	67.9	-	0.178	I
I	ARM C	18.39	25.90	0.710	- -	-	2.4	2.4	35.9	-	0.133	I
I	ARM D	7.54	14.27	0.528	- -	-	1.1	1.1	16.5	-	0.148	I
I	ARM E	6.57	11.05	0.595	- -	-	1.4	1.4	21.4	-	0.223	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	16.42	26.03	0.631	- -	-	4.7	1.7	28.0	0.108	I
I	ARM B	21.59	33.43	0.646	- -	-	4.6	1.9	29.4	0.087	I
I	ARM C	15.01	27.33	0.549	- -	-	2.4	1.2	19.2	0.082	I
I	ARM D	6.16	16.09	0.383	- -	-	1.1	0.6	9.7	0.101	I
I	ARM E	5.36	13.12	0.409	- -	-	1.4	0.7	11.0	0.131	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	13.75	27.41	0.502	- -	-	1.7	1.0	15.7	0.074	I
I	ARM B	18.08	34.58	0.523	- -	-	1.9	1.1	17.0	0.061	I
I	ARM C	12.57	28.46	0.442	- -	-	1.2	0.8	12.3	0.063	I
I	ARM D	5.16	17.47	0.295	- -	-	0.6	0.4	6.5	0.081	I
I	ARM E	4.49	14.69	0.306	- -	-	0.7	0.4	6.9	0.098	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.0	*
07.45	1.7	**
08.00	4.4	****
08.15	4.7	*****
08.30	1.7	**
08.45	1.0	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	1.8	**
08.00	4.4	****
08.15	4.6	*****
08.30	1.9	**
08.45	1.1	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.8	*
07.45	1.2	*
08.00	2.4	**
08.15	2.4	**
08.30	1.2	*
08.45	0.8	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.6	*
08.00	1.1	*
08.15	1.1	*
08.30	0.6	*
08.45	0.4	

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.7	*
08.00	1.4	*
08.15	1.4	*
08.30	0.7	*
08.45	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		
I		I		I	* DELAY *	I	* DELAY *	I		
I		I								
I		I	(VEH)	(VEH/H)	I (MIN)	(MIN/VEH)	I (MIN)	(MIN/VEH)	I	
I	A	I	1508.6	I 1005.7	I 209.9	I 0.14	I 210.0	I 0.14	I	
I	B	I	1983.4	I 1322.3	I 215.9	I 0.11	I 215.9	I 0.11	I	
I	C	I	1379.2	I 919.5	I 129.6	I 0.09	I 129.6	I 0.09	I	
I	D	I	565.7	I 377.1	I 63.3	I 0.11	I 63.3	I 0.11	I	
I	E	I	492.8	I 328.5	I 74.9	I 0.15	I 75.0	I 0.15	I	
I	ALL	I	5929.6	I 3953.1	I 693.6	I 0.12	I 693.7	I 0.12	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\LLITM\S4 2026 PM + Dev.vai"
(drive-on-the-left) at 17:06:53 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 Cross in Hand Roundabout PM Peak 2026 With Development
LOCATION: Cross In Hand Roundabout
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

														T5	
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	4.70	I	7.50	I	47.00	I	45.00	I	98.00	I	48.0	I	0.494	I 34.354 I
I ARM B	I	7.10	I	8.80	I	25.00	I	35.00	I	79.00	I	54.0	I	0.566	I 40.232 I
I ARM C	I	5.10	I	7.50	I	50.00	I	37.00	I	98.00	I	54.0	I	0.486	I 34.056 I
I ARM D	I	3.20	I	6.20	I	24.00	I	40.00	I	88.00	I	64.0	I	0.405	I 24.458 I
I ARM E	I	3.50	I	7.20	I	9.00	I	19.00	I	88.00	I	64.0	I	0.384	I 22.641 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I ARM	I	FLOW	SCALE(%)	I	I
I A	I	100	I	I	I
I B	I	100	I	I	I
I C	I	100	I	I	I
I D	I	100	I	I	I
I E	I	100	I	I	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	9.43	14.14	9.43			
ARM B	15.00	45.00	75.00	15.44	23.16	15.44			
ARM C	15.00	45.00	75.00	12.55	18.83	12.55			
ARM D	15.00	45.00	75.00	6.70	10.05	6.70			
ARM E	15.00	45.00	75.00	3.41	5.12	3.41			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
16.45 - 18.15	ARM A	0.000	0.333	0.557	0.098	0.012			
		0.0	251.0	420.0	74.0	9.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM B	0.367	0.000	0.223	0.323	0.087			
		453.0	0.0	275.0	399.0	108.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM C	0.596	0.271	0.000	0.044	0.090			
		598.0	272.0	0.0	44.0	90.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM D	0.224	0.638	0.127	0.000	0.011			
		120.0	342.0	68.0	0.0	6.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM E	0.033	0.777	0.168	0.022	0.000			
		9.0	212.0	46.0	6.0	0.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	9.46	28.53	0.332	-	0.0	0.5	7.2	-	0.052
ARM B	15.50	35.82	0.433	-	0.0	0.8	11.1	-	0.049
ARM C	12.60	27.68	0.455	-	0.0	0.8	12.1	-	0.066
ARM D	6.73	16.71	0.402	-	0.0	0.7	9.6	-	0.099
ARM E	3.43	13.76	0.249	-	0.0	0.3	4.8	-	0.096

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	11.30	27.38	0.413	-	0.5	0.7	10.3	-	0.062
ARM B	18.50	34.96	0.529	-	0.8	1.1	16.3	-	0.061
ARM C	15.04	26.43	0.569	-	0.8	1.3	18.9	-	0.087
ARM D	8.03	15.19	0.529	-	0.7	1.1	15.8	-	0.139
ARM E	4.09	12.01	0.340	-	0.3	0.5	7.4	-	0.126

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	13.84	25.86	0.535	-	0.7	1.1	16.5	-	0.083
ARM B	22.66	33.78	0.671	-	1.1	2.0	28.8	-	0.089
ARM C	18.42	24.73	0.745	-	1.3	2.8	39.2	-	0.154
ARM D	9.84	13.14	0.749	-	1.1	2.8	37.3	-	0.284
ARM E	5.01	9.68	0.517	-	0.5	1.0	14.7	-	0.211

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
ARM A	13.84	25.79	0.536	-	1.1	1.1	17.2	-	0.084
ARM B	22.66	33.76	0.671	-	2.0	2.0	30.2	-	0.090
ARM C	18.42	24.71	0.746	-	2.8	2.9	42.7	-	0.159
ARM D	9.84	13.09	0.752	-	2.8	2.9	42.8	-	0.306
ARM E	5.01	9.60	0.522	-	1.0	1.1	15.9	-	0.217

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	11.30	27.28	0.414	- -	1.1	0.7	10.9	-	0.063	I
I	ARM B	18.50	34.92	0.530	- -	2.0	1.1	17.5	-	0.061	I
I	ARM C	15.04	26.40	0.570	- -	2.9	1.3	21.0	-	0.090	I
I	ARM D	8.03	15.12	0.531	- -	2.9	1.2	18.5	-	0.146	I
I	ARM E	4.09	11.90	0.344	- -	1.1	0.5	8.3	-	0.129	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	9.46	28.47	0.332	- -	0.7	0.5	7.6	-	0.053	I
I	ARM B	15.50	35.80	0.433	- -	1.1	0.8	11.7	-	0.049	I
I	ARM C	12.60	27.65	0.456	- -	1.3	0.8	13.0	-	0.067	I
I	ARM D	6.73	16.66	0.404	- -	1.2	0.7	10.6	-	0.101	I
I	ARM E	3.43	13.69	0.250	- -	0.5	0.3	5.2	-	0.098	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	
17.15	0.7	*
17.30	1.1	*
17.45	1.1	*
18.00	0.7	*
18.15	0.5	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.1	*
17.30	2.0	**
17.45	2.0	**
18.00	1.1	*
18.15	0.8	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.3	*
17.30	2.8	***
17.45	2.9	***
18.00	1.3	*
18.15	0.8	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.7	*
17.15	1.1	*
17.30	2.8	***
17.45	2.9	***
18.00	1.2	*
18.15	0.7	*

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.5	*
17.30	1.0	*
17.45	1.1	*
18.00	0.5	*
18.15	0.3	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1037.8	I 691.9	I 69.8	I 0.07	I 69.8	I 0.07	I	
I	B	I	1699.9	I 1133.3	I 115.7	I 0.07	I 115.8	I 0.07	I	
I	C	I	1381.9	I 921.3	I 146.9	I 0.11	I 146.9	I 0.11	I	
I	D	I	737.8	I 491.8	I 134.6	I 0.18	I 134.6	I 0.18	I	
I	E	I	375.8	I 250.5	I 56.3	I 0.15	I 56.3	I 0.15	I	
I	ALL	I	5233.2	I 3488.8	I 523.3	I 0.10	I 523.4	I 0.10	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
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Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\LLITM\S5 2026 AM + Dev + SP.vai"
(drive-on-the-left) at 17:08:30 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 Cross in Hand Roundabout AM Peak 2026 With Development + Symmetry Park
LOCATION: Cross In Hand Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

														T5	
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	5.00	I	8.60	I	60.00	I	60.00	I	73.00	I	44.0	I	0.596	I 39.854 I
I ARM B	I	7.00	I	8.60	I	29.50	I	48.00	I	80.00	I	47.0	I	0.577	I 40.948 I
I ARM C	I	4.50	I	7.00	I	23.00	I	48.00	I	80.00	I	41.0	I	0.500	I 31.782 I
I ARM D	I	3.50	I	6.00	I	18.00	I	70.00	I	80.00	I	20.0	I	0.487	I 28.255 I
I ARM E	I	3.00	I	7.00	I	14.00	I	23.00	I	73.00	I	56.0	I	0.430	I 23.547 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I ARM	I	FLOW	SCALE(%)	I	
I A	I	100		I	
I B	I	100		I	
I C	I	100		I	
I D	I	100		I	
I E	I	100		I	

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	14.02	21.04	14.02			
ARM B	15.00	45.00	75.00	18.15	27.22	18.15			
ARM C	15.00	45.00	75.00	12.86	19.29	12.86			
ARM D	15.00	45.00	75.00	5.44	8.16	5.44			
ARM E	15.00	45.00	75.00	5.07	7.61	5.07			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D	ARM E			
07.15 - 08.45	ARM A	0.000	0.422	0.504	0.069	0.006			
		0.0	473.0	565.0	77.0	7.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM B	0.256	0.000	0.440	0.267	0.037			
		372.0	0.0	639.0	388.0	53.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM C	0.395	0.472	0.000	0.068	0.065			
		406.0	486.0	0.0	70.0	67.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM D	0.232	0.706	0.060	0.000	0.002			
		101.0	307.0	26.0	0.0	1.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			
	ARM E	0.034	0.707	0.246	0.012	0.000			
		14.0	287.0	100.0	5.0	0.0			
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)			

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	14.08	30.85	0.456	-	0.0	0.8	12.2	-	0.059	
ARM B	18.22	35.33	0.516	-	0.0	1.1	15.4	-	0.058	
ARM C	12.91	26.14	0.494	-	0.0	1.0	14.0	-	0.075	
ARM D	5.46	19.79	0.276	-	0.0	0.4	5.5	-	0.070	
ARM E	5.09	14.43	0.353	-	0.0	0.5	7.8	-	0.106	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	16.81	29.08	0.578	-	0.8	1.4	19.7	-	0.081	
ARM B	21.76	34.23	0.636	-	1.1	1.7	24.9	-	0.080	
ARM C	15.42	25.03	0.616	-	1.0	1.6	22.7	-	0.103	
ARM D	6.52	18.13	0.359	-	0.4	0.6	8.1	-	0.086	
ARM E	6.08	12.64	0.481	-	0.5	0.9	13.1	-	0.151	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	20.59	26.74	0.770	-	1.4	3.2	44.3	-	0.157	
ARM B	26.64	32.76	0.813	-	1.7	4.1	56.6	-	0.155	
ARM C	18.88	23.55	0.802	-	1.6	3.8	51.4	-	0.202	
ARM D	7.98	15.92	0.502	-	0.6	1.0	14.3	-	0.125	
ARM E	7.45	10.24	0.727	-	0.9	2.5	32.9	-	0.334	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	20.59	26.63	0.773	-	3.2	3.3	49.1	-	0.165	
ARM B	26.64	32.70	0.815	-	4.1	4.3	63.2	-	0.164	
ARM C	18.88	23.50	0.803	-	3.8	3.9	58.2	-	0.215	
ARM D	7.98	15.83	0.504	-	1.0	1.0	15.0	-	0.127	
ARM E	7.45	10.16	0.733	-	2.5	2.6	38.4	-	0.365	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	16.81	28.93	0.581	- -	-	3.3	1.4	22.1	0.084	I
I	ARM B	21.76	34.15	0.637	- -	-	4.3	1.8	28.1	0.083	I
I	ARM C	15.42	24.97	0.618	- -	-	3.9	1.6	26.2	0.108	I
I	ARM D	6.52	18.01	0.362	- -	-	1.0	0.6	8.8	0.087	I
I	ARM E	6.08	12.53	0.486	- -	-	2.6	1.0	15.5	0.161	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	14.08	30.77	0.458	- -	-	1.4	0.8	13.1	0.060	I
I	ARM B	18.22	35.29	0.516	- -	-	1.8	1.1	16.6	0.059	I
I	ARM C	12.91	26.10	0.495	- -	-	1.6	1.0	15.3	0.076	I
I	ARM D	5.46	19.73	0.277	- -	-	0.6	0.4	5.9	0.070	I
I	ARM E	5.09	14.36	0.355	- -	-	1.0	0.6	8.6	0.109	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.8	*
07.45	1.4	*
08.00	3.2	***
08.15	3.3	***
08.30	1.4	*
08.45	0.8	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	1.7	**
08.00	4.1	****
08.15	4.3	****
08.30	1.8	**
08.45	1.1	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.0	*
07.45	1.6	**
08.00	3.8	****
08.15	3.9	****
08.30	1.6	**
08.45	1.0	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.6	*
08.00	1.0	*
08.15	1.0	*
08.30	0.6	*
08.45	0.4	

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.9	*
08.00	2.5	**
08.15	2.6	***
08.30	1.0	*
08.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1544.4	I 1029.6	I 160.4	I 0.10	I 160.4	I 0.10	I	
I	B	I	1998.6	I 1332.4	I 204.8	I 0.10	I 204.8	I 0.10	I	
I	C	I	1416.3	I 944.2	I 187.8	I 0.13	I 187.8	I 0.13	I	
I	D	I	598.7	I 399.2	I 57.7	I 0.10	I 57.7	I 0.10	I	
I	E	I	558.8	I 372.6	I 116.4	I 0.21	I 116.4	I 0.21	I	
I	ALL	I	6116.8	I 4077.9	I 727.0	I 0.12	I 727.1	I 0.12	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Cross in Hand A5_A4303\
ES Addendum Oct 2016\LLITM\S5 2026 PM + Dev + SP.vai"
(drive-on-the-left) at 17:09:58 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 Cross in Hand Roundabout PM Peak 2026 With Development + Symmetry Park
LOCATION: Cross In Hand Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - A5 North
ARM B - A4303
ARM C - A5 South
ARM D - B4027
ARM E - Coal Pit Lane

GEOMETRIC DATA

																	T5	
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	5.00	I	8.60	I	60.00	I	60.00	I	73.00	I	44.0	I	0.596	I	39.854	I
I	ARM B	I	7.00	I	8.60	I	29.50	I	48.00	I	80.00	I	47.0	I	0.577	I	40.948	I
I	ARM C	I	4.50	I	7.00	I	23.00	I	48.00	I	80.00	I	41.0	I	0.500	I	31.782	I
I	ARM D	I	3.50	I	6.00	I	18.00	I	70.00	I	80.00	I	20.0	I	0.487	I	28.255	I
I	ARM E	I	3.00	I	7.00	I	14.00	I	23.00	I	73.00	I	56.0	I	0.430	I	23.547	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I
I	E	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15				
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I				
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I	
I		I		I		I		I		I		I		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	9.41	I	14.12	I	9.41	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	16.85	I	25.28	I	16.85	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	12.56	I	18.84	I	12.56	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	6.49	I	9.73	I	6.49	I
I	ARM	E	I	15.00	I	45.00	I	75.00	I	3.70	I	5.55	I	3.70	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

												T33			
I		I	TURNING PROPORTIONS						I						
I		I	TURNING COUNTS						I						
I		I	(PERCENTAGE OF H.V.S)						I						

I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	ARM E	I	
I	16.45 - 18.15	I		I		I		I		I		I		I	
I		ARM A	I	0.000	I	0.345	I	0.544	I	0.098	I	0.012	I		
I			I	0.0	I	260.0	I	410.0	I	74.0	I	9.0	I		
I			I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I		
I			I		I		I		I		I		I		
I			I	ARM B	I	0.367	I	0.000	I	0.237	I	0.307	I	0.089	I
I			I		I	495.0	I	0.0	I	319.0	I	414.0	I	120.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I		I
I			I	ARM C	I	0.564	I	0.303	I	0.000	I	0.043	I	0.090	I
I			I		I	567.0	I	305.0	I	0.0	I	43.0	I	90.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I		I
I			I	ARM D	I	0.227	I	0.649	I	0.112	I	0.000	I	0.012	I
I			I		I	118.0	I	337.0	I	58.0	I	0.0	I	6.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I		I
I			I	ARM E	I	0.030	I	0.797	I	0.152	I	0.020	I	0.000	I
I			I		I	9.0	I	236.0	I	45.0	I	6.0	I	0.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I		I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	16.45-17.00										I	
I	ARM A	9.45	32.52	0.291	- -	-	0.0	0.4	6.0	-	0.043	I
I	ARM B	16.91	36.61	0.462	- -	-	0.0	0.9	12.5	-	0.050	I
I	ARM C	12.61	24.79	0.509	- -	-	0.0	1.0	14.8	-	0.081	I
I	ARM D	6.51	18.61	0.350	- -	-	0.0	0.5	7.8	-	0.082	I
I	ARM E	3.71	13.46	0.276	- -	-	0.0	0.4	5.5	-	0.102	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	17.00-17.15										I	
I	ARM A	11.28	31.07	0.363	- -	-	0.4	0.6	8.4	-	0.050	I
I	ARM B	20.20	35.75	0.565	- -	-	0.9	1.3	18.8	-	0.064	I
I	ARM C	15.06	23.41	0.643	- -	-	1.0	1.8	25.3	-	0.118	I
I	ARM D	7.78	16.71	0.465	- -	-	0.5	0.9	12.4	-	0.111	I
I	ARM E	4.43	11.47	0.387	- -	-	0.4	0.6	9.0	-	0.142	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	17.15-17.30										I	
I	ARM A	13.82	29.18	0.474	- -	-	0.6	0.9	13.1	-	0.065	I
I	ARM B	24.74	34.60	0.715	- -	-	1.3	2.5	35.0	-	0.100	I
I	ARM C	18.44	21.55	0.856	- -	-	1.8	5.3	67.9	-	0.282	I
I	ARM D	9.52	14.21	0.670	- -	-	0.9	2.0	27.1	-	0.207	I
I	ARM E	5.43	8.85	0.613	- -	-	0.6	1.5	20.8	-	0.282	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	17.30-17.45										I	
I	ARM A	13.82	29.08	0.475	- -	-	0.9	0.9	13.5	-	0.065	I
I	ARM B	24.74	34.58	0.715	- -	-	2.5	2.5	37.1	-	0.101	I
I	ARM C	18.44	21.52	0.857	- -	-	5.3	5.6	81.8	-	0.318	I
I	ARM D	9.52	14.09	0.676	- -	-	2.0	2.0	30.0	-	0.219	I
I	ARM E	5.43	8.74	0.622	- -	-	1.5	1.6	23.5	-	0.301	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	11.28	30.93	0.365	- -	-	0.9	0.6	8.8	0.051	I
I	ARM B	20.20	35.73	0.565	- -	-	2.5	1.3	20.3	0.065	I
I	ARM C	15.06	23.37	0.644	- -	-	5.6	1.9	30.5	0.128	I
I	ARM D	7.78	16.55	0.470	- -	-	2.0	0.9	14.1	0.116	I
I	ARM E	4.43	11.30	0.392	- -	-	1.6	0.7	10.4	0.148	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	9.45	32.45	0.291	- -	-	0.6	0.4	6.3	0.044	I
I	ARM B	16.91	36.59	0.462	- -	-	1.3	0.9	13.3	0.051	I
I	ARM C	12.61	24.75	0.510	- -	-	1.9	1.1	16.3	0.083	I
I	ARM D	6.51	18.53	0.351	- -	-	0.9	0.5	8.4	0.083	I
I	ARM E	3.71	13.37	0.278	- -	-	0.7	0.4	6.0	0.104	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.4	
17.15	0.6	*
17.30	0.9	*
17.45	0.9	*
18.00	0.6	*
18.15	0.4	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.9	*
17.15	1.3	*
17.30	2.5	**
17.45	2.5	**
18.00	1.3	*
18.15	0.9	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.0	*
17.15	1.8	**
17.30	5.3	*****
17.45	5.6	*****
18.00	1.9	**
18.15	1.1	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	*
17.15	0.9	*
17.30	2.0	**
17.45	2.0	**
18.00	0.9	*
18.15	0.5	*

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.4	
17.15	0.6	*
17.30	1.5	**
17.45	1.6	**
18.00	0.7	*
18.15	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I		I		I	* DELAY *	I	* DELAY *	I		I
I		I		I		I		I		I
I		I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1036.4	I 691.0	I 56.0	I 0.05	I 56.0	I 0.05	I	I
I	B	I	1855.4	I 1236.9	I 136.9	I 0.07	I 136.9	I 0.07	I	I
I	C	I	1383.3	I 922.2	I 236.5	I 0.17	I 236.5	I 0.17	I	I
I	D	I	714.4	I 476.2	I 99.9	I 0.14	I 99.9	I 0.14	I	I
I	E	I	407.4	I 271.6	I 75.1	I 0.18	I 75.2	I 0.18	I	I
I	ALL	I	5397.0	I 3598.0	I 604.5	I 0.11	I 604.5	I 0.11	I	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\LLITM\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 17:18:10 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 Magna Park Access Roundabout AM Peak 2026 Without Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

																		T5
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	7.20	I	10.70	I	31.00	I	19.00	I	67.00	I	57.0	I	0.654	I	44.594	I
I	ARM B	I	7.30	I	10.20	I	32.00	I	100.00	I	67.00	I	54.0	I	0.681	I	46.088	I
I	ARM C	I	7.30	I	7.30	I	0.00	I	25.00	I	67.00	I	62.0	I	0.541	I	33.132	I
I	ARM D	I	7.60	I	10.00	I	11.00	I	42.00	I	67.00	I	60.0	I	0.632	I	41.945	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15															
I	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		I		I		I		I		I		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	7.06	I	10.59	I	7.06	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	21.54	I	32.31	I	21.54	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	0.36	I	0.54	I	0.36	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	16.80	I	25.20	I	16.80	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
		TURNING PROPORTIONS							
		TURNING COUNTS							
		(PERCENTAGE OF H.V.S)							
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D			
07.15 - 08.45	ARM A	0.000	0.301	0.000	0.699				
		0.0	170.0	0.0	395.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM B	0.384	0.035	0.057	0.524				
		661.0	61.0	98.0	903.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM C	0.276	0.241	0.000	0.483				
		8.0	7.0	0.0	14.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM D	0.403	0.541	0.057	0.000				
		541.0	727.0	76.0	0.0				
		(0.0)	(0.0)	(0.0)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

[illegible][illegible]

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	07.45-08.00										
I	ARM A	10.37	34.19	0.303	- -	-	0.3	0.4	6.4	-	0.042
I	ARM B	31.62	40.21	0.786	- -	-	1.7	3.6	49.8	-	0.113
I	ARM C	0.53	13.14	0.041	- -	-	0.0	0.0	0.6	-	0.079
I	ARM D	24.66	33.43	0.738	- -	-	1.3	2.7	38.7	-	0.112

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	08.00-08.15									
	ARM A	10.37	34.15	0.304	-	-	0.4	0.4	6.5	0.042
	ARM B	31.62	40.20	0.786	-	-	3.6	3.6	53.9	0.116
	ARM C	0.53	13.07	0.041	-	-	0.0	0.0	0.6	0.080
	ARM D	24.66	33.39	0.739	-	-	2.7	2.8	41.5	0.115

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	08.15-08.30										
I	ARM A	8.47	36.02	0.235	- -	-	0.4	0.3	4.7	-	0.036
I	ARM B	25.82	41.28	0.625	- -	-	3.6	1.7	26.3	-	0.066
I	ARM C	0.43	16.68	0.026	- -	-	0.0	0.0	0.4	-	0.062
I	ARM D	20.14	34.93	0.577	- -	-	2.8	1.4	21.4	-	0.069

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	7.09	37.44	0.189	-	0.3	0.2	3.5	-	0.033
ARM B	21.62	42.06	0.514	-	1.7	1.1	16.3	-	0.049
ARM C	0.36	19.39	0.019	-	0.0	0.0	0.3	-	0.053
ARM D	16.86	36.09	0.467	-	1.4	0.9	13.5	-	0.052

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.2
07.45	0.3
08.00	0.4
08.15	0.4
08.30	0.3
08.45	0.2

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.0 *
07.45	1.7 **
08.00	3.6 ****
08.15	3.6 ****
08.30	1.7 **
08.45	1.1 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.9 *
07.45	1.3 *
08.00	2.7 ***
08.15	2.8 ***
08.30	1.4 *
08.45	0.9 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	777.7	29.1	29.1
B	2371.6	185.8	185.8
C	39.9	2.6	2.6
D	1849.9	147.4	147.4
ALL	5039.1	365.0	365.0

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\LLITM\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 17:19:14 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 Magna Park Access Roundabout PM Peak 2026 Without Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

T5																		
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	7.20	I	10.70	I	31.00	I	19.00	I	67.00	I	57.0	I	0.654	I	44.594	I
I	ARM B	I	7.30	I	10.20	I	32.00	I	100.00	I	67.00	I	54.0	I	0.681	I	46.088	I
I	ARM C	I	7.30	I	7.30	I	0.00	I	25.00	I	67.00	I	62.0	I	0.541	I	33.132	I
I	ARM D	I	7.60	I	10.00	I	11.00	I	42.00	I	67.00	I	60.0	I	0.632	I	41.945	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13				
I	ARM	I	FLOW SCALE(%)	I

I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERMANENT FLOW RATE AT PEAK FLOW										T15			
I	I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)			I				
ARM	I	FLOW STARTS	I	TOP OF PEAK	I	BEFORE	I	AT TOP	I				
I	I	I	I	I	I	I	I	I	I				
I	I	TO RISE	I	IS REACHED	I	PEAK	I	OF PEAK	I				
I ARM A	I	15.00	I	45.00	I	75.00	I	9.48	I	14.21	I	9.48	I
I ARM B	I	15.00	I	45.00	I	75.00	I	12.30	I	18.45	I	12.30	I
I ARM C	I	15.00	I	45.00	I	75.00	I	3.63	I	5.44	I	3.63	I
I ARM D	I	15.00	I	45.00	I	75.00	I	12.43	I	18.64	I	12.43	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33										
		TURNING PROPORTIONS								
		TURNING COUNTS								
		(PERCENTAGE OF H.V.S)								
TIME		FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D
I	16.45 - 18.15	I	I	I	I	I	I	I	I	I
I		I	ARM A	I	0.000	I	0.445	I	0.008	I
I		I		I	0.0	I	337.0	I	6.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I
I		I	ARM B	I	0.229	I	0.028	I	0.023	I
I		I		I	225.0	I	28.0	I	23.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I
I		I	ARM C	I	0.055	I	0.593	I	0.000	I
I		I		I	16.0	I	172.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I
I		I	ARM D	I	0.161	I	0.827	I	0.012	I
I		I		I	160.0	I	822.0	I	12.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

[illegible][illegible]

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.15-17.30										
I	ARM A	13.91	32.21	0.432	- -	-	0.5	0.8	11.1	-	0.055
I	ARM B	18.06	40.68	0.444	- -	-	0.5	0.8	11.7	-	0.044
I	ARM C	5.32	19.48	0.273	- -	-	0.2	0.4	5.5	-	0.070
I	ARM D	18.24	36.83	0.495	- -	-	0.6	1.0	14.3	-	0.054

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
	17.30-17.45										
	ARM A	13.91	32.19	0.432	-	-	0.8	0.8	11.4	-	0.055
	ARM B	18.06	40.68	0.444	-	-	0.8	0.8	11.9	-	0.044
	ARM C	5.32	19.46	0.273	-	-	0.4	0.4	5.6	-	0.071
	ARM D	18.24	36.83	0.495	-	-	1.0	1.0	14.6	-	0.054

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
	17.45-18.00										
	ARM A	11.36	34.45	0.330	- -	-	0.8	0.5	7.5	-	0.043
	ARM B	14.74	41.66	0.354	- -	-	0.8	0.5	8.4	-	0.037
	ARM C	4.35	21.96	0.198	- -	-	0.4	0.2	3.8	-	0.057
	ARM D	14.89	37.76	0.394	- -	-	1.0	0.7	10.0	-	0.044

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	9.51	36.10	0.263	- -	0.5	0.4	5.5	-	0.038	I
I	ARM B	12.35	42.39	0.291	- -	0.5	0.4	6.3	-	0.033	I
I	ARM C	3.64	23.78	0.153	- -	0.2	0.2	2.8	-	0.050	I
I	ARM D	12.47	38.44	0.324	- -	0.7	0.5	7.3	-	0.039	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5
17.30	0.8 *
17.45	0.8 *
18.00	0.5
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.8 *
17.45	0.8 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.2
17.30	0.4
17.45	0.4
18.00	0.2
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5
17.15	0.6 *
17.30	1.0 *
17.45	1.0 *
18.00	0.7 *
18.15	0.5

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	I	I	I	I	I	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	1043.3	I	695.6	I	47.9	I	0.05
I	B	I	1354.4	I	902.9	I	52.4	I	0.04
I	C	I	399.2	I	266.1	I	23.9	I	0.06
I	D	I	1368.2	I	912.1	I	62.9	I	0.05
I	ALL	I	4165.1	I	2776.7	I	187.2	I	0.04

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\LLITM\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 16:42:16 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 Magna Park Access Roundabout AM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

T5																		
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	7.20	I	10.70	I	31.00	I	19.00	I	67.00	I	57.0	I	0.654	I	44.594	I
I	ARM B	I	7.30	I	10.20	I	32.00	I	100.00	I	67.00	I	54.0	I	0.681	I	46.088	I
I	ARM C	I	7.30	I	7.30	I	0.00	I	25.00	I	67.00	I	62.0	I	0.541	I	33.132	I
I	ARM D	I	7.60	I	10.00	I	11.00	I	42.00	I	67.00	I	60.0	I	0.632	I	41.945	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	7.85	11.77	7.85			
ARM B	15.00	45.00	75.00	22.44	33.66	22.44			
ARM C	15.00	45.00	75.00	0.31	0.47	0.31			
ARM D	15.00	45.00	75.00	15.86	23.79	15.86			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.361	0.008	0.631				
		0.0	227.0	5.0	396.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM B	0.425	0.034	0.052	0.489				
		763.0	61.0	93.0	878.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM C	0.360	0.240	0.000	0.400				
		9.0	6.0	0.0	10.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM D	0.378	0.567	0.055	0.000				
		480.0	719.0	70.0	0.0				
		(0.0)	(0.0)	(0.0)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	7.88	37.60	0.210	-	0.0	0.3	3.9	-	0.034	
ARM B	22.52	42.07	0.535	-	0.0	1.1	16.7	-	0.051	
ARM C	0.31	18.93	0.017	-	0.0	0.0	0.2	-	0.054	
ARM D	15.92	35.31	0.451	-	0.0	0.8	11.9	-	0.051	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	9.41	36.22	0.260	-	0.3	0.3	5.2	-	0.037	
ARM B	26.89	41.29	0.651	-	1.1	1.8	26.8	-	0.069	
ARM C	0.37	16.14	0.023	-	0.0	0.0	0.3	-	0.063	
ARM D	19.01	34.01	0.559	-	0.8	1.3	18.3	-	0.066	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	11.52	34.37	0.335	-	0.3	0.5	7.4	-	0.044	
ARM B	32.94	40.21	0.819	-	1.8	4.3	59.6	-	0.131	
ARM C	0.46	12.38	0.037	-	0.0	0.0	0.6	-	0.084	
ARM D	23.29	32.26	0.722	-	1.3	2.5	35.9	-	0.109	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	11.52	34.33	0.336	-	0.5	0.5	7.6	-	0.044	
ARM B	32.94	40.20	0.819	-	4.3	4.4	65.8	-	0.137	
ARM C	0.46	12.30	0.037	-	0.0	0.0	0.6	-	0.084	
ARM D	23.29	32.21	0.723	-	2.5	2.6	38.3	-	0.112	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	9.41	36.17	0.260	-	0.5	0.4	5.4	-	0.037	
ARM B	26.89	41.28	0.652	-	4.4	1.9	29.8	-	0.071	
ARM C	0.37	16.03	0.023	-	0.0	0.0	0.4	-	0.064	
ARM D	19.01	33.95	0.560	-	2.6	1.3	19.9	-	0.068	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	7.88	37.56	0.210	-	0.4	0.3	4.0	-	0.034
ARM B	22.52	42.06	0.535	-	1.9	1.2	17.8	-	0.051
ARM C	0.31	18.85	0.017	-	0.0	0.0	0.3	-	0.054
ARM D	15.92	35.27	0.451	-	1.3	0.8	12.7	-	0.052

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.3
07.45	0.3
08.00	0.5 *
08.15	0.5 *
08.30	0.4
08.45	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.1 *
07.45	1.8 **
08.00	4.3 ****
08.15	4.4 ****
08.30	1.9 **
08.45	1.2 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.8 *
07.45	1.3 *
08.00	2.5 ***
08.15	2.6 ***
08.30	1.3 *
08.45	0.8 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	864.4	33.5	33.5
B	2470.7	216.5	216.5
C	34.4	2.4	2.4
D	1746.7	137.1	137.2
ALL	5116.2	389.4	389.5

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\LLITM\S4 2026 PM + Dev.vai"
(drive-on-the-left) at 16:43:34 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 Magna Park Access Roundabout PM Peak 2026 With Development
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

																		T5
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	7.20	I	10.70	I	31.00	I	19.00	I	67.00	I	57.0	I	0.654	I	44.594	I
I	ARM B	I	7.30	I	10.20	I	32.00	I	100.00	I	67.00	I	54.0	I	0.681	I	46.088	I
I	ARM C	I	7.30	I	7.30	I	0.00	I	25.00	I	67.00	I	62.0	I	0.541	I	33.132	I
I	ARM D	I	7.60	I	10.00	I	11.00	I	42.00	I	67.00	I	60.0	I	0.632	I	41.945	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

T15															
		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		I		I		I		I		I		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	9.39	I	14.08	I	9.39	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	12.60	I	18.90	I	12.60	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	3.91	I	5.87	I	3.91	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	11.94	I	17.91	I	11.94	I

T33									
		TURNING PROPORTIONS							
		TURNING COUNTS							
		(PERCENTAGE OF H.V.S)							
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D			
16.45	18.15	ARM A	0.000	0.529	0.009	0.462			
			0.0	397.0	7.0	347.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM B	0.278	0.028	0.022	0.673			
			280.0	28.0	22.0	678.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM C	0.163	0.537	0.000	0.300			
			51.0	168.0	0.0	94.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM D	0.133	0.854	0.013	0.000			
			127.0	816.0	12.0	0.0			
			(0.0)	(0.0)	(0.0)	(0.0)			

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL
	16.45-17.00										
ARM A	9.42	36.22	0.260	-	-	0.0	0.4	5.2	-	0.037	
ARM B	12.65	42.97	0.294	-	-	0.0	0.4	6.1	-	0.033	
ARM C	3.93	24.10	0.163	-	-	0.0	0.2	2.9	-	0.050	
ARM D	11.98	37.77	0.317	-	-	0.0	0.5	6.8	-	0.039	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.00-17.15										I
I	ARM A	11.25	34.57	0.325	-	0.4	0.5	7.1	-	0.043	I
I	ARM B	15.10	42.36	0.357	-	0.4	0.6	8.2	-	0.037	I
I	ARM C	4.69	22.33	0.210	-	0.2	0.3	3.9	-	0.057	I
I	ARM D	14.31	36.96	0.387	-	0.5	0.6	9.3	-	0.044	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.15-17.30										
I	ARM A	13.78	32.33	0.426	- -	-	0.5	0.7	10.9	-	0.054
I	ARM B	18.50	41.52	0.445	- -	-	0.6	0.8	11.8	-	0.043
I	ARM C	5.74	19.90	0.289	- -	-	0.3	0.4	5.9	-	0.071
I	ARM D	17.52	35.84	0.489	- -	-	0.6	1.0	14.0	-	0.054

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	17.30-17.45									
I	ARM A	13.78	32.31	0.427	-	-	0.7	0.7	-	0.054
I	ARM B	18.50	41.52	0.446	-	-	0.8	0.8	-	0.043
I	ARM C	5.74	19.89	0.289	-	-	0.4	0.4	-	0.071
I	ARM D	17.52	35.83	0.489	-	-	1.0	1.0	-	0.055

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
	17.45-18.00										
	ARM A	11.25	34.55	0.326	- -	-	0.7	0.5	7.4	-	0.043
	ARM B	15.10	42.35	0.357	- -	-	0.8	0.6	8.5	-	0.037
	ARM C	4.69	22.31	0.210	- -	-	0.4	0.3	4.1	-	0.057
	ARM D	14.31	36.94	0.387	- -	-	1.0	0.6	9.7	-	0.044

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	9.42	36.19	0.260	- -	0.5	0.4	5.4	-	0.037	I
I	ARM B	12.65	42.96	0.294	- -	0.6	0.4	6.4	-	0.033	I
I	ARM C	3.93	24.07	0.163	- -	0.3	0.2	3.0	-	0.050	I
I	ARM D	11.98	37.76	0.317	- -	0.6	0.5	7.1	-	0.039	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5
17.30	0.7 *
17.45	0.7 *
18.00	0.5
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	0.8 *
17.45	0.8 *
18.00	0.6 *
18.15	0.4

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5
17.15	0.6 *
17.30	1.0 *
17.45	1.0 *
18.00	0.6 *
18.15	0.5

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	1033.7	I	689.1	I	47.0	I	0.05
I	B	I	1387.4	I	925.0	I	52.9	I	0.04
I	C	I	430.8	I	287.2	I	25.8	I	0.06
I	D	I	1314.5	I	876.3	I	61.2	I	0.05
I	ALL	I	4166.4	I	2777.6	I	186.9	I	0.04

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\LLITM\S5 2026 AM + Dev + SP.vai"
(drive-on-the-left) at 16:44:47 on Friday, 7 October 2016

FILE PROPERTIES *****

RUN TITLE: S5 Magna Park Access Roundabout AM Peak 2026 With Development + Symmetry Park
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA *****

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA -----

																	T5	
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	7.00	I	9.00	I	29.00	I	22.50	I	66.50	I	45.0	I	0.640	I	41.590	I
I	ARM B	I	7.00	I	9.50	I	26.50	I	36.00	I	66.50	I	32.0	I	0.695	I	45.714	I
I	ARM C	I	7.00	I	7.50	I	15.50	I	20.00	I	66.50	I	44.0	I	0.583	I	35.810	I
I	ARM D	I	7.50	I	11.00	I	45.00	I	39.00	I	66.50	I	45.0	I	0.732	I	50.559	I

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

WARNING ARM D Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA -----

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW SCALE(%)	I	
I	A	I	100	I	
I	B	I	100	I	
I	C	I	100	I	
I	D	I	100	I	

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

												T15		
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I		
I		I		I		I		I		I		I		
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I		
I		I		I		I		I		I		I		
I	ARM A	I	15.00	I	45.00	I	75.00	I	7.95	I	11.92	I	7.95	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	22.20	I	33.30	I	22.20	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	0.31	I	0.47	I	0.31	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	17.21	I	25.82	I	17.21	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

												T33
I												I
I	TURNING PROPORTIONS											I
I	TURNING COUNTS											I
I	(PERCENTAGE OF H.V.S)											I
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	07.15 - 08.45	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.365	I	0.008	I	0.627	I
I		I		I	0.0	I	232.0	I	5.0	I	399.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.416	I	0.034	I	0.053	I	0.497	I
I		I		I	738.0	I	61.0	I	94.0	I	883.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.360	I	0.240	I	0.000	I	0.400	I
I		I		I	9.0	I	6.0	I	0.0	I	10.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.364	I	0.585	I	0.051	I	0.000	I
I		I		I	501.0	I	806.0	I	70.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	-										I	
I	07.15-07.30										I	
I	ARM A	7.98	34.04	0.234	- -	-	0.0	0.3	4.5	-	0.038	I
I	ARM B	22.28	41.59	0.536	- -	-	0.0	1.1	16.7	-	0.051	I
I	ARM C	0.31	20.64	0.015	- -	-	0.0	0.0	0.2	-	0.049	I
I	ARM D	17.28	43.11	0.401	- -	-	0.0	0.7	9.8	-	0.039	I
I											I	

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
I	07.30-07.45										
I	ARM A	9.53	32.56	0.293	- -	-	0.3	0.4	6.1	-	0.043
I	ARM B	26.61	40.78	0.652	- -	-	1.1	1.9	26.9	-	0.070
I	ARM C	0.37	17.66	0.021	- -	-	0.0	0.0	0.3	-	0.058
I	ARM D	20.63	41.65	0.495	- -	-	0.7	1.0	14.4	-	0.047
I											

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)
I	07.45-08.00									
I	ARM A	11.67	30.54	0.382	- -	-	0.4	0.6	-	0.053
I	ARM B	32.59	39.68	0.821	- -	-	1.9	4.4	-	0.135
I	ARM C	0.46	13.65	0.034	- -	-	0.0	0.0	-	0.076
I	ARM D	25.27	39.69	0.637	- -	-	1.0	1.7	-	0.069
I										

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
I	08.00-08.15										
I	ARM A	11.67	30.52	0.382	- -	-	0.6	0.6	9.2	-	0.053
I	ARM B	32.59	39.67	0.822	- -	-	4.4	4.5	66.7	-	0.141
I	ARM C	0.46	13.55	0.034	- -	-	0.0	0.0	0.5	-	0.076
I	ARM D	25.27	39.63	0.638	- -	-	1.7	1.7	26.1	-	0.070
I											

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH. MIN/	(VEH. MIN/	PER ARRIVING	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	
I	08.15-08.30										
I	ARM A	9.53	32.53	0.293	- -	-	0.6	0.4	6.3	-	0.044
I	ARM B	26.61	40.77	0.653	- -	-	4.5	1.9	30.0	-	0.072
I	ARM C	0.37	17.53	0.021	- -	-	0.0	0.0	0.3	-	0.058
I	ARM D	20.63	41.58	0.496	- -	-	1.7	1.0	15.2	-	0.048
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	7.98	34.01	0.235	-	0.4	0.3	4.7	-	0.038
ARM B	22.28	41.58	0.536	-	1.9	1.2	17.9	-	0.052
ARM C	0.31	20.56	0.015	-	0.0	0.0	0.2	-	0.049
ARM D	17.28	43.07	0.401	-	1.0	0.7	10.3	-	0.039

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.3
07.45	0.4
08.00	0.6 *
08.15	0.6 *
08.30	0.4
08.45	0.3

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.1 *
07.45	1.9 **
08.00	4.4 ****
08.15	4.5 *****
08.30	1.9 **
08.45	1.2 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.7 *
07.45	1.0 *
08.00	1.7 **
08.15	1.7 **
08.30	1.0 *
08.45	0.7 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	875.4	39.9	39.9
B	2444.5	218.5	218.5
C	34.4	2.1	2.1
D	1895.3	100.9	100.9
ALL	5249.7	361.4	361.4

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Hunter Bld\
ES Addendum Oct 2016\LLITM\S5 2026 PM + Dev + SP.vai"
(drive-on-the-left) at 16:45:57 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 Magna Park Access Roundabout PM Peak 2026 With Development + Symmetry Park
LOCATION: Magna Park Site Access
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Hunter Bld
ARM B - A4303 East
ARM C - Site Access
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	7.00	I	9.00	I	29.00	I	22.50	I	66.50	I	45.0	I	0.640	I	41.590	I
I	ARM B	I	7.00	I	9.50	I	26.50	I	36.00	I	66.50	I	32.0	I	0.695	I	45.714	I
I	ARM C	I	7.00	I	7.50	I	15.50	I	20.00	I	66.50	I	44.0	I	0.583	I	35.810	I
I	ARM D	I	7.50	I	11.00	I	45.00	I	39.00	I	66.50	I	45.0	I	0.732	I	50.559	I

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

WARNING ARM D Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW SCALE(%)	I	
I	A	I	100	I	
I	B	I	100	I	
I	C	I	100	I	
I	D	I	100	I	

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	9.46	I	14.19	I	9.46	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	13.98	I	20.96	I	13.98	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	3.91	I	5.87	I	3.91	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	12.29	I	18.43	I	12.29	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33		
I	I	TURNING PROPORTIONS								I		
I	I	TURNING COUNTS								I		
I	I	(PERCENTAGE OF H.V.S)								I		
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.528	I	0.009	I	0.462	I
I		I		I	0.0	I	400.0	I	7.0	I	350.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.255	I	0.025	I	0.020	I	0.700	I
I		I		I	285.0	I	28.0	I	22.0	I	783.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.163	I	0.530	I	0.000	I	0.307	I
I		I		I	51.0	I	166.0	I	0.0	I	96.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.132	I	0.856	I	0.012	I	0.000	I
I		I		I	130.0	I	841.0	I	12.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	16.45-17.00										I	I
I	ARM A	9.50	33.20	0.286	- -	-	0.0	0.4	5.9	-	0.042	I
I	ARM B	14.03	42.50	0.330	- -	-	0.0	0.5	7.2	-	0.035	I
I	ARM C	3.93	25.26	0.155	- -	-	0.0	0.2	2.7	-	0.047	I
I	ARM D	12.33	45.71	0.270	- -	-	0.0	0.4	5.5	-	0.030	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.00-17.15										I	I
I	ARM A	11.34	31.56	0.359	- -	-	0.4	0.6	8.2	-	0.049	I
I	ARM B	16.75	41.87	0.400	- -	-	0.5	0.7	9.8	-	0.040	I
I	ARM C	4.69	23.19	0.202	- -	-	0.2	0.3	3.7	-	0.054	I
I	ARM D	14.73	44.75	0.329	- -	-	0.4	0.5	7.3	-	0.033	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.15-17.30										I	I
I	ARM A	13.89	29.31	0.474	- -	-	0.6	0.9	13.1	-	0.065	I
I	ARM B	20.52	41.01	0.500	- -	-	0.7	1.0	14.6	-	0.049	I
I	ARM C	5.74	20.36	0.282	- -	-	0.3	0.4	5.7	-	0.068	I
I	ARM D	18.04	43.45	0.415	- -	-	0.5	0.7	10.4	-	0.039	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.30-17.45										I	I
I	ARM A	13.89	29.30	0.474	- -	-	0.9	0.9	13.4	-	0.065	I
I	ARM B	20.52	41.01	0.500	- -	-	1.0	1.0	14.9	-	0.049	I
I	ARM C	5.74	20.34	0.282	- -	-	0.4	0.4	5.9	-	0.068	I
I	ARM D	18.04	43.44	0.415	- -	-	0.7	0.7	10.6	-	0.039	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.45-18.00										I	I
I	ARM A	11.34	31.54	0.360	- -	-	0.9	0.6	8.6	-	0.050	I
I	ARM B	16.75	41.86	0.400	- -	-	1.0	0.7	10.2	-	0.040	I
I	ARM C	4.69	23.16	0.202	- -	-	0.4	0.3	3.9	-	0.054	I
I	ARM D	14.73	44.74	0.329	- -	-	0.7	0.5	7.5	-	0.033	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	9.50	33.18	0.286	- -	0.6	0.4	6.1	-	0.042	I
I	ARM B	14.03	42.49	0.330	- -	0.7	0.5	7.5	-	0.035	I
I	ARM C	3.93	25.22	0.156	- -	0.3	0.2	2.8	-	0.047	I
I	ARM D	12.33	45.69	0.270	- -	0.5	0.4	5.6	-	0.030	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	0.9 *
17.45	0.9 *
18.00	0.6 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5
17.15	0.7 *
17.30	1.0 *
17.45	1.0 *
18.00	0.7 *
18.15	0.5

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.2
17.15	0.3
17.30	0.4
17.45	0.4
18.00	0.3
18.15	0.2

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5
17.30	0.7 *
17.45	0.7 *
18.00	0.5
18.15	0.4

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	1042.0	I	694.6	I	55.4	I	0.05
I	B	I	1538.8	I	1025.9	I	64.4	I	0.04
I	C	I	430.8	I	287.2	I	24.8	I	0.06
I	D	I	1353.0	I	902.0	I	46.9	I	0.03
I	ALL	I	4364.6	I	2909.8	I	191.4	I	0.04

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\LLITM\S2 AM 2026 No Dev.vai"
(drive-on-the-left) at 14:18:50 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 A4303/Coventry Road Roundabout AM Peak 2026 No Development
LOCATION: A4303_Coventry Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																		T5	
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

													T15
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I		
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER
I		I		I		I		I		I		I	
I		I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK
I	ARM A	I	15.00	I	45.00	I	75.00	I	10.60	I	15.90	I	10.60
I	ARM B	I	15.00	I	45.00	I	75.00	I	15.00	I	22.50	I	15.00
I	ARM C	I	15.00	I	45.00	I	75.00	I	0.24	I	0.36	I	0.24
I	ARM D	I	15.00	I	45.00	I	75.00	I	12.29	I	18.43	I	12.29

DEMAND SET TITLE: AM Peak 2006 Base Flows

												T33
I		I	TURNING PROPORTIONS									I
I		I	TURNING COUNTS									I
I		I	(PERCENTAGE OF H.V.S)									I

I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I

I	07.15 - 08.45	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.192	I	0.000	I	0.808	I
I		I		I	0.0	I	163.0	I	0.0	I	685.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.048	I	0.000	I	0.000	I	0.952	I
I		I		I	58.0	I	0.0	I	0.0	I	1142.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.421	I	0.421	I	0.000	I	0.158	I
I		I		I	8.0	I	8.0	I	0.0	I	3.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.237	I	0.752	I	0.004	I	0.007	I
I		I		I	233.0	I	739.0	I	4.0	I	7.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	-	-	-	-	-	-	-	-	-	-	I	
I	07.15-07.30										I	
I	ARM A	10.64	22.03	0.483	- -	-	0.0	0.9	13.3	-	0.087	I
I	ARM B	15.06	30.79	0.489	- -	-	0.0	0.9	13.8	-	0.063	I
I	ARM C	0.24	10.65	0.022	- -	-	0.0	0.0	0.3	-	0.096	I
I	ARM D	12.33	40.67	0.303	- -	-	0.0	0.4	6.4	-	0.035	I
I	-										I	

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	07.30-07.45	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	ARM A	I	12.71	I	21.03	I	0.604	I	- -	I	-	I	0.9	I	1.5	I	21.5	I	-	I
I	ARM B	I	17.98	I	29.68	I	0.606	I	- -	I	-	I	0.9	I	1.5	I	22.0	I	-	I
I	ARM C	I	0.28	I	8.32	I	0.034	I	- -	I	-	I	0.0	I	0.0	I	0.5	I	-	I
I	ARM D	I	14.73	I	40.54	I	0.363	I	- -	I	-	I	0.4	I	0.6	I	8.4	I	-	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	07.45-08.00	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	ARM A	I	15.56	I	19.67	I	0.791	I	- -	I	-	I	1.5	I	3.5	I	47.7	I	-	I
I	ARM B	I	22.02	I	28.22	I	0.780	I	- -	I	-	I	1.5	I	3.4	I	46.9	I	-	I
I	ARM C	I	0.35	I	5.22	I	0.067	I	- -	I	-	I	0.0	I	0.1	I	1.0	I	-	I
I	ARM D	I	18.04	I	40.37	I	0.447	I	- -	I	-	I	0.6	I	0.8	I	11.9	I	-	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	08.00-08.15	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	ARM A	I	15.56	I	19.67	I	0.791	I	- -	I	-	I	3.5	I	3.7	I	54.1	I	-	I
I	ARM B	I	22.02	I	28.15	I	0.782	I	- -	I	-	I	3.4	I	3.5	I	51.9	I	-	I
I	ARM C	I	0.35	I	5.11	I	0.068	I	- -	I	-	I	0.1	I	0.1	I	1.1	I	-	I
I	ARM D	I	18.04	I	40.36	I	0.447	I	- -	I	-	I	0.8	I	0.8	I	12.1	I	-	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	08.15-08.30	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	ARM A	I	12.71	I	21.02	I	0.604	I	- -	I	-	I	3.7	I	1.6	I	24.9	I	-	I
I	ARM B	I	17.98	I	29.59	I	0.608	I	- -	I	-	I	3.5	I	1.6	I	24.7	I	-	I
I	ARM C	I	0.28	I	8.17	I	0.035	I	- -	I	-	I	0.1	I	0.0	I	0.6	I	-	I
I	ARM D	I	14.73	I	40.53	I	0.363	I	- -	I	-	I	0.8	I	0.6	I	8.7	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	10.64	22.01	0.483	- -	1.6	0.9	14.7	-	0.089	I
I	ARM B	15.06	30.73	0.490	- -	1.6	1.0	14.9	-	0.064	I
I	ARM C	0.24	10.56	0.023	- -	0.0	0.0	0.4	-	0.097	I
I	ARM D	12.33	40.66	0.303	- -	0.6	0.4	6.6	-	0.035	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.5	*
08.00	3.5	****
08.15	3.7	****
08.30	1.6	**
08.45	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.5	**
08.00	3.4	***
08.15	3.5	***
08.30	1.6	**
08.45	1.0	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.0	
07.45	0.0	
08.00	0.1	
08.15	0.1	
08.30	0.0	
08.45	0.0	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.6	*
08.00	0.8	*
08.15	0.8	*
08.30	0.6	*
08.45	0.4	

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	1167.2	I	778.1	I	176.2	I	0.15
I	B	I	1651.7	I	1101.1	I	174.2	I	0.11
I	C	I	26.2	I	17.4	I	3.9	I	0.15
I	D	I	1353.0	I	902.0	I	54.1	I	0.04
I	ALL	I	4198.1	I	2798.7	I	408.4	I	0.10

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

END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\LLITM\S2 PM 2026 No Dev.vai"
(drive-on-the-left) at 14:19:15 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 A4303/Coventry Road Roundabout PM Peak 2026 No Development
LOCATION: A4303_Coventry Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 7071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																	T5		
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T15	
I	I	NUMBER OF MINUTES FROM START WHEN				RATE OF FLOW (VEH/MIN)				I	I
		FLOW STARTS	TOP OF PEAK	FLOW STOPS	BEFORE	AT TOP	AFTER				
I	I	I	I	I	I	I	I	I	I	I	I
I	I	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK	I	I	I	I
I	ARM A	I 15.00	I 45.00	I 75.00	I 6.20	I 9.30	I 6.20	I	I	I	I
I	ARM B	I 15.00	I 45.00	I 75.00	I 11.49	I 17.23	I 11.49	I	I	I	I
I	ARM C	I 15.00	I 45.00	I 75.00	I 0.15	I 0.23	I 0.15	I	I	I	I
I	ARM D	I 15.00	I 45.00	I 75.00	I 20.63	I 30.94	I 20.63	I	I	I	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

I	I	TURNING PROPORTIONS								I	T33	
I	I	TURNING COUNTS								I		
I	I	(PERCENTAGE OF H.V.S)								I		
I	I									I		
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I	I	I	I	I	I	I	I	I	I	I
I		I	ARM A	I	0.000	I	0.375	I	0.008	I	0.617	I
I		I		I	0.0	I	186.0	I	4.0	I	306.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM B	I	0.091	I	0.000	I	0.007	I	0.902	I
I		I		I	84.0	I	0.0	I	6.0	I	829.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM C	I	0.583	I	0.083	I	0.000	I	0.333	I
I		I		I	7.0	I	1.0	I	0.0	I	4.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM D	I	0.363	I	0.633	I	0.003	I	0.001	I
I		I		I	599.0	I	1044.0	I	5.0	I	2.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	16.45-17.00										I	I
I	ARM A	6.22	20.07	0.310	- -	-	0.0	0.4	6.5	-	0.072	I
I	ARM B	11.53	33.83	0.341	- -	-	0.0	0.5	7.6	-	0.045	I
I	ARM C	0.15	14.84	0.010	- -	-	0.0	0.0	0.1	-	0.068	I
I	ARM D	20.70	40.51	0.511	- -	-	0.0	1.0	15.2	-	0.050	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.00-17.15										I	I
I	ARM A	7.43	18.69	0.398	- -	-	0.4	0.7	9.6	-	0.089	I
I	ARM B	13.77	33.33	0.413	- -	-	0.5	0.7	10.3	-	0.051	I
I	ARM C	0.18	13.33	0.013	- -	-	0.0	0.0	0.2	-	0.076	I
I	ARM D	24.72	40.35	0.613	- -	-	1.0	1.6	22.8	-	0.064	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.15-17.30										I	I
I	ARM A	9.10	16.81	0.541	- -	-	0.7	1.2	16.6	-	0.129	I
I	ARM B	16.86	32.65	0.517	- -	-	0.7	1.1	15.5	-	0.063	I
I	ARM C	0.22	11.29	0.020	- -	-	0.0	0.0	0.3	-	0.090	I
I	ARM D	30.28	40.13	0.755	- -	-	1.6	3.0	42.5	-	0.100	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.30-17.45										I	I
I	ARM A	9.10	16.78	0.542	- -	-	1.2	1.2	17.5	-	0.130	I
I	ARM B	16.86	32.64	0.517	- -	-	1.1	1.1	15.9	-	0.063	I
I	ARM C	0.22	11.26	0.020	- -	-	0.0	0.0	0.3	-	0.091	I
I	ARM D	30.28	40.12	0.755	- -	-	3.0	3.0	45.3	-	0.102	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.45-18.00										I	I
I	ARM A	7.43	18.64	0.399	- -	-	1.2	0.7	10.4	-	0.090	I
I	ARM B	13.77	33.31	0.413	- -	-	1.1	0.7	10.8	-	0.051	I
I	ARM C	0.18	13.30	0.014	- -	-	0.0	0.0	0.2	-	0.076	I
I	ARM D	24.72	40.34	0.613	- -	-	3.0	1.6	24.8	-	0.065	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	6.22	20.03	0.311	- -	-	0.7	0.5	7.0	0.073	I
I	ARM B	11.53	33.82	0.341	- -	-	0.7	0.5	7.9	0.045	I
I	ARM C	0.15	14.80	0.010	- -	-	0.0	0.0	0.2	0.068	I
I	ARM D	20.70	40.50	0.511	- -	-	1.6	1.1	16.1	0.051	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.7 *
17.30	1.2 *
17.45	1.2 *
18.00	0.7 *
18.15	0.5

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5 *
17.15	0.7 *
17.30	1.1 *
17.45	1.1 *
18.00	0.7 *
18.15	0.5 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	1.0 *
17.15	1.6 **
17.30	3.0 ***
17.45	3.0 ***
18.00	1.6 **
18.15	1.1 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	682.7	I	455.1	I	67.6	I	0.10
I	B	I	1264.9	I	843.3	I	68.1	I	0.05
I	C	I	16.5	I	11.0	I	1.3	I	0.08
I	D	I	2271.1	I	1514.1	I	166.8	I	0.07
I	ALL	I	4235.3	I	2823.5	I	303.7	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\LLITM\S4 AM 2026 + Dev.vai"
(drive-on-the-left) at 14:19:38 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S4 A4303/Coventry Road Roundabout AM Peak 2026 With Development
LOCATION: A4303_Coventry Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																		T5	
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	10.05	I	15.08	I	10.05	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	16.48	I	24.71	I	16.48	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	0.24	I	0.36	I	0.24	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	12.98	I	19.46	I	12.98	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T33	
I		I	TURNING PROPORTIONS								I	
I		I	TURNING COUNTS								I	
I		I	(PERCENTAGE OF H.V.S)								I	
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	07.15 - 08.45	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.197	I	0.000	I	0.803	I
I		I		I	0.0	I	158.0	I	0.0	I	646.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.044	I	0.000	I	0.000	I	0.956	I
I		I		I	58.0	I	0.0	I	0.0	I	1260.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.421	I	0.421	I	0.000	I	0.158	I
I		I		I	8.0	I	8.0	I	0.0	I	3.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.224	I	0.766	I	0.004	I	0.007	I
I		I		I	232.0	I	795.0	I	4.0	I	7.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	07.15-07.30										I	I
I	ARM A	10.09	21.65	0.466	- -	-	0.0	0.9	12.5	-	0.086	I
I	ARM B	16.54	31.10	0.532	- -	-	0.0	1.1	16.3	-	0.068	I
I	ARM C	0.24	10.16	0.023	- -	-	0.0	0.0	0.3	-	0.101	I
I	ARM D	13.02	40.67	0.320	- -	-	0.0	0.5	6.9	-	0.036	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	07.30-07.45										I	I
I	ARM A	12.05	20.59	0.585	- -	-	0.9	1.4	20.0	-	0.116	I
I	ARM B	19.75	30.05	0.657	- -	-	1.1	1.9	27.1	-	0.096	I
I	ARM C	0.28	7.74	0.037	- -	-	0.0	0.0	0.6	-	0.134	I
I	ARM D	15.55	40.54	0.384	- -	-	0.5	0.6	9.2	-	0.040	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	07.45-08.00										I	I
I	ARM A	14.75	19.12	0.771	- -	-	1.4	3.2	43.3	-	0.217	I
I	ARM B	24.19	28.67	0.844	- -	-	1.9	5.0	66.1	-	0.205	I
I	ARM C	0.35	4.53	0.077	- -	-	0.0	0.1	1.2	-	0.239	I
I	ARM D	19.05	40.37	0.472	- -	-	0.6	0.9	13.1	-	0.047	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	08.00-08.15										I	I
I	ARM A	14.75	19.12	0.772	- -	-	3.2	3.3	48.6	-	0.228	I
I	ARM B	24.19	28.61	0.845	- -	-	5.0	5.2	76.7	-	0.223	I
I	ARM C	0.35	4.39	0.079	- -	-	0.1	0.1	1.3	-	0.247	I
I	ARM D	19.05	40.36	0.472	- -	-	0.9	0.9	13.3	-	0.047	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	08.15-08.30										I	I
I	ARM A	12.05	20.57	0.586	- -	-	3.3	1.4	22.9	-	0.121	I
I	ARM B	19.75	29.97	0.659	- -	-	5.2	2.0	31.6	-	0.102	I
I	ARM C	0.28	7.54	0.038	- -	-	0.1	0.0	0.6	-	0.138	I
I	ARM D	15.55	40.53	0.384	- -	-	0.9	0.6	9.5	-	0.040	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	10.09	21.64	0.466	-	1.4	0.9	13.7	-	0.087
ARM B	16.54	31.05	0.533	-	2.0	1.2	17.8	-	0.070
ARM C	0.24	10.06	0.024	-	0.0	0.0	0.4	-	0.102
ARM D	13.02	40.66	0.320	-	0.6	0.5	7.2	-	0.036

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.9 *
07.45	1.4 *
08.00	3.2 ***
08.15	3.3 ***
08.30	1.4 *
08.45	0.9 *

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.1 *
07.45	1.9 **
08.00	5.0 *****
08.15	5.2 *****
08.30	2.0 **
08.45	1.2 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.1
08.15	0.1
08.30	0.0
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.5
07.45	0.6 *
08.00	0.9 *
08.15	0.9 *
08.30	0.6 *
08.45	0.5

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	1106.6	160.8	160.8
B	1814.1	235.6	235.6
C	26.2	4.3	4.3
D	1428.7	59.2	59.3
ALL	4375.7	460.0	460.0

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\LLITM\S4 PM 2026 + Dev.vai"
(drive-on-the-left) at 14:20:03 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S4 A4303/Coventry Road Roundabout PM Peak 2026 With Development
LOCATION: A4303_Coventry Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 7071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																		T5	
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	6.00	I	9.00	I	6.00	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	12.56	I	18.84	I	12.56	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	0.15	I	0.23	I	0.15	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	21.51	I	32.27	I	21.51	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33		
I	I	TURNING PROPORTIONS								I		
I	I	TURNING COUNTS								I		
I	I	(PERCENTAGE OF H.V.S)								I		
I	TIME		I FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I	I	I	I	I	I	I	I	I	I	I
I		I	ARM A	I	0.000	I	0.410	I	0.008	I	0.581	I
I		I		I	0.0	I	197.0	I	4.0	I	279.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM B	I	0.082	I	0.000	I	0.006	I	0.912	I
I		I		I	82.0	I	0.0	I	6.0	I	917.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM C	I	0.583	I	0.083	I	0.000	I	0.333	I
I		I		I	7.0	I	1.0	I	0.0	I	4.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I
I		I	ARM D	I	0.336	I	0.660	I	0.003	I	0.001	I
I		I		I	578.0	I	1136.0	I	5.0	I	2.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I	I	I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	16.45-17.00										I	I
I	ARM A	6.02	19.45	0.310	- -	-	0.0	0.4	6.5	-	0.074	I
I	ARM B	12.61	34.05	0.370	- -	-	0.0	0.6	8.6	-	0.046	I
I	ARM C	0.15	14.47	0.010	- -	-	0.0	0.0	0.2	-	0.070	I
I	ARM D	21.59	40.52	0.533	- -	-	0.0	1.1	16.5	-	0.052	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.00-17.15										I	I
I	ARM A	7.19	17.95	0.401	- -	-	0.4	0.7	9.7	-	0.093	I
I	ARM B	15.06	33.59	0.448	- -	-	0.6	0.8	11.9	-	0.054	I
I	ARM C	0.18	12.89	0.014	- -	-	0.0	0.0	0.2	-	0.079	I
I	ARM D	25.79	40.37	0.639	- -	-	1.1	1.7	25.4	-	0.068	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.15-17.30										I	I
I	ARM A	8.81	15.92	0.553	- -	-	0.7	1.2	17.4	-	0.139	I
I	ARM B	18.44	32.97	0.559	- -	-	0.8	1.3	18.3	-	0.068	I
I	ARM C	0.22	10.75	0.020	- -	-	0.0	0.0	0.3	-	0.095	I
I	ARM D	31.58	40.15	0.787	- -	-	1.7	3.6	49.9	-	0.114	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.30-17.45										I	I
I	ARM A	8.81	15.88	0.555	- -	-	1.2	1.2	18.4	-	0.141	I
I	ARM B	18.44	32.96	0.560	- -	-	1.3	1.3	18.9	-	0.069	I
I	ARM C	0.22	10.72	0.021	- -	-	0.0	0.0	0.3	-	0.095	I
I	ARM D	31.58	40.15	0.787	- -	-	3.6	3.6	54.0	-	0.117	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.45-18.00										I	I
I	ARM A	7.19	17.89	0.402	- -	-	1.2	0.7	10.5	-	0.094	I
I	ARM B	15.06	33.57	0.449	- -	-	1.3	0.8	12.6	-	0.054	I
I	ARM C	0.18	12.85	0.014	- -	-	0.0	0.0	0.2	-	0.079	I
I	ARM D	25.79	40.36	0.639	- -	-	3.6	1.8	27.9	-	0.070	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	6.02	19.41	0.310	- -	0.7	0.5	7.0	-	0.075	I
I	ARM B	12.61	34.03	0.371	- -	0.8	0.6	9.0	-	0.047	I
I	ARM C	0.15	14.43	0.010	- -	0.0	0.0	0.2	-	0.070	I
I	ARM D	21.59	40.52	0.533	- -	1.8	1.1	17.7	-	0.053	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.7 *
17.30	1.2 *
17.45	1.2 *
18.00	0.7 *
18.15	0.5

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.8 *
17.30	1.3 *
17.45	1.3 *
18.00	0.8 *
18.15	0.6 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	1.1 *
17.15	1.7 **
17.30	3.6 ****
17.45	3.6 ****
18.00	1.8 **
18.15	1.1 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	660.7	I	440.5	I	69.4	I	0.11
I	B	I	1383.3	I	922.2	I	79.3	I	0.06
I	C	I	16.5	I	11.0	I	1.4	I	0.08
I	D	I	2368.8	I	1579.2	I	191.4	I	0.08
I	ALL	I	4429.3	I	2952.9	I	341.5	I	0.08

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

END OF JOB

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\LLITM\S5 AM 2026 + Dev + SP.vai"
(drive-on-the-left) at 14:20:24 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S5 A4303/Coventry Road Roundabout AM Peak 2026 With Development + Symmetry Park
LOCATION: A4303_Coventry Road
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																		T5	
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

T13				
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

														T15
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			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		I		I		I		I		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	10.04	I	15.06	I	10.04	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	17.14	I	25.71	I	17.14	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	0.24	I	0.36	I	0.24	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	13.18	I	19.76	I	13.18	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

													T33
I													I
I	TURNING PROPORTIONS												I
I	TURNING COUNTS												I
I	(PERCENTAGE OF H.V.S)												I
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	
I	07.15 - 08.45	I		I		I		I		I		I	
I		I	ARM A	I	0.000	I	0.199	I	0.000	I	0.801	I	
I		I		I	0.0	I	160.0	I	0.0	I	643.0	I	
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I		I		I		I		I		I		I	
I		I	ARM B	I	0.040	I	0.000	I	0.000	I	0.960	I	
I		I		I	55.0	I	0.0	I	0.0	I	1316.0	I	
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I		I		I		I		I		I		I	
I		I	ARM C	I	0.421	I	0.421	I	0.000	I	0.158	I	
I		I		I	8.0	I	8.0	I	0.0	I	3.0	I	
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I		I		I		I		I		I		I	
I		I	ARM D	I	0.220	I	0.769	I	0.004	I	0.007	I	
I		I		I	232.0	I	811.0	I	4.0	I	7.0	I	
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	
I		I		I		I		I		I		I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I											I	
I	07.15-07.30										I	
I	ARM A	10.08	21.55	0.468	- -	-	0.0	0.9	12.6	-	0.086	I
I	ARM B	17.20	31.12	0.553	- -	-	0.0	1.2	17.7	-	0.071	I
I	ARM C	0.24	9.85	0.024	- -	-	0.0	0.0	0.4	-	0.104	I
I	ARM D	13.23	40.69	0.325	- -	-	0.0	0.5	7.1	-	0.036	I
I											I	

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	07.30-07.45	I		I		I		I		I		I		I		I		I		I
I	ARM A	I	12.03	I	20.46	I	0.588	I	- -	I	0.9	I	1.4	I	20.2	I	-	I	0.118	I
I	ARM B	I	20.54	I	30.08	I	0.683	I	- -	I	1.2	I	2.1	I	30.2	I	-	I	0.104	I
I	ARM C	I	0.28	I	7.37	I	0.039	I	- -	I	0.0	I	0.0	I	0.6	I	-	I	0.141	I
I	ARM D	I	15.79	I	40.57	I	0.389	I	- -	I	0.5	I	0.6	I	9.4	I	-	I	0.040	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	07.45-08.00	I		I		I		I		I		I		I		I		I		I
I	ARM A	I	14.74	I	18.97	I	0.777	I	- -	I	1.4	I	3.3	I	44.4	I	-	I	0.223	I
I	ARM B	I	25.16	I	28.71	I	0.876	I	- -	I	2.1	I	6.3	I	80.8	I	-	I	0.245	I
I	ARM C	I	0.35	I	4.11	I	0.085	I	- -	I	0.0	I	0.1	I	1.3	I	-	I	0.265	I
I	ARM D	I	19.34	I	40.41	I	0.479	I	- -	I	0.6	I	0.9	I	13.4	I	-	I	0.047	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	08.00-08.15	I		I		I		I		I		I		I		I		I		I
I	ARM A	I	14.74	I	18.96	I	0.777	I	- -	I	3.3	I	3.4	I	50.0	I	-	I	0.235	I
I	ARM B	I	25.16	I	28.65	I	0.878	I	- -	I	6.3	I	6.7	I	97.8	I	-	I	0.279	I
I	ARM C	I	0.35	I	3.94	I	0.089	I	- -	I	0.1	I	0.1	I	1.4	I	-	I	0.279	I
I	ARM D	I	19.34	I	40.40	I	0.479	I	- -	I	0.9	I	0.9	I	13.7	I	-	I	0.048	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	08.15-08.30	I		I		I		I		I		I		I		I		I		I
I	ARM A	I	12.03	I	20.44	I	0.588	I	- -	I	3.4	I	1.5	I	23.2	I	-	I	0.122	I
I	ARM B	I	20.54	I	30.00	I	0.685	I	- -	I	6.7	I	2.2	I	36.5	I	-	I	0.113	I
I	ARM C	I	0.28	I	7.12	I	0.040	I	- -	I	0.1	I	0.0	I	0.7	I	-	I	0.146	I
I	ARM D	I	15.79	I	40.56	I	0.389	I	- -	I	0.9	I	0.6	I	9.8	I	-	I	0.040	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	10.08	21.53	0.468	-	1.5	0.9	13.8	-	0.088
ARM B	17.20	31.07	0.554	-	2.2	1.3	19.4	-	0.073
ARM C	0.24	9.74	0.024	-	0.0	0.0	0.4	-	0.105
ARM D	13.23	40.69	0.325	-	0.6	0.5	7.3	-	0.036

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.9 *
07.45	1.4 *
08.00	3.3 ***
08.15	3.4 ***
08.30	1.5 *
08.45	0.9 *

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	1.2 *
07.45	2.1 **
08.00	6.3 *****
08.15	6.7 *****
08.30	2.2 **
08.45	1.3 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.1
08.15	0.1
08.30	0.0
08.45	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.5
07.45	0.6 *
08.00	0.9 *
08.15	0.9 *
08.30	0.6 *
08.45	0.5

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
I	I	I	I
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
A	1105.3	164.0	0.15
B	1887.1	282.4	0.15
C	26.2	4.7	0.18
D	1450.8	60.7	0.04
ALL	4469.3	511.8	0.11

* 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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_Coventry Road\
ES Addendum Oct 2016\LLITM\S5 PM 2026 + Dev + SP.vai"
(drive-on-the-left) at 14:20:51 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S5 A4303/Coventry Road Roundabout PM Peak 2026 With Development + Symmetry Park
LOCATION: A4303_Coventry Road
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 7071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Coventry Road
ARM B - A4303 East
ARM C - Mobile Home Park
ARM D - A4303 West

GEOMETRIC DATA

																		T5	
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	3.90	I	7.20	I	20.00	I	18.70	I	56.00	I	62.0	I	0.534	I	27.099	I
I	ARM	B	I	7.80	I	7.80	I	0.00	I	35.00	I	56.00	I	58.0	I	0.645	I	36.388	I
I	ARM	C	I	3.65	I	5.50	I	8.00	I	28.00	I	56.00	I	50.0	I	0.501	I	22.482	I
I	ARM	D	I	7.20	I	8.80	I	18.00	I	35.00	I	56.00	I	45.0	I	0.711	I	41.325	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

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	6.04	9.06	6.04			
ARM B	15.00	45.00	75.00	12.80	19.20	12.80			
ARM C	15.00	45.00	75.00	0.15	0.23	0.15			
ARM D	15.00	45.00	75.00	22.52	33.79	22.52			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
16.45 - 18.15									
	ARM A	0.000	0.402	0.008	0.590				
		0.0	194.0	4.0	285.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM B	0.080	0.000	0.006	0.914				
		82.0	0.0	6.0	936.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM C	0.583	0.083	0.000	0.333				
		7.0	1.0	0.0	4.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM D	0.335	0.661	0.003	0.001				
		604.0	1191.0	5.0	2.0				
		(0.0)	(0.0)	(0.0)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	6.06	19.09	0.318	-	0.0	0.5	6.7	-	0.076	
ARM B	12.85	34.00	0.378	-	0.0	0.6	8.9	-	0.047	
ARM C	0.15	14.31	0.011	-	0.0	0.0	0.2	-	0.071	
ARM D	22.61	40.52	0.558	-	0.0	1.3	18.2	-	0.055	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	7.24	17.52	0.413	-	0.5	0.7	10.2	-	0.097	
ARM B	15.34	33.53	0.458	-	0.6	0.8	12.3	-	0.055	
ARM C	0.18	12.71	0.014	-	0.0	0.0	0.2	-	0.080	
ARM D	27.00	40.37	0.669	-	1.3	2.0	28.8	-	0.074	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	8.86	15.40	0.576	-	0.7	1.3	18.9	-	0.151	
ARM B	18.79	32.90	0.571	-	0.8	1.3	19.2	-	0.071	
ARM C	0.22	10.52	0.021	-	0.0	0.0	0.3	-	0.097	
ARM D	33.07	40.15	0.824	-	2.0	4.4	61.2	-	0.135	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	8.86	15.34	0.578	-	1.3	1.3	20.1	-	0.154	
ARM B	18.79	32.88	0.571	-	1.3	1.3	19.8	-	0.071	
ARM C	0.22	10.49	0.021	-	0.0	0.0	0.3	-	0.097	
ARM D	33.07	40.15	0.824	-	4.4	4.6	67.6	-	0.141	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.45-18.00										
ARM A	7.24	17.44	0.415	-	1.3	0.7	11.1	-	0.099	
ARM B	15.34	33.51	0.458	-	1.3	0.9	13.0	-	0.055	
ARM C	0.18	12.66	0.014	-	0.0	0.0	0.2	-	0.080	
ARM D	27.00	40.36	0.669	-	4.6	2.1	32.3	-	0.077	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	6.06	19.04	0.318	- -	0.7	0.5	7.2	-	0.077	I
I	ARM B	12.85	33.99	0.378	- -	0.9	0.6	9.3	-	0.047	I
I	ARM C	0.15	14.27	0.011	- -	0.0	0.0	0.2	-	0.071	I
I	ARM D	22.61	40.52	0.558	- -	2.1	1.3	19.6	-	0.056	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.5
17.15	0.7 *
17.30	1.3 *
17.45	1.3 *
18.00	0.7 *
18.15	0.5

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.8 *
17.30	1.3 *
17.45	1.3 *
18.00	0.9 *
18.15	0.6 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	1.3 *
17.15	2.0 **
17.30	4.4 ****
17.45	4.6 *****
18.00	2.1 **
18.15	1.3 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75									
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I	I
I	I	I	I	I	* DELAY *	I	* DELAY *	I	I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I
I	A	I	664.8	I	443.2	I	74.2	I	0.11
I	B	I	1409.5	I	939.6	I	82.6	I	0.06
I	C	I	16.5	I	11.0	I	1.4	I	0.08
I	D	I	2480.3	I	1653.5	I	227.8	I	0.09
I	ALL	I	4571.1	I	3047.4	I	386.0	I	0.08

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.

* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.

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

END OF JOB

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\LLITM\S2 AM 2026 No Dev.vai"
(drive-on-the-left) at 11:48:07 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 A4303/ A426 Rbt AM Peak 2026 No Development + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I	36.532	I
I	ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I	54.463	I
I	ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I	39.841	I
I	ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I	44.668	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

T15															
		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		I		I		I		I		I		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	14.23	I	21.34	I	14.23	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	27.14	I	40.71	I	27.14	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	9.34	I	14.01	I	9.34	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	11.57	I	17.36	I	11.57	I

[illegible]

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH. MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH. MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL
07.15-07.30										
ARM A	14.28	28.07	0.509	-	-	0.0	1.0	14.9	0.072	
ARM B	27.24	49.61	0.549	-	-	0.0	1.2	17.7	0.044	
ARM C	9.37	27.56	0.340	-	-	0.0	0.5	7.5	0.055	
ARM D	11.62	34.38	0.338	-	-	0.0	0.5	7.5	0.044	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	07.30-07.45									
I	ARM A	17.05	26.41	0.646	-	1.0	1.8	25.6	-	0.106
I	ARM B	32.53	48.65	0.669	-	1.2	2.0	29.0	-	0.062
I	ARM C	11.19	25.15	0.445	-	0.5	0.8	11.6	-	0.071
I	ARM D	13.87	32.36	0.429	-	0.5	0.7	11.0	-	0.054

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	07.45-08.00									
I	ARM A	20.88	24.16	0.864	- -	1.8	5.6	72.6	-	0.265
I	ARM B	39.84	47.41	0.840	- -	2.0	5.0	68.6	-	0.125
I	ARM C	13.71	21.93	0.625	- -	0.8	1.6	23.3	-	0.120
I	ARM D	16.99	29.65	0.573	- -	0.7	1.3	19.3	-	0.078

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	08.00-08.15										
I	ARM A	20.88	24.13	0.866	- -	-	5.6	6.0	87.7	-	0.301
I	ARM B	39.84	47.34	0.842	- -	-	5.0	5.2	76.5	-	0.133
I	ARM C	13.71	21.83	0.628	- -	-	1.6	1.7	24.8	-	0.123
I	ARM D	16.99	29.58	0.574	- -	-	1.3	1.3	20.0	-	0.079

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	08.15-08.30									
I	ARM A	17.05	26.37	0.647	-	6.0	1.9	30.7	-	0.114
I	ARM B	32.53	48.55	0.670	-	5.2	2.1	32.4	-	0.064
I	ARM C	11.19	25.02	0.447	-	1.7	0.8	12.6	-	0.073
I	ARM D	13.87	32.27	0.430	-	1.3	0.8	11.6	-	0.055

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	14.28	28.03	0.509	- -	-	1.9	1.0	16.2	0.073	I
I	ARM B	27.24	49.57	0.550	- -	-	2.1	1.2	18.9	0.045	I
I	ARM C	9.37	27.49	0.341	- -	-	0.8	0.5	8.0	0.055	I
I	ARM D	11.62	34.33	0.338	- -	-	0.8	0.5	7.8	0.044	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.0	*
07.45	1.8	**
08.00	5.6	*****
08.15	6.0	*****
08.30	1.9	**
08.45	1.0	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.2	*
07.45	2.0	**
08.00	5.0	*****
08.15	5.2	*****
08.30	2.1	**
08.45	1.2	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.8	*
08.00	1.6	**
08.15	1.7	**
08.30	0.8	*
08.45	0.5	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.7	*
08.00	1.3	*
08.15	1.3	*
08.30	0.8	*
08.45	0.5	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1566.4	I	1044.2	I	247.7	I	0.16	I
I	B	I	2988.2	I	1992.1	I	243.0	I	0.08	I
I	C	I	1028.2	I	685.5	I	87.9	I	0.09	I
I	D	I	1274.6	I	849.7	I	77.2	I	0.06	I
I	ALL	I	6857.4	I	4571.6	I	655.8	I	0.10	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\LLITM\S2 PM 2026 No Dev.vai"
(drive-on-the-left) at 11:57:00 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 A4303/ A426 Rbt PM Peak 2026 No Development + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I	36.532	I
I	ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I	54.463	I
I	ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I	39.841	I
I	ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I	44.668	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13				
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

T15															
		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		I		I		I		I		I		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	12.09	I	18.13	I	12.09	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	21.75	I	32.63	I	21.75	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	11.43	I	17.14	I	11.43	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	15.30	I	22.95	I	15.30	I

T33									
		TURNING PROPORTIONS							
		TURNING COUNTS							
		(PERCENTAGE OF H.V.S)							
TIME		FROM/T	ARM A	ARM B	ARM C	ARM D			
16.45	18.15	ARM A	0.000	0.510	0.349	0.142			
			0.0	493.0	337.0	137.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM B	0.297	0.000	0.259	0.444			
			517.0	0.0	451.0	772.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM C	0.419	0.538	0.000	0.043			
			383.0	492.0	0.0	39.0			
			(0.0)	(0.0)	(0.0)	(0.0)			
		ARM D	0.139	0.809	0.052	0.000			
			170.0	990.0	64.0	0.0			
			(0.0)	(0.0)	(0.0)	(0.0)			

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL
	16.45-17.00										
ARM A	12.13	25.78	0.471	-	-	0.0	0.9	12.8	-	0.073	
ARM B	21.83	49.55	0.441	-	-	0.0	0.8	11.5	-	0.036	
ARM C	11.47	29.43	0.390	-	-	0.0	0.6	9.3	-	0.055	
ARM D	15.36	33.76	0.455	-	-	0.0	0.8	12.1	-	0.054	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.00-17.15										I
I	ARM A	14.49	23.67	0.612	-	0.9	1.6	22.3	-	0.108	I
I	ARM B	26.07	48.59	0.537	-	0.8	1.2	16.9	-	0.044	I
I	ARM C	13.69	27.40	0.500	-	0.6	1.0	14.5	-	0.073	I
I	ARM D	18.34	31.62	0.580	-	0.8	1.4	19.8	-	0.075	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.15-17.30										
I	ARM A	17.74	20.83	0.852	- -	-	1.6	5.1	65.7	-	0.284
I	ARM B	31.93	47.34	0.674	- -	-	1.2	2.0	29.6	-	0.064
I	ARM C	16.77	24.63	0.681	- -	-	1.0	2.1	29.5	-	0.125
I	ARM D	22.46	28.72	0.782	- -	-	1.4	3.4	47.3	-	0.153

	TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
	17.30-17.45									
	ARM A	17.74	20.75	0.855	-	-	5.1	5.5	79.9	0.324
	ARM B	31.93	47.26	0.676	-	-	2.0	2.1	30.9	0.065
	ARM C	16.77	24.59	0.682	-	-	2.1	2.1	31.5	0.128
	ARM D	22.46	28.67	0.783	-	-	3.4	3.5	52.3	0.160

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.45-18.00										
I	ARM A	14.49	23.55	0.615	-	-	5.5	1.6	26.8	-	0.117
I	ARM B	26.07	48.47	0.538	-	-	2.1	1.2	18.0	-	0.045
I	ARM C	13.69	27.34	0.501	-	-	2.1	1.0	15.7	-	0.074
I	ARM D	18.34	31.55	0.581	-	-	3.5	1.4	22.1	-	0.077

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	12.13	25.71	0.472	- -	1.6	0.9	13.9	-	0.074	I
I	ARM B	21.83	49.51	0.441	- -	1.2	0.8	12.1	-	0.036	I
I	ARM C	11.47	29.39	0.390	- -	1.0	0.6	9.9	-	0.056	I
I	ARM D	15.36	33.71	0.456	- -	1.4	0.8	12.9	-	0.055	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.9	*
17.15	1.6	**
17.30	5.1	*****
17.45	5.5	*****
18.00	1.6	**
18.15	0.9	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.2	*
17.30	2.0	**
17.45	2.1	**
18.00	1.2	*
18.15	0.8	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.6	*
17.15	1.0	*
17.30	2.1	**
17.45	2.1	**
18.00	1.0	*
18.15	0.6	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.8	*
17.15	1.4	*
17.30	3.4	***
17.45	3.5	****
18.00	1.4	*
18.15	0.8	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1331.0	I	887.3	I	221.4	I	0.17	I
I	B	I	2395.0	I	1596.7	I	119.0	I	0.05	I
I	C	I	1258.1	I	838.7	I	110.4	I	0.09	I
I	D	I	1684.7	I	1123.2	I	166.6	I	0.10	I
I	ALL	I	6668.8	I	4445.9	I	617.4	I	0.09	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\LLITM\S4 AM 2026 + Dev.vai"
(drive-on-the-left) at 16:25:53 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 A4303/ A426 Rbt AM Peak 2026 With Development + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I	36.532	I
I	ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I	54.463	I
I	ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I	39.841	I
I	ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I	44.668	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	14.34	21.51	14.34			
ARM B	15.00	45.00	75.00	29.05	43.57	29.05			
ARM C	15.00	45.00	75.00	9.35	14.03	9.35			
ARM D	15.00	45.00	75.00	12.43	18.64	12.43			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.577	0.291	0.132				
		0.0	662.0	334.0	151.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM B	0.265	0.021	0.272	0.442				
		615.0	48.0	633.0	1028.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM C	0.424	0.512	0.000	0.064				
		317.0	383.0	0.0	48.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM D	0.095	0.862	0.043	0.000				
		94.0	857.0	43.0	0.0				
		(0.0)	(0.0)	(0.0)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	14.39	27.27	0.528	-	0.0	1.1	16.0	-	0.077	
ARM B	29.16	49.64	0.587	-	0.0	1.4	20.6	-	0.048	
ARM C	9.39	26.41	0.355	-	0.0	0.5	8.0	-	0.058	
ARM D	12.47	33.99	0.367	-	0.0	0.6	8.5	-	0.046	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	17.19	25.45	0.675	-	1.1	2.0	28.9	-	0.119	
ARM B	34.82	48.70	0.715	-	1.4	2.5	35.6	-	0.071	
ARM C	11.21	23.78	0.471	-	0.5	0.9	12.9	-	0.079	
ARM D	14.89	31.90	0.467	-	0.6	0.9	12.8	-	0.059	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	21.05	22.99	0.915	-	2.0	8.3	99.3	-	0.371	
ARM B	42.65	47.52	0.897	-	2.5	7.8	101.8	-	0.180	
ARM C	13.73	20.32	0.675	-	0.9	2.0	28.4	-	0.148	
ARM D	18.24	29.11	0.627	-	0.9	1.7	23.8	-	0.091	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	21.05	22.95	0.917	-	8.3	9.3	133.4	-	0.473	
ARM B	42.65	47.41	0.900	-	7.8	8.4	122.3	-	0.205	
ARM C	13.73	20.16	0.681	-	2.0	2.1	31.0	-	0.155	
ARM D	18.24	29.02	0.629	-	1.7	1.7	25.0	-	0.093	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	17.19	25.38	0.677	-	9.3	2.2	38.3	-	0.137	
ARM B	34.82	48.53	0.717	-	8.4	2.6	42.1	-	0.077	
ARM C	11.21	23.55	0.476	-	2.1	0.9	14.3	-	0.082	
ARM D	14.89	31.76	0.469	-	1.7	0.9	13.7	-	0.060	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	14.39	27.22	0.529	- -	-	2.2	1.1	17.6	0.079	I
I	ARM B	29.16	49.60	0.588	- -	-	2.6	1.4	22.2	0.049	I
I	ARM C	9.39	26.33	0.357	- -	-	0.9	0.6	8.5	0.059	I
I	ARM D	12.47	33.93	0.368	- -	-	0.9	0.6	8.9	0.047	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	2.0	**
08.00	8.3	*****
08.15	9.3	*****
08.30	2.2	**
08.45	1.1	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.4	*
07.45	2.5	**
08.00	7.8	*****
08.15	8.4	*****
08.30	2.6	***
08.45	1.4	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.9	*
08.00	2.0	**
08.15	2.1	**
08.30	0.9	*
08.45	0.6	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.9	*
08.00	1.7	**
08.15	1.7	**
08.30	0.9	*
08.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1578.8	I	1052.5	I	333.5	I	0.21	I
I	B	I	3198.8	I	2132.5	I	344.5	I	0.11	I
I	C	I	1029.6	I	686.4	I	103.2	I	0.10	I
I	D	I	1368.2	I	912.1	I	92.6	I	0.07	I
I	ALL	I	7175.3	I	4783.5	I	873.8	I	0.12	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\LLITM\S4 PM 2026 + Dev.vai"
(drive-on-the-left) at 16:27:21 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S4 A4303/ A426 Rbt PM Peak 2026 With Development + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

														T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I 36.532 I
I ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I 54.463 I
I ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I 39.841 I
I ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I 44.668 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13

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

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15			
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	12.29	I	18.43	I	12.29	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	22.60	I	33.90	I	22.60	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	11.41	I	17.12	I	11.41	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	16.74	I	25.11	I	16.74	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

										T33		
I		I	TURNING PROPORTIONS						I			
I		I	TURNING COUNTS						I			
I		I	(PERCENTAGE OF H.V.S)						I			
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.506	I	0.344	I	0.151	I
I		I		I	0.0	I	497.0	I	338.0	I	148.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.284	I	0.003	I	0.248	I	0.466	I
I		I		I	513.0	I	5.0	I	448.0	I	842.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.422	I	0.536	I	0.000	I	0.043	I
I		I		I	385.0	I	489.0	I	0.0	I	39.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.131	I	0.798	I	0.072	I	0.000	I
I		I		I	175.0	I	1068.0	I	96.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	16.45-17.00										I	I
I	ARM A	12.33	25.00	0.493	- -	-	0.0	1.0	13.9	-	0.078	I
I	ARM B	22.69	49.15	0.462	- -	-	0.0	0.9	12.5	-	0.038	I
I	ARM C	11.46	28.84	0.397	- -	-	0.0	0.7	9.6	-	0.057	I
I	ARM D	16.80	33.76	0.498	- -	-	0.0	1.0	14.3	-	0.059	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.00-17.15										I	I
I	ARM A	14.73	22.74	0.648	- -	-	1.0	1.8	25.6	-	0.123	I
I	ARM B	27.09	48.11	0.563	- -	-	0.9	1.3	18.8	-	0.047	I
I	ARM C	13.68	26.68	0.513	- -	-	0.7	1.0	15.2	-	0.077	I
I	ARM D	20.06	31.62	0.634	- -	-	1.0	1.7	24.7	-	0.086	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.15-17.30										I	I
I	ARM A	18.04	19.74	0.914	- -	-	1.8	7.9	94.0	-	0.414	I
I	ARM B	33.18	46.82	0.709	- -	-	1.3	2.4	34.5	-	0.073	I
I	ARM C	16.75	23.77	0.705	- -	-	1.0	2.3	32.6	-	0.139	I
I	ARM D	24.57	28.73	0.855	- -	-	1.7	5.4	70.5	-	0.216	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.30-17.45										I	I
I	ARM A	18.04	19.61	0.920	- -	-	7.9	9.3	130.5	-	0.550	I
I	ARM B	33.18	46.69	0.711	- -	-	2.4	2.4	36.3	-	0.074	I
I	ARM C	16.75	23.71	0.707	- -	-	2.3	2.4	35.2	-	0.144	I
I	ARM D	24.57	28.67	0.857	- -	-	5.4	5.7	83.3	-	0.240	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	I
I	17.45-18.00										I	I
I	ARM A	14.73	22.56	0.653	- -	-	9.3	1.9	35.1	-	0.145	I
I	ARM B	27.09	47.90	0.566	- -	-	2.4	1.3	20.2	-	0.048	I
I	ARM C	13.68	26.59	0.514	- -	-	2.4	1.1	16.7	-	0.078	I
I	ARM D	20.06	31.54	0.636	- -	-	5.7	1.8	28.7	-	0.091	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	12.33	24.92	0.495	- -	1.9	1.0	15.4	-	0.080	I
I	ARM B	22.69	49.10	0.462	- -	1.3	0.9	13.2	-	0.038	I
I	ARM C	11.46	28.79	0.398	- -	1.1	0.7	10.2	-	0.058	I
I	ARM D	16.80	33.71	0.498	- -	1.8	1.0	15.4	-	0.059	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.0	*
17.15	1.8	**
17.30	7.9	*****
17.45	9.3	*****
18.00	1.9	**
18.15	1.0	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.9	*
17.15	1.3	*
17.30	2.4	**
17.45	2.4	**
18.00	1.3	*
18.15	0.9	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.7	*
17.15	1.0	*
17.30	2.3	**
17.45	2.4	**
18.00	1.1	*
18.15	0.7	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.0	*
17.15	1.7	**
17.30	5.4	*****
17.45	5.7	*****
18.00	1.8	**
18.15	1.0	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
ARM	I	TOTAL	DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		
	I		I		* DELAY *	I	* DELAY *	I		
	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	I	
A	I	1353.0	I	902.0	I	314.5	I	0.23	I	
B	I	2488.6	I	1659.1	I	135.4	I	0.05	I	
C	I	1256.7	I	837.8	I	119.4	I	0.10	I	
D	I	1843.0	I	1228.7	I	237.0	I	0.13	I	
ALL	I	6941.3	I	4627.5	I	806.3	I	0.12	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
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IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\LLITM\S5 AM 2026 + Dev + SP.vai"
(drive-on-the-left) at 16:28:52 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 A4303/ A426 Rbt AM Peak 2026 With Dev + Symmetry park + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

																	T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I	36.532	I
I	ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I	54.463	I
I	ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I	39.841	I
I	ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I	44.668	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I	ARM	I	FLOW SCALE(%)	I
I	A	I	100	I
I	B	I	100	I
I	C	I	100	I
I	D	I	100	I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	14.41	21.62	14.41			
ARM B	15.00	45.00	75.00	29.50	44.25	29.50			
ARM C	15.00	45.00	75.00	9.51	14.27	9.51			
ARM D	15.00	45.00	75.00	12.70	19.05	12.70			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
07.15 - 08.45	ARM A	0.000	0.572	0.291	0.137				
		0.0	659.0	336.0	158.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM B	0.259	0.020	0.267	0.453				
		611.0	48.0	631.0	1070.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM C	0.423	0.505	0.000	0.072				
		322.0	384.0	0.0	55.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM D	0.094	0.860	0.046	0.000				
		95.0	874.0	47.0	0.0				
		(0.0)	(0.0)	(0.0)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.15-07.30										
ARM A	14.47	27.12	0.534	-	0.0	1.1	16.3	-	0.078	
ARM B	29.61	49.53	0.598	-	0.0	1.5	21.5	-	0.050	
ARM C	9.55	26.08	0.366	-	0.0	0.6	8.4	-	0.060	
ARM D	12.75	33.98	0.375	-	0.0	0.6	8.8	-	0.047	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.30-07.45										
ARM A	17.28	25.27	0.684	-	1.1	2.1	30.0	-	0.123	
ARM B	35.36	48.56	0.728	-	1.5	2.6	37.8	-	0.075	
ARM C	11.40	23.39	0.487	-	0.6	0.9	13.7	-	0.083	
ARM D	15.22	31.88	0.477	-	0.6	0.9	13.3	-	0.060	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
07.45-08.00										
ARM A	21.16	22.77	0.929	-	2.1	9.3	108.9	-	0.409	
ARM B	43.31	47.36	0.914	-	2.6	9.2	116.4	-	0.205	
ARM C	13.96	19.87	0.703	-	0.9	2.3	31.8	-	0.164	
ARM D	18.64	29.10	0.641	-	0.9	1.8	25.2	-	0.095	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.00-08.15										
ARM A	21.16	22.72	0.931	-	9.3	10.8	152.0	-	0.543	
ARM B	43.31	47.24	0.917	-	9.2	10.0	145.2	-	0.244	
ARM C	13.96	19.68	0.710	-	2.3	2.4	35.2	-	0.175	
ARM D	18.64	28.99	0.643	-	1.8	1.8	26.6	-	0.097	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
08.15-08.30										
ARM A	17.28	25.19	0.686	-	10.8	2.2	41.6	-	0.146	
ARM B	35.36	48.36	0.731	-	10.0	2.8	46.3	-	0.083	
ARM C	11.40	23.10	0.494	-	2.4	1.0	15.4	-	0.087	
ARM D	15.22	31.72	0.480	-	1.8	0.9	14.3	-	0.061	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	14.47	27.06	0.535	- -	2.2	1.2	18.0	-	0.080	I
I	ARM B	29.61	49.48	0.598	- -	2.8	1.5	23.2	-	0.051	I
I	ARM C	9.55	25.99	0.367	- -	1.0	0.6	9.0	-	0.061	I
I	ARM D	12.75	33.91	0.376	- -	0.9	0.6	9.2	-	0.047	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	2.1	**
08.00	9.3	*****
08.15	10.8	*****
08.30	2.2	**
08.45	1.2	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.5	*
07.45	2.6	***
08.00	9.2	*****
08.15	10.0	*****
08.30	2.8	***
08.45	1.5	**

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.9	*
08.00	2.3	**
08.15	2.4	**
08.30	1.0	*
08.45	0.6	*

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	0.9	*
08.00	1.8	**
08.15	1.8	**
08.30	0.9	*
08.45	0.6	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75										
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I	I	I	I	I	* DELAY *	I	* DELAY *	I		I
I	I	I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1587.0	I	1058.0	I	366.8	I	0.23	I
I	B	I	3248.4	I	2165.6	I	390.3	I	0.12	I
I	C	I	1047.5	I	698.3	I	113.5	I	0.11	I
I	D	I	1398.4	I	932.3	I	97.4	I	0.07	I
I	ALL	I	7281.3	I	4854.2	I	968.1	I	0.13	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

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

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\A4303_A426\
ES Addendum Oct 2016\LLITM\S5 PM 2026 + Dev + SP.vai"
(drive-on-the-left) at 16:30:15 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 A4303/ A426 Rbt PM Peak 2026 With Development + Symmetry Park + Hydrock Imps
LOCATION: A4303_Rugby Road
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Rugby Road
ARM B - A4303 East
ARM C - A426 South
ARM D - A4303 West

GEOMETRIC DATA

														T5	
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	3.00	I	11.40	I	31.00	I	25.00	I	74.00	I	43.0	I	0.556	I 36.532 I
I ARM B	I	7.30	I	11.20	I	80.00	I	20.00	I	74.00	I	27.0	I	0.731	I 54.463 I
I ARM C	I	4.20	I	11.30	I	31.30	I	22.00	I	74.00	I	46.0	I	0.583	I 39.841 I
I ARM D	I	7.30	I	11.60	I	12.60	I	22.00	I	74.00	I	47.0	I	0.626	I 44.668 I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

													T15	
I		I	NUMBER OF MINUTES FROM START WHEN				I	RATE OF FLOW (VEH/MIN)			I			
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	12.25	I	18.38	I	12.25	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	22.85	I	34.28	I	22.85	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	11.57	I	17.36	I	11.57	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	17.41	I	26.12	I	17.41	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

I	I	TURNING PROPORTIONS										I
I	I	TURNING COUNTS										I
I	I	(PERCENTAGE OF H.V.S)										I
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I	I	I	I	I	I	I	I	I	I	I
I	I	I	ARM A	I	0.000	I	0.505	I	0.350	I	0.145	I
I	I	I	I	I	0.0	I	495.0	I	343.0	I	142.0	I
I	I	I	I	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	ARM B	I	0.280	I	0.000	I	0.246	I	0.474	I
I	I	I	I	I	512.0	I	0.0	I	450.0	I	866.0	I
I	I	I	I	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	ARM C	I	0.423	I	0.529	I	0.000	I	0.048	I
I	I	I	I	I	392.0	I	490.0	I	0.0	I	44.0	I
I	I	I	I	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	ARM D	I	0.128	I	0.803	I	0.069	I	0.000	I
I	I	I	I	I	178.0	I	1119.0	I	96.0	I	0.0	I
I	I	I	I	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I	I	I	I	I	I	I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	-	-	-	-	-	-	-	-	-	-	I	
I	16.45-17.00										I	
I	ARM A	12.30	24.67	0.498	- -	-	0.0	1.0	14.2	-	0.080	I
I	ARM B	22.94	49.16	0.467	- -	-	0.0	0.9	12.8	-	0.038	I
I	ARM C	11.62	28.75	0.404	- -	-	0.0	0.7	9.9	-	0.058	I
I	ARM D	17.48	33.75	0.518	- -	-	0.0	1.1	15.5	-	0.061	I
I											I	

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	17.00-17.15	I		I		I		I		I		I		I		I		I		I
I	ARM A	I	14.68	I	22.35	I	0.657	I	- -	I	-	I	1.0	I	1.9	I	26.6	I	-	I
I	ARM B	I	27.39	I	48.13	I	0.569	I	- -	I	-	I	0.9	I	1.3	I	19.2	I	-	I
I	ARM C	I	13.87	I	26.58	I	0.522	I	- -	I	-	I	0.7	I	1.1	I	15.7	I	-	I
I	ARM D	I	20.87	I	31.61	I	0.660	I	- -	I	-	I	1.1	I	1.9	I	27.5	I	-	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	17.15-17.30	I		I		I		I		I		I		I		I		I		I
I	ARM A	I	17.98	I	19.31	I	0.931	I	- -	I	-	I	1.9	I	9.1	I	104.8	I	-	I
I	ARM B	I	33.54	I	46.86	I	0.716	I	- -	I	-	I	1.3	I	2.5	I	35.6	I	-	I
I	ARM C	I	16.99	I	23.65	I	0.718	I	- -	I	-	I	1.1	I	2.5	I	34.6	I	-	I
I	ARM D	I	25.56	I	28.71	I	0.890	I	- -	I	-	I	1.9	I	7.0	I	88.1	I	-	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	17.30-17.45	I		I		I		I		I		I		I		I		I		I
I	ARM A	I	17.98	I	19.14	I	0.940	I	- -	I	-	I	9.1	I	11.2	I	154.4	I	-	I
I	ARM B	I	33.54	I	46.72	I	0.718	I	- -	I	-	I	2.5	I	2.5	I	37.6	I	-	I
I	ARM C	I	16.99	I	23.59	I	0.720	I	- -	I	-	I	2.5	I	2.5	I	37.6	I	-	I
I	ARM D	I	25.56	I	28.65	I	0.892	I	- -	I	-	I	7.0	I	7.6	I	109.8	I	-	I

I	TIME	I	DEMAND	I	CAPACITY	I	DEMAND/	I	PEDESTRIAN	I	START	I	END	I	DELAY	I	GEOMETRIC DELAY	I	AVERAGE DELAY	I
I	I	I	(VEH/MIN)	I	(VEH/MIN)	I	CAPACITY	I	FLOW	I	QUEUE	I	QUEUE	I	(VEH.MIN/	I	(VEH.MIN/	I	PER ARRIVING	I
I	I	I	I	I	I	I	(RFC)	I	(PEDS/MIN)	I	(VEHS)	I	(VEHS)	I	TIME SEGMENT)	I	TIME SEGMENT)	I	VEHICLE (MIN)	I
I	17.45-18.00	I		I		I		I		I		I		I		I		I		I
I	ARM A	I	14.68	I	22.11	I	0.664	I	- -	I	-	I	11.2	I	2.0	I	39.5	I	-	I
I	ARM B	I	27.39	I	47.86	I	0.572	I	- -	I	-	I	2.5	I	1.3	I	20.8	I	-	I
I	ARM C	I	13.87	I	26.48	I	0.524	I	- -	I	-	I	2.5	I	1.1	I	17.4	I	-	I
I	ARM D	I	20.87	I	31.51	I	0.662	I	- -	I	-	I	7.6	I	2.0	I	33.4	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	12.30	24.59	0.500	- -	2.0	1.0	15.7	-	0.082	I
I	ARM B	22.94	49.11	0.467	- -	1.3	0.9	13.4	-	0.038	I
I	ARM C	11.62	28.70	0.405	- -	1.1	0.7	10.5	-	0.059	I
I	ARM D	17.48	33.69	0.519	- -	2.0	1.1	16.8	-	0.062	I
I											I

QUEUE AT ARM A

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE	
17.00	1.0	*
17.15	1.9	**
17.30	9.1	*****
17.45	11.2	*****
18.00	2.0	**
18.15	1.0	*

QUEUE AT ARM B

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE	
17.00	0.9	*
17.15	1.3	*
17.30	2.5	**
17.45	2.5	***
18.00	1.3	*
18.15	0.9	*

QUEUE AT ARM C

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE	
17.00	0.7	*
17.15	1.1	*
17.30	2.5	**
17.45	2.5	***
18.00	1.1	*
18.15	0.7	*

QUEUE AT ARM D

TIME ENDING	SEGMENT NO. OF VEHICLES IN QUEUE	
17.00	1.1	*
17.15	1.9	**
17.30	7.0	*****
17.45	7.6	*****
18.00	2.0	**
18.15	1.1	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75														
I	ARM	I	TOTAL	DEMAND	I	* QUEUEING	*	I	* INCLUSIVE	QUEUEING	*	I		
I	I	I	I	I	I	* DELAY	*	I	* DELAY	*	I	I		
I	I	I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I	I		
I	A	I	1348.9	I	899.3	I	355.1	I	0.26	I	355.1	I	0.26	I
I	B	I	2516.1	I	1677.4	I	139.4	I	0.06	I	139.4	I	0.06	I
I	C	I	1274.6	I	849.7	I	125.6	I	0.10	I	125.6	I	0.10	I
I	D	I	1917.4	I	1278.2	I	291.0	I	0.15	I	291.0	I	0.15	I
I	ALL	I	7056.9	I	4704.6	I	911.1	I	0.13	I	911.1	I	0.13	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\LLITM\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 14:33:09 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 M1 Junction 20 AM Peak 2026 Without Development
LOCATION: M1 Junction 20
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

															T5			
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	7.30	I	12.00	I	35.00	I	45.00	I	103.00	I	43.0	I	1.147	I	59.035	I
I	ARM B	I	3.50	I	7.70	I	67.00	I	45.00	I	103.00	I	40.0	I	0.765	I	43.301	I
I	ARM C	I	7.30	I	12.00	I	49.00	I	50.00	I	103.00	I	41.0	I	0.920	I	57.132	I
I	ARM D	I	7.30	I	8.20	I	10.00	I	50.00	I	103.00	I	35.0	I	1.113	I	54.000	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS
ARM CIRFLO SEP
A 16.0 120.0
B 27.0 0.0
C 33.0 120.0
D 6.0 0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

DEMAND SET TITLE: AM Peak 2000 Base Flows														T15
I		I	NUMBER OF MINUTES FROM START WHEN					I	RATE OF FLOW (VEH/MIN)				I	
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE	I	AT TOP	I	AFTER	I
I		I		I		I		I		I		I		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	13.88	I	20.81	I	13.88	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	11.18	I	16.76	I	11.18	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	10.38	I	15.56	I	10.38	I
I	ARM D	I	15.00	I	45.00	I	75.00	I	22.23	I	33.34	I	22.23	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T33	
I											I	
I	I	TURNING PROPORTIONS								I		
I	I	TURNING COUNTS								I		
I	I	(PERCENTAGE OF H.V.S)								I		
I											I	
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	07.15 - 08.45	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.139	I	0.000	I	0.861	I
I		I		I	0.0	I	154.0	I	0.0	I	956.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.291	I	0.000	I	0.144	I	0.565	I
I		I		I	260.0	I	0.0	I	129.0	I	505.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.000	I	0.069	I	0.040	I	0.892	I
I		I		I	0.0	I	57.0	I	33.0	I	740.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.399	I	0.179	I	0.422	I	0.000	I
I		I		I	710.0	I	318.0	I	750.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	16.63	39.08	0.426	- -	1.4	0.7	11.4	-	0.045	I
I	ARM B	13.39	23.32	0.574	- -	6.0	1.4	23.0	-	0.107	I
I	ARM C	12.44	33.13	0.375	- -	1.2	0.6	9.2	-	0.048	I
I	ARM D	26.64	48.06	0.554	- -	2.3	1.3	19.3	-	0.047	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	13.93	42.35	0.329	- -	0.7	0.5	7.5	-	0.035	I
I	ARM B	11.22	26.59	0.422	- -	1.4	0.7	11.3	-	0.065	I
I	ARM C	10.41	37.22	0.280	- -	0.6	0.4	5.9	-	0.037	I
I	ARM D	22.31	49.09	0.454	- -	1.3	0.8	12.8	-	0.037	I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.5
07.45	0.7 *
08.00	1.4 *
08.15	1.4 *
08.30	0.7 *
08.45	0.5

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.7 *
07.45	1.3 *
08.00	5.5 *****
08.15	6.0 *****
08.30	1.4 *
08.45	0.7 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.4
07.45	0.6 *
08.00	1.1 *
08.15	1.2 *
08.30	0.6 *
08.45	0.4

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.8 *
07.45	1.2 *
08.00	2.2 **
08.15	2.3 **
08.30	1.3 *
08.45	0.8 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1527.8	I 1018.6	I 78.5	I 0.05	I 78.5	I 0.05	I	
I	B	I	1230.5	I 820.4	I 220.3	I 0.18	I 220.4	I 0.18	I	
I	C	I	1142.4	I 761.6	I 63.7	I 0.06	I 63.7	I 0.06	I	
I	D	I	2447.3	I 1631.5	I 128.6	I 0.05	I 128.6	I 0.05	I	
I	ALL	I	6348.1	I 4232.1	I 491.2	I 0.08	I 491.2	I 0.08	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
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RG40 3GA,UK

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\LLITM\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 14:34:01 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 M1 Junction 20 PM Peak 2026 Without Development
LOCATION: M1 Junction 20
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

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	T5
I ARM A	I	7.30	I	12.00	I	35.00	I	45.00	I	103.00	I	43.0	I	1.192	I	59.731	I	
I ARM B	I	3.50	I	7.70	I	67.00	I	45.00	I	103.00	I	40.0	I	0.834	I	44.693	I	
I ARM C	I	7.30	I	12.00	I	49.00	I	50.00	I	103.00	I	41.0	I	1.027	I	58.756	I	
I ARM D	I	7.30	I	8.20	I	10.00	I	50.00	I	103.00	I	35.0	I	1.126	I	54.232	I	

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	13.0	120.0
B	21.0	0.0
C	26.0	120.0
D	5.0	0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

----- T13			
I ARM	I	FLOW SCALE(%)	I
I A	I	100	I
I B	I	100	I
I C	I	100	I
I D	I	100	I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	17.30-17.45									
I	ARM A	16.53	35.42	0.467	-	-	0.9	0.9	-	0.053
I	ARM B	13.80	27.20	0.507	-	-	1.0	1.0	-	0.075
I	ARM C	16.09	33.89	0.475	-	-	0.9	0.9	-	0.056
I	ARM D	35.60	48.57	0.733	-	-	2.7	2.7	-	0.077

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	13.50	39.82	0.339	- -	0.9	0.5	7.8	-	0.038	I
I	ARM B	11.27	30.37	0.371	- -	1.0	0.6	9.1	-	0.052	I
I	ARM C	13.14	38.41	0.342	- -	0.9	0.5	8.0	-	0.040	I
I	ARM D	29.07	49.60	0.586	- -	2.7	1.4	22.0	-	0.049	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	11.31	43.08	0.262	- -	0.5	0.4	5.4	-	0.031	I
I	ARM B	9.44	32.72	0.288	- -	0.6	0.4	6.2	-	0.043	I
I	ARM C	11.00	41.74	0.264	- -	0.5	0.4	5.5	-	0.033	I
I	ARM D	24.34	50.35	0.483	- -	1.4	0.9	14.4	-	0.039	I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.9 *
17.45	0.9 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	1.0 *
17.45	1.0 *
18.00	0.6 *
18.15	0.4

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.9 *
17.45	0.9 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.9 *
17.15	1.4 *
17.30	2.7 ***
17.45	2.7 ***
18.00	1.4 *
18.15	0.9 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1240.2	I 826.8	I 51.8	I 0.04	I 51.8	I 0.04	I	
I	B	I	1035.1	I 690.0	I 60.0	I 0.06	I 60.0	I 0.06	I	
I	C	I	1207.1	I 804.8	I 52.9	I 0.04	I 52.9	I 0.04	I	
I	D	I	2670.3	I 1780.2	I 149.9	I 0.06	I 149.9	I 0.06	I	
I	ALL	I	6152.6	I 4101.7	I 314.6	I 0.05	I 314.7	I 0.05	I	

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END OF JOB
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\LLITM\S4 2026 AM + Dev.vai"
(drive-on-the-left) at 14:34:49 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S4 M1 Junction 20 AM Peak 2026 With Development
LOCATION: M1 Junction 20
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

															T5			
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	7.30	I	12.00	I	35.00	I	45.00	I	103.00	I	43.0	I	1.147	I	59.035	I
I	ARM B	I	3.50	I	7.70	I	67.00	I	45.00	I	103.00	I	40.0	I	0.765	I	43.301	I
I	ARM C	I	7.30	I	12.00	I	49.00	I	50.00	I	103.00	I	41.0	I	0.920	I	57.132	I
I	ARM D	I	7.30	I	8.20	I	10.00	I	50.00	I	103.00	I	35.0	I	1.113	I	54.000	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
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WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS
ARM CIRFLO SEP
A 16.0 120.0
B 27.0 0.0
C 33.0 120.0
D 6.0 0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15								
I	I	NUMBER OF MINUTES FROM START WHEN			I	RATE OF FLOW (VEH/MIN)		
I	ARM	I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I
I	I	I	I	I	I	I	I	I
I	I	I	TO RISE	I	IS REACHED	I	FALLING	I
I	I	I	I	I	I	I	PEAK	I
I	I	I	I	I	I	I	OF PEAK	I
I	I	I	I	I	I	I	I	I
I	ARM A	I	15.00	I	45.00	I	75.00	I 14.75
I	ARM B	I	15.00	I	45.00	I	75.00	I 11.20
I	ARM C	I	15.00	I	45.00	I	75.00	I 10.76
I	ARM D	I	15.00	I	45.00	I	75.00	I 23.06

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33								
I	I	TURNING PROPORTIONS			I	TURNING COUNTS		
I	I	(PERCENTAGE OF H.V.S)			I			
I	I				I			
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I
I	I	I	I	I	I	I	I	I
I	07.15 - 08.45	I	I	I	I	I	I	I
I	I	I	ARM A	I	0.000	I	0.129	I 0.000
I	I	I	I	I	0.0	I	152.0	I 0.0
I	I	I	I	I	(0.0)	I	(0.0)	I (0.0)
I	I	I	I	I	I	I	I	I
I	I	I	ARM B	I	0.287	I	0.000	I 0.142
I	I	I	I	I	257.0	I	0.0	I 127.0
I	I	I	I	I	(0.0)	I	(0.0)	I (0.0)
I	I	I	I	I	I	I	I	I
I	I	I	ARM C	I	0.000	I	0.072	I 0.038
I	I	I	I	I	0.0	I	62.0	I 33.0
I	I	I	I	I	(0.0)	I	(0.0)	I (0.0)
I	I	I	I	I	I	I	I	I
I	I	I	ARM D	I	0.399	I	0.177	I 0.424
I	I	I	I	I	737.0	I	326.0	I 782.0
I	I	I	I	I	(0.0)	I	(0.0)	I (0.0)
I	I	I	I	I	I	I	I	I

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I	I	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING
I	I	I	I	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)
I	07.15-07.30									
I	ARM A	14.81	41.77	0.354	- -	-	0.0	0.5	8.1	0.037
I	ARM B	11.24	25.66	0.438	- -	-	0.0	0.8	11.3	0.069
I	ARM C	10.80	36.46	0.296	- -	-	0.0	0.4	6.2	0.039
I	ARM D	23.15	49.10	0.471	- -	-	0.0	0.9	13.0	0.038

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I	I	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING
I	I	I	I	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)
I	07.30-07.45									
I	ARM A	17.68	38.39	0.461	- -	-	0.5	0.8	12.5	0.048
I	ARM B	13.42	22.21	0.605	- -	-	0.8	1.5	21.5	0.113
I	ARM C	12.90	32.42	0.398	- -	-	0.4	0.7	9.7	0.051
I	ARM D	27.64	48.14	0.574	- -	-	0.9	1.3	19.6	0.049

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I	I	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING
I	I	I	I	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)
I	07.45-08.00									
I	ARM A	21.65	33.78	0.641	- -	-	0.8	1.8	25.4	0.082
I	ARM B	16.44	17.50	0.939	- -	-	1.5	9.4	106.1	0.516
I	ARM C	15.80	27.26	0.580	- -	-	0.7	1.4	19.7	0.087
I	ARM D	33.86	46.98	0.721	- -	-	1.3	2.5	36.4	0.075

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY
I	I	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING
I	I	I	I	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)
I	08.00-08.15									
I	ARM A	21.65	33.72	0.642	- -	-	1.8	1.8	26.6	0.083
I	ARM B	16.44	17.44	0.943	- -	-	9.4	11.5	159.0	0.746
I	ARM C	15.80	26.91	0.587	- -	-	1.4	1.4	20.9	0.090
I	ARM D	33.86	46.85	0.723	- -	-	2.5	2.6	38.4	0.077

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	17.68	38.30	0.462	- -	1.8	0.9	13.2	-	0.049	I
I	ARM B	13.42	22.11	0.607	- -	11.5	1.6	31.8	-	0.135	I
I	ARM C	12.90	31.79	0.406	- -	1.4	0.7	10.5	-	0.053	I
I	ARM D	27.64	47.91	0.577	- -	2.6	1.4	21.2	-	0.050	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	14.81	41.70	0.355	- -	0.9	0.6	8.4	-	0.037	I
I	ARM B	11.24	25.59	0.439	- -	1.6	0.8	12.2	-	0.070	I
I	ARM C	10.80	36.33	0.297	- -	0.7	0.4	6.5	-	0.039	I
I	ARM D	23.15	49.06	0.472	- -	1.4	0.9	13.7	-	0.039	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	*
07.45	0.8	*
08.00	1.8	**
08.15	1.8	**
08.30	0.9	*
08.45	0.6	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.8	*
07.45	1.5	**
08.00	9.4	*****
08.15	11.5	*****
08.30	1.6	**
08.45	0.8	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.4	
07.45	0.7	*
08.00	1.4	*
08.15	1.4	*
08.30	0.7	*
08.45	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.9	*
07.45	1.3	*
08.00	2.5	***
08.15	2.6	***
08.30	1.4	*
08.45	0.9	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I		I		I	* DELAY *	I	* DELAY *	I		I
I		I		I		I		I		I
I		I	(VEH)	I	(MIN)	I	(MIN)	I	(MIN/VEH)	I
I	A	I	1624.2	I	94.2	I	94.2	I	0.06	I
I	B	I	1233.3	I	341.9	I	341.9	I	0.28	I
I	C	I	1185.1	I	73.4	I	73.5	I	0.06	I
I	D	I	2539.5	I	142.4	I	142.4	I	0.06	I
I	ALL	I	6582.1	I	651.9	I	651.9	I	0.10	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\LLITM\S4 2026 PM + Dev.vai"
(drive-on-the-left) at 14:35:37 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S4 M1 Junction 20 PM Peak 2026 With Development
LOCATION: M1 Junction 20
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

															T5			
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	7.30	I	12.00	I	35.00	I	45.00	I	103.00	I	43.0	I	1.192	I	59.731	I
I	ARM B	I	3.50	I	7.70	I	67.00	I	45.00	I	103.00	I	40.0	I	0.834	I	44.693	I
I	ARM C	I	7.30	I	12.00	I	49.00	I	50.00	I	103.00	I	41.0	I	1.027	I	58.756	I
I	ARM D	I	7.30	I	8.20	I	10.00	I	50.00	I	103.00	I	35.0	I	1.126	I	54.232	I

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

WARNING ARM A Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS
ARM CIRFLO SEP
A 13.0 120.0
B 21.0 0.0
C 26.0 120.0
D 5.0 0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15									
ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS	TOP OF PEAK	FLOW STOPS	RATE OF FLOW (VEH/MIN) BEFORE	AT TOP	AFTER			
	TO RISE	IS REACHED	FALLING	PEAK	OF PEAK	PEAK			
ARM A	15.00	45.00	75.00	11.59	17.38	11.59			
ARM B	15.00	45.00	75.00	9.41	14.12	9.41			
ARM C	15.00	45.00	75.00	11.16	16.74	11.16			
ARM D	15.00	45.00	75.00	25.50	38.25	25.50			

DEMAND SET TITLE: AM Peak 2006 Base Flows

T33									
TURNING PROPORTIONS									
TURNING COUNTS									
(PERCENTAGE OF H.V.S)									
TIME	FROM/T	ARM A	ARM B	ARM C	ARM D				
16.45 - 18.15	ARM A	0.000	0.274	0.000	0.726				
		0.0	254.0	0.0	673.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM B	0.212	0.000	0.102	0.685				
		160.0	0.0	77.0	516.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM C	0.000	0.097	0.028	0.875				
		0.0	87.0	25.0	781.0				
		(0.0)	(0.0)	(0.0)	(0.0)				
	ARM D	0.495	0.262	0.243	0.000				
		1010.0	535.0	495.0	0.0				
		(0.0)	(0.0)	(0.0)	(0.0)				

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70										
TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
16.45-17.00										
ARM A	11.63	42.70	0.272	-	0.0	0.4	5.5	-	0.032	
ARM B	9.45	32.23	0.293	-	0.0	0.4	6.1	-	0.044	
ARM C	11.20	41.41	0.271	-	0.0	0.4	5.5	-	0.033	
ARM D	25.60	50.40	0.508	-	0.0	1.0	15.1	-	0.040	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.00-17.15										
ARM A	13.89	39.37	0.353	-	0.4	0.5	8.0	-	0.039	
ARM B	11.28	29.80	0.379	-	0.4	0.6	8.9	-	0.054	
ARM C	13.38	38.01	0.352	-	0.4	0.5	8.0	-	0.041	
ARM D	30.57	49.65	0.616	-	1.0	1.6	23.2	-	0.052	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.15-17.30										
ARM A	17.01	34.83	0.488	-	0.5	0.9	13.9	-	0.056	
ARM B	13.82	26.47	0.522	-	0.6	1.1	15.7	-	0.079	
ARM C	16.39	33.38	0.491	-	0.5	1.0	14.0	-	0.059	
ARM D	37.43	48.62	0.770	-	1.6	3.3	46.3	-	0.088	

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
17.30-17.45										
ARM A	17.01	34.76	0.489	-	0.9	1.0	14.3	-	0.056	
ARM B	13.82	26.43	0.523	-	1.1	1.1	16.3	-	0.079	
ARM C	16.39	33.33	0.492	-	1.0	1.0	14.4	-	0.059	
ARM D	37.43	48.61	0.770	-	3.3	3.3	49.4	-	0.089	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	13.89	39.27	0.354	- -	1.0	0.5	8.4	-	0.040	I
I	ARM B	11.28	29.74	0.379	- -	1.1	0.6	9.4	-	0.054	I
I	ARM C	13.38	37.94	0.353	- -	1.0	0.5	8.3	-	0.041	I
I	ARM D	30.57	49.63	0.616	- -	3.3	1.6	25.0	-	0.053	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	11.63	42.63	0.273	- -	0.5	0.4	5.7	-	0.032	I
I	ARM B	9.45	32.19	0.294	- -	0.6	0.4	6.4	-	0.044	I
I	ARM C	11.20	41.35	0.271	- -	0.5	0.4	5.7	-	0.033	I
I	ARM D	25.60	50.38	0.508	- -	1.6	1.0	15.9	-	0.040	I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	0.9 *
17.45	1.0 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.6 *
17.30	1.1 *
17.45	1.1 *
18.00	0.6 *
18.15	0.4

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.4
17.15	0.5 *
17.30	1.0 *
17.45	1.0 *
18.00	0.5 *
18.15	0.4

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	1.0 *
17.15	1.6 **
17.30	3.3 ***
17.45	3.3 ***
18.00	1.6 **
18.15	1.0 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I		I		I	* DELAY *	I	* DELAY *	I		I
I		I		I		I		I		I
I		I	(VEH)	(VEH/H)	I (MIN)	(MIN/VEH)	I (MIN)	(MIN/VEH)	I	I
I	A	I	1275.9	I 850.6	I 55.8	I 0.04	I 55.8	I 0.04	I	I
I	B	I	1036.4	I 691.0	I 62.8	I 0.06	I 62.8	I 0.06	I	I
I	C	I	1229.1	I 819.4	I 55.9	I 0.05	I 55.9	I 0.05	I	I
I	D	I	2807.9	I 1871.9	I 174.9	I 0.06	I 174.9	I 0.06	I	I
I	ALL	I	6349.5	I 4233.0	I 349.4	I 0.06	I 349.4	I 0.06	I	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\LLITM\S5 2026 AM Peak + Dev + SP.vai"
(drive-on-the-left) at 17:23:51 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 M1 Junction 20 AM Peak 2026 Base With Development + Symmetry Park
LOCATION: M1 Junction 20
DATE: 14/07/31
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

																	T5	
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	7.00	I	13.00	I	6.50	I	50.00	I	98.00	I	42.0	I	1.005	I	48.972	I
I	ARM B	I	3.25	I	9.00	I	150.00	I	70.00	I	100.00	I	45.0	I	0.846	I	49.806	I
I	ARM C	I	6.00	I	11.00	I	70.00	I	70.00	I	100.00	I	41.0	I	0.879	I	53.264	I
I	ARM D	I	7.00	I	8.00	I	2.00	I	70.00	I	100.00	I	45.0	I	1.033	I	49.758	I

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

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	16.0	120.0
B	27.0	0.0
C	33.0	120.0
D	6.0	0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
I	08.00-08.15									
I	ARM A	22.28	26.84	0.830	-	4.5	4.7	68.8	-	0.217
I	ARM B	16.22	20.67	0.785	-	3.3	3.5	51.4	-	0.223
I	ARM C	16.02	23.98	0.668	-	1.9	2.0	29.3	-	0.125
I	ARM D	34.04	43.10	0.790	-	3.6	3.7	54.9	-	0.110

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	18.19	30.81	0.590	- -	4.7	1.5	23.3	-	0.082	I
I	ARM B	13.24	25.79	0.514	- -	3.5	1.1	16.9	-	0.082	I
I	ARM C	13.08	29.03	0.451	- -	2.0	0.8	12.8	-	0.063	I
I	ARM D	27.79	44.25	0.628	- -	3.7	1.7	26.6	-	0.062	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	15.23	33.81	0.451	- -	1.5	0.8	12.7	-	0.054	I
I	ARM B	11.09	29.82	0.372	- -	1.1	0.6	9.1	-	0.054	I
I	ARM C	10.95	33.16	0.330	- -	0.8	0.5	7.6	-	0.045	I
I	ARM D	23.28	45.19	0.515	- -	1.7	1.1	16.4	-	0.046	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.8	*
07.45	1.4	*
08.00	4.5	****
08.15	4.7	*****
08.30	1.5	*
08.45	0.8	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.6	*
07.45	1.0	*
08.00	3.3	***
08.15	3.5	****
08.30	1.1	*
08.45	0.6	*

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.5	
07.45	0.8	*
08.00	1.9	**
08.15	2.0	**
08.30	0.8	*
08.45	0.5	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	1.1	*
07.45	1.7	**
08.00	3.6	****
08.15	3.7	****
08.30	1.7	**
08.45	1.1	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		I
I		I		I	* DELAY *	I	* DELAY *	I		I
I		I		I		I		I		I
I		I	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)		I
I	A	I	1671.0	I 1114.0	I 196.6	I 0.12	I 196.6	I 0.12	I	I
I	B	I	1216.8	I 811.2	I 145.6	I 0.12	I 145.6	I 0.12	I	I
I	C	I	1201.6	I 801.1	I 95.7	I 0.08	I 95.7	I 0.08	I	I
I	D	I	2553.3	I 1702.2	I 188.4	I 0.07	I 188.4	I 0.07	I	I
I	ALL	I	6642.6	I 4428.4	I 626.2	I 0.09	I 626.3	I 0.09	I	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

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Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\M1 Junction 20\
ES Addendum Oct 2016\LLITM\S5 2026 PM Peak + Dev + SP.vai"
(drive-on-the-left) at 17:24:51 on Friday, 7 October 2016

FILE PROPERTIES

RUN TITLE: S5 M1 Junction 20 PM Peak 2026 Base With Development + Symmetry Park
LOCATION: M1 Junction 20
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - M1 North
ARM B - A4304
ARM C - M1 South
ARM D - A4303

GEOMETRIC DATA

GRADE SEPARATED / MOTORWAY FACTORS APPLY TO ALL ARMS

															T5			
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	7.00	I	13.00	I	6.50	I	50.00	I	98.00	I	42.0	I	1.044	I	49.668	I
I	ARM B	I	3.25	I	9.00	I	150.00	I	70.00	I	100.00	I	45.0	I	0.923	I	51.198	I
I	ARM C	I	6.00	I	11.00	I	70.00	I	70.00	I	100.00	I	41.0	I	0.982	I	54.888	I
I	ARM D	I	7.00	I	8.00	I	2.00	I	70.00	I	100.00	I	45.0	I	1.045	I	49.990	I

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

WARNING ARM B Effective flare length is outside normal range.
Treat capacities with increasing caution.

WARNING ARM C Effective flare length is outside normal range.
Treat capacities with increasing caution.

DATA FOR VERY LARGE ROUNDABOUTS

ARM	CIRFLO	SEP
A	13.0	120.0
B	21.0	0.0
C	26.0	120.0
D	5.0	0.0

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13
I ARM	I	FLOW	SCALE(%)	I
I A	I	100		I
I B	I	100		I
I C	I	100		I
I D	I	100		I

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

PERIOD OF TIME WHEN THE FLOW OF TRAFFIC IS STOPPED										T15
I	I	I	NUMBER OF MINUTES FROM START WHEN	I	I	RATE OF FLOW (VEH/MIN)	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	I	I	I	I	I	I	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 11.81	I 17.72	I 11.81
I ARM	B	I	15.00	I	45.00	I	75.00	I 9.30	I 13.95	I 9.30
I ARM	C	I	15.00	I	45.00	I	75.00	I 11.16	I 16.74	I 11.16
I ARM	D	I	15.00	I	45.00	I	75.00	I 26.14	I 39.21	I 26.14

DEMAND SET TITLE: AM Peak 2006 Base Flows

									T33			
I									I			
I	TURNING PROPORTIONS								I			
I	TURNING COUNTS								I			
I	(PERCENTAGE OF H.V.S)								I			
I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I
I	16.45 - 18.15	I		I		I		I		I		I
I		I	ARM A	I	0.000	I	0.270	I	0.000	I	0.730	I
I		I		I	0.0	I	255.0	I	0.0	I	690.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM B	I	0.210	I	0.000	I	0.102	I	0.688	I
I		I		I	156.0	I	0.0	I	76.0	I	512.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM C	I	0.000	I	0.097	I	0.028	I	0.875	I
I		I		I	0.0	I	87.0	I	25.0	I	781.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I
I		I	ARM D	I	0.503	I	0.257	I	0.240	I	0.000	I
I		I		I	1052.0	I	537.0	I	502.0	I	0.0	I
I		I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL DELAY (MIN)
16.45-17.00											
ARM A	11.86	34.64	0.342	-	-	0.0	0.5	7.6	-	0.044	
ARM B	9.34	37.15	0.251	-	-	0.0	0.3	4.9	-	0.036	
ARM C	11.20	38.21	0.293	-	-	0.0	0.4	6.1	-	0.037	
ARM D	26.24	46.49	0.564	-	-	0.0	1.3	18.8	-	0.049	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.00-17.15										
I	ARM A	14.16	31.70	0.447	- -	-	0.5	0.8	11.8	-	0.057
I	ARM B	11.15	34.40	0.324	- -	-	0.3	0.5	7.1	-	0.043
I	ARM C	13.38	34.94	0.383	- -	-	0.4	0.6	9.1	-	0.046
I	ARM D	31.33	45.80	0.684	- -	-	1.3	2.1	30.9	-	0.069

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.15-17.30										
I	ARM A	17.34	27.75	0.625	- -	-	0.8	1.6	23.6	-	0.095
I	ARM B	13.65	30.68	0.445	- -	-	0.5	0.8	11.7	-	0.059
I	ARM C	16.39	30.49	0.537	- -	-	0.6	1.2	16.8	-	0.070
I	ARM D	38.37	44.86	0.855	- -	-	2.1	5.5	75.1	-	0.144

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	
I	17.30-17.45										
I	ARM A	17.34	27.63	0.628	- -	-	1.6	1.7	24.9	-	0.097
I	ARM B	13.65	30.59	0.446	- -	-	0.8	0.8	12.0	-	0.059
I	ARM C	16.39	30.43	0.538	- -	-	1.2	1.2	17.3	-	0.071
I	ARM D	38.37	44.85	0.855	- -	-	5.5	5.7	84.8	-	0.153
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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	14.16	31.54	0.449	- -	1.7	0.8	12.6	-	0.058	I
I	ARM B	11.15	34.28	0.325	- -	0.8	0.5	7.4	-	0.043	I
I	ARM C	13.38	34.86	0.384	- -	1.2	0.6	9.6	-	0.047	I
I	ARM D	31.33	45.79	0.684	- -	5.7	2.2	34.9	-	0.071	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	11.86	34.56	0.343	- -	0.8	0.5	8.0	-	0.044	I
I	ARM B	9.34	37.08	0.252	- -	0.5	0.3	5.1	-	0.036	I
I	ARM C	11.20	38.14	0.294	- -	0.6	0.4	6.3	-	0.037	I
I	ARM D	26.24	46.47	0.565	- -	2.2	1.3	20.1	-	0.050	I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.5	*
17.15	0.8	*
17.30	1.6	**
17.45	1.7	**
18.00	0.8	*
18.15	0.5	*

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.3	
17.15	0.5	
17.30	0.8	*
17.45	0.8	*
18.00	0.5	
18.15	0.3	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	0.4	
17.15	0.6	*
17.30	1.2	*
17.45	1.2	*
18.00	0.6	*
18.15	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
17.00	1.3	*
17.15	2.1	**
17.30	5.5	*****
17.45	5.7	*****
18.00	2.2	**
18.15	1.3	*

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
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	1300.7	I 867.1	I 88.4	I 0.07	I 88.4	I 0.07	I	
I	B	I	1024.1	I 682.7	I 48.2	I 0.05	I 48.2	I 0.05	I	
I	C	I	1229.1	I 819.4	I 65.2	I 0.05	I 65.3	I 0.05	I	
I	D	I	2878.1	I 1918.7	I 264.5	I 0.09	I 264.5	I 0.09	I	
I	ALL	I	6432.0	I 4288.0	I 466.4	I 0.07	I 466.4	I 0.07	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Gibbet Hill A5_A426\
ES Addendum Oct 2016\LLITM\S2 2026 AM No Dev.vai"
(drive-on-the-left) at 12:07:02 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 Gibbet Hill Roundabout AM Peak 2026 Without Development
LOCATION: Gibbet Hill Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Gibbet Lane
ARM B - A5 South
ARM C - A426 South
ARM D - A5 North
ARM E - Rugby Road

GEOMETRIC DATA

T5																		
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	2.90	I	8.00	I	10.00	I	19.00	I	66.00	I	68.0	I	0.421	I	21.146	I
I	ARM B	I	4.70	I	7.30	I	25.00	I	24.00	I	70.00	I	40.0	I	0.540	I	32.695	I
I	ARM C	I	3.65	I	6.90	I	20.00	I	44.00	I	70.00	I	56.0	I	0.481	I	27.373	I
I	ARM D	I	4.00	I	8.80	I	36.00	I	15.00	I	70.00	I	54.0	I	0.530	I	33.487	I
I	ARM E	I	3.65	I	7.20	I	27.00	I	100.00	I	70.00	I	52.0	I	0.511	I	29.895	I

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

WARNING ARM D Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I	ARM	I	FLOW	SCALE(%)	I
I	A	I	100		I
I	B	I	100		I
I	C	I	100		I
I	D	I	100		I
I	E	I	100		I

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

											T15					
I	ARM	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	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	1.54	I	2.31	I	1.54	I	
I	ARM	B	I	15.00	I	45.00	I	75.00	I	6.51	I	9.77	I	6.51	I	
I	ARM	C	I	15.00	I	45.00	I	75.00	I	17.52	I	26.29	I	17.52	I	
I	ARM	D	I	15.00	I	45.00	I	75.00	I	12.88	I	19.31	I	12.88	I	
I	ARM	E	I	15.00	I	45.00	I	75.00	I	8.05	I	12.08	I	8.05	I	

DEMAND SET TITLE: AM Peak 2006 Base Flows

														T33	
I		I	TURNING PROPORTIONS						I						
I		I	TURNING COUNTS						I						
I		I	(PERCENTAGE OF H.V.S)						I						

I	TIME	I	FROM/T	I	ARM A	I	ARM B	I	ARM C	I	ARM D	I	ARM E	I	
I	07.15 - 08.45	I		I		I		I		I		I		I	
I		ARM A	I	0.000	I	0.203	I	0.366	I	0.244	I	0.187	I		
I			I	0.0	I	25.0	I	45.0	I	30.0	I	23.0	I		
I			I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I		
I			I		I		I		I		I		I		
I			I	ARM B	I	0.042	I	0.017	I	0.152	I	0.655	I	0.134	I
I			I		I	22.0	I	9.0	I	79.0	I	341.0	I	70.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I		I
I			I	ARM C	I	0.040	I	0.051	I	0.000	I	0.441	I	0.468	I
I			I		I	56.0	I	72.0	I	0.0	I	618.0	I	656.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I		I
I			I	ARM D	I	0.014	I	0.550	I	0.430	I	0.000	I	0.007	I
I			I		I	14.0	I	566.0	I	443.0	I	0.0	I	7.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I			I		I		I		I		I		I		I
I			I	ARM E	I	0.034	I	0.332	I	0.632	I	0.002	I	0.000	I
I			I		I	22.0	I	214.0	I	407.0	I	1.0	I	0.0	I
I			I		I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I	(0.0)	I
I		I		I		I		I		I		I		I	

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

											T70	
I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
I	07.15-07.30										I	
I	ARM A	1.54	12.15	0.127	- -	-	0.0	0.1	2.1	-	0.094	I
I	ARM B	6.54	26.29	0.249	- -	-	0.0	0.3	4.8	-	0.051	I
I	ARM C	17.59	24.39	0.721	- -	-	0.0	2.5	34.7	-	0.140	I
I	ARM D	12.92	27.50	0.470	- -	-	0.0	0.9	12.8	-	0.068	I
I	ARM E	8.08	22.35	0.362	- -	-	0.0	0.6	8.2	-	0.070	I
I											I	

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I		(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I	
I				(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
I	07.30-07.45										I	
I	ARM A	1.84	10.38	0.178	- -	-	0.1	0.2	3.1	-	0.117	I
I	ARM B	7.81	25.03	0.312	- -	-	0.3	0.5	6.7	-	0.058	I
I	ARM C	21.01	23.80	0.883	- -	-	2.5	6.4	82.1	-	0.304	I
I	ARM D	15.43	26.35	0.586	- -	-	0.9	1.4	20.2	-	0.091	I
I	ARM E	9.65	20.87	0.462	- -	-	0.6	0.9	12.4	-	0.089	I
I											I	

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I	I	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I	
I	I	I	I	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
I	07.45-08.00										I	
I	ARM A	2.26	8.04	0.281	- -	-	0.2	0.4	5.5	-	0.172	I
I	ARM B	9.56	23.33	0.410	- -	-	0.5	0.7	10.1	-	0.073	I
I	ARM C	25.73	23.00	1.119	- -	-	6.4	51.0	443.6	-	1.441	I
I	ARM D	18.90	25.53	0.740	- -	-	1.4	2.7	38.5	-	0.147	I
I	ARM E	11.82	18.99	0.622	- -	-	0.9	1.6	22.9	-	0.137	I
I											I	

I	TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY	I	
I	I	(VEH/MIN)	(VEH/MIN)	CAPACITY	FLOW	QUEUE	QUEUE	(VEH.MIN/	(VEH.MIN/	PER ARRIVING	I	
I	I	I	I	(RFC)	(PEDS/MIN)	(VEHS)	(VEHS)	TIME SEGMENT)	TIME SEGMENT)	VEHICLE (MIN)	I	
I	08.00-08.15										I	
I	ARM A	2.26	7.98	0.283	- -	-	0.4	0.4	5.8	-	0.175	I
I	ARM B	9.56	23.29	0.411	- -	-	0.7	0.7	10.4	-	0.073	I
I	ARM C	25.73	22.99	1.119	- -	-	51.0	92.6	1077.8	-	3.237	I
I	ARM D	18.90	25.47	0.742	- -	-	2.7	2.8	41.9	-	0.152	I
I	ARM E	11.82	18.93	0.624	- -	-	1.6	1.6	24.4	-	0.140	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.15-08.30										I
I	ARM A	1.84	10.24	0.180	- -	-	0.4	0.2	3.4	0.119	I
I	ARM B	7.81	24.97	0.313	- -	-	0.7	0.5	7.0	0.058	I
I	ARM C	21.01	23.79	0.883	- -	-	92.6	54.7	1104.6	3.152	I
I	ARM D	15.43	25.52	0.605	- -	-	2.8	1.6	24.4	0.101	I
I	ARM E	9.65	20.68	0.467	- -	-	1.6	0.9	13.7	0.092	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.30-08.45										I
I	ARM A	1.54	12.00	0.129	- -	-	0.2	0.1	2.3	0.096	I
I	ARM B	6.54	26.24	0.249	- -	-	0.5	0.3	5.1	0.051	I
I	ARM C	17.59	24.37	0.722	- -	-	54.7	2.8	255.6	0.664	I
I	ARM D	12.92	26.42	0.489	- -	-	1.6	1.0	14.9	0.075	I
I	ARM E	8.08	22.13	0.365	- -	-	0.9	0.6	8.9	0.071	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.1
07.45	0.2
08.00	0.4
08.15	0.4
08.30	0.2
08.45	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.3
07.45	0.5
08.00	0.7 *
08.15	0.7 *
08.30	0.5
08.45	0.3

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	2.5 ***
07.45	6.4 *****
08.00	51.0 *****
08.15	92.6 *****
08.30	54.7 *****
08.45	2.8 ***

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.9 *
07.45	1.4 *
08.00	2.7 ***
08.15	2.8 ***
08.30	1.6 **
08.45	1.0 *

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.6 *
07.45	0.9 *
08.00	1.6 **
08.15	1.6 **
08.30	0.9 *
08.45	0.6 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

										T75
I	ARM	I	TOTAL DEMAND	I	* QUEUEING *	I	* INCLUSIVE QUEUEING *	I		
I		I		I	* DELAY *	I	* DELAY *	I		
I		I								
I		I	(VEH)	(VEH/H)	I (MIN)	(MIN/VEH)	I (MIN)	(MIN/VEH)	I	
I	A	I	169.3	I 112.9	I 22.3	I 0.13	I 22.3	I 0.13	I	
I	B	I	717.1	I 478.1	I 44.0	I 0.06	I 44.0	I 0.06	I	
I	C	I	1929.7	I 1286.5	I 2998.5	I 1.55	I 2998.7	I 1.55	I	
I	D	I	1417.7	I 945.1	I 152.7	I 0.11	I 152.7	I 0.11	I	
I	E	I	886.4	I 590.9	I 90.6	I 0.10	I 90.6	I 0.10	I	
I	ALL	I	5120.3	I 3413.5	I 3308.1	I 0.65	I 3308.3	I 0.65	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
===== end of file =====

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA, UK

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:-
"j:\Gazeley UK Ltd\47071103 Magna Park Phase 4\Technical\11 Junction Assessments Outline\Gibbet Hill A5_A426\
ES Addendum Oct 2016\LLITM\S2 2026 PM No Dev.vai"
(drive-on-the-left) at 12:08:10 on Tuesday, 11 October 2016

FILE PROPERTIES

RUN TITLE: S2 Gibbet Hill Roundabout PM Peak 2026 Without Development
LOCATION: Gibbet Hill Roundabout
DATE: 31/07/14
CLIENT: IDI Gazeley
ENUMERATOR: jon_ashcroft [UKBEDFLT06027]
JOB NUMBER: 47071103
STATUS:
DESCRIPTION:

INPUT DATA

ARM A - Gibbet Lane
ARM B - A5 South
ARM C - A426 South
ARM D - A5 North
ARM E - Rugby Road

GEOMETRIC DATA

														T5	
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	2.90	I	8.00	I	10.00	I	19.00	I	66.00	I	68.0	I	0.421	I 21.146 I
I ARM B	I	4.70	I	7.30	I	25.00	I	24.00	I	70.00	I	40.0	I	0.540	I 32.695 I
I ARM C	I	3.65	I	6.90	I	20.00	I	44.00	I	70.00	I	56.0	I	0.481	I 27.373 I
I ARM D	I	4.00	I	8.80	I	36.00	I	15.00	I	70.00	I	54.0	I	0.530	I 33.487 I
I ARM E	I	3.65	I	7.20	I	27.00	I	100.00	I	70.00	I	52.0	I	0.511	I 29.895 I

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

WARNING ARM D Effective flare length is outside normal range.
Treat capacities with increasing caution.

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

				T13	
I ARM	I	FLOW	SCALE(%)	I	
I A	I	100		I	
I B	I	100		I	
I C	I	100		I	
I D	I	100		I	
I E	I	100		I	

TIME PERIOD BEGINS(16.45)AND ENDS(18.15)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: AM Peak 2006 Base Flows

T15															
I	ARM	I	NUMBER OF MINUTES FROM START WHEN			RATE OF FLOW (VEH/MIN)			I						
			I	I	I	I	I	I							
										FLOW STARTS	TOP OF PEAK	FLOW STOPS	BEFORE	AT TOP	AFTER
I	ARM	A	I	15.00	I	45.00	I	75.00	I	1.51	I	2.27	I	1.51	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	9.61	I	14.42	I	9.61	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	15.51	I	23.27	I	15.51	I
I	ARM	D	I	15.00	I	45.00	I	75.00	I	9.94	I	14.91	I	9.94	I
I	ARM	E	I	15.00	I	45.00	I	75.00	I	8.81	I	13.22	I	8.81	I

DEMAND SET TITLE: AM Peak 2006 Base Flows

[illegible]

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	TOTAL
	16.45-17.00										
ARM A		1.52	13.01	0.117	-	0.0	0.1	1.9	-	0.087	
ARM B		9.65	25.54	0.378	-	0.0	0.6	8.8	-	0.063	
ARM C		15.57	22.85	0.681	-	0.0	2.1	29.1	-	0.132	
ARM D		9.98	26.09	0.382	-	0.0	0.6	9.0	-	0.062	
ARM E		8.85	23.77	0.372	-	0.0	0.6	8.6	-	0.067	

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	17.00-17.15										I	
I	ARM A	1.81	11.41	0.159	- -	-	0.1	0.2	2.7	-	0.104	I
I	ARM B	11.52	24.13	0.478	- -	-	0.6	0.9	13.2	-	0.079	I
I	ARM C	18.59	21.96	0.847	- -	-	2.1	5.0	65.2	-	0.268	I
I	ARM D	11.91	24.67	0.483	- -	-	0.6	0.9	13.5	-	0.078	I
I	ARM E	10.56	22.57	0.468	- -	-	0.6	0.9	12.7	-	0.083	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I	
I	17.15-17.30										I	
I	ARM A	2.22	9.29	0.239	- -	-	0.2	0.3	4.5	-	0.141	I
I	ARM B	14.11	22.22	0.635	- -	-	0.9	1.7	24.3	-	0.122	I
I	ARM C	22.77	20.76	1.097	- -	-	5.0	40.1	353.7	-	1.296	I
I	ARM D	14.59	23.53	0.620	- -	-	0.9	1.6	23.0	-	0.111	I
I	ARM E	12.94	21.04	0.615	- -	-	0.9	1.6	22.4	-	0.122	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45										
ARM A	2.22	9.25	0.240	- -	-	0.3	0.3	4.7	-	0.142
ARM B	14.11	22.18	0.636	- -	-	1.7	1.7	25.8	-	0.124
ARM C	22.77	20.73	1.098	- -	-	40.1	71.6	838.6	-	2.823
ARM D	14.59	23.43	0.623	- -	-	1.6	1.6	24.3	-	0.113
ARM E	12.94	21.00	0.616	- -	-	1.6	1.6	23.7	-	0.124

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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	17.45-18.00										I
I	ARM A	1.81	11.28	0.161	- -	-	0.3	0.2	3.0	0.106	I
I	ARM B	11.52	24.08	0.478	- -	-	1.7	0.9	14.4	0.080	I
I	ARM C	18.59	21.92	0.848	- -	-	71.6	26.1	732.9	2.317	I
I	ARM D	11.91	23.36	0.510	- -	-	1.6	1.1	16.3	0.088	I
I	ARM E	10.56	22.37	0.472	- -	-	1.6	0.9	14.0	0.085	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)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	18.00-18.15										I
I	ARM A	1.52	12.91	0.118	- -	-	0.2	0.1	2.1	0.088	I
I	ARM B	9.65	25.49	0.379	- -	-	0.9	0.6	9.4	0.063	I
I	ARM C	15.57	22.82	0.682	- -	-	26.1	2.2	79.6	0.230	I
I	ARM D	9.98	25.39	0.393	- -	-	1.1	0.7	10.0	0.065	I
I	ARM E	8.85	23.65	0.374	- -	-	0.9	0.6	9.2	0.068	I
I											I

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.1

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.9 *
17.30	1.7 **
17.45	1.7 **
18.00	0.9 *
18.15	0.6 *

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	2.1 **
17.15	5.0 *****
17.30	40.1 *****
17.45	71.6 *****
18.00	26.1 *****
18.15	2.2 **

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.9 *
17.30	1.6 **
17.45	1.6 **
18.00	1.1 *
18.15	0.7 *

QUEUE AT ARM E

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.6 *
17.15	0.9 *
17.30	1.6 **
17.45	1.6 **
18.00	0.9 *
18.15	0.6 *

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

											T75
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	166.5	I 111.0	I	18.9	I 0.11	I	18.9	I 0.11	I
I	B	I	1058.5	I 705.6	I	95.9	I 0.09	I	95.9	I 0.09	I
I	C	I	1708.1	I 1138.8	I	2099.0	I 1.23	I	2099.1	I 1.23	I
I	D	I	1094.3	I 729.5	I	96.1	I 0.09	I	96.1	I 0.09	I
I	E	I	970.4	I 646.9	I	90.6	I 0.09	I	90.6	I 0.09	I
I	ALL	I	4997.8	I 3331.9	I	2400.5	I 0.48	I	2400.7	I 0.48	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
===== end of file =====

T R A N S Y T 12

Traffic Network Study Tool

Analysis Program Release 7 (July 2010)
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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited	Tel:	+44 (0) 1344 770758
Crowthorne House	Fax:	+44 (0) 1344 770864
Nine Mile Ride	Email:	softwarebureau@trl.co.uk
Wokingham, Berks.	Web:	www.trlsoftware.co.uk
RG40 3GA, UK		

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
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Run with file:- "2026 AM PEAK+DEV.DAT" at 16:07 on 20160218

TRANSYT 12.0

Gibbet Hill Rbout 2026 AM Peak + Development - Gazeley Improvements

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	4
NUMBER OF LINKS	=	32
NUMBER OF OPTIMISED NODES	=	4
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	45
MAXIMUM NUMBER OF SHARED STOPLINES	=	4
MAXIMUM NUMBER OF TIMING POINTS	=	2
MAXIMUM LINKS AT ANY NODE	=	11

CORE REQUESTED = 8366 WORDS
CORE AVAILABLE = 72000 WORDS

71)= 32 42 76 0 30 76 43 0 0 0 0 0 0 0 0 0

72)=	32	43	23	0	30	23	43	0	0	0	0	0	0	0	0	0
73)=	32	44	225	0	32	225	43	0	0	0	0	0	0	0	0	0
74)=	32	45	204	0	31	204	43	0	0	0	0	0	0	0	0	0
75)=	32	46	226	0	32	226	43	0	0	0	0	0	0	0	0	0
76)=	32	47	205	0	31	205	43	0	0	0	0	0	0	0	0	0
77)=	32	50	1446	0	0	0	43	0	0	0	0	0	0	0	0	0
78)=	32	51	349	0	40	349	43	0	0	0	0	0	0	0	0	0
79)=	32	52	98	0	41	98	43	0	0	0	0	0	0	0	0	0
80)=	32	53	23	0	43	23	43	0	0	0	0	0	0	0	0	0
81)=	32	54	10	0	47	10	43	0	0	0	0	0	0	0	0	0
82)=	32	55	31	0	42	31	43	0	0	0	0	0	0	0	0	0

LINK CARDS : FLARE SATURATION FLOW DATA																
			..LANE 1..			..LANE 2..			..LANE 3..							
CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	LINK	LIMIT	QUEUE	LINK	LIMIT
NO.	TYPE	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	NO.	WEIGHT	NO.	NO.
83)=	33	50	2155	6	0	0	0	0	0	0	0	0	0	0	0	0
LINK DATA: QUEUE CONSTRAINTS																
CARD	CARD	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE
NO.	TYPE	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT
84)=	38	12	5	4500	13	5	4500	22	1	4500	23	1	4500	42	2	4500
85)=	38	43	2	4500	51	1	4500	52	1	4500	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

45 SECOND CYCLE 45 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	2	0	20								
2	2	0	15								
4	2	0	21								
5	2	0	30								

LINK	FLOW	SAT	DEGREE	MEAN	TIMES	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN	TIMES
NUMBER	INTO	FLOW	OF	PER	PCU	UNIFORM	RANDOM+	COST	MEAN	COST	MAX.	AVERAGE	INDEX.	NODE	START	END
	LINK	(PCU/H)	(PCU/H)	(%)	DELAY	(U+R+0=MEAN	OVERSAT	OF	/PCU	OF	(PCU)	EXCESS	OF () VALUES		1ST	2ND
				(SEC)	(SEC)	(PCU-H/H)	(Q)	DELAY	(%)	STOPS	(PCU)	(PCU)	(\$/H)		(SECONDS)	
10	590	2065	80	16.7	25.2	2.1 +	2.0	(58.7)*	109	(16.5)	9		35.2	1	5	20
11	451	2205	58	16.7	17.1	1.5 +	0.7	(30.5)*	86	(10.1)	5		18.3	1	5	20
12	662	2050S	79	4.6	21.5	2.4 +	1.6	(56.2)*	116	(19.8)	10	(2.0)*	391.5	1	25	0
13	127	2100S	16	4.6	9.7	0.3 +	0.1	(4.9)*	79	(2.6)	1	(0.0)*	26.9	1	25	0
14	23	12L	79	4.6	15.4	0.0 +	0.1	(1.4)	51	(0.3)	10	+	1.7	1	25	0
15	67	12L	79	4.6	14.9	0.1 +	0.2	(3.9)	48	(0.8)	10	+	4.8	1	25	0
16	31	13L	16	4.6	8.3	0.1 +	0.0	(1.0)	32	(0.3)	1		1.3	1	25	0
20	321	2040	64	16.7	25.3	1.4 +	0.9	(32.0)*	105	(8.7)	4		19.2	2	5	15
21	320	2180	60	16.7	23.5	1.3 +	0.7	(29.6)*	100	(8.3)	4		17.8	2	5	15
22	583	2050S	63	2.6	16.4	2.0 +	0.7	(37.6)*	109	(16.3)	10	(3.6)*	367.5	2	20	0
23	451	2100	37	2.6	14.2	1.5 +	0.3	(25.3)*	104	(12.1)	6	(1.7)*	216.9	2	20	0
24	31	22L	63	2.6	11.4	0.1 +	0.0	(1.4)	65	(0.5)	10	+	1.9	2	20	0
25	127	22L	63	2.6	8.7	0.2 +	0.1	(4.3)	87	(2.8)	10	+	7.1	2	20	0
30	123	1169	21	16.7	6.2	0.1 +	0.1	(3.0)	54	(1.7)	1		4.7			
31	619	6000S	29	4.2	0.4	0.0 +	0.1	(1.0)	1	(0.1)	0		1.2			
32	1020	31L	29	4.2	0.4	0.0 +	0.1	(1.7)	1	(0.2)	0		1.9			
33	10	31L	29	4.2	0.4	0.0 +	0.0	(0.0)	1	(0.0)	0		0.0			
34	72	31L	29	4.2	0.4	0.0 +	0.0	(0.1)	1	(0.0)	0		0.1			
40	427	2090	54	16.7	15.9	1.3 +	0.6	(26.8)*	83	(9.1)	5		16.1	4	5	21
41	98	2230	12	16.7	11.6	0.2 +	0.1	(4.5)*	66	(1.7)	1		2.7	4	5	21
42	76	2050S	55	2.1	12.6	0.2 +	0.1	(3.8)*	66	(1.3)	5	(0.8)*	55.6	4	26	0
43	23	2100S	49	2.1	11.6	0.1 +	0.0	(1.1)*	64	(0.4)	5	(0.5)*	29.5	4	26	0
44	224	42L	55	2.1	6.2	0.1 +	0.3	(5.5)	53	(3.1)	5	+	8.6	4	26	0
45	204	42L	55	2.1	17.7	0.8 +	0.3	(14.3)	109	(5.8)	5	+	20.0	4	26	0
46	226	43L	49	2.1	5.1	0.1 +	0.2	(4.5)	43	(2.5)	5	+	7.0	4	26	0
47	206	43L	49	2.1	16.7	0.7 +	0.2	(13.5)	108	(5.7)	5	+	19.2	4	26	0
50	1446	2985f	84	16.7	12.4	2.4 +	2.5	(70.6)*	70	(26.0)	14		42.4	5	5	30
51	349	2050S	78	2.7	41.5	2.5 +	1.5	(57.1)*	132	(11.9)	7	(3.7)*	466.2	5	35	0
52	98	2100S	24	2.7	29.3	0.7 +	0.1	(11.3)*	110	(2.8)	2	(0.2)*	67.9	5	35	0
53	23	52L	24	2.7	10.4	0.0 +	0.0	(0.9)	67	(0.4)	2	+	1.3	5	35	0
54	10	51L	78	2.7	27.2	0.0 +	0.0	(1.1)	130	(0.3)	7	+	1.4	5	35	0
55	31	51L	78	2.7	25.1	0.1 +	0.1	(3.1)	110	(0.9)	7	+	3.9	5	35	0

*** f - average saturation flow for flared link ***

TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	DELAY	DELAY	STOPS	QUEUES	(\$/H)
968.4	58.5	16.6	22.2	13.8	(1199.5) + (	92.7) + (	567.9)	= 1860.0
TOTALS								

CRUISE				DELAY		STOPS		TOTALS
LITRES PER HOUR				LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS				51.9	+	41.4	+	78.8
								= 172.1

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 56

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6
- (SECONDS)

1	2	18	38
2	2	0	15
4	2	24	0
5	2	39	24

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)				(\$/H)	
968.4	51.6	18.8	15.2	13.8	(680.3) + (	42.4)	+ (135.5)	=	858.2 TOTALS

NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 338

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18
- (SECONDS)

1	2	18	38
2	2	0	15
4	2	24	0
5	2	39	24

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)				(\$/H)	
968.4	51.6	18.8	15.2	13.8	(680.3) + (	42.4)	+ (135.5)	=	858.2 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 237

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1
- (SECONDS)

1	2	20	38
2	2	1	15
4	2	24	39
5	2	42	24

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)				(\$/H)	
968.4	57.4	16.9	15.3	19.6	(563.6) + (	32.6)	+ (28.5)	=	624.7 TOTALS

NO. OF ENTRIES TO SUBPT = 28
NO. OF LINKS RECALCULATED= 602

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6
- (SECONDS)

1	2	26	44
2	2	1	15
4	2	24	39
5	2	42	24

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)				(\$/H)	
968.4	56.6	17.1	14.5	19.6	(525.9) + (	26.1)	+ (24.0)	=	576.0 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 261

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18
- (SECONDS)

1	2	26	44
2	2	1	15
4	2	24	39
5	2	42	24

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
968.4	56.6	17.1	14.5	19.6	(525.9)	+ (26.1)	+ (24.0)	=	576.0 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 271

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1
- (SECONDS)

1	2	26	44
2	2	3	17
4	2	23	38
5	2	42	24

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
968.4	56.6	17.1	14.4	19.6	(519.5)	+ (24.9)	+ (23.1)	=	567.5 TOTALS

NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 319

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1 -1
- (SECONDS)

1	2	26	44
2	2	3	17
4	2	22	38
5	2	42	23

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
968.4	58.0	16.7	14.6	20.9	(520.2)	+ (24.6)	+ (20.8)	=	565.7 TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 460

Printed at 15:25:38 on 27/10/2016]

T R A N S Y T 12

Traffic Network Study Tool

Analysis Program Release 7 (July 2010)
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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited	Tel:	+44 (0) 1344 770758
Crowthorne House	Fax:	+44 (0) 1344 770864
Nine Mile Ride	Email:	softwarebureau@trl.co.uk
Wokingham, Berks.	Web:	www.trlsoftware.co.uk
RG40 3GA, UK		

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "2026 PM PEAK+DEV.DAT" at 16:14 on 20160218

TRANSYT 12.0

Gibbet Hill Rbout 2026 PM Peak + Development - Gazeley Improvements

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	4
NUMBER OF LINKS	=	32
NUMBER OF OPTIMISED NODES	=	4
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	45
MAXIMUM NUMBER OF SHARED STOPLINES	=	4
MAXIMUM NUMBER OF TIMING POINTS	=	2
MAXIMUM LINKS AT ANY NODE	=	11

CORE REQUESTED = 8366 WORDS
CORE AVAILABLE = 72000 WORDS

71)= 32 42 84 0 30 84 43 0 0 0 0 0 0 0 0 0

72)=	32	43	12	0	30	12	43	0	0	0	0	0	0	0	0	0
73)=	32	44	228	0	32	228	43	0	0	0	0	0	0	0	0	0
74)=	32	45	286	0	31	286	43	0	0	0	0	0	0	0	0	0
75)=	32	46	229	0	32	229	43	0	0	0	0	0	0	0	0	0
76)=	32	47	275	0	31	275	43	0	0	0	0	0	0	0	0	0
77)=	32	50	1266	0	0	0	43	0	0	0	0	0	0	0	0	0
78)=	32	51	531	0	40	531	43	0	0	0	0	0	0	0	0	0
79)=	32	52	175	0	41	175	43	0	0	0	0	0	0	0	0	0
80)=	32	53	12	0	43	12	43	0	0	0	0	0	0	0	0	0
81)=	32	54	10	0	47	10	43	0	0	0	0	0	0	0	0	0
82)=	32	55	19	0	42	19	43	0	0	0	0	0	0	0	0	0

LINK CARDS : FLARE SATURATION FLOW DATA								
			..LANE 1..		..LANE 2..		..LANE 3..	
CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	
TYPE	NO.	FLOW	VEH.	FLOW	VEH.	FLOW	VEH.	
83)=	33	50	2155	6	0	0	0	0
LINK DATA: QUEUE CONSTRAINTS								
CARD	CARD	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	
NO.	TYPE	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT	
84)=	38	12	5	4500	13	5	4500	22
85)=	38	43	2	4500	51	1	4500	52
								23
								0
								1
								4500
								42
								2
								4500
								0
								0
								0
								0

*****END OF SUBROUTINE TINPUT*****

45 SECOND CYCLE 45 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	2	0	15								
2	2	0	19								
4	2	0	22								
5	2	0	26								

LINK	FLOW	SAT	DEGREE	MEAN	TIMES	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN	TIMES
NUMBER	INTO	FLOW	OF	PER	PCU	UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE	INDEX.	NODE	START	START
	LINK		SAT	CRUISE	OF	OF	OVERSAT	OF	PCU	OF	MAX.	EXCESS	WEIGHTED		END	END
	(PCU/H)	(PCU/H)	(%)	(SEC)	DELAY	(U+R+0=	MEAN Q)	DELAY	/PCU	STOPS	(PCU)	(PCU)	OF ()	VALUES	1ST	2ND
					(SEC)	(PCU-H/H)		(\$/H)	(%)	(\$/H)			(\$/H)		(SECONDS)	
10	359	2065	71	16.7	27.7	1.6	+	1.2	(39.2)*	111	(10.2)	5	23.5	1	5	15
11	457	2205	85	16.7	36.8	2.1	+	2.6	(66.4)*	130	(15.3)	8	39.8	1	5	15
12	838	2050S	83	4.6	20.2	2.7	+	2.0	(66.9)*	117	(25.4)	14	(3.5)*	1	20	0
13	122	2100S	14	4.6	6.1	0.1	+	0.1	(2.9)*	67	(2.1)	1	(0.0)*	1	20	0
14	12	12L	83	4.6	13.5	0.0	+	0.0	(0.6)	60	(0.2)	14	+	1	20	0
15	132	12L	83	4.6	12.3	0.1	+	0.3	(6.4)	51	(1.7)	14	+	1	20	0
16	43	13L	14	4.6	4.8	0.0	+	0.0	(0.8)	22	(0.2)	1	1.1	1	20	0
20	355	2040	52	16.7	17.6	1.2	+	0.5	(24.7)*	87	(7.9)	4	14.8	2	5	19
21	354	2180	49	16.7	16.8	1.2	+	0.5	(23.4)*	84	(7.6)	4	14.0	2	5	19
22	356	2050S	52	2.6	20.1	1.6	+	0.4	(28.2)*	108	(9.9)	7	(2.4)*	2	24	0
23	457	2100	45	2.6	19.7	2.1	+	0.4	(35.4)*	107	(12.6)	6	(2.3)*	2	24	0
24	43	22L	52	2.6	10.4	0.1	+	0.0	(1.8)	48	(0.5)	7	+	2	24	0
25	122	22L	52	2.6	11.9	0.3	+	0.1	(5.7)	99	(3.1)	7	+	2	24	0
30	118	1169	19	16.7	5.3	0.1	+	0.1	(2.4)	46	(1.4)	0	3.8			
31	693	6000S	26	4.2	0.4	0.0	+	0.1	(1.1)	1	(0.2)	0	1.3			
32	796	31L	26	4.2	0.4	0.0	+	0.1	(1.3)	1	(0.2)	0	1.5			
33	10	31L	26	4.2	0.4	0.0	+	0.0	(0.0)	1	(0.0)	0	0.0			
34	76	31L	26	4.2	0.4	0.0	+	0.0	(0.1)	1	(0.0)	0	0.1			
40	588	2090	70	16.7	18.5	1.8	+	1.2	(42.8)*	92	(13.9)	7	25.7	4	5	22
41	175	2230	20	16.7	11.3	0.4	+	0.1	(7.8)*	66	(3.0)	2	4.7	4	5	22
42	84	2050S	69	2.1	16.3	0.2	+	0.2	(5.4)*	79	(1.7)	8	(1.7)*	4	27	0
43	12	2100S	58	2.1	14.1	0.0	+	0.0	(0.7)*	75	(0.2)	6	(0.9)*	4	27	0
44	228	42L	69	2.1	8.5	0.1	+	0.4	(7.7)	65	(3.8)	8	+	4	27	0
45	285	42L	69	2.1	21.1	1.1	+	0.5	(23.7)	114	(8.4)	8	+	4	27	0
46	229	43L	58	2.1	5.7	0.1	+	0.3	(5.1)	37	(2.2)	6	+	4	27	0
47	274	43L	58	2.1	18.6	1.0	+	0.4	(20.1)	109	(7.8)	6	+	4	27	0
50	1266	3136f	83	16.7	14.9	2.9	+	2.3	(74.6)*	80	(25.9)	14	44.8	5	5	26
51	532	2050S	82	2.7	36.5	3.3	+	2.1	(76.6)*	129	(17.7)	9	(5.5)*	5	31	0
52	175	2100S	27	2.7	24.4	1.0	+	0.2	(16.8)*	108	(4.8)	2	(0.6)*	5	31	0
53	12	52L	27	2.7	7.0	0.0	+	0.0	(0.3)	40	(0.1)	2	+	5	31	0
54	10	51L	82	2.7	23.8	0.0	+	0.0	(0.9)	125	(0.3)	9	+	5	31	0
55	19	51L	82	2.7	22.6	0.0	+	0.1	(1.7)	104	(0.5)	9	+	5	31	0

*** f - average saturation flow for flared link ***

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
958.4	64.0	15.0	25.4	16.3	(1412.3)	+ (105.1)	+ (768.7)	= 2286.1
								TOTALS

	CRUISE		DELAY		STOPS		TOTALS	
	LITRES	PER HOUR	LITRES	PER HOUR	LITRES	PER HOUR	LITRES	PER HOUR
FUEL CONSUMPTION PREDICTIONS	51.4		+	47.9	+	86.1	=	185.5

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 56

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6
- (SECONDS)

1	2	0	15								
2	2	27	1								
4	2	24	1								
5	2	12	38								
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
958.4	55.9	17.1	17.3	16.3	(832.2) + (	73.5)	+ (390.7)	=	1296.4	TOTALS	

NO. OF ENTRIES TO SUBPT = 16
NO. OF LINKS RECALCULATED= 338

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18
- (SECONDS)

1	2	0	15								
2	2	27	1								
4	2	42	19								
5	2	12	38								
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
958.4	56.6	16.9	18.0	16.3	(827.7) + (	65.1)	+ (368.5)	=	1261.4	TOTALS	

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 262

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1
- (SECONDS)

1	2	1	15								
2	2	25	40								
4	2	41	14								
5	2	16	39								
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
958.4	62.6	15.3	16.7	23.6	(631.3) + (	44.5)	+ (106.7)	=	782.5	TOTALS	

NO. OF ENTRIES TO SUBPT = 33
NO. OF LINKS RECALCULATED= 691

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6
- (SECONDS)

1	2	1	15								
2	2	19	34								
4	2	41	14								
5	2	16	39								
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
958.4	61.4	15.6	15.5	23.6	(610.4) + (	38.2)	+ (76.1)	=	724.7	TOTALS	

NO. OF ENTRIES TO SUBPT = 10
NO. OF LINKS RECALCULATED= 286

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18
- (SECONDS)

1	2	1	15
2	2	19	34
4	2	41	14
5	2	16	39

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
958.4	61.4	15.6	15.5	23.6	(610.4)	+ (38.2)	+ (76.1)	=	724.7 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 274

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1
- (SECONDS)

1	2	2	16
2	2	20	35
4	2	39	12
5	2	17	40

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
958.4	61.5	15.6	15.6	23.6	(607.4)	+ (35.3)	+ (66.7)	=	709.3 TOTALS

NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 327

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1 -1
- (SECONDS)

1	2	2	16
2	2	19	34
4	2	38	12
5	2	17	40

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
958.4	60.0	16.0	15.6	22.1	(598.8)	+ (36.0)	+ (67.0)	=	701.8 TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 473

45 SECOND CYCLE 45 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :- 6 18 -1 6 18 1 -1 1
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	2	2	16								
2	2	19	34								
4	2	39	13								
5	2	17	40								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE	TIMES PCU	-----DELAY----- UNIFORM (U+R+O=MEAN Q) RANDOM+ OVERSAT COST OF DELAY (PCU-H/H)	-----STOPS----- MEAN STOPS /PCU COST OF STOPS (\$/H)	-----QUEUE----- MEAN MAX. AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN START 1ST END 2ND (SECONDS)	TIMES START 1ST END 2ND (SECONDS)
10	359	2065	78	16.7	33.9	1.6 + 1.7 (48.0)*	123 (11.4)	6	28.8	1	7	16
11	457	2205	93	16.7	58.5	2.2 + 5.3 (105.5)*	165 (19.5)	11	63.3	1	7	16
12	838	2050S	80	4.6	8.5	0.3 + 1.7 (27.9)*	56 (12.1)	11 (0.9)*	192.2	1	21	2
13	122	2100S	13	4.6	1.7	0.0 + 0.1 (0.8)*	4 (0.1)	1 (0.0)*	4.3	1	21	2
14	12	12L	80	4.6	22.8	0.1 + 0.0 (1.1)	115 (0.4)	11 +	1.4	1	21	2
15	132	12L	80	4.6	16.5	0.3 + 0.3 (8.6)	109 (3.7)	11 +	12.3	1	21	2
16	43	13L	13	4.6	9.6	0.1 + 0.0 (1.6)	90 (1.0)	1	2.6	1	21	2
20	355	2040	71	16.7	27.9	1.5 + 1.2 (39.0)*	111 (10.2)	5	23.4	2	24	34
21	354	2180	66	16.7	25.3	1.5 + 1.0 (35.3)*	105 (9.6)	5	21.2	2	24	34
22	356	2050S	44	2.6	2.9	0.0 + 0.3 (4.1)*	7 (0.6)	2 (0.2)*	29.0	2	39	19
23	457	2100	38	2.6	2.8	0.1 + 0.3 (5.0)*	11 (1.3)	3 (0.1)*	32.2	2	39	19
24	43	22L	44	2.6	17.8	0.2 + 0.0 (3.0)	105 (1.2)	2 +	4.2	2	39	19
25	122	22L	44	2.6	7.5	0.2 + 0.1 (3.6)	74 (2.3)	2 +	5.9	2	39	19
30	118	1169	19	16.7	5.1	0.1 + 0.1 (2.4)	44 (1.3)	0	3.7			
31	693	6000S	26	4.2	0.4	0.0 + 0.1 (1.1)	1 (0.2)	0	1.3			
32	796	31L	26	4.2	0.4	0.0 + 0.1 (1.3)	1 (0.2)	0	1.5			
33	10	31L	26	4.2	0.4	0.0 + 0.0 (0.0)	1 (0.0)	0	0.0			
34	76	31L	26	4.2	0.4	0.0 + 0.0 (0.1)	1 (0.0)	0	0.1			
40	588	2090	84	16.7	29.7	2.3 + 2.6 (69.0)*	118 (17.9)	9	41.4	4	44	13
41	175	2230	24	16.7	14.0	0.5 + 0.2 (9.7)*	74 (3.3)	2	5.8	4	44	13
42	84	2050S	60	2.1	11.0	0.2 + 0.1 (3.6)*	57 (1.2)	3 (0.1)*	23.0	4	18	39
43	12	2100S	50	2.1	9.9	0.0 + 0.0 (0.5)*	55 (0.2)	2 (0.0)*	2.9	4	18	39
44	228	42L	60	2.1	6.0	0.1 + 0.3 (5.4)	50 (3.0)	3 +	8.4	4	18	39
45	285	42L	60	2.1	5.7	0.1 + 0.4 (6.4)	15 (1.1)	3 +	7.5	4	18	39
46	229	43L	50	2.1	4.6	0.1 + 0.2 (4.1)	36 (2.1)	2	6.2	4	18	39
47	274	43L	50	2.1	4.8	0.1 + 0.3 (5.2)	13 (0.9)	2	6.1	4	18	39
50	1266	3291f	91	16.7	24.2	3.8 + 4.7 (120.7)*	104 (34.0)	18	72.4	5	22	40
51	532	2050S	68	2.7	7.0	0.0 + 1.0 (14.6)*	15 (2.1)	1 (0.2)*	83.7	5	0	17
52	175	2100S	22	2.7	2.8	0.0 + 0.1 (1.9)*	6 (0.3)	0 (0.0)*	10.0	5	0	17
53	12	52L	22	2.7	20.7	0.1 + 0.0 (1.0)	103 (0.3)	0	1.3	5	0	17
54	10	51L	68	2.7	16.1	0.0 + 0.0 (0.6)	107 (0.3)	1 +	0.9	5	0	17
55	19	51L	68	2.7	24.6	0.1 + 0.0 (1.8)	111 (0.5)	1 +	2.4	5	0	17

*** f - average saturation flow for flared link ***

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
958.4	59.8	16.0	15.4	22.1	(596.4) + (36.4)	+ (66.9)	=	699.7

ROUTE

CRUISE		DELAY		STOPS
LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS		51.4	+	43.2
			+	64.8
			=	159.4

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 268

PROGRAM TRANSYT FINISHED

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

T R A N S Y T 12

Traffic Network Study Tool

Analysis Program Release 7 (July 2010)
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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited	Tel:	+44 (0) 1344 770758
Crowthorne House	Fax:	+44 (0) 1344 770864
Nine Mile Ride	Email:	softwarebureau@trl.co.uk
Wokingham, Berks.	Web:	www.trlsoftware.co.uk
RG40 3GA, UK		

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "2026 AM PEAK+DEV+SP.DAT" at 16:27 on 20160218

TRANSYT 12.0

Gibbet Hill Rbout 2026 AM Peak + Development+ SP - Gazeley Improvements

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	4
NUMBER OF LINKS	=	32
NUMBER OF OPTIMISED NODES	=	4
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	45
MAXIMUM NUMBER OF SHARED STOPLINES	=	4
MAXIMUM NUMBER OF TIMING POINTS	=	2
MAXIMUM LINKS AT ANY NODE	=	11

CORE REQUESTED = 8366 WORDS
CORE AVAILABLE = 72000 WORDS

71)= 32 42 76 0 30 76 43 0 0 0 0 0 0 0 0 0

72)=	32	43	23	0	30	23	43	0	0	0	0	0	0	0	0	0
73)=	32	44	226	0	32	226	43	0	0	0	0	0	0	0	0	0
74)=	32	45	204	0	31	204	43	0	0	0	0	0	0	0	0	0
75)=	32	46	226	0	32	226	43	0	0	0	0	0	0	0	0	0
76)=	32	47	205	0	31	205	43	0	0	0	0	0	0	0	0	0
77)=	32	50	1504	0	0	0	43	0	0	0	0	0	0	0	0	0
78)=	32	51	349	0	40	349	43	0	0	0	0	0	0	0	0	0
79)=	32	52	90	0	41	90	43	0	0	0	0	0	0	0	0	0
80)=	32	53	23	0	43	23	43	0	0	0	0	0	0	0	0	0
81)=	32	54	10	0	47	10	43	0	0	0	0	0	0	0	0	0
82)=	32	55	32	0	42	32	43	0	0	0	0	0	0	0	0	0

LINK CARDS : FLARE SATURATION FLOW DATA																
			..LANE 1..			..LANE 2..			..LANE 3..							
CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC	LINK	LIMIT	QUEUE	LINK	LIMIT
NO.	TYPE	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	VEH.	NO.	NO.	WEIGHT	NO.	NO.
83)=	33	50	2155	6	0	0	0	0	0	0	0	0	0	0	0	0
LINK DATA: QUEUE CONSTRAINTS																
CARD	CARD	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE
NO.	TYPE	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT	NO.	WEIGHT	WEIGHT
84)=	38	12	5	4500	13	5	4500	22	1	4500	23	1	4500	42	2	4500
85)=	38	43	2	4500	51	1	4500	52	1	4500	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

45 SECOND CYCLE 45 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
NO	OF STAGES	1	2	3	4	5	6	7	8	9	10
1	2	0	20								
2	2	0	15								
4	2	0	21								
5	2	0	31								

LINK	FLOW	SAT	DEGREE	MEAN	TIMES	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN	TIMES
NUMBER	INTO	FLOW	OF	PER	PCU	UNIFORM	RANDOM+	COST	MEAN	COST	MAX.	AVERAGE	INDEX.	NODE	START	START
	LINK		SAT	CRUISE	DELAY	(U+R+0=	OVERSAT	OF	/PCU	OF		EXCESS	OF ()		1ST	END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	(Q)	(\$/H)	(%)	(STOPS	(PCU)	(PCU)	VALUES		(SECONDS)	2ND
10	590	2065	80	16.7	25.2	2.1 +	2.0 (	58.7)*	109	(16.5)	9		35.2	1	5	20
11	452	2205	58	16.7	17.2	1.5 +	0.7 (	30.6)*	87	(10.1)	5		18.4	1	5	20
12	677	2050S	79	4.6	21.7	2.4 +	1.7 (	57.9)*	116	(20.3)	11	(2.1)*	404.5	1	25	0
13	126	2100S	16	4.6	9.5	0.3 +	0.1 (	4.7)*	77	(2.5)	1	(0.0)*	26.0	1	25	0
14	23	12L	79	4.6	16.3	0.0 +	0.1 (	1.5)	52	(0.3)	11	+	1.8	1	25	0
15	61	12L	79	4.6	17.9	0.2 +	0.2 (	4.3)	59	(0.9)	11	+	5.2	1	25	0
16	29	13L	16	4.6	11.2	0.1 +	0.0 (	1.3)	45	(0.3)	1		1.6	1	25	0
20	319	2040	64	16.7	25.2	1.4 +	0.9 (	31.7)*	105	(8.6)	4		19.0	2	5	15
21	318	2180	60	16.7	23.4	1.3 +	0.7 (	29.3)*	100	(8.2)	4		17.6	2	5	15
22	583	2050S	62	2.6	16.3	2.0 +	0.7 (	37.5)*	109	(16.3)	10	(3.6)*	366.6	2	20	0
23	452	2100	37	2.6	14.3	1.5 +	0.3 (	25.4)*	104	(12.2)	6	(1.7)*	217.5	2	20	0
24	29	22L	62	2.6	12.1	0.1 +	0.0 (	1.4)	77	(0.6)	10	+	2.0	2	20	0
25	126	22L	62	2.6	8.5	0.2 +	0.1 (	4.2)	84	(2.7)	10	+	7.0	2	20	0
30	123	1169	21	16.7	6.2	0.1 +	0.1 (	3.0)	54	(1.7)	1		4.7			
31	615	6000S	29	4.2	0.4	0.0 +	0.1 (	1.0)	1	(0.1)	0		1.2			
32	1022	31L	29	4.2	0.4	0.0 +	0.1 (	1.7)	1	(0.2)	0		1.9			
33	10	31L	29	4.2	0.4	0.0 +	0.0 (	0.0)	1	(0.0)	0		0.0			
34	71	31L	29	4.2	0.4	0.0 +	0.0 (	0.1)	1	(0.0)	0		0.1			
40	427	2090	54	16.7	15.9	1.3 +	0.6 (	26.8)*	83	(9.1)	5		16.1	4	5	21
41	90	2230	11	16.7	11.5	0.2 +	0.1 (	4.1)*	65	(1.5)	1		2.5	4	5	21
42	76	2050S	56	2.1	12.6	0.2 +	0.1 (	3.8)*	66	(1.3)	6	(0.8)*	55.9	4	26	0
43	23	2100S	49	2.1	11.7	0.1 +	0.0 (	1.1)*	64	(0.4)	5	(0.5)*	29.5	4	26	0
44	227	42L	56	2.1	6.3	0.1 +	0.3 (	5.6)	54	(3.1)	6	+	8.8	4	26	0
45	204	42L	56	2.1	17.8	0.8 +	0.3 (	14.3)	109	(5.8)	6	+	20.1	4	26	0
46	227	43L	49	2.1	5.1	0.1 +	0.2 (	4.5)	43	(2.5)	5	+	7.1	4	26	0
47	206	43L	49	2.1	16.7	0.7 +	0.2 (	13.6)	108	(5.7)	5	+	19.3	4	26	0
50	1504	2955f	85	16.7	12.1	2.3 +	2.7 (	71.7)*	68	(26.3)	14		43.0	5	5	31
51	349	2050S	86	2.7	52.5	2.6 +	2.5 (	72.3)*	150	(13.5)	8	(4.9)*	597.7	5	36	0
52	90	2100S	24	2.7	30.8	0.6 +	0.1 (	10.9)*	111	(2.6)	1	(0.1)*	63.9	5	36	0
53	23	52L	24	2.7	11.4	0.0 +	0.0 (	1.0)	70	(0.4)	1	+	1.4	5	36	0
54	10	51L	86	2.7	38.1	0.0 +	0.1 (	1.5)	148	(0.4)	8	+	1.9	5	36	0
55	32	51L	86	2.7	36.1	0.1 +	0.2 (	4.6)	133	(1.1)	8	+	5.7	5	36	0

*** f - average saturation flow for flared link ***

TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	DELAY	DELAY	STOPS	QUEUES	(\$/H)
977.9	60.1	16.3	22.2	15.2	(1283.8) + (	95.0)	+ (624.3)	= 2003.0
TOTALS								

CRUISE			DELAY		STOPS	
LITRES PER HOUR			LITRES PER HOUR		LITRES PER HOUR	
FUEL CONSUMPTION PREDICTIONS			52.4	+	42.9	+
					79.9	=
					175.2	

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 56

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6
- (SECONDS)

1	2	18	38								
2	2	0	15								
4	2	24	0								
5	2	39	25								
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
977.9	53.1	18.4	15.2	15.2	(768.1)	+ (46.1)	+ (199.8)	=	1014.0	TOTALS	

NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 338

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18
- (SECONDS)

1	2	18	38								
2	2	0	15								
4	2	24	0								
5	2	39	25								
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
977.9	53.1	18.4	15.2	15.2	(768.1)	+ (46.1)	+ (199.8)	=	1014.0	TOTALS	

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 237

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1
- (SECONDS)

1	2	20	38								
2	2	1	15								
4	2	25	41								
5	2	42	25								
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
977.9	57.8	16.9	15.5	19.6	(597.0)	+ (34.9)	+ (46.6)	=	678.5	TOTALS	

NO. OF ENTRIES TO SUBPT = 27
NO. OF LINKS RECALCULATED= 587

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6
- (SECONDS)

1	2	26	44								
2	2	7	21								
4	2	25	41								
5	2	42	25								
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
977.9	57.1	17.1	14.7	19.6	(553.9)	+ (30.5)	+ (38.8)	=	623.1	TOTALS	

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 266

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18
- (SECONDS)

1	2	26	44
2	2	7	21
4	2	25	41
5	2	42	25

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
977.9	57.1	17.1	14.7	19.6	(553.9)	+ (30.5)	+ (38.8)	=	623.1 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 284

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1
- (SECONDS)

1	2	26	44
2	2	6	20
4	2	24	40
5	2	42	25

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
977.9	56.9	17.2	14.6	19.6	(546.6)	+ (29.3)	+ (34.2)	=	610.1 TOTALS

NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 338

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1 -1
- (SECONDS)

1	2	26	44
2	2	6	19
4	2	24	39
5	2	42	24

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
977.9	61.2	16.0	14.9	23.6	(558.3)	+ (26.3)	+ (20.1)	=	604.7 TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 473

45 SECOND CYCLE 45 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :- 6 18 -1 6 18 1 -1 1
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	2	27	0								
2	2	4	17								
4	2	23	38								
5	2	42	24								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE	TIMES PCU	-----DELAY----- UNIFORM (U+R+O=MEAN Q) RANDOM+ OVERSAT COST OF DELAY (PCU-H/H)	-----STOPS----- MEAN STOPS /PCU COST OF STOPS (\$/H)	-----QUEUE----- MEAN MAX. AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN START 1ST	TIMES START 2ND
(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)			(%)	(PCU)			(SECONDS)	
10	590	2065	92	16.7	44.0	2.5 + 4.8 (102.4)*	145 (22.0)	12	61.4	1	32	0
11	452	2205	66	16.7	21.1	1.7 + 1.0 (37.5)*	96 (11.2)	6	22.5	1	32	0
12	677	2050S	73	4.6	7.5	0.2 + 1.2 (19.9)*	25 (4.4)	5 (0.0)*	104.4	1	5	27
13	126	2100S	15	4.6	3.1	0.0 + 0.1 (1.5)*	10 (0.3)	1 (0.0)*	8.0	1	5	27
14	23	12L	73	4.6	22.3	0.1 + 0.0 (2.0)	113 (0.7)	5	2.7	1	5	27
15	61	12L	73	4.6	17.4	0.2 + 0.1 (4.2)	111 (1.7)	5	5.9	1	5	27
16	29	13L	15	4.6	11.9	0.1 + 0.0 (1.4)	100 (0.7)	1	2.1	1	5	27
20	319	2040	78	16.7	36.6	1.5 + 1.7 (46.0)*	128 (10.5)	5	27.6	2	9	17
21	318	2180	73	16.7	31.8	1.5 + 1.3 (39.9)*	118 (9.7)	5	23.9	2	9	17
22	583	2050S	58	2.6	3.4	0.0 + 0.5 (7.9)*	8 (1.2)	2 (0.3)*	52.7	2	22	4
23	452	2100	35	2.6	2.2	0.0 + 0.3 (3.9)*	7 (0.9)	3 (0.1)*	23.8	2	22	4
24	29	22L	58	2.6	17.9	0.1 + 0.0 (2.0)	108 (0.8)	2 +	2.9	2	22	4
25	126	22L	58	2.6	10.1	0.2 + 0.1 (5.0)	82 (2.7)	2 +	7.7	2	22	4
30	123	1169	22	16.7	6.2	0.1 + 0.1 (3.0)	53 (1.7)	1	4.7			
31	615	6000S	29	4.2	0.4	0.0 + 0.1 (1.0)	1 (0.1)	0	1.2			
32	1022	31L	29	4.2	0.4	0.0 + 0.1 (1.7)	1 (0.2)	0	1.9			
33	10	31L	29	4.2	0.4	0.0 + 0.0 (0.0)	1 (0.0)	0	0.0			
34	71	31L	29	4.2	0.4	0.0 + 0.0 (0.1)	1 (0.0)	0	0.1			
40	427	2090	84	16.7	36.4	1.9 + 2.4 (61.4)*	129 (14.2)	7	36.8	4	28	38
41	90	2230	17	16.7	17.4	0.3 + 0.1 (6.2)*	82 (1.9)	1	3.7	4	28	38
42	76	2050S	43	2.1	7.2	0.1 + 0.1 (2.1)*	44 (0.9)	2 (0.0)*	11.6	4	43	23
43	23	2100S	38	2.1	6.8	0.0 + 0.0 (0.6)*	43 (0.3)	2 (0.0)*	3.3	4	43	23
44	227	42L	43	2.1	3.4	0.0 + 0.2 (3.0)	27 (1.6)	2	4.6	4	43	23
45	204	42L	43	2.1	3.6	0.1 + 0.2 (2.9)	11 (0.6)	2	3.5	4	43	23
46	227	43L	38	2.1	2.9	0.0 + 0.1 (2.6)	21 (1.2)	2	3.9	4	43	23
47	206	43L	38	2.1	3.3	0.1 + 0.1 (2.7)	10 (0.6)	2	3.2	4	43	23
50	1504	3094f	95	16.7	27.7	3.5 + 8.0 (164.5)*	113 (43.6)	24	98.7	5	2	24
51	349	2050S	61	2.7	7.4	0.0 + 0.7 (10.2)*	16 (1.4)	1 (0.1)*	55.6	5	29	42
52	90	2100S	17	2.7	3.4	0.0 + 0.1 (1.2)*	8 (0.2)	0 (0.0)*	6.2	5	29	42
53	23	52L	17	2.7	22.6	0.1 + 0.0 (2.1)	103 (0.6)	0	2.7	5	29	42
54	10	51L	61	2.7	16.0	0.0 + 0.0 (0.6)	107 (0.3)	1 +	0.9	5	29	42
55	32	51L	61	2.7	26.7	0.2 + 0.1 (3.4)	112 (0.9)	1 +	4.3	5	29	42

*** f - average saturation flow for flared link ***

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
977.9	61.0	16.0	14.7	23.6	(549.5) + (23.9)	+ (19.1)	=	592.6

ROUTE

CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR	
FUEL CONSUMPTION PREDICTIONS	52.4	+	44.0	+
			62.5	=
			158.9	

NO. OF ENTRIES TO SUBPT = 12
NO. OF LINKS RECALCULATED= 355

PROGRAM TRANSYT FINISHED

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

T R A N S Y T 12

Traffic Network Study Tool

Analysis Program Release 7 (July 2010)
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For sales and distribution information,
program advice and maintenance, contact:

TRL Limited	Tel:	+44 (0) 1344 770758
Crowthorne House	Fax:	+44 (0) 1344 770864
Nine Mile Ride	Email:	softwarebureau@trl.co.uk
Wokingham, Berks.	Web:	www.trlsoftware.co.uk
RG40 3GA, UK		

THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
IN NO WAY RELIEVED OF THEIR RESPONSIBILITY FOR THE CORRECTNESS OF THE SOLUTION

Run with file:- "2026 PM PEAK+DEV+SP.DAT" at 16:34 on 20160218

TRANSYT 12.0

Gibbet Hill Rbout 2026 PM Peak + Development+ SP - Gazeley Improvements

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	4
NUMBER OF LINKS	=	32
NUMBER OF OPTIMISED NODES	=	4
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	45
MAXIMUM NUMBER OF SHARED STOPLINES	=	4
MAXIMUM NUMBER OF TIMING POINTS	=	2
MAXIMUM LINKS AT ANY NODE	=	11

CORE REQUESTED = 8366 WORDS
CORE AVAILABLE = 72000 WORDS

71)= 32 42 52 0 30 52 43 0 0 0 0 0 0 0 0 0 0

72)=	32	43	12	0	30	12	43	0	0	0	0	0	0	0	0	0
73)=	32	44	217	0	32	217	43	0	0	0	0	0	0	0	0	0
74)=	32	45	254	0	31	254	43	0	0	0	0	0	0	0	0	0
75)=	32	46	218	0	32	218	43	0	0	0	0	0	0	0	0	0
76)=	32	47	263	0	31	263	43	0	0	0	0	0	0	0	0	0
77)=	32	50	1607	0	0	0	43	0	0	0	0	0	0	0	0	0
78)=	32	51	517	0	40	517	43	0	0	0	0	0	0	0	0	0
79)=	32	52	69	0	41	69	43	0	0	0	0	0	0	0	0	0
80)=	32	53	12	0	43	12	43	0	0	0	0	0	0	0	0	0
81)=	32	54	10	0	47	10	43	0	0	0	0	0	0	0	0	0
82)=	32	55	19	0	42	19	43	0	0	0	0	0	0	0	0	0

LINK CARDS : FLARE SATURATION FLOW DATA																
..LANE 1..			..LANE 2..			..LANE 3..										
	CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC								
	TYPE	NO.	FLOW	VEH.	FLOW	VEH.	FLOW	VEH.								
83)=	33	50	2155	6	0	0	0	0								
LINK DATA: QUEUE CONSTRAINTS																
CARD	CARD	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE	LINK	LIMIT	QUEUE
NO.	TYPE	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT	NO.	QUEUE	WEIGHT
84)=	38	12	5	4500	13	5	4500	22	1	4500	23	1	4500	42	2	4500
85)=	38	43	2	4500	51	1	4500	52	1	4500	0	0	0	0	0	0

*****END OF SUBROUTINE TINPUT*****

45 SECOND CYCLE 45 STEPS

INITIAL SETTINGS
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10					
1	2	0	17													
2	2	0	17													
4	2	0	23													
5	2	0	28													
LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE	TIMES PCU DELAY (SEC)	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE INDEX.	EXIT NODE	GREEN START	TIMES START
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	UNIFORM (U+R+O=	RANDOM+ MEAN Q	COST OF DELAY (\$/H)	MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	MEAN MAX. (PCU)	AVERAGE EXCESS (PCU)	WEIGHTED SUM OF () VALUES (\$/H)		END 1ST	END 2ND
10	496	2065	83	16.7	32.1	2.1 +	2.4 (62.8)*	121	(15.5)	8			37.7	1	5	17
11	435	2205	68	16.7	23.0	1.7 +	1.1 (39.5)*	101	(11.3)	6			23.7	1	5	17
12	903	2050S	87	4.6	24.0	3.0 +	3.0 (85.6)*	124	(28.9)	15	(4.5)*		657.6	1	22	0
13	177	2100S	19	4.6	7.0	0.2 +	0.1 (4.9)*	67	(3.1)	2	(0.0)*		27.6	1	22	0
14	12	12L	87	4.6	18.4	0.0 +	0.0 (0.9)	89	(0.3)	15	+		1.1	1	22	0
15	34	12L	87	4.6	19.3	0.1 +	0.1 (2.6)	80	(0.7)	15	+		3.3	1	22	0
16	35	13L	19	4.6	8.4	0.1 +	0.0 (1.2)	38	(0.3)	2			1.5	1	22	0
20	378	2040	64	16.7	22.4	1.5 +	0.9 (33.4)*	99	(9.7)	5			20.1	2	5	17
21	377	2180	60	16.7	20.8	1.4 +	0.7 (31.0)*	95	(9.2)	5			18.6	2	5	17
22	493	2050S	64	2.6	19.0	2.0 +	0.6 (37.0)*	110	(14.0)	9	(3.8)*		372.0	2	22	0
23	435	2100	39	2.6	16.9	1.7 +	0.3 (29.0)*	106	(11.8)	6	(2.0)*		244.9	2	22	0
24	35	22L	64	2.6	12.2	0.1 +	0.0 (1.7)	66	(0.6)	9	+		2.3	2	22	0
25	177	22L	64	2.6	11.9	0.4 +	0.2 (8.3)	99	(4.5)	9	+		12.8	2	22	0
30	77	1169	13	16.7	5.4	0.0 +	0.1 (1.7)	47	(0.9)	0			2.6			
31	739	6000S	29	4.2	0.4	0.0 +	0.1 (1.2)	1	(0.2)	0			1.4			
32	903	31L	29	4.2	0.4	0.0 +	0.1 (1.5)	1	(0.2)	0			1.7			
33	10	31L	29	4.2	0.4	0.0 +	0.0 (0.0)	1	(0.0)	0			0.0			
34	70	31L	29	4.2	0.4	0.0 +	0.0 (0.1)	1	(0.0)	0			0.1			
40	572	2090	65	16.7	16.1	1.6 +	0.9 (36.3)*	85	(12.5)	6			21.8	4	5	23
41	69	2230	7	16.7	9.9	0.1 +	0.0 (2.7)*	58	(1.0)	1			1.6	4	5	23
42	52	2050S	64	2.1	15.7	0.1 +	0.1 (3.2)*	75	(1.0)	7	(1.4)*		79.7	4	28	0
43	12	2100S	59	2.1	14.7	0.0 +	0.0 (0.7)*	72	(0.2)	6	(1.1)*		54.0	4	28	0
44	217	42L	64	2.1	8.9	0.2 +	0.4 (7.7)	76	(4.3)	7	+		11.9	4	28	0
45	254	42L	64	2.1	21.0	1.1 +	0.4 (21.1)	113	(7.4)	7	+		28.5	4	28	0
46	219	43L	59	2.1	7.6	0.1 +	0.3 (6.6)	68	(3.8)	6	+		10.4	4	28	0
47	263	43L	59	2.1	20.0	1.1 +	0.4 (20.7)	111	(7.5)	6	+		28.2	4	28	0
50	1607	3055f	99	16.7	42.4	3.7 +	15.2 (268.5)*	142	(58.7)	34			161.1	5	5	28
51	517	2050S	92	2.7	56.4	3.5 +	4.6 (115.0)*	160	(21.3)	12	(8.3)*		968.0	5	33	0
52	69	2100S	13	2.7	25.3	0.4 +	0.1 (6.9)*	107	(1.9)	1	(0.0)*		36.3	5	33	0
53	12	52L	13	2.7	6.3	0.0 +	0.0 (0.3)	32	(0.1)	1			0.4	5	33	0
54	10	51L	92	2.7	43.1	0.0 +	0.1 (1.7)	159	(0.4)	12	+		2.1	5	33	0
55	19	51L	92	2.7	41.3	0.0 +	0.2 (3.1)	144	(0.7)	12	+		3.8	5	33	0

*** f - average saturation flow for flared link ***

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
1033.0	83.0	12.5	26.4	32.5	(1776.5) + (	114.3) + (	946.0)	= 2836.8
TOTALS								

	CRUISE		DELAY		STOPS		TOTALS
	LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	55.4	+	67.8	+	105.8	=	229.0

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 54

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6
- (SECONDS)

1	2	24	41
2	2	6	23
4	2	6	29
5	2	39	22

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1033.0	74.8	13.8	18.3	32.6	(1191.7) + (	65.6)	+ (436.8)	=	1694.1 TOTALS

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 303

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18
- (SECONDS)

1	2	24	41
2	2	6	23
4	2	24	2
5	2	39	22

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1033.0	74.2	13.9	17.6	32.6	(1155.5) + (	54.1)	+ (360.1)	=	1569.6 TOTALS

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 253

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1
- (SECONDS)

1	2	26	42
2	2	6	21
4	2	23	41
5	2	41	23

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1033.0	87.8	11.8	17.4	46.4	(993.8) + (	41.6)	+ (163.9)	=	1199.3 TOTALS

NO. OF ENTRIES TO SUBPT = 29
NO. OF LINKS RECALCULATED= 621

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6
- (SECONDS)

1	2	26	42
2	2	0	15
4	2	23	41
5	2	41	23

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1033.0	86.9	11.9	16.5	46.4	(980.6) + (	37.6)	+ (150.8)	=	1169.0 TOTALS

NO. OF ENTRIES TO SUBPT = 10
NO. OF LINKS RECALCULATED= 277

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18
- (SECONDS)

1	2	26	42
2	2	0	15
4	2	23	41
5	2	41	23

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1033.0	86.9	11.9	16.5	46.4	(980.6)	+ (37.6)	+ (150.8)	=	1169.0 TOTALS

NO. OF ENTRIES TO SUBPT = 10
NO. OF LINKS RECALCULATED= 303

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1
- (SECONDS)

1	2	27	43
2	2	1	16
4	2	21	39
5	2	41	23

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1033.0	86.4	12.0	16.0	46.4	(944.9)	+ (33.3)	+ (132.5)	=	1110.7 TOTALS

NO. OF ENTRIES TO SUBPT = 11
NO. OF LINKS RECALCULATED= 314

45 SECOND CYCLE 45 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 6 18 -1 6 18 1 -1
- (SECONDS)

1	2	27	43
2	2	1	16
4	2	21	39
5	2	41	23

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
1033.0	86.4	12.0	16.0	46.4	(944.9)	+ (33.3)	+ (132.5)	=	1110.7 TOTALS

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 467

45 SECOND CYCLE 45 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :- 6 18 -1 6 18 1 -1 1
- (SECONDS)

NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7	STAGE 8	STAGE 9	STAGE 10
1	2	28	44								
2	2	2	17								
4	2	21	39								
5	2	41	23								

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE	TIMES PCU	-----DELAY----- UNIFORM (U+R+O=MEAN Q) RANDOM+ OVERSAT COST OF DELAY (PCU-H/H)	-----STOPS----- MEAN STOPS /PCU COST OF STOPS (\$/H)	-----QUEUE----- MEAN MAX. AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN START 1ST END 2ND (SECONDS)	TIMES START 1ST END 2ND (SECONDS)
10	496	2065	90	16.7	44.7	2.2 + 4.0 (87.4)*	145 (18.5)	10	52.5	1	33	44
11	435	2205	74	16.7	26.6	1.8 + 1.4 (45.7)*	109 (12.2)	6	27.4	1	33	44
12	889<	2050S	82	4.6	9.4	0.2 + 2.1 (32.8)*	33 (7.7)	8 (0.2)*	182.9	1	4	28
13	174	2100S	18	4.6	2.3	0.0 + 0.1 (1.6)*	6 (0.3)	1 (0.0)*	8.3	1	4	28
14	12	12L	82	4.6	24.3	0.1 + 0.0 (1.2)	118 (0.4)	8 +	1.5	1	4	28
15	34	12L	82	4.6	18.8	0.1 + 0.1 (2.5)	114 (1.0)	8 +	3.5	1	4	28
16	35	13L	18	4.6	11.4	0.1 + 0.0 (1.6)	97 (0.9)	1	2.5	1	4	28
20	378	2040	76	16.7	30.3	1.7 + 1.5 (45.2)*	116 (11.3)	6	27.1	2	7	17
21	377	2180	71	16.7	26.9	1.6 + 1.2 (40.0)*	109 (10.6)	5	24.0	2	7	17
22	493	2050S	59	2.6	3.9	0.0 + 0.5 (7.7)*	9 (1.2)	3 (0.5)*	63.3	2	22	2
23	435	2100	36	2.6	2.5	0.0 + 0.3 (4.3)*	9 (1.0)	3 (0.1)*	25.7	2	22	2
24	35	22L	59	2.6	19.2	0.2 + 0.0 (2.7)	109 (1.0)	3 +	3.6	2	22	2
25	174	22L	59	2.6	10.9	0.3 + 0.2 (7.5)	82 (3.8)	3 +	11.2	2	22	2
30	77	1169	13	16.7	5.4	0.0 + 0.1 (1.6)	47 (0.9)	0	2.6			
31	739	6000S	29	4.2	0.4	0.0 + 0.1 (1.2)	1 (0.2)	0	1.4			
32	903	31L	29	4.2	0.4	0.0 + 0.1 (1.5)	1 (0.2)	0	1.7			
33	10	31L	29	4.2	0.4	0.0 + 0.0 (0.0)	1 (0.0)	0	0.0			
34	69	31L	29	4.2	0.4	0.0 + 0.0 (0.1)	1 (0.0)	0	0.1			
40	572	2090	88	16.7	35.9	2.3 + 3.4 (81.0)*	130 (19.1)	10	48.6	4	26	39
41	69	2230	10	16.7	13.9	0.2 + 0.1 (3.8)*	71 (1.3)	1	2.3	4	26	39
42	52	2050S	50	2.1	10.1	0.1 + 0.0 (2.1)*	56 (0.7)	2 (0.0)*	11.7	4	44	21
43	12	2100S	46	2.1	9.6	0.0 + 0.0 (0.5)*	55 (0.2)	2 (0.0)*	2.4	4	44	21
44	217	42L	50	2.1	4.5	0.1 + 0.2 (3.9)	37 (2.1)	2 +	5.9	4	44	21
45	254	42L	50	2.1	5.6	0.2 + 0.2 (5.6)	18 (1.2)	2 +	6.8	4	44	21
46	219	43L	46	2.1	4.0	0.1 + 0.2 (3.4)	30 (1.7)	2	5.1	4	44	21
47	263	43L	46	2.1	5.3	0.2 + 0.2 (5.5)	17 (1.2)	2	6.6	4	44	21
50	1607	3094f	102	16.7	71.0	4.3 + 27.4 (450.0)*	184 (76.3)	48 +	270.0	5	1	23
51	517	2050S	86	2.7	19.2	0.1 + 2.7 (39.2)*	42 (5.6)	4 (2.1)*	295.0	5	28	41
52	69	2100S	12	2.7	3.6	0.0 + 0.1 (1.0)*	8 (0.1)	0 (0.0)*	5.1	5	28	41
53	12	52L	12	2.7	23.1	0.1 + 0.0 (1.1)	105 (0.3)	0	1.4	5	28	41
54	10	51L	86	2.7	29.0	0.0 + 0.1 (1.1)	132 (0.3)	4 +	1.5	5	28	41
55	19	51L	86	2.7	38.3	0.1 + 0.1 (2.9)	135 (0.7)	4 +	3.5	5	28	41

*** f - average saturation flow for flared link ***

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
1033.0	86.4	12.0	16.0	46.4	(940.6) + (	32.5)	+ (132.3)	= 1105.5

ROUTE

	CRUISE		DELAY		STOPS		TOTALS	
	LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR	
FUEL CONSUMPTION PREDICTIONS	55.4	+	71.7	+	82.9	=	210.0	

NO. OF ENTRIES TO SUBPT = 9
NO. OF LINKS RECALCULATED= 284

PROGRAM TRANSYT FINISHED

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

Printed at 15:27:18 on 27/10/2016]

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix I – ATC Survey Data

Site 1 - 52.442048, -1.260346



Site 2 – 52.434791, -1.295937







Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Sat 01-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcycle	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %	
00:00	10	0	0	0	9	90	1	10	0	0	0	
01:00	2	0	0	0	2	100	0	0	0	0	0	
02:00	1	0	0	0	1	100	0	0	0	0	0	
03:00	3	0	0	0	1	33.33	1	33.33	1	33.33	0	0
04:00	7	0	0	0	6	85.71	1	14.29	0	0	0	0
05:00	27	0	0	0	27	100	0	0	0	0	0	0
06:00	25	0	0	0	24	96	1	4	0	0	0	0
07:00	18	0	0	0	14	77.78	4	22.22	0	0	0	0
08:00	46	2	4.35	38	82.61	2	4.35	4	8.7	0	0	0
09:00	53	1	1.89	46	86.79	4	7.55	2	3.77	0	0	0
10:00	66	1	1.52	59	89.39	2	3.03	3	4.55	1	1.52	0
11:00	74	1	1.35	70	94.59	2	2.7	1	1.35	0	0	0
12:00	78	0	0	70	89.74	6	7.69	2	2.56	0	0	0
13:00	82	0	0	79	96.34	3	3.66	0	0	0	0	0
14:00	100	0	0	90	90	9	9	1	1	0	0	0
15:00	78	0	0	76	97.44	0	0	2	2.56	0	0	0
16:00	76	0	0	74	97.37	1	1.32	1	1.32	0	0	0
17:00	73	0	0	71	97.26	2	2.74	0	0	0	0	0
18:00	54	1	1.85	50	92.59	3	5.56	0	0	0	0	0
19:00	38	0	0	34	89.47	3	7.89	1	2.63	0	0	0
20:00	20	0	0	19	95	1	5	0	0	0	0	0
21:00	16	0	0	15	93.75	1	6.25	0	0	0	0	0
22:00	38	0	0	37	97.37	1	2.63	0	0	0	0	0
23:00	19	0	0	18	94.74	1	5.26	0	0	0	0	0

12H,7-19	798	6	0.75	737	92.36	38	4.76	16	2.01	1	0.13
16H,6-22	897	6	0.67	829	92.42	44	4.91	17	1.9	1	0.11
18H,6-24	954	6	0.63	884	92.66	46	4.82	17	1.78	1	0.1
24H,0-24	1004	6	0.6	930	92.63	49	4.88	18	1.79	1	0.1

Am	11:00	08:00 -		11:00 -		07:00 -		08:00 -		10:00 -	
Peak	74	2 -		70 -		4 -		4 -		1 -	
Pm	14:00	18:00 -		14:00 -		14:00 -		12:00 -		00:00 -	
Peak	100	1 -		90 -		9 -		2 -		0 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Sun 02-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcycl%	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	8	0	0	0	8	100	0	0	0	0	0
01:00	5	0	0	0	5	100	0	0	0	0	0
02:00	4	0	0	0	4	100	0	0	0	0	0
03:00	2	0	0	0	2	100	0	0	0	0	0
04:00	4	0	0	0	4	100	0	0	0	0	0
05:00	16	0	0	0	16	100	0	0	0	0	0
06:00	17	1	5.88	14	82.35	1	5.88	1	5.88	0	0
07:00	14	1	7.14	12	85.71	0	0	1	7.14	0	0
08:00	27	2	7.41	24	88.89	0	0	1	3.7	0	0
09:00	35	1	2.86	31	88.57	1	2.86	2	5.71	0	0
10:00	51	7	13.73	43	84.31	1	1.96	0	0	0	0
11:00	62	4	6.45	51	82.26	3	4.84	4	6.45	0	0
12:00	60	7	11.67	51	85	1	1.67	1	1.67	0	0
13:00	83	8	9.64	72	86.75	2	2.41	1	1.2	0	0
14:00	80	3	3.75	73	91.25	3	3.75	1	1.25	0	0
15:00	83	5	6.02	74	89.16	3	3.61	1	1.2	0	0
16:00	97	8	8.25	85	87.63	2	2.06	2	2.06	0	0
17:00	60	4	6.67	53	88.33	3	5	0	0	0	0
18:00	53	0	0	53	100	0	0	0	0	0	0
19:00	34	0	0	34	100	0	0	0	0	0	0
20:00	22	0	0	20	90.91	2	9.09	0	0	0	0
21:00	19	0	0	19	100	0	0	0	0	0	0
22:00	29	0	0	28	96.55	0	0	1	3.45	0	0
23:00	4	0	0	4	100	0	0	0	0	0	0

12H,7-19	705	50	7.09	622	88.23	19	2.7	14	1.99	0	0
16H,6-22	797	51	6.4	709	88.96	22	2.76	15	1.88	0	0
18H,6-24	830	51	6.14	741	89.28	22	2.65	16	1.93	0	0
24H,0-24	869	51	5.87	780	89.76	22	2.53	16	1.84	0	0

Am	11:00	10:00 -		11:00 -		11:00 -		11:00 -		00:00 -	
Peak	62	7 -		51 -		3 -		4 -		0 -	

Pm	16:00	13:00 -		16:00 -		14:00 -		16:00 -		00:00 -	
Peak	97	8 -		85 -		3 -		2 -		0 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Mon 03-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	6	0	0	0	6	100	0	0	0	0	0
01:00	1	0	0	0	1	100	0	0	0	0	0
02:00	4	0	0	0	3	75	0	0	1	25	0
03:00	5	0	0	0	5	100	0	0	0	0	0
04:00	11	0	0	0	11	100	0	0	0	0	0
05:00	68	2	2.94	66	97.06	0	0	0	0	0	0
06:00	68	2	2.94	61	89.71	4	5.88	1	1.47	0	0
07:00	142	2	1.41	130	91.55	5	3.52	5	3.52	0	0
08:00	194	4	2.06	178	91.75	8	4.12	3	1.55	1	0.52
09:00	82	0	0	74	90.24	3	3.66	5	6.1	0	0
10:00	71	0	0	59	83.1	8	11.27	4	5.63	0	0
11:00	95	4	4.21	83	87.37	5	5.26	3	3.16	0	0
12:00	70	2	2.86	57	81.43	6	8.57	5	7.14	0	0
13:00	111	4	3.6	93	83.78	11	9.91	2	1.8	1	0.9
14:00	107	3	2.8	94	87.85	8	7.48	2	1.87	0	0
15:00	125	0	0	111	88.8	8	6.4	6	4.8	0	0
16:00	303	2	0.66	283	93.4	15	4.95	3	0.99	0	0
17:00	380	4	1.05	363	95.53	12	3.16	1	0.26	0	0
18:00	154	4	2.6	141	91.56	8	5.19	1	0.65	0	0
19:00	65	1	1.54	61	93.85	1	1.54	2	3.08	0	0
20:00	31	0	0	26	83.87	3	9.68	2	6.45	0	0
21:00	28	1	3.57	26	92.86	1	3.57	0	0	0	0
22:00	40	0	0	39	97.5	1	2.5	0	0	0	0
23:00	10	0	0	10	100	0	0	0	0	0	0

12H,7-19	1834	29	1.58	1666	90.84	97	5.29	40	2.18	2	0.11
16H,6-22	2026	33	1.63	1840	90.82	106	5.23	45	2.22	2	0.1
18H,6-24	2076	33	1.59	1889	90.99	107	5.15	45	2.17	2	0.1
24H,0-24	2171	35	1.61	1981	91.25	107	4.93	46	2.12	2	0.09

Am	08:00	08:00 -		08:00 -		08:00 -		07:00 -		08:00 -	
Peak	194	4 -		178 -		8 -		5 -		1 -	
Pm	17:00	13:00 -		17:00 -		16:00 -		15:00 -		13:00 -	
Peak	380	4 -		363 -		15 -		6 -		1 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Tue 04-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcycl%	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	5	0	0	0	4	80	1	20	0	0	0
01:00	3	0	0	0	2	66.67	0	0	1	33.33	0
02:00	5	0	0	0	2	40	1	20	2	40	0
03:00	6	0	0	0	6	100	0	0	0	0	0
04:00	13	0	0	0	13	100	0	0	0	0	0
05:00	61	1	1.64	60	98.36	0	0	0	0	0	0
06:00	92	0	0	84	91.3	8	8.7	0	0	0	0
07:00	185	2	1.08	164	88.65	14	7.57	5	2.7	0	0
08:00	386	3	0.78	342	88.6	30	7.77	10	2.59	1	0.26
09:00	336	5	1.49	289	86.01	31	9.23	9	2.68	2	0.6
10:00	98	2	2.04	77	78.57	12	12.24	4	4.08	3	3.06
11:00	97	5	5.15	77	79.38	13	13.4	2	2.06	0	0
12:00	91	2	2.2	83	91.21	5	5.49	1	1.1	0	0
13:00	104	2	1.92	97	93.27	5	4.81	0	0	0	0
14:00	116	2	1.72	106	91.38	6	5.17	1	0.86	1	0.86
15:00	162	4	2.47	140	86.42	13	8.02	5	3.09	0	0
16:00	322	1	0.31	292	90.68	20	6.21	9	2.8	0	0
17:00	395	7	1.77	378	95.7	10	2.53	0	0	0	0
18:00	193	2	1.04	182	94.3	8	4.15	1	0.52	0	0
19:00	56	1	1.79	53	94.64	1	1.79	1	1.79	0	0
20:00	34	1	2.94	29	85.29	4	11.76	0	0	0	0
21:00	30	1	3.33	26	86.67	1	3.33	2	6.67	0	0
22:00	56	2	3.57	52	92.86	2	3.57	0	0	0	0
23:00	10	0	0	8	80	2	20	0	0	0	0

12H,7-19	2485	37	1.49	2227	89.62	167	6.72	47	1.89	7	0.28
16H,6-22	2697	40	1.48	2419	89.69	181	6.71	50	1.85	7	0.26
18H,6-24	2763	42	1.52	2479	89.72	185	6.7	50	1.81	7	0.25
24H,0-24	2856	43	1.51	2566	89.85	187	6.55	53	1.86	7	0.25

Am	08:00	09:00 -		08:00 -		09:00 -		08:00 -		10:00 -	
Peak	386	5 -		342 -		31 -		10 -		3 -	

Pm	17:00	17:00 -		17:00 -		16:00 -		16:00 -		14:00 -	
Peak	395	7 -		378 -		20 -		9 -		1 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Wed 05-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	7	0	0	7	100	0	0	0	0	0	0
01:00	3	0	0	3	100	0	0	0	0	0	0
02:00	4	0	0	3	75	1	25	0	0	0	0
03:00	6	0	0	6	100	0	0	0	0	0	0
04:00	16	1	6.25	14	87.5	1	6.25	0	0	0	0
05:00	67	0	0	65	97.01	0	0	2	2.99	0	0
06:00	81	1	1.23	78	96.3	2	2.47	0	0	0	0
07:00	155	5	3.23	139	89.68	7	4.52	4	2.58	0	0
08:00	197	3	1.52	177	89.85	12	6.09	5	2.54	0	0
09:00	85	0	0	77	90.59	4	4.71	4	4.71	0	0
10:00	75	1	1.33	65	86.67	7	9.33	2	2.67	0	0
11:00	79	2	2.53	67	84.81	5	6.33	4	5.06	1	1.27
12:00	63	0	0	61	96.83	1	1.59	1	1.59	0	0
13:00	105	1	0.95	100	95.24	2	1.9	2	1.9	0	0
14:00	135	1	0.74	116	85.93	13	9.63	5	3.7	0	0
15:00	163	2	1.23	141	86.5	15	9.2	5	3.07	0	0
16:00	313	3	0.96	291	92.97	12	3.83	7	2.24	0	0
17:00	419	8	1.91	390	93.08	19	4.53	2	0.48	0	0
18:00	188	1	0.53	178	94.68	8	4.26	1	0.53	0	0
19:00	71	0	0	64	90.14	1	1.41	6	8.45	0	0
20:00	26	0	0	25	96.15	1	3.85	0	0	0	0
21:00	39	0	0	39	100	0	0	0	0	0	0
22:00	33	0	0	30	90.91	2	6.06	1	3.03	0	0
23:00	10	0	0	9	90	0	0	1	10	0	0

12H,7-19	1977	27	1.37	1802	91.15	105	5.31	42	2.12	1	0.05
16H,6-22	2194	28	1.28	2008	91.52	109	4.97	48	2.19	1	0.05
18H,6-24	2237	28	1.25	2047	91.51	111	4.96	50	2.24	1	0.04
24H,0-24	2340	29	1.24	2145	91.67	113	4.83	52	2.22	1	0.04

Am	08:00	07:00 -	08:00 -	08:00 -	08:00 -	08:00 -	11:00 -
Peak	197	5 -	177 -	12 -	5 -	1 -	
Pm	17:00	17:00 -	17:00 -	17:00 -	16:00 -	00:00 -	
Peak	419	8 -	390 -	19 -	7 -	0 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Thu 06-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	4	0	0	3	75	1	25	0	0	0	0
01:00	2	0	0	2	100	0	0	0	0	0	0
02:00	5	0	0	5	100	0	0	0	0	0	0
03:00	5	0	0	5	100	0	0	0	0	0	0
04:00	15	0	0	15	100	0	0	0	0	0	0
05:00	63	0	0	59	93.65	2	3.17	2	3.17	0	0
06:00	66	1	1.52	59	89.39	4	6.06	2	3.03	0	0
07:00	124	3	2.42	111	89.52	7	5.65	3	2.42	0	0
08:00	217	1	0.46	197	90.78	10	4.61	9	4.15	0	0
09:00	104	1	0.96	93	89.42	6	5.77	4	3.85	0	0
10:00	73	0	0	61	83.56	7	9.59	5	6.85	0	0
11:00	104	2	1.92	88	84.62	8	7.69	5	4.81	1	0.96
12:00	96	1	1.04	84	87.5	6	6.25	5	5.21	0	0
13:00	113	1	0.88	101	89.38	10	8.85	1	0.88	0	0
14:00	130	1	0.77	118	90.77	8	6.15	2	1.54	1	0.77
15:00	162	2	1.23	146	90.12	8	4.94	6	3.7	0	0
16:00	314	1	0.32	291	92.68	18	5.73	4	1.27	0	0
17:00	390	7	1.79	363	93.08	16	4.1	4	1.03	0	0
18:00	181	2	1.1	168	92.82	10	5.52	1	0.55	0	0
19:00	52	2	3.85	46	88.46	2	3.85	2	3.85	0	0
20:00	30	1	3.33	28	93.33	0	0	1	3.33	0	0
21:00	34	0	0	32	94.12	0	0	1	2.94	1	2.94
22:00	41	0	0	40	97.56	1	2.44	0	0	0	0
23:00	3	0	0	3	100	0	0	0	0	0	0

12H,7-19	2008	22	1.1	1821	90.69	114	5.68	49	2.44	2	0.1
16H,6-22	2190	26	1.19	1986	90.68	120	5.48	55	2.51	3	0.14
18H,6-24	2234	26	1.16	2029	90.82	121	5.42	55	2.46	3	0.13
24H,0-24	2328	26	1.12	2118	90.98	124	5.33	57	2.45	3	0.13

Am	08:00	07:00 -	08:00 -	08:00 -	08:00 -	11:00 -
Peak	217	3 -	197 -	10 -	9 -	1 -
Pm	17:00	17:00 -	17:00 -	16:00 -	15:00 -	14:00 -
Peak	390	7 -	363 -	18 -	6 -	1 -

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Fri 07-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcycl%	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	7	0	0	0	7	100	0	0	0	0	0
01:00	2	0	0	0	0	0	2	100	0	0	0
02:00	3	0	0	0	3	100	0	0	0	0	0
03:00	8	0	0	0	6	75	2	25	0	0	0
04:00	16	0	0	13	81.25	2	12.5	1	6.25	0	0
05:00	69	1	1.45	65	94.2	2	2.9	1	1.45	0	0
06:00	66	1	1.52	60	90.91	2	3.03	3	4.55	0	0
07:00	137	4	2.92	120	87.59	10	7.3	3	2.19	0	0
08:00	201	4	1.99	180	89.55	16	7.96	1	0.5	0	0
09:00	83	0	0	75	90.36	8	9.64	0	0	0	0
10:00	68	0	0	57	83.82	7	10.29	4	5.88	0	0
11:00	108	1	0.93	96	88.89	7	6.48	4	3.7	0	0
12:00	149	6	4.03	132	88.59	9	6.04	1	0.67	1	0.67
13:00	157	4	2.55	137	87.26	16	10.19	0	0	0	0
14:00	156	3	1.92	146	93.59	6	3.85	1	0.64	0	0
15:00	206	1	0.49	185	89.81	15	7.28	5	2.43	0	0
16:00	273	5	1.83	253	92.67	13	4.76	2	0.73	0	0
17:00	310	2	0.65	299	96.45	8	2.58	1	0.32	0	0
18:00	145	4	2.76	138	95.17	3	2.07	0	0	0	0
19:00	61	0	0	57	93.44	4	6.56	0	0	0	0
20:00	34	1	2.94	30	88.24	2	5.88	1	2.94	0	0
21:00	28	0	0	26	92.86	0	0	2	7.14	0	0
22:00	48	1	2.08	46	95.83	1	2.08	0	0	0	0
23:00	36	0	0	34	94.44	2	5.56	0	0	0	0

12H,7-19	1993	34	1.71	1818	91.22	118	5.92	22	1.1	1	0.05
16H,6-22	2182	36	1.65	1991	91.25	126	5.77	28	1.28	1	0.05
18H,6-24	2266	37	1.63	2071	91.39	129	5.69	28	1.24	1	0.04
24H,0-24	2371	38	1.6	2165	91.31	137	5.78	30	1.27	1	0.04

Am	08:00	07:00 -		08:00 -		08:00 -		10:00 -		00:00 -	
Peak	201	4 -		180 -		16 -		4 -		0 -	
Pm	17:00	12:00 -		17:00 -		13:00 -		15:00 -		12:00 -	
Peak	310	6 -		299 -		16 -		5 -		1 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Sat 01-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk %	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	19	0	0	0	18	94.74	1	5.26	0	0	0
01:00	7	0	0	0	7	100	0	0	0	0	0
02:00	2	0	0	0	2	100	0	0	0	0	0
03:00	6	0	0	0	5	83.33	0	0	1	16.67	0
04:00	4	0	0	0	4	100	0	0	0	0	0
05:00	10	0	0	0	10	100	0	0	0	0	0
06:00	33	0	0	0	31	93.94	1	3.03	1	3.03	0
07:00	53	0	0	0	45	84.91	7	13.21	0	0	1.89
08:00	78	2	2.56	0	60	76.92	12	15.38	4	5.13	0
09:00	116	1	0.86	0	106	91.38	7	6.03	2	1.72	0
10:00	82	2	2.44	0	67	81.71	9	10.98	4	4.88	0
11:00	85	1	1.18	0	69	81.18	11	12.94	4	4.71	0
12:00	76	1	1.32	0	68	89.47	6	7.89	1	1.32	0
13:00	66	0	0	0	60	90.91	6	9.09	0	0	0
14:00	76	1	1.32	0	62	81.58	11	14.47	2	2.63	0
15:00	74	2	2.7	0	67	90.54	3	4.05	2	2.7	0
16:00	67	0	0	0	63	94.03	4	5.97	0	0	0
17:00	50	0	0	0	45	90	5	10	0	0	0
18:00	57	0	0	0	54	94.74	2	3.51	1	1.75	0
19:00	32	0	0	0	30	93.75	2	6.25	0	0	0
20:00	10	0	0	0	10	100	0	0	0	0	0
21:00	18	0	0	0	16	88.89	2	11.11	0	0	0
22:00	23	0	0	0	22	95.65	1	4.35	0	0	0
23:00	31	0	0	0	30	96.77	1	3.23	0	0	0

12H,7-19	880	10	1.14	0	766	87.05	83	9.43	20	2.27	1	0.11
16H,6-22	973	10	1.03	0	853	87.67	88	9.04	21	2.16	1	0.1
18H,6-24	1027	10	0.97	0	905	88.12	90	8.76	21	2.04	1	0.1
24H,0-24	1075	10	0.93	0	951	88.47	91	8.47	22	2.05	1	0.09

Am	09:00	08:00 -		09:00 -		08:00 -		08:00 -		07:00 -	
Peak	116	2 -		106 -		12 -		4 -		1 -	
Pm	12:00	15:00 -		12:00 -		14:00 -		14:00 -		00:00 -	
Peak	76	2 -		68 -		11 -		2 -		0 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Sun 02-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	13	0	0	13	100	0	0	0	0	0	0
01:00	2	0	0	2	100	0	0	0	0	0	0
02:00	3	0	0	2	66.67	1	33.33	0	0	0	0
03:00	1	0	0	1	100	0	0	0	0	0	0
04:00	1	0	0	1	100	0	0	0	0	0	0
05:00	8	0	0	7	87.5	1	12.5	0	0	0	0
06:00	18	0	0	18	100	0	0	0	0	0	0
07:00	36	0	0	35	97.22	1	2.78	0	0	0	0
08:00	23	6	26.09	16	69.57	1	4.35	0	0	0	0
09:00	37	1	2.7	33	89.19	3	8.11	0	0	0	0
10:00	63	2	3.17	55	87.3	4	6.35	2	3.17	0	0
11:00	82	1	1.22	77	93.9	3	3.66	1	1.22	0	0
12:00	75	6	8	58	77.33	10	13.33	1	1.33	0	0
13:00	74	4	5.41	61	82.43	8	10.81	1	1.35	0	0
14:00	64	3	4.69	60	93.75	1	1.56	0	0	0	0
15:00	59	5	8.47	49	83.05	5	8.47	0	0	0	0
16:00	50	4	8	44	88	2	4	0	0	0	0
17:00	72	0	0	62	86.11	10	13.89	0	0	0	0
18:00	54	1	1.85	49	90.74	4	7.41	0	0	0	0
19:00	29	0	0	28	96.55	1	3.45	0	0	0	0
20:00	23	0	0	21	91.3	2	8.7	0	0	0	0
21:00	15	0	0	13	86.67	2	13.33	0	0	0	0
22:00	16	1	6.25	14	87.5	0	0	1	6.25	0	0
23:00	20	0	0	19	95	1	5	0	0	0	0

12H,7-19	689	33	4.79	599	86.94	52	7.55	5	0.73	0	0
16H,6-22	774	33	4.26	679	87.73	57	7.36	5	0.65	0	0
18H,6-24	810	34	4.2	712	87.9	58	7.16	6	0.74	0	0
24H,0-24	838	34	4.06	738	88.07	60	7.16	6	0.72	0	0

Am	11:00	08:00 -		11:00 -		10:00 -		10:00 -		00:00 -	
Peak	82	6 -		77 -		4 -		2 -		0 -	

Pm	12:00	12:00 -		17:00 -		12:00 -		12:00 -		00:00 -	
Peak	75	6 -		62 -		10 -		1 -		0 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Mon 03-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	8	0		0	8	100	0	0	0	0	0
01:00	0	0	-		0	-	0	-	0	-	0
02:00	0	0	-		0	-	0	-	0	-	0
03:00	5	0		0	5	100	0	0	0	0	0
04:00	3	0		0	3	100	0	0	0	0	0
05:00	21	0		0	18	85.71	3	14.29	0	0	0
06:00	94	0		0	86	91.49	7	7.45	1	1.06	0
07:00	305	3	0.98	286	93.77	12	3.93	3	0.98	1	0.33
08:00	276	2	0.72	249	90.22	18	6.52	7	2.54	0	0
09:00	141	1	0.71	122	86.52	13	9.22	5	3.55	0	0
10:00	76	0		0	67	88.16	7	9.21	2	2.63	0
11:00	75	2	2.67	64	85.33	7	9.33	2	2.67	0	0
12:00	73	2	2.74	61	83.56	8	10.96	2	2.74	0	0
13:00	80	4	5	60	75	14	17.5	2	2.5	0	0
14:00	105	3	2.86	88	83.81	11	10.48	3	2.86	0	0
15:00	91	3	3.3	80	87.91	5	5.49	3	3.3	0	0
16:00	142	1	0.7	125	88.03	15	10.56	1	0.7	0	0
17:00	169	2	1.18	154	91.12	8	4.73	4	2.37	1	0.59
18:00	108	0		0	103	95.37	5	4.63	0	0	0
19:00	50	0		0	45	90	4	8	1	2	0
20:00	34	0		0	29	85.29	4	11.76	1	2.94	0
21:00	36	0		0	34	94.44	2	5.56	0	0	0
22:00	39	2	5.13	35	89.74	2	5.13	0	0	0	0
23:00	42	0		0	39	92.86	3	7.14	0	0	0

12H,7-19	1641	23	1.4	1459	88.91	123	7.5	34	2.07	2	0.12
16H,6-22	1855	23	1.24	1653	89.11	140	7.55	37	1.99	2	0.11
18H,6-24	1936	25	1.29	1727	89.2	145	7.49	37	1.91	2	0.1
24H,0-24	1973	25	1.27	1761	89.25	148	7.5	37	1.88	2	0.1

Am	07:00	07:00 -		07:00 -		08:00 -		08:00 -		07:00 -	
Peak	305	3 -		286 -		18 -		7 -		1 -	

Pm	17:00	13:00 -		17:00 -		16:00 -		17:00 -		17:00 -	
Peak	169	4 -		154 -		15 -		4 -		1 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Tue 04-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk %	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	17	0	0	0	17	100	0	0	0	0	0
01:00	4	1	25	2	50	1	25	0	0	0	0
02:00	5	0	0	4	80	1	20	0	0	0	0
03:00	5	0	0	3	60	2	40	0	0	0	0
04:00	4	0	0	3	75	1	25	0	0	0	0
05:00	22	0	0	18	81.82	4	18.18	0	0	0	0
06:00	113	0	0	102	90.27	7	6.19	4	3.54	0	0
07:00	358	5	1.4	320	89.39	26	7.26	7	1.96	0	0
08:00	301	4	1.33	270	89.7	23	7.64	2	0.66	2	0.66
09:00	126	2	1.59	110	87.3	13	10.32	1	0.79	0	0
10:00	91	0	0	75	82.42	12	13.19	3	3.3	1	1.1
11:00	88	5	5.68	65	73.86	14	15.91	4	4.55	0	0
12:00	58	0	0	47	81.03	11	18.97	0	0	0	0
13:00	91	1	1.1	80	87.91	8	8.79	2	2.2	0	0
14:00	120	2	1.67	110	91.67	6	5	2	1.67	0	0
15:00	120	3	2.5	105	87.5	10	8.33	2	1.67	0	0
16:00	130	3	2.31	117	90	9	6.92	1	0.77	0	0
17:00	181	2	1.1	169	93.37	8	4.42	2	1.1	0	0
18:00	121	2	1.65	113	93.39	6	4.96	0	0	0	0
19:00	39	0	0	35	89.74	3	7.69	1	2.56	0	0
20:00	42	1	2.38	36	85.71	5	11.9	0	0	0	0
21:00	41	1	2.44	40	97.56	0	0	0	0	0	0
22:00	40	0	0	37	92.5	2	5	1	2.5	0	0
23:00	42	1	2.38	39	92.86	2	4.76	0	0	0	0

12H,7-19	1785	29	1.62	1581	88.57	146	8.18	26	1.46	3	0.17
16H,6-22	2020	31	1.53	1794	88.81	161	7.97	31	1.53	3	0.15
18H,6-24	2102	32	1.52	1870	88.96	165	7.85	32	1.52	3	0.14
24H,0-24	2159	33	1.53	1917	88.79	174	8.06	32	1.48	3	0.14

Am	07:00	07:00 -		07:00 -		07:00 -		07:00 -		08:00 -	
Peak	358	5 -		320 -		26 -		7 -		2 -	
Pm	17:00	15:00 -		17:00 -		12:00 -		13:00 -		00:00 -	
Peak	181	3 -		169 -		11 -		2 -		0 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Wed 05-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	21	0	0	20	95.24	0	0	1	4.76	0	0
01:00	4	0	0	4	100	0	0	0	0	0	0
02:00	8	0	0	7	87.5	1	12.5	0	0	0	0
03:00	7	0	0	7	100	0	0	0	0	0	0
04:00	3	0	0	3	100	0	0	0	0	0	0
05:00	23	2	8.7	18	78.26	2	8.7	1	4.35	0	0
06:00	101	2	1.98	90	89.11	8	7.92	1	0.99	0	0
07:00	322	2	0.62	298	92.55	16	4.97	5	1.55	1	0.31
08:00	260	4	1.54	231	88.85	20	7.69	4	1.54	1	0.38
09:00	125	0	0	107	85.6	13	10.4	4	3.2	1	0.8
10:00	80	8	10	56	70	12	15	4	5	0	0
11:00	81	2	2.47	66	81.48	12	14.81	1	1.23	0	0
12:00	77	1	1.3	67	87.01	7	9.09	2	2.6	0	0
13:00	83	1	1.2	75	90.36	7	8.43	0	0	0	0
14:00	128	2	1.56	114	89.06	8	6.25	4	3.13	0	0
15:00	115	1	0.87	99	86.09	12	10.43	3	2.61	0	0
16:00	147	1	0.68	133	90.48	8	5.44	4	2.72	1	0.68
17:00	170	4	2.35	152	89.41	14	8.24	0	0	0	0
18:00	108	0	0	94	87.04	13	12.04	1	0.93	0	0
19:00	62	0	0	52	83.87	7	11.29	3	4.84	0	0
20:00	39	1	2.56	32	82.05	5	12.82	1	2.56	0	0
21:00	34	1	2.94	31	91.18	1	2.94	1	2.94	0	0
22:00	46	1	2.17	44	95.65	1	2.17	0	0	0	0
23:00	38	0	0	38	100	0	0	0	0	0	0

12H,7-19	1696	26	1.53	1492	87.97	142	8.37	32	1.89	4	0.24
16H,6-22	1932	30	1.55	1697	87.84	163	8.44	38	1.97	4	0.21
18H,6-24	2016	31	1.54	1779	88.24	164	8.13	38	1.88	4	0.2
24H,0-24	2082	33	1.59	1838	88.28	167	8.02	40	1.92	4	0.19

Am	07:00	10:00 -		07:00 -		08:00 -		07:00 -		07:00 -	
Peak	322	8 -		298 -		20 -		5 -		1 -	
Pm	17:00	17:00 -		17:00 -		17:00 -		14:00 -		16:00 -	
Peak	170	4 -		152 -		14 -		4 -		1 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Thu 06-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcycl%	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	20	0	0	0	19	95	1	5	0	0	0
01:00	5	0	0	0	3	60	1	20	1	20	0
02:00	4	0	0	0	4	100	0	0	0	0	0
03:00	2	0	0	0	2	100	0	0	0	0	0
04:00	6	0	0	0	5	83.33	0	0	1	16.67	0
05:00	21	2	9.52	15	71.43	4	19.05	0	0	0	0
06:00	95	2	2.11	85	89.47	7	7.37	1	1.05	0	0
07:00	316	2	0.63	291	92.09	17	5.38	6	1.9	0	0
08:00	264	4	1.52	234	88.64	20	7.58	4	1.52	2	0.76
09:00	108	1	0.93	92	85.19	14	12.96	1	0.93	0	0
10:00	78	1	1.28	71	91.03	3	3.85	3	3.85	0	0
11:00	80	3	3.75	64	80	12	15	0	0	1	1.25
12:00	72	0	0	57	79.17	14	19.44	1	1.39	0	0
13:00	84	1	1.19	71	84.52	8	9.52	4	4.76	0	0
14:00	131	1	0.76	113	86.26	17	12.98	0	0	0	0
15:00	110	2	1.82	99	90	8	7.27	1	0.91	0	0
16:00	145	3	2.07	124	85.52	17	11.72	1	0.69	0	0
17:00	176	2	1.14	159	90.34	13	7.39	2	1.14	0	0
18:00	88	2	2.27	78	88.64	6	6.82	1	1.14	1	1.14
19:00	55	0	0	49	89.09	6	10.91	0	0	0	0
20:00	45	0	0	40	88.89	5	11.11	0	0	0	0
21:00	39	1	2.56	37	94.87	1	2.56	0	0	0	0
22:00	42	1	2.38	39	92.86	1	2.38	1	2.38	0	0
23:00	39	0	0	38	97.44	1	2.56	0	0	0	0

12H,7-19	1652	22	1.33	1453	87.95	149	9.02	24	1.45	4	0.24
16H,6-22	1886	25	1.33	1664	88.23	168	8.91	25	1.33	4	0.21
18H,6-24	1967	26	1.32	1741	88.51	170	8.64	26	1.32	4	0.2
24H,0-24	2025	28	1.38	1789	88.35	176	8.69	28	1.38	4	0.2

Am	07:00	08:00 -		07:00 -		08:00 -		07:00 -		08:00 -	
Peak	316	4 -		291 -		20 -		6 -		2 -	

Pm	17:00	16:00 -		17:00 -		14:00 -		13:00 -		18:00 -	
Peak	176	3 -		159 -		17 -		4 -		1 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Class Report FHWA

Fri 07-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	12	0	0	12	100	0	0	0	0	0	0
01:00	9	0	0	8	88.89	0	0	1	11.11	0	0
02:00	5	0	0	5	100	0	0	0	0	0	0
03:00	5	0	0	2	40	2	40	1	20	0	0
04:00	5	0	0	5	100	0	0	0	0	0	0
05:00	29	2	6.9	24	82.76	2	6.9	1	3.45	0	0
06:00	80	1	1.25	72	90	7	8.75	0	0	0	0
07:00	305	3	0.98	285	93.44	12	3.93	5	1.64	0	0
08:00	238	2	0.84	213	89.5	20	8.4	2	0.84	1	0.42
09:00	88	0	0	76	86.36	10	11.36	2	2.27	0	0
10:00	92	1	1.09	73	79.35	13	14.13	5	5.43	0	0
11:00	72	2	2.78	55	76.39	14	19.44	1	1.39	0	0
12:00	76	0	0	60	78.95	14	18.42	2	2.63	0	0
13:00	88	6	6.82	73	82.95	8	9.09	1	1.14	0	0
14:00	146	4	2.74	128	87.67	13	8.9	1	0.68	0	0
15:00	127	5	3.94	108	85.04	14	11.02	0	0	0	0
16:00	161	0	0	147	91.3	11	6.83	3	1.86	0	0
17:00	162	2	1.23	143	88.27	16	9.88	0	0	1	0.62
18:00	105	0	0	97	92.38	7	6.67	1	0.95	0	0
19:00	59	0	0	52	88.14	7	11.86	0	0	0	0
20:00	49	0	0	47	95.92	2	4.08	0	0	0	0
21:00	33	0	0	31	93.94	2	6.06	0	0	0	0
22:00	47	1	2.13	45	95.74	1	2.13	0	0	0	0
23:00	37	0	0	37	100	0	0	0	0	0	0

12H,7-19	1660	25	1.51	1458	87.83	152	9.16	23	1.39	2	0.12
16H,6-22	1881	26	1.38	1660	88.25	170	9.04	23	1.22	2	0.11
18H,6-24	1965	27	1.37	1742	88.65	171	8.7	23	1.17	2	0.1
24H,0-24	2030	29	1.43	1798	88.57	175	8.62	26	1.28	2	0.1

Am	07:00	07:00 -		07:00 -		08:00 -		07:00 -		08:00 -	
Peak	305	3 -		285 -		20 -		5 -		1 -	
Pm	17:00	13:00 -		16:00 -		17:00 -		16:00 -		17:00 -	
Peak	162	6 -		147 -		16 -		3 -		1 -	

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Vehicle Count Report

Week Begin: 01-Oct-16

Channel: Eastbound

Time	Sat	Sun	Mon	Tue	Wed	Thu	Fri	5-Day	7-Day
Begin	01/10/2016	02/10/2016	03/10/2016	04/10/2016	05/10/2016	06/10/2016	07/10/2016	Av	Av
00:00	10	8	6	5	7	4	7	6	7
01:00	2	5	1	3	3	2	2	2	3
02:00	1	4	4	5	4	5	3	4	4
03:00	3	2	5	6	6	5	8	6	5
04:00	7	4	11	13	16	15	16	14	12
05:00	27	16	68	61	67	63	69	66	53
06:00	25	17	68	92	81	66	66	75	59
07:00	18	14	142	185	155	124	137	149	111
08:00	46	27	194	386	197	217	201	239	181
09:00	53	35	82	336	85	104	83	138	111
10:00	66	51	71	98	75	73	68	77	72
11:00	74	62	95	97	79	104	108	97	88
12:00	78	60	70	91	63	96	149	94	87
13:00	82	83	111	104	105	113	157	118	108
14:00	100	80	107	116	135	130	156	129	118
15:00	78	83	125	162	163	162	206	164	140
16:00	76	97	303	322	313	314	273	305	243
17:00	73	60	380	395	419	390	310	379	290
18:00	54	53	154	193	188	181	145	172	138
19:00	38	34	65	56	71	52	61	61	54
20:00	20	22	31	34	26	30	34	31	28
21:00	16	19	28	30	39	34	28	32	28
22:00	38	29	40	56	33	41	48	44	41
23:00	19	4	10	10	10	3	36	14	13
12H,7-19	798	705	1834	2485	1977	2008	1993	2059	1686
16H,6-22	897	797	2026	2697	2194	2190	2182	2258	1855
18H,6-24	954	830	2076	2763	2237	2234	2266	2315	1909
24H,0-24	1004	869	2171	2856	2340	2328	2371	2413	1991
Am	11:00	11:00	08:00	08:00	08:00	08:00	08:00	-	-
Peak	74	62	194	386	197	217	201	239	190
Pm	14:00	16:00	17:00	17:00	17:00	17:00	17:00	-	-
Peak	100	97	380	395	419	390	310	379	299

K & M TRAFFIC SURVEYS

Created at 13:40:23 on 17 Oct 2016

Site No: 20835001

Grid Reference: SP50378,82948

Site 1, Lutterworth Road, Pailton (50mph Sign)

Vehicle Count Report

Week Begin: 01-Oct-16

Channel: Westbound

Time	Sat	Sun	Mon	Tue	Wed	Thu	Fri	5-Day	7-Day
Begin	01/10/2016	02/10/2016	03/10/2016	04/10/2016	05/10/2016	06/10/2016	07/10/2016	Av	Av
00:00	19	13	8	17	21	20	12	16	16
01:00	7	2	0	4	4	5	9	4	4
02:00	2	3	0	5	8	4	5	4	4
03:00	6	1	5	5	7	2	5	5	4
04:00	4	1	3	4	3	6	5	4	4
05:00	10	8	21	22	23	21	29	23	19
06:00	33	18	94	113	101	95	80	97	76
07:00	53	36	305	358	322	316	305	321	242
08:00	78	23	276	301	260	264	238	268	206
09:00	116	37	141	126	125	108	88	118	106
10:00	82	63	76	91	80	78	92	83	80
11:00	85	82	75	88	81	80	72	79	80
12:00	76	75	73	58	77	72	76	71	72
13:00	66	74	80	91	83	84	88	85	81
14:00	76	64	105	120	128	131	146	126	110
15:00	74	59	91	120	115	110	127	113	99
16:00	67	50	142	130	147	145	161	145	120
17:00	50	72	169	181	170	176	162	172	140
18:00	57	54	108	121	108	88	105	106	92
19:00	32	29	50	39	62	55	59	53	47
20:00	10	23	34	42	39	45	49	42	35
21:00	18	15	36	41	34	39	33	37	31
22:00	23	16	39	40	46	42	47	43	36
23:00	31	20	42	42	38	39	37	40	36
12H,7-19	880	689	1641	1785	1696	1652	1660	1687	1429
16H,6-22	973	774	1855	2020	1932	1886	1881	1915	1617
18H,6-24	1027	810	1936	2102	2016	1967	1965	1997	1689
24H,0-24	1075	838	1973	2159	2082	2025	2030	2054	1740
Am	09:00	11:00	07:00	07:00	07:00	07:00	07:00	-	-
Peak	116	82	305	358	322	316	305	321	258
Pm	14:00	12:00	17:00	17:00	17:00	17:00	17:00	-	-
Peak	76	75	169	181	170	176	162	172	144

K & M TRAFFIC SURVEYS

Created at 13:40:23 on 17 Oct 2016

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Sat 01-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcycle	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	8	0	0	0	7	87.5	1	12.5	0	0	0
01:00	2	0	0	0	2	100	0	0	0	0	0
02:00	1	0	0	0	1	100	0	0	0	0	0
03:00	2	0	0	0	1	50	1	50	0	0	0
04:00	3	0	0	0	3	100	0	0	0	0	0
05:00	24	0	0	0	24	100	0	0	0	0	0
06:00	20	1	5	18	90	1	5	0	0	0	0
07:00	17	1	5.88	12	70.59	4	23.53	0	0	0	0
08:00	31	2	6.45	24	77.42	1	3.23	4	12.9	0	0
09:00	42	2	4.76	35	83.33	5	11.9	0	0	0	0
10:00	49	1	2.04	42	85.71	2	4.08	3	6.12	1	2.04
11:00	55	1	1.82	54	98.18	0	0	0	0	0	0
12:00	52	0	0	46	88.46	5	9.62	1	1.92	0	0
13:00	59	0	0	57	96.61	2	3.39	0	0	0	0
14:00	70	0	0	64	91.43	5	7.14	1	1.43	0	0
15:00	62	0	0	58	93.55	1	1.61	3	4.84	0	0
16:00	50	0	0	48	96	1	2	1	2	0	0
17:00	61	0	0	58	95.08	2	3.28	1	1.64	0	0
18:00	30	1	3.33	28	93.33	1	3.33	0	0	0	0
19:00	33	0	0	31	93.94	1	3.03	1	3.03	0	0
20:00	13	0	0	13	100	0	0	0	0	0	0
21:00	15	0	0	14	93.33	1	6.67	0	0	0	0
22:00	34	0	0	33	97.06	1	2.94	0	0	0	0
23:00	19	0	0	18	94.74	1	5.26	0	0	0	0

12H,7-19	578	8	1.38	526	91	29	5.02	14	2.42	1	0.17
16H,6-22	659	9	1.37	602	91.35	32	4.86	15	2.28	1	0.15
18H,6-24	712	9	1.26	653	91.71	34	4.78	15	2.11	1	0.14
24H,0-24	752	9	1.2	691	91.89	36	4.79	15	1.99	1	0.13

Am	11:00	08:00 -		11:00 -		09:00 -		08:00 -		10:00 -	
Peak	55	2 -		54 -		5 -		4 -		1 -	
Pm	14:00	18:00 -		14:00 -		12:00 -		15:00 -		00:00 -	
Peak	70	1 -		64 -		5 -		3 -		0 -	

K & M TRAFFIC SURVEYS

Created at 13:41:18 on 17 Oct 2016

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Sun 02-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	10	0	0	0	10	100	0	0	0	0	0
01:00	4	0	0	0	4	100	0	0	0	0	0
02:00	3	0	0	0	3	100	0	0	0	0	0
03:00	1	0	0	0	1	100	0	0	0	0	0
04:00	3	0	0	0	3	100	0	0	0	0	0
05:00	14	0	0	0	14	100	0	0	0	0	0
06:00	13	1	7.69	11	84.62	1	7.69	0	0	0	0
07:00	10	0	0	9	90	0	0	1	10	0	0
08:00	16	0	0	15	93.75	0	0	1	6.25	0	0
09:00	27	2	7.41	24	88.89	1	3.7	0	0	0	0
10:00	39	7	17.95	30	76.92	2	5.13	0	0	0	0
11:00	46	4	8.7	34	73.91	4	8.7	4	8.7	0	0
12:00	45	5	11.11	38	84.44	2	4.44	0	0	0	0
13:00	64	8	12.5	56	87.5	0	0	0	0	0	0
14:00	69	3	4.35	63	91.3	2	2.9	1	1.45	0	0
15:00	78	6	7.69	69	88.46	2	2.56	1	1.28	0	0
16:00	69	9	13.04	57	82.61	2	2.9	1	1.45	0	0
17:00	51	2	3.92	48	94.12	1	1.96	0	0	0	0
18:00	41	1	2.44	39	95.12	1	2.44	0	0	0	0
19:00	30	0	0	29	96.67	1	3.33	0	0	0	0
20:00	17	0	0	15	88.24	2	11.76	0	0	0	0
21:00	11	0	0	11	100	0	0	0	0	0	0
22:00	26	0	0	26	100	0	0	0	0	0	0
23:00	3	0	0	3	100	0	0	0	0	0	0

12H,7-19	555	47	8.47	482	86.85	17	3.06	9	1.62	0	0
16H,6-22	626	48	7.67	548	87.54	21	3.35	9	1.44	0	0
18H,6-24	655	48	7.33	577	88.09	21	3.21	9	1.37	0	0
24H,0-24	690	48	6.96	612	88.7	21	3.04	9	1.3	0	0

Am	11:00	10:00 -		11:00 -		11:00 -		11:00 -		00:00 -	
Peak	46	7 -		34 -		4 -		4 -		0 -	

Pm	15:00	16:00 -		15:00 -		12:00 -		14:00 -		00:00 -	
Peak	78	9 -		69 -		2 -		1 -		0 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Mon 03-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	3	0	0	3	100	0	0	0	0	0	0
01:00	2	0	0	2	100	0	0	0	0	0	0
02:00	3	0	0	2	66.67	0	0	1	33.33	0	0
03:00	3	0	0	3	100	0	0	0	0	0	0
04:00	11	1	9.09	10	90.91	0	0	0	0	0	0
05:00	53	0	0	53	100	0	0	0	0	0	0
06:00	52	1	1.92	49	94.23	2	3.85	0	0	0	0
07:00	104	2	1.92	92	88.46	7	6.73	3	2.88	0	0
08:00	118	3	2.54	105	88.98	8	6.78	1	0.85	1	0.85
09:00	64	0	0	57	89.06	2	3.13	5	7.81	0	0
10:00	66	1	1.52	55	83.33	8	12.12	2	3.03	0	0
11:00	56	2	3.57	46	82.14	6	10.71	2	3.57	0	0
12:00	50	5	10	35	70	8	16	2	4	0	0
13:00	87	3	3.45	75	86.21	5	5.75	3	3.45	1	1.15
14:00	75	2	2.67	66	88	6	8	1	1.33	0	0
15:00	87	1	1.15	78	89.66	5	5.75	3	3.45	0	0
16:00	180	2	1.11	160	88.89	15	8.33	3	1.67	0	0
17:00	212	2	0.94	199	93.87	10	4.72	1	0.47	0	0
18:00	111	1	0.9	104	93.69	5	4.5	1	0.9	0	0
19:00	49	1	2.04	40	81.63	5	10.2	3	6.12	0	0
20:00	29	0	0	27	93.1	2	6.9	0	0	0	0
21:00	20	1	5	19	95	0	0	0	0	0	0
22:00	32	0	0	30	93.75	1	3.13	1	3.13	0	0
23:00	7	0	0	7	100	0	0	0	0	0	0

12H,7-19	1210	24	1.98	1072	88.6	85	7.02	27	2.23	2	0.17
16H,6-22	1360	27	1.99	1207	88.75	94	6.91	30	2.21	2	0.15
18H,6-24	1399	27	1.93	1244	88.92	95	6.79	31	2.22	2	0.14
24H,0-24	1474	28	1.9	1317	89.35	95	6.45	32	2.17	2	0.14

Am	08:00	08:00 -		08:00 -		08:00 -		09:00 -		08:00 -	
Peak	118	3 -		105 -		8 -		5 -		1 -	

Pm	17:00	12:00 -		17:00 -		16:00 -		13:00 -		13:00 -	
Peak	212	5 -		199 -		15 -		3 -		1 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Tue 04-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	4	0	0	0	3	75	1	25	0	0	0
01:00	6	0	0	0	2	33.33	1	16.67	3	50	0
02:00	2	0	0	0	2	100	0	0	0	0	0
03:00	5	0	0	0	5	100	0	0	0	0	0
04:00	10	0	0	0	10	100	0	0	0	0	0
05:00	50	1	2	49	98	0	0	0	0	0	0
06:00	80	0	0	70	87.5	9	11.25	1	1.25	0	0
07:00	136	2	1.47	118	86.76	15	11.03	1	0.74	0	0
08:00	325	1	0.31	283	87.08	30	9.23	9	2.77	2	0.62
09:00	298	3	1.01	246	82.55	35	11.74	10	3.36	4	1.34
10:00	79	2	2.53	58	73.42	13	16.46	3	3.8	3	3.8
11:00	81	4	4.94	65	80.25	10	12.35	1	1.23	1	1.23
12:00	59	0	0	52	88.14	5	8.47	2	3.39	0	0
13:00	82	2	2.44	73	89.02	7	8.54	0	0	0	0
14:00	79	2	2.53	70	88.61	6	7.59	1	1.27	0	0
15:00	115	3	2.61	91	79.13	15	13.04	6	5.22	0	0
16:00	155	0	0	135	87.1	15	9.68	5	3.23	0	0
17:00	229	4	1.75	219	95.63	5	2.18	0	0	1	0.44
18:00	128	1	0.78	120	93.75	6	4.69	1	0.78	0	0
19:00	43	0	0	41	95.35	1	2.33	1	2.33	0	0
20:00	27	1	3.7	23	85.19	2	7.41	1	3.7	0	0
21:00	20	1	5	19	95	0	0	0	0	0	0
22:00	38	0	0	37	97.37	1	2.63	0	0	0	0
23:00	9	0	0	7	77.78	2	22.22	0	0	0	0

12H,7-19	1766	24	1.36	1530	86.64	162	9.17	39	2.21	11	0.62
16H,6-22	1936	26	1.34	1683	86.93	174	8.99	42	2.17	11	0.57
18H,6-24	1983	26	1.31	1727	87.09	177	8.93	42	2.12	11	0.55
24H,0-24	2060	27	1.31	1798	87.28	179	8.69	45	2.18	11	0.53

Am	08:00	11:00 -		08:00 -		09:00 -		09:00 -		09:00 -	
Peak	325	4 -		283 -		35 -		10 -		4 -	

Pm	17:00	17:00 -		17:00 -		15:00 -		15:00 -		17:00 -	
Peak	229	4 -		219 -		15 -		6 -		1 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Wed 05-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	7	0	0	0	6	85.71	1	14.29	0	0	0
01:00	2	0	0	0	2	100	0	0	0	0	0
02:00	4	0	0	0	3	75	1	25	0	0	0
03:00	5	0	0	0	5	100	0	0	0	0	0
04:00	15	1	6.67	13	86.67	1	6.67	0	0	0	0
05:00	58	0	0	56	96.55	0	0	2	3.45	0	0
06:00	60	1	1.67	57	95	2	3.33	0	0	0	0
07:00	96	4	4.17	86	89.58	4	4.17	2	2.08	0	0
08:00	128	2	1.56	112	87.5	13	10.16	1	0.78	0	0
09:00	71	0	0	64	90.14	6	8.45	1	1.41	0	0
10:00	61	1	1.64	50	81.97	7	11.48	3	4.92	0	0
11:00	57	3	5.26	47	82.46	5	8.77	1	1.75	1	1.75
12:00	51	1	1.96	46	90.2	3	5.88	1	1.96	0	0
13:00	82	2	2.44	77	93.9	2	2.44	1	1.22	0	0
14:00	97	1	1.03	84	86.6	10	10.31	2	2.06	0	0
15:00	113	1	0.88	95	84.07	14	12.39	3	2.65	0	0
16:00	172	1	0.58	157	91.28	10	5.81	4	2.33	0	0
17:00	228	5	2.19	206	90.35	17	7.46	0	0	0	0
18:00	130	3	2.31	120	92.31	5	3.85	1	0.77	1	0.77
19:00	45	0	0	40	88.89	3	6.67	2	4.44	0	0
20:00	18	0	0	17	94.44	1	5.56	0	0	0	0
21:00	28	0	0	28	100	0	0	0	0	0	0
22:00	25	0	0	21	84	4	16	0	0	0	0
23:00	8	0	0	7	87.5	0	0	1	12.5	0	0

12H,7-19	1286	24	1.87	1144	88.96	96	7.47	20	1.56	2	0.16
16H,6-22	1437	25	1.74	1286	89.49	102	7.1	22	1.53	2	0.14
18H,6-24	1470	25	1.7	1314	89.39	106	7.21	23	1.56	2	0.14
24H,0-24	1561	26	1.67	1399	89.62	109	6.98	25	1.6	2	0.13

Am	08:00	07:00 -		08:00 -		08:00 -		10:00 -		11:00 -	
Peak	128	4 -		112 -		13 -		3 -		1 -	
Pm	17:00	17:00 -		17:00 -		17:00 -		16:00 -		18:00 -	
Peak	228	5 -		206 -		17 -		4 -		1 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Thu 06-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	4	0	0	0	3	75	1	25	0	0	0
01:00	1	0	0	0	1	100	0	0	0	0	0
02:00	3	0	0	0	3	100	0	0	0	0	0
03:00	5	0	0	0	5	100	0	0	0	0	0
04:00	12	0	0	0	12	100	0	0	0	0	0
05:00	50	0	0	0	49	98	1	2	0	0	0
06:00	58	1	1.72	50	86.21	4	6.9	2	3.45	1	1.72
07:00	84	2	2.38	71	84.52	8	9.52	3	3.57	0	0
08:00	144	1	0.69	126	87.5	11	7.64	6	4.17	0	0
09:00	71	1	1.41	60	84.51	6	8.45	3	4.23	1	1.41
10:00	66	3	4.55	52	78.79	7	10.61	4	6.06	0	0
11:00	74	1	1.35	57	77.03	10	13.51	5	6.76	1	1.35
12:00	66	1	1.52	57	86.36	5	7.58	2	3.03	1	1.52
13:00	98	1	1.02	87	88.78	9	9.18	0	0	1	1.02
14:00	94	1	1.06	83	88.3	8	8.51	1	1.06	1	1.06
15:00	114	1	0.88	101	88.6	9	7.89	3	2.63	0	0
16:00	160	0	0	148	92.5	11	6.88	1	0.63	0	0
17:00	219	3	1.37	201	91.78	14	6.39	1	0.46	0	0
18:00	117	1	0.85	109	93.16	6	5.13	1	0.85	0	0
19:00	46	0	0	43	93.48	2	4.35	1	2.17	0	0
20:00	22	1	4.55	21	95.45	0	0	0	0	0	0
21:00	28	0	0	27	96.43	0	0	1	3.57	0	0
22:00	35	0	0	34	97.14	1	2.86	0	0	0	0
23:00	2	0	0	0	2	100	0	0	0	0	0

12H,7-19	1307	16	1.22	1152	88.14	104	7.96	30	2.3	5	0.38
16H,6-22	1461	18	1.23	1293	88.5	110	7.53	34	2.33	6	0.41
18H,6-24	1498	18	1.2	1329	88.72	111	7.41	34	2.27	6	0.4
24H,0-24	1573	18	1.14	1402	89.13	113	7.18	34	2.16	6	0.38

Am	08:00	10:00 -		08:00 -		08:00 -		08:00 -		06:00 -	
Peak	144	3 -		126 -		11 -		6 -		1 -	
Pm	17:00	17:00 -		17:00 -		17:00 -		15:00 -		12:00 -	
Peak	219	3 -		201 -		14 -		3 -		1 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Fri 07-Oct-16

Channel: Eastbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	7	0	0	7	100	0	0	0	0	0	0
01:00	2	0	0	1	50	1	50	0	0	0	0
02:00	3	0	0	3	100	0	0	0	0	0	0
03:00	6	0	0	5	83.33	1	16.67	0	0	0	0
04:00	15	0	0	12	80	2	13.33	1	6.67	0	0
05:00	59	0	0	57	96.61	2	3.39	0	0	0	0
06:00	58	1	1.72	52	89.66	2	3.45	3	5.17	0	0
07:00	89	4	4.49	74	83.15	9	10.11	2	2.25	0	0
08:00	130	3	2.31	117	90	10	7.69	0	0	0	0
09:00	60	0	0	51	85	9	15	0	0	0	0
10:00	56	0	0	48	85.71	4	7.14	4	7.14	0	0
11:00	79	0	0	74	93.67	4	5.06	1	1.27	0	0
12:00	114	4	3.51	97	85.09	10	8.77	2	1.75	1	0.88
13:00	118	2	1.69	102	86.44	14	11.86	0	0	0	0
14:00	109	2	1.83	98	89.91	7	6.42	1	0.92	1	0.92
15:00	125	0	0	107	85.6	13	10.4	5	4	0	0
16:00	148	2	1.35	136	91.89	8	5.41	2	1.35	0	0
17:00	161	1	0.62	156	96.89	4	2.48	0	0	0	0
18:00	90	0	0	86	95.56	4	4.44	0	0	0	0
19:00	42	0	0	38	90.48	4	9.52	0	0	0	0
20:00	29	1	3.45	25	86.21	1	3.45	2	6.9	0	0
21:00	24	0	0	23	95.83	1	4.17	0	0	0	0
22:00	42	1	2.38	40	95.24	1	2.38	0	0	0	0
23:00	30	0	0	27	90	2	6.67	1	3.33	0	0

12H,7-19	1279	18	1.41	1146	89.6	96	7.51	17	1.33	2	0.16
16H,6-22	1432	20	1.4	1284	89.66	104	7.26	22	1.54	2	0.14
18H,6-24	1504	21	1.4	1351	89.83	107	7.11	23	1.53	2	0.13
24H,0-24	1596	21	1.32	1436	89.97	113	7.08	24	1.5	2	0.13

Am	08:00	07:00 -		08:00 -		08:00 -		10:00 -		00:00 -	
Peak	130	4 -		117 -		10 -		4 -		0 -	

Pm	17:00	12:00 -		17:00 -		13:00 -		15:00 -		12:00 -	
Peak	161	4 -		156 -		14 -		5 -		1 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Sat 01-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	15	0	0	0	14	93.33	1	6.67	0	0	0
01:00	6	0	0	0	6	100	0	0	0	0	0
02:00	3	0	0	0	3	100	0	0	0	0	0
03:00	3	0	0	0	3	100	0	0	0	0	0
04:00	5	0	0	0	5	100	0	0	0	0	0
05:00	8	0	0	0	8	100	0	0	0	0	0
06:00	25	0	0	0	23	92	1	4	1	4	0
07:00	43	1	2.33	4	37	86.05	4	9.3	0	0	1
08:00	50	2	4	4	44	88	2	4	2	4	0
09:00	87	0	0	0	82	94.25	4	4.6	1	1.15	0
10:00	66	3	4.55	4	55	83.33	5	7.58	3	4.55	0
11:00	55	1	1.82	4	50	90.91	4	7.27	0	0	0
12:00	56	1	1.79	4	51	91.07	4	7.14	0	0	0
13:00	50	0	0	4	48	96	2	4	0	0	0
14:00	55	0	0	4	51	92.73	3	5.45	1	1.82	0
15:00	56	2	3.57	4	51	91.07	1	1.79	2	3.57	0
16:00	36	0	0	4	35	97.22	1	2.78	0	0	0
17:00	41	0	0	4	41	100	0	0	0	0	0
18:00	40	0	0	4	39	97.5	0	0	1	2.5	0
19:00	20	0	0	4	19	95	1	5	0	0	0
20:00	12	0	0	4	12	100	0	0	0	0	0
21:00	12	0	0	4	10	83.33	2	16.67	0	0	0
22:00	16	0	0	4	15	93.75	1	6.25	0	0	0
23:00	26	0	0	4	26	100	0	0	0	0	0

12H,7-19	635	10	1.57	4	584	91.97	30	4.72	10	1.57	1
16H,6-22	704	10	1.42	4	648	92.05	34	4.83	11	1.56	1
18H,6-24	746	10	1.34	4	689	92.36	35	4.69	11	1.47	1
24H,0-24	786	10	1.27	4	728	92.62	36	4.58	11	1.4	1

Am	09:00	10:00 -		09:00 -		10:00 -		10:00 -		07:00 -
Peak	87	3 -		82 -		5 -		3 -		1 -
Pm	12:00	15:00 -		12:00 -		12:00 -		15:00 -		00:00 -
Peak	56	2 -		51 -		4 -		2 -		0 -

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Sun 02-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk %	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	10	0	0	0	10	100	0	0	0	0	0
01:00	0	0 -		0 -	0 -		0 -		0 -		0 -
02:00	3	0	0	0	2	66.67	1	33.33	0	0	0
03:00	1	0	0	0	1	100	0	0	0	0	0
04:00	1	0	0	0	1	100	0	0	0	0	0
05:00	8	0	0	0	7	87.5	1	12.5	0	0	0
06:00	16	0	0	0	16	100	0	0	0	0	0
07:00	30	0	0	0	30	100	0	0	0	0	0
08:00	15	3	20	12	80	0	0	0	0	0	0
09:00	27	2	7.41	25	92.59	0	0	0	0	0	0
10:00	55	1	1.82	50	90.91	2	3.64	2	3.64	0	0
11:00	72	4	5.56	67	93.06	1	1.39	0	0	0	0
12:00	61	6	9.84	51	83.61	4	6.56	0	0	0	0
13:00	63	6	9.52	52	82.54	2	3.17	3	4.76	0	0
14:00	58	4	6.9	54	93.1	0	0	0	0	0	0
15:00	44	6	13.64	36	81.82	2	4.55	0	0	0	0
16:00	43	3	6.98	39	90.7	1	2.33	0	0	0	0
17:00	53	0	0	48	90.57	5	9.43	0	0	0	0
18:00	48	0	0	46	95.83	2	4.17	0	0	0	0
19:00	22	0	0	22	100	0	0	0	0	0	0
20:00	18	0	0	17	94.44	1	5.56	0	0	0	0
21:00	11	0	0	10	90.91	1	9.09	0	0	0	0
22:00	15	1	6.67	13	86.67	0	0	1	6.67	0	0
23:00	17	0	0	17	100	0	0	0	0	0	0

12H,7-19	569	35	6.15	510	89.63	19	3.34	5	0.88	0	0
16H,6-22	636	35	5.5	575	90.41	21	3.3	5	0.79	0	0
18H,6-24	668	36	5.39	605	90.57	21	3.14	6	0.9	0	0
24H,0-24	691	36	5.21	626	90.59	23	3.33	6	0.87	0	0

Am	11:00	11:00 -		11:00 -		10:00 -		10:00 -		00:00 -	
Peak	72	4 -		67 -		2 -		2 -		0 -	

Pm	13:00	12:00 -		14:00 -		17:00 -		13:00 -		00:00 -	
Peak	63	6 -		54 -		5 -		3 -		0 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Mon 03-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	6	0		0	6	100	0	0	0	0	0
01:00	0	0	-		0		0	-	0	-	
02:00	0	0	-		0		0	-	0	-	
03:00	5	0		0	5	100	0	0	0	0	0
04:00	3	0		0	3	100	0	0	0	0	0
05:00	14	0		0	14	100	0	0	0	0	0
06:00	70	0		0	66	94.29	3	4.29	1	1.43	0
07:00	203	2	0.99	187	92.12	9	4.43	4	1.97	1	0.49
08:00	181	3	1.66	165	91.16	8	4.42	5	2.76	0	0
09:00	111	1	0.9	104	93.69	5	4.5	1	0.9	0	0
10:00	56	0		0	52	92.86	2	3.57	2	3.57	0
11:00	55	3	5.45	49	89.09	3	5.45	0	0	0	0
12:00	56	2	3.57	45	80.36	5	8.93	4	7.14	0	0
13:00	58	4	6.9	45	77.59	7	12.07	2	3.45	0	0
14:00	80	3	3.75	69	86.25	6	7.5	2	2.5	0	0
15:00	78	2	2.56	71	91.03	4	5.13	1	1.28	0	0
16:00	102	2	1.96	90	88.24	8	7.84	2	1.96	0	0
17:00	113	2	1.77	105	92.92	6	5.31	0	0	0	0
18:00	72	0		0	68	94.44	2	2.78	2	2.78	0
19:00	35	0		0	29	82.86	4	11.43	2	5.71	0
20:00	28	0		0	28	100	0	0	0	0	0
21:00	28	0		0	28	100	0	0	0	0	0
22:00	31	2	6.45	27	87.1	2	6.45	0	0	0	0
23:00	39	0		0	38	97.44	1	2.56	0	0	0

12H,7-19	1165	24	2.06	1050	90.13	65	5.58	25	2.15	1	0.09
16H,6-22	1326	24	1.81	1201	90.57	72	5.43	28	2.11	1	0.08
18H,6-24	1396	26	1.86	1266	90.69	75	5.37	28	2.01	1	0.07
24H,0-24	1424	26	1.83	1294	90.87	75	5.27	28	1.97	1	0.07

Am	07:00	08:00 -		07:00 -		07:00 -		08:00 -		07:00 -	
Peak	203	3 -		187 -		9 -		5 -		1 -	
Pm	17:00	13:00 -		17:00 -		16:00 -		12:00 -		00:00 -	
Peak	113	4 -		105 -		8 -		4 -		0 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Tue 04-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	15	0	0	0	15	100	0	0	0	0	0
01:00	4	1	25	2	50	1	25	0	0	0	0
02:00	4	0	0	3	75	1	25	0	0	0	0
03:00	5	0	0	3	60	2	40	0	0	0	0
04:00	4	0	0	3	75	1	25	0	0	0	0
05:00	14	0	0	13	92.86	1	7.14	0	0	0	0
06:00	81	0	0	76	93.83	3	3.7	2	2.47	0	0
07:00	235	2	0.85	214	91.06	14	5.96	5	2.13	0	0
08:00	177	2	1.13	157	88.7	12	6.78	4	2.26	2	1.13
09:00	87	2	2.3	81	93.1	3	3.45	1	1.15	0	0
10:00	61	0	0	54	88.52	6	9.84	1	1.64	0	0
11:00	61	3	4.92	46	75.41	9	14.75	2	3.28	1	1.64
12:00	40	0	0	36	90	4	10	0	0	0	0
13:00	68	0	0	62	91.18	3	4.41	3	4.41	0	0
14:00	93	1	1.08	85	91.4	5	5.38	2	2.15	0	0
15:00	101	2	1.98	90	89.11	7	6.93	2	1.98	0	0
16:00	104	4	3.85	93	89.42	6	5.77	1	0.96	0	0
17:00	122	2	1.64	115	94.26	4	3.28	1	0.82	0	0
18:00	85	0	0	82	96.47	3	3.53	0	0	0	0
19:00	34	0	0	31	91.18	2	5.88	1	2.94	0	0
20:00	35	1	2.86	32	91.43	2	5.71	0	0	0	0
21:00	32	1	3.13	31	96.88	0	0	0	0	0	0
22:00	31	0	0	29	93.55	1	3.23	1	3.23	0	0
23:00	38	0	0	37	97.37	1	2.63	0	0	0	0

12H,7-19	1234	18	1.46	1115	90.36	76	6.16	22	1.78	3	0.24
16H,6-22	1416	20	1.41	1285	90.75	83	5.86	25	1.77	3	0.21
18H,6-24	1485	20	1.35	1351	90.98	85	5.72	26	1.75	3	0.2
24H,0-24	1531	21	1.37	1390	90.79	91	5.94	26	1.7	3	0.2

Am	07:00	11:00 -		07:00 -		07:00 -		07:00 -		08:00 -	
Peak	235	3 -		214 -		14 -		5 -		2 -	
Pm	17:00	16:00 -		17:00 -		15:00 -		13:00 -		00:00 -	
Peak	122	4 -		115 -		7 -		3 -		0 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Wed 05-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk %	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	16	0	0	0	15	93.75	0	0	1	6.25	0
01:00	4	0	0	0	4	100	0	0	0	0	0
02:00	7	0	0	0	6	85.71	1	14.29	0	0	0
03:00	4	0	0	0	4	100	0	0	0	0	0
04:00	4	0	0	0	4	100	0	0	0	0	0
05:00	16	1	6.25	13	81.25	2	12.5	0	0	0	0
06:00	79	1	1.27	71	89.87	6	7.59	1	1.27	0	0
07:00	201	2	1	181	90.05	11	5.47	6	2.99	1	0.5
08:00	163	1	0.61	143	87.73	12	7.36	7	4.29	0	0
09:00	95	0	0	88	92.63	4	4.21	3	3.16	0	0
10:00	60	10	16.67	43	71.67	4	6.67	3	5	0	0
11:00	65	1	1.54	56	86.15	7	10.77	1	1.54	0	0
12:00	60	1	1.67	54	90	4	6.67	1	1.67	0	0
13:00	66	2	3.03	61	92.42	3	4.55	0	0	0	0
14:00	92	2	2.17	87	94.57	2	2.17	1	1.09	0	0
15:00	97	3	3.09	83	85.57	8	8.25	3	3.09	0	0
16:00	104	2	1.92	93	89.42	8	7.69	1	0.96	0	0
17:00	120	4	3.33	111	92.5	5	4.17	0	0	0	0
18:00	72	0	0	69	95.83	2	2.78	1	1.39	0	0
19:00	42	0	0	35	83.33	3	7.14	4	9.52	0	0
20:00	28	0	0	27	96.43	0	0	1	3.57	0	0
21:00	28	1	3.57	27	96.43	0	0	0	0	0	0
22:00	39	2	5.13	37	94.87	0	0	0	0	0	0
23:00	33	0	0	33	100	0	0	0	0	0	0

12H,7-19	1195	28	2.34	1069	89.46	70	5.86	27	2.26	1	0.08
16H,6-22	1372	30	2.19	1229	89.58	79	5.76	33	2.41	1	0.07
18H,6-24	1444	32	2.22	1299	89.96	79	5.47	33	2.29	1	0.07
24H,0-24	1495	33	2.21	1345	89.97	82	5.48	34	2.27	1	0.07

Am	07:00	10:00 -		07:00 -		08:00 -		08:00 -		07:00 -	
Peak	201	10 -		181 -		12 -		7 -		1 -	
Pm	17:00	17:00 -		17:00 -		15:00 -		19:00 -		00:00 -	
Peak	120	4 -		111 -		8 -		4 -		0 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Thu 06-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	16	0	0	0	15	93.75	1	6.25	0	0	0
01:00	4	0	0	0	2	50	1	25	1	25	0
02:00	4	0	0	0	4	100	0	0	0	0	0
03:00	2	0	0	0	2	100	0	0	0	0	0
04:00	5	0	0	0	4	80	0	0	1	20	0
05:00	15	1	6.67	12	80	2	13.33	0	0	0	0
06:00	77	1	1.3	70	90.91	4	5.19	2	2.6	0	0
07:00	211	2	0.95	196	92.89	9	4.27	3	1.42	1	0.47
08:00	178	3	1.69	152	85.39	18	10.11	5	2.81	0	0
09:00	84	0	0	76	90.48	8	9.52	0	0	0	0
10:00	56	1	1.79	49	87.5	3	5.36	2	3.57	1	1.79
11:00	57	2	3.51	47	82.46	6	10.53	2	3.51	0	0
12:00	51	1	1.96	44	86.27	5	9.8	1	1.96	0	0
13:00	55	0	0	46	83.64	5	9.09	4	7.27	0	0
14:00	93	1	1.08	82	88.17	10	10.75	0	0	0	0
15:00	84	1	1.19	77	91.67	6	7.14	0	0	0	0
16:00	99	3	3.03	89	89.9	7	7.07	0	0	0	0
17:00	124	2	1.61	114	91.94	6	4.84	2	1.61	0	0
18:00	68	2	2.94	64	94.12	0	0	1	1.47	1	1.47
19:00	42	0	0	40	95.24	2	4.76	0	0	0	0
20:00	34	0	0	31	91.18	3	8.82	0	0	0	0
21:00	28	1	3.57	27	96.43	0	0	0	0	0	0
22:00	34	1	2.94	33	97.06	0	0	0	0	0	0
23:00	39	0	0	37	94.87	1	2.56	1	2.56	0	0

12H,7-19	1160	18	1.55	1036	89.31	83	7.16	20	1.72	3	0.26
16H,6-22	1341	20	1.49	1204	89.78	92	6.86	22	1.64	3	0.22
18H,6-24	1414	21	1.49	1274	90.1	93	6.58	23	1.63	3	0.21
24H,0-24	1460	22	1.51	1313	89.93	97	6.64	25	1.71	3	0.21

Am	07:00	08:00 -		07:00 -		08:00 -		08:00 -		07:00 -	
Peak	211	3 -		196 -		18 -		5 -		1 -	
Pm	17:00	16:00 -		17:00 -		14:00 -		13:00 -		18:00 -	
Peak	124	3 -		114 -		10 -		4 -		1 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Class Report FHWA

Fri 07-Oct-16

Channel: Westbound

Time Begin	Total Vol.	Bin 1 Motorcyclk	Bin 1 %	Bin 2 Cars	Bin 2 %	Bin 3 LGV	Bin 3 %	Bin 4 HGV	Bin 4 %	Bin 5 Buses	Bin 5 %
00:00	9	0	0	9	100	0	0	0	0	0	0
01:00	7	0	0	6	85.71	0	0	1	14.29	0	0
02:00	3	0	0	3	100	0	0	0	0	0	0
03:00	4	0	0	2	50	1	25	1	25	0	0
04:00	4	0	0	4	100	0	0	0	0	0	0
05:00	20	1	5	17	85	1	5	1	5	0	0
06:00	63	1	1.59	58	92.06	4	6.35	0	0	0	0
07:00	195	3	1.54	179	91.79	9	4.62	4	2.05	0	0
08:00	141	0	0	126	89.36	10	7.09	4	2.84	1	0.71
09:00	72	0	0	65	90.28	6	8.33	1	1.39	0	0
10:00	62	1	1.61	51	82.26	8	12.9	2	3.23	0	0
11:00	53	1	1.89	45	84.91	7	13.21	0	0	0	0
12:00	57	0	0	49	85.96	7	12.28	1	1.75	0	0
13:00	68	4	5.88	62	91.18	2	2.94	0	0	0	0
14:00	105	4	3.81	95	90.48	5	4.76	1	0.95	0	0
15:00	92	3	3.26	79	85.87	10	10.87	0	0	0	0
16:00	116	0	0	106	91.38	8	6.9	2	1.72	0	0
17:00	118	3	2.54	107	90.68	8	6.78	0	0	0	0
18:00	91	0	0	87	95.6	4	4.4	0	0	0	0
19:00	38	0	0	35	92.11	3	7.89	0	0	0	0
20:00	40	0	0	39	97.5	0	0	1	2.5	0	0
21:00	26	0	0	24	92.31	2	7.69	0	0	0	0
22:00	43	1	2.33	41	95.35	1	2.33	0	0	0	0
23:00	36	0	0	35	97.22	0	0	1	2.78	0	0

12H,7-19	1170	19	1.62	1051	89.83	84	7.18	15	1.28	1	0.09
16H,6-22	1337	20	1.5	1207	90.28	93	6.96	16	1.2	1	0.07
18H,6-24	1416	21	1.48	1283	90.61	94	6.64	17	1.2	1	0.07
24H,0-24	1463	22	1.5	1324	90.5	96	6.56	20	1.37	1	0.07

Am	07:00	07:00 -		07:00 -		08:00 -		07:00 -		08:00 -	
Peak	195	3 -		179 -		10 -		4 -		1 -	
Pm	17:00	13:00 -		17:00 -		15:00 -		16:00 -		00:00 -	
Peak	118	4 -		107 -		10 -		2 -		0 -	

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Vehicle Count Report

Week Begin: 01-Oct-16

Channel: Eastbound

Time	Sat	Sun	Mon	Tue	Wed	Thu	Fri	5-Day	7-Day
Begin	01/10/2016	02/10/2016	03/10/2016	04/10/2016	05/10/2016	06/10/2016	07/10/2016	Av	Av
00:00		8	10	3	4	7	4	7	5
01:00		2	4	2	6	2	1	2	3
02:00		1	3	3	2	4	3	3	3
03:00		2	1	3	5	5	5	6	5
04:00		3	3	11	10	15	12	15	13
05:00		24	14	53	50	58	50	59	54
06:00		20	13	52	80	60	58	58	62
07:00		17	10	104	136	96	84	89	102
08:00		31	16	118	325	128	144	130	169
09:00		42	27	64	298	71	71	60	113
10:00		49	39	66	79	61	66	56	66
11:00		55	46	56	81	57	74	79	69
12:00		52	45	50	59	51	66	114	68
13:00		59	64	87	82	82	98	118	93
14:00		70	69	75	79	97	94	109	91
15:00		62	78	87	115	113	114	125	111
16:00		50	69	180	155	172	160	148	163
17:00		61	51	212	229	228	219	161	210
18:00		30	41	111	128	130	117	90	115
19:00		33	30	49	43	45	46	42	45
20:00		13	17	29	27	18	22	29	25
21:00		15	11	20	20	28	28	24	24
22:00		34	26	32	38	25	35	42	34
23:00		19	3	7	9	8	2	30	11
12H,7-19	578	555	1210	1766	1286	1307	1279	1370	1140
16H,6-22	659	626	1360	1936	1437	1461	1432	1525	1273
18H,6-24	712	655	1399	1983	1470	1498	1504	1571	1317
24H,0-24	752	690	1474	2060	1561	1573	1596	1653	1387
Am	11:00	11:00	08:00	08:00	08:00	08:00	08:00	-	-
Peak	55	46	118	325	128	144	130	169	135
Pm	14:00	15:00	17:00	17:00	17:00	17:00	17:00	-	-
Peak	70	78	212	229	228	219	161	210	171

K & M TRAFFIC SURVEYS

Created at 13:40:57 on 17 Oct 2016

Site No: 20835002

Grid Reference: SP47939,82089

Site 2, Lutterworth Road, Pailton (Speed Warning)

Vehicle Count Report

Week Begin: 01-Oct-16

Channel: Westbound

Time	Sat	Sun	Mon	Tue	Wed	Thu	Fri	5-Day	7-Day
Begin	01/10/2016	02/10/2016	03/10/2016	04/10/2016	05/10/2016	06/10/2016	07/10/2016	Av	Av
00:00	15	10	6	15	16	16	9	12	12
01:00	6	0	0	4	4	4	7	4	4
02:00	3	3	0	4	7	4	3	4	3
03:00	3	1	5	5	4	2	4	4	3
04:00	5	1	3	4	4	5	4	4	4
05:00	8	8	14	14	16	15	20	16	14
06:00	25	16	70	81	79	77	63	74	59
07:00	43	30	203	235	201	211	195	209	160
08:00	50	15	181	177	163	178	141	168	129
09:00	87	27	111	87	95	84	72	90	80
10:00	66	55	56	61	60	56	62	59	59
11:00	55	72	55	61	65	57	53	58	60
12:00	56	61	56	40	60	51	57	53	54
13:00	50	63	58	68	66	55	68	63	61
14:00	55	58	80	93	92	93	105	93	82
15:00	56	44	78	101	97	84	92	90	79
16:00	36	43	102	104	104	99	116	105	86
17:00	41	53	113	122	120	124	118	119	99
18:00	40	48	72	85	72	68	91	78	68
19:00	20	22	35	34	42	42	38	38	33
20:00	12	18	28	35	28	34	40	33	28
21:00	12	11	28	32	28	28	26	28	24
22:00	16	15	31	31	39	34	43	36	30
23:00	26	17	39	38	33	39	36	37	33
12H,7-19	635	569	1165	1234	1195	1160	1170	1185	1018
16H,6-22	704	636	1326	1416	1372	1341	1337	1358	1162
18H,6-24	746	668	1396	1485	1444	1414	1416	1431	1224
24H,0-24	786	691	1424	1531	1495	1460	1463	1475	1264
Am	09:00	11:00	07:00	07:00	07:00	07:00	07:00	-	-
Peak	87	72	203	235	201	211	195	209	172
Pm	15:00	13:00	17:00	17:00	17:00	17:00	17:00	-	-
Peak	56	63	113	122	120	124	118	119	102

K & M TRAFFIC SURVEYS

Created at 13:40:57 on 17 Oct 2016

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendices J - K

October 2016

Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix J – HGV Routing Plan

Magna Park HGV Routing Plan

Key:

 Area subject to Magna Park Routing Agreement

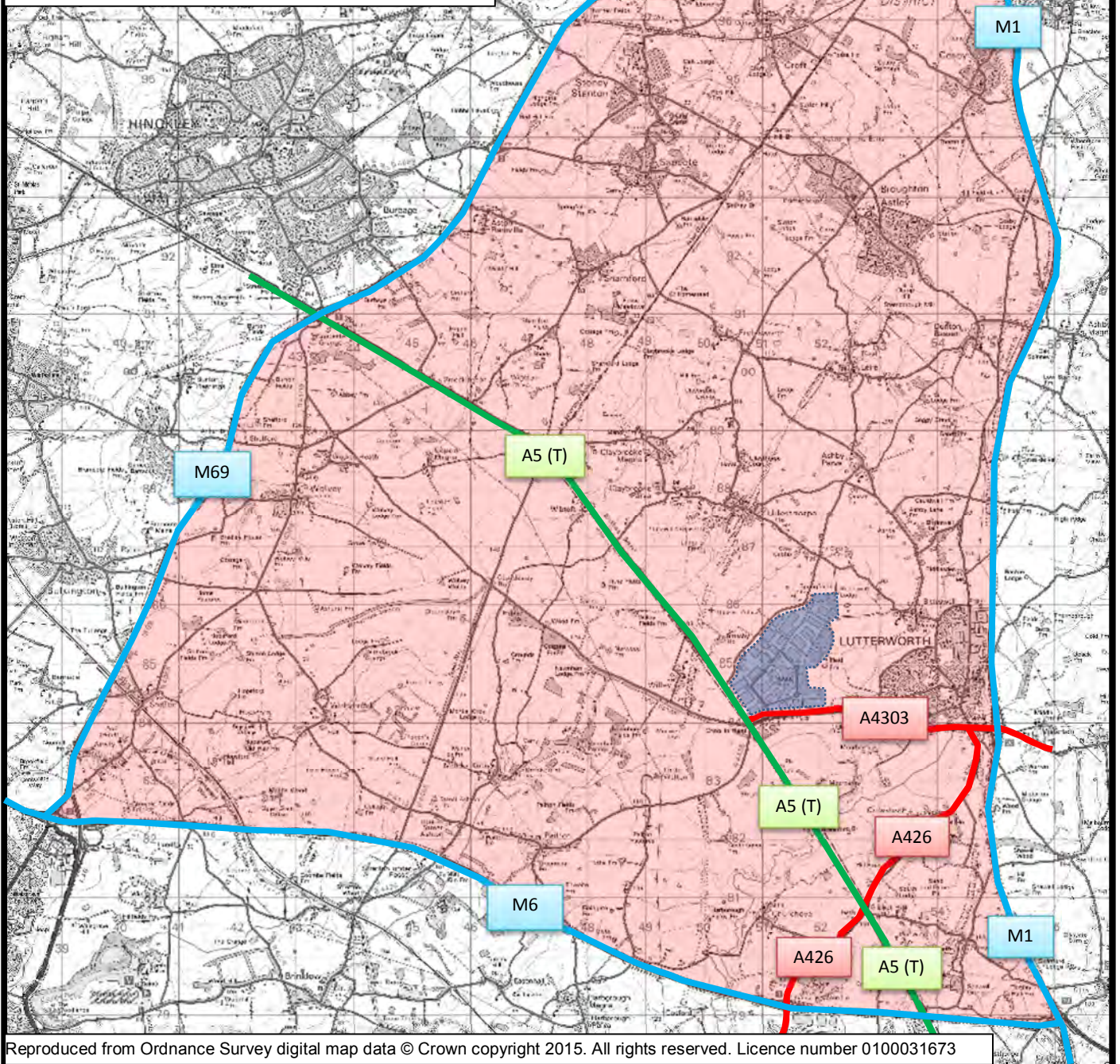
 Magna Park

 Motorway

Permitted routes for Magna Park HGV's within area subject to amended Routing Agreement (2016):

 Trunk Road

 A Road



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Magna Park Extension: Hybrid Application

Addendum Transport Assessment

Appendix K – Location of Bus Stops at Magna Park

MAGNA PARK

LUTTERWORTH

Magna Park Management
The Estate Office
Harrier Parkway
Magna Park, Lutterworth
Leicester LE17 4XT
Tel: 01455 558777



BUS STOPS
 BUS ROUTE



IDI Gazeley

Brookfield Logistics Properties

APPENDIX 1 to Addendum ES Section 7:Air Quality
TRAFFIC DATA

Table A1.1 Summary of Traffic Data

Road Link	2021 Baseline		2021 With Scheme		2031 Baseline		2031 With Scheme		2031 With Scheme + Symmetry Park	
	AADT	%HDV	AADT	%HDV	AADT	%HDV	AADT	%HDV	AADT	%HDV
A4303	24,594	19.5	28,672	20.3	24,594	19.5	28,672	20.3	32,550	21.7
Coventry Road	9,833	1.1	10,897	1.0	9,833	1.1	10,897	1.0	11,747	2.3
A5 North of A4303	23,471	15.0	28,534	15.8	23,471	15.0	28,534	15.8	29,797	16.3
A5 South of A4303	22,478	18.3	23,671	18.6	22,478	18.3	23,671	18.6	25,099	20.0
Coal Pit Lane	5,301	4.6	6,078	4.0	5,301	4.6	6,078	4.0	6,738	6.0
B4027	5,434	4.6	6,542	4.3	5,434	4.6	6,542	4.3	6,807	5.3

Note: The 2021 and 2031 Baseline Flows include all committed developments (including DHL Supply Chain).

APPENDIX 2 to Addendum ES Section 7: Air Quality
ERRATA TABLES TO HYBRID APPLICATION ES – CHAPTER 10

Table 10.15 Predicted Impacts on Annual Mean Nitrogen Dioxide Concentrations in 2021 and 2031 ($\mu\text{g}/\text{m}^3$)

Receptor						
	2021			2031		
	Without Dev	With Dev	Impact Descriptor	Without Dev	With Dev	Impact Descriptor
1	28.0	31.7	Moderate Adverse	23.2	25.4	Slight Adverse
2	26.2	29.5	Slight Adverse	22.0	24.2	Negligible
3	22.4	25.0	Slight Adverse	19.6	21.2	Negligible
4	25.1	28.3	Slight Adverse	21.4	23.3	Negligible
5	19.3	21.4	Negligible	17.4	18.7	Negligible
7	14.0	14.7	Negligible	13.7	14.2	Negligible
8	11.8	12.3	Negligible	12.5	12.8	Negligible
9	15.6	16.5	Negligible	16.8	17.4	Negligible
10	21.1	23.4	Slight Adverse	20.3	21.8	Negligible
11	18.0	19.6	Negligible	18.0	19.1	Negligible
12	19.7	20.6	Negligible	17.7	18.2	Negligible
13	16.7	18.0	Negligible	16.2	17.0	Negligible
14	17.5	19.0	Negligible	16.8	17.6	Negligible
15	17.7	18.5	Negligible	17.2	17.7	Negligible
16	15.9	17.1	Negligible	16.0	16.7	Negligible
Objective	40		-	40		-

NB: The only changes are to the 2031 With Development Concentrations. Receptor 6 (Emmanuel Cottage) will be demolished as part of the DHL Supply Chain development.

Table 10.16 Predicted Annual Mean PM₁₀ Impacts (µg/m³)

Receptor	2021			2031		
	Without Dev	With Dev	Impact Descriptor	Without Dev	With Dev	Impact Descriptor
1	21.3	22.6	Negligible	21.0	22.3	Negligible
2	20.8	21.9	Negligible	20.5	21.6	Negligible
3	19.7	20.5	Negligible	19.4	20.2	Negligible
4	20.5	21.5	Negligible	20.2	21.2	Negligible
5	19.1	19.7	Negligible	18.9	19.5	Negligible
7	17.0	17.1	Negligible	16.8	16.9	Negligible
8	16.3	16.4	Negligible	16.1	16.2	Negligible
9	17.0	17.2	Negligible	16.8	17.0	Negligible
10	18.1	18.5	Negligible	17.8	18.2	Negligible
11	17.0	17.3	Negligible	16.8	17.1	Negligible
12	18.5	18.8	Negligible	18.3	18.5	Negligible
13	18.0	18.4	Negligible	17.8	18.2	Negligible
14	18.2	18.7	Negligible	18.0	18.5	Negligible
15	16.8	16.9	Negligible	16.5	16.7	Negligible
16	18.1	18.5	Negligible	17.9	18.3	Negligible
Objective	40		-	40		-

NB: The only changes are to the 2031 With Development Concentrations. Receptor 6 (Emmanuel Cottage) will be demolished as part of the DHL Supply Chain development.

Table 10.17 Predicted Annual Mean PM_{2.5} Impacts (µg/m³)

Receptor	2021			2031		
	Without Dev	With Dev	Impact Descriptor	Without Dev	With Dev	Impact Descriptor
1	13.1	13.8	Negligible	12.8	13.5	Negligible
2	12.8	13.4	Negligible	12.5	13.1	Negligible
3	12.2	12.6	Negligible	11.9	12.3	Negligible
4	12.6	13.2	Negligible	12.3	12.9	Negligible
5	11.7	12.0	Negligible	11.4	11.8	Negligible
7	10.6	10.6	Negligible	10.4	10.4	Negligible
8	10.3	10.4	Negligible	10.1	10.2	Negligible
9	10.8	10.9	Negligible	10.6	10.7	Negligible
10	11.4	11.6	Negligible	11.1	11.4	Negligible
11	10.9	11.1	Negligible	10.7	10.9	Negligible
12	11.6	11.7	Negligible	11.4	11.5	Negligible
13	11.3	11.6	Negligible	11.1	11.3	Negligible
14	11.5	11.7	Negligible	11.2	11.5	Negligible
15	10.9	11.0	Negligible	10.7	10.8	Negligible
16	11.3	11.5	Negligible	11.0	11.2	Negligible
Objective	25		-	25		-

NB: The only changes are to the 2031 With Development Concentrations. Receptor 6 (Emmanuel Cottage) will be demolished as part of the DHL Supply Chain development.

Table 10.19 Predicted Impacts on Annual Mean Nitrogen Dioxide Concentrations ($\mu\text{g}/\text{m}^3$) – With Symmetry Park

Receptor	2031		
	Annual Mean Nitrogen Dioxide ($\mu\text{g}/\text{m}^3$)		
	Without Scheme	With Scheme + Symmetry Park	Impact Descriptor
1	23.2	26.3	Slight Adverse
2	22.0	24.8	Slight Adverse
3	19.6	21.7	Negligible
4	21.4	23.9	Slight Adverse
5	17.4	19.0	Negligible
7	13.7	14.6	Negligible
8	12.5	13.0	Negligible
9	16.8	17.7	Negligible
10	20.3	22.5	Negligible
11	18.0	19.5	Negligible
12	17.7	18.7	Negligible
13	16.2	17.7	Negligible
14	16.8	18.5	Negligible
15	17.2	18.3	Negligible
16	16.0	17.3	Negligible
Objective	40		-

Receptor 6 (Emmanuel Cottage) will be demolished as part of the DHL Supply Chain development.

Table 10.20 Predicted Annual Mean PM₁₀ Impacts (µg/m³) – With Symmetry Park

Receptor	2031		
	Annual Mean PM ₁₀ (µg/m ³)		
	Without Development	With Dev + Symmetry Park	Impact Descriptor
1	21.0	22.7	Negligible
2	20.5	21.9	Negligible
3	19.4	20.5	Negligible
4	20.2	21.5	Negligible
5	18.9	19.7	Negligible
7	16.8	17.1	Negligible
8	16.1	16.2	Negligible
9	16.8	17.1	Negligible
10	17.8	18.5	Negligible
11	16.8	17.3	Negligible
12	18.3	18.8	Negligible
13	17.8	18.6	Negligible
14	18.0	19.0	Negligible
15	16.5	16.9	Negligible
16	17.9	18.7	Negligible
Objective	40		-

Receptor 6 (Emmanuel Cottage) will be demolished as part of the DHL Supply Chain development.

Table 10.21 Predicted Annual Mean PM_{2.5} Impacts (µg/m³) – With Symmetry Park

Receptor	2031		
	Annual Mean PM _{2.5} (µg/m ³)		
	Without Development	With Dev + Symmetry Park	Impact Descriptor
1	12.8	13.7	Negligible
2	12.5	13.3	Negligible
3	11.9	12.5	Negligible
4	12.3	13.1	Negligible
5	11.4	11.9	Negligible
7	10.4	10.5	Negligible
8	10.1	10.2	Negligible
9	10.6	10.7	Negligible
10	11.1	11.5	Negligible
11	10.7	11.0	Negligible
12	11.4	11.6	Negligible
13	11.1	11.5	Negligible
14	11.2	11.8	Negligible
15	10.7	10.9	Negligible
16	11.0	11.4	Negligible
Objective	25		-

Receptor 6 (Emmanuel Cottage) will be demolished as part of the DHL Supply Chain development.

About IDI Gazeley

IDI Gazeley is one of the world's leading investors and developers of logistics warehouses and distribution parks with 60 million square feet of premier assets under management and additional prime land sites to develop another 45 million square feet of distribution facilities near major markets and transport routes in North America, Europe and China.

For more information, please visit:

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MAGNA PARK Extension

HYBRID PLANNING APPLICATION:

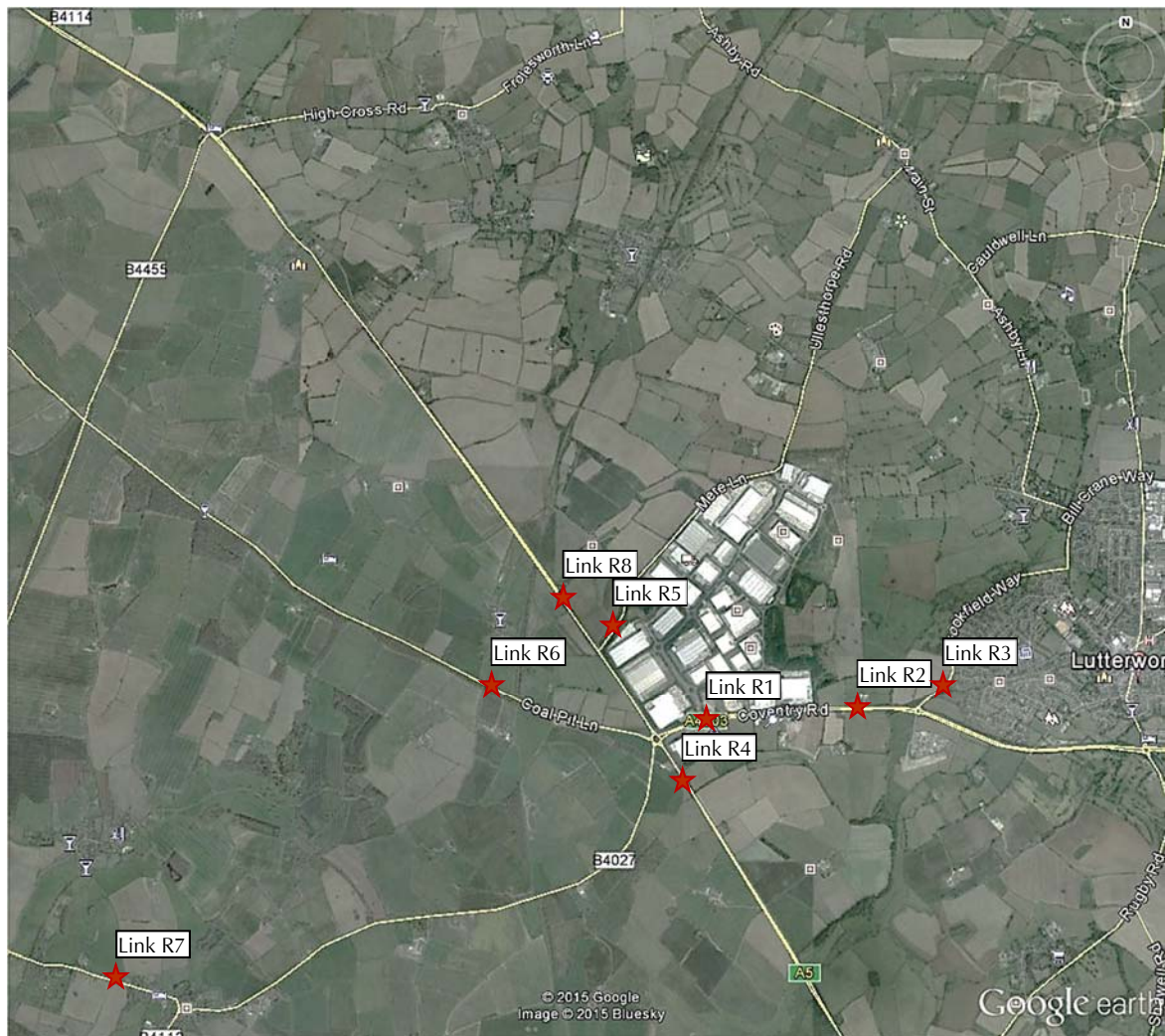
15/01531/OUT

**Addendum to the Environmental Statement –
the Grant of Planning Permission for DHL Supply Chain 15/00919/FUL**

Volume 3B.3: Appendices D.4A Traffic Assessment Locations and D.5A Road
Traffic Noise Assessment to the Addendum ES Section 5: Noise and Vibration

1 November 2016

Appendix D.4A



Title: Traffic Assessment Locations

Project: Magna Park Extension: Hybrid Application

Date: October 2016

Scale: Not to scale

Appendix D.5A

Subject: Road Traffic Noise Assessment
Project: Magna Park Extension: Hybrid Application
Date: October 2016

Road Link Descriptions

Road Link	Road Link Description
Link R1	Hunter Boulevard
Link R2	A4303 East of Magna Park
Link R3	Coventry Road
Link R4	A5 South of A4303
Link R5	Mere Lane
Link R6	Coal Pit Lane
Link R7	B4027 West of Pailton
Link R8	A5 North of Mere Lane



Schedule 1 (Short Term)

2019 Do-Minimum - with committed development only

versus

2019 Do-Something - with proposed development and committed development

Road Link	Description	18-hour traffic flow		Change in Noise Level, dB $L_{A10, 18 \text{ hour}}$	Effect Magnitude
		2019 Do-Min	2019 Do-Som		
R1	Hunter Boulevard	17,112	18,238	0.3	Negligible
R2	A4303 East of Magna Park	22,009	23,135	0.3	Negligible
R3	Coventry Road	8,478	8,768	0.1	Negligible
R4	A5 South of A4303	17,607	17,935	0.1	Negligible
R5	Mere Lane	No Sensitivities along relevant section of road corridor			
R6	Coal Pit Lane	4,590	4,800	0.2	Negligible
R7	B4027 West of Pailton	5,198	5,505	0.2	Negligible
R8	A5 North of Mere Lane	18,796	19,270	-0.1	Negligible



Schedule 2 (Long Term)

2019 Do-Minimum - with committed development only

versus

2034 Do-Something - with proposed and committed development

Road Link	Description	18-hour traffic flow		Change in Noise Level, dB $L_{A10, 18 \text{ hour}}$	Effect Magnitude
		2019 Do-Min	2034 Do-Som		
R1	Hunter Boulevard	17,112	17,237	0.0	None
R2	A4303 East of Magna Park	22,009	26,571	0.7	Negligible
R3	Coventry Road	8,478	10,745	1.0	Negligible
R4	A5 South of A4303	17,607	22,968	1.0	Negligible
R5	Mere Lane	No Sensitivities along relevant section of road corridor			
R6	Coal Pit Lane	4,590	5,620	0.9	Negligible
R7	B4027 West of Pailton	5,198	5,944	0.6	Negligible
R8	A5 North of Mere Lane	18,796	24,254	0.8	Negligible

**Schedule 2A (Long Term)****2019 Do-Minimum - with committed development only***versus***2034 Do-Something - with proposed development and committed development and Symmetry Park**

Road Link	Description	18-hour traffic flow		Change in Noise Level, dB $L_{A10, 18 \text{ hour}}$	Effect Magnitude
		2019 Do-Min	2034 Do-Som		
R1	Hunter Boulevard	17,112	18,727	0.4	Negligible
R2	A4303 East of Magna Park	22,009	33,996	2.1	Negligible
R3	Coventry Road	8,478	12,562	1.9	Negligible
R4	A5 South of A4303	17,607	25,380	1.6	Negligible
R5	Mere Lane	No Sensitivities along relevant section of road corridor			
R6	Coal Pit Lane	4,590	7,061	2.0	Negligible
R7	B4027 West of Pailton	5,198	7,333	1.6	Negligible
R8	A5 North of Mere Lane	18,796	30,726	2.2	Negligible



Schedule 3 (Long Term)

2034 Do-Minimum - with committed development only

versus

2034 Do-Something - with proposed development and committed development

Road Link	Description	18-hour traffic flow		Change in Noise Level, dB $L_{A10, 18 \text{ hour}}$	Effect Magnitude
		2034 Do-Min	2034 Do-Som		
R1	Hunter Boulevard	17,237	18,727	0.4	Negligible
R2	A4303 East of Magna Park	26,571	30,800	0.7	Negligible
R3	Coventry Road	10,745	11,862	0.4	Negligible
R4	A5 South of A4303	22,968	24,204	0.3	Negligible
R5	Mere Lane	No Sensitivities along relevant section of road corridor			
R6	Coal Pit Lane	5,620	6,517	0.5	Negligible
R7	B4027 West of Pailton	5,944	7,113	0.7	Negligible
R8	A5 North of Mere Lane	24,254	29,685	0.9	Negligible

**Schedule 3A (Long Term)****2034 Do-Minimum - with committed development only*****versus*****2034 Do-Something - with proposed development and committed development and Symmetry Park**

Road Link	Description	18-hour traffic flow		Change in Noise Level, dB $L_{A10, 18 \text{ hour}}$	Effect Magnitude
		2034 Do-Min	2034 Do-Som		
R1	Hunter Boulevard	17,237	18,727	0.4	Negligible
R2	A4303 East of Magna Park	26,571	33,996	1.3	Negligible
R3	Coventry Road	10,745	12,562	0.9	Negligible
R4	A5 South of A4303	22,968	25,380	0.5	Negligible
R5	Mere Lane	No Sensitivities along relevant section of road corridor			
R6	Coal Pit Lane	5,620	7,061	1.2	Negligible
R7	B4027 West of Pailton	5,944	7,333	1.0	Negligible
R8	A5 North of Mere Lane	24,254	30,726	1.1	Negligible

 End of Section

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