HILDERSLEY FARM, ROSS-ON-WYE

TRANSPORT ASSESSMENT

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13 February 2015

Our Ref: RS/AW/AG/sb/ls/JNY8251-02a

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1 INTRODUCTION

Context

1.1 This Transport Assessment report assesses the transport implications of a proposed residential development on land to the west of Hildersley Farm, Ross-on-Wye. The site has been identified in Herefordshire Local Plan Core Strategy Pre-Submission Publication (May 2014) as a suitable location for a strategic urban extension of Ross-on-Wye, suitable for residential development of around 200 new homes.

1.2 The site is located to the east of Ross-on-Wye, south of the A40 Gloucester Road and west of Hildersley Business Park as indicated on **Figure 1**. The site area extends westwards to the south of the existing residential development named The Mead.

1.3 The proposed development is expected to comprise approximately 250 residential dwellings over an 11 hectare area. Vehicular access is proposed from the A40, upgrading the existing western access to Hildersley Farm. Hildersley Farm itself and the Business Park do not form part of the application site.

1.4 Changes to the A40 in the vicinity of the site to incorporate a signalised pedestrian crossing and upgraded bus stops are already proposed as part of the planning application for employment on land at Model Farm to the north (planning application ref P133411/CD). There is the potential to provide additional connectivity for pedestrians and cyclists from the north-west corner of the site to link to the A40 and to Ross-on-Wye town centre.

Assessment Methodology

1.5 Research undertaken in connection with this assessment has included:

- Site visits to assess local infrastructure and facilities;
- Review of national, regional and local government policy guidance;
- Assessment of existing public transport provision, timetable information, bus routes and rail services;
- Assessment of current infrastructure provision for pedestrians and cyclists;
- Consideration of appropriate measures to encourage modal shift away from the private car and towards the use of foot, cycle and public transport;
- Assessment of the road safety record on the local highway network;
- Discussion about the development proposals and the scope of this Transport Assessment with the local Highway Authority;
- Assessment of existing and traffic levels on the local highway network and consideration of the traffic likely to be generated from consented developments;

- Assessment of the operation and capacity of junctions on the local and wider primary highway network; and
- A quantitative review of the predicted increase in vehicle numbers on the Strategic Road Network (SRN) as a result of the development proposals.

This Transport Assessment has had regard to the advice contained within the Planning Practice Guidance – 'Travel plans, transport assessments and statements in decision-taking' (March 2014).

Scope and Report Outline

1.6 The scope of the Transport Assessment is based on discussions with Herefordshire County Council and these discussions are detailed within **Annex 1**. This includes trip generation rates, trip distribution methodology and junctions for which capacity assessment is requested.

1.7 This report incorporates the following sections:

1. An introduction;
2. An appraisal of relevant national and local transport policy;
3. A review of the existing situation and conditions around the site including opportunities to travel by sustainable modes of travel, analysis of personal injury accident data on the local road network, analysis of existing traffic flows and the capacity of junctions on the local highway network;
4. Details of the proposed development, access and a proposed speed limit reduction on the A40 adjacent to the site;
5. A Traffic Impact Assessment, including trip generation, distribution and assessment of future year operation of junctions on the local highway network; and
6. The summary and conclusions which can be drawn from the Assessment.

Conclusions

1.8 The report concludes that the proposals comply with both local and national policy in relation to transport. Safe and appropriate means of access can be provided by all modes of travel to facilitate residential development on the site. The predicted vehicular trips resulting from the proposed development can be adequately accommodated on the surrounding local highway network and the Strategic Road Network with minimal impact. The development is sustainable and prioritises movement on foot and bicycle in terms of its concept layout and links to surrounding facilities and proposed employment areas.

1.9 The site benefits from good access to public transport: the nearest bus stops are located on the A40 Gloucester Road immediately east of the proposed vehicular access and these stops are proposed to be upgraded, as part of the Model Farm employment development to the north, to incorporate shelters and timetable provision. A Travel Plan is proposed to encourage sustainable modes of travel and to mitigate tpotential transport impacts of the proposals. The overall impact of the development would fall far short of '*severe*' as set-out in the National Planning Policy Framework and therefore there is no reason for preventing development from coming forward for transport reasons.

2 APPRAISAL OF RELEVANT POLICY AND GUIDANCE

Introduction

2.1 This section details the transport policy documents against which the development proposals will be considered from national and local guidelines.

National Policy

White Paper – 'Creating Growth, Cutting Carbon' (January 2011)

2.2 The white paper has overall objectives to "create growth in the economy, and tackle climate change by cutting carbon emissions". The white paper notes (in paragraph 4) that two-thirds of journeys are under five miles and that these could easily be undertaken by cycling, walking or using public transport.

2.3 The white paper confirms the Government's commitment to sustainable local small-scale schemes to enable people to make more sustainable transport choices (paragraphs 9 to 11).

National Planning Policy Framework (March 2012)

2.4 The National Planning Policy Framework (NPPF) was adopted in March 2012 and sets out national policy for delivering sustainable growth and development. The NPPF aims to make the planning system less complex and more accessible.

2.5 Paragraph 14 of the NPPF states that there should be a "**presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking**".

2.6 The NPPF sets out the Government's planning policies for England and how these are expected to be applied. In terms of transport the objectives outlined in the NPPF are;

- The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel (Paragraph 29); and
- Encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion. In preparing Local Plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport (Paragraph 30)

2.7 One of the 'Core Planning Principles' set out in paragraph 17 of the NPPF is that planning should:

> **"Actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable"**

2.8 When determining planning applications Paragraph 32 of the NPPF requires that all developments which generate a significant amount of movement are supported by a Transport Statement or Transport Assessment. Plans and decisions should consider whether:

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

2.9 Whilst the NPPF provides no definition of what a 'severe' impact would be, it is clear that *de minimis* impacts are not a reason for preventing development from coming forward for transport reasons.

2.10 Paragraph 34 of the NPPF states that "**All developments which generate significant amounts of movement should be required to provide a Travel Plan**."

2.11 Paragraph 35 of the NPPF emphasises the importance of protecting and exploiting opportunities for the use of sustainable transport modes for the movement of goods or people:

- accommodate the efficient delivery of goods and supplies;
- give priority to pedestrian and cycle movements, and have access to high quality public transport facilities; and
- create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians.

2.12 The NPPF states that local authorities should consider the accessibility of a development alongside the type, mix and use of the development as well as looking at local car ownership and the overall need to reduce the use of high emission vehicles when determining planning applications.

Planning Practice Guidance (March 2014)

2.13 The National Planning Policy Guidance (PPG) was released in March 2014. The *Planning Practice Guidance - Travel Plans, Transport Assessments and Statements in Decision-Taking* provides a concise report on the use and importance of Transport Assessments / Statements and Travel Plans.

2.14 With regard to whether to provide a Transport Assessment, Transport Statement or no assessment, the PPG states that local planning authorities, developers, relevant transport authorities, and neighbourhood planning organisations should agree what evaluation is needed in each instance. Accordingly, the scope of this Transport Assessment has been discussed and agreed with Herefordshire County Council. The NPPF states that Transport Assessments / Statements and Travel Plans should be proportionate to the size and scope of the proposed development, be tailored to particular local circumstances and be established at the earliest practicable possible stage of a development proposal.

2.15 The PPG states that Transport Assessments / Statements and Travel Plans can positively contribute to encouraging sustainable travel, lessening traffic generation and its detrimental impacts and reducing carbon emissions and climate impact. In doing so they can create accessible, connected, inclusive communities with improved road safety, health and quality of life.

Circular 02/2013: The Strategic Road Network and the Delivery of Sustainable Development

2.16 DfT Circular 02/2013 was released in September 2013. The Circular sets out the way in which the Highways Agency will engage with communities and the development industry to deliver sustainable development and economic growth whilst safeguarding the primary function and purpose of the strategic road network. Circular 02/2013 replaces Circular 02/2007 and 01/2008.

2.17 Circular 02/2013 states that "**the Highways Agency supports the economy through the provision of a safe and reliable strategic road network, which allows for the efficient movement of people and goods**". Similarly to the NPPF, Circular 02/2013 states that "**development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe**".

2.18 Similarly to the previous Circular 02/2007, the replacement Circular 02/2013 refers to the need to compare forecast demand to the ability of the existing network to accommodate traffic over a period of ten years after the date of registration of a planning application. As with other national and local policy, the Circular has a focus on managing down the traffic impacts of proposals to "**support the promotion of sustainable transport and the development of accessible sites**". The Circular encourages the preparation and implementation of Travel Plans.

Local Policy

2.19 Local strategy with respect to land use and transport is articulated in statutory documents prepared by planning and highway authorities which, for this development, comprise:

- Herefordshire Council - Local Transport Plan (2013/14 – 2014/15);
- Herefordshire Council – Herefordshire Local Plan Core Strategy 2011-2031 Pre-Submission Publication (May 2014);
- Herefordshire Council – Unitary Development Plan; Saved and Deleted Policies Introduction (March 2010); and
- Herefordshire Council Environment Directorate – Highways Design Guide for New Developments (July 2006).

Herefordshire Council - Local Transport Plan (2013/14 – 2014/15)

2.20 The purpose of this document is to ensure the Council has a clear plan for investment in the transport network to support economic growth, encourage healthier lifestyles, maintain connectivity, maintain the safety of the county's transport network and improve the quality of transport corridors. The LTP is guided by the following key objectives:

- **"To support a cleaner, healthier, more prosperous county; and**
- **To maintain connectivity for all and to reduce social isolation for those without access to a car."**

2.21 The LTP Policy document is set out around the following themes:

- Passenger transport;
- Walking and cycling;
- Transport safety;
- Highway network development; and
- Highways maintenance

2.22 Policy AM6 relates to managing new developments. Planned developments must be carefully controlled in order to maintain the local highway network to an acceptable standard where it can meet the future demand originating from changes in highway use. This can only be achieved through close working collaboration between spatial planners, developers and communities on appropriate approaches to materials and design layout. 'Packages' of schemes will be beneficial to the development which incorporate maintenance elements alongside other components in order to deliver network capacity, safety and environmental improvements.

2.23 Road safety should be improved through a combination of education, enforcement and engineering approaches. It is essential to provide a road network that is safe and efficient, and for footways, cycle-ways, roads, bridges and street furniture to be maintained to sustain their condition.

2.24 The bus network in Herefordshire operates along the main transport corridors to connect Hereford and the Market Towns and larger village settlements. Over the LTP monitoring period it is expected to enhance the number of rural services to develop a hub and spoke passenger transport model for Herefordshire. It is expected cycle and car parking will be available in the vicinity of the hub facility, and there will be a more frequent service provision throughout the day, evening and Sundays. The LTP notes that the Council will continue to work with Parish and Town Councils to improve bus shelters and infrastructure and to further undertake a review of rural bus stops to identify potential Rural Transport Hubs.

2.25 The term 'Active Travel' within the LTP refers to pedestrians and cyclists. Walking is identified under Policy AT1 as the most important mode of travel at the local level and offers the greatest potential for replacing car trips of less than 1 mile. Cycling furthermore offers potential to replace car trips for distances of up to five miles. Both of these modes of transport offer health benefits, reduced congestion and air pollution, and low cost accessibility for those without access to a car. Cycling and walking can be encouraged through improvements to active travel infrastructure (footways and cycleways), including:

- clear and concise signage to raise awareness of safer routes;
- expanding the number of 20mph residential zones;
- delivering more secure cycle spaces; and
- investigating the use of disused railway lines and other traffic-free rural routes for active travel.

2.26 Policy AT2 requires that the master planning process for new developments prioritises access by walking and cycling and provides access to the existing active travel network. Developers should help to ensure that proposals avoid severing existing routes utilised by cyclists and pedestrians, or provide alternative routes if this cannot be avoided.

2.27 Smarter Travel Choices are set out within the document, defined as:

> **"low cost techniques for influencing people's travel behaviour towards more sustainable options such as walking, cycling and public transport use".**

2.28 These choices can help to maximise accessibility and connectivity within the county by increasing awareness of all travel options available, in particular to those without private access to the car. In turn, these sustainable travel decisions can impact positively on environmental impacts of traffic, for example carbon dioxide reductions.

2.29 Travel Plans are central to the delivery and success of Smarter Choices campaigns, and are usually prepared as a condition of a planning application for a medium to large scale development. They should incorporate a combination of 'hard' (physical engineering) initiatives and 'soft' (non-engineering) initiatives.

2.30 Policy DC1 asserts that new and re-developments should be designed and located to minimise the impacts of the transport network, in order that journey times and journey time reliability does not deteriorate. They are to be constructed in such a manner that does not impact upon the safety of highway users. The inclusion of sustainable transport infrastructure is to be strongly encouraged within the design proposals. Developer's contributions may be asked for to mitigate the impacts of new and re-developments on the transport network.

2.31 Policy PRW1 describes that the Council will endeavour to develop, promote, manage and maintain Herefordshire's Public Rights of Way network. This will come as a part of the Transport Asset Management Plan, for the planned, proactive maintenance of the network. The Council will collaborate with landowners, developers and designers to ensure that developments do not fragment the network and that opportunities for enhancements are acted upon.

Herefordshire Local Plan Core Strategy 2011-2031 Pre-Submission Publication (May 2014)

2.32 When adopted the Herefordshire Core Strategy will form one part of the overall Local Development Framework (LDF) which sets out the key elements of the planning framework for Herefordshire and establishes a development strategy for the area. The LDF will eventually replace the adopted Herefordshire Unitary Development Plan (2007).

2.33 Ross-on-Wye is identified as the market town which serves the southern part of Herefordshire County. The place fulfils a diverse range of roles as centre for residential, employment, recreational and cultural services. The motorway connections surrounding the market town make it an important gateway into the county and therefore an ideal place to situate residential developments.

2.34 Policy RW2 outlines the urban extension of new homes proposed to the south-east of the town at Hildersley (the proposed development to which this Framework Travel Plan relates). The site has the strong potential for sustainable transport links to the town centre without the need to create new strategic highway links. The site is strategically located within close walking proximity to existing employment at Hildersley Farm Business Centre and to the east of Ross-on-Wye; Ross-on-Wye town centre and the proposed Model Farm employment development, located north of the A40 Gloucester Road transport corridor.

2.35 Both the Model Farm employment development and Hildersley residential development would access directly onto the A40, and thus the developers of both areas will be required to make contributions to the improvement of local roads and sustainable transport networks along the A40, if required to support the developments. This will help to achieve acceptable traffic movements between the sites and Ross-on-Wye town centre.

Herefordshire Unitary Development Plan; Saved Policies

2.36 The Herefordshire Unitary Development Plan Saved Policies (UDP) are in place until such time as the Local Plan is adopted. The UDP was adopted in March 2007 and provides more detailed policy advice on the key issues and development pressures facing the Herefordshire.

2.37 The UDP outlines a number of saved policies relating to new developments and transport and are summarised below.

Policy S1: Sustainable Development

- Reducing the need to travel, securing safe and convenient accessibility between different land uses and maintaining, improving and integrating opportunities to move safely and conveniently by modes other than personal motor transport.

Policy S2: Development Requirements

- Ensuring that developments include suitable provision for public transport, cycling and walking, and that their likely effect in relation to the capacity and safety of both the trunk road and local highway network is taken fully into account.

Policy S6: Transport

- Locating developments wherever possible within the County's existing urban areas or at locations reasonably accessible by means other than the private car, in order to reduce growth in the length and number of motorised journeys and reliance on the motor vehicle, and promote modal choice according to a hierarchy of modes and solutions to demand for travel in order of their sustainability;
- Promoting integration between transport modes so that the network is used to best effect;
- Assessing development and transport infrastructure proposals in terms of their traffic and transportation, economic development and environmental impacts and benefits, including implications for the whole road network including trunk roads, road safety, access to development areas, and assistance given to non-motorised modes of travel and to reducing the need to travel.

Policy DR3: Movement

- Provide a safe, convenient and attractive pattern of movement into, out of and across the site, particularly for pedestrians, people with disabilities and cyclists, incorporating pedestrian seating and cycle parking as required;
- Include good links to public transport, incorporating wherever appropriate suitable access for public transport vehicles into the site and associated passenger facilities;
- Incorporate adequate provision for vehicular access from the highway network without detriment to highway safety or to pedestrians, cyclists or public transport; and
- Incorporate cycle and vehicle parking to the required standards having regard to the need to promote sustainable transport choices, together with suitable turning and loading facilities.

Policy H16: Car Parking

- New housing developments will be subject to a maximum off-street car parking provision of an average of not more than 1.5 spaces per dwelling, with no minimum level of provision other than parking for disabled people.
- Site densities and off-street parking provision should reflect site location, the type of housing to be provided, the types of household likely to occupy the development, and the availability of public transport.

Herefordshire Council Environment Directorate – Highways Design Guide for New Developments (July 2006)

2.38 This Design Guide was produced to aid developers, designers and other professionals in preparing transport infrastructure related to new developments.

2.39 The design and layout of the development should be such as to discourage the through movement of traffic unconnected with the site. Permeability for cyclists and pedestrians is essential however for sustainable development, which essentially means the ease at which residents can take the shortest route to their destination. Footpath links should be short, direct and well-lit, with the provision of dropped crossing kerbs whenever footways interconnect with carriageways.

2.40 It is considered appropriate for cyclists to share a network of streets where the 85 percentile speed of vehicles does not exceed 20mph. Speed restraint and traffic calming measures should be incorporated in the initial design stages so that high vehicular speeds are impossible to achieve through the development.

2.41 Car parking should be open to natural surveillance at all times and situated in well lit areas, with remote car and cycle parking secure with owner only access via secure gated accesses direct to the dwellings. The provision of convenient and easy to use car parking facilities will be a significant factor in discouraging indiscriminate parking on pedestrian routes.

2.42 The recommended residential car and cycle parking standards are outlined in **Table 2.1** below:

Table 2.1: Residential Parking Standards for areas outside Hereford City central area

Land Use	Car Parking Standards		Cycle Parking Standards	
	Description	Standard	Long Stay	Short Stay
C3 Dwellings	Units with 2 bedroom where grouped parking	Max 1 space / unit	One locker per unit	One space per unit
	Units with 1 bedroom where individual parking	Max 1 space / unit	One locker per unit (may be provided by a garage)	One space per unit
	Units with 2 or 3 bedrooms where grouped or individual parking	Max 2 spaces / unit	One space per bedroom (may be provided by a locker or garage)	One space per unit
	Units with more than 3 bedrooms where grouped or individual parking	Max 3 spaces / unit	One space per bedroom (may be provided by a locker or garage)	One space per unit
	This should produce an average max rate of 1.5 spaces / unit for development			

2.43 The provision of disabled users parking should be at the 10% level of the total parking provision, with a minimum of 1 space per development.

2.44 The provision for motorcycle parking should be based on the modal split obtained from the 2001 census; this is taken at 2% for Hereford.

2.45 Cycle parking at residential developments should be within a covered, lockable enclosure. A Sheffield Stand is preferred as it provides support and a suitable means of locking both wheels and frames for security. Longer-term parking might be usefully provided by cycle lockers, which provide convenient space for storing cycle gear, and offers better protection against theft.

Transport Policy Summary

2.46 To summarise, the development will need to be assessed against the following policies. Taken together, local and national policy requires that new residential development be located where a range of facilities and services can be accessed by a range of modes of travel including walking, cycling and public transport so as to minimise the number and length of car journeys. Safe and suitable access to the site should be achievable for all people.

- *PPG* – to provide outline of the required content for Transport Assessments and Travel Plans;
- *NPPF* – in terms of sustainable development and safe and suitable access;
- *GTA* – provides the thresholds for Transport Assessments and Transport Plans;
- *Herefordshire Local Transport Plan* – overarching transport targets and accompanying objectives in the county over the 20 years;
- *Herefordshire Local Plan Core Strategy* – Policy RW2 on details regarding the Hildersley residential development, Ross-on-Wye;
- *Herefordshire UDP* – saved policies that provide further detail into pressing transport issues in the local area; and
- *Herefordshire Design Guide for New Development* – sets out the recommended car and cycle parking standards and master planning advice.

2.47 In relation to the impact of development on the operation of the local transport network, planning decisions should take into account whether improvements can be undertaken within the transport network that cost effectively limits the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are *severe*.

2.48 The following sections of this Transport Assessment describe how the proposed development complies with local and national transport policy and demonstrates that the impact of the proposals fall far short of *severe*, as set out in the NPPF.

3 EXISTING SITUATION

Introduction

3.1 This section describes the existing conditions at the site and surrounding transport networks. In particular it focuses on the accessibility of the site by non-car modes. A review of personal injury accidents on the local road network in the vicinity of the site is also incorporated.

Site Use, Location and Surroundings

3.2 The site is located in Hildersley approximately 1.4 kilometres (0.9 miles) to the east of the centre of Ross-on-Wye, Herefordshire, The site is located south of the A40 Gloucester Road and west of Hildersley Business Park.

3.3 The site area extends westwards to the south of the existing residential development named The Mead. The site is bordered to the south and west by woodland and open fields; to the north by a veterinary practice, existing residential dwellings, and the A40; and to the east by Hildersley Farm. The site boundary meets the A40 at its north-east corner, where the vehicular access to the site is proposed. Hildersley Farm itself and Hildersley Business Park do not form part of the proposed development. The site location and local highway network is shown in **Figure 1.**

3.4 The urban area of Ross-on-Wye lies between 600m (0.4 miles) and 1.8km (1.1 miles) to the west of the site. The residential area of Hildersley abuts the site to the north. The hamlet of Weston under Penyard is located 2.3 kilometres to the east of the site along the A40 Gloucester Road. Further afield, the towns of Cheltenham and Gloucester can be accessed via the A40 to the east; Monmouth to the south-west via the A40 across the England-Wales border; Ledbury to the north-east via the A449; and Hereford to the north-west via the A49.

Local Facilities

3.5 Ross-on-Wye is a medium sized town with a good range of local shops, services, education opportunities, a community hospital and abundant employment. There is a large Morrisons supermarket and numerous smaller shops including both national chains and local specialists. Ross-on-Wye therefore provides a wide range of local amenities and employment opportunities within walking and cycling distance of the proposed residential development. The site in the context of local facilities is shown on **Figure 2.**

3.6 The shortest route from the site access onto the A40 to Ross-on-Wye town centre is via the A40 and B4260 Gloucester Road. There is an existing footway of between 1.3m and 1.5m in width along the northern side of the A40 from the proposed vehicular access point to the 30mph speed limit signs on the approach to the town edge, from which point there is footway provision on both the northern and southern side of the carriageway into Ross-on-Wye. There are several dedicated pedestrian crossing points along the B4260 Gloucester Road and traffic island crossings at the A40 roundabout junction. Traffic speeds on B4260 Gloucester Road were observed to be low, typical of a town-centre location, and conducive to pedestrian movement.

3.7 Both retail and employment opportunities are on offer in the town centre, with retail stores predominantly located on Broad Street, High Street and Gloucester Road within the town centre. There are a range of independent and national stores, cafes and restaurants. The nearest convenience store to the site, One Stop, is located on the southern side of the B4260 on the approach to the town centre. There is a large Morrisons supermarket located north of Station Street and Millpond Street and a Sainsbury's Supermarket on Henry Street. The nearest post office is located within The Maltings on Broad Street within the town centre. Labels Outlet Shopping Centre provides further retail and employment opportunities adjacent to the Overross roundabout to the north of the town centre, accessed from the site via the A40.

3.8 There are a range of health facilities in the town centre, including the Ross-on-Wye Community Hospital and Alton Street Surgery on Alton Street. The town offers a range of community facilities which are easily accessible to the proposed site. The Library is located on Cantilupe Road and the nearest place of worship is the Evangelical Church on Henry Street. There are a range of leisure facilities, including The Phoenix Theatre and sports pitches and facilities. The Ross Swimming Pool is located along Kyrle Street north of the immediate town centre and Ross Health and Fitness is located along Greytree Road, approximately 770 metres from the town centre crossroad junction.

3.9 In addition to the Hildersley Farm Business Park directly adjacent to the site, Ross-on-Wye has large areas of employment around Ashburton Road and on the Wolf Business Park, Alton Road, both accessible from the B4260 Gloucester Road to the east of the town centre and close to the proposed site. There are a wide range of employment types available including manufacturing, offices, and service industries. Further shopping and employment opportunities are located to the north of the town at the Labels Outlet Shopping Centre. It is also proposed to build a business park at Model Farm, on the northern side of the A40 directly opposite Hildersley Farm, which could potentially provide a greater range of employment opportunities for residents within walking distance.

3.10 The nearest primary schools to the site are St Joseph's RC Primary School, located in Ashfield towards the south of the Ross-on-Wye town centre, approximately 2.1 kilometres to the south-west of the site, and Ashfield Park Primary School located north of Redhill Road. The schools can be accessed from Ross-on-Wye town centre (crossroad junction between the B4260, Broad Street and Copse Cross Street) by heading south along Copse Cross Street and Walford Road or via Alton Road / Alton Street where improvements to the pedestrian environment can be undertaken (see paragraph 4.8). St Joseph's access is from The Avenue. An alternative route for pedestrians and cyclists, avoiding many roads, would be to use the Town and County Trail.

3.11 A further primary school is situated in Weston under Penyard, approximately 2.2 kilometres east of the site. The school can be accessed from the site via the footway alongside the A40 Gloucester Road.

3.12 Secondary education in Ross-on-Wye is provided at John Kyrle High School located towards the north of the town in Greytree. It accommodates for pupils aged 11-18 years. This is approximately 2.4 kilometres to the north-west of the site, accessible via Smallbrook Road from the B4260 Gloucester Road, Station Street and B4234. There is continuous footway provision along the stretch of the B4234 between the town centre and Three Crosses Road where the school is located.

3.13 Ross-on-Wye is located in the Wye Valley Area of Outstanding Natural Beauty, and there are many publically accessible green open spaces surrounding the town. The Wye Valley Walk and Town and County Trail are available for walking and cycling away from roads, both located to the south-west of the development site. The Wye Valley Walk routes from Chepstow to Plynlimon via Monmouth, Ross-on-Wye and Hereford.

Access to Public Transport

3.14 The site benefits from good access to public transport. The nearest bus stops are located on the A40 Gloucester Road immediately east of the proposed vehicular access. These are proposed to be upgraded as part of the Model Farm employment development to incorporate shelters and timetable provision. Further bus stops are available to the west on A40 adjacent to The Mead and on Alton Road, 700 metres south-west of the site.

Local Facilities and Services

3.15 **Table 3.1** summarises the local facilities in the vicinity of the site with approximate distances and corresponding typical journey times from the proposed vehicular access to the site**.**

Table 3.1: Location of Selected Key Facilities

Facility		Distance (m)	Journey Times (minutes)	
			Walk	Cycle
Public Transport				
Bus Stop	A40 Gloucester Road (adjacent Hildersley Farm)	100	1	0
	A40 Gloucester Road (adjacent to The Mead)	320	4	1
	Alton Road (adjacent Wolf Business Park)	700	9	3
Education				
Primary School / Nursery	St Joseph's R C Primary School, The Avenue	2100	26	8
	Weston under Penyard CE Primary School	2270	28	9
	Ashfield Primary School	2200	28	9
Secondary & Sixth Form	John Kryle Secondary School, Three Crosses Road	2400	30	9
Health Facilities				
Dentist	Warrendale Dental Care, Chase Road	1300	16	5
Pharmacy	Superdrug, Broad Street	1500	19	6
	Boots Pharmacy, Broad Street	1550	19	6
Hospital	Ross-on-Wye Community Hospital, Alton Street	1700	21	6
Doctors	Alton Street Surgery	1700	21	6
Employment				
Employment Area	Ross-on-Wye town centre	600 to 1800	8 to 23	2 to 7
	Ashburton Road Industrial Area	550 to 1150	7 to 14	2 to 4
	Wolf Business Park	800	10	3
	Labels Outlet Shopping Centre	2000	25	8

Facility		Distance (m)	Journey Times (minutes)	
			Walk	Cycle
Job Centre	Jobcentre Plus	1450	18	5
Community Facilities				
Library	Cantilupe Road	1350	17	5
Public House	The Mail Rooms, B2460 Gloucester Road	1350	17	5
Church	Henry Street Evangelical Church	1400	18	5
Post Office	The Maltings, Broad Street	1600	20	6
Shopping/Retail				
Town Centre	Ross-on-Wye (Broad Street, High Street and Gloucester Road)	1200 to 1670	15 to 21	5 to 6
Convenience Store	One Stop Stores	1400	18	5
Supermarket	Morrisons Supermarket, Station Street	1310	16	5
	Sainsbury's Supermarket	1400	18	5
Retail Park	Labels Outlet Shopping Centre	2000	25	8
Leisure				
Gym	Wyefit, Old Gloucester Road	1300	16	5
Theatre	The Phoenix Theatre, St Mary's Street	1600	20	6
Swimming Pool	Ross Swimming Pool, Kyrle Street	1700	21	6
Outdoor Recreation				
Wye Valley Walk	Penyard Lane, adjacent to Town and County Trail	800	10	3

Note: Assumed walking speed of 1.33m/sec and cycling speed of 4.44m/sec

3.16 Paragraph 2.3 of the Design Manual for Roads and Bridges TD91/05 "Provision for Non-Motorised Users" states: "**Walking is used to access a wide variety of destinations including educational facilities, shops, and places of work, normally within a range of up to 2 miles** [3.2 km]**. Walking and rambling can also be undertaken as a leisure activity, often over longer distances**". Local Transport Note 2/08 "Cycle Infrastructure Design" states: "**many utility cycle journeys are under 3 miles** [4.8 km] **although, for commuter journeys, a trip distance of over 5 miles** [8.0 km] **is not uncommon**".

3.17 It is evident that there are a wide variety of local facilities highlighted in **Figure 2** and **Table 3.1** that are within walking and cycling distance of the site.

Local Highway Network

3.18 The development site is located immediately south of the A40 Gloucester Road from which it is proposed to gain vehicular access to the site. The A40 is a strategic road link in Herefordshire and neighbouring counties, from Wales through Monmouth, Ross-on-Wye, Gloucester, Cheltenham to continue in an eastern direction towards Oxford where it joins the M40. Within the vicinity of the site's vehicular access, the A40 is a single carriageway road subject to the national speed limit (60 mph). There is a speed limit change to 30mph approximately 200 metres west of the proposed vehicular access as the A40 approaches Ross-on-Wye. The pre-application meeting with Herefordshire County Council indicated a desire to consider the location of the existing speed limit change point to include the proposed development site, Hildersley Farm Business Park and the access to the proposed Model Farm employment site within a lower speed limit than the present 60 mph. The local highway network surrounding the site is illustrated on **Figure 1.**

3.19 To the west of the site, the A40 bypasses Ross-on-Wye town centre to the east and meets a link to the A449 and M50 at the Overross roundabout, which also serves the Labels Outlet Shopping area from the northern arm. From the Overross roundabout the A40 continues in a south-westerly direction towards Wales. The A449 travels north-east to Great Malvern and Worcester via Ledbury. The M50 is routed north-east to eventually form junction 8 of the M5, approximately 5 kilometres north of Tewkesbury. The M5 provides access to a variety of destinations between the south-west of England and Birmingham.

3.20 On a more local scale, the most convenient route into Ross-on-Wye town centre from the site is via the B4260 Gloucester Road which is accessible via a 4-arm roundabout (the Hildersley roundabout) with the A40 (north and east) and Hildersley Rise located approximately 500 metres west of the site's vehicular access point. This roundabout junction has pedestrian traffic islands across three of its arms The B4260 is a single carriageway and subject to 30mph speed restrictions; there are some stretches of on-street parking and double and single yellow line restrictions. On the approach to the town centre west of the junction with Henry Street, the B4260 is a single lane one-way system with traffic calming measures and designated off-loading areas. This section of road was observed to operate at very low speeds conducive to pedestrian movement.

3.21 The central point of the town centre is marked by a crossroad junction between the B2460 / B4234 Broad Street / B2460 High Street / B4234 Copse Cross Street. The High Street and Gloucester Road arms of this junction operate one-way east to west. From this junction, the B4234 is routed north of the town centre as Broad Street, Brookend Street and Ledbury Road from which it connects to the Overross roundabout to the north. To the south, Copse Cross Street is routed past Ross-on-Wye Community Hospital and St Joseph's Primary School towards Tudorville and onwards villages in south Herefordshire. To the west, the B2460 continues west out of Ross-on-Wye as High Street to route over the River Wye towards the settlements of Wilton and Bristow.

Pedestrian and Cycle Facilities

3.22 The existing pedestrian and cycle networks in the vicinity of the site are depicted on **Figure 3.**

3.23 A concept masterplan for the development is provided in **Annex 2.** This demonstrates the potential for footpaths and cycle ways to be provided within the site's boundaries and external connections to the north and north-west, allowing onward connectivity to Ross-on-Wye town centre, the Modal Farm development to the north and to bus stops adjacent to the development on the A40. The proposed Model Farm development to the north proposes a 3m footway/cycleway meeting the A40 directly opposite the site access and provision of pedestrian crossings and improved bus stops on the A40 adjacent to the site to the east, should the Hildersley Farm development come forward before Model Farm then there is the opportunity to introduce bus stop improvements independently of Model Farm (see paragraph 4.6).

3.24 As described above, there are high quality pedestrian links along the B4260 Gloucester Road towards the town centre and pedestrian island crossings are provided at the A40 / B4260 Gloucester Road roundabout junction.

3.25 There is a shared-use cycleway and footpath approximately 130 metres west of the development's western boundary. There is the opportunity to form a connection between the pedestrian network within the development and this shared-use path as part of the development proposals (**Annex 11** refers). This Town and County Trail is located south-west from the A40 Gloucester Road, approximately 70 metres west of the A40 / B4260 Gloucester Road roundabout junction, via Penyard Lane. This links to Fernbank Road north of Tudorville. Residents of the development could use this designated off-road trail to access areas south of Ross-on-Wye. The shared-use path is clearly signposted at both Hildersley and Tudorville.

3.26 **Figure 3** incorporates the Public Rights of Way (PROW) network in the vicinity of the site. PROW reference number ZK17 is a footpath that routes between the Town and Country Trail to Alton Road, which could benefit the residents employed on the Wolf Business Park or those intending to access facilities to the south of town centre, including St Joseph's RC Primary School and the Community Hospital. There is also the pleasant Riverside Walk that can be reached from the High Street in the town centre, following the River Wye.

3.27 The proposed connection from the north-west of the site to the existing footway on the southern side of A40 provides a good level of connectivity to existing facilities and services.

Public Transport

Bus Services

3.28 There are two sets of bus stops located on the A40 Gloucester Road that are within walking distance of the site; both sets of bus stops serve bus service 33 operated by Stagecoach. The first set of bus stops are located immediately east of the proposed vehicular access; the proposed Model Farm development to the north proposes a pedestrian crossing and improved bus stops with shelters in this location, should the Hildersley Farm development come forward before Model Farm then there is the opportunity to introduce bus stop improvements independently of Model Farm (**Annex 11** refers).

3.29 The second set of bus stops are located approximately 400 metres further west adjacent to The Mead; these would be beneficial to residents of the western dwellings on the development, as they could utilise the proposed foot/cycle path from the north-west corner of the site to join the A40.

3.30 Another set of bus stops serving additional routes are located on Alton Road 700 metres south-west of the site. These stops serves route 40 which operates as a circular service around Ross-on-Wye.

3.31 **Table 3.2** below summarises the route and frequencies of the existing bus services from the aforementioned bus stops. The local bus routes and stops within the vicinity of the site are highlighted on **Figure 4.**

Table 3.2 Local Bus Services

Route No.	Stop	Operator and Route	Frequency				
			Mon-Fri Peaks	Mon-Fri Daytime	Mon-Fri Evening	Sat	Sun
33	A40 Gloucester Road (adj. Hildersley Farm)	**Stagecoach** Gloucester – Lea – Weston upon Penyard – Ross-on-Wye town centre – Peterstow – Hereford	2 per hour	Hourly	No Service	Hourly	No Service
32	A40 Gloucester Road (adj. Hildersley Farm)	**Stagecoach** Gloucester – Lea – Weston upon Penyard – Ross-on-Wye town centre – Peterstow – Hereford	No Service	No Service	1 per 2 hours	Evening Only	No Service
40	Alton Road (adj. Wolf Business Park)	**H&H Coaches** Tudorville – Archenfield – Greytree – Over Ross St – Cantilupe Road – Alton Road – Merrivale Road	No Service	Hourly	No Service	Hourly	No Service

Source: Traveline West Midlands (July 2014)

3.32 **Table 3.2** demonstrates that it is possible to access facilities throughout Ross-on-Wye and in Weston upon Penyard via local bus services, including supermarkets, shops, St Joseph's RC Primary School, John Kryle Secondary School, Weston under Penyard Church of England Primary School and Labels Outlet Shopping Centre. The timetable accommodates for school trips to John Kryle Secondary School by placing additional services during the school peak hours.

3.33 There are additional bus services that route through Ross-on-Wye's town centre (majority departing from Cantilupe Street) to Monmouth, Ledbury and further services to Hereford.

Rail Services

3.34 The nearest railway station to the site is located in the town of Ledbury, approximately 18 kilometres in distance. There is one daily bus service to the station, operated by Abbey Cars, from Cantilupe Road in Ross-on-Wye to Ledbury High Street.

3.35 Hereford railway station is located north-west of the site approximately 19 kilometres in distance. This station can be accessed in approximately 35 minutes via the bus service 33 (accessible from stops directly adjacent to the site), providing rail services to Wales, Manchester, Birmingham and London Paddington. Hereford and Ledbury railway stations are on the same train line.

3.36 Gloucester railway station is located approximately 23 kilometres east of the site and an approximate 40 minute journey time via the bus service 33 (accessible from stops directly adjacent to the site). Gloucester railway station provides rail services to the South West, West Midlands, Wales and London Paddington.

Personal Injury Accident Data

3.37 Personal Injury Accident (PIA) data has been obtained from Herefordshire County Council for the latest available three year period between 25th July 2011 and 20th June 2014. The study area was agreed in scoping with the Council and included the highway network within the vicinity of the site, including the A40 north section between the Wilton roundabout and M50 roundabout, the A40 east section between the Overross roundabout and the junction with Springetts Lane, and the B4260 Gloucester Road between the Hildersley roundabout and junction with Ryefield Road. The study area with a plot of the PIAs classified by severity is illustrated on **Figure 5**. Twenty four slight PIAs and three serious PIAs occurred in the search area over the latest 3 years. There have been no fatal accidents recorded in the study area during this period.

3.38 One of the serious PIAs took place on the A40 Gloucester Road approximately 350 metres to the west of the site access involving two cars, and was attributable to driver error. A vehicle travelling from west to east indicated to turn right into the fire station and moved into the path of an oncoming vehicle travelling in the opposite direction. The road conditions were recorded as wet and damp.

3.39 The other two serious severity PIAs occurred on the stretch of the A449 between the Overross roundabout and the M50 roundabout. In one incident, three vehicles were travelling east-bound on Lane 1 of the dual carriageway towards the M50 roundabout, when the first vehicle braked hard for an unknown reason, causing the vehicle behind to collide into its rear. The behind vehicle subsequently swerved into Lane 2 impacting upon a motorcycle rider that dismounted to the ground. The other serious PIA along this section of highway occurred on the approach to the M50 junction, as a HGV driver failed to judge the speed of a pedal cyclist travelling in front and collided with the rear of the bike.

Wilton Roundabout

3.40 Six of the slight PIAs occurred at the Wilton roundabout. One of the incidents was due to a driver being distracted by temporary road works. Another involved a HGV that was thought to be overloaded or poorly loaded with goods which spilled onto the carriageway whilst exiting the roundabout, causing a minor collision. The third PIA was due to a driver attempting to avoid an animal in the carriageway. The remaining incidents were caused by drivers failing to look properly whilst negotiating the roundabout or careless driving.

Overross Roundabout

3.41 Thirteen of the slight PIAs took place at or within proximity to this junction. One of the incidents involved a HGV whose foreign driver was thought to be inexperienced driving on the left-hand side of the road. Another PIA impacted upon a motorcycle rider that was an inexperienced learner. Nine accidents were attributable to drivers failing to judge another vehicles' speed or following too close. One was due to a car driver attempting to overtake a vehicle whilst in the circulating flow on the junction, and the remaining was due to poor use of indicating.

M50 / A449 (North) / A449 (South-west) Roundabout

3.42 A minor collision occurred on the roundabout between a foreign driver thought to be inexperienced driving on the left-hand side and another vehicle.

A40 Eastern Section, A40 Gloucester Road and B4260 Gloucester Road

3.43 The remaining four PIAs classed as slight took place in this area. The incident close to the site access was due an item falling off the back of an overloaded or poorly loaded vehicle to smash the windscreen of following vehicle. Two were caused by drivers failing to judge another vehicles' speed. The fourth PIA impacted upon a pedestrian as they were struck by a parked vehicle that jolted as it was hit by a moving HGV travelling along the B4260.

Summary of PIA Data

3.44 The PIA data shows that the personal injury accidents recorded by police over the latest available three year period are attributable to driver error, inexperienced drivers, overloaded goods vehicles and poor weather conditions. Only three PIAs involved a pedal cyclist and one involved a pedestrian out of the twenty seven incidents. The PIAs recorded at the three roundabout junctions occurred at different locations at the junction, with different times of day and conditions.

3.45 Whilst any road accident is unfortunate, overall the personal injury accident recorded on the surrounding network does not appear to exhibit any particular clusters of accidents which are a cause for concern and therefore there are no specific highway safety issues in the area which this TA needs to address in more detail.

Existing Traffic Conditions

3.46 An Automatic Traffic Count (ATC) was undertaken on A40 Gloucester Road to the west of the site access between 03/07/2014 and 09/07/2014 to obtain a general indication of traffic flow, composition and speed.

3.47 The ATC recorded an average speed westbound of 43.0 mph and an 85th percentile speed of 49.0 mph. Eastbound the average recorded speed was 40.8 mph and the 85th percentile speed was 49.0 mph.

3.48 The recorded traffic flows for an average weekday are provided in Table 3.3. For an average weekday, the evening peak hour is busier than the morning peak hour for both westbound and eastbound directions. This is more marked in the eastbound direction with 169 vehicles recorded during the morning peak hour and 208 vehicles recorded during the evening peak hour. HGV percentages are higher for eastbound traffic than westbound traffic for all time periods in Table 3.3. Over an average weekday as a whole, HGV percentages recorded were 4.3% westbound and 4.5% eastbound.

Table 3.3 – Recorded Traffic Flows – ATC on A40 Gloucester Road – Average Weekday

Time Period	Westbound (away from Ross-on-Wye)			Eastbound (towards Ross-on-Wye)		
	Total Vehicles	HGVs	HGV percentage	Total Vehicles	HGVs	HGV percentage
Morning Peak Hour 0800-0900	191	8	4.2%	169	9	5.3%
Evening Peak Hour 1700-1800	200	3	1.5%	208	5	2.4%
12 Hours 0700 -1900	1809	70	3.9%	1795	85	4.7%
Daily (24 hour)	2283	98	4.3%	2234	100	4.5%

Source: ATC survey undertaken by PCC TIC 03/07/2014 to 09/07/2014

3.49 Junction turning count surveys were also undertaken on Tuesday 9th September 2014 at the junctions agreed with Herefordshire County Council though scoping. The traffic survey results are shown diagrammatically on **Figure 6**.

- Overross roundabout;
- Hildersley roundabout;
- Alton Road junction with B4260 Gloucester Road; and
- Ashburton Industrial Estate junction with B4260 Gloucester Road.

Overross Roundabout

3.50 The Overross roundabout links the A40 west, A40 south, A449 east (towards the M50), B4234 Ledbury Road and Netherton Road / retail Park. The turning count surveys indicate that the predominant movements at the junction are between the A40 west and A449 east during both morning and evening peak hours. This movement carries 981 vehicles (12% HGVs) eastbound and 874 vehicles (22% HGVs) westbound during the AM peak hour and 643 vehicles (16% HGVs) eastbound and 805 vehicles (11% HGVs) westbound during the PM peak hour, indicating a tidal flow eastbound in the AM peak hour and westbound in the PM peak hour.

3.51 Turning movements into the A40 south are between 23% and 33% of the through movement (A40 – A449), depending on direction and peak hour. Turning movements out of the A40 south are between 10% and 28% of the through movement (A40 – A449), depending on direction and peak hour.

3.52 The Ledbury Road approach carries a similar volume of traffic to the A40 south approach during the AM peak hour and approximately 20% less traffic than the A40 south approach during the PM peak hour. However, the longest queues during the AM peak hour (up to 9 vehicles) were recorded on this arm. This is likely a result of the arm being opposed by other more significant traffic flows. The Netherton Road / retail park arm carries the lowest volumes of traffic, particularly during the AM peak hour when only 40 approaching vehicles were recorded.

Hildersley Roundabout

3.53 The Hildersley roundabout links the A40 north, A40 east, A4260 (towards Ashburton Road, Alton Road and the town centre) and Hildersley Rise. During the AM peak hour, the turning count surveys indicate that the predominant movements are from the A40 north and the A40 east to the B4260 (330 and 326 vehicle movements respectively) with the other movements except to/from Hildersley Rise carrying between 144 and 161 movements each.

3.54 During the PM peak hour the predominant movements are from the B4260 to the A40 east (325 vehicle movements) and from A40 north to B4260 (269 movements) with the remaining movements, except to/from Hildersley Rise carrying between 118 and 206 movements each.

3.55 The Hildersley Rise arm provides access to a small residential area only and, consequently, the traffic flows on this arm are very low.

Alton Road and Ashburton Industrial Estate Priority Junctions onto Gloucester Road

3.56 The junctions of B4260 Gloucester Road with Alton Road and Ashburton Road/Station Approach (which serves Ashburton Industrial Estate) operate as staggered priority junctions. During the AM peak hour the predominant vehicle movement is from B4260 east to Alton Road (361 vehicles). The movements from B4260 east to Alton Road and from B4260 east towards the town centre carry 173 vehicles and 134 vehicles respectively. The movements from Ashburton Road/Station Approach to B4260 east and from Alton Road to B4260 east carry 113 vehicles and 142 vehicles respectively. Traffic flows on the approach from the town centre arm are significantly lower.

3.57 During the PM peak hour, the predominant traffic movements at this junction are from B4260 to Alton Road (244 vehicles), from and Ashburton Road/Station Approach to B4260 east (241 vehicles) and from Alton Road to B4260 east (226 vehicles). The movement from B4260 east towards the town centre carries 160 vehicles. All other traffic movements are significantly lower. The longest queues recorded at this junction were up to 5 vehicles on the Alton Road approach during the PM peak hour.

3.58 In general, the arm of this staggered junction with the lowest traffic flows is the Gloucester Road approach from the town centre, despite this forming the major arm of the junction arrangement. This may be in part due to the one-way east to west nature of Gloucester Road east of Cantaloupe Road / Henry Street.

Base Year Junction Modelling Results

3.59 The existing peak hour conditions at the Overross roundabout, Hildersley roundabout and the staggered junction of Gloucester Road, Alton Road and Ashburton Road have been modelled using TRL Program Junctions 8, which incorporates ARCADY and PICADY software. The full Junctions 8 reports are given in **Annex 10**.

3.60 The Ratio of Flow to Capacity (RFC) is typically used to assess how well a junction is operating. A target RFC of 0.85 is typically quoted, giving a reserve capacity of 0.15 before a junction is considered to be fully saturated.

Overross Roundabout

3.61 The results of the ARCADY modelling for the base year 2014 are provided in Table 3.4. This shows that the Overross roundabout currently operates well within capacity during both the morning and evening the peak hours. The busiest peak hour is the AM peak hour 0800-0900 during which the RFC is 0.73 or lower on all arms of the junction, well below the target RFC of 0.85.

Table 3.4: Overross Roundabout - Results of ARCADY Modelling - 2014 Base Scenario

Arm	AM Peak Hour 0800-0900			PM Peak Hour 1700-1800		
	RFC	Max Queue (Veh)	Max Delay (sec/veh)	RFC	Max Queue (Veh)	Max Delay (sec/veh)
A449 East	0.73	3	6.86	0.65	2	4.90
A40 South	0.43	1	7.56	0.35	1	5.89
Ledbury Rd	0.44	1	7.24	0.26	0	4.70
A40 West	0.73	3	6.70	0.52	1	3.76
Netherton Rd	0.13	0	11.92	0.27	0	6.84

Notes: The modelling of this junction has incorporated a small increase to the default PCU factor to reflect the higher than average proportion of large HGVs (OGV2s) using this junction.

Hildersley Roundabout

3.62 Table 3.5 provides the results of the ARCADY modelling of the Hildersley roundabout for base year 2014. This shows that the Hildersley roundabout currently operates well within capacity during both the morning and evening the peak hours. The busiest peak hour is the AM peak hour 0800-0900 during which the RFC is 0.58 or lower on all arms of the junction, well below the target RFC of 0.85.

Table 3.5: Hildersley Roundabout – Results of ARCADY Modelling - 2014 Base Scenario

Arm	AM Peak Hour 0800-0900			PM Peak Hour 1700-1800		
	RFC	Max Queue (Veh)	Max Delay (sec/veh)	RFC	Max Queue (Veh)	Max Delay (sec/veh)
Hildersley Rise	0.03	0	5.89	0.01	0	6.81
A40 East	0.43	1	5.17	0.31	0	3.95
Gloucester Road	0.33	0	5.19	0.54	1	7.20
A40 North	0.58	1	9.39	0.63	2	11.91

Alton Road and Ashburton Industrial Estate Priority Junctions onto Gloucester Road

3.63 The priority T-junctions of Gloucester Road with Alton Road and the road leading to Ashburton Industrial Estate have been modelled as a single staggered junction within TRL Junctions 8. This allows the interaction of the two junctions to be considered within the model.

3.64 Table 3.6 gives the results of the PICADY modelling of the staggered junction of Gloucester Road, Alton Road and the road leading to the Ashburton Industrial Estate. This indicates that the staggered junction operates within capacity during both morning and evening peak hours

Table 3.6: Gloucester Road staggered junction – Results of PICADY modelling – 2014 Base Scenario

Movement	AM Peak Hour 0800-0900			PM Peak Hour 1700-1800		
	RFC	Max Queue (Veh)	Max Delay (sec/veh)	RFC	Max Queue (Veh)	Max Delay (sec/veh)
Alton Rd Left	0.08	0	9.33	0.14	0	12.61
Alton Rd Ahead/Right	0.45	1	14.71	0.68	2	24.85
Gloucester Rd East	0.31	0	8.63	0.23	0	8.08
Ashburton Rd Left	0.21	0	7.46	0.47	1	11.91
Ashburton Rd Ahead/Right	0.17	0	14.18	0.33	0	19.00
Gloucester Rd West	0.15	0	7.88	0.13	0	7.55

Summary of Existing Traffic Conditions

3.65 The surveys and modelling of the junctions identified through scoping with Herefordshire County Council as relevant to this Transport Assessment indicated that none of the junctions assessed currently experience capacity issues during peak hours.

4 PROPOSED DEVELOPMENT

Introduction

4.1 The site is located on land to the west of Hildersley Farm, Ross-on-Wye. The site has been identified in Herefordshire Council's Local Plan Core Strategy Pre-Submission Publication (May 2014) as a suitable location for a strategic urban extension of Ross-on-Wye, suitable for residential development of around 200 new homes.

4.2 The site is located to the east of Ross-on-Wye, south of the A40 Gloucester Road and west of Hildersley Business Park as indicated on **Figure 1**. The site area extends westwards to the south of the existing residential development named The Mead.

4.3 The development is expected to comprise approximately 250 residential dwellings with the planning application submitted in Outline with access to be determined. Hildersley Farm itself and the Business Park do not form part of the application site.

Proposed Access by Sustainable Modes of Travel

4.4 It is proposed to provide links to the existing bus stops adjacent to the site access on the A40, and the footway on the northern side of the A40 to the north of the site; and a separate footway/cycleway connection to the A40 to the north-west, where footways are available on both sides of the A40.

4.5 The proposed connections would connect to existing footway networks into Ross-on-Wye to the west as well as the proposed footway/cycleway routes and crossing facilities proposed by the Model Farm planning application for employment, to the north of the A40.

4.6 The nearest bus stops are located on the A40 Gloucester Road immediately east of the proposed vehicular access. These are proposed to be upgraded as part of the Model Farm employment development to incorporate shelters and timetable provision. If this improvement does not come forward through the Model Farm planning application, the Hildersley Farm development would commit to upgrading the bus stops in this location, as indicated on drawing JNY8251-05 within **Annex 11**.

Further Mitigation and Improvement to Pedestrian Network

4.7 The Model Farm development proposes crossing points across the A40 which would provide enhanced connectivity to this employment area and the bus stops on the northern side of the A40. Herefordshire County Council has asked whether these crossing points should be delivered by the Hildersley Farm site should this come forward for development before Model Farm. Whilst some improvements, such as the bus stop upgrades, are considered necessary to facilitate the Hildersley Farm development it is anticipated that further improvements, such as the pedestrian crossings, would be more appropriately considered via a contribution towards their provision through a planning obligation in order that the timing and provision of facilities can be coordinated by Herefordshire County Council. This would be in accordance with Herefordshire County Council Local Transport Plan policy DC1.

4.8 Herefordshire County Council has also identified that the pedestrian environment along Alton Road, which provides access to schools and the hospital, could be improved. It is anticipated that this could be considered through a contribution towards pedestrian facilities on Alton Road secured via a planning obligation in order that the timing and provision of the improvements can be coordinated by Herefordshire County Council. This would be in accordance with Herefordshire County Council Local Transport Plan policy DC1.

4.9 A Travel Plan (RPS document reference JNY8251-03) has been prepared to accompany this Transport Assessment in order to promote sustainable travel from the development and to discourage single-occupancy car trips. The Travel Plan is provided as **Annex 12** to this TA.

Proposed Vehicular Access

4.10 Vehicular access is proposed from the A40, formalising and upgrading the existing western access to Hildersley Farm. The access would be formalised through provision of give-way markings at the junction with the A40. Vegetation would be cut-back on the adjacent site frontages in order to provide appropriate visibility from the access and to accommodate appropriate footway links. The proposed access (and footway) arrangements are shown on drawing JNY8251-03 within **Annex 4**.

4.11 A speed survey undertaken in October 2014 at the site of the proposed access recorded 85th percentile speeds in this location of 43.0 mph both eastbound and westbound (**Annex 6** refers). In accordance with a request from Herefordshire County Council (HCC) at a pre-application meeting visibility splays at the access have been shown to DMRB standards for a 43 mph recorded speeds. Since the pre-application meeting with HCC, the alignment of the access and access to the existing farm have also been amended to accommodate HCC's requests. The access can be delivered with or without the intermediate speed limit described in paragraphs 4.15 onwards below and is not reliant on the speed limit change.

Internal Layout

4.12 The planning application is submitted in outline and therefore a concept masterplan is provided in **Annex 2**. The concept site layout incorporates a clear pedestrian network. Routes for pedestrians would be provided alongside vehicular routes and also via green space within the development and would be linked to external footway networks at the vehicular access point and via a footway/cycleway link to the A40 to the north-west.

4.13 The main route into the site becomes the priority for vehicles, with the access to the existing farm forming a T-junction onto this road as this is likely to carry fewer vehicles than from the proposed development.

Car Parking

4.14 The current planning application is submitted in outline. Full details of car parking proposals would be incorporated within a subsequent Reserved Matters planning application. Nonetheless, the applicant would commit to provision of car parking within the site to meet local car parking standards for residential development.

Proposed Intermediate Speed Limit

4.15 The pre-application meeting with Herefordshire Council indicated a desire to consider the location of the existing speed limit change point which is currently situated to the west of the site's frontage onto the A40. The current speed limit change is from a 30 mph speed limit within Ross-on-Wye to a National (60 mph) speed limit past the site frontage and onwards to the east.

4.16 The introduction of Intermediate Speed Limits, between national speed limits and areas where a lower speed limit is in force is encouraged by Department for Transport (DfT) Circular 01/2013 'Setting Local Speed Limits'. At paragraph 38, the Circular states:

> **"It may be appropriate to use a short length of 40 mph or 50 mph speed limit as a transition between a length of road subject to a national limit and another length on which a lower limit is in force, for example on the outskirts of villages or urban areas with adjoining intermittent development."**

4.17 The Circular advises that consideration should be given to existing road characteristics when considering the appropriate speed limit. The existing road alignment includes a bend on the A40 to the east, which naturally limits speeds, and the existing 'outlying' accesses to Hildersley Business Park to the south and Model Farm to the north. In addition, the proposed employment development at Model Farm, to the north of the A40, would introduce a larger access and a pedestrian crossing within the 60mph speed limit section.

4.18 The DfT circular advises that **"mean speeds should be used as the basis for determining local speed limits"** (paragraph 35). The current mean traffic speeds recorded in October 2014 adjacent to the proposed site access were 39.7 mph westbound and 38.6 mph eastbound. This clearly indicates that a suitable speed limit in the vicinity of the site access would be 40mph. It is therefore considered reasonable to propose an Intermediate Speed Limit of 40 mph on the A40.

4.19 The DfT Circular recommends that a minimum length of a speed limit should "**generally be not less than 600 metres to avoid too many changes of speed limit along the route**" in exceptional circumstances the length of speed limit can be reduced to an absolute minimum of 300m (paragraph 135).

4.20 In this location, the logical location for the start of a 40mph speed limit would be adjacent to the bend to the east of the site, prior to the proposed vehicular access to Model Farm and the existing access to Hildersley Farm Business Park. This would introduce a 40 mph Intermediate Speed Limit over a length of circa 600m to the existing transition to 30 mph. Drawing JNY8251-01 (in **Annex 3**) indicates the proposed Intermediate Speed Limit arrangements.

4.21 Not disregarding the above, the reduced speed limit is 'desirable' and not 'essential' for access to the development. The developer would fund and promote the speed limit change Order(s) and pay for physical changes that may be required if approved. However, the Order(s) themselves would need to be administered by Herefordshire County Council and the formation of the site access is not dependent on this.

5 TRAFFIC IMPACT ASSESSMENT

Assessment Year, Committed Developments and Background Traffic Growth

5.1 The scope of the Transport Assessment and methodology outlined in this section have been discussed and agreed with the Local Highway Authority, Herefordshire County Council, as described in **Annex 1**.

Background Traffic Growth and Committed Developments

5.2 A future year of 2019, five years after the submission of a planning application and consistent with the recommendations within the (now superseded) Guidance on Transport Assessment (DfT, 2007), has been agreed with Herefordshire County Council.

5.3 The following developments have been considered individually as committed development as agreed through pre-application scoping with Herefordshire Council. The traffic flows for these developments have been obtained from their respective Transport Assessments. Where the committed development traffic flows do not extend to all junctions modelled as part of this document the flows have been further distributed according to recorded turning proportions at the additional junctions required.

- Model Farm commercial development (application ref 133411);
- 290 dwellings on land to the east of the A40 (application ref 140684); and
- Remainder of the Chase Wood Park development, west of the A40. The sales office was contacted and confirmed that 11 dwellings of the permitted 87 were permitted at the time of the traffic surveys. Therefore, the remaining 76 dwellings on this site have been considered as committed development.

5.4 The industry standard TEMPRO and NTM datasets are typically used to assess background traffic growth based on projected growth in housing and employment in an area. TEMPRO assumes 173 housing completions and 103 additional jobs in Ross-on-Wye between 2014 and 2019. In this instance, the combined inclusion of the Model Farm employment site, 290 dwellings on land to the east of the A40, and the remainder of the Chase Wood Park development, west of the A40 as committed development results in growth which far exceeds that considered in TEMPRO.

5.5 Accordingly, no additional background traffic growth has been applied to the surveyed traffic flows on the local network, as this is already accounted for in the committed developments considered separately.

5.6 However, in order to account for growth from developments further afield, background traffic growth has been applied to the primary highway network corridor from the M50 (via A449) to the A40 west (and reverse), to the north of Ross-on-Wye. The following growth rates between 2014 and 2019 from TEMPRO / NTM, for the wider Hereford and Worcester region, have been used:

- AM Peak Hour 1.0467; and
- PM Peak Hour 1.0501.

Trip Generation

5.7 Predicted trip generation rates for the site have been estimated using the industry standard TRICS database, version 7.1.1. In order to select sites of a similar nature to the proposed development at Ross-on-Wye, the following TRICS selection parameters have been used. These parameters have been agreed with Herefordshire Council through Transport Assessment Scoping.

- Category: Residential – Mixed Private / Non-Private Housing;
- No. Dwellings: 50 to 500 dwellings;
- Days of the week: Weekdays;
- Locations: Suburban area, edge of town;
- Travel Plan: No;
- Population < 1 mile < 25,000;
- Population < 5miles < 125,000;
- Types of Dwellings: Sites with bungalows removed; and
- Region: Sites in Ireland and central London removed.

5.8 The resulting trip rates are provided in Table 5.1 below. The TRICS output is provided in **Annex 7**. The number of trips predicted for a 250 dwelling development based upon these trip rates is provided in Table 5.2.

Table 5.1 – TRICS Trip Rates (weekday)

Time Period	Vehicles			Other Modes (Total Two way)		
	Arrivals	Depart-ures	Total Two Way	Pedest-rians	Cyclists	Public Trans. Users
Morning Network Peak Hour 0800-0900	0.155	0.291	0.446	0.254	0.029	0.015
Evening Network Peak Hour 1700-1800	0.33	0.192	0.522	0.13	0.027	0.017
12 Hour (0700-1900)	2.443	2.452	4.895	1.678	0.184	0.227

Source: TRICS 7.1.1 accessed 31/07/2014

5.9 The TRICS sites used do not have Travel Plans associated with them. Accordingly, the trip rates in **Table 5.1** and resulting number of trips in **Table 5.2** are presented as a worst case, as the Travel Plan proposed for the Hildersley Farm site (**Annex 12**) incorporates targets and measures to reduce vehicular trips and encourage travel by sustainable modes.

Table 5.2 – Predicted Trips for 250 Dwellings based upon TRICS Trip Rates (weekday)

Time Period	Vehicles			Other Modes (Total Two way)		
	Arrivals	Depart-ures	Total Two Way	Pedest-rians	Cyclists	Public Trans. Users
Morning Network Peak Hour 0800-0900	39	73	112	64	7	4
Evening Network Peak Hour 1700-1800	83	48	131	33	7	4
12 Hour (0700-1900)	611	613	1224	420	46	57

Trip Distribution and Assignment

5.10 National statistics, shown in Table 5.3, indicate the journey purposes of all journeys made annually. This indicates that leisure, shopping, commuting / business and education / escort education trips typically account for around three quarters of all journeys.

Table 5.3: Proportion of Trips per Year by Journey Purpose

Journey Purpose	Proportion of Trips
Leisure	26%
Shopping	20%
Commuting/Business	19%
Education/Escort Education	11%
Personal Business	10%
Other Escort	10%
Other	4%

Source: Table NTS0409 of Transport Statistics Great Britain – 2011 Edition

5.11 For peak travel, the National Travel Survey results indicate that 42% and 46% of vehicular trips are for “commute” or “business” purposes during the morning and evening peak hours respectively. Accordingly, it was agreed through pre-application scoping that traffic would be distributed from the development using two methods, depending on journey purpose:

- For “commute” and “business” purpose trips: traffic distributed using the Census Journey to Work data for Ross-on-Wye East ward (00GAQE); and
- For other purposes: traffic distributed using a gravity model with a 30 minute travel time.

5.12 The Census Journey to Work data for Ross-on-Wye East ward indicates that the most common destinations for 'car driver' journeys to work were as follows, making up 81.7% of total journeys to work. A further 34 wards and authorities made up the remaining 18.3% of journeys.

- Ross-on-Wye East ward 35.5%
- Gloucestershire 24.4%
- Ross-on-Wye west ward 7.0%
- Kerne Bridge ward 3.7%
- Monmouthshire 3.7%
- Central ward (Hereford) 3.0%
- Three Elms ward (Hereford) 2.4%
- Worcestershire 2.0%

5.13 It is clear from the above list that there is considerable opportunity to encourage modal shift away from private car and onto sustainable modes. The number of 'car driver' journeys to work within Ross-on-Wye East ward is 35.5% with a further 7.0% of 'car driver' journeys to work to Ross-on-Wye West ward.

5.14 For the purposes of distributing and assigning vehicular trips to the network, destinations with less than a 1.5% car driver mode share in the national census would not result in any assignment of any trips from the developments, accordingly the remaining destinations have been re-based to 100% and 'commute' and 'business' journeys have been assigned using this method. The Census Journey to Work information is provided in **Annex 8**.

5.15 For journey purposes other than 'commute' and 'business', a Gravity Model with a 30 minute drive time has been developed. This indicates that, for non 'commute' or 'business' travel, the key destinations are into Ross-on-Wye (60.8%), Monmouth (26.2%), Hereford (10.5%) and Ledbury (2.5%). The Gravity Model is provided in **Annex 9**.

5.16 The resulting predicted development traffic flows, combining the Census Journey to Work and Gravity Model distributed trips, are shown diagrammatically in **Figure 7**.

Predicted Future Year Junction Operation

The three junctions assessed in the 2014 Observed scenario have been reassessed in 2019, with committed developments only as a baseline scenario (**Figure 8** refers), and with the addition of the proposed development (**Figure 9** refers). The site access onto the A40 (**Annex 4** refers) has also been assessed for the Baseline + Development scenario. The junction capacity modelling results are provided in **Annex 10**.

Overross Roundabout

5.17 Background traffic growth has been applied to flows between the A449 and the A40 West in the Future Year 2019 Baseline scenario as described in paragraph 5.6. The remaining traffic growth is a result of traffic flows from the committed developments considered (paragraphs 5.3 to 5.5 refer).

5.18 The results of the future year modelling of the Overross roundabout are shown in Table 5.4. This table indicates that the impact of traffic from the proposed development at Hildersley Farm upon this junction would be negligible. No queue length increases are predicted over the Future Year 2019 Baseline scenario, the maximum RFC increase would be 0.02 and all arms would remain below the target RFC of 0.85 in the '+ Development' scenario.

Table 5.4: Overross Roundabout - Results of ARCADY Modelling - 2019 Scenarios

Arm	Future Year 2019 Baseline						Future Year 2019 Baseline + Development					
	AM Peak Hour 0800-0900			PM Peak Hour 1700-1800			AM Peak Hour 0800-0900			PM Peak Hour 1700-1800		
	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)
A449 East	0.79	4	8.91	0.72	3	6.18	0.79	4	9.01	0.72	3	6.30
A40 South	0.65	2	12.37	0.52	1	8.22	0.67	2	13.03	0.53	1	8.40
Ledbury Rd	0.52	1	9.38	0.31	0	5.57	0.52	1	9.58	0.32	0	5.61
A40 West	0.80	4	9.21	0.59	1	4.47	0.80	4	9.37	0.59	1	4.54
Netherton Rd	0.16	0	15.20	0.31	0	8.39	0.16	0	15.39	0.32	0	8.55

Hildersley Roundabout

5.19 **Table 5.5** gives the results of the ARCADY modelling of the Hildersley roundabout in 2019. Background traffic growth is a result of traffic flows from the committed developments considered (paragraphs 5.3 to 5.5 refer). The results indicate the impact of the proposed development at Hildersley Farm upon this junction would be small. A maximum queue length increase of 1 vehicle is predicted on the A40 north arm during the AM peak hour and the maximum increase in RFC at any arm is 0.05. All arms would remain below the target RFC of 0.85 in the 'Baseline + Development' scenario.

Table 5.5: Hildersley Roundabout - Results of ARCADY Modelling - 2019 Scenarios

Arm	Future Year 2019 Baseline						Future Year 2019 Baseline + Development					
	AM Peak Hour 0800-0900			PM Peak Hour 1700-1800			AM Peak Hour 0800-0900			PM Peak Hour 1700-1800		
	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)
Hildersley Rise	0.03	0	7.78	0.01	0	7.54	0.04	0	8.07	0.01	0	8.15
A40 East	0.50	1	6.07	0.46	1	5.24	0.54	1	6.68	0.50	1	5.55
Gloucester Road	0.45	1	6.51	0.64	2	9.59	0.48	1	6.90	0.69	2	11.23
A40 North	0.82	4	22.05	0.73	3	16.40	0.84	5	24.88	0.78	3	20.22

Alton Road and Ashburton Industrial Estate Priority Junctions onto Gloucester Road

5.20 Table 5.6 provides the results of the PICADY modelling of the staggered junction of Gloucester Road, Alton Road and the road leading to the Ashburton Industrial Estate in 2019. Background traffic growth is a result of traffic flows from the committed developments considered (paragraphs 5.3 to 5.5 refer). The results indicate the impact of the proposed development at Hildersley Farm upon this junction would be small. A maximum queue length increase of 1 vehicle is predicted for the Alton Rd Ahead/Right movement during the PM peak hour and the maximum increase in RFC for any movement is 0.09 (Alton Road Left during the PM peak hour).

5.21 The RFC for the Alton Road Ahead/Right movement increases to 0.86, just over the target 0.85, during the PM peak hour with development, from a without development base of 0.81. This increase in RFC is not considered to be significant, does not reach a value of 1 (indicating that a junction is fully saturated) and is certainly not *severe* as considered in paragraph 32 of the NPPF. It is also worth of note that this figure is assessed without the benefit of the Travel Plan measures and targets set out in **Annex 12**, which should reduce development traffic flows below that considered here.

Table 5.6: Gloucester Road staggered junction – Results of PICADY modelling – 2019 Scenarios

Movement	Future Year 2019 Baseline						Future Year 2019 Baseline + Development					
	AM Peak Hour 0800-0900			PM Peak Hour 1700-1800			AM Peak Hour 0800-0900			PM Peak Hour 1700-1800		
	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)
Alton Rd Left	0.10	0	12.17	0.22	0	22.02	0.11	0	13.37	0.31	0	35.89
Alton Rd Ahead/Right	0.61	2	21.81	0.81	4	41.90	0.65	2	24.74	0.86	5	55.81
Gloucester Rd East	0.35	1	9.46	0.28	0	8.87	0.37	1	9.89	0.31	0	9.41
Ashburton Rd Left	0.27	0	8.48	0.53	1	14.83	0.28	0	8.76	0.58	1	17.22
Ashburton Rd Ahead/Right	0.20	0	17.10	0.39	1	25.27	0.21	0	18.36	0.43	1	30.08
Gloucester Rd West	0.16	0	8.28	0.14	0	8.09	0.16	0	8.43	0.14	0	8.19

Site Access onto A40

5.22 The site access priority junction has also been assessed for the 2019 with development scenario. The results are provided in Table 5.7. The results indicate that the site access would operate well within capacity with RFCs on all arms below 0.2 and with negligible queues.

Table 5.7: Site Access – Results of PICADY modelling – 2019 with Development

Movement	AM Peak Hour 0800-0900			PM Peak Hour 1700-1800		
	RFC	Max Queue (Veh)	Max Delay (sec/ veh)	RFC	Max Queue (Veh)	Max Delay (sec/ veh)
Site Access Left turn	0.12	0	7.73	0.08	0	7.36
Site Access Right turn	0.07	0	13.64	0.05	0	14.74
A40 West Right turn to site	0.08	0	4.57	0.19	1	4.56

Assessment of Impact upon the Strategic Road Network

5.23 The M50, A449 and A40 to the north of Ross-on-Wye form part of the Strategic Road Network (SRN) managed by the Highways Agency. The additional vehicles predicted to use the SRN route as a result of the proposed development at Hildersley Farm has therefore been calculated based upon the trip generation and distribution described in paragraphs 5.7 onwards. The resulting numbers of trips are shown in Table 5.8

Table 5.8: Predicted Development Trips on Strategic Road Network

Location	AM Peak Hour 0800-0900			PM Peak Hour 1700-1800		
	Eastbound	Westbound	Total (two way)	Eastbound	Westbound	Total (two way)
A40 north of Ross-on-Wye	6	13	19	14	7	21
A449	2	1	3	2	2	4
M50	1	1	2	2	1	3

5.24 Table 5.8 indicates that the predicted impact upon the routes forming part of the SRN in proximity to the site is very low and likely to be well within typical variations in flows these routes. Accordingly, it is unlikely that existing users of the SRN would notice any perceptible change in conditions and it is not anticipated that any further assessment of the SRN is required.

Summary of Traffic Impact Assessment

5.25 The predicted operation of the following junctions has been assessed for future year 2019 both with and without the proposed development at Hildersley Farm.

- Overross roundabout;

- Hildersley roundabout;
- B4260 Gloucester Road junctions with and the road to Ashburton Industrial Estate; and
- The proposed site access onto the A40.

5.26 The results indicate that the predicted traffic from the Hildersley Farm development can be satisfactorily accommodated on the existing road network and that no significant negative impacts on junction operation are predicted.

5.27 Considering both the development of Hildersley Farm and the committed developments agreed with Herefordshire County Council during pre-application scoping indicated that the above considered junctions remain operating within capacity in future year 2019.

6 SUMMARY AND CONCLUSIONS

6.1 This Transport Assessment report (TA) has been prepared in accordance with best practice, the Planning Practice Guidance – 'Travel plans, transport assessments and statements in decision-taking' (March 2014). The scope of the assessment has been informed through scoping with the local highway authority, Herefordshire County Council.

6.2 This TA assesses the transport implications of a proposed residential development on land to the west of Hildersley Farm, Ross-on-Wye. The site has been identified in Herefordshire Council's Local Plan Core Strategy Pre-Submission Publication (May 2014) as a suitable location for a strategic urban extension of Ross-on-Wye. The proposed development is expected to comprise approximately 250 residential dwellings over an 11 hectare area.

6.3 The site benefits from good access to public transport: the nearest bus stops are located on the A40 Gloucester Road immediately east of the proposed vehicular access and these stops are proposed to be upgraded, as part of the Model Farm employment development to the north, to incorporate shelters and timetable provision. Alternatively, if the Hildersley Farm development comes forward before Model Farm this Transport Assessment demonstrates how these bus stop improvements may be implemented. Analysis of Personal Injury Accident data does not indicate a cause for concern on the local road network.

6.4 The development prioritises movement on foot and bicycle in terms of its concept layout and links to surrounding facilities and proposed employment areas. A footpath / cyclepath link away from traffic is proposed from the north-western corner of the site to connect with the existing footway provision on the southern side of the A40 towards Ross-on-Wye. A Travel Plan is proposed to encourage sustainable modes of travel and to mitigate the transport impacts of the proposal.

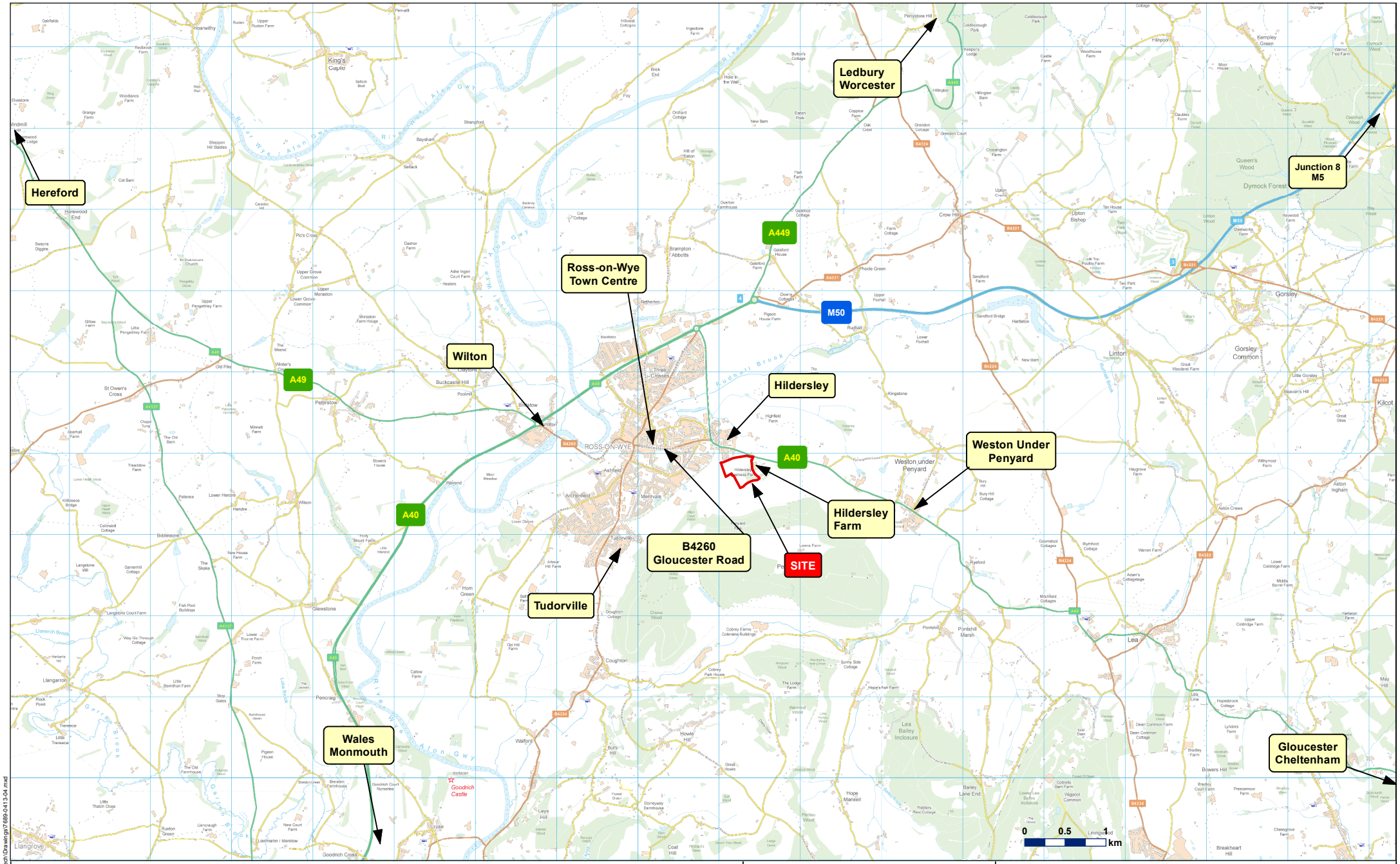
6.5 Vehicular access is proposed from the A40, upgrading the existing western access to Hildersley Farm. An intermediate 40 mph speed limit is proposed on the A40 adjacent to the site, although the proposed access arrangements are not dependent on this. The intermediate speed limit providing a step between the existing national speed limit and the 30 mph speed limit on entry to Ross-on-Wye. The proposed 40 mph intermediate speed limit would extend eastwards to incorporate the proposed Model Farm employment site access and the existing access to Hildersley Farm Business Park.

6.6 Herefordshire County Council has identified potential improvements to the pedestrian network via: the potential for the pedestrian crossings proposed as part of the Model Farm application to be provided in advance of that development; and/or improvements to pedestrian connectivity along Alton Road. The Applicant is prepared to consider contributions towards improvements to the pedestrian environment through a contribution secured via a planning obligation in order that the timing and provision of facilities can be coordinated by Herefordshire County Council. This would be in accordance with Herefordshire County Council Local Transport Plan policy DC1.

6.7 It is concluded that safe and appropriate means of access can be provided by all modes of travel to facilitate residential development on the site in accordance with the National Planning Policy Framework, including the Core Planning Principle to "**actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable**".

6.8 The predicted vehicular trips resulting from the proposed development have been estimated using parameters agreed through scoping with the highway authority. The predicted vehicular trips can be adequately accommodated on the surrounding local highway network and the Strategic Road Network with minimal impact. There would be no material changes to the operational capacity of key junctions and negligible impact on the Strategic Road Network.

FIGURES



Legend

Site

RPS

Date: Jul 2014	Scale: NTS	Rev: --
Drwg. No: JNY8251-01	Drawn: JC	Checked: AW

Project:
HILDERSLEY FARM, ROSS-ON-WYE

Title:
SITE LOCATION AND LOCAL HIGHWAY NETWORK

Figure No:
1

Transport

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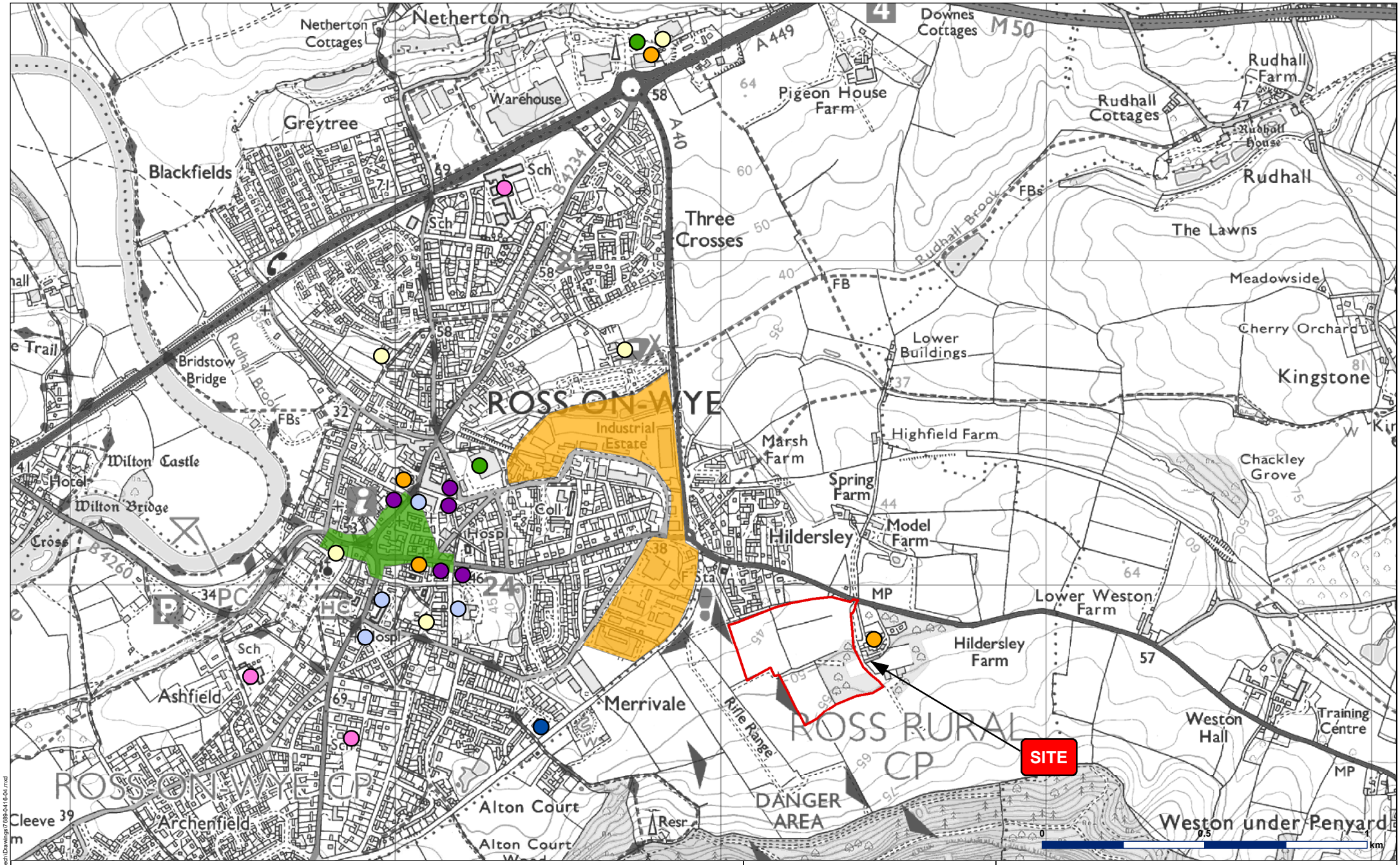

Legend

- Site
- Education Facilities
- Health Facilities
- Outdoor Activities
- Community Facilities
- Employment Facilities
- Leisure Facilities
- Shopping/Retail Facilities

RPS

Date: Jul 2014	Scale: 1:18,000	Rev: --
Drwg. No: JNY8251-02	Drawn: JC	Checked: AW

Project: HILDERSLEY FARM, ROSS-ON-WYE

Title: LOCAL FACILITIES PLAN

Figure No: 2

Transport

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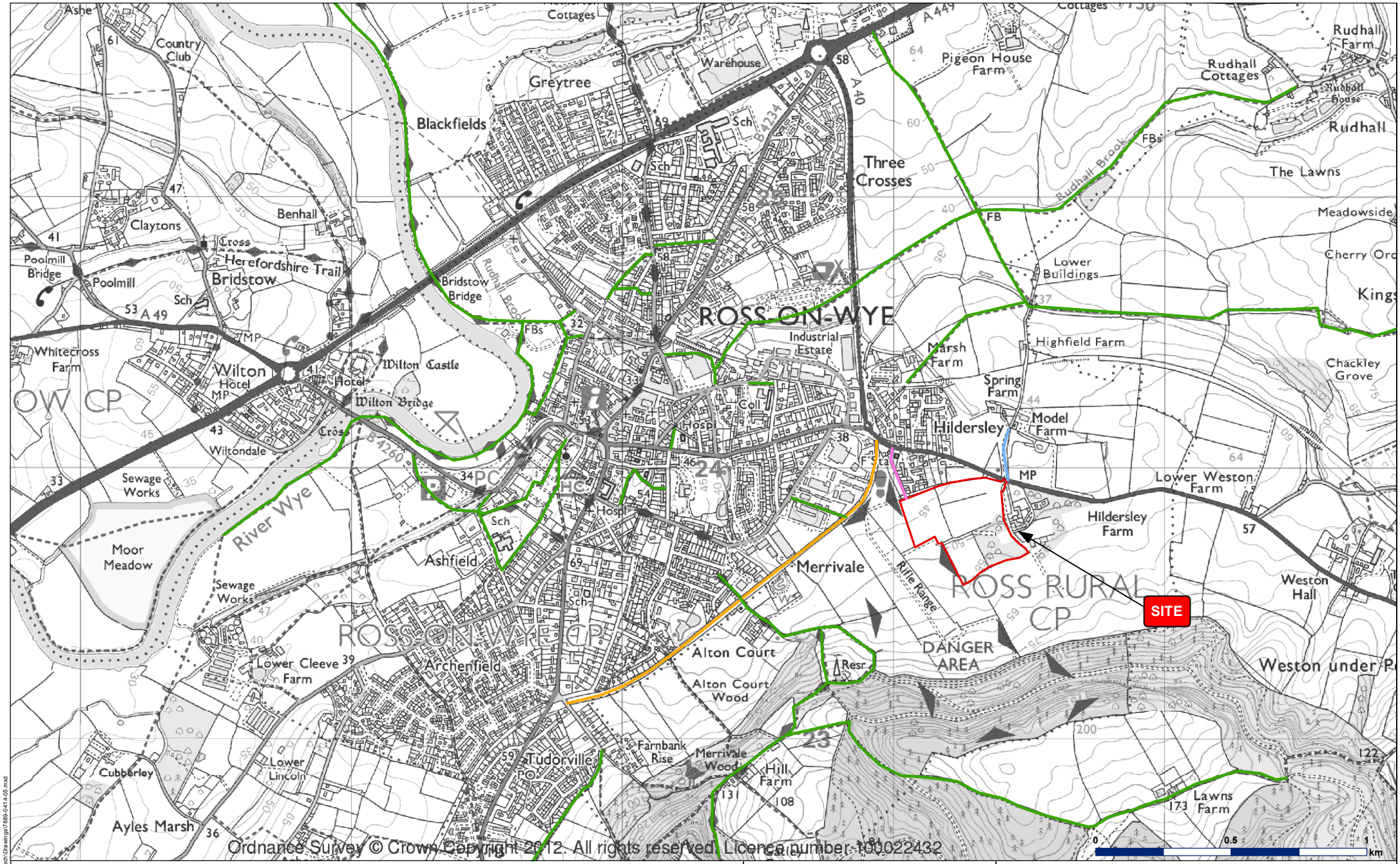

Legend

- Site
- Proposed Shared-use paths
- Shared use path proposed by others
- Billy's Cycle Path
- Public Right of Way

RPS

Date: Oct 2014	Scale: 1:18,000	Rev: --
Drwg. No: JNY8251-03	Drawn: JC	Checked: AW

Project: HILDERSLEY FARM, ROSS-ON-WYE

Title: LOCAL PEDESTRIAN AND CYCLING FACILITIES

Figure No: 3

Transport

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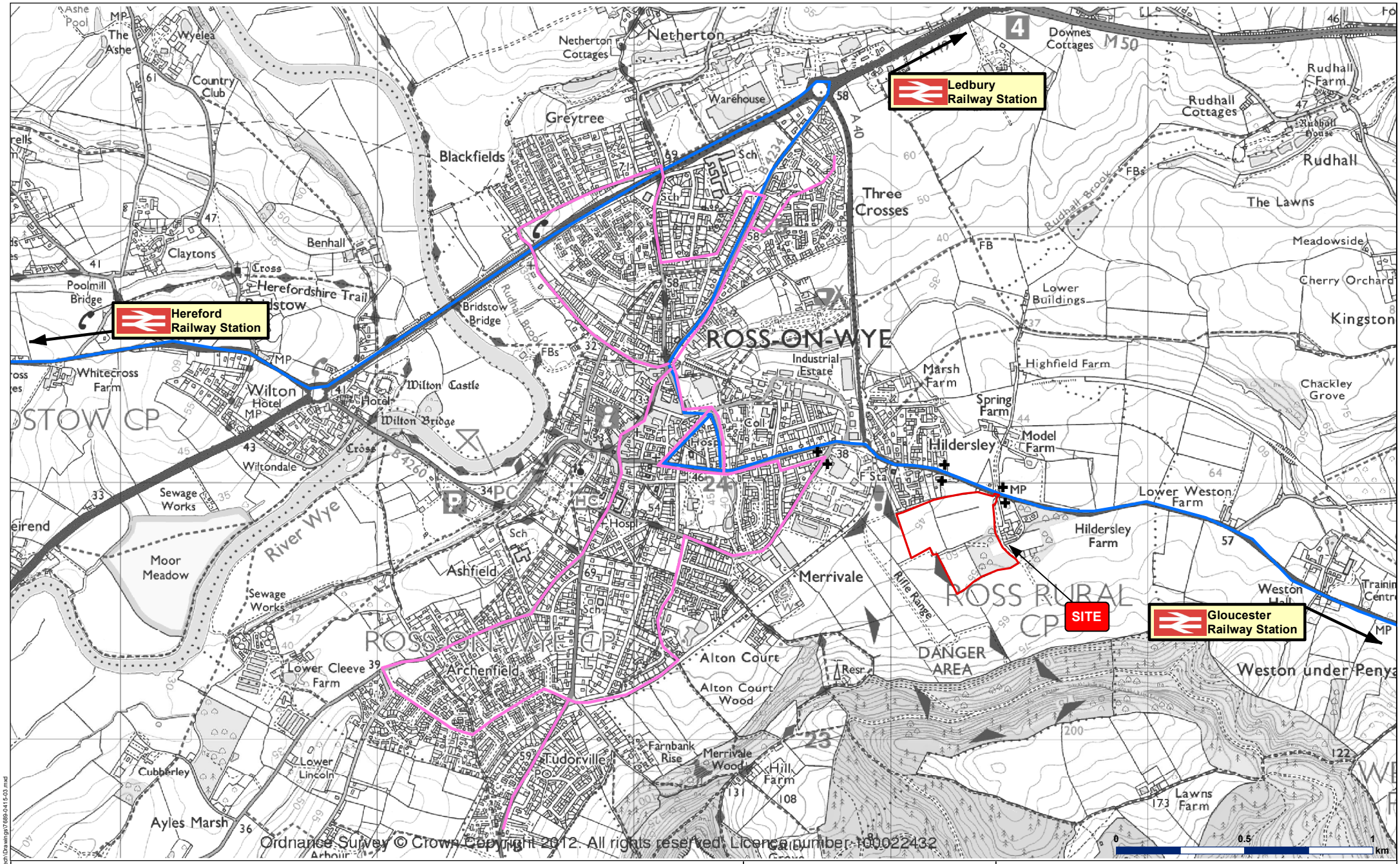

Legend

Site ✚ Bus Stop

Bus Route: 32/33 40

RPS

Date: Jul 2014	Scale: 1:19,000	Rev: --
Drwg. No: JNY8251-04	Drawn: JC	Checked: AW

Project: HILDERSLEY FARM, ROSS-ON-WYE

Title: PUBLIC TRANSPORT FACILITES

Figure No: 4

Transport

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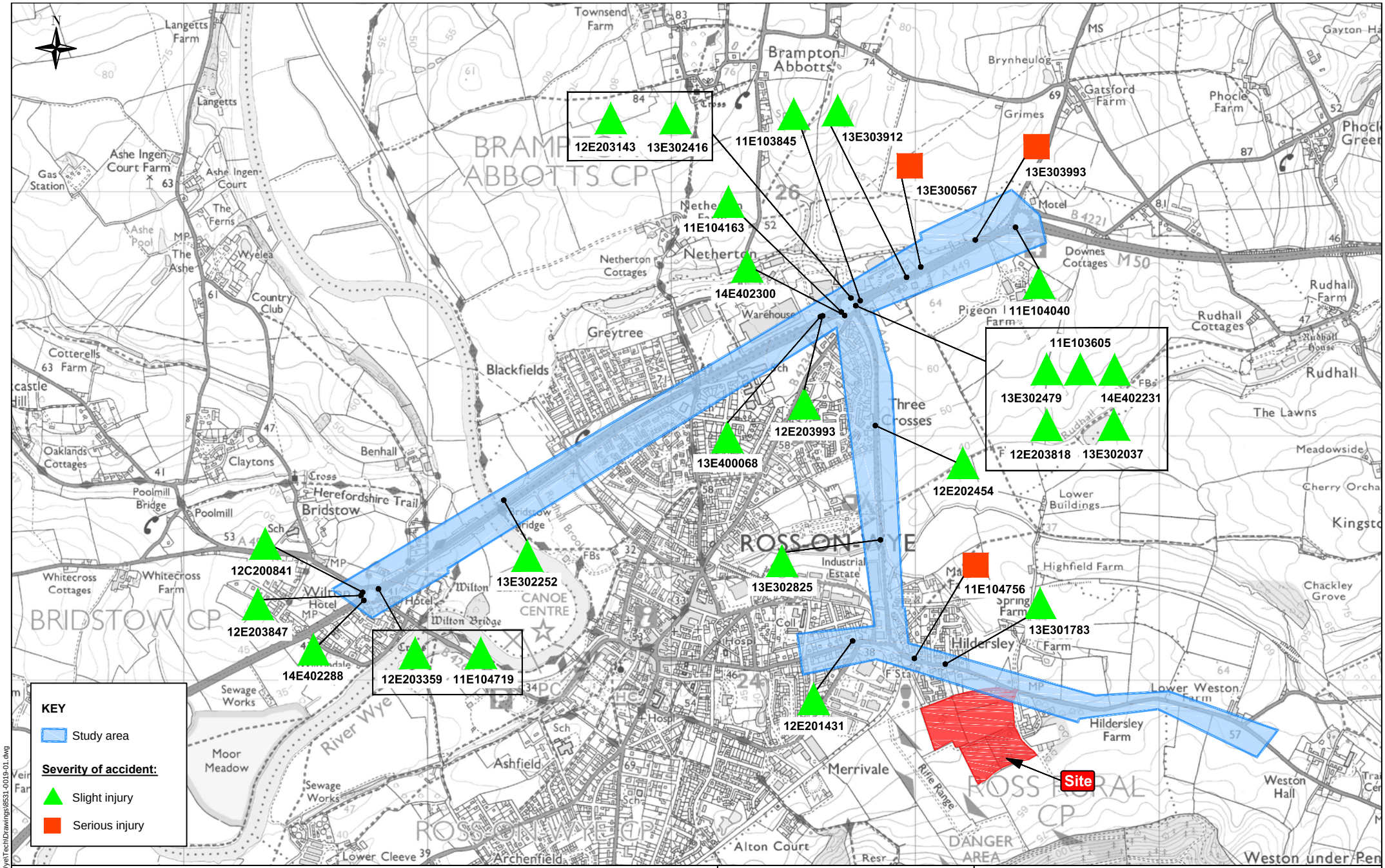
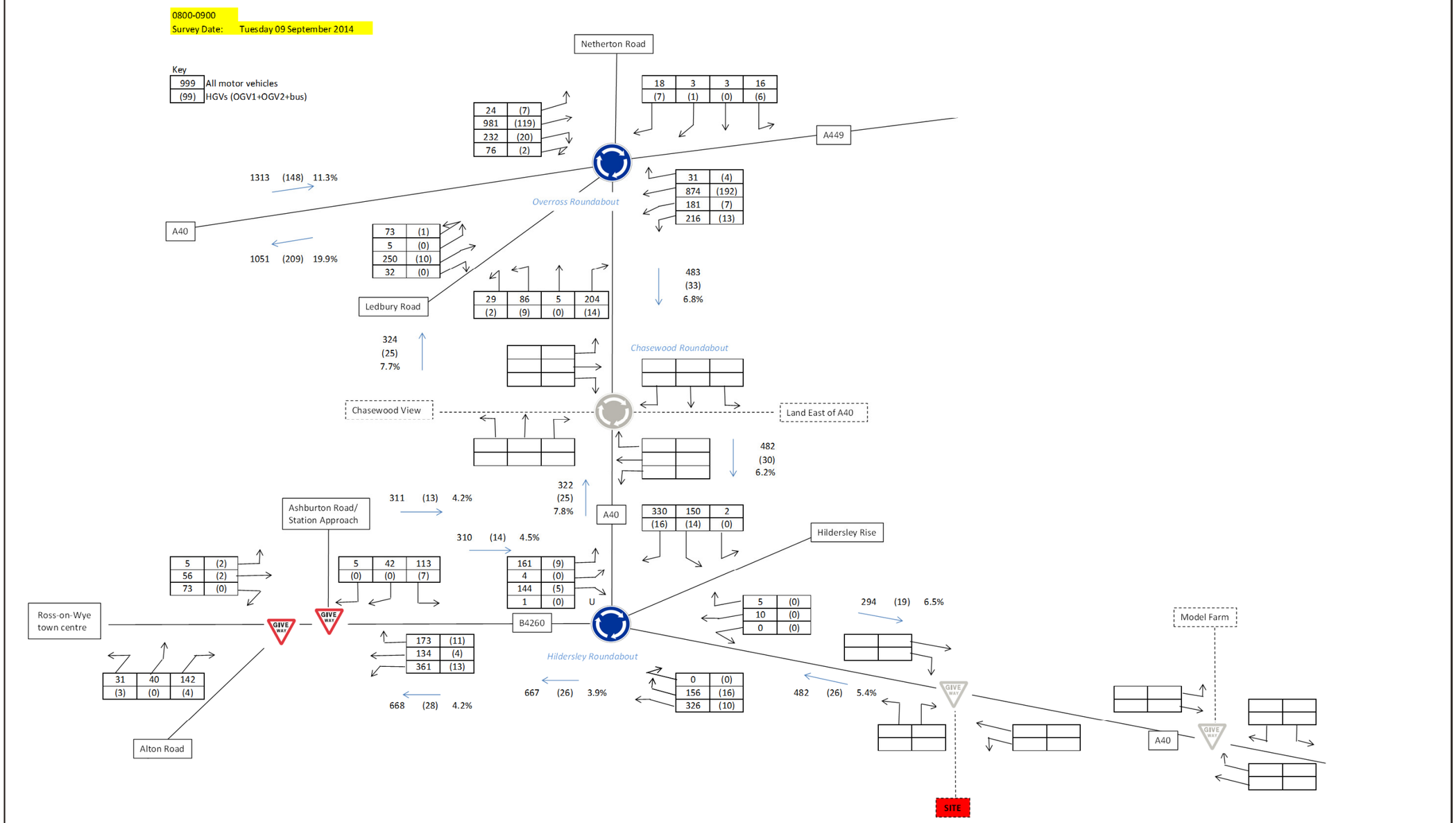




RPS

Project: Hildersley Farm, Ross on Wye

Title: 2014 Base Traffic Flows AM Peak (08:00 - 09:00)

Date: Oct 2014 | Scale: NTS | Rev:

Drwg. No: JNY8251-04 | Drawn: AG | Checked: AW

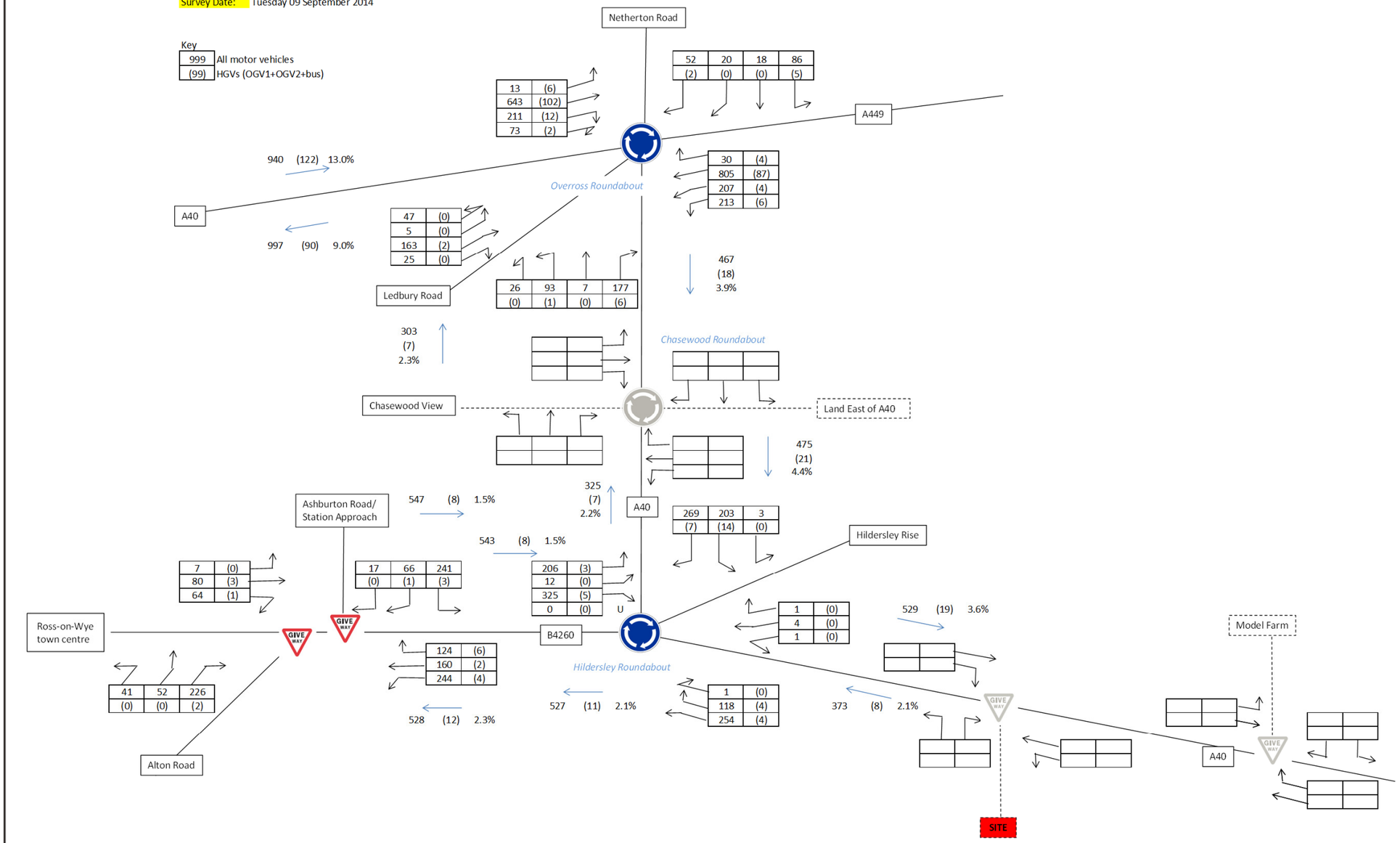
Figure No: 6

Transport

1700-1800
Survey Date: Tuesday 09 September 2014

Key

999	All motor vehicles
(99)	HGVs (OGV1+OGV2+bus)



RPS

Project: Hildersley Farm, Ross on Wye

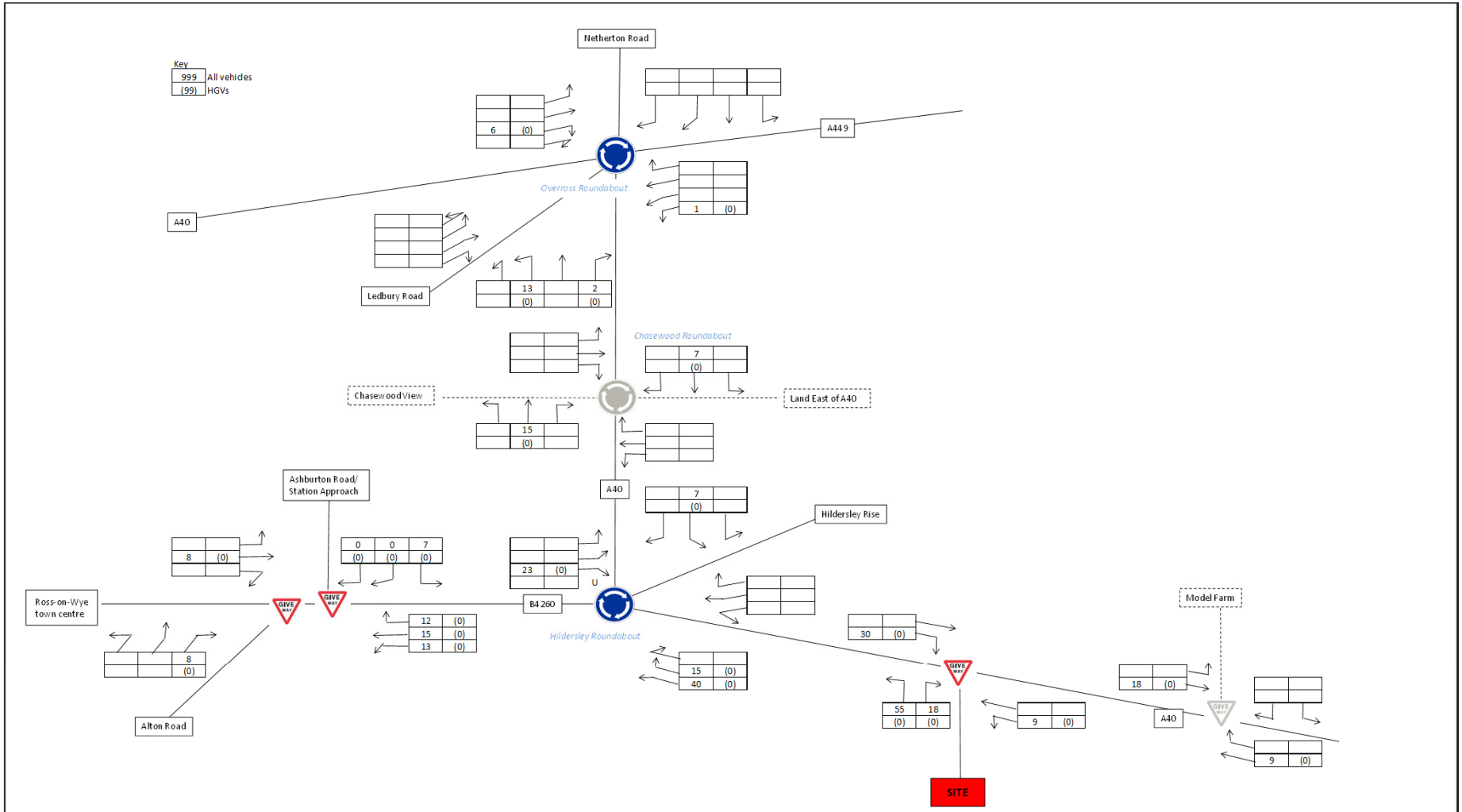
Title: 2014 Base Traffic Flows PM Peak (17:00 - 18:00)

Date: Oct 2014 Scale: NTS Rev:

Drwg. No: JNY8251-05 Drawn AG Checked AW

Figure No: 6

Transport



RPS

Project: Hildersley Farm, Ross on Wye

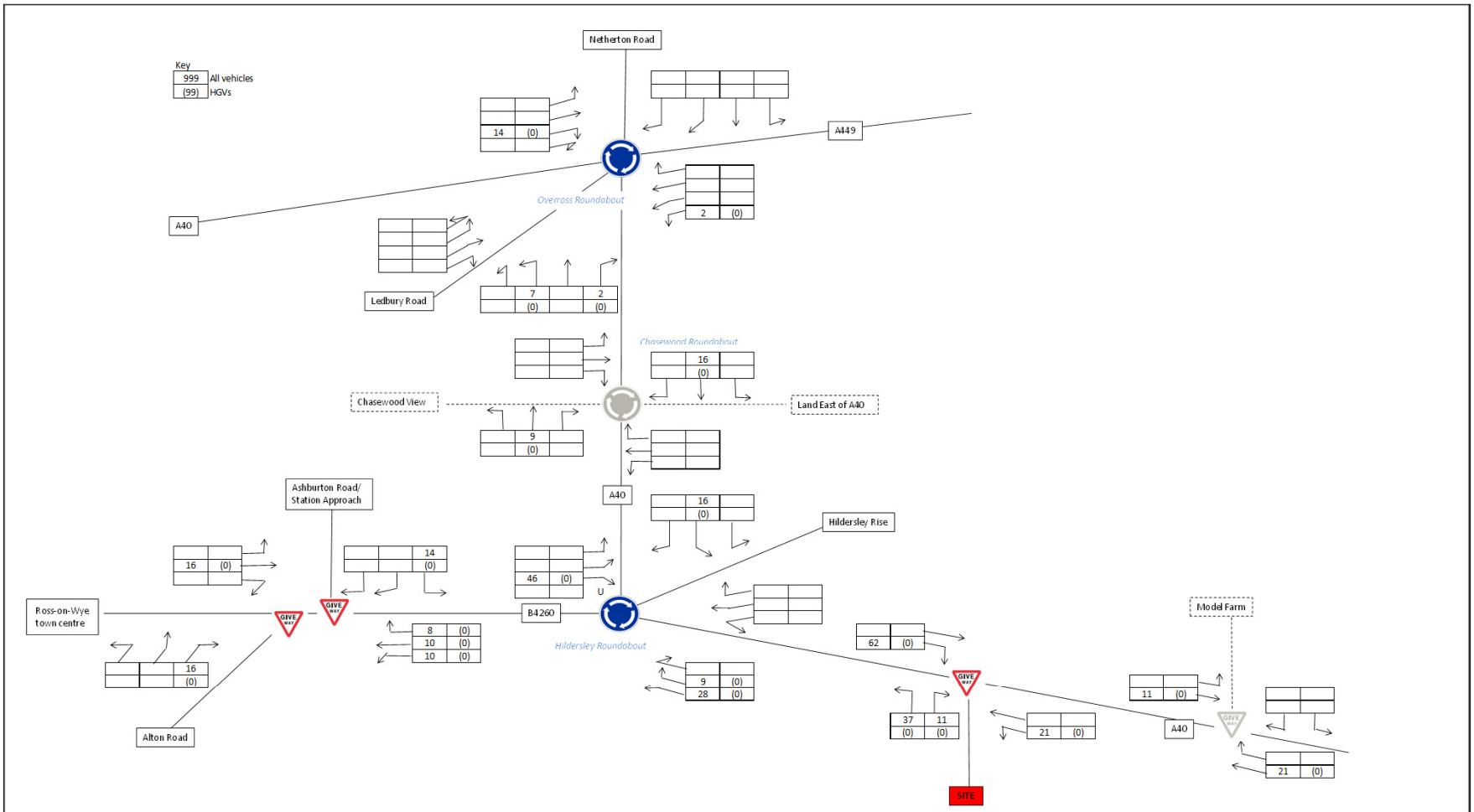
Title: Predicted Development Flows AM Peak (08:00 - 09:00)

Date: Oct 2014 Scale: NTS Rev:

Drwg. No: JNY8251-06 Drawn: AG Checked: AW

Figure No: 7

Transport



RPS

Project: Hildersley Farm, Ross on Wye

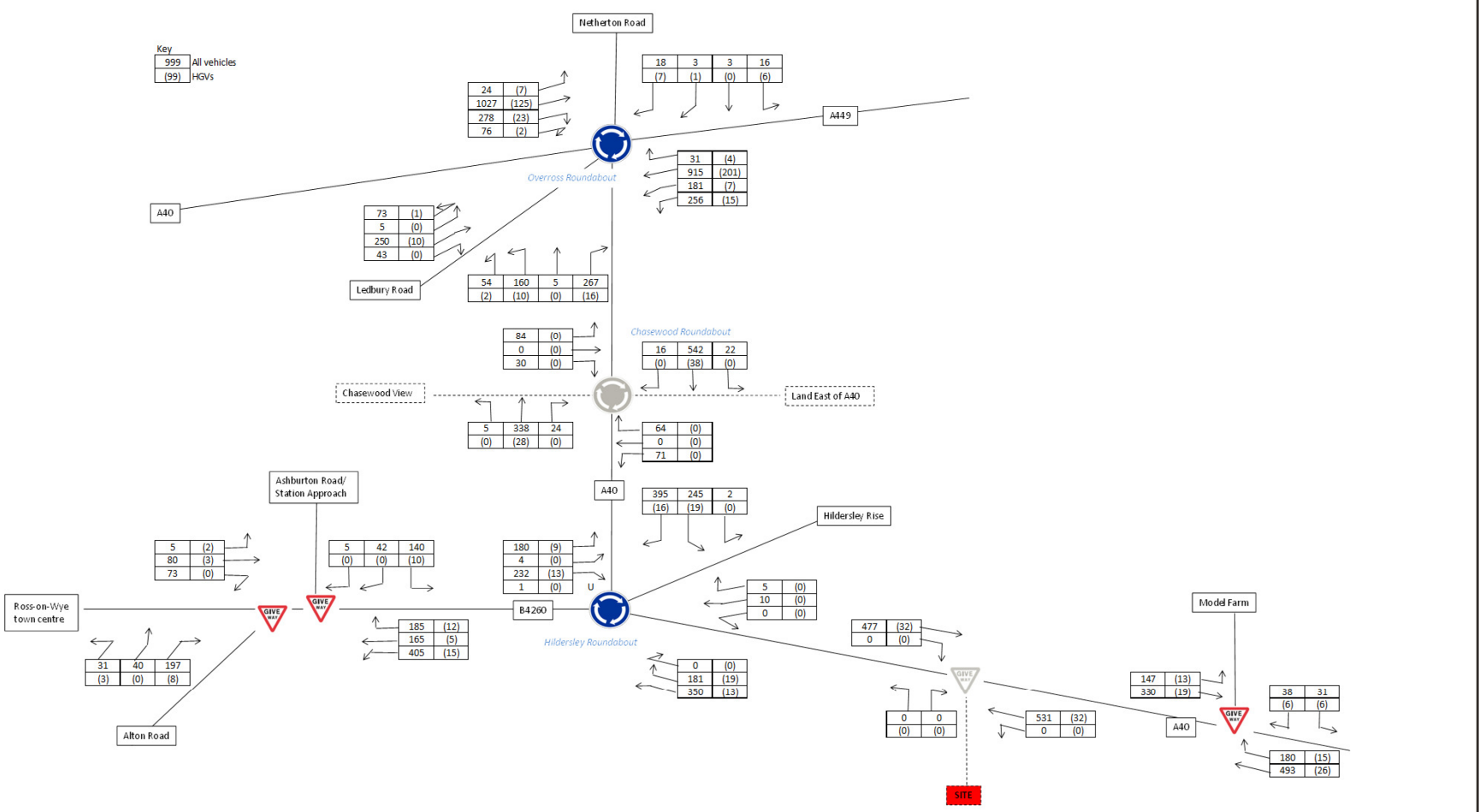
Title: Predicted Development Flows PM Peak (17:00 - 18:00)

Date: Oct 2014 Scale: NTS Rev:

Drwg. No: JNY8251-07 Drawn: AG Checked: AW

Figure No: 7

Transport



RPS

Project: Hildersley Farm, Ross on Wye

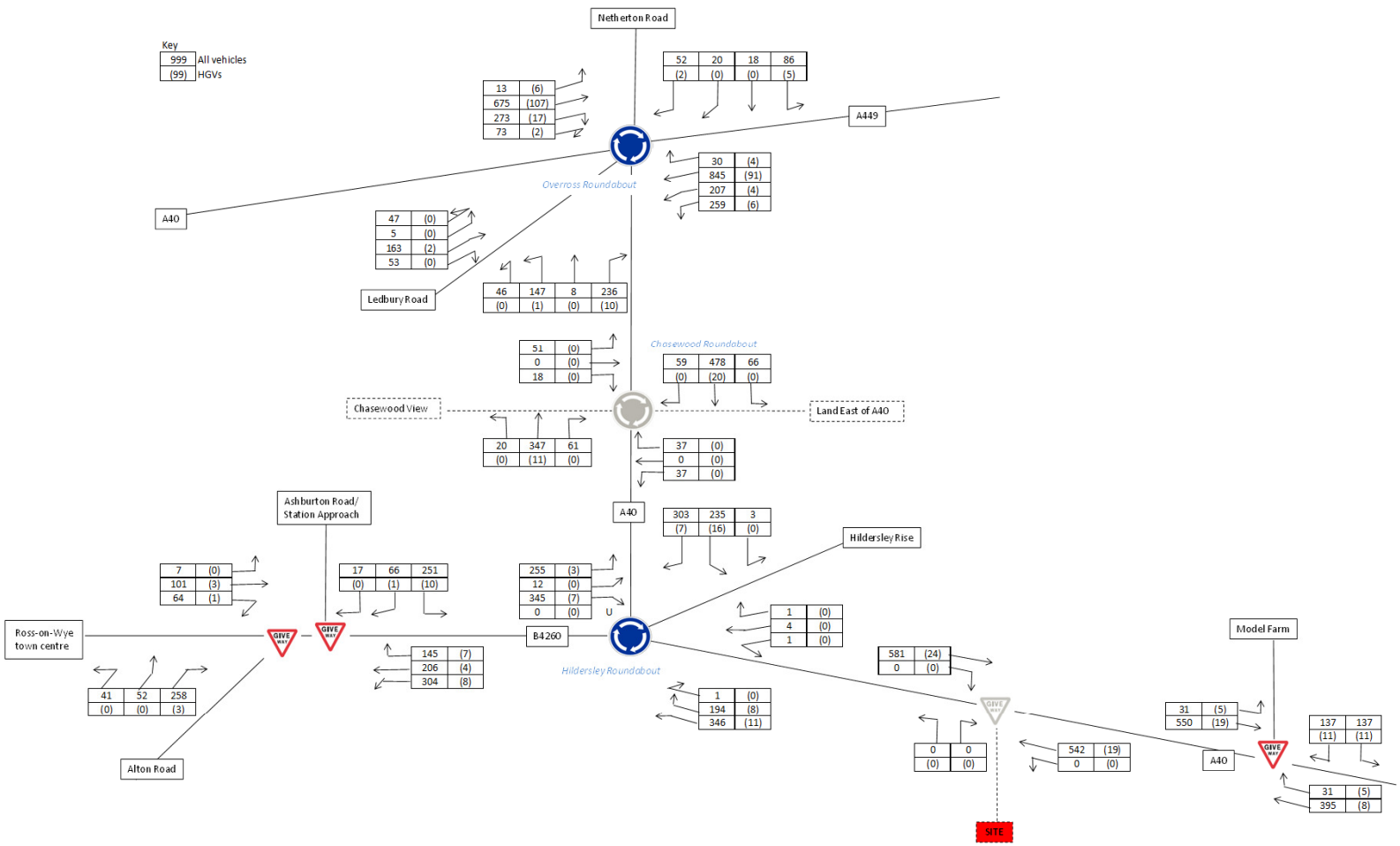
Title: 2019 Baseline + Committed Dev Flows AM Peak (08:00 - 09:00)

Date: Oct 2014 Scale: NTS Rev:

Drwg. No: JNY8251-08 Drawn: AG Checked: AW

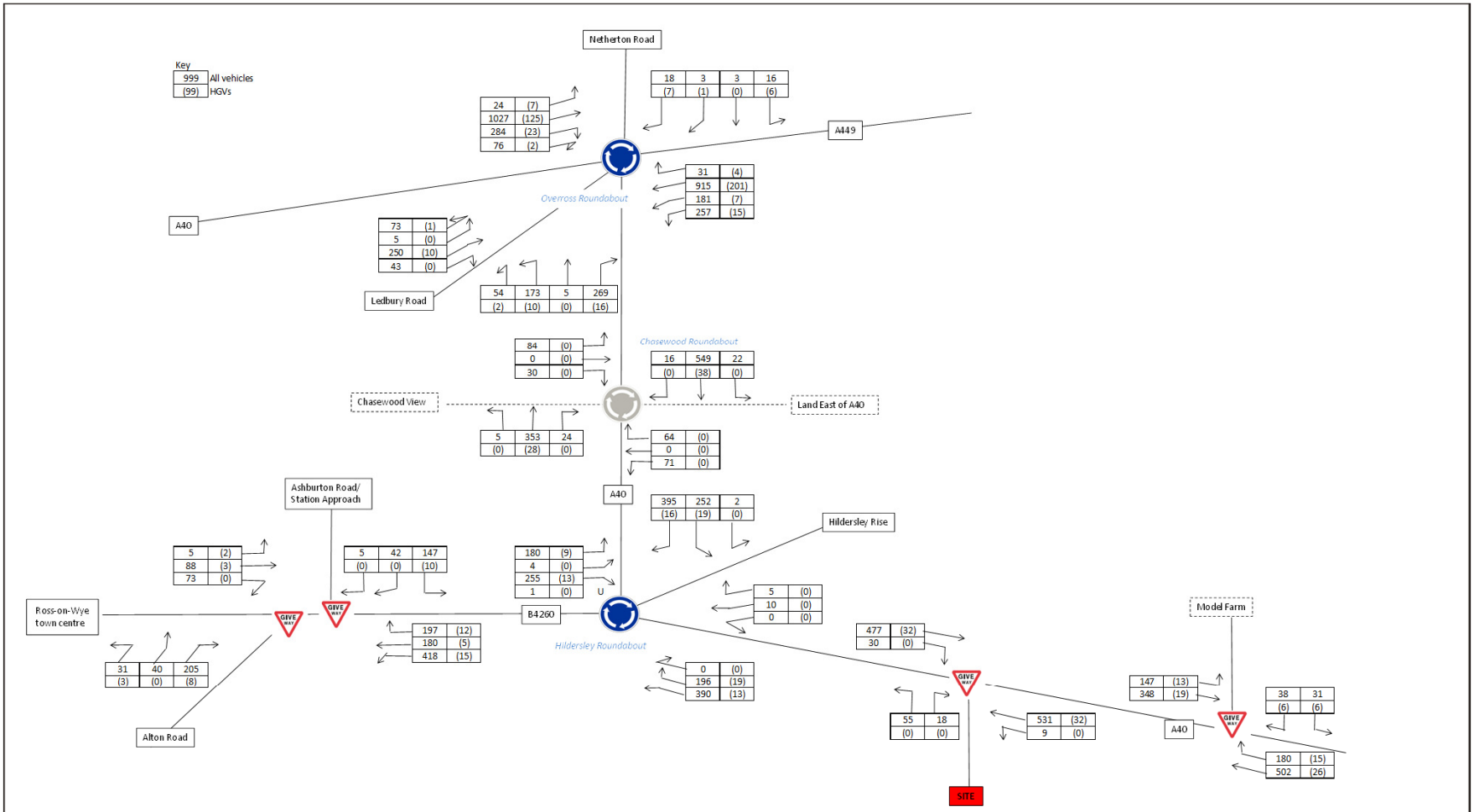
Figure No: 8

Transport



	RPS	Project:	Hildersley Farm, Ross on Wye
		Title:	2019 Baseline + Committed Dev Flows PM Peak (17:00 - 18:00)
Date: Oct 2014	Scale: NTS	Rev:	Figure No: 8
Drwg. No: JNY8251-09	Drawn: AG	Checked: AW	

Transport



RPS

Project: Hildersley Farm, Ross on Wye

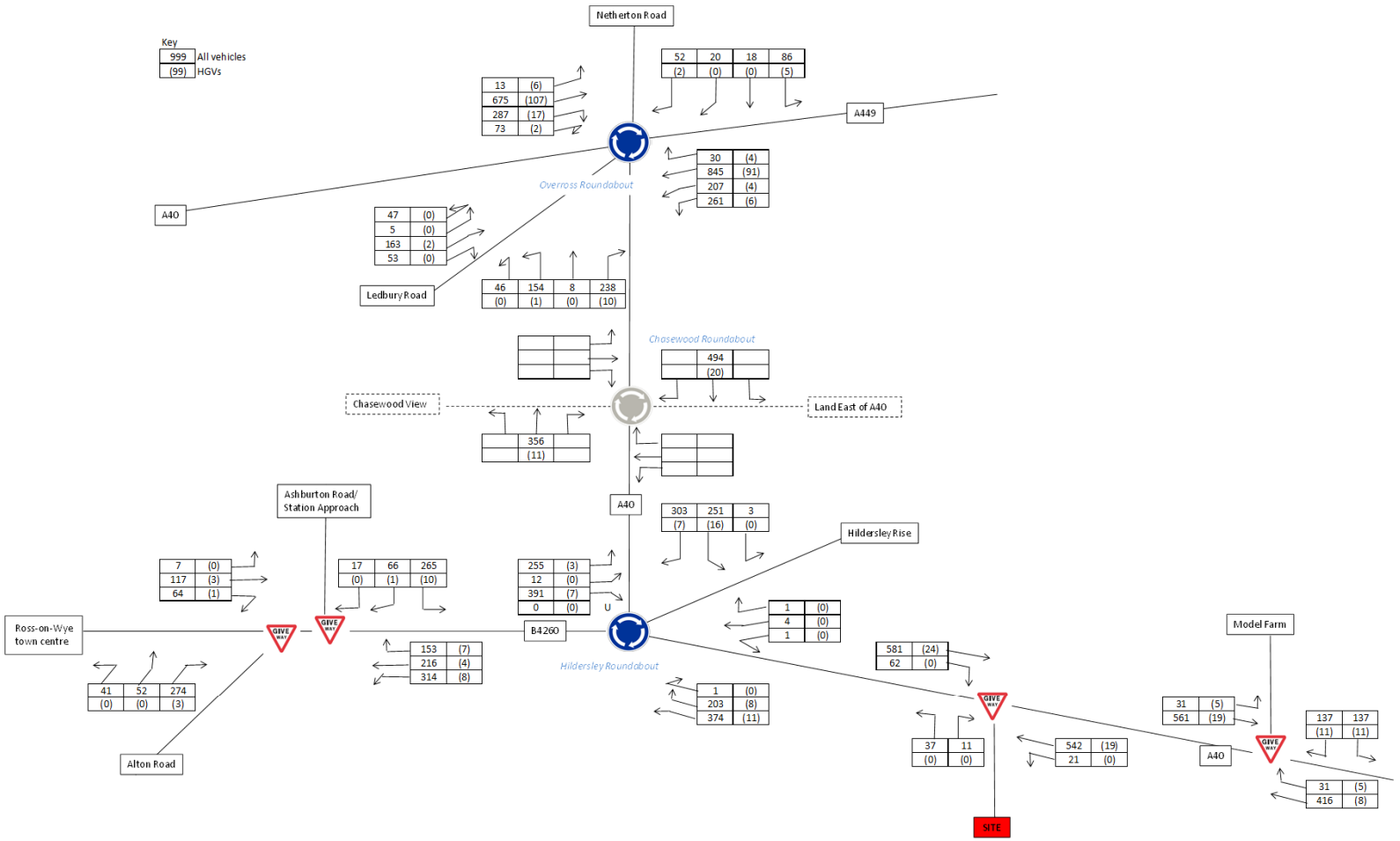
Title: 2019 Baseline + Committed Dev + Predicted Dev Flows AM Peak (08:00 - 09:00)

Date: Oct 2014 Scale: NTS Rev:

Drwg. No: JNY8251-10 Drawn: AG Checked: AW

Figure No: 9

Transport



RPS

Project: Hildersley Farm, Ross on Wye

Title: 2019 Baseline + Committed Dev + Predicted Dev Flows PM Peak (17:00 - 18:00)

Date: Oct 2014 Scale: NTS Rev:

Drwg. No: JNY8251-11 Drawn: AG Checked: AW

Figure No: 9

Transport

ANNEXES

ANNEX 1 – SCOPING COMMUNICATIONS WITH THE HEREFORDSHIRE COUNCIL

Andrew Wells

From: Evans, Bruce <bje@herefordshire.gov.uk>
Sent: 31 July 2014 11:04
To: Andrew Wells
Subject: RE: Hildersley, Ross-on-Wye

Hi Andy,
I confirm this reflects our conversation,
Regards
Bruce

From: Andrew Wells [mailto:andrew.wells@rpsgroup.com]
Sent: 31 July 2014 11:01
To: Evans, Bruce
Cc: Kate Gapper; Richard Stacey; Alison Goddard
Subject: RE: Hildersley, Ross-on-Wye

Hello Bruce,

Further to our telephone conversation, I would be grateful if you could confirm and agree our discussion as follows:

The content and methodology set out within the Scoping Note is agreed, with the following changes, caveats and additions:

- The TRICS assessment should be based upon the category 'Mixed Private / Non-Private Housing' to reflect affordable housing within the development;
- The committed developments are those set-out in the Scoping Report (Model Farm and 290 dwellings east of the A40). You have asked us to discuss the remaining build-out of Chase Wood Park with Andy Banks to determine how this should be considered in the TA. The TEMPRO growth rates set-out in the Scoping Report will be reduced to avoid double-counting of committed development (Scoping Report para. 3.11);
- Junction capacity assessment is to be undertaken for the junctions set-out in the TA Scoping Report along with the proposed site access;
- You have requested an additional 'Town Centre Traffic Impact' assessment which considers rat-running through routes to the north and south of the town centre, particularly Alton Street and surrounding areas and the areas circled in red on the plan provided in your email of 28 July 2014 13:42; pedestrian/cycle provision on these routes; the impact that traffic from the development might have on these routes; and potential mitigation. This assessment is not of capacity per-se but the overall operation and function of these areas at peak times;
- You will review the proposed access arrangements and footway provision on the A40 as part of the proposal. You have noted that any offsite works will require a Stage 1 / 2 Road Safety Audit to be provided; and
- You have requested that the area for which Personal Injury Accident data is obtained is extended to include both that within the Scoping Report (para 3.7) and also to incorporate the locations circled in red on the plan provided in your email of 28 July 2014 13:42.

I trust that this adequately reflects our discussion. Please could you confirm this by return of email?

Thanks and best wishes,

Andy Wells

Andy Wells
Associate (Transport) - RPS Planning & Development
20 Western Avenue, Milton Park,
Abingdon, Oxfordshire, OX14 4SH.
United Kingdom
Tel: +44 (0) 1235 432 190

Fax: +44 (0) 1235 834 698
Mobile: +44 (0) 7808 042 269
Email: andrew.wells@rpsgroup.com
www: www.rpsgroup.com

From: Evans, Bruce [mailto:bje@herefordshire.gov.uk]
Sent: 31 July 2014 09:37
To: Andrew Wells
Subject: RE: Hildersley, Ross-on-Wye

Hi Andy,
Please see my comments below, I'm just going into a meeting, I'll call later if ok,

Cheers
Bruce

From: Andrew Wells [mailto:andrew.wells@rpsgroup.com]
Sent: 30 July 2014 14:10
To: Evans, Bruce
Cc: Banks, Andrew; Byng, Andy; Lewis, Mark (Accident Investigation); Barratt, Janette; Whateley, Judith; roger.sell@bblivingplaces.com
Subject: RE: Hildersley, Ross-on-Wye

Hello Bruce,

Thank you for your email scoping response. I would be grateful if you could confirm that the scope agreed is that within our supplied Scoping Report (JNY8251-01) with the changes in your email? With this in mind, please could you also clarify a couple of points for me?

- The junctions to be examined for capacity are those in the plan you have provided – are these junctions additional to, or instead of, those within our Scoping Report (para 4.3 last bullet point), which were based on those set-out in the pre-app meeting in May? Junctions to be included in the assessment – Kent Road and Alton Street are problematic due to the size and function of the street.
- The area for accident data is set out in the Scoping Report (para 3.7). Is this agreed, or should this are be extended to the junctions shown on the plan you have provided? Extended
- Is the use of the existing Western access to Hildersley Farm accepted? Needs to be assessed
- Are the committed developments in the Scoping Report accepted? If so, please can you confirm whether you require the remaining dwellings yet to be occupied at Chase Wood Park to be considered as committed development? And
- Can you confirm that you would like us to revise the trip generation rates based on the 'Mixed Private / Non-Private Housing' category in TRICS? Yes please

Thanks and Best Wishes,

Andy Wells

Andy Wells
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Email: andrew.wells@rpsgroup.com
www: www.rpsgroup.com

From: Evans, Bruce [mailto:bje@herefordshire.gov.uk]
Sent: 28 July 2014 13:42
To: Andrew Wells
Cc: Banks, Andrew; Byng, Andy; Lewis, Mark (Accident Investigation); Barratt, Janette; Whateley, Judith; roger.sell@bblivingplaces.com
Subject: FW: Hildersley, Ross-on-Wye

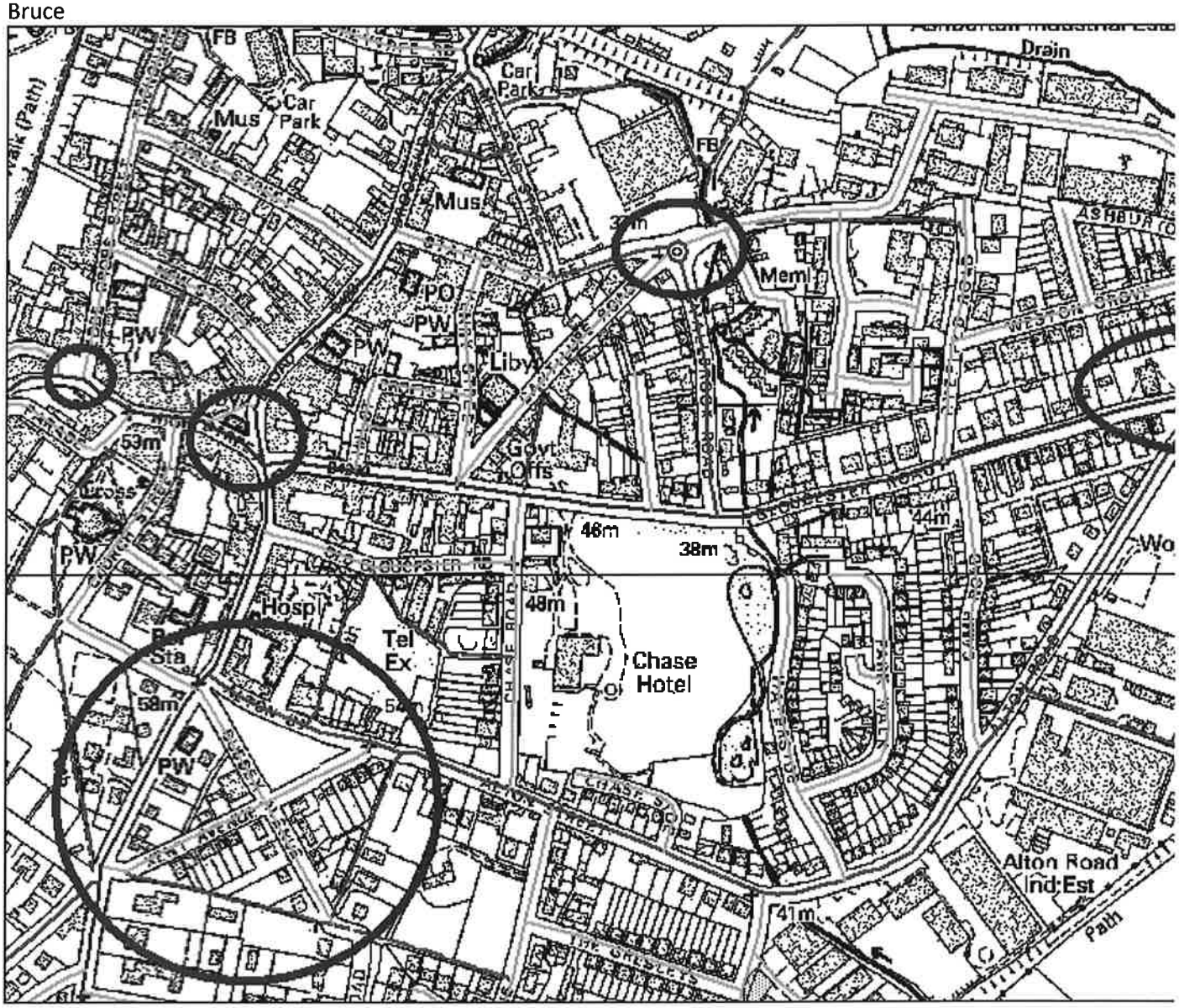
Hi Andy,
Please see the areas of concern, junctions that need to be looked at as part of the TA and a possible footway / cycle link onto the A40 close to the Town and Country Trail. Alton Street area is a major concern due to the linkage to the south of the town, hospital and the schools.

The rest of the information covers the issues, any application with offsite works will require a Stage 1 / 2 Audit.

Trip generation as discussed in the e-mail below.

You were after some contacts for the TA work, please see below:
Accident Information – Mark Lewis mslewis@herefordshire.gov.uk
Highway Extents – Andy Byng (Also S38 Manager) AndyB@herefordshire.gov.uk
Traffic Survey Information – Roger Sell roger.sell@bblivingplaces.com
Travel Plan – Judith Whateley and Janette Barratt. jwhateley@herefordshire.gov.uk jbarratt@herefordshire.gov.uk

Hope this helps,
Cheers
Bruce



From: Evans, Bruce
Sent: 25 July 2014 12:47

To: Andrew Wells (andrew.wells@rpsgroup.com)
Subject: TRIPRATE03462(1).CSV

Hi Andy,
Bit of discrepancy in the trics, I've just gone by population, can you let me have your thoughts?
Cheers
Bruce

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RPS Group Plc web link: http://www.rpsgroup.com

RPS

LAND TO THE WEST OF HILDERSLEY FARM, ROSS-ON-WYE

TRANSPORT ASSESSMENT SCOPING REPORT

LAND TO THE WEST OF HILDERSLEY FARM, ROSS-ON-WYE

TRANSPORT ASSESSMENT SCOPING REPORT

11 July 2014

Our Ref: **RS/AW/sb/JNY8251-01**

RPS
Park House
Greyfriars Road
Cardiff
CF10 3AF

Tel: 02920 550662
Email: transport@rpsgroup.com

QUALITY MANAGEMENT

Prepared by:	**Andy Wells**
Authorised by:	**Richard Stacey**
Date:	**11 July 2014**
Project Number/Document Reference:	**RS/AW/sb/JNY8251-01**

CONTENTS

1 INTRODUCTION

Background

1.1 This Scoping Report sets out the proposed scope of a Transport Assessment and Framework Travel Plan for submission as part of a forthcoming Outline planning application for development of up to 250 dwellings on land to the west of Hildersley Farm, Ross-on-Wye.

1.2 Representatives from RPS Planning have attended a pre-application meeting with Herefordshire Council officers from Planning, Highways and Parks & Countryside departments. The scope of the Transport Assessment and Travel Plan proposed responds to relevant responses received at the pre-application meeting and subsequently in communication with Herefordshire Council.

1.3 At the pre-application scoping meeting, the potential for interaction with the Highways Agency in relation to any impact upon the M50 to the north was mentioned. At this stage, and considering the limited number of trips anticipated to use this route (Section 3 of this Scoping Report refers) it is proposed to agree the matters within this Scoping Report with Herefordshire County Council before approaching the Highways Agency in this regard.

Policy Context

1.4 Paragraph 32 of the National Planning Policy Framework (NPPF) refers to the transport implications of development proposals. This paragraph states:

> **"All developments that generate significant amounts of movements should be supported by a Transport Statement or Transport Assessment."**

1.5 National Planning Practice Guidance (NPPG) – Travel Plans, Transport Assessments and Statements in decision-taking (March, 2014). States

> **"Travel Plans, Transport Assessments and Statements are all ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements."**
>
> and
>
> **"The need for, scale, scope and level of detail required of a Transport Assessment or Statement should be established as early in the development management process as possible as this may therefore positively influence the overall nature or the detailed design of the development."**

1.6 Reviewing the development quantum against the indicative thresholds indicated in Appendix B of the Guidance on Transport Assessment (GTA) (DfT, 2007) indicates that the size of the proposed development is sufficient to trigger the need for a Transport Assessment (rather than a Transport Statement) and a Travel Plan to be prepared.

1.7 The Transport Assessment would incorporate a review of relevant national and local transport policy. The primary policies against which the development would be assessed are:

- National Planning Policy Framework (March 2012);
- National Planning Practice Guidance - Travel Plans, Transport Assessments and Statements in Decision-Taking (March 2014);
- Circular 02/2013: The Strategic Road Network and the Delivery of Sustainable Development;
- Department for Transport – Guidance on Transport Assessment (March 2007);
- Herefordshire Council - Local Transport Plan (2013/14 – 2014/15);
- Herefordshire Council – Herefordshire Local Plan Core Strategy 2011-2031 Pre-Submission Publication (May 2014);
- Herefordshire Council – Unitary Development Plan; Saved and Deleted Policies Introduction (March 2010); and
- Herefordshire Council Environment Directorate – Highways Design Guide for New Developments (July 2006).

Location and Connectivity for Pedestrians, Cyclists and Public Transport

1.8 The site is located to the east of Ross-on-Wye, south of the A40 Gloucester Road and west of Hildersley Business Park as indicated on Figure 1. The site area extends westwards to the south of the existing residential development named The Mead. The site is identified in the Draft Core Strategy as a strategic urban extension of Ross-on-Wye suitable for the residential development of around 200 new homes. Hildersley Farm itself and the Business Park do not form part of the proposed development area.

1.9 There are potential connections for pedestrian and cycle routes to the west and north-west of the site which would provide links towards employment areas and Ross-on-Wye town centre from the site.

1.10 The site opposite, Model Farm, is proposed for B1, B2 and B8 employment land uses. A 3m wide footway/cycleway link through the Model Farm site is proposed via an access directly opposite that proposed for the Hildersley Farm residential development; this would provide a direct pedestrian and cycle connection to the proposed employment at Model Farm for Hildersley Farm residents. In addition, the Model Farm planning application proposes upgrading the bus stops adjacent to the Hildersley Farm access to provide shelters and footway areas, and to provide signalised crossing points: between the eastern and western accesses for Hildersley Farm; and to the west of The Glebe.

1.11 In addition to that proposed by the Model Farm development, there is the opportunity to improve footways alongside the A40 from the site access towards Ross-on-Wye town centre and employment areas.

2 PROPOSED VEHICULAR ACCESS

2.1 Hildersley Farm currently has two accesses onto the A40. The eastern access serves the Hildersley Business Park, and the western access serves Hildersley Farm and a trailer manufacturing business.

2.2 It is proposed to reuse, and improve where necessary, the existing western access to Hildersley Farm to serve the residential development. This would be formalised with give-way markings and vegetation would be cut-back to improve visibility. An operational assessment of the capacity of this junction to accommodate the proposed development would be undertaken within the Transport Assessment.

2.3 The pre-application meeting with Herefordshire Council indicated a desire to consider the location of the existing speed limit change point which is currently situated to the west of the site's frontage onto the A40. The current speed limit change is from a 30 mph speed limit within Ross-on-Wye to a National (60 mph) speed limit past the site frontage and onwards to the east.

2.4 The introduction of Intermediate Speed Limits, between national speed limits and areas where a lower speed limit is in force is encouraged by Department for Transport (DfT) Circular 01/2013 'Setting Local Speed Limits'. At paragraph 38, the Circular states:

> **"It may be appropriate to use a short length of 40 mph or 50 mph speed limit as a transition between a length of road subject to a national limit and another length on which a lower limit is in force, for example on the outskirts of villages or urban areas with adjoining intermittent development."**

2.5 The Circular advises that consideration should be given to existing road characteristics when considering the appropriate speed limit. The existing road alignment includes a bend on the A40 to the east, which naturally limits speeds, and the existing 'outlying' accesses to Hildersley Business Park to the south and Model Farm to the north. In addition, the proposed employment development at Model Farm, to the north of the A40, would introduce a larger access and a pedestrian crossing within the 60mph speed limit section.

2.6 It is therefore considered reasonable to propose an Intermediate Speed Limit of 40 mph on the A40. The DfT Circular recommends that a speed limit extends over a minimum of 300m (paragraph 37). In this location, the logical location for the start of a 40mph speed limit would be adjacent to the bend to the east of the site, prior to the proposed vehicular access to Model Farm and the existing access to Hildersley Farm Business Park. This would introduce a 40 mph Intermediate Speed Limit over a length of circa 600m to the existing transition to 30 mph. Drawing JNY8251-01 (in Appendix A) indicates the proposed Intermediate Speed Limit arrangements.

2.7 Not disregarding the above, the reduced speed limit is 'desirable' and not 'essential' for access to the development. The developer would fund and promote the speed limit change Order(s) and pay for physical changes that may be required if approved. However, the Order(s) themselves would need to be administered by Herefordshire County Council.

3 TRANSPORT ASSESSMENT

Development Proposals

3.1 It is proposed to submit an Outline planning application for development of up to 250 dwellings incorporating up to 40% affordable housing. Access is proposed to be determined as part of the Outline Planning Application.

Layout and Parking Provision

3.2 As the application is to be submitted in Outline, an illustrative masterplan would be submitted by the Applicant confirming that the site can accommodate the level of housing proposed along with the required roads, services, landscaping etc. Parking would be indicated on this plan to local authority parking standards with the *Herefordshire Council Environment Directorate – Highways Design Guide for New Developments* (July 2006). The precise layout and parking would be confirmed in more detail through a subsequent Reserved Matters planning application.

Access by Sustainable Modes of Travel

3.3 The Transport Assessment will incorporate an analysis of the opportunities to access the site by sustainable modes of travel and the accessibility of local facilities and services in the vicinity of the site. Access to wider employment, education and retail opportunities will also be considered.

3.4 The site is well located to existing 'hail and ride' bus stops on A40 Gloucester Road adjacent to the site access. These stops are proposed to be upgraded to provide bus shelters and a signalised pedestrian crossing as part of the Model Farm employment-led planning application to the north. Formal stops with shelters and timetables are also available 400m to the west of the Hildersley Farm site, adjacent to the junction with 'The Mead'.

3.5 The development proposals would include upgrading the existing 'hail and ride' bus stops on A40 Gloucester Road adjacent to the site access to incorporate bus shelters and timetable information, if this upgrade is not already approved as part of the Model Farm employment proposals.

3.6 Off-site mitigation measures to improve walking and cycling between the site and Ross-on-Wye town centre and existing employment areas will be detailed within the Transport Assessment. The Transport Assessment would also be accompanied by a Framework Travel Plan to encourage modal shift to sustainable modes and away from single occupancy car travel.

Personal Injury Accident History

3.7 The most recent three years of Personal Injury Accident (PIA) information for the highway network within the vicinity of the site will be obtained from Herefordshire County Council and analysed. It is proposed that the analysis will be undertaken for the following road links:

- A40 northern section, from roundabout junction with A449 to junction with B4260;
- A40 eastern section, from junction with B4260 to junction with Springetts Lane; and

- B4270 Gloucester Road, from the junction with A40 to the junction with B4234 High Street.

Existing Highway Conditions

3.8 A description and functional classification of the highway network in the vicinity of the site will be provided within the Transport Assessment. Traffic flow information for A40 Gloucester Road close to the site would be obtained using a seven day Automatic Traffic Count (ATC). Further junction turning counts and junction capacity assessments would be undertaken at locations and on dates to be agreed with Herefordshire County Council. At the pre-application meeting held on the 13 May 2014, the Council identified four locations, as follows. RPS would be grateful if these locations, and any others the authority wish to be analysed, are confirmed in response to this scoping report:

- Overross roundabout;
- Hildersley roundabout;
- Alton Road junction; and
- Ashforth Industrial Estate junction.

Future Year Assessment

Background Traffic Growth

3.9 It is proposed to assess a future year of 2019, five years after the submission of a planning application consistent with the recommendations within the Guidance on Transport Assessment (DfT, 2007). It is proposed that background traffic growth is applied to the surveyed ATC flows and those obtained from any junction turning counts using the industry standard TEMPRO database (version 6.2). Localised NTM factors for Ross-on-Wye (00GA4) have been obtained based upon the NTM AF09 dataset, these are presented below:

- 2014 – 2019 AM Peak 1.0501; and

  PM Peak 1.0543.

Committed Developments

3.10 Traffic growth from committed developments should be incorporated into the growth rates based upon TEMPRO (above). Nevertheless, Herefordshire County Council (HCC) has requested that the Model Farm application be considered as committed development. An Outline planning application for up to 290 dwellings on land to the east of the A40 has also recently been permitted and will therefore be incorporated as committed development. This scoping note also queries whether HCC requires the remaining dwellings which have yet to be occupied within the Chase Wood Park development (Persimmon Homes) to the west of the A40, are considered as committed development? If so, please could HCC indicate the number of dwellings yet to be occupied?

3.11 Background traffic growth would be reduced correspondingly to avoid double-counting of traffic from sites considered specifically as committed developments, consistent with the Transport Analysis Guidance (TAG) unit 3.15.2 ‘Use of TEMPRO data’.

Trip Generation

3.12 Predicted trip generation rates for the site have been estimated using the industry standard TRICS database, version 7.1.1. In order to select sites of a similar nature to the proposed development at Ross-on-Wye, the following TRICS selection parameters have been used:

- Category: Residential – Houses Privately Owned;
- No. Dwellings: 50 to 500 dwellings;
- Days of the week: Weekdays;
- Locations: Suburban area, edge of town;
- Travel Plan: No;
- Population < 1 mile < 25,000;
- Population < 5miles < 125,000;
- Types of Dwellings: Sites with bungalows removed; and
- Region: Sites in Ireland and central London removed.

3.13 The resulting trip rates are provided in Table 1 below. The TRICS output is provided in Appendix B. The number of trips predicted for a 250 dwelling development based upon these trip rates is provided in Table 2.

Table 1 – TRICS Trip Rates

Time Period	Vehicles			Other Modes (Total Two way)		
	Arrivals	Depart-ures	Total Two Way	Pedest-rians	Cyclists	Public Trans. Users
AM Peak Hour 0800-0900	0.148	0.426	0.574	0.198	0.023	0.020
PM Peak Hour 1700-1800	0.416	0.237	0.653	0.124	0.023	0.016
Daily (0700-1900)	2.533	2.643	5.176	1.31	0.187	0.133

Table 2 – Predicted Trips for 250 Dwellings based upon TRICS Trip Rates

Time Period	Vehicles			Other Modes (Total Two way)		
	Arrivals	Depart-ures	Total Two Way	Pedest-rians	Cyclists	Public Trans. Users
AM Peak Hour 0800-0900	37	107	144	50	6	5
PM Peak Hour 1700-1800	104	59	163	31	6	4
Daily (0700-1900)	633	661	1296	328	47	33

3.14 The analysis presents a robust assessment as only the 'Houses Privately Owned' category within TRICS has been used. The development would incorporate up to 40% affordable housing and affordable dwellings typically generate fewer vehicular trips during peak hours than the market dwellings assessed using TRICS.

3.15 Table 2 indicates that the level of traffic predicted to be generated by the proposed development would be sufficient to require a Transport Assessment and Travel Plan to be produced and submitted with the planning application based upon paragraph 2.11 and Appendix B of the Guidance on Transport Assessment (DfT, 2007).

Development Trip Distribution

3.16 National statistics, shown in Table 3, indicate the journey purposes of all journeys made annually. This indicates that leisure, shopping, commuting / business and education / escort education trips typically account for around three quarters of all journeys.

Table 3: Proportion of Trips per Year by Journey Purpose

Journey Purpose	Proportion of Trips
Leisure	26%
Shopping	20%
Commuting/Business	19%
Education/Escort Education	11%
Personal Business	10%
Other Escort	10%
Other	4%

Source: Table NTS0409 of Transport Statistics Great Britain – 2011 Edition

3.17 For peak travel, the National Travel Survey results indicate that 42% and 46% of vehicular trips are for "commute" or "business" purposes during the morning and evening peak hours respectively. Accordingly, it is proposed that traffic would be distributed from the development using two methods, depending on journey purpose:

- For "commute" and "business" purpose trips: traffic distributed using the Census Journey to Work data for Ross-on-Wye East ward (00GAQE); and
- For other purposes: traffic distributed using a gravity model with a 30 minute travel time.

3.18 The Census Journey to Work data for Ross-on-Wye East ward indicates that the most common destinations for 'car driver' journeys to work were as follows, making up 81.7% of total journeys to work. A further 34 wards and authorities made up the remaining 18.3% of journeys.

- Ross-on-Wye East ward 35.5%;
- Gloucestershire 24.4%;
- Ross-on-Wye west ward 7.0%;

- Kerne Bridge ward 3.7%;
- Monmouthshire 3.7%;
- Central ward (Hereford) 3.0%;
- Three Elms ward (Hereford) 2.4%; and
- Worcestershire 2.0%.

3.19 It is clear from the above list that there is considerable opportunity to encourage modal shift away from private car and onto sustainable modes. The number of 'car driver' journeys to work within Ross-on-Wye East ward is 35.5% with a further 7.0% of 'car driver' journeys to work to Ross-on-Wye West ward.

3.20 Off-site mitigation measures to improve walking and cycling facilities between the site and Ross-on-Wye town centre will be detailed within the Transport Assessment. The Transport Assessment would also be accompanied by a Framework Travel Plan to encourage modal shift to sustainable modes and away from single occupancy car travel.

4 SUMMARY

4.1 This Scoping Report is submitted to Herefordshire County Council in relation to a proposed residential development of up to 250 dwellings on land to the west of Hildersley Farm, Ross-on-Wye. It is proposed that the forthcoming planning application for this development is accompanied by a Transport Assessment and Travel Plan prepared according to the scope set-out herein, in accordance with paragraph 2.11 and Appendix B of the Guidance on Transport Assessment (DfT, 2007).

4.2 The Transport Assessment would be prepared in line the Department for Transport 'Guidance on Transport Assessment' (GTA) (March, 2007) and the recently published National Planning Practice Guidance - Travel Plans, Transport Assessments and Statements in Decision-Taking (2014). Both these documents advise that scoping advice should be sought from the local highway authority before preparing an assessment.

4.3 This document seeks to agree the following parameters for assessment:

- that a Transport Assessment (TA) and Framework Travel Plan (FTP) will be prepared to accompany the planning application;
- the transport impact of the proposed development will be assess against the policies outlined in paragraph 1.7;
- access to the site by formalising a priority T-junction at the existing western access to Hildersley Farm is acceptable;
- the opportunity to reduce speed limits on the A40 in the vicinity of the site and Model Farm will be considered within the TA but the development is not dependent on this reduction;
- opportunities to improve pedestrian connectivity to Ross-on-Wye to the west will be considered within the TA;
- three years PIA data will be obtained and assessed for the roads outlined in paragraph 3.7;
- the proposed future year, background traffic growth rates and committed developments, as set out in paragraphs 3.9 to 3.11. Including whether Herefordshire County Council requires the remaining dwellings yet to be occupied at Chase Wood Park to be considered as committed development?
- the trip rates and corresponding trip generation for market dwellings set out in paragraphs 3.12 to 3.15 and Tables 1 and 2;
- the trip distribution and assignment set out in paragraphs 3.16 to 3.19; and

- That the locations specified for assessment discussed at the pre-application meeting on 13 May 2014 are confirmed and that operational assessment of junctions other than these locations is not required. We would seek to obtain traffic counts at these locations during a 'neutral month':

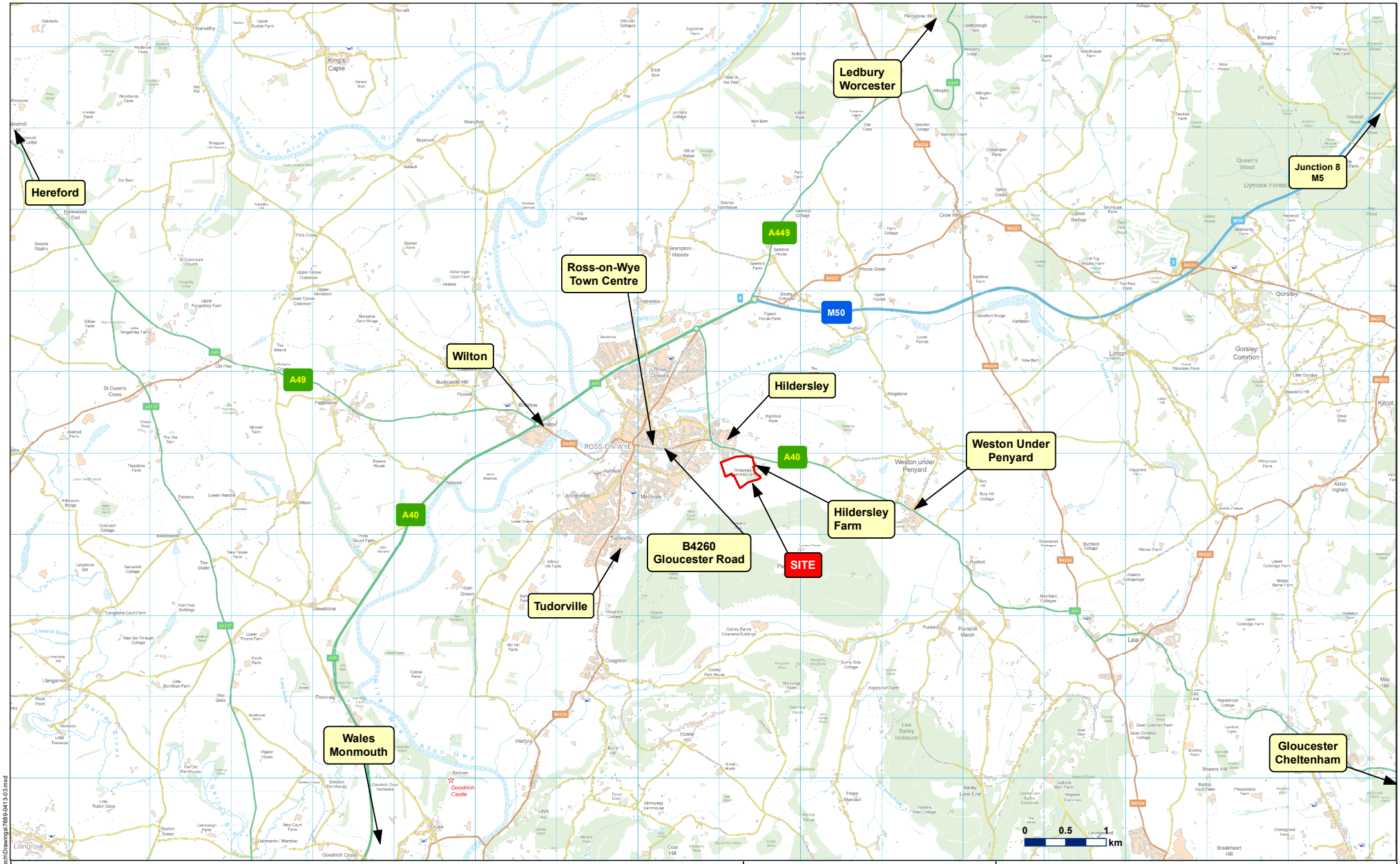
    - Overross roundabout;
    - Hildersley roundabout;
    - Alton Road junction; and
    - Ashforth Industrial Estate junction.

4.4 It is clear from analysis of census journey to work data that there is considerable opportunity to encourage modal shift away from private car and onto sustainable modes. The number of 'car driver' journeys to work within Ross-on-Wye East ward is 35.5% with a further 7.0% of 'car driver' journeys to work to Ross-on-Wye West ward.

4.5 Off-site mitigation measures to improve walking and cycling facilities between the site and Ross-on-Wye town centre will be detailed within the Transport Assessment. The Transport Assessment would also be accompanied by a Framework Travel Plan to encourage modal shift to sustainable modes and away from single occupancy car travel.

4.6 We would be grateful if you could supply a list of contacts at Hereforeshire County Council from which we can obtain relevant information, including: PIA data; Highway Boundary information; traffic count data; and any specific officer we would need to speak to regarding the Travel Plan.

FIGURES



Legend

Site

RPS

Date: Jul 2014	Scale: NTS	Rev: --
Drwg. No: JNY8251-01	Drawn: JC	Checked: AW

Project:
HILDERSLEY FARM, ROSS-ON-WYE

Title:
SITE LOCATION AND LOCAL HIGHWAY NETWORK

Figure No:
1

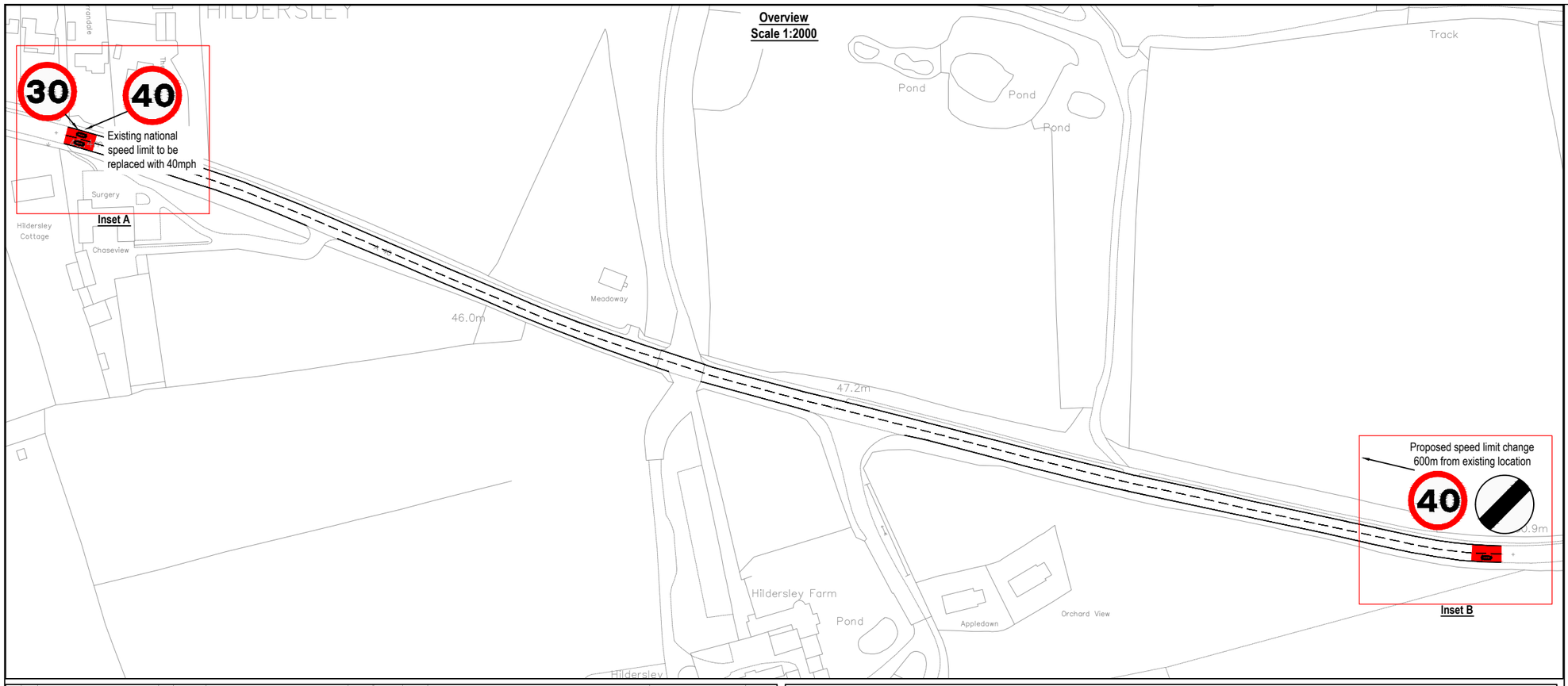
Transport

Path: O:\7689 Newbury Tech Support\Tech\Drawings\7689-04\3-03.mxd

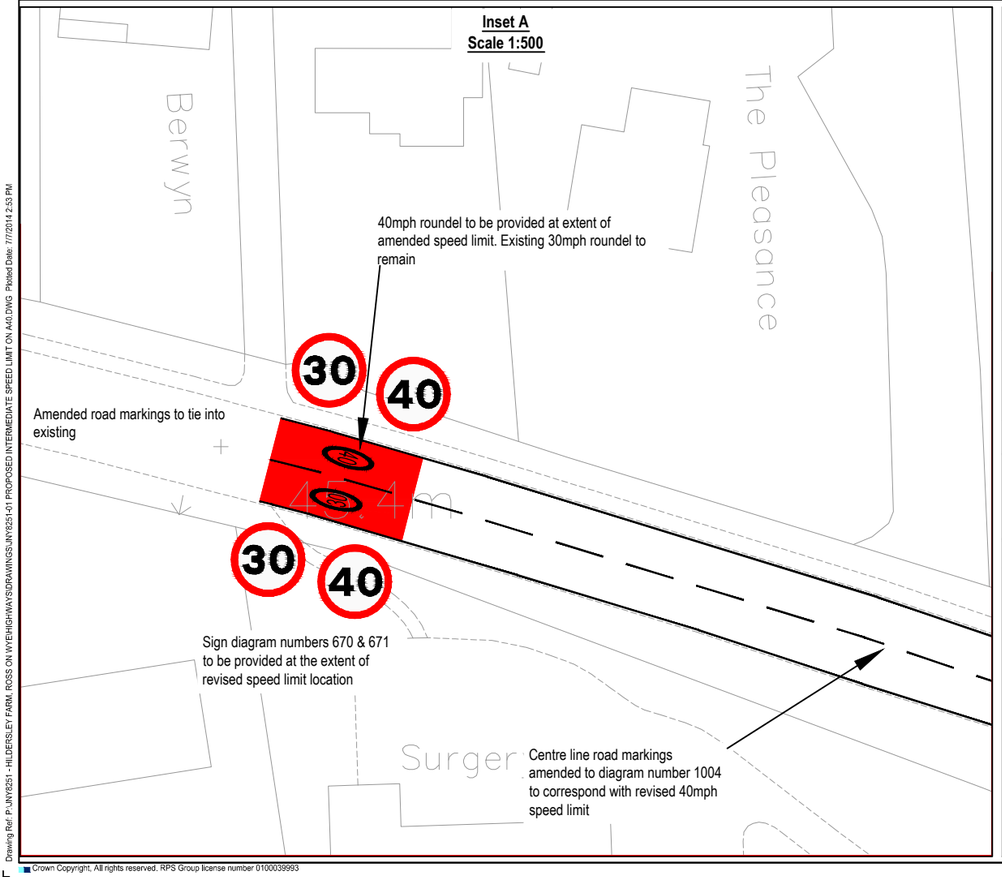
APPENDICES

APPENDIX A - DRAWING JNY8251-01
PROPOSED INTERMEDIATE SPEED LIMIT ON A40

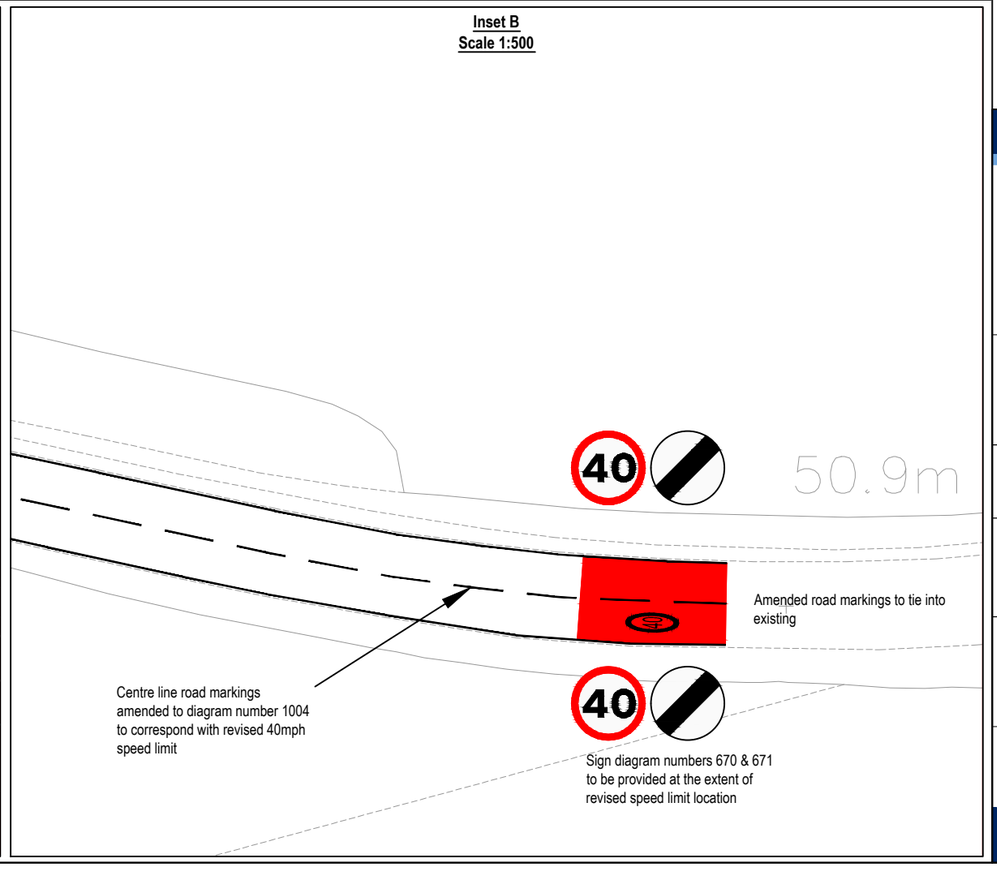
Overview
Scale 1:2000



Inset A
Scale 1:500



Inset B
Scale 1:500



NOTES

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.
2. All dimensions are in metres unless stated otherwise. It is recommended that information is not scaled off this drawing.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.

rev	amendments	by	ckd	date

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Client: Hildersley Farm

Project: Hildersley Farm, Ross-on-Wye

Title: Proposed Intermediate Speed Limit on A40

Drawing Status	Date Created	Drawing Scale
FOR INFORMATION	07-07-14	AS SHOWN

Drawing Size	Project Leader	Drawn By	Initial Review
A3	AW	BA	SM

Drawing Number: JNY8251-01

Rev: -

Transport

APPENDIX B - TRICS OUTPUT

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

03	SOUTH WEST		
	CW	CORNWALL	1 days
	WL	WILTSHIRE	1 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	2 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	WO	WORCESTERSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	2 days
09	NORTH		
	CB	CUMBRIA	1 days
	TV	TEES VALLEY	1 days
11	SCOTLAND		
	FA	FALKIRK	1 days
	FI	FIFE	2 days
	HI	HIGHLAND	1 days
	SR	STIRLING	1 days

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

Filtering Stage 2 selection:

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

Parameter: Number of dwellings
Actual Range: 52 to 232 (units:)
Range Selected by User: 50 to 500 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/05 to 29/05/13

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

Selected survey days:

Monday	6 days
Tuesday	3 days
Wednesday	1 days
Thursday	3 days
Friday	2 days

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

Selected survey types:

Manual count	15 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	9
Edge of Town	6

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

Selected Location Sub Categories:

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

Filtering Stage 3 selection:

Use Class:

C3	15 days

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

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	3 days
10,001 to 15,000	4 days
15,001 to 20,000	4 days
20,001 to 25,000	3 days

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

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	4 days
50,001 to 75,000	2 days
75,001 to 100,000	4 days
100,001 to 125,000	4 days

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

Car ownership within 5 miles:

0.6 to 1.0	7 days
1.1 to 1.5	8 days

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

Travel Plan:

No	15 days

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

LIST OF SITES relevant to selection parameters

1 CB-03-A-04 SEMI DETACHED CUMBRIA
MOORCLOSE ROAD
SALTERBACK
WORKINGTON
Edge of Town
No Sub Category
Total Number of dwellings: 82
Survey date: FRIDAY 24/04/09 Survey Type: MANUAL

2 CW-03-A-02 SEMI D./DETATCHED CORNWALL
BOSVEAN GARDENS

TRURO
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 73
Survey date: TUESDAY 18/09/07 Survey Type: MANUAL

3 FA-03-A-02 MIXED HOUSES FALKIRK
ROSEBANK AVENUE & SPRINGFIELD DRIVE

FALKIRK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 161
Survey date: WEDNESDAY 29/05/13 Survey Type: MANUAL

4 FI-03-A-02 SEMI DETACHED FIFE
WAROUT ROAD

GLENROTHES
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 58
Survey date: MONDAY 16/05/05 Survey Type: MANUAL

5 FI-03-A-03 MIXED HOUSES FIFE
WOODMILL ROAD

DUNFERMLINE
Edge of Town
Residential Zone
Total Number of dwellings: 155
Survey date: MONDAY 30/04/07 Survey Type: MANUAL

6 HI-03-A-14 SEMI-DETACHED HIGHLAND
CALEDONIAN ROAD
DALNEIGH
INVERNESS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 73
Survey date: FRIDAY 13/05/11 Survey Type: MANUAL

7 LN-03-A-01 MIXED HOUSES LINCOLNSHIRE
BRANT ROAD
BRACEBRIDGE
LINCOLN
Edge of Town
Residential Zone
Total Number of dwellings: 150
Survey date: TUESDAY 15/05/07 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8 LN-03-A-02 MIXED HOUSES LINCOLNSHIRE
HYKEHAM ROAD

LINCOLN
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 186
Survey date: MONDAY 14/05/07 Survey Type: MANUAL

9 NY-03-A-01 MIXED HOUSES NORTH YORKSHIRE
GRAMMAR SCHOOL LANE

NORTHALLERTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 52
Survey date: TUESDAY 25/09/07 Survey Type: MANUAL

10 NY-03-A-05 HOUSES AND FLATS NORTH YORKSHIRE
BOROUGHBRIDGE ROAD

RIPON
Edge of Town
No Sub Category
Total Number of dwellings: 71
Survey date: MONDAY 22/09/08 Survey Type: MANUAL

11 SH-03-A-04 TERRACED SHROPSHIRE
ST MICHAEL'S STREET

SHREWSBURY
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 108
Survey date: THURSDAY 11/06/09 Survey Type: MANUAL

12 SR-03-A-01 DETACHED STIRLING
BENVIEW

STIRLING
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 115
Survey date: MONDAY 23/04/07 Survey Type: MANUAL

13 TV-03-A-01 HOUSES & FLATS TEES VALLEY
POWLETT ROAD

HARTLEPOOL
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 225
Survey date: THURSDAY 14/04/05 Survey Type: MANUAL

14 WL-03-A-01 SEMI D./TERRACED W. BASSETT WILTSHIRE
MAPLE DRIVE

WOOTTON BASSETT
Edge of Town
Residential Zone
Total Number of dwellings: 99
Survey date: MONDAY 02/10/06 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

15 WO-03-A-06 DET./TERRACED WORCESTERSHIRE
ST GODWALDS ROAD
ASTON FIELDS
BROMSGROVE
Edge of Town
No Sub Category
Total Number of dwellings: 232
Survey date: THURSDAY 30/06/05 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
CH-03-A-06	Removed sites with bungalows
HI-03-A-11	Removed sites with bungalows
NY-03-A-06	Removed sites with bungalows

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	123	0.071	15	123	0.285	15	123	0.356
08:00 - 09:00	15	123	0.148	15	123	0.426	15	123	0.574
09:00 - 10:00	15	123	0.161	15	123	0.208	15	123	0.369
10:00 - 11:00	15	123	0.148	15	123	0.161	15	123	0.309
11:00 - 12:00	15	123	0.160	15	123	0.164	15	123	0.324
12:00 - 13:00	15	123	0.196	15	123	0.179	15	123	0.375
13:00 - 14:00	15	123	0.183	15	123	0.186	15	123	0.369
14:00 - 15:00	15	123	0.192	15	123	0.185	15	123	0.377
15:00 - 16:00	15	123	0.251	15	123	0.185	15	123	0.436
16:00 - 17:00	15	123	0.330	15	123	0.208	15	123	0.538
17:00 - 18:00	15	123	0.416	15	123	0.237	15	123	0.653
18:00 - 19:00	15	123	0.277	15	123	0.219	15	123	0.496
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.533			2.643			5.176

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

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

Parameter summary

Trip rate parameter range selected:	52 - 232 (units:)
Survey date date range:	01/01/05 - 29/05/13
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	3

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	123	0.006	15	123	0.011	15	123	0.017
08:00 - 09:00	15	123	0.005	15	123	0.018	15	123	0.023
09:00 - 10:00	15	123	0.005	15	123	0.004	15	123	0.009
10:00 - 11:00	15	123	0.004	15	123	0.004	15	123	0.008
11:00 - 12:00	15	123	0.004	15	123	0.003	15	123	0.007
12:00 - 13:00	15	123	0.003	15	123	0.009	15	123	0.012
13:00 - 14:00	15	123	0.004	15	123	0.003	15	123	0.007
14:00 - 15:00	15	123	0.005	15	123	0.003	15	123	0.008
15:00 - 16:00	15	123	0.011	15	123	0.007	15	123	0.018
16:00 - 17:00	15	123	0.015	15	123	0.017	15	123	0.032
17:00 - 18:00	15	123	0.014	15	123	0.009	15	123	0.023
18:00 - 19:00	15	123	0.015	15	123	0.008	15	123	0.023
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.091			0.096			0.187

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

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

Parameter summary

Trip rate parameter range selected:	52 - 232 (units:)
Survey date date range:	01/01/05 - 29/05/13
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	3

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	123	0.023	15	123	0.052	15	123	0.075
08:00 - 09:00	15	123	0.030	15	123	0.168	15	123	0.198
09:00 - 10:00	15	123	0.047	15	123	0.054	15	123	0.101
10:00 - 11:00	15	123	0.032	15	123	0.044	15	123	0.076
11:00 - 12:00	15	123	0.034	15	123	0.042	15	123	0.076
12:00 - 13:00	15	123	0.044	15	123	0.029	15	123	0.073
13:00 - 14:00	15	123	0.035	15	123	0.045	15	123	0.080
14:00 - 15:00	15	123	0.032	15	123	0.038	15	123	0.070
15:00 - 16:00	15	123	0.116	15	123	0.059	15	123	0.175
16:00 - 17:00	15	123	0.079	15	123	0.055	15	123	0.134
17:00 - 18:00	15	123	0.076	15	123	0.048	15	123	0.124
18:00 - 19:00	15	123	0.073	15	123	0.055	15	123	0.128
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.621			0.689			1.310

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

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

Parameter summary

Trip rate parameter range selected:	52 - 232 (units:)
Survey date date range:	01/01/05 - 29/05/13
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	3

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	123	0.002	15	123	0.010	15	123	0.012
08:00 - 09:00	15	123	0.002	15	123	0.018	15	123	0.020
09:00 - 10:00	15	123	0.003	15	123	0.004	15	123	0.007
10:00 - 11:00	15	123	0.003	15	123	0.004	15	123	0.007
11:00 - 12:00	15	123	0.002	15	123	0.003	15	123	0.005
12:00 - 13:00	15	123	0.003	15	123	0.009	15	123	0.012
13:00 - 14:00	15	123	0.007	15	123	0.005	15	123	0.012
14:00 - 15:00	15	123	0.004	15	123	0.002	15	123	0.006
15:00 - 16:00	15	123	0.012	15	123	0.004	15	123	0.016
16:00 - 17:00	15	123	0.006	15	123	0.004	15	123	0.010
17:00 - 18:00	15	123	0.013	15	123	0.003	15	123	0.016
18:00 - 19:00	15	123	0.008	15	123	0.002	15	123	0.010
19:00 - 20:00	1	73	0.000	1	73	0.000	1	73	0.000
20:00 - 21:00	1	73	0.000	1	73	0.000	1	73	0.000
21:00 - 22:00	1	73	0.000	1	73	0.000	1	73	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.065			0.068			0.133

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

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

Parameter summary

Trip rate parameter range selected:	52 - 232 (units:)
Survey date date range:	01/01/05 - 29/05/13
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	3

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

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	123	0.114	15	123	0.404	15	123	0.518
08:00 - 09:00	15	123	0.220	15	123	0.848	15	123	1.068
09:00 - 10:00	15	123	0.243	15	123	0.324	15	123	0.567
10:00 - 11:00	15	123	0.221	15	123	0.255	15	123	0.476
11:00 - 12:00	15	123	0.237	15	123	0.255	15	123	0.492
12:00 - 13:00	15	123	0.294	15	123	0.278	15	123	0.572
13:00 - 14:00	15	123	0.273	15	123	0.299	15	123	0.572
14:00 - 15:00	15	123	0.290	15	123	0.290	15	123	0.580
15:00 - 16:00	15	123	0.524	15	123	0.333	15	123	0.857
16:00 - 17:00	15	123	0.550	15	123	0.370	15	123	0.920
17:00 - 18:00	15	123	0.657	15	123	0.393	15	123	1.050
18:00 - 19:00	15	123	0.452	15	123	0.379	15	123	0.831
19:00 - 20:00	1	73	0.000	1	73	0.000	1	73	0.000
20:00 - 21:00	1	73	0.000	1	73	0.000	1	73	0.000
21:00 - 22:00	1	73	0.000	1	73	0.000	1	73	0.000
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.075			4.428			8.503

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

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

Parameter summary

Trip rate parameter range selected:	52 - 232 (units:)
Survey date date range:	01/01/05 - 29/05/13
Number of weekdays (Monday-Friday):	15
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	3

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

ANNEX 2 – CONCEPT MASTERPLAN

0 20m 100m 150m

Do not scale from this drawing. This drawing is for indicative purposes only.
All information contained on this drawing should be verified through proper survey.

Notes

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

- Site Boundary
- Residential
- Informal Open Space
- Infrastructure
- Views to St Marys Church
- Existing Footpath
- Proposed Footpaths
- Site Access
- Pedestrian/Cycle and Emergency Access
- Indicative built form

Rev	Description	Date	Initial	Checked
D	Amendments to red line	25.11.14	AG	AH
C	Amendments to residential area and road alignments to accommodate ecological constraints	19:09:14	AG	AH
B	Drainage ponds added and residential area adjusted	08:09:14	AG	AH
A	residential area amended		AG	AH

RPS

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Client Boynton

Project Hildersley Farm
Ross-on-Wye

Title Concept Plan

Status	Drawn By	PM/Checked by
DRAFT	AG	AH
Job Ref	**Scale @ A3**	**Date Created**
JBR2514	1:2500	19.09.14

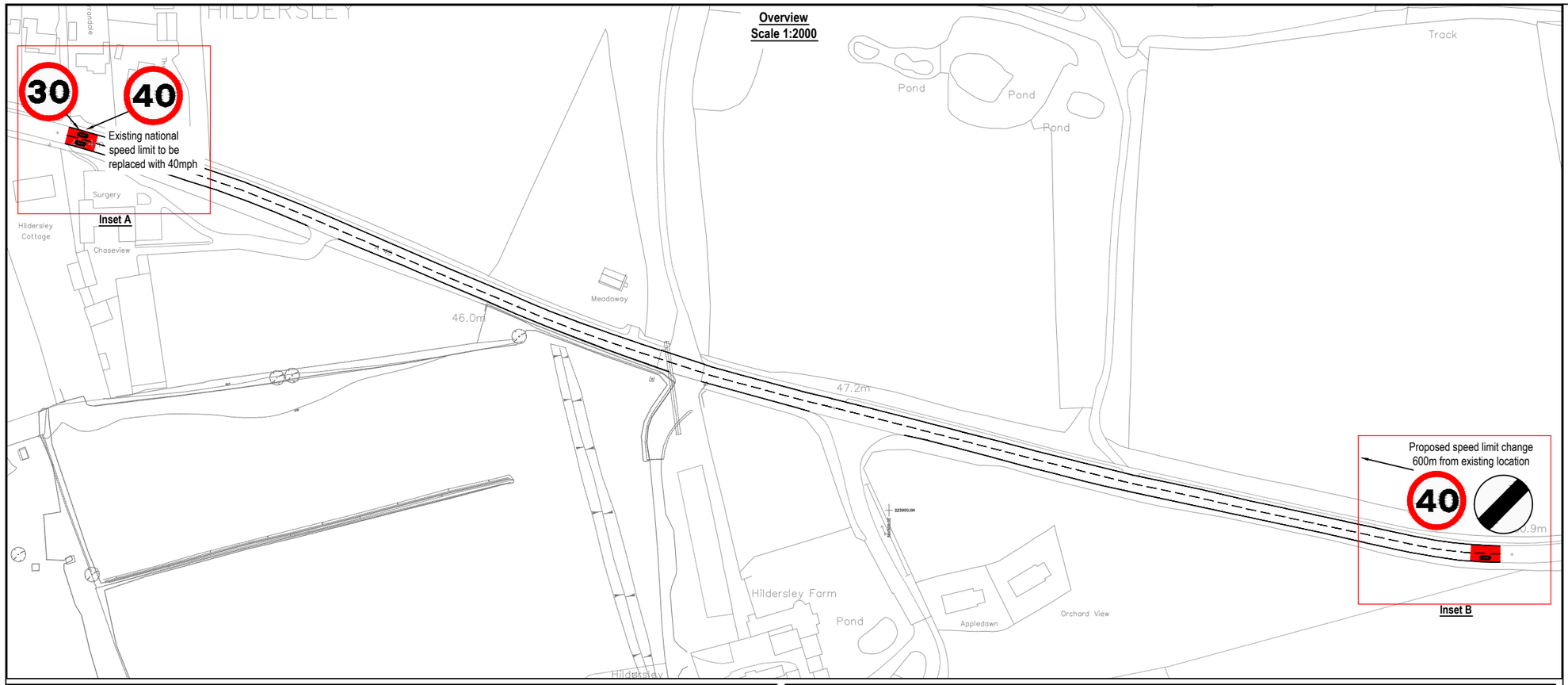
Drawing Number	Rev
503	D

rpsgroup.com

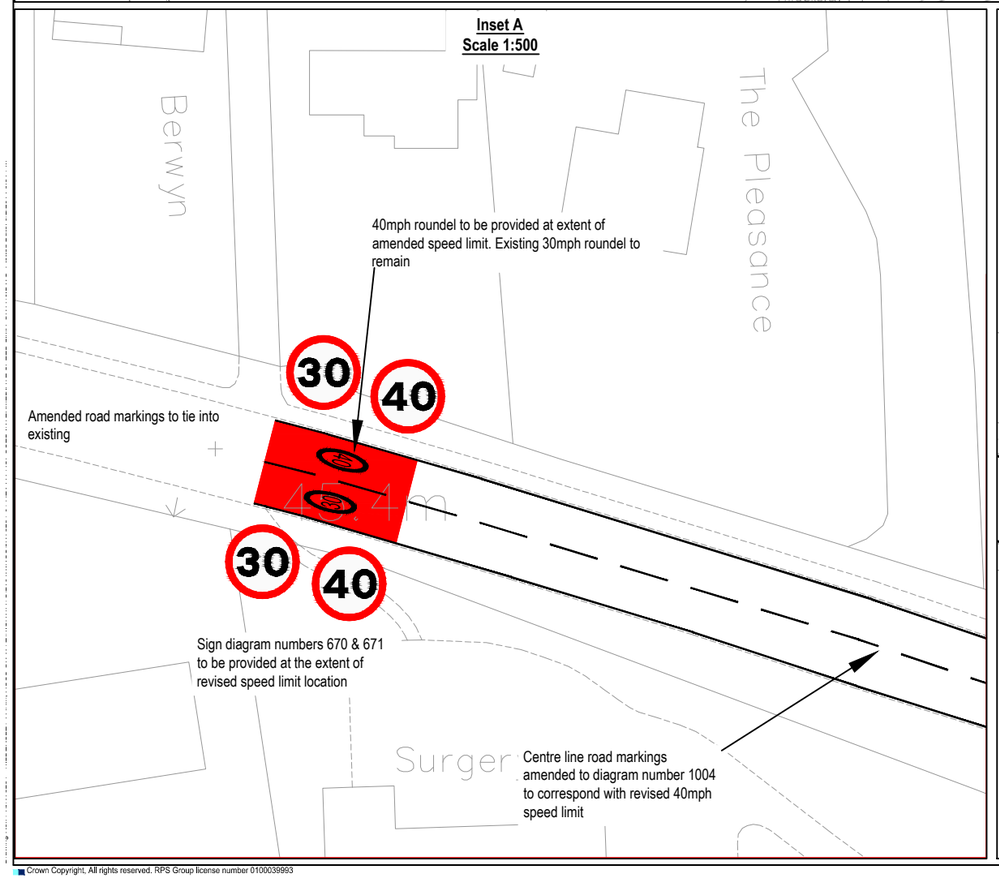
R:\0.0_Project_Numbers\JBR2514 - Hildersley Farm Ross-on-Wye\3 RPS Drawings & Images\2 Drawings in Progress\JBR2514_503_D_Concept Masterplan_25.11.14.dwg

ANNEX 3 – PROPOSED INTERMEDIATE SPEED LIMIT ARRANGEMENTS

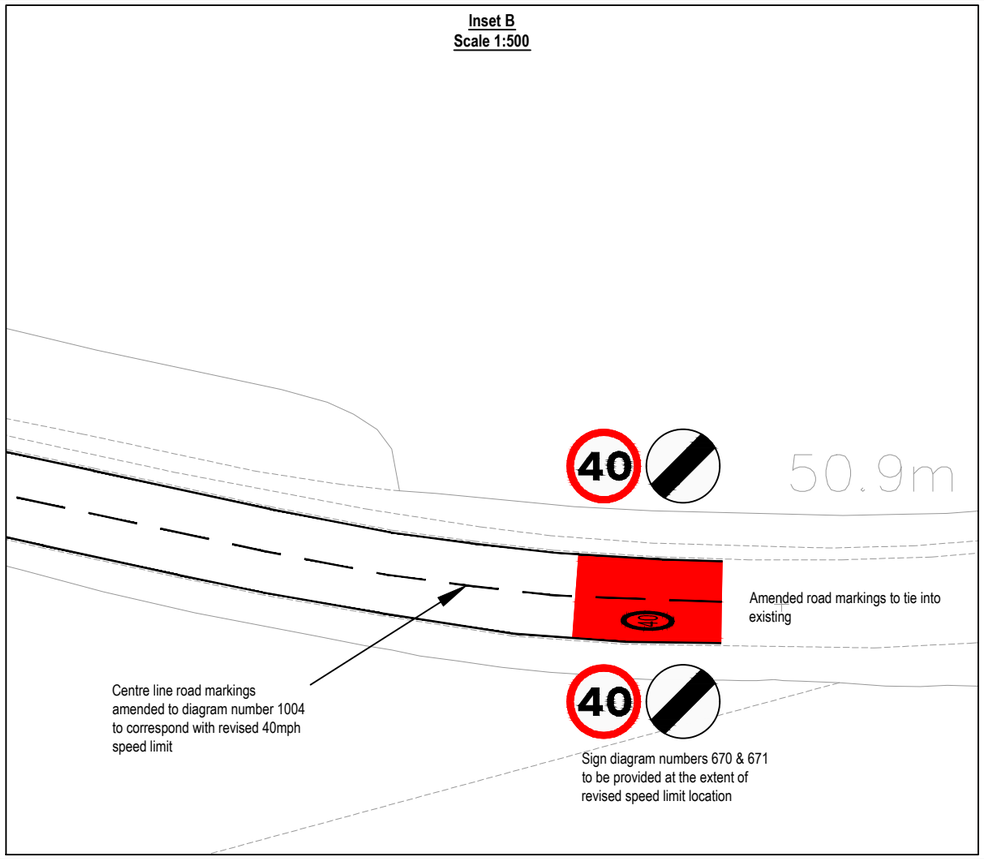
Overview
Scale 1:2000



Inset A
Scale 1:500



Inset B
Scale 1:500



NOTES

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.
2. All dimensions are in metres unless stated otherwise. It is recommended that information is not scaled off this drawing.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.

rev	amendments	by	ckd	date
A	Base xref updated to show topo data	BA	SM	02/09/2014

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E Transport@rpsgroup.com

Client: Mr M Boynton

Project: Hildersley Farm, Ross-on-Wye

Title: Proposed Intermediate Speed Limit on A40

Drawing Status	Date Created	Drawing Scale
FOR INFORMATION	07-07-14	AS SHOWN

Drawing Size	Project Leader	Drawn By	Initial Review
A3	AW	BA	SM

Drawing Number: JNY8251-01
Rev: A

Transport

ANNEX 4 – PROPOSED ACCESS ARRANGEMENTS

Proposed uncontrolled pedestrian crossing

Bus stop upgrades as part of Model Farm application

2.4m x 120m Visibility Splay (actual)

2.4m x 120m Visibility Splay (Tangential)

Existing commercial access to remain with proposed vehicular crossover

2.4m x 120m Visibility Splay (actual)

Proposed 5.5m site access with 2 No. 2.0m footway

Proposed uncontrolled pedestrian crossing

Existing farm access to be retained

Existing gate to be relocated

Development Site

Site boundary

General Arrangement

Vehicle Swept Path Access

Vehicle Swept Path Egress

NOTES

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.

2. All dimensions are in metres unless stated otherwise. It is recommended that information is not scaled off this drawing.

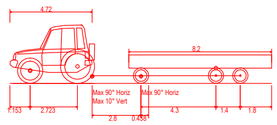
3. This drawing should be read in conjunction with all other relevant drawings and specifications.

KEY

Highway Boundary

Site Boundary

Vehicle Profile



UoR Farm tractor & hay wagon

Overall Length	15.020m
Overall Width	2.500m
Overall Body	Height 0.438m
Min Body Ground Clearance	0.398m
Max Track Width	2.500m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	4.620m

rev	amendments	by	ckd	date
A	Priority junction with A40 moved west, existing farm access amended and layout amended to suit	HS	SM	24.10.14

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Client: Mr M Boynton

Project: Hildersley Farm, Ross-on-Wye

Title: Primary Site Access & Junction with Existing Farm Access

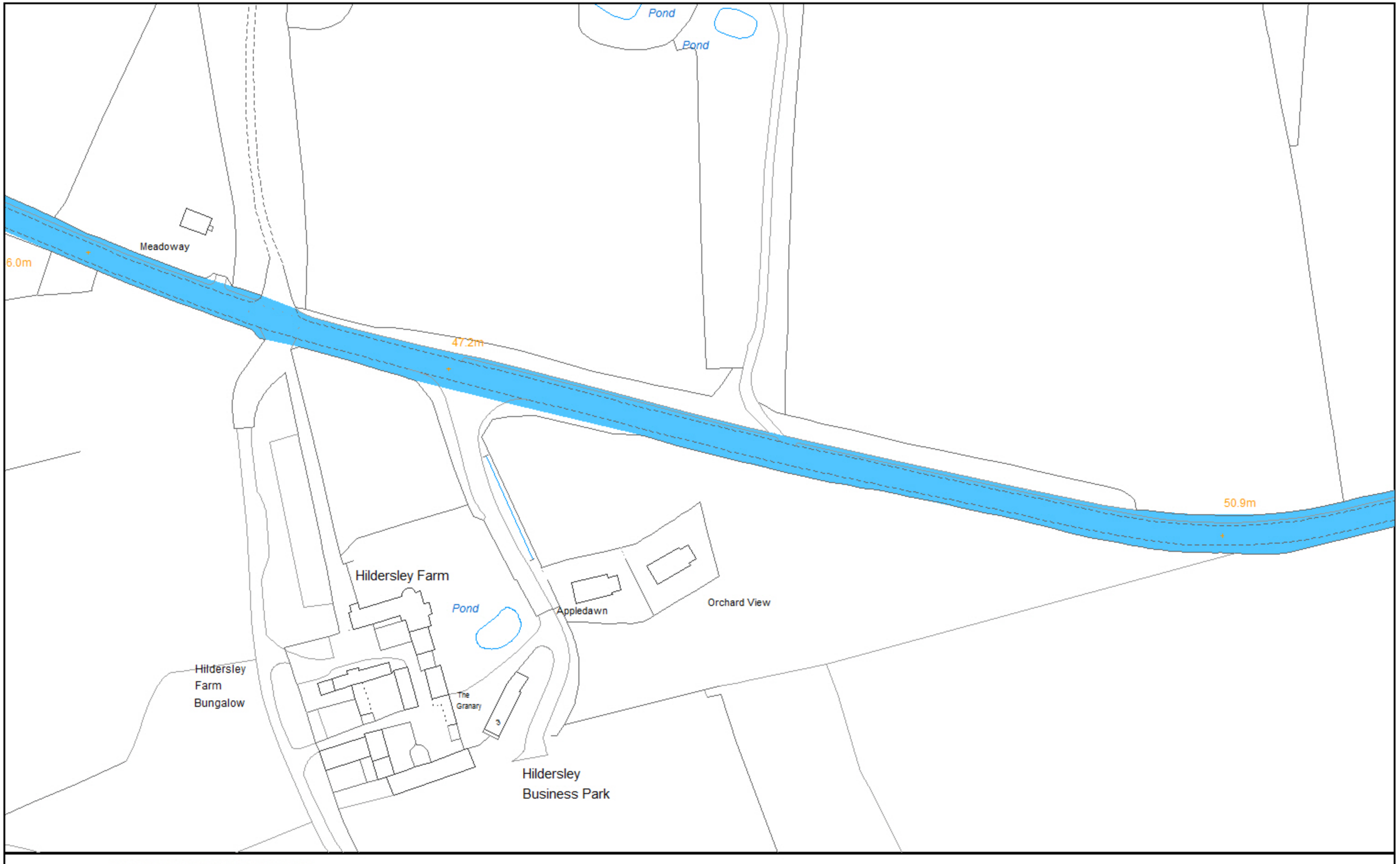
Drawing Status	Date Created	Drawing Scale
FOR INFORMATION	23-09-14	1:500
Drawing Size	**Project Leader**	**Drawn By**	**Initial Review**
A2	AW	HS	SM

Drawing Number: JNY8251-03

Rev: A

Transport

ANNEX 5 – HIGHWAY BOUNDARY INFORMATION



LOCATION: A40 HILDERSLEY

SCALE 1:1250

POSTCODE: HR9

Herefordshire Council, Highways and Transportation,
Plough Lane, Hereford, HR4 0WZ.
Tel: 01432 260000
Fax: 01432 383031

ANNEX 6 – SPEED SURVEY RESULTS

A40 Ross-on-Wye Speed Survey

360TSL Traffic Data Collection

All speeds are recorded from free flowing vehicles

Weather: Heavy Showers

Wednesday 8th October 2014

1000-1200

Westbound				Eastbound			
	Speeds(mph)		Speeds(mph)		Speeds(mph)		Speeds(mph)
1	29	51	39	1	26	51	39
2	33	52	39	2	28	52	39
3	33	53	40	3	30	53	39
4	33	54	40	4	30	54	39
5	34	55	40	5	31	55	39
6	34	56	40	6	31	56	39
7	35	57	40	7	31	57	39
8	35	58	40	8	32	58	40
9	35	59	40	9	32	59	40
10	35	60	40	10	32	60	40
11	35	61	40	11	33	61	40
12	35	62	40	12	33	62	40
13	35	63	40	13	34	63	40
14	36	64	40	14	34	64	40
15	37	65	40	15	34	65	40
16	37	66	40	16	34	66	40
17	37	67	41	17	34	67	40
18	37	68	41	18	34	68	41
19	37	69	41	19	34	69	41
20	37	70	41	20	35	70	41
21	37	71	41	21	35	71	41
22	37	72	41	22	35	72	41
23	37	73	41	23	36	73	42
24	37	74	41	24	36	74	42
25	37	75	41	25	36	75	42
26	37	76	41	26	36	76	42
27	38	77	42	27	36	77	42
28	38	78	42	28	36	78	42
29	38	79	42	29	37	79	42
30	38	80	43	30	37	80	42
31	38	81	43	31	37	81	43
32	38	82	43	32	37	82	43
33	38	83	43	33	37	83	43
34	38	84	43	34	37	84	43
35	38	85	43	35	37	85	43
36	38	86	43	36	37	86	43
37	38	87	43	37	37	87	43
38	38	88	43	38	37	88	43
39	38	89	43	39	38	89	43
40	39	90	44	40	38	90	44
41	39	91	44	41	38	91	44
42	39	92	44	42	38	92	44
43	39	93	45	43	38	93	44
44	39	94	46	44	38	94	44
45	39	95	46	45	38	95	45
46	39	96	47	46	38	96	45
47	39	97	48	47	38	97	47
48	39	98	50	48	38	98	48
49	39	99	52	49	39	99	50
50	39	100	54	50	39	100	51

ROAD SURFACE - WET

Average Westbound	39.7	Average Eastbound	38.6
85th%ile Westbound	43.0	85th%ile Eastbound	43.0
% > Speed Limit Westbound	0%	% > Speed Limit Eastbound	0%
% > 15mph over Speed Limit Westbound	0%	% > 15mph over Speed Limit Eastbound	0%

SPEED LIMIT 60

SPEED LIMIT 60

ANNEX 7 – TRICS OUTPUT

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	1 days
03	SOUTH WEST		
	DV	DEVON	1 days
06	WEST MIDLANDS		
	HE	HEREFORDSHIRE	1 days
09	NORTH		
	CB	CUMBRIA	1 days
11	SCOTLAND		
	FA	FALKIRK	1 days

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

Filtering Stage 2 selection:

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

Parameter: Number of dwellings
Actual Range: 57 to 138 (units:)
Range Selected by User: 50 to 500 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/05 to 02/10/13

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

Selected survey days:

Monday	1 days
Wednesday	3 days
Thursday	1 days

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

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	2
Edge of Town	3

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

Selected Location Sub Categories:

Industrial Zone	1
Residential Zone	3
No Sub Category	1

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

Filtering Stage 3 selection:

Use Class:

C3	5 days

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

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	2 days
20,001 to 25,000	2 days

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

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	2 days
50,001 to 75,000	1 days
100,001 to 125,000	1 days

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

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	2 days
1.6 to 2.0	1 days

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

Travel Plan:

No	5 days

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

LIST OF SITES relevant to selection parameters

1	CB-03-M-03	SEMI-DETACHED		CUMBRIA
	MOORCLOSE ROAD			
	SALTERBECK			
	WORKINGTON			
	Edge of Town			
	No Sub Category			
	Total Number of dwellings:		82	
	Survey date: MONDAY		20/06/05	Survey Type: MANUAL
2	DV-03-M-01	HOUSES & FLATS		DEVON
	TOPSHAM ROAD			
	EXETER			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total Number of dwellings:		61	
	Survey date: THURSDAY		06/10/11	Survey Type: MANUAL
3	ES-03-M-03	MIXED HOUSES		EAST SUSSEX
	FIELD END			
	MARESFIELD			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:		68	
	Survey date: WEDNESDAY		02/10/13	Survey Type: MANUAL
4	FA-03-M-01	SEMI D./TERRACED		FALKIRK
	FAIRLIE STREET			
	FALKIRK			
	Edge of Town			
	Residential Zone			
	Total Number of dwellings:		138	
	Survey date: WEDNESDAY		29/06/05	Survey Type: MANUAL
5	HE-03-M-01	SEMI D./TERRACED		HEREFORDSHIRE
	WHITECROSS ROAD			
	WIDEMARSH			
	HEREFORD			
	Suburban Area (PPS6 Out of Centre)			
	Industrial Zone			
	Total Number of dwellings:		57	
	Survey date: WEDNESDAY		01/03/06	Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	81	0.091	5	81	0.227	5	81	0.318
08:00 - 09:00	5	81	0.155	5	81	0.291	5	81	0.446
09:00 - 10:00	5	81	0.163	5	81	0.200	5	81	0.363
10:00 - 11:00	5	81	0.192	5	81	0.177	5	81	0.369
11:00 - 12:00	5	81	0.187	5	81	0.190	5	81	0.377
12:00 - 13:00	5	81	0.170	5	81	0.224	5	81	0.394
13:00 - 14:00	5	81	0.167	5	81	0.165	5	81	0.332
14:00 - 15:00	5	81	0.190	5	81	0.180	5	81	0.370
15:00 - 16:00	5	81	0.229	5	81	0.185	5	81	0.414
16:00 - 17:00	5	81	0.298	5	81	0.209	5	81	0.507
17:00 - 18:00	5	81	0.330	5	81	0.192	5	81	0.522
18:00 - 19:00	5	81	0.271	5	81	0.212	5	81	0.483
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.443			2.452			4.895

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

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

Parameter summary

Trip rate parameter range selected:	57 - 138 (units:)
Survey date date range:	01/01/05 - 02/10/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	81	0.002	5	81	0.000	5	81	0.002
08:00 - 09:00	5	81	0.000	5	81	0.002	5	81	0.002
09:00 - 10:00	5	81	0.002	5	81	0.002	5	81	0.004
10:00 - 11:00	5	81	0.000	5	81	0.000	5	81	0.000
11:00 - 12:00	5	81	0.007	5	81	0.012	5	81	0.019
12:00 - 13:00	5	81	0.005	5	81	0.002	5	81	0.007
13:00 - 14:00	5	81	0.002	5	81	0.000	5	81	0.002
14:00 - 15:00	5	81	0.002	5	81	0.002	5	81	0.004
15:00 - 16:00	5	81	0.002	5	81	0.002	5	81	0.004
16:00 - 17:00	5	81	0.002	5	81	0.000	5	81	0.002
17:00 - 18:00	5	81	0.000	5	81	0.002	5	81	0.002
18:00 - 19:00	5	81	0.000	5	81	0.000	5	81	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.024			0.024			0.048

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

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

Parameter summary

Trip rate parameter range selected:	57 - 138 (units:)
Survey date date range:	01/01/05 - 02/10/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL PSVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	81	0.005	5	81	0.007	5	81	0.012
08:00 - 09:00	5	81	0.012	5	81	0.012	5	81	0.024
09:00 - 10:00	5	81	0.005	5	81	0.010	5	81	0.015
10:00 - 11:00	5	81	0.012	5	81	0.010	5	81	0.022
11:00 - 12:00	5	81	0.010	5	81	0.010	5	81	0.020
12:00 - 13:00	5	81	0.010	5	81	0.007	5	81	0.017
13:00 - 14:00	5	81	0.010	5	81	0.010	5	81	0.020
14:00 - 15:00	5	81	0.010	5	81	0.010	5	81	0.020
15:00 - 16:00	5	81	0.017	5	81	0.017	5	81	0.034
16:00 - 17:00	5	81	0.010	5	81	0.015	5	81	0.025
17:00 - 18:00	5	81	0.010	5	81	0.005	5	81	0.015
18:00 - 19:00	5	81	0.007	5	81	0.007	5	81	0.014
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.118			0.120			0.238

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

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

Parameter summary

Trip rate parameter range selected:	57 - 138 (units:)
Survey date date range:	01/01/05 - 02/10/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	81	0.010	5	81	0.015	5	81	0.025
08:00 - 09:00	5	81	0.002	5	81	0.027	5	81	0.029
09:00 - 10:00	5	81	0.002	5	81	0.002	5	81	0.004
10:00 - 11:00	5	81	0.007	5	81	0.002	5	81	0.009
11:00 - 12:00	5	81	0.005	5	81	0.005	5	81	0.010
12:00 - 13:00	5	81	0.005	5	81	0.000	5	81	0.005
13:00 - 14:00	5	81	0.002	5	81	0.002	5	81	0.004
14:00 - 15:00	5	81	0.002	5	81	0.002	5	81	0.004
15:00 - 16:00	5	81	0.005	5	81	0.010	5	81	0.015
16:00 - 17:00	5	81	0.017	5	81	0.015	5	81	0.032
17:00 - 18:00	5	81	0.020	5	81	0.007	5	81	0.027
18:00 - 19:00	5	81	0.020	5	81	0.000	5	81	0.020
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.097			0.087			0.184

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

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

Parameter summary

Trip rate parameter range selected:	57 - 138 (units:)
Survey date date range:	01/01/05 - 02/10/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	81	0.089	5	81	0.313	5	81	0.402
08:00 - 09:00	5	81	0.202	5	81	0.463	5	81	0.665
09:00 - 10:00	5	81	0.192	5	81	0.300	5	81	0.492
10:00 - 11:00	5	81	0.246	5	81	0.224	5	81	0.470
11:00 - 12:00	5	81	0.241	5	81	0.249	5	81	0.490
12:00 - 13:00	5	81	0.204	5	81	0.264	5	81	0.468
13:00 - 14:00	5	81	0.212	5	81	0.209	5	81	0.421
14:00 - 15:00	5	81	0.254	5	81	0.234	5	81	0.488
15:00 - 16:00	5	81	0.382	5	81	0.254	5	81	0.636
16:00 - 17:00	5	81	0.424	5	81	0.264	5	81	0.688
17:00 - 18:00	5	81	0.426	5	81	0.249	5	81	0.675
18:00 - 19:00	5	81	0.360	5	81	0.293	5	81	0.653
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.232			3.316			6.548

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

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

Parameter summary

Trip rate parameter range selected:	57 - 138 (units:)
Survey date date range:	01/01/05 - 02/10/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL PEDESTRIANS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	81	0.025	5	81	0.074	5	81	0.099
08:00 - 09:00	5	81	0.074	5	81	0.180	5	81	0.254
09:00 - 10:00	5	81	0.074	5	81	0.042	5	81	0.116
10:00 - 11:00	5	81	0.057	5	81	0.054	5	81	0.111
11:00 - 12:00	5	81	0.047	5	81	0.086	5	81	0.133
12:00 - 13:00	5	81	0.079	5	81	0.039	5	81	0.118
13:00 - 14:00	5	81	0.067	5	81	0.039	5	81	0.106
14:00 - 15:00	5	81	0.047	5	81	0.069	5	81	0.116
15:00 - 16:00	5	81	0.143	5	81	0.089	5	81	0.232
16:00 - 17:00	5	81	0.091	5	81	0.071	5	81	0.162
17:00 - 18:00	5	81	0.054	5	81	0.076	5	81	0.130
18:00 - 19:00	5	81	0.034	5	81	0.067	5	81	0.101
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.792			0.886			1.678

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

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

Parameter summary

Trip rate parameter range selected:	57 - 138 (units:)
Survey date date range:	01/01/05 - 02/10/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	81	0.002	5	81	0.010	5	81	0.012
08:00 - 09:00	5	81	0.000	5	81	0.015	5	81	0.015
09:00 - 10:00	5	81	0.000	5	81	0.015	5	81	0.015
10:00 - 11:00	5	81	0.007	5	81	0.020	5	81	0.027
11:00 - 12:00	5	81	0.002	5	81	0.010	5	81	0.012
12:00 - 13:00	5	81	0.002	5	81	0.027	5	81	0.029
13:00 - 14:00	5	81	0.015	5	81	0.007	5	81	0.022
14:00 - 15:00	5	81	0.007	5	81	0.010	5	81	0.017
15:00 - 16:00	5	81	0.027	5	81	0.007	5	81	0.034
16:00 - 17:00	5	81	0.010	5	81	0.002	5	81	0.012
17:00 - 18:00	5	81	0.012	5	81	0.005	5	81	0.017
18:00 - 19:00	5	81	0.010	5	81	0.005	5	81	0.015
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.094			0.133			0.227

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

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

Parameter summary

Trip rate parameter range selected:	57 - 138 (units:)
Survey date date range:	01/01/05 - 02/10/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/NON-PRIVATE HOUSING
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	81	0.126	5	81	0.411	5	81	0.537
08:00 - 09:00	5	81	0.278	5	81	0.685	5	81	0.963
09:00 - 10:00	5	81	0.268	5	81	0.360	5	81	0.628
10:00 - 11:00	5	81	0.318	5	81	0.300	5	81	0.618
11:00 - 12:00	5	81	0.296	5	81	0.350	5	81	0.646
12:00 - 13:00	5	81	0.291	5	81	0.330	5	81	0.621
13:00 - 14:00	5	81	0.296	5	81	0.259	5	81	0.555
14:00 - 15:00	5	81	0.310	5	81	0.315	5	81	0.625
15:00 - 16:00	5	81	0.557	5	81	0.360	5	81	0.917
16:00 - 17:00	5	81	0.542	5	81	0.352	5	81	0.894
17:00 - 18:00	5	81	0.512	5	81	0.337	5	81	0.849
18:00 - 19:00	5	81	0.424	5	81	0.365	5	81	0.789
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.218			4.424			8.642

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

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

Parameter summary

Trip rate parameter range selected:	57 - 138 (units:)
Survey date date range:	01/01/05 - 02/10/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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

ANNEX 8 – CENSUS JOURNEY TO WORK DATA

area of workplace : pre-2009 local authority: county / unitary	T203:1 (Total : All people)	T203:25 (Car - driver : All people)	Car Driver %
Herefordshire, County of	1,536	697	64.3%
00GAPG : Central	39	33	3.0%
00GAPS : Kerne Bridge	53	40	3.7%
00GAPY : Llangarron	24	18	1.7%
00GAQC : Penyard	28	17	1.6%
00GAQE : Ross-on-Wye East	1,055	383	35.3%
00GAQF : Ross-on-Wye West	179	76	7.0%
00GAQL : Three Elms	29	26	2.4%
Worcestershire	24	24	2.2%
Bristol	16	16	1.5%
Gloucestershire	304	264	24.4%
Monmouthshire	43	40	3.7%

ANNEX 9 – GRAVITY MODEL OF LOCAL DESTINATIONS

JNY8251 Hildersley Farm Ross-on-Wye
Gravity Model 30 minute drive time

Approximate site postcode: HR9 7NW

Authority	Area	Drive Time (mins)	Total Pop'n (2011)	HH (TEMPRO)	HH Split (TEMPRO)	P/T	P/T^2	% journeys	Primary Route	%	Secondary Route	%	Tertiary Route	%	Quaternary Route	%
Herefordshire	Authority	*(split below)*	183,477	79346												
	Ross-on-Wye	5	10,961	4740	6.0%	2,192	438	60.8%	A40 west	60.8%	B4260 Gloucester Road	60.8%	B4260 Gloucester Road	20.28%		
													Ashburton Road	20.28%		
													Alton Road	20.28%		
	Ledbury	23	9,610	4156	5.2%	418	18	2.5%	A40 west	2.5%	A40 north	2.5%	A449 east	2.5%	M50 east	1.3%
															A449 north-east	1.3%
	Hereford	28	59,375	25677	32.4%	2,121	76	10.5%	A40 west	10.5%	A40 north	10.5%	A40 west	10.5%	A49 north-west	10.5%
Monmouthshire	Authority	*(split below)*	91,323	38879												
	Monmouth	19	19,136	4055	10.4%	1,007	53	7.4%	A40 west	7.4%	A40 north	7.4%	A40 west	7.4%		
Gloucester City		30	121,688	52164		4,056	135	18.8%	A40 east	18.8%						

ANNEX 10 – JUNCTION CAPACITY MODELLING

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.4.487 [15039,24/03/2014]

Filename: Overross Roundabout.arc8
Path: P:\JNY8251 - Hildersley Farm, Ross on Wye\Transport\Arcady\J1 A40-A449
Report generation date: 01/10/2014 15:40:21

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	2014 Observed							
Arm 1	2.70	6.86	0.73	A	1.87	4.90	0.65	A
Arm 2	0.74	7.56	0.43	A	0.54	5.89	0.35	A
Arm 3	0.79	7.24	0.44	A	0.34	4.70	0.26	A
Arm 4	2.65	6.70	0.73	A	1.08	3.76	0.52	A
Arm 5	0.14	11.92	0.13	B	0.37	6.84	0.27	A
	2019 Base + Committed							
Arm 1	3.69	8.91	0.79	A	2.51	6.18	0.72	A
Arm 2	1.80	12.37	0.65	B	1.09	8.22	0.52	A
Arm 3	1.05	9.38	0.52	A	0.45	5.57	0.31	A
Arm 4	3.87	9.21	0.80	A	1.40	4.47	0.59	A
Arm 5	0.18	15.20	0.16	C	0.45	8.39	0.31	A
	2019 Base + Committed + Dev							
Arm 1	3.73	9.01	0.79	A	2.56	6.30	0.72	A
Arm 2	1.95	13.03	0.67	B	1.13	8.40	0.53	A
Arm 3	1.07	9.58	0.52	A	0.46	5.61	0.32	A
Arm 4	3.95	9.37	0.80	A	1.45	4.54	0.59	A
Arm 5	0.19	15.39	0.16	C	0.46	8.55	0.32	A

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

"D1 - 2014 Observed, AM " model duration: 07:45 - 09:15
"D2 - 2014 Observed, PM" model duration: 16:45 - 18:15
"D3 - 2019 Base + Committed, AM" model duration: 07:45 - 09:15
"D4 - 2019 Base + Committed, PM" model duration: 16:45 - 18:15
"D5 - 2019 Base + Committed + Dev, AM" model duration: 07:45 - 09:15
"D6 - 2019 Base + Committed + Dev, PM" model duration: 16:45 - 18:15

Run using Junctions 8.0.4.487 at 01/10/2014 15:40:19

File summary

Title	A40-A449
Location	Ross-on-Wye
Site Number	J1
Date	24/09/2014
Version	
Status	Existing Layout
Identifier	
Client	RPS SW Planning
Jobnumber	JNY8251
Enumerator	pauline.pettitt
Description	Standalone Roundabout. PCU factor amended to 2.2 as high proportion of OGV2

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

2014 Observed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2014 Observed, AM	2014 Observed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4,5			6.97	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	A449	
2	2	A40 South	
3	3	Ledbury Road	
4	4	A40 West	
5	5	Netherton Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.30	8.50	15.00	30.00	75.00	20.00	
2	3.65	7.30	11.00	20.00	75.00	22.00	
3	4.00	7.60	9.00	20.00	75.00	20.00	
4	8.30	8.30	0.00	35.00	75.00	21.00	
5	3.50	6.00	8.00	25.00	75.00	19.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.638	2628.961
2		(calculated)	(calculated)	0.491	1687.937
3		(calculated)	(calculated)	0.502	1749.079
4		(calculated)	(calculated)	0.641	2646.145
5		(calculated)	(calculated)	0.468	1508.262

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.20				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1302.00	100.000
2	ONE HOUR	✓	324.00	100.000
3	ONE HOUR	✓	360.00	100.000
4	ONE HOUR	✓	1313.00	100.000
5	ONE HOUR	✓	40.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	216.000	181.000	874.000	31.000
	2	204.000	0.000	29.000	86.000	5.000
	3	250.000	32.000	0.000	73.000	5.000
	4	981.000	232.000	76.000	0.000	24.000
	5	16.000	3.000	3.000	18.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.17	0.14	0.67	0.02
	2	0.63	0.00	0.09	0.27	0.02
	3	0.69	0.09	0.00	0.20	0.01
	4	0.75	0.18	0.06	0.00	0.02
	5	0.40	0.08	0.08	0.45	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.000	1.072	1.047	1.264	1.155
	2	1.083	1.000	1.083	1.126	1.000
	3	1.048	1.000	1.000	1.017	1.000
	4	1.145	1.103	1.031	1.000	1.350
	5	1.450	1.000	1.400	1.467	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.0	6.0	3.9	22.0	12.9
	2	6.9	0.0	6.9	10.5	0.0
	3	4.0	0.0	0.0	1.4	0.0
	4	12.1	8.6	2.6	0.0	29.2
	5	37.5	0.0	33.3	38.9	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.73	6.86	2.70	A
2	0.43	7.56	0.74	A
3	0.44	7.24	0.79	A
4	0.73	6.70	2.65	A
5	0.13	11.92	0.14	B

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	980.22	976.52	272.96	0.00	2032.34	0.482	0.92	3.399	A
2	243.92	242.74	887.22	0.00	1059.70	0.230	0.30	4.400	A
3	271.03	269.80	913.22	0.00	1146.62	0.236	0.31	4.099	A
4	988.50	984.94	394.92	0.00	2094.11	0.472	0.89	3.234	A
5	30.11	29.89	1331.12	0.00	574.29	0.052	0.05	6.608	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1170.47	1168.60	326.69	0.00	2000.92	0.585	1.39	4.316	A
2	291.27	290.74	1061.77	0.00	964.35	0.302	0.43	5.339	A
3	323.63	323.07	1093.13	0.00	1040.16	0.311	0.45	5.015	A
4	1180.36	1178.52	472.93	0.00	2047.21	0.577	1.35	4.136	A
5	35.96	35.86	1593.12	0.00	478.28	0.075	0.08	8.135	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1433.53	1428.47	399.31	0.00	1958.44	0.732	2.66	6.728	A
2	356.73	355.51	1297.86	0.00	835.39	0.427	0.73	7.481	A
3	396.37	395.03	1336.30	0.00	896.25	0.442	0.78	7.164	A
4	1445.64	1440.56	578.26	0.00	1983.88	0.729	2.62	6.564	A
5	44.04	43.79	1947.51	0.00	348.40	0.126	0.14	11.809	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1433.53	1433.38	400.73	0.00	1957.61	0.732	2.70	6.863	A
2	356.73	356.70	1302.37	0.00	832.92	0.428	0.74	7.558	A
3	396.37	396.33	1340.90	0.00	893.52	0.444	0.79	7.240	A
4	1445.64	1445.49	580.18	0.00	1982.72	0.729	2.65	6.696	A
5	44.04	44.03	1954.11	0.00	345.98	0.127	0.14	11.922	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1170.47	1175.55	328.69	0.00	1999.73	0.585	1.43	4.394	A
2	291.27	292.49	1068.15	0.00	960.86	0.303	0.44	5.395	A
3	323.63	324.96	1099.70	0.00	1036.26	0.312	0.46	5.072	A
4	1180.36	1185.46	475.73	0.00	2045.52	0.577	1.38	4.209	A
5	35.96	36.21	1602.51	0.00	474.83	0.076	0.08	8.211	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	980.22	982.17	274.60	0.00	2031.37	0.483	0.94	3.436	A
2	243.92	244.47	892.42	0.00	1056.85	0.231	0.30	4.435	A
3	271.03	271.61	918.88	0.00	1143.29	0.237	0.31	4.132	A
4	988.50	990.41	397.61	0.00	2092.49	0.472	0.90	3.271	A
5	30.11	30.22	1338.98	0.00	571.41	0.053	0.06	6.655	A

2014 Observed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2014 Observed, PM	2014 Observed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4,5			4.70	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	A449	
2	2	A40 South	
3	3	Ledbury Road	
4	4	A40 West	
5	5	Netherton Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.30	8.50	15.00	30.00	75.00	20.00	
2	3.65	7.30	11.00	20.00	75.00	22.00	
3	4.00	7.60	9.00	20.00	75.00	20.00	
4	8.30	8.30	0.00	35.00	75.00	21.00	
5	3.50	6.00	8.00	25.00	75.00	19.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.638	2628.961
2		(calculated)	(calculated)	0.491	1687.937
3		(calculated)	(calculated)	0.502	1749.079
4		(calculated)	(calculated)	0.641	2646.145
5		(calculated)	(calculated)	0.468	1508.262

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.20				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1255.00	100.000
2	ONE HOUR	✓	303.00	100.000
3	ONE HOUR	✓	240.00	100.000
4	ONE HOUR	✓	940.00	100.000
5	ONE HOUR	✓	176.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	213.000	207.000	805.000	30.000
	2	177.000	0.000	26.000	93.000	7.000
	3	163.000	25.000	0.000	47.000	5.000
	4	643.000	211.000	73.000	0.000	13.000
	5	86.000	18.000	20.000	52.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.17	0.16	0.64	0.02
	2	0.58	0.00	0.09	0.31	0.02
	3	0.68	0.10	0.00	0.20	0.02
	4	0.68	0.22	0.08	0.00	0.01
	5	0.49	0.10	0.11	0.30	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.000	1.034	1.023	1.130	1.160
	2	1.041	1.000	1.000	1.013	1.000
	3	1.014	1.000	1.000	1.000	1.000
	4	1.191	1.068	1.329	1.000	1.554
	5	1.070	1.000	1.000	1.046	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.0	2.8	1.9	10.8	13.3
	2	3.4	0.0	0.0	1.1	0.0
	3	1.2	0.0	0.0	0.0	0.0
	4	15.9	5.7	27.4	0.0	46.2
	5	5.8	0.0	0.0	3.8	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.65	4.90	1.87	A
2	0.35	5.89	0.54	A
3	0.26	4.70	0.34	A
4	0.52	3.76	1.08	A
5	0.27	6.84	0.37	A

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	944.83	941.85	299.36	0.00	2205.62	0.428	0.75	2.844	A
2	228.11	227.15	890.74	0.00	1166.55	0.196	0.24	3.829	A
3	180.68	180.01	873.26	0.00	1253.58	0.144	0.17	3.351	A
4	707.68	705.62	305.21	0.00	2072.39	0.341	0.52	2.631	A
5	132.50	131.86	969.56	0.00	949.17	0.140	0.16	4.398	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1128.22	1126.89	358.31	0.00	2167.79	0.520	1.08	3.453	A
2	272.39	272.00	1065.82	0.00	1073.07	0.254	0.34	4.492	A
3	215.76	215.52	1045.10	0.00	1159.42	0.186	0.23	3.813	A
4	845.04	844.29	365.43	0.00	2038.48	0.415	0.70	3.013	A
5	158.22	157.96	1160.33	0.00	852.63	0.186	0.23	5.181	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1381.78	1378.67	438.53	0.00	2116.29	0.653	1.85	4.860	A
2	333.61	332.80	1304.00	0.00	945.91	0.353	0.54	5.865	A
3	264.24	263.79	1278.63	0.00	1031.45	0.256	0.34	4.686	A
4	1034.96	1033.49	447.18	0.00	1992.44	0.519	1.07	3.750	A
5	193.78	193.23	1420.24	0.00	721.08	0.269	0.36	6.813	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1381.78	1381.72	439.30	0.00	2115.81	0.653	1.87	4.903	A
2	333.61	333.59	1306.86	0.00	944.39	0.353	0.54	5.893	A
3	264.24	264.24	1281.53	0.00	1029.86	0.257	0.34	4.701	A
4	1034.96	1034.94	448.10	0.00	1991.92	0.520	1.08	3.760	A
5	193.78	193.77	1422.49	0.00	719.95	0.269	0.37	6.841	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1128.22	1131.31	359.46	0.00	2167.06	0.521	1.09	3.485	A
2	272.39	273.19	1070.00	0.00	1070.86	0.254	0.34	4.517	A
3	215.76	216.21	1049.36	0.00	1157.09	0.186	0.23	3.827	A
4	845.04	846.50	366.81	0.00	2037.70	0.415	0.71	3.025	A
5	158.22	158.77	1163.74	0.00	850.92	0.186	0.23	5.204	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	944.83	946.19	300.78	0.00	2204.72	0.429	0.75	2.862	A
2	228.11	228.51	894.94	0.00	1164.32	0.196	0.24	3.848	A
3	180.68	180.93	877.67	0.00	1251.18	0.144	0.17	3.363	A
4	707.68	708.45	306.88	0.00	2071.45	0.342	0.52	2.644	A
5	132.50	132.77	973.86	0.00	947.02	0.140	0.16	4.422	A

2019 Base + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed, AM	2019 Base + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4,5			9.58	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	A449	
2	2	A40 South	
3	3	Ledbury Road	
4	4	A40 West	
5	5	Netherton Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.30	8.50	15.00	30.00	75.00	20.00	
2	3.65	7.30	11.00	20.00	75.00	22.00	
3	4.00	7.60	9.00	20.00	75.00	20.00	
4	8.30	8.30	0.00	35.00	75.00	21.00	
5	3.50	6.00	8.00	25.00	75.00	19.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.638	2628.961
2		(calculated)	(calculated)	0.491	1687.937
3		(calculated)	(calculated)	0.502	1749.079
4		(calculated)	(calculated)	0.641	2646.145
5		(calculated)	(calculated)	0.468	1508.262

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.20				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1383.00	100.000
2	ONE HOUR	✓	486.00	100.000
3	ONE HOUR	✓	371.00	100.000
4	ONE HOUR	✓	1405.00	100.000
5	ONE HOUR	✓	40.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	256.000	181.000	915.000	31.000
	2	267.000	0.000	54.000	160.000	5.000
	3	250.000	43.000	0.000	73.000	5.000
	4	1027.000	278.000	76.000	0.000	24.000
	5	16.000	3.000	3.000	18.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.19	0.13	0.66	0.02
	2	0.55	0.00	0.11	0.33	0.01
	3	0.67	0.12	0.00	0.20	0.01
	4	0.73	0.20	0.05	0.00	0.02
	5	0.40	0.08	0.08	0.45	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.000	1.071	1.047	1.264	1.155
	2	1.072	1.000	1.044	1.075	1.000
	3	1.048	1.000	1.000	1.017	1.000
	4	1.146	1.100	1.031	1.000	1.350
	5	1.450	1.000	1.400	1.467	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.0	5.9	3.9	22.0	12.9
	2	6.0	0.0	3.7	6.3	0.0
	3	4.0	0.0	0.0	1.4	0.0
	4	12.2	8.3	2.6	0.0	29.2
	5	37.5	0.0	33.3	38.9	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.79	8.91	3.69	A
2	0.65	12.37	1.80	B
3	0.52	9.38	1.05	A
4	0.80	9.21	3.87	A
5	0.16	15.20	0.18	C

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1041.20	1036.94	315.59	0.00	2011.50	0.518	1.06	3.677	A
2	365.89	363.81	917.67	0.00	1065.62	0.343	0.52	5.116	A
3	279.31	277.92	1046.12	0.00	1078.29	0.259	0.35	4.491	A
4	1057.76	1053.59	450.09	0.00	2062.93	0.513	1.04	3.552	A
5	30.11	29.88	1454.95	0.00	530.02	0.057	0.06	7.194	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1243.29	1240.85	377.68	0.00	1975.27	0.629	1.67	4.885	A
2	436.90	435.71	1098.16	0.00	964.70	0.453	0.82	6.790	A
3	333.52	332.79	1252.18	0.00	958.03	0.348	0.53	5.753	A
4	1263.07	1260.57	538.98	0.00	2009.67	0.629	1.67	4.789	A
5	35.96	35.83	1741.24	0.00	425.32	0.085	0.09	9.240	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1522.72	1514.98	460.97	0.00	1926.68	0.790	3.61	8.585	A
2	535.10	531.34	1340.70	0.00	829.09	0.645	1.76	11.943	B
3	408.48	406.47	1528.24	0.00	796.88	0.513	1.03	9.174	A
4	1546.94	1538.53	657.82	0.00	1938.45	0.798	3.77	8.821	A
5	44.04	43.69	2125.16	0.00	284.91	0.155	0.18	14.904	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1522.72	1522.37	463.41	0.00	1925.24	0.791	3.69	8.915	A
2	535.10	534.90	1347.33	0.00	825.37	0.648	1.80	12.374	B
3	408.48	408.40	1536.60	0.00	792.05	0.516	1.05	9.379	A
4	1546.94	1546.53	661.53	0.00	1936.23	0.799	3.87	9.212	A
5	44.04	44.02	2136.52	0.00	280.76	0.157	0.18	15.203	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1243.29	1251.16	381.08	0.00	1973.26	0.630	1.73	5.039	A
2	436.90	440.73	1107.42	0.00	959.52	0.455	0.85	6.990	A
3	333.52	335.55	1263.92	0.00	951.26	0.351	0.55	5.867	A
4	1263.07	1271.67	544.23	0.00	2006.52	0.629	1.72	4.954	A
5	35.96	36.31	1757.07	0.00	419.53	0.086	0.09	9.404	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1041.20	1043.78	317.79	0.00	2010.20	0.518	1.08	3.736	A
2	365.89	367.16	923.81	0.00	1062.18	0.344	0.53	5.190	A
3	279.31	280.07	1053.93	0.00	1073.77	0.260	0.35	4.539	A
4	1057.76	1060.40	453.85	0.00	2060.68	0.513	1.06	3.610	A
5	30.11	30.25	1465.18	0.00	526.28	0.057	0.06	7.258	A

2019 Base + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed, PM	2019 Base + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4,5			5.92	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	A449	
2	2	A40 South	
3	3	Ledbury Road	
4	4	A40 West	
5	5	Netherton Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.30	8.50	15.00	30.00	75.00	20.00	
2	3.65	7.30	11.00	20.00	75.00	22.00	
3	4.00	7.60	9.00	20.00	75.00	20.00	
4	8.30	8.30	0.00	35.00	75.00	21.00	
5	3.50	6.00	8.00	25.00	75.00	19.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.638	2628.961
2		(calculated)	(calculated)	0.491	1687.937
3		(calculated)	(calculated)	0.502	1749.079
4		(calculated)	(calculated)	0.641	2646.145
5		(calculated)	(calculated)	0.468	1508.262

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.20				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1341.00	100.000
2	ONE HOUR	✓	437.00	100.000
3	ONE HOUR	✓	268.00	100.000
4	ONE HOUR	✓	1034.00	100.000
5	ONE HOUR	✓	176.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	259.000	207.000	845.000	30.000
	2	236.000	0.000	46.000	147.000	8.000
	3	163.000	53.000	0.000	47.000	5.000
	4	675.000	273.000	73.000	0.000	13.000
	5	86.000	18.000	20.000	52.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.19	0.15	0.63	0.02
	2	0.54	0.00	0.11	0.34	0.02
	3	0.61	0.20	0.00	0.18	0.02
	4	0.65	0.26	0.07	0.00	0.01
	5	0.49	0.10	0.11	0.30	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.000	1.028	1.023	1.130	1.160
	2	1.050	1.000	1.000	1.008	1.000
	3	1.014	1.000	1.000	1.000	1.000
	4	1.191	1.074	1.329	1.000	1.554
	5	1.070	1.000	1.000	1.046	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.0	2.3	1.9	10.8	13.3
	2	4.2	0.0	0.0	0.7	0.0
	3	1.2	0.0	0.0	0.0	0.0
	4	15.9	6.2	27.4	0.0	46.2
	5	5.8	0.0	0.0	3.8	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.72	6.18	2.51	A
2	0.52	8.22	1.09	A
3	0.31	5.57	0.45	A
4	0.59	4.47	1.40	A
5	0.31	8.39	0.45	A

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1009.57	1006.11	366.80	0.00	2168.37	0.466	0.87	3.088	A
2	329.00	327.40	920.49	0.00	1148.10	0.287	0.40	4.379	A
3	201.76	200.95	988.37	0.00	1193.94	0.169	0.20	3.621	A
4	778.45	776.00	371.03	0.00	2042.81	0.381	0.61	2.837	A
5	132.50	131.80	1105.02	0.00	883.05	0.150	0.18	4.788	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1205.53	1203.78	439.04	0.00	2122.19	0.568	1.30	3.913	A
2	392.86	392.09	1101.44	0.00	1051.66	0.374	0.59	5.450	A
3	240.93	240.60	1182.94	0.00	1087.66	0.222	0.28	4.250	A
4	929.55	928.55	444.26	0.00	2001.28	0.464	0.86	3.352	A
5	158.22	157.90	1322.54	0.00	773.44	0.205	0.26	5.846	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1476.46	1471.77	537.17	0.00	2059.46	0.717	2.47	6.077	A
2	481.15	479.21	1346.71	0.00	920.93	0.522	1.07	8.115	A
3	295.07	294.40	1446.13	0.00	943.87	0.313	0.45	5.537	A
4	1138.46	1136.32	543.27	0.00	1945.13	0.585	1.39	4.439	A
5	193.78	193.02	1618.11	0.00	624.49	0.310	0.44	8.331	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1476.46	1476.34	538.38	0.00	2058.69	0.717	2.51	6.177	A
2	481.15	481.09	1350.84	0.00	918.74	0.524	1.09	8.223	A
3	295.07	295.06	1451.01	0.00	941.22	0.314	0.45	5.570	A
4	1138.46	1138.42	544.96	0.00	1944.17	0.586	1.40	4.467	A
5	193.78	193.76	1621.72	0.00	622.69	0.311	0.45	8.393	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1205.53	1210.23	440.83	0.00	2121.07	0.568	1.33	3.973	A
2	392.86	394.79	1107.30	0.00	1048.56	0.375	0.60	5.522	A
3	240.93	241.59	1189.88	0.00	1083.89	0.222	0.29	4.277	A
4	929.55	931.67	446.73	0.00	1999.87	0.465	0.87	3.378	A
5	158.22	158.97	1327.87	0.00	770.79	0.205	0.26	5.890	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1009.57	1011.38	368.72	0.00	2167.16	0.466	0.88	3.118	A
2	329.00	329.79	925.41	0.00	1145.49	0.287	0.41	4.419	A
3	201.76	202.09	994.25	0.00	1190.75	0.169	0.20	3.641	A
4	778.45	779.47	373.42	0.00	2041.45	0.381	0.62	2.856	A
5	132.50	132.83	1110.65	0.00	880.23	0.151	0.18	4.818	A

2019 Base + Committed + Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed + Dev, AM	2019 Base + Committed + Dev	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4,5			9.79	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	A449	
2	2	A40 South	
3	3	Ledbury Road	
4	4	A40 West	
5	5	Netherton Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.30	8.50	15.00	30.00	75.00	20.00	
2	3.65	7.30	11.00	20.00	75.00	22.00	
3	4.00	7.60	9.00	20.00	75.00	20.00	
4	8.30	8.30	0.00	35.00	75.00	21.00	
5	3.50	6.00	8.00	25.00	75.00	19.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.638	2628.961
2		(calculated)	(calculated)	0.491	1687.937
3		(calculated)	(calculated)	0.502	1749.079
4		(calculated)	(calculated)	0.641	2646.145
5		(calculated)	(calculated)	0.468	1508.262

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.20				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1384.00	100.000
2	ONE HOUR	✓	501.00	100.000
3	ONE HOUR	✓	371.00	100.000
4	ONE HOUR	✓	1411.00	100.000
5	ONE HOUR	✓	40.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	257.000	181.000	915.000	31.000
	2	269.000	0.000	54.000	173.000	5.000
	3	250.000	43.000	0.000	73.000	5.000
	4	1027.000	284.000	76.000	0.000	24.000
	5	16.000	3.000	3.000	18.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.19	0.13	0.66	0.02
	2	0.54	0.00	0.11	0.35	0.01
	3	0.67	0.12	0.00	0.20	0.01
	4	0.73	0.20	0.05	0.00	0.02
	5	0.40	0.08	0.08	0.45	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.000	1.070	1.047	1.264	1.155
	2	1.071	1.000	1.044	1.070	1.000
	3	1.048	1.000	1.000	1.017	1.000
	4	1.146	1.097	1.031	1.000	1.350
	5	1.450	1.000	1.400	1.467	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.0	5.8	3.9	22.0	12.9
	2	5.9	0.0	3.7	5.8	0.0
	3	4.0	0.0	0.0	1.4	0.0
	4	12.2	8.1	2.6	0.0	29.2
	5	37.5	0.0	33.3	38.9	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.79	9.01	3.73	A
2	0.67	13.03	1.95	B
3	0.52	9.58	1.07	A
4	0.80	9.37	3.95	A
5	0.16	15.39	0.19	C

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1041.95	1037.68	320.09	0.00	2009.66	0.518	1.07	3.687	A
2	377.18	375.02	917.66	0.00	1067.98	0.353	0.54	5.180	A
3	279.31	277.91	1057.32	0.00	1072.92	0.260	0.35	4.521	A
4	1062.28	1058.07	451.57	0.00	2063.32	0.515	1.05	3.567	A
5	30.11	29.87	1460.91	0.00	528.12	0.057	0.06	7.222	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1244.19	1241.73	383.06	0.00	1972.95	0.631	1.68	4.906	A
2	450.39	449.12	1098.14	0.00	966.84	0.466	0.86	6.937	A
3	333.52	332.78	1265.58	0.00	951.61	0.350	0.53	5.810	A
4	1268.46	1265.93	540.74	0.00	2009.88	0.631	1.69	4.822	A
5	35.96	35.83	1748.35	0.00	423.05	0.085	0.09	9.294	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1523.81	1515.97	467.48	0.00	1923.75	0.792	3.64	8.665	A
2	551.61	547.46	1340.61	0.00	830.97	0.664	1.90	12.518	B
3	408.48	406.41	1544.31	0.00	789.19	0.518	1.05	9.355	A
4	1553.54	1544.91	659.81	0.00	1938.52	0.801	3.85	8.954	A
5	44.04	43.68	2133.54	0.00	282.25	0.156	0.18	15.067	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1523.81	1523.46	470.01	0.00	1922.27	0.793	3.73	9.006	A
2	551.61	551.39	1347.32	0.00	827.20	0.667	1.95	13.026	B
3	408.48	408.39	1553.09	0.00	784.14	0.521	1.07	9.577	A
4	1553.54	1553.11	663.71	0.00	1936.18	0.802	3.95	9.371	A
5	44.04	44.02	2145.28	0.00	277.97	0.158	0.19	15.386	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1244.19	1252.17	386.58	0.00	1970.88	0.631	1.74	5.062	A
2	450.39	454.63	1107.52	0.00	961.58	0.468	0.89	7.161	A
3	333.52	335.61	1277.87	0.00	944.54	0.353	0.55	5.933	A
4	1268.46	1277.30	546.26	0.00	2006.57	0.632	1.74	4.994	A
5	35.96	36.32	1764.72	0.00	417.07	0.086	0.10	9.465	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1041.95	1044.55	322.32	0.00	2008.34	0.519	1.09	3.747	A
2	377.18	378.54	923.83	0.00	1064.51	0.354	0.55	5.259	A
3	279.31	280.09	1065.33	0.00	1068.30	0.261	0.36	4.573	A
4	1062.28	1064.96	455.40	0.00	2061.03	0.515	1.07	3.625	A
5	30.11	30.25	1471.30	0.00	524.33	0.057	0.06	7.287	A

2019 Base + Committed + Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed + Dev, PM	2019 Base + Committed + Dev	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4,5			6.03	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	A449	
2	2	A40 South	
3	3	Ledbury Road	
4	4	A40 West	
5	5	Netherton Road	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00
5	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	7.30	8.50	15.00	30.00	75.00	20.00	
2	3.65	7.30	11.00	20.00	75.00	22.00	
3	4.00	7.60	9.00	20.00	75.00	20.00	
4	8.30	8.30	0.00	35.00	75.00	21.00	
5	3.50	6.00	8.00	25.00	75.00	19.00	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.638	2628.961
2		(calculated)	(calculated)	0.491	1687.937
3		(calculated)	(calculated)	0.502	1749.079
4		(calculated)	(calculated)	0.641	2646.145
5		(calculated)	(calculated)	0.468	1508.262

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.20				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	1343.00	100.000
2	ONE HOUR	✓	446.00	100.000
3	ONE HOUR	✓	268.00	100.000
4	ONE HOUR	✓	1048.00	100.000
5	ONE HOUR	✓	176.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.000	261.000	207.000	845.000	30.000
	2	238.000	0.000	46.000	154.000	8.000
	3	163.000	53.000	0.000	47.000	5.000
	4	675.000	287.000	73.000	0.000	13.000
	5	86.000	18.000	20.000	52.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.00	0.19	0.15	0.63	0.02
	2	0.53	0.00	0.10	0.35	0.02
	3	0.61	0.20	0.00	0.18	0.02
	4	0.64	0.27	0.07	0.00	0.01
	5	0.49	0.10	0.11	0.30	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	1.000	1.028	1.023	1.130	1.160
	2	1.050	1.000	1.000	1.007	1.000
	3	1.014	1.000	1.000	1.000	1.000
	4	1.191	1.071	1.329	1.000	1.554
	5	1.070	1.000	1.000	1.046	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To				
		1	2	3	4	5
From	1	0.0	2.3	1.9	10.8	13.3
	2	4.2	0.0	0.0	0.6	0.0
	3	1.2	0.0	0.0	0.0	0.0
	4	15.9	5.9	27.4	0.0	46.2
	5	5.8	0.0	0.0	3.8	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.72	6.30	2.56	A
2	0.53	8.40	1.13	A
3	0.32	5.61	0.46	A
4	0.59	4.54	1.45	A
5	0.32	8.55	0.46	A

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1011.08	1007.59	377.31	0.00	2162.44	0.468	0.87	3.108	A
2	335.77	334.13	920.47	0.00	1148.85	0.292	0.41	4.409	A
3	201.76	200.95	995.08	0.00	1190.61	0.169	0.20	3.633	A
4	788.99	786.49	372.52	0.00	2046.00	0.386	0.62	2.852	A
5	132.50	131.80	1117.00	0.00	877.65	0.151	0.18	4.823	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1207.33	1205.55	451.61	0.00	2115.05	0.571	1.32	3.950	A
2	400.95	400.15	1101.41	0.00	1052.35	0.381	0.61	5.512	A
3	240.93	240.60	1190.97	0.00	1083.67	0.222	0.28	4.270	A
4	942.13	941.10	446.04	0.00	2004.21	0.470	0.88	3.383	A
5	158.22	157.90	1336.88	0.00	766.99	0.206	0.26	5.908	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1478.67	1473.84	552.52	0.00	2050.68	0.721	2.52	6.189	A
2	491.06	489.02	1346.58	0.00	921.58	0.533	1.12	8.283	A
3	295.07	294.39	1455.86	0.00	939.06	0.314	0.45	5.578	A
4	1153.87	1151.65	545.41	0.00	1947.75	0.592	1.44	4.509	A
5	193.78	193.00	1635.59	0.00	616.62	0.314	0.45	8.483	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1478.67	1478.54	553.79	0.00	2049.88	0.721	2.56	6.296	A
2	491.06	491.00	1350.83	0.00	919.33	0.534	1.13	8.402	A
3	295.07	295.06	1460.91	0.00	936.31	0.315	0.46	5.613	A
4	1153.87	1153.83	547.16	0.00	1946.75	0.593	1.45	4.540	A
5	193.78	193.76	1639.34	0.00	614.76	0.315	0.46	8.551	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1207.33	1212.17	453.48	0.00	2113.87	0.571	1.35	4.014	A
2	400.95	402.98	1107.42	0.00	1049.16	0.382	0.62	5.590	A
3	240.93	241.60	1198.16	0.00	1079.77	0.223	0.29	4.299	A
4	942.13	944.34	448.58	0.00	2002.77	0.470	0.89	3.407	A
5	158.22	158.99	1342.39	0.00	764.25	0.207	0.26	5.957	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	1011.08	1012.92	379.28	0.00	2161.19	0.468	0.88	3.141	A
2	335.77	336.60	925.44	0.00	1146.21	0.293	0.42	4.450	A
3	201.76	202.10	1001.08	0.00	1187.36	0.170	0.21	3.657	A
4	788.99	790.04	374.94	0.00	2044.62	0.386	0.63	2.873	A
5	132.50	132.84	1122.75	0.00	874.79	0.151	0.18	4.853	A

Junctions 8

ARCADY 8 - Roundabout Module

Filename: J2 Hildersley Roundabout.arc8
Path: P:\JNY8251 - Hildersley Farm, Ross on Wye\Transport\Arcady
Report generation date: 30/09/2014 11:47:54

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	2014 Observed							
Arm 1	0.03	5.89	0.03	A	0.01	6.81	0.01	A
Arm 2	0.76	5.17	0.43	A	0.45	3.95	0.31	A
Arm 3	0.49	5.19	0.33	A	1.19	7.20	0.54	A
Arm 4	1.37	9.39	0.58	A	1.70	11.91	0.63	B
	2019 Base + Committed							
Arm 1	0.04	7.78	0.03	A	0.01	7.54	0.01	A
Arm 2	0.98	6.07	0.50	A	0.86	5.24	0.46	A
Arm 3	0.83	6.51	0.45	A	1.77	9.59	0.64	A
Arm 4	4.15	22.05	0.82	C	2.64	16.40	0.73	C
	2019 Base + Committed + Dev							
Arm 1	0.04	8.07	0.04	A	0.01	8.15	0.01	A
Arm 2	1.19	6.68	0.54	A	0.97	5.55	0.50	A
Arm 3	0.92	6.90	0.48	A	2.22	11.23	0.69	B
Arm 4	4.70	24.88	0.84	C	3.32	20.22	0.78	C

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

"D1 - 2014 Observed, AM " model duration: 07:45 - 09:15
"D2 - 2014 Observed, PM" model duration: 16:45 - 18:15
"D3 - 2019 Base + Committed, AM" model duration: 07:45 - 09:15
"D4 - 2019 Base + Committed, PM" model duration: 16:45 - 18:15
"D5 - 2019 Base + Committed + Dev, AM" model duration: 07:45 - 09:15
"D6 - 2019 Base + Committed + Dev, PM" model duration: 16:45 - 18:15

Run using Junctions 8.0.4.487 at 30/09/2014 11:47:52

File summary

Title	Hildersley Roundabout
Location	Ross-on-Wye
Site Number	2
Date	24/09/2014
Version	
Status	Existing Layout
Identifier	
Client	RPS SW Planning
Jobnumber	JNY8251
Enumerator	pauline.pettitt
Description	Standalone roundabout

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

2014 Observed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2014 Observed, AM	2014 Observed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4			6.77	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Hildersley Rise	
2	2	A40 East	
3	3	Gloucester Road	
4	4	A40 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.75	4.50	2.50	17.50	30.00	26.00	
2	4.00	5.50	8.00	20.00	30.00	20.00	
3	3.40	5.50	3.00	10.00	30.00	25.00	
4	3.00	4.00	3.50	15.00	30.00	27.50	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.518	1003.780
2		(calculated)	(calculated)	0.638	1547.976
3		(calculated)	(calculated)	0.543	1187.890
4		(calculated)	(calculated)	0.524	1059.146

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	15.00	100.000
2	ONE HOUR	✓	482.00	100.000
3	ONE HOUR	✓	310.00	100.000
4	ONE HOUR	✓	482.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	0.000	10.000	5.000
	2	0.000	0.000	326.000	156.000
	3	4.000	144.000	1.000	161.000
	4	2.000	150.000	330.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.00	0.67	0.33
	2	0.00	0.00	0.68	0.32
	3	0.01	0.46	0.00	0.52
	4	0.00	0.31	0.68	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.031	1.103
	3	1.000	1.035	1.000	1.056
	4	1.000	1.093	1.048	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	3.1	10.3
	3	0.0	3.5	0.0	5.6
	4	0.0	9.3	4.8	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.03	5.89	0.03	A
2	0.43	5.17	0.76	A
3	0.33	5.19	0.49	A
4	0.58	9.39	1.37	A

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	11.29	11.23	467.54	0.00	748.31	0.015	0.02	4.884	A
2	362.88	361.34	258.72	0.00	1304.64	0.278	0.38	3.809	A
3	233.38	232.27	120.69	0.00	1067.38	0.219	0.28	4.306	A
4	362.88	360.39	111.64	0.00	940.50	0.386	0.62	6.180	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	13.48	13.47	560.76	0.00	697.38	0.019	0.02	5.263	A
2	433.31	432.79	310.37	0.00	1271.97	0.341	0.51	4.287	A
3	278.68	278.37	144.56	0.00	1053.73	0.264	0.36	4.640	A
4	433.31	432.35	133.80	0.00	929.19	0.466	0.86	7.230	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	16.52	16.49	685.93	0.00	628.98	0.026	0.03	5.877	A
2	530.69	529.73	379.58	0.00	1228.21	0.432	0.75	5.146	A
3	341.32	340.79	176.94	0.00	1035.22	0.330	0.49	5.181	A
4	530.69	528.73	163.80	0.00	913.87	0.581	1.35	9.299	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	16.52	16.51	688.07	0.00	627.81	0.026	0.03	5.888	A
2	530.69	530.68	380.91	0.00	1227.36	0.432	0.76	5.166	A
3	341.32	341.31	177.26	0.00	1035.04	0.330	0.49	5.188	A
4	530.69	530.63	164.05	0.00	913.74	0.581	1.37	9.392	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	13.48	13.51	564.02	0.00	695.59	0.019	0.02	5.277	A
2	433.31	434.26	312.39	0.00	1270.69	0.341	0.52	4.308	A
3	278.68	279.20	145.05	0.00	1053.45	0.265	0.36	4.654	A
4	433.31	435.24	134.19	0.00	928.98	0.466	0.89	7.321	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	11.29	11.31	471.69	0.00	746.04	0.015	0.02	4.899	A
2	362.88	363.41	261.20	0.00	1303.07	0.278	0.39	3.835	A
3	233.38	233.71	121.39	0.00	1066.98	0.219	0.28	4.323	A
4	362.88	363.88	112.33	0.00	940.15	0.386	0.64	6.257	A

2014 Observed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2014 Observed, PM	2014 Observed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4			7.97	A

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Hildersley Rise	
2	2	A40 East	
3	3	Gloucester Road	
4	4	A40 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.75	4.50	2.50	17.50	30.00	26.00	
2	4.00	5.50	8.00	20.00	30.00	20.00	
3	3.40	5.50	3.00	10.00	30.00	25.00	
4	3.00	4.00	3.50	15.00	30.00	27.50	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.518	1003.780
2		(calculated)	(calculated)	0.638	1547.976
3		(calculated)	(calculated)	0.543	1187.890
4		(calculated)	(calculated)	0.524	1059.146

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	6.00	100.000
2	ONE HOUR	✓	373.00	100.000
3	ONE HOUR	✓	543.00	100.000
4	ONE HOUR	✓	475.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	1.000	4.000	1.000
	2	1.000	0.000	254.000	118.000
	3	12.000	325.000	0.000	206.000
	4	3.000	203.000	269.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.17	0.67	0.17
	2	0.00	0.00	0.68	0.32
	3	0.02	0.60	0.00	0.38
	4	0.01	0.43	0.57	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.016	1.034
	3	1.000	1.015	1.000	1.015
	4	1.000	1.069	1.026	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	1.6	3.4
	3	0.0	1.5	0.0	1.5
	4	0.0	6.9	2.6	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.01	6.81	0.01	A
2	0.31	3.95	0.45	A
3	0.54	7.20	1.19	A
4	0.63	11.91	1.70	B

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	4.52	4.49	596.00	0.00	685.30	0.007	0.01	5.287	A
2	280.81	279.80	204.74	0.00	1384.14	0.203	0.25	3.256	A
3	408.80	406.52	90.01	0.00	1120.90	0.365	0.57	5.023	A
4	357.61	354.93	253.05	0.00	885.39	0.404	0.67	6.753	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	5.39	5.39	714.80	0.00	621.81	0.009	0.01	5.839	A
2	335.32	335.03	245.63	0.00	1357.98	0.247	0.33	3.519	A
3	488.15	487.32	107.78	0.00	1111.07	0.439	0.78	5.764	A
4	427.02	425.81	303.34	0.00	859.77	0.497	0.97	8.273	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	6.61	6.59	873.75	0.00	536.88	0.012	0.01	6.788	A
2	410.68	410.20	300.08	0.00	1323.13	0.310	0.45	3.942	A
3	597.85	596.25	131.97	0.00	1097.69	0.545	1.18	7.156	A
4	522.99	520.17	371.15	0.00	825.23	0.634	1.67	11.691	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	6.61	6.61	877.37	0.00	534.94	0.012	0.01	6.813	A
2	410.68	410.67	301.61	0.00	1322.15	0.311	0.45	3.949	A
3	597.85	597.81	132.12	0.00	1097.60	0.545	1.19	7.202	A
4	522.99	522.87	372.12	0.00	824.73	0.634	1.70	11.913	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	5.39	5.41	720.20	0.00	618.92	0.009	0.01	5.869	A
2	335.32	335.80	247.91	0.00	1356.52	0.247	0.33	3.530	A
3	488.15	489.72	108.03	0.00	1110.93	0.439	0.79	5.809	A
4	427.02	429.80	304.83	0.00	859.01	0.497	1.01	8.440	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	4.52	4.53	601.80	0.00	682.19	0.007	0.01	5.313	A
2	280.81	281.11	207.01	0.00	1382.69	0.203	0.26	3.268	A
3	408.80	409.65	90.44	0.00	1120.67	0.365	0.58	5.068	A
4	357.61	358.88	255.00	0.00	884.40	0.404	0.69	6.866	A

2019 Base + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed, AM	2019 Base + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4			12.59	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Hildersley Rise	
2	2	A40 East	
3	3	Gloucester Road	
4	4	A40 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.75	4.50	2.50	17.50	30.00	26.00	
2	4.00	5.50	8.00	20.00	30.00	20.00	
3	3.40	5.50	3.00	10.00	30.00	25.00	
4	3.00	4.00	3.50	15.00	30.00	27.50	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.518	1003.780
2		(calculated)	(calculated)	0.638	1547.976
3		(calculated)	(calculated)	0.543	1187.890
4		(calculated)	(calculated)	0.524	1059.146

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	15.00	100.000
2	ONE HOUR	✓	531.00	100.000
3	ONE HOUR	✓	417.00	100.000
4	ONE HOUR	✓	642.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	0.000	10.000	5.000
	2	0.000	0.000	350.000	181.000
	3	4.000	232.000	1.000	180.000
	4	2.000	245.000	395.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.00	0.67	0.33
	2	0.00	0.00	0.66	0.34
	3	0.01	0.56	0.00	0.43
	4	0.00	0.38	0.62	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.037	1.105
	3	1.000	1.056	1.000	1.050
	4	1.000	1.078	1.041	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	3.7	10.5
	3	0.0	5.6	0.0	5.0
	4	0.0	7.8	4.1	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.03	7.78	0.04	A
2	0.50	6.07	0.98	A
3	0.45	6.51	0.83	A
4	0.82	22.05	4.15	C

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	11.29	11.22	651.87	0.00	647.73	0.017	0.02	5.655	A
2	399.76	397.94	306.62	0.00	1268.45	0.315	0.46	4.127	A
3	313.94	312.24	139.38	0.00	1049.09	0.299	0.42	4.875	A
4	483.33	478.90	177.46	0.00	910.89	0.531	1.11	8.251	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	13.48	13.46	781.86	0.00	576.73	0.023	0.02	6.390	A
2	477.36	476.67	367.82	0.00	1230.20	0.388	0.63	4.773	A
3	374.87	374.31	166.97	0.00	1033.40	0.363	0.56	5.457	A
4	577.15	574.50	212.74	0.00	892.40	0.647	1.77	11.227	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	16.52	16.47	951.98	0.00	483.81	0.034	0.04	7.703	A
2	584.64	583.28	447.14	0.00	1180.63	0.495	0.97	6.013	A
3	459.12	458.10	204.31	0.00	1012.16	0.454	0.82	6.485	A
4	706.86	698.18	260.36	0.00	867.43	0.815	3.94	20.282	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	16.52	16.51	960.35	0.00	479.24	0.034	0.04	7.779	A
2	584.64	584.60	452.00	0.00	1177.58	0.496	0.98	6.070	A
3	459.12	459.10	204.78	0.00	1011.90	0.454	0.83	6.511	A
4	706.86	706.02	260.93	0.00	867.13	0.815	4.15	22.052	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	13.48	13.53	794.35	0.00	569.91	0.024	0.02	6.470	A
2	477.36	478.70	375.07	0.00	1225.66	0.389	0.64	4.827	A
3	374.87	375.87	167.68	0.00	1033.00	0.363	0.57	5.486	A
4	577.15	586.15	213.63	0.00	891.93	0.647	1.90	12.096	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	11.29	11.32	660.53	0.00	643.00	0.018	0.02	5.698	A
2	399.76	400.48	311.28	0.00	1265.54	0.316	0.46	4.164	A
3	313.94	314.52	140.28	0.00	1048.58	0.299	0.43	4.909	A
4	483.33	486.30	178.75	0.00	910.22	0.531	1.15	8.550	A

2019 Base + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed, PM	2019 Base + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4			10.39	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Hildersley Rise	
2	2	A40 East	
3	3	Gloucester Road	
4	4	A40 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.75	4.50	2.50	17.50	30.00	26.00	
2	4.00	5.50	8.00	20.00	30.00	20.00	
3	3.40	5.50	3.00	10.00	30.00	25.00	
4	3.00	4.00	3.50	15.00	30.00	27.50	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.518	1003.780
2		(calculated)	(calculated)	0.638	1547.976
3		(calculated)	(calculated)	0.543	1187.890
4		(calculated)	(calculated)	0.524	1059.146

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	6.00	100.000
2	ONE HOUR	✓	541.00	100.000
3	ONE HOUR	✓	612.00	100.000
4	ONE HOUR	✓	541.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	1.000	4.000	1.000
	2	1.000	0.000	346.000	194.000
	3	12.000	345.000	0.000	255.000
	4	3.000	235.000	303.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.17	0.67	0.17
	2	0.00	0.00	0.64	0.36
	3	0.02	0.56	0.00	0.42
	4	0.01	0.43	0.56	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.032	1.041
	3	1.000	1.020	1.000	1.012
	4	1.000	1.068	1.023	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	3.2	4.1
	3	0.0	2.0	0.0	1.2
	4	0.0	6.8	2.3	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.01	7.54	0.01	A
2	0.46	5.24	0.86	A
3	0.64	9.59	1.77	A
4	0.73	16.40	2.64	C

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	4.52	4.49	659.75	0.00	650.78	0.007	0.01	5.569	A
2	407.29	405.58	229.95	0.00	1350.56	0.302	0.43	3.803	A
3	460.75	457.84	146.94	0.00	1087.13	0.424	0.73	5.695	A
4	407.29	403.89	267.82	0.00	878.72	0.464	0.85	7.530	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	5.39	5.38	791.30	0.00	580.38	0.009	0.01	6.260	A
2	486.35	485.75	275.87	0.00	1321.63	0.368	0.58	4.304	A
3	550.18	548.93	175.98	0.00	1070.97	0.514	1.04	6.879	A
4	486.35	484.55	321.10	0.00	851.40	0.571	1.30	9.764	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	6.61	6.59	965.61	0.00	487.13	0.014	0.01	7.490	A
2	595.65	594.54	336.28	0.00	1283.58	0.464	0.86	5.216	A
3	673.83	671.01	215.40	0.00	1049.04	0.642	1.75	9.451	A
4	595.65	590.62	392.52	0.00	814.78	0.731	2.56	15.709	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	6.61	6.61	971.82	0.00	483.79	0.014	0.01	7.543	A
2	595.65	595.63	338.93	0.00	1281.92	0.465	0.86	5.245	A
3	673.83	673.73	215.79	0.00	1048.82	0.642	1.77	9.590	A
4	595.65	595.33	394.11	0.00	813.97	0.732	2.64	16.401	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	5.39	5.41	800.42	0.00	575.49	0.009	0.01	6.316	A
2	486.35	487.45	279.74	0.00	1319.19	0.369	0.59	4.333	A
3	550.18	552.97	176.60	0.00	1070.63	0.514	1.07	6.993	A
4	486.35	491.43	323.47	0.00	850.19	0.572	1.37	10.170	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	4.52	4.53	667.46	0.00	646.64	0.007	0.01	5.608	A
2	407.29	407.90	232.98	0.00	1348.64	0.302	0.44	3.831	A
3	460.75	462.06	147.78	0.00	1086.66	0.424	0.74	5.775	A
4	407.29	409.25	270.29	0.00	877.45	0.464	0.88	7.720	A

2019 Base + Committed + Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed + Dev, AM	2019 Base + Committed + Dev	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4			13.75	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Hildersley Rise	
2	2	A40 East	
3	3	Gloucester Road	
4	4	A40 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.75	4.50	2.50	17.50	30.00	26.00	
2	4.00	5.50	8.00	20.00	30.00	20.00	
3	3.40	5.50	3.00	10.00	30.00	25.00	
4	3.00	4.00	3.50	15.00	30.00	27.50	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.518	1003.780
2		(calculated)	(calculated)	0.638	1547.976
3		(calculated)	(calculated)	0.543	1187.890
4		(calculated)	(calculated)	0.524	1059.146

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	15.00	100.000
2	ONE HOUR	✓	586.00	100.000
3	ONE HOUR	✓	440.00	100.000
4	ONE HOUR	✓	649.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	0.000	10.000	5.000
	2	0.000	0.000	390.000	196.000
	3	4.000	255.000	1.000	180.000
	4	2.000	252.000	395.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.00	0.67	0.33
	2	0.00	0.00	0.67	0.33
	3	0.01	0.58	0.00	0.41
	4	0.00	0.39	0.61	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.033	1.097
	3	1.000	1.051	1.000	1.050
	4	1.000	1.075	1.041	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	3.3	9.7
	3	0.0	5.1	0.0	5.0
	4	0.0	7.5	4.1	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.04	8.07	0.04	A
2	0.54	6.68	1.19	A
3	0.48	6.90	0.92	A
4	0.84	24.88	4.70	C

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	11.29	11.22	674.15	0.00	636.27	0.018	0.02	5.759	A
2	441.17	439.07	306.53	0.00	1275.45	0.346	0.52	4.294	A
3	331.26	329.42	150.60	0.00	1046.02	0.317	0.46	5.012	A
4	488.60	483.98	194.65	0.00	903.12	0.541	1.15	8.499	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	13.48	13.46	808.53	0.00	563.02	0.024	0.02	6.550	A
2	526.80	525.96	367.69	0.00	1237.01	0.426	0.73	5.056	A
3	395.55	394.92	180.41	0.00	1029.13	0.384	0.62	5.670	A
4	583.44	580.54	233.36	0.00	882.91	0.661	1.88	11.790	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	16.52	16.47	983.41	0.00	467.69	0.035	0.04	7.977	A
2	645.20	643.45	446.29	0.00	1187.62	0.543	1.17	6.594	A
3	484.45	483.26	220.70	0.00	1006.31	0.481	0.92	6.867	A
4	714.56	704.40	285.56	0.00	855.64	0.835	4.42	22.409	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	16.52	16.51	993.07	0.00	462.42	0.036	0.04	8.073	A
2	645.20	645.14	451.82	0.00	1184.14	0.545	1.19	6.678	A
3	484.45	484.42	221.28	0.00	1005.98	0.482	0.92	6.901	A
4	714.56	713.42	286.25	0.00	855.28	0.835	4.70	24.885	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	13.48	13.53	823.13	0.00	555.06	0.024	0.03	6.647	A
2	526.80	528.53	376.05	0.00	1231.76	0.428	0.75	5.133	A
3	395.55	396.72	181.29	0.00	1028.63	0.385	0.63	5.706	A
4	583.44	594.14	234.42	0.00	882.35	0.661	2.03	12.922	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	11.29	11.32	683.48	0.00	631.19	0.018	0.02	5.807	A
2	441.17	442.05	311.45	0.00	1272.36	0.347	0.53	4.341	A
3	331.26	331.91	151.63	0.00	1045.43	0.317	0.47	5.049	A
4	488.60	491.88	196.13	0.00	902.35	0.541	1.20	8.838	A

2019 Base + Committed + Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	ARCADY			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed + Dev, PM	2019 Base + Committed + Dev	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Grade Separated	Large Roundabout	Junction Delay (s)	Junction LOS
1	untitled	Roundabout	1,2,3,4			12.20	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description
1	1	Hildersley Rise	
2	2	A40 East	
3	3	Gloucester Road	
4	4	A40 North	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)
1	0.00	99999.00
2	0.00	99999.00
3	0.00	99999.00
4	0.00	99999.00

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
1	2.75	4.50	2.50	17.50	30.00	26.00	
2	4.00	5.50	8.00	20.00	30.00	20.00	
3	3.40	5.50	3.00	10.00	30.00	25.00	
4	3.00	4.00	3.50	15.00	30.00	27.50	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.518	1003.780
2		(calculated)	(calculated)	0.638	1547.976
3		(calculated)	(calculated)	0.543	1187.890
4		(calculated)	(calculated)	0.524	1059.146

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
1	ONE HOUR	✓	6.00	100.000
2	ONE HOUR	✓	578.00	100.000
3	ONE HOUR	✓	658.00	100.000
4	ONE HOUR	✓	557.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.000	1.000	4.000	1.000
	2	1.000	0.000	374.000	203.000
	3	12.000	391.000	0.000	255.000
	4	3.000	251.000	303.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.00	0.17	0.67	0.17
	2	0.00	0.00	0.65	0.35
	3	0.02	0.59	0.00	0.39
	4	0.01	0.45	0.54	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	1.000	1.000	1.000	1.000
	2	1.000	1.000	1.029	1.039
	3	1.000	1.018	1.000	1.012
	4	1.000	1.064	1.023	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		1	2	3	4
From	1	0.0	0.0	0.0	0.0
	2	0.0	0.0	2.9	3.9
	3	0.0	1.8	0.0	1.2
	4	0.0	6.4	2.3	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.01	8.15	0.01	A
2	0.50	5.55	0.97	A
3	0.69	11.23	2.22	B
4	0.78	20.22	3.32	C

Main Results for each time segment

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	4.52	4.49	705.77	0.00	626.88	0.007	0.01	5.783	A
2	435.15	433.27	229.83	0.00	1354.18	0.321	0.47	3.901	A
3	495.38	492.05	153.67	0.00	1084.53	0.457	0.83	6.042	A
4	419.34	415.62	302.11	0.00	862.30	0.486	0.93	7.995	A

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	5.39	5.38	846.46	0.00	551.74	0.010	0.01	6.588	A
2	519.61	518.93	275.70	0.00	1325.21	0.392	0.64	4.461	A
3	591.53	589.97	184.05	0.00	1067.64	0.554	1.22	7.512	A
4	500.73	498.57	362.23	0.00	831.50	0.602	1.47	10.740	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	6.61	6.59	1031.41	0.00	452.98	0.015	0.01	8.064	A
2	636.39	635.09	335.39	0.00	1287.52	0.494	0.97	5.506	A
3	724.47	720.64	225.25	0.00	1044.75	0.693	2.18	10.976	B
4	613.27	606.46	442.46	0.00	790.40	0.776	3.17	18.894	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	6.61	6.61	1039.79	0.00	448.49	0.015	0.01	8.146	A
2	636.39	636.36	338.80	0.00	1285.36	0.495	0.97	5.546	A
3	724.47	724.30	225.70	0.00	1044.50	0.694	2.22	11.226	B
4	613.27	612.69	444.71	0.00	789.25	0.777	3.32	20.221	C

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	5.39	5.41	858.78	0.00	545.14	0.010	0.01	6.669	A
2	519.61	520.90	280.72	0.00	1322.04	0.393	0.65	4.502	A
3	591.53	595.34	184.75	0.00	1067.25	0.554	1.27	7.688	A
4	500.73	507.75	365.53	0.00	829.82	0.603	1.57	11.407	B

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

Arm	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
1	4.52	4.53	714.82	0.00	622.03	0.007	0.01	5.829	A
2	435.15	435.85	233.19	0.00	1352.05	0.322	0.48	3.933	A
3	495.38	497.03	154.58	0.00	1084.02	0.457	0.85	6.152	A
4	419.34	421.74	305.17	0.00	860.74	0.487	0.97	8.244	A

Junctions 8

PICADY 8 - Priority Intersection Module

Version: 8.0.4.487 [15039,24/03/2014]

For sales and distribution information, program advice and maintenance, contact TRL:
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Filename: Staggered Junction.arc8
Path: P:\JNY8251 - Hildersley Farm, Ross on Wye\Transport\Picady\J4 Gloucester Rd-Alton Rd-Ashburton Rd
Report generation date: 01/10/2014 14:09:36

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	2014 Observed							
Stream B-C	0.09	9.33	0.08	A	0.16	12.61	0.14	B
Stream B-AD	0.81	14.71	0.45	B	2.04	24.85	0.68	C
Stream A-BCD	0.45	8.63	0.31	A	0.30	8.08	0.23	A
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
Stream D-A	0.26	7.46	0.21	A	0.87	11.91	0.47	B
Stream D-BC	0.20	14.18	0.17	B	0.47	19.00	0.33	C
Stream C-ABD	0.18	7.88	0.15	A	0.15	7.55	0.13	A
Stream C-D	-	-	-	-	-	-	-	-
Stream C-A	-	-	-	-	-	-	-	-
	2019 Base + Committed							
Stream B-C	0.11	12.17	0.10	B	0.27	22.02	0.22	C
Stream B-AD	1.54	21.81	0.61	C	3.74	41.90	0.81	E
Stream A-BCD	0.53	9.46	0.35	A	0.39	8.87	0.28	A
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
Stream D-A	0.36	8.48	0.27	A	1.12	14.83	0.53	B
Stream D-BC	0.24	17.10	0.20	C	0.63	25.27	0.39	D
Stream C-ABD	0.18	8.28	0.16	A	0.16	8.09	0.14	A
Stream C-D	-	-	-	-	-	-	-	-
Stream C-A	-	-	-	-	-	-	-	-
	2019 Base + Committed + Dev							
Stream B-C	0.13	13.37	0.11	B	0.43	35.89	0.31	E
Stream B-AD	1.80	24.74	0.65	C	5.17	55.81	0.86	F
Stream A-BCD	0.59	9.89	0.37	A	0.45	9.41	0.31	A
Stream A-B	-	-	-	-	-	-	-	-
Stream A-C	-	-	-	-	-	-	-	-
Stream D-A	0.39	8.76	0.28	A	1.36	17.22	0.58	C
Stream D-BC	0.26	18.36	0.21	C	0.74	30.08	0.43	D
Stream C-ABD	0.19	8.43	0.16	A	0.16	8.19	0.14	A
Stream C-D	-	-	-	-	-	-	-	-
Stream C-A	-	-	-	-	-	-	-	-

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

"D1 - 2014 Observed, AM " model duration: 07:45 - 09:15
"D2 - 2014 Observed, PM" model duration: 16:45 - 18:15
"D3 - 2019 Base + Committed, AM" model duration: 07:45 - 09:15
"D4 - 2019 Base + Committed, PM" model duration: 16:45 - 18:15
"D5 - 2019 Base + Committed + Dev, AM" model duration: 07:45 - 09:15
"D6 - 2019 Base + Committed + Dev, PM" model duration: 16:45 - 18:15

Run using Junctions 8.0.4.487 at 01/10/2014 14:09:32

File summary

Title	GloucesterRd-Alton Rd-Ashburton Rd
Location	Ross-on-Wye
Site Number	4
Date	30/09/2014
Version	
Status	Existing
Identifier	
Client	
Jobnumber	JNY8251
Enumerator	pauline.pettitt
Description	Staggered Junction modelled as a standalone junction

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

2014 Observed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2014 Observed, AM	2014 Observed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	Staggered Junction	OS-NS Stagger (UK RL Stagger)	Two-way	A,B,C,D	10.52	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Gloucester Road East		Major
B	B	Alton Road		Minor
C	C	untitled	Gloucester Road West	Major
D	D	Ashburton Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.00		0.00	✓	3.50	100.00	✓	11.00
C	7.00		0.00	✓	3.00	115.00	✓	3.00

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

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	6.00	4.20	4.00	4.00		1.00	28	50
D	One lane plus flare				10.00	10.00	6.70	5.60	5.00		1.00	40	41

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	721.275	-	-	-	0.267	0.267	0.267	-	0.267	-	-
1	B-AD	584.739	0.102	0.257	-	-	-	0.162	0.368	0.162	0.102	0.257
1	B-C	655.413	0.096	0.243	-	-	-	-	-	-	0.096	0.243
1	C-B	696.333	0.258	0.258	-	-	-	-	-	-	0.258	0.258
1	D-A	746.430	-	-	-	0.277	0.109	0.277	-	0.109	-	-
1	D-BC	509.400	0.141	0.141	0.320	0.224	0.089	0.224	-	0.089	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	668.00	100.000
B	ONE HOUR	✓	213.00	100.000
C	ONE HOUR	✓	134.00	100.000
D	ONE HOUR	✓	160.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	361.000	134.000	173.000
	B	142.000	0.000	31.000	40.000
	C	56.000	73.000	0.000	5.000
	D	113.000	42.000	5.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.54	0.20	0.26
	B	0.67	0.00	0.15	0.19
	C	0.42	0.54	0.00	0.04
	D	0.71	0.26	0.03	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.037	1.030	1.064
	B	1.028	1.000	1.097	1.000
	C	1.036	1.000	1.000	1.400
	D	1.062	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	3.7	3.0	6.4
	B	2.8	0.0	9.7	0.0
	C	3.6	0.0	0.0	40.0
	D	6.2	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-C	0.08	9.33	0.09	A
B-AD	0.45	14.71	0.81	B
A-BCD	0.31	8.63	0.45	A
A-B	-	-	-	-
A-C	-	-	-	-
D-A	0.21	7.46	0.26	A
D-BC	0.17	14.18	0.20	B
C-ABD	0.15	7.88	0.18	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	23.34	23.14	0.00	496.15	0.047	0.05	7.607	A
B-AD	137.02	135.47	0.00	485.97	0.282	0.39	10.227	B
A-BCD	130.24	129.21	0.00	630.42	0.207	0.26	7.168	A
A-B	271.78	271.78	0.00	-	-	-	-	-
A-C	100.88	100.88	0.00	-	-	-	-	-
D-A	85.07	84.47	0.00	642.68	0.132	0.15	6.442	A
D-BC	35.38	34.97	0.00	371.99	0.095	0.10	10.669	B
C-ABD	54.96	54.55	0.00	587.68	0.094	0.10	6.749	A
C-D	3.76	3.76	0.00	-	-	-	-	-
C-A	42.16	42.16	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	27.87	27.81	0.00	467.78	0.060	0.06	8.181	A
B-AD	163.61	163.06	0.00	468.81	0.349	0.53	11.751	B
A-BCD	155.52	155.23	0.00	620.81	0.251	0.33	7.727	A
A-B	324.53	324.53	0.00	-	-	-	-	-
A-C	120.46	120.46	0.00	-	-	-	-	-
D-A	101.58	101.43	0.00	628.37	0.162	0.19	6.830	A
D-BC	42.25	42.12	0.00	344.24	0.123	0.14	11.911	B
C-ABD	65.64	65.53	0.00	566.51	0.116	0.13	7.183	A
C-D	4.49	4.49	0.00	-	-	-	-	-
C-A	50.33	50.33	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	34.13	34.03	0.00	420.99	0.081	0.09	9.301	A
B-AD	200.38	199.30	0.00	445.05	0.450	0.80	14.583	B
A-BCD	190.48	190.00	0.00	607.93	0.313	0.45	8.607	A
A-B	397.47	397.47	0.00	-	-	-	-	-
A-C	147.54	147.54	0.00	-	-	-	-	-
D-A	124.42	124.16	0.00	607.14	0.205	0.26	7.450	A
D-BC	51.75	51.50	0.00	306.02	0.169	0.20	14.129	B
C-ABD	80.41	80.23	0.00	537.40	0.150	0.17	7.868	A
C-D	5.50	5.50	0.00	-	-	-	-	-
C-A	61.63	61.63	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	34.13	34.13	0.00	419.98	0.081	0.09	9.329	A
B-AD	200.38	200.34	0.00	444.94	0.450	0.81	14.710	B
A-BCD	190.48	190.46	0.00	607.65	0.313	0.45	8.629	A
A-B	397.47	397.47	0.00	-	-	-	-	-
A-C	147.54	147.54	0.00	-	-	-	-	-
D-A	124.42	124.41	0.00	606.58	0.205	0.26	7.465	A
D-BC	51.75	51.74	0.00	305.67	0.169	0.20	14.176	B
C-ABD	80.41	80.40	0.00	537.34	0.150	0.18	7.878	A
C-D	5.50	5.50	0.00	-	-	-	-	-
C-A	61.63	61.63	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	27.87	27.96	0.00	466.61	0.060	0.06	8.208	A
B-AD	163.61	164.66	0.00	468.64	0.349	0.55	11.885	B
A-BCD	155.52	155.98	0.00	620.38	0.251	0.34	7.759	A
A-B	324.53	324.53	0.00	-	-	-	-	-
A-C	120.46	120.46	0.00	-	-	-	-	-
D-A	101.58	101.83	0.00	627.53	0.162	0.19	6.853	A
D-BC	42.25	42.49	0.00	343.73	0.123	0.14	11.959	B
C-ABD	65.64	65.81	0.00	566.42	0.116	0.13	7.192	A
C-D	4.49	4.49	0.00	-	-	-	-	-
C-A	50.33	50.33	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	23.34	23.40	0.00	494.91	0.047	0.05	7.637	A
B-AD	137.02	137.61	0.00	485.70	0.282	0.40	10.359	B
A-BCD	130.24	130.54	0.00	629.86	0.207	0.26	7.213	A
A-B	271.78	271.78	0.00	-	-	-	-	-
A-C	100.88	100.88	0.00	-	-	-	-	-
D-A	85.07	85.24	0.00	641.60	0.133	0.15	6.474	A
D-BC	35.38	35.53	0.00	371.24	0.095	0.11	10.727	B
C-ABD	54.96	55.07	0.00	587.54	0.094	0.10	6.761	A
C-D	3.76	3.76	0.00	-	-	-	-	-
C-A	42.16	42.16	0.00	-	-	-	-	-

2014 Observed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2014 Observed, PM	2014 Observed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	Staggered Junction	OS-NS Stagger (UK RL Stagger)	Two-way	A,B,C,D	16.02	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Gloucester Road East		Major
B	B	Alton Road		Minor
C	C	untitled	Gloucester Road West	Major
D	D	Ashburton Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.00		0.00	✓	3.50	100.00	✓	11.00
C	7.00		0.00	✓	3.00	115.00	✓	3.00

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

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	6.00	4.20	4.00	4.00		1.00	28	50
D	One lane plus flare				10.00	10.00	6.70	5.60	5.00		1.00	40	41

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	721.275	-	-	-	0.267	0.267	0.267	-	0.267	-	-
1	B-AD	584.739	0.102	0.257	-	-	-	0.162	0.368	0.162	0.102	0.257
1	B-C	655.413	0.096	0.243	-	-	-	-	-	-	0.096	0.243
1	C-B	696.333	0.258	0.258	-	-	-	-	-	-	0.258	0.258
1	D-A	752.117	-	-	-	0.279	0.110	0.279	-	0.110	-	-
1	D-BC	504.930	0.140	0.140	0.318	0.222	0.088	0.222	-	0.088	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	528.00	100.000
B	ONE HOUR	✓	319.00	100.000
C	ONE HOUR	✓	151.00	100.000
D	ONE HOUR	✓	324.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	244.000	160.000	124.000
	B	226.000	0.000	41.000	52.000
	C	80.000	64.000	0.000	7.000
	D	241.000	66.000	17.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.46	0.30	0.23
	B	0.71	0.00	0.13	0.16
	C	0.53	0.42	0.00	0.05
	D	0.74	0.20	0.05	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.016	1.013	1.048
	B	1.009	1.000	1.000	1.000
	C	1.038	1.016	1.000	1.000
	D	1.012	1.015	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	1.6	1.3	4.8
	B	0.9	0.0	0.0	0.0
	C	3.8	1.6	0.0	0.0
	D	1.2	1.5	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-C	0.14	12.61	0.16	B
B-AD	0.68	24.85	2.04	C
A-BCD	0.23	8.08	0.30	A
A-B	-	-	-	-
A-C	-	-	-	-
D-A	0.47	11.91	0.87	B
D-BC	0.33	19.00	0.47	C
C-ABD	0.13	7.55	0.15	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	30.87	30.61	0.00	499.03	0.062	0.07	7.681	A
B-AD	209.29	206.41	0.00	492.67	0.425	0.72	12.457	B
A-BCD	93.35	92.65	0.00	617.18	0.151	0.18	6.855	A
A-B	183.70	183.70	0.00	-	-	-	-	-
A-C	120.46	120.46	0.00	-	-	-	-	-
D-A	181.44	179.88	0.00	640.46	0.283	0.39	7.790	A
D-BC	62.49	61.67	0.00	362.43	0.172	0.21	11.938	B
C-ABD	48.19	47.83	0.00	590.95	0.082	0.09	6.624	A
C-D	5.27	5.27	0.00	-	-	-	-	-
C-A	60.23	60.23	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	36.86	36.76	0.00	441.35	0.084	0.09	8.896	A
B-AD	249.92	248.51	0.00	474.92	0.526	1.07	15.796	C
A-BCD	111.47	111.28	0.00	602.65	0.185	0.22	7.322	A
A-B	219.35	219.35	0.00	-	-	-	-	-
A-C	143.84	143.84	0.00	-	-	-	-	-
D-A	216.65	216.06	0.00	613.33	0.353	0.54	9.048	A
D-BC	74.62	74.29	0.00	330.38	0.226	0.29	14.038	B
C-ABD	57.54	57.45	0.00	572.44	0.101	0.11	6.990	A
C-D	6.29	6.29	0.00	-	-	-	-	-
C-A	71.91	71.91	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	45.14	44.89	0.00	336.47	0.134	0.15	12.337	B
B-AD	306.08	302.49	0.00	450.08	0.680	1.97	23.805	C
A-BCD	136.53	136.22	0.00	583.22	0.234	0.30	8.047	A
A-B	268.65	268.65	0.00	-	-	-	-	-
A-C	176.16	176.16	0.00	-	-	-	-	-
D-A	265.35	264.09	0.00	569.37	0.466	0.85	11.743	B
D-BC	91.38	90.67	0.00	282.00	0.324	0.47	18.743	C
C-ABD	70.49	70.35	0.00	547.11	0.129	0.15	7.549	A
C-D	7.70	7.70	0.00	-	-	-	-	-
C-A	88.05	88.05	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	45.14	45.13	0.00	330.53	0.137	0.16	12.613	B
B-AD	306.08	305.79	0.00	449.86	0.680	2.04	24.855	C
A-BCD	136.53	136.52	0.00	582.30	0.234	0.30	8.075	A
A-B	268.65	268.65	0.00	-	-	-	-	-
A-C	176.16	176.16	0.00	-	-	-	-	-
D-A	265.35	265.29	0.00	567.35	0.468	0.87	11.912	B
D-BC	91.38	91.35	0.00	280.71	0.326	0.47	19.003	C
C-ABD	70.49	70.49	0.00	546.92	0.129	0.15	7.555	A
C-D	7.70	7.70	0.00	-	-	-	-	-
C-A	88.05	88.05	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	36.86	37.11	0.00	435.22	0.085	0.09	9.048	A
B-AD	249.92	253.48	0.00	474.63	0.527	1.15	16.530	C
A-BCD	111.47	111.77	0.00	601.29	0.185	0.23	7.357	A
A-B	219.35	219.35	0.00	-	-	-	-	-
A-C	143.84	143.84	0.00	-	-	-	-	-
D-A	216.65	217.89	0.00	610.82	0.355	0.56	9.192	A
D-BC	74.62	75.32	0.00	328.80	0.227	0.30	14.242	B
C-ABD	57.54	57.68	0.00	572.17	0.101	0.11	6.998	A
C-D	6.29	6.29	0.00	-	-	-	-	-
C-A	71.91	71.91	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	30.87	30.97	0.00	494.96	0.062	0.07	7.760	A
B-AD	209.29	210.87	0.00	492.31	0.425	0.76	12.864	B
A-BCD	93.35	93.55	0.00	616.00	0.152	0.18	6.892	A
A-B	183.70	183.70	0.00	-	-	-	-	-
A-C	120.46	120.46	0.00	-	-	-	-	-
D-A	181.44	182.06	0.00	638.21	0.284	0.40	7.902	A
D-BC	62.49	62.83	0.00	361.03	0.173	0.21	12.085	B
C-ABD	48.19	48.28	0.00	590.64	0.082	0.09	6.640	A
C-D	5.27	5.27	0.00	-	-	-	-	-
C-A	60.23	60.23	0.00	-	-	-	-	-

2019 Base + Committed, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed, AM	2019 Base + Committed	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	Staggered Junction	OS-NS Stagger (UK RL Stagger)	Two-way	A,B,C,D	13.78	B

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Gloucester Road East		Major
B	B	Alton Road		Minor
C	C	untitled	Gloucester Road West	Major
D	D	Ashburton Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.00		0.00	✓	3.50	100.00	✓	11.00
C	7.00		0.00	✓	3.00	115.00	✓	3.00

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

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	6.00	4.20	4.00	4.00		1.00	28	50
D	One lane plus flare				10.00	10.00	6.70	5.60	5.00		1.00	40	41

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	721.275	-	-	-	0.267	0.267	0.267	-	0.267	-	-
1	B-AD	584.739	0.102	0.257	-	-	-	0.162	0.368	0.162	0.102	0.257
1	B-C	655.413	0.096	0.243	-	-	-	-	-	-	0.096	0.243
1	C-B	696.333	0.258	0.258	-	-	-	-	-	-	0.258	0.258
1	D-A	754.743	-	-	-	0.280	0.111	0.280	-	0.111	-	-
1	D-BC	502.866	0.139	0.139	0.316	0.221	0.088	0.221	-	0.088	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	755.00	100.000
B	ONE HOUR	✓	268.00	100.000
C	ONE HOUR	✓	158.00	100.000
D	ONE HOUR	✓	187.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	405.000	165.000	185.000
	B	197.000	0.000	31.000	40.000
	C	80.000	73.000	0.000	5.000
	D	140.000	42.000	5.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.54	0.22	0.25
	B	0.74	0.00	0.12	0.15
	C	0.51	0.46	0.00	0.03
	D	0.75	0.22	0.03	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.037	1.030	1.064
	B	1.028	1.000	1.097	1.000
	C	1.038	1.000	1.000	1.400
	D	1.071	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	3.7	3.0	6.4
	B	2.8	0.0	9.7	0.0
	C	3.8	0.0	0.0	40.0
	D	7.1	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-C	0.10	12.17	0.11	B
B-AD	0.61	21.81	1.54	C
A-BCD	0.35	9.46	0.53	A
A-B	-	-	-	-
A-C	-	-	-	-
D-A	0.27	8.48	0.36	A
D-BC	0.20	17.10	0.24	C
C-ABD	0.16	8.28	0.18	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	23.34	23.13	0.00	460.95	0.051	0.05	8.219	A
B-AD	178.43	176.05	0.00	472.70	0.377	0.59	12.044	B
A-BCD	139.28	138.12	0.00	614.99	0.226	0.29	7.531	A
A-B	304.91	304.91	0.00	-	-	-	-	-
A-C	124.22	124.22	0.00	-	-	-	-	-
D-A	105.40	104.60	0.00	627.04	0.168	0.20	6.881	A
D-BC	35.38	34.93	0.00	341.65	0.104	0.11	11.721	B
C-ABD	54.96	54.54	0.00	572.62	0.096	0.11	6.942	A
C-D	3.76	3.76	0.00	-	-	-	-	-
C-A	60.22	60.22	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	27.87	27.79	0.00	415.07	0.067	0.07	9.296	A
B-AD	213.06	211.98	0.00	452.98	0.470	0.86	14.868	B
A-BCD	166.31	165.96	0.00	602.17	0.276	0.38	8.246	A
A-B	364.09	364.09	0.00	-	-	-	-	-
A-C	148.33	148.33	0.00	-	-	-	-	-
D-A	125.86	125.62	0.00	608.29	0.207	0.26	7.455	A
D-BC	42.25	42.08	0.00	308.60	0.137	0.16	13.499	B
C-ABD	65.64	65.52	0.00	548.54	0.120	0.13	7.451	A
C-D	4.49	4.49	0.00	-	-	-	-	-
C-A	71.90	71.90	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	34.13	33.97	0.00	333.45	0.102	0.11	12.014	B
B-AD	260.94	258.40	0.00	425.55	0.613	1.50	21.207	C
A-BCD	203.69	203.10	0.00	585.02	0.348	0.53	9.410	A
A-B	445.91	445.91	0.00	-	-	-	-	-
A-C	181.67	181.67	0.00	-	-	-	-	-
D-A	154.14	153.74	0.00	579.55	0.266	0.36	8.447	A
D-BC	51.75	51.41	0.00	262.97	0.197	0.24	16.989	C
C-ABD	80.43	80.24	0.00	515.44	0.156	0.18	8.268	A
C-D	5.50	5.50	0.00	-	-	-	-	-
C-A	88.03	88.03	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	34.13	34.12	0.00	329.98	0.103	0.11	12.167	B
B-AD	260.94	260.78	0.00	425.40	0.613	1.54	21.808	C
A-BCD	203.69	203.67	0.00	584.37	0.349	0.53	9.456	A
A-B	445.91	445.91	0.00	-	-	-	-	-
A-C	181.67	181.67	0.00	-	-	-	-	-
D-A	154.14	154.13	0.00	578.48	0.266	0.36	8.483	A
D-BC	51.75	51.73	0.00	262.23	0.197	0.24	17.100	C
C-ABD	80.43	80.43	0.00	515.36	0.156	0.18	8.276	A
C-D	5.50	5.50	0.00	-	-	-	-	-
C-A	88.03	88.03	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	27.87	28.03	0.00	411.43	0.068	0.07	9.393	A
B-AD	213.06	215.56	0.00	452.77	0.471	0.92	15.332	C
A-BCD	166.31	166.89	0.00	601.20	0.277	0.39	8.301	A
A-B	364.09	364.09	0.00	-	-	-	-	-
A-C	148.33	148.33	0.00	-	-	-	-	-
D-A	125.86	126.24	0.00	606.83	0.207	0.26	7.495	A
D-BC	42.25	42.58	0.00	307.53	0.137	0.16	13.605	B
C-ABD	65.64	65.83	0.00	548.42	0.120	0.14	7.461	A
C-D	4.49	4.49	0.00	-	-	-	-	-
C-A	71.90	71.90	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	23.34	23.42	0.00	458.23	0.051	0.05	8.282	A
B-AD	178.43	179.61	0.00	472.40	0.378	0.62	12.344	B
A-BCD	139.28	139.64	0.00	614.05	0.227	0.30	7.593	A
A-B	304.91	304.91	0.00	-	-	-	-	-
A-C	124.22	124.22	0.00	-	-	-	-	-
D-A	105.40	105.64	0.00	625.58	0.168	0.20	6.929	A
D-BC	35.38	35.56	0.00	340.43	0.104	0.12	11.817	B
C-ABD	54.96	55.08	0.00	572.46	0.096	0.11	6.961	A
C-D	3.76	3.76	0.00	-	-	-	-	-
C-A	60.22	60.22	0.00	-	-	-	-	-

2019 Base + Committed, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed, PM	2019 Base + Committed	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	Staggered Junction	OS-NS Stagger (UK RL Stagger)	Two-way	A,B,C,D	23.89	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Gloucester Road East		Major
B	B	Alton Road		Minor
C	C	untitled	Gloucester Road West	Major
D	D	Ashburton Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.00		0.00	✓	3.50	100.00	✓	11.00
C	7.00		0.00	✓	3.00	115.00	✓	3.00

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

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	6.00	4.20	4.00	4.00		1.00	28	50
D	One lane plus flare				10.00	10.00	6.70	5.60	5.00		1.00	40	41

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	721.275	-	-	-	0.267	0.267	0.267	-	0.267	-	-
1	B-AD	584.739	0.102	0.257	-	-	-	0.162	0.368	0.162	0.102	0.257
1	B-C	655.413	0.096	0.243	-	-	-	-	-	-	0.096	0.243
1	C-B	696.333	0.258	0.258	-	-	-	-	-	-	0.258	0.258
1	D-A	754.085	-	-	-	0.279	0.111	0.279	-	0.111	-	-
1	D-BC	503.383	0.139	0.139	0.317	0.222	0.088	0.222	-	0.088	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	655.00	100.000
B	ONE HOUR	✓	351.00	100.000
C	ONE HOUR	✓	172.00	100.000
D	ONE HOUR	✓	334.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	304.000	206.000	145.000
	B	258.000	0.000	41.000	52.000
	C	101.000	64.000	0.000	7.000
	D	251.000	66.000	17.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.46	0.31	0.22
	B	0.74	0.00	0.12	0.15
	C	0.59	0.37	0.00	0.04
	D	0.75	0.20	0.05	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.026	1.019	1.048
	B	1.012	1.000	1.000	1.000
	C	1.030	1.016	1.000	1.000
	D	1.040	1.015	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	2.6	1.9	4.8
	B	1.2	0.0	0.0	0.0
	C	3.0	1.6	0.0	0.0
	D	4.0	1.5	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-C	0.22	22.02	0.27	C
B-AD	0.81	41.90	3.74	E
A-BCD	0.28	8.87	0.39	A
A-B	-	-	-	-
A-C	-	-	-	-
D-A	0.53	14.83	1.12	B
D-BC	0.39	25.27	0.63	D
C-ABD	0.14	8.09	0.16	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	30.87	30.58	0.00	458.83	0.067	0.07	8.401	A
B-AD	233.38	229.63	0.00	474.63	0.492	0.94	14.487	B
A-BCD	109.16	108.29	0.00	606.80	0.180	0.22	7.210	A
A-B	228.87	228.87	0.00	-	-	-	-	-
A-C	155.09	155.09	0.00	-	-	-	-	-
D-A	188.97	187.20	0.00	610.75	0.309	0.44	8.464	A
D-BC	62.49	61.58	0.00	333.65	0.187	0.23	13.189	B
C-ABD	48.19	47.82	0.00	569.56	0.085	0.09	6.895	A
C-D	5.27	5.27	0.00	-	-	-	-	-
C-A	76.03	76.03	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	36.86	36.72	0.00	378.27	0.097	0.11	10.535	B
B-AD	278.68	276.38	0.00	453.52	0.614	1.51	20.050	C
A-BCD	130.35	130.10	0.00	590.02	0.221	0.28	7.823	A
A-B	273.29	273.29	0.00	-	-	-	-	-
A-C	185.19	185.19	0.00	-	-	-	-	-
D-A	225.64	224.90	0.00	578.67	0.390	0.63	10.156	B
D-BC	74.62	74.20	0.00	294.90	0.253	0.33	16.280	C
C-ABD	57.55	57.45	0.00	546.89	0.105	0.12	7.352	A
C-D	6.29	6.29	0.00	-	-	-	-	-
C-A	90.78	90.78	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	45.14	44.59	0.00	224.87	0.201	0.24	19.907	C
B-AD	341.32	333.58	0.00	423.78	0.805	3.44	37.023	E
A-BCD	159.65	159.23	0.00	567.58	0.281	0.39	8.807	A
A-B	334.71	334.71	0.00	-	-	-	-	-
A-C	226.81	226.81	0.00	-	-	-	-	-
D-A	276.36	274.53	0.00	522.91	0.529	1.09	14.386	B
D-BC	91.38	90.29	0.00	236.27	0.387	0.60	24.475	C
C-ABD	70.51	70.35	0.00	515.84	0.137	0.16	8.078	A
C-D	7.70	7.70	0.00	-	-	-	-	-
C-A	111.16	111.16	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	45.14	45.04	0.00	208.41	0.217	0.27	22.017	C
B-AD	341.32	340.15	0.00	423.38	0.806	3.74	41.899	E
A-BCD	159.65	159.63	0.00	565.59	0.282	0.39	8.868	A
A-B	334.71	334.71	0.00	-	-	-	-	-
A-C	226.81	226.81	0.00	-	-	-	-	-
D-A	276.36	276.23	0.00	518.67	0.533	1.12	14.832	B
D-BC	91.38	91.30	0.00	233.60	0.391	0.63	25.265	D
C-ABD	70.51	70.51	0.00	515.56	0.137	0.16	8.088	A
C-D	7.70	7.70	0.00	-	-	-	-	-
C-A	111.16	111.16	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	36.86	37.48	0.00	362.02	0.102	0.11	11.114	B
B-AD	278.68	286.88	0.00	453.06	0.615	1.69	22.609	C
A-BCD	130.35	130.76	0.00	587.14	0.222	0.29	7.896	A
A-B	273.29	273.29	0.00	-	-	-	-	-
A-C	185.19	185.19	0.00	-	-	-	-	-
D-A	225.64	227.47	0.00	573.84	0.393	0.66	10.448	B
D-BC	74.62	75.71	0.00	291.66	0.256	0.35	16.751	C
C-ABD	57.55	57.70	0.00	546.49	0.105	0.12	7.366	A
C-D	6.29	6.29	0.00	-	-	-	-	-
C-A	90.78	90.78	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	30.87	31.03	0.00	451.65	0.068	0.07	8.561	A
B-AD	233.38	236.14	0.00	474.21	0.492	1.00	15.292	C
A-BCD	109.16	109.43	0.00	605.06	0.180	0.22	7.266	A
A-B	228.87	228.87	0.00	-	-	-	-	-
A-C	155.09	155.09	0.00	-	-	-	-	-
D-A	188.97	189.78	0.00	607.75	0.311	0.46	8.631	A
D-BC	62.49	62.95	0.00	331.53	0.188	0.24	13.425	B
C-ABD	48.19	48.29	0.00	569.20	0.085	0.09	6.911	A
C-D	5.27	5.27	0.00	-	-	-	-	-
C-A	76.03	76.03	0.00	-	-	-	-	-

2019 Base + Committed + Dev, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed + Dev, AM	2019 Base + Committed + Dev	AM		ONE HOUR	07:45	09:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	Staggered Junction	OS-NS Stagger (UK RL Stagger)	Two-way	A,B,C,D	15.05	C

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Gloucester Road East		Major
B	B	Alton Road		Minor
C	C	untitled	Gloucester Road West	Major
D	D	Ashburton Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.00		0.00	✓	3.50	100.00	✓	11.00
C	7.00		0.00	✓	3.00	115.00	✓	3.00

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

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	6.00	4.20	4.00	4.00		1.00	28	50
D	One lane plus flare				10.00	10.00	6.70	5.60	5.00		1.00	40	41

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	721.275	-	-	-	0.267	0.267	0.267	-	0.267	-	-
1	B-AD	584.739	0.102	0.257	-	-	-	0.162	0.368	0.162	0.102	0.257
1	B-C	655.413	0.096	0.243	-	-	-	-	-	-	0.096	0.243
1	C-B	696.333	0.258	0.258	-	-	-	-	-	-	0.258	0.258
1	D-A	755.882	-	-	-	0.280	0.111	0.280	-	0.111	-	-
1	D-BC	501.971	0.139	0.139	0.316	0.221	0.087	0.221	-	0.087	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	795.00	100.000
B	ONE HOUR	✓	276.00	100.000
C	ONE HOUR	✓	166.00	100.000
D	ONE HOUR	✓	194.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	418.000	180.000	197.000
	B	205.000	0.000	31.000	40.000
	C	88.000	73.000	0.000	5.000
	D	147.000	42.000	5.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.53	0.23	0.25
	B	0.74	0.00	0.11	0.14
	C	0.53	0.44	0.00	0.03
	D	0.76	0.22	0.03	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.036	1.028	1.061
	B	1.039	1.000	1.097	1.000
	C	1.034	1.000	1.000	1.400
	D	1.068	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	3.6	2.8	6.1
	B	3.9	0.0	9.7	0.0
	C	3.4	0.0	0.0	40.0
	D	6.8	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-C	0.11	13.37	0.13	B
B-AD	0.65	24.74	1.80	C
A-BCD	0.37	9.89	0.59	A
A-B	-	-	-	-
A-C	-	-	-	-
D-A	0.28	8.76	0.39	A
D-BC	0.21	18.36	0.26	C
C-ABD	0.16	8.43	0.19	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	23.34	23.12	0.00	451.15	0.052	0.05	8.406	A
B-AD	184.45	181.87	0.00	463.64	0.398	0.65	12.667	B
A-BCD	148.31	147.05	0.00	613.24	0.242	0.32	7.702	A
A-B	314.69	314.69	0.00	-	-	-	-	-
A-C	135.51	135.51	0.00	-	-	-	-	-
D-A	110.67	109.82	0.00	625.61	0.177	0.21	6.968	A
D-BC	35.38	34.91	0.00	331.92	0.107	0.12	12.121	B
C-ABD	54.96	54.54	0.00	567.16	0.097	0.11	7.016	A
C-D	3.76	3.76	0.00	-	-	-	-	-
C-A	66.25	66.25	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	27.87	27.79	0.00	400.19	0.070	0.07	9.664	A
B-AD	220.25	219.01	0.00	443.14	0.497	0.96	15.968	C
A-BCD	177.10	176.71	0.00	599.64	0.295	0.41	8.504	A
A-B	375.77	375.77	0.00	-	-	-	-	-
A-C	161.82	161.82	0.00	-	-	-	-	-
D-A	132.15	131.90	0.00	605.54	0.218	0.28	7.597	A
D-BC	42.25	42.07	0.00	296.98	0.142	0.16	14.112	B
C-ABD	65.64	65.52	0.00	542.02	0.121	0.14	7.553	A
C-D	4.49	4.49	0.00	-	-	-	-	-
C-A	79.09	79.09	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	34.13	33.94	0.00	308.07	0.111	0.12	13.122	B
B-AD	269.75	266.62	0.00	414.58	0.651	1.74	23.822	C
A-BCD	216.91	216.22	0.00	581.47	0.373	0.59	9.837	A
A-B	460.22	460.22	0.00	-	-	-	-	-
A-C	198.18	198.18	0.00	-	-	-	-	-
D-A	161.85	161.41	0.00	574.26	0.282	0.39	8.710	A
D-BC	51.75	51.37	0.00	248.70	0.208	0.26	18.208	C
C-ABD	80.44	80.24	0.00	507.48	0.159	0.19	8.423	A
C-D	5.50	5.50	0.00	-	-	-	-	-
C-A	96.83	96.83	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	34.13	34.12	0.00	303.39	0.113	0.13	13.369	B
B-AD	269.75	269.52	0.00	414.41	0.651	1.80	24.737	C
A-BCD	216.91	216.89	0.00	580.65	0.374	0.59	9.894	A
A-B	460.22	460.22	0.00	-	-	-	-	-
A-C	198.18	198.18	0.00	-	-	-	-	-
D-A	161.85	161.84	0.00	572.93	0.283	0.39	8.757	A
D-BC	51.75	51.73	0.00	247.79	0.209	0.26	18.359	C
C-ABD	80.44	80.44	0.00	507.39	0.159	0.19	8.431	A
C-D	5.50	5.50	0.00	-	-	-	-	-
C-A	96.83	96.83	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	27.87	28.06	0.00	395.39	0.070	0.08	9.807	A
B-AD	220.25	223.35	0.00	442.91	0.497	1.02	16.618	C
A-BCD	177.10	177.76	0.00	598.44	0.296	0.43	8.570	A
A-B	375.77	375.77	0.00	-	-	-	-	-
A-C	161.82	161.82	0.00	-	-	-	-	-
D-A	132.15	132.58	0.00	603.78	0.219	0.28	7.646	A
D-BC	42.25	42.61	0.00	295.67	0.143	0.17	14.248	B
C-ABD	65.64	65.84	0.00	541.88	0.121	0.14	7.564	A
C-D	4.49	4.49	0.00	-	-	-	-	-
C-A	79.09	79.09	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	23.34	23.42	0.00	447.91	0.052	0.06	8.483	A
B-AD	184.45	185.83	0.00	463.33	0.398	0.68	13.036	B
A-BCD	148.31	148.72	0.00	612.17	0.242	0.32	7.774	A
A-B	314.69	314.69	0.00	-	-	-	-	-
A-C	135.51	135.51	0.00	-	-	-	-	-
D-A	110.67	110.93	0.00	623.98	0.177	0.22	7.022	A
D-BC	35.38	35.58	0.00	330.55	0.107	0.12	12.211	B
C-ABD	54.96	55.09	0.00	566.99	0.097	0.11	7.036	A
C-D	3.76	3.76	0.00	-	-	-	-	-
C-A	66.25	66.25	0.00	-	-	-	-	-

2019 Base + Committed + Dev, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Locked	Network Flow Scaling Factor (%)	Reason For Scaling Factors
	N/A			100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Single Time Segment Only	Locked
2019 Base + Committed + Dev, PM	2019 Base + Committed + Dev	PM		ONE HOUR	16:45	18:15	90	15		

Junction Network

Junctions

Junction	Name	Junction Type	Major Road Direction	Arm Order	Junction Delay (s)	Junction LOS
1	Staggered Junction	OS-NS Stagger (UK RL Stagger)	Two-way	A,B,C,D	30.42	D

Junction Network Options

Driving Side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Arm	Name	Description	Arm Type
A	A	Gloucester Road East		Major
B	B	Alton Road		Minor
C	C	untitled	Gloucester Road West	Major
D	D	Ashburton Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
A	7.00		0.00	✓	3.50	100.00	✓	11.00
C	7.00		0.00	✓	3.00	115.00	✓	3.00

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

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane plus flare				10.00	6.00	4.20	4.00	4.00		1.00	28	50
D	One lane plus flare				10.00	10.00	6.70	5.60	5.00		1.00	40	41

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
1	A-D	721.275	-	-	-	0.267	0.267	0.267	-	0.267	-	-
1	B-AD	584.739	0.102	0.257	-	-	-	0.162	0.368	0.162	0.102	0.257
1	B-C	655.413	0.096	0.243	-	-	-	-	-	-	0.096	0.243
1	C-B	696.333	0.258	0.258	-	-	-	-	-	-	0.258	0.258
1	D-A	755.396	-	-	-	0.280	0.111	0.280	-	0.111	-	-
1	D-BC	502.352	0.139	0.139	0.316	0.221	0.088	0.221	-	0.088	-	-

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

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

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

Traffic Flows

Demand Set Data Options

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

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	ONE HOUR	✓	688.00	100.000
B	ONE HOUR	✓	367.00	100.000
C	ONE HOUR	✓	188.00	100.000
D	ONE HOUR	✓	348.00	100.000

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.000	314.000	216.000	158.000
	B	274.000	0.000	41.000	52.000
	C	117.000	64.000	0.000	7.000
	D	265.000	66.000	17.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.00	0.46	0.31	0.23
	B	0.75	0.00	0.11	0.14
	C	0.62	0.34	0.00	0.04
	D	0.76	0.19	0.05	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	1.000	1.025	1.019	1.046
	B	1.011	1.000	1.000	1.000
	C	1.026	1.016	1.000	1.000
	D	1.038	1.015	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To			
		A	B	C	D
From	A	0.0	2.5	1.9	4.6
	B	1.1	0.0	0.0	0.0
	C	2.6	1.6	0.0	0.0
	D	3.8	1.5	0.0	0.0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
B-C	0.31	35.89	0.43	E
B-AD	0.86	55.81	5.17	F
A-BCD	0.31	9.41	0.45	A
A-B	-	-	-	-
A-C	-	-	-	-
D-A	0.58	17.22	1.36	C
D-BC	0.43	30.08	0.74	D
C-ABD	0.14	8.19	0.16	A
C-D	-	-	-	-
C-A	-	-	-	-

Main Results for each time segment

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	30.87	30.57	0.00	441.99	0.070	0.07	8.744	A
B-AD	245.43	241.22	0.00	470.27	0.522	1.05	15.450	C
A-BCD	118.95	117.98	0.00	601.82	0.198	0.24	7.425	A
A-B	236.40	236.40	0.00	-	-	-	-	-
A-C	162.62	162.62	0.00	-	-	-	-	-
D-A	199.51	197.57	0.00	605.11	0.330	0.48	8.793	A
D-BC	62.49	61.54	0.00	320.98	0.195	0.24	13.828	B
C-ABD	48.19	47.82	0.00	565.72	0.085	0.09	6.947	A
C-D	5.27	5.27	0.00	-	-	-	-	-
C-A	88.08	88.08	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	36.86	36.69	0.00	349.86	0.105	0.12	11.489	B
B-AD	293.07	290.19	0.00	448.16	0.654	1.77	22.368	C
A-BCD	142.04	141.74	0.00	583.70	0.243	0.32	8.139	A
A-B	282.28	282.28	0.00	-	-	-	-	-
A-C	194.18	194.18	0.00	-	-	-	-	-
D-A	238.23	237.35	0.00	569.86	0.418	0.70	10.797	B
D-BC	74.62	74.14	0.00	278.87	0.268	0.36	17.542	C
C-ABD	57.55	57.45	0.00	542.30	0.106	0.12	7.422	A
C-D	6.29	6.29	0.00	-	-	-	-	-
C-A	105.17	105.17	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	45.14	44.23	0.00	171.12	0.264	0.34	28.177	D
B-AD	358.93	347.76	0.00	416.91	0.861	4.56	45.936	E
A-BCD	173.96	173.45	0.00	559.41	0.311	0.44	9.315	A
A-B	345.72	345.72	0.00	-	-	-	-	-
A-C	237.82	237.82	0.00	-	-	-	-	-
D-A	291.77	289.37	0.00	506.44	0.576	1.30	16.401	C
D-BC	91.38	89.99	0.00	214.54	0.426	0.70	28.589	D
C-ABD	70.52	70.36	0.00	510.23	0.138	0.16	8.182	A
C-D	7.70	7.70	0.00	-	-	-	-	-
C-A	128.77	128.77	0.00	-	-	-	-	-

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

Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	45.14	44.79	0.00	144.75	0.312	0.43	35.886	E
B-AD	358.93	356.51	0.00	416.32	0.862	5.17	55.810	F
A-BCD	173.96	173.94	0.00	556.53	0.313	0.45	9.407	A
A-B	345.72	345.72	0.00	-	-	-	-	-
A-C	237.82	237.82	0.00	-	-	-	-	-
D-A	291.77	291.54	0.00	500.11	0.583	1.36	17.221	C
D-BC	91.38	91.24	0.00	210.62	0.434	0.74	30.081	D
C-ABD	70.52	70.52	0.00	509.88	0.138	0.16	8.193	A
C-D	7.70	7.70	0.00	-	-	-	-	-
C-A	128.77	128.77	0.00	-	-	-	-	-

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

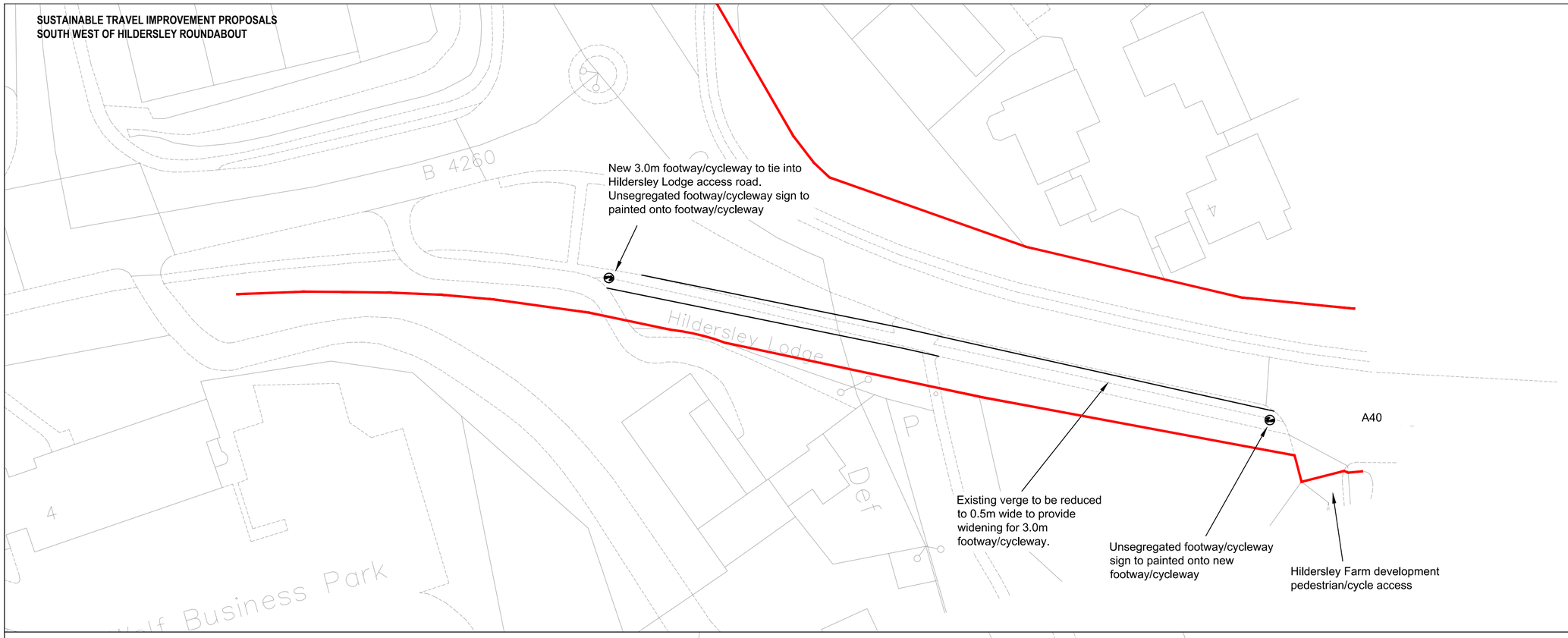
Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	36.86	38.06	0.00	323.56	0.114	0.13	12.659	B
B-AD	293.07	305.61	0.00	447.51	0.655	2.03	27.234	D
A-BCD	142.04	142.53	0.00	579.45	0.245	0.33	8.250	A
A-B	282.28	282.28	0.00	-	-	-	-	-
A-C	194.18	194.18	0.00	-	-	-	-	-
D-A	238.23	240.68	0.00	562.84	0.423	0.75	11.258	B
D-BC	74.62	76.04	0.00	274.12	0.272	0.38	18.299	C
C-ABD	57.55	57.71	0.00	541.79	0.106	0.12	7.438	A
C-D	6.29	6.29	0.00	-	-	-	-	-
C-A	105.17	105.17	0.00	-	-	-	-	-

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

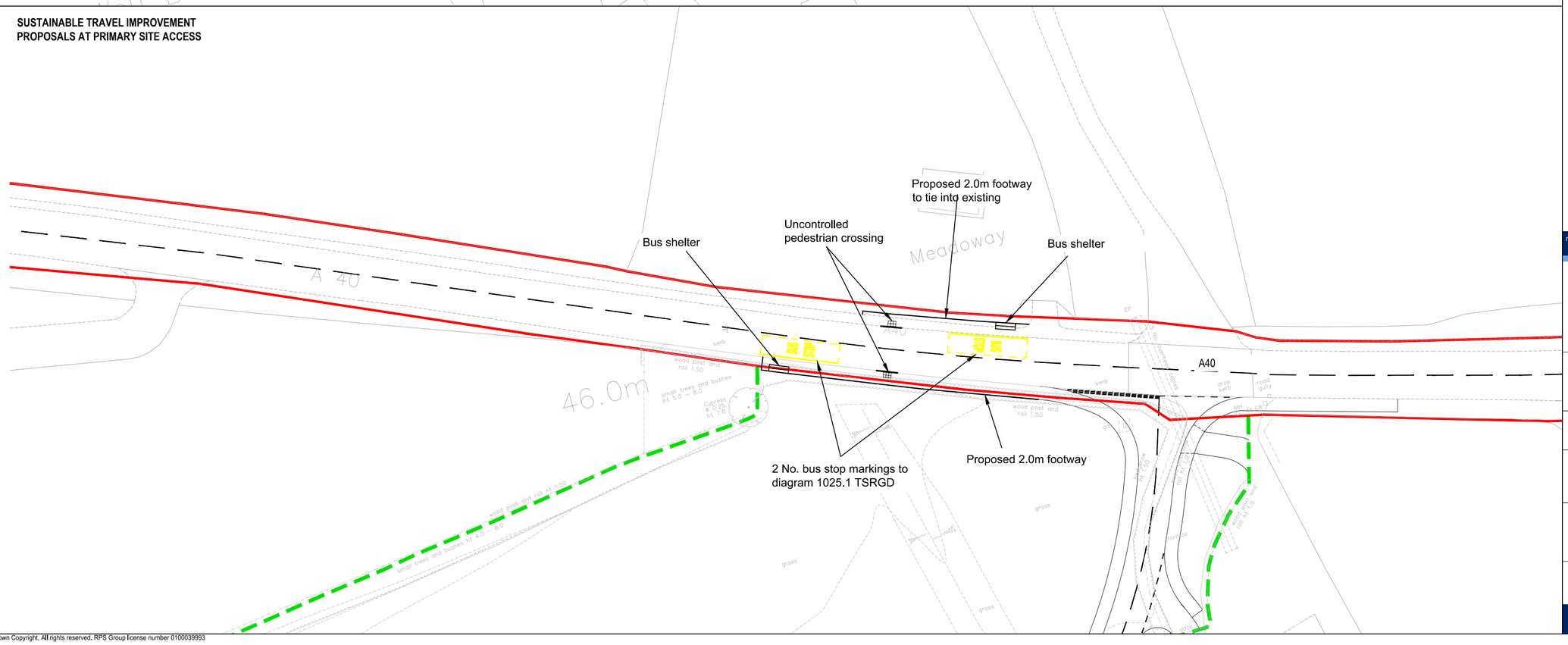
Stream	Total Demand (Veh/hr)	Entry Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	RFC	End Queue (Veh)	Delay (s)	LOS
B-C	30.87	31.08	0.00	432.64	0.071	0.08	8.971	A
B-AD	245.43	249.03	0.00	469.82	0.522	1.13	16.557	C
A-BCD	118.95	119.27	0.00	599.72	0.198	0.25	7.499	A
A-B	236.40	236.40	0.00	-	-	-	-	-
A-C	162.62	162.62	0.00	-	-	-	-	-
D-A	199.51	200.49	0.00	601.53	0.332	0.50	8.999	A
D-BC	62.49	63.03	0.00	318.41	0.196	0.25	14.128	B
C-ABD	48.19	48.29	0.00	565.32	0.085	0.09	6.966	A
C-D	5.27	5.27	0.00	-	-	-	-	-
C-A	88.08	88.08	0.00	-	-	-	-	-

ANNEX 11 – BUS STOP AND SUSTAINABLE TRAVEL IMPROVEMENTS ON A40

SUSTAINABLE TRAVEL IMPROVEMENT PROPOSALS
SOUTH WEST OF HILDERSLEY ROUNDABOUT



SUSTAINABLE TRAVEL IMPROVEMENT
PROPOSALS AT PRIMARY SITE ACCESS



NOTES

1. If this drawing has been received electronically it is the recipients responsibility to print the document to the correct scale.

2. All dimensions are in metres unless stated otherwise. It is recommended that information is not scaled off this drawing.

3. This drawing should be read in conjunction with all other relevant drawings and specifications.

KEY

Highway Boundary

Hildersley Farm Site Boundary

rev	amendments	by	ckd	date

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FOR INFORMATION	25-11-14	1:500
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Drawing Number: JNY8251-05

Rev:

Transport

ANNEX 12 – FRAMEWORK RESIDENTIAL TRAVEL PLAN

RPS

HILDERSLEY FARM, ROSS-ON-WYE

FRAMEWORK TRAVEL PLAN

HILDERSLEY FARM, ROSS-ON-WYE

FRAMEWORK TRAVEL PLAN

13 February 2015

Our Ref: AW/PL/sb/ls/JNY8251-03a

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QUALITY MANAGEMENT

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Date:	**13 February 2015**
Project Number/Document Reference:	**AW/PL/sb/ls/JNY8251-03a**

CONTENTS

1 INTRODUCTION

Background

1.1 RPS Planning & Development has prepared this Framework Residential Travel Plan to accompany a planning application for approximately 250 dwellings on land to the west of Hildersley Farm, Ross-on-Wye.

1.2 The site is located to the east of Ross-on-Wye, south of the A40 Gloucester Road and west of Hildersley Business Park as indicated on **Figure 1**. The site area extends westwards to the south of the existing residential development named The Mead. Vehicular access is proposed from the A40, formalising and improving the existing western access to Hildersley Farm. Hildersley Farm itself and the Business Park do not form part of the application site.

1.3 Changes to the A40 in the vicinity of the site to incorporate a signalised pedestrian crossing and upgraded bus stops are already proposed as part of the planning application for employment on land at Model Farm to the north (planning application ref P133411/CD). There is the potential to provide additional connectivity for pedestrians and cyclists from the site to Ross-on-Wye town centre.

What is a Travel Plan?

1.4 Travel Plans are evolutionary documents that should be regularly updated, ensuring they can be reviewed and tailored to take account of ongoing changes in travel patterns. It is therefore intended that this Framework Travel Plan is a starting point for the travel plan process and that the final Travel Plan once in operation should be reviewed and updated on an annual basis.

1.5 The implementation of measures set out within this Travel Plan and the targets within it will assist in minimising the number of vehicle trips generated by the site. The Travel Plan will be revised following a survey of baseline travel habits undertaken within three months after the first occupation on the site. At that time, the travel characteristics of residents and employees can be more readily determined and the Travel Plan can be refined as necessary to influence the travel behaviour of future occupants.

1.6 This Travel Plan has been produced in line with the Planning Policy Guidance (PPG) 'Travel Plans, Transport Assessments and Statements in Decision-Taking' (March 2014), and is structured as follows:

- **Section 2** – Transport Policy;
- **Section 3** – Existing Sustainable Transport Opportunities;
- **Section 4** – Development Proposals;
- **Section 5** – Management;
- **Section 6** – Marketing and Promotion;
- **Section 7** – Measures and Initiatives;

- **Section 8** – Targets and Monitoring; and
- **Section 9** – Summary.

1.7 This Framework Travel Plan is a document that clearly sets out the details of the initiatives, deliverables, targets and responsibilities that will form part of the final Travel Plan to be prepared once the full details of the site are known. The Travel Plan will be a recorded agreement between Herefordshire Council and the developer, providing a commitment to deliver the travel planning measures. The requirement to produce the final Travel Plan in accordance with the principles set out in this Framework Travel Plan will be secured by a planning condition.

2 TRANSPORT POLICY

Context

2.1 The emergence of Travel Plans has been an important development in transport policy. They demonstrate that the environmental improvement sought from the transport sector can be achieved at a local level and can contribute towards easing congestion, especially during peak periods. Residential Travel Plans relate to journeys made from a single origin (home) to multiple and changing destinations and take account of different needs and travel choices over time.

2.2 A Travel Plan is a management tool that brings together a co-ordinated strategy and a package of initiatives to minimise the number and length of car trips generated by a residential development, while supporting more sustainable forms of travel and reducing the overall need to travel.

2.3 This Travel Plan concentrates on sustainability issues and outlines a package of initiatives that are designed to encourage more efficient use of the private car and promote a choice of alternative travel modes. In addition to the policy documents reviewed as part of the Transport Assessment Report there are various publications on a national level which provide Travel Plan Guidance. The policy context for the Travel Plan is summarised below.

National Policy

National Planning Policy Framework (March 2012)

2.4 The National Planning Policy Framework (NPPF) was adopted in March 2012 and sets out national policy for delivering sustainable growth and development. The NPPF aims to make the planning system less complex and more accessible. The NPPF sets out a number of transport objectives designed to facilitate sustainable development and contribute to a wider sustainability by giving people a greater choice about how they travel.

2.5 NPPF paragraph 32 states all developments that generate significant amounts of movement should be supported by a Transport Assessment. Plans and decisions should take account of whether:

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

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

- Support opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- Accommodate the efficient delivery of goods and supplies;
- Give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;
- Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;
- Incorporate facilities for charging plug-in and other ultra-low emission vehicles; and
- Consider the needs of people with disabilities by all modes of transport.

2.7 The NPPF recognises that Travel Plans are a key tool in facilitating sustainable travel, stating that all developments which generate significant amounts of movement should be required to provide a Travel Plan (NPPF paragraph 36).

Practice Guidance 'Travel Plans, Transport Assessments and Statements in Decision-Taking' (March 2014)

2.8 The Planning Practice Guidance (PPG) sets out that all developments that generate significant amounts of transport movement should be supported by a Travel Plan. The PPG states that Travel Plans should identify the specific required outcomes, targets and measures, and set out clear future monitoring and management arrangements all of which should be proportionate.

2.9 Travel Plans should set explicit outcomes rather than just identify processes to be followed and should address all journeys resulting from a proposed development by anyone who may need to visit or stay, and should seek to fit in with wider strategies for transport in the area.

2.10 The NPPG set out how Travel Plans should evaluate and consider:

- Benchmark travel data including trip generation databases;
- Information concerning the nature of the proposed development and the forecast level of trips by all modes of transport likely to be associated with the development;
- Relevant information about existing travel habits in the surrounding area;
- Proposals to reduce the need for travel to and from the site via all modes of transport; and
- Provision of improved public transport services.

The Transport White Paper 'Creating Growth, Cutting Carbon' (January 2011)

2.11 The Transport White Paper 'Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen' was published in January 2011. It seeks to create growth in the economy whilst also tackling climate change by cutting carbon emissions, thus contributing towards the achievement of two key Government objectives. It includes the vision 'for a safer transport system that is an engine for economic growth, but one that is also greener and safer and improves quality of life in our communities'.

Manual for Streets (March 2007) and Manual for Streets 2 (September 2010)

2.12 The Manual for Streets (MFS) documents provide guidance for planning and designing streets. They aim to increase the quality of life through good design which creates more people-orientated streets. A key recommendation is that increased consideration should be given to the 'place' function of streets. This function is essentially what distinguishes a street from a road, where the main purpose is to facilitate movement.

2.13 MFS defines 'walkable neighbourhoods' are those which are "**typically characterised by having a range of facilities available to residents that can be accessed comfortably on foot**". Making the local environment convenient and attractive to walk in can help enhance the vibrancy of a community and reduce reliance on motor transport.

Local Policy

2.14 National policy on transport and land use establishes broad policy objectives that reflect the Government's aspirations for integrating land development and transport. The role of local government is to develop strategies based on specific local social and spatial requirements, which deliver the national aspirations.

2.15 Local strategy with respect to land use and transport is articulated in statutory documents prepared by planning and highway authorities which, for this development, comprise:

- Herefordshire Council - Local Transport Plan (2013/14 – 2014/15);
- Herefordshire Council – Herefordshire Local Plan Core Strategy 2011-2031 Pre-Submission Publication (May 2014); and
- Herefordshire Council – Unitary Development Plan; Saved and Deleted Policies Introduction (March 2010).

Herefordshire Council – Local Transport Plan (2013/14 – 2014/15)

2.16 The purpose of this document is to ensure the Council has a clear plan for investment in the transport network to support economic growth, encourage healthier lifestyles, maintain connectivity, maintain the safety of the county's transport network and improve the quality of transport corridors. The LTP is guided by the following key objectives:

- **"To support a cleaner, healthier, more prosperous county; and**
- **To maintain connectivity for all and to reduce social isolation for those without access to a car."**

2.17 The LTP Policy document is set out around the following themes:

- Passenger transport;
- Walking and cycling;
- Transport safety;
- Highway network development; and

- Highways maintenance

2.18 Policy AT2 requires that the master planning process for new developments prioritises access by walking and cycling and provides access to the existing active travel network. Developers should help to ensure that proposals avoid severing existing routes utilised by cyclists and pedestrians, or provide alternative routes if this cannot be avoided.

2.19 Smarter Travel Choices are set out within the document, defined as:

> **"low cost techniques for influencing people's travel behaviour towards more sustainable options such as walking, cycling and public transport use".**

2.20 These choices can help to maximise accessibility and connectivity within the county by increasing awareness of all travel options available, in particular to those without private access to the car. In turn, these sustainable travel decisions can impact positively on environmental impacts of traffic, for example carbon dioxide reductions.

2.21 Travel Plans are central to the delivery and success of Smarter Choices campaigns, and are usually prepared as a condition of a planning application for a medium to large scale development. They should incorporate a combination of 'hard' (physical engineering) initiatives and 'soft' (non-engineering) initiatives.

2.22 Policy DC1 asserts that new and re-developments should be designed and located to minimise the impacts of the transport network, in order that journey times and journey time reliability does not deteriorate. They are to be constructed in such a manner that does not impact upon the safety of highway users. The inclusion of sustainable transport infrastructure is to be strongly encouraged within the design proposals. Developer's contributions may be asked for to mitigate the impacts of new and re-developments on the transport network.

Herefordshire Council – Herefordshire Local Plan Core Strategy 2011-2031 Pre-Submission Publication (May 2014)

2.23 When adopted the Herefordshire Core Strategy will form one part of the overall Local Development Framework (LDF) which sets out the key elements of the planning framework for Herefordshire and establishes a development strategy for the area. The LDF will eventually replace the adopted Herefordshire Unitary Development Plan (2007).

2.24 Policy RW2 outlines the urban extension of new homes proposed to the south-east of the town at Hildersley (the proposed development to which this Framework Travel Plan relates). The site has the strong potential for sustainable transport links to the town centre without the need to create new strategic highway links. The site is strategically located within close walking proximity to existing employment at Hildersley Farm Business Centre and to the east of Ross-on-Wye; Ross-on-Wye town centre and the proposed Model Farm employment development, located north of the A40 Gloucester Road transport corridor.

2.25 Both the Model Farm employment development and Hildersley residential development would access directly onto the A40, and thus the developers of both areas will be required to make contributions to the improvement of local roads and sustainable transport networks along the A40, if required to support the developments. This will help to achieve acceptable traffic movements between the sites and Ross-on-Wye town centre.

Herefordshire Council – Unitary Development Plan; Saved and Deleted Policies Introduction (March 2010)

2.26 The Herefordshire Unitary Development Plan Saved Policies (UDP) are in place until such time as the Local Plan is adopted. The UDP was adopted in March 2007 and provides more detailed policy advice on the key issues and development pressures facing the Herefordshire.

2.27 The UDP outlines a number of saved policies relating to new developments and transport and are summarised below.

Policy S1: Sustainable Development

- Reducing the need to travel, securing safe and convenient accessibility between different land uses and maintaining, improving and integrating opportunities to move safely and conveniently by modes other than personal motor transport.

Policy S6: Transport

- Locating developments wherever possible within the County's existing urban areas or at locations reasonably accessible by means other than the private car, in order to reduce growth in the length and number of motorised journeys and reliance on the motor vehicle, and promote modal choice according to a hierarchy of modes and solutions to demand for travel in order of their sustainability; and
- Promoting integration between transport modes so that the network is used to best effect.

Policy DR3: Movement

- Provide a safe, convenient and attractive pattern of movement into, out of and across the site, particularly for pedestrians, people with disabilities and cyclists, incorporating pedestrian seating and cycle parking as required;
- Include good links to public transport, incorporating wherever appropriate suitable access for public transport vehicles into the site and associated passenger facilities;
- Incorporate adequate provision for vehicular access from the highway network without detriment to highway safety or to pedestrians, cyclists or public transport; and
- Incorporate cycle and vehicle parking to the required standards having regard to the need to promote sustainable transport choices, together with suitable turning and loading facilities.

Transport Policy Summary

2.28 Taken together, local and national policy requires that new residential development be located where a range of facilities and services can be accessed by a range of modes of travel including walking, cycling and public transport so as to minimise the number and length of car journeys. Safe and suitable access to the site should be achievable for all people.

- *PPG* – to provide outline of the required content for Transport Assessments and Travel Plans;
- *NPPF* – in terms of sustainable development and safe and suitable access;

- *Herefordshire Local Transport Plan* – overarching transport targets and accompanying objectives in the county over the 20 years;
- *Herefordshire Local Plan Core Strategy* – Policy RW2 on details regarding the Hildersley residential development, Ross-on-Wye; and
- *Herefordshire UDP* – saved policies that provide further detail into pressing transport issues in the local area.

3 EXISTING TRANSPORT OPPORTUNITIES

Introduction

3.1 This chapter outlines the existing sustainable transport network available for residents and visitors to the proposed Hildersley Farm site. This information also provides a context for providing future connections to the site.

3.2 This chapter considers the site location and the existing local highway, pedestrian, cycle and public transport networks, with particular regard to the accessibility of the site in relation to public transport stops and local service provision.

Development Site

3.3 The site is located in Hildersley approximately 1.4 kilometres (0.9 miles) to the east of the centre of Ross-on-Wye, Herefordshire, The site is located south of the A40 Gloucester Road and west of Hildersley Business Park.

3.4 The urban area of Ross-on-Wye lies between 600m (0.4 miles) and 1.8km (1.1 miles) to the west of the site. The residential area of Hildersley abuts the site to the north. The hamlet of Weston under Penyard is located 2.3 kilometres to the east of the site along the A40 Gloucester Road. Further afield, the towns of Cheltenham and Gloucester can be accessed via the A40 to the east; Monmouth to the south-west via the A40 across the England-Wales border; Ledbury to the north-east via the A449; and Hereford to the north-west via the A49.

Accessibility to Local Services

3.5 The National Planning Policy Framework (NPPF) sets out Core Planning Principles in paragraph 17. These include: “actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable”. Furthermore, paragraph 29 of the NPPF states “**Transport policies have an important role to play in facilitating sustainable development but also in contributing to wider sustainability and health objectives … The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel. However, the Government recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas.**”

3.6 The IHT’s ‘Guidelines for Providing Journeys on Foot’ (2000) provides guidance when considering accessibility of specific locations by foot. In relation to the proposed development, the guidelines suggest:

- **Maximum** distances of 800m to town centres, 2000m for work/ education/ leisure, and 1200m elsewhere;
- **Acceptable** distances of 400m to town centres, 1000m for work/ education/ leisure, and 800m elsewhere; and

- **Desirable** distances of 200m to town centres, 500m for work/ education/ leisure, and 400m elsewhere.

3.7 As suggested by the Institute of Highways and Transportation (IHT), an average walking speed is given as 4.8km/h, or 5 minutes for every 400m. The 'maximum' distances quoted above represent a walk of 10 minutes (town centres), 25 minutes (work / education / leisure) and 15 minutes (elsewhere).

3.8 However, the distances given in 'Guidelines for Providing Journeys on Foot' (2000) should not be seen as an upper limit to walking and cycling. Paragraph 2.3 of the Design Manual for Roads and Bridges TD91/05 "Provision for Non-Motorised Users" states: "**Walking is used to access a wide variety of destinations including educational facilities, shops, and places of work, normally within a range of up to 2 miles** [3.2 km]**. Walking and rambling can also be undertaken as a leisure activity, often over longer distances**". Local Transport Note 2/08 "Cycle Infrastructure Design" states: "**many utility cycle journeys are under 3 miles** [4.8 km] **although, for commuter journeys, a trip distance of over 5 miles** [8.0 km] **is not uncommon**".

3.9 Ross-on-Wye is a medium sized town with a good range of local shops, services, education opportunities, a community hospital and abundant employment. There is a large Morrisons supermarket and numerous smaller shops including both national chains and local specialists. Ross-on-Wye therefore provides a wide range of local amenities and employment opportunities within walking and cycling distance of the proposed residential development. The site in the context of local facilities is shown on **Figure 2.**

3.10 The shortest route from the site access onto the A40 to Ross-on-Wye town centre is via the A40 and B4260 Gloucester Road. There is an existing footway of between 1.3m and 1.5m in width along the northern side of the A40 from the proposed vehicular access point to the 30mph speed limit signs on the approach to the town edge, from which point there is footway provision on both the northern and southern side of the carriageway into Ross-on-Wye. There are several dedicated pedestrian crossing points along the B4260 Gloucester Road and traffic island crossings at the A40 roundabout junction.

3.11 Both retail and employment opportunities are on offer in the town centre, with retail stores predominantly located on Broad Street, High Street and Gloucester Road within the town centre. The nearest convenience store to the site, One Stop, is located on the southern side of the B4260 on the approach to the town centre. There is a large Morrisons supermarket located north of Station Street and Millpond Street and a Sainsbury's Supermarket on Henry Street. The nearest post office is located within The Maltings on Broad Street within the town centre.

3.12 There are a range of health facilities in the town centre, including the Ross-on-Wye Community Hospital and Alton Street Surgery on Alton Street. The town offers a range of community facilities which are easily accessible to the proposed site. The Library is located on Cantilupe Road and the nearest place of worship is the Evangelical Church on Henry Street. There are a range of leisure facilities, including The Phoenix Theatre and sports pitches and facilities. The Ross Swimming Pool is located along Kyrle Street north of the immediate town centre and Ross Health and Fitness is located along Greytree Road, approximately 770 metres from the town centre crossroad junction.

3.13 In addition to the Hildersley Farm Business park directly adjacent to the site, Ross-on-Wye has large areas of employment around Ashburton Road and on the Wolf Business Park, Alton Road, both accessible from the B4260 Gloucester Road to the east of the town centre and close to the proposed site. There are a wide range of employment types available including manufacturing, offices, and service industries. It is also proposed to build a business park at Model Farm, on the northern side of the A40 directly opposite Hildersley Farm, which could potentially provide a greater range of employment opportunities for residents within walking distance.

3.14 The nearest primary school and nursery to the site are at St Joseph' RC Primary School, located in Ashfield towards the south of the Ross-on-Wye town centre approximately 2.1 kilometres to the south-west of the site. The school can be accessed from Ross-on-Wye town centre (crossroad junction between the B4260, Broad Street and Copse Cross Street) by heading south along Copse Cross Street and Walford Road via the footways on both side of the carriageway. The school's access is from The Avenue off Walford Street. An alternative route for pedestrians and cyclists, avoiding many roads, would be to use the Town and County Trail.

3.15 Secondary education in Ross-on-Wye is provided at John Kyrle High School located towards the north of the town in Greytree. It accommodates for pupils aged 11-18 years. This is approximately 2.4 kilometres to the north-west of the site, accessible via Smallbrook Road from the B4260 Gloucester Road, Station Street and B4234. There is continuous footway provision along the stretch of the B4234 between the town centre and Three Crosses Road where the school is located.

3.16 Ross-on-Wye is located in the Wye Valley Area of Outstanding Natural Beauty, and there are many publically accessible green open spaces surrounding the town. The Wye Valley Walk and Town and County Trail are available for walking and cycling away from roads, both located to the south-west of the development site. The Wye Valley Walk routes from Chepstow to Plynlimon via Monmouth, Ross-on-Wye and Hereford.

3.17 **Table 3.1** summarises the local facilities in the vicinity of the site with approximate distances and corresponding typical journey times from the proposed vehicular access to the site**.**

Table 3.1 – Location of Selected Key Facilities

Facility		Distance (m)	Journey Times (minutes)	
			Walk	Cycle
Public Transport				
Bus Stop	A40 Gloucester Road (adjacent Hildersley Farm)	100	1	0
	A40 Gloucester Road (adjacent to The Mead)	320	4	1
	Alton Road (adjacent Wolf Business Park)	700	9	3
Education				
Primary School / Nursery	St Joseph's R C Primary School, The Avenue	2100	26	8
	Weston under Penyard CE Primary School	2270	28	9
Secondary & Sixth Form	John Kryle Secondary School, Three Crosses Road	2400	30	9
Health Facilities				
Dentist	Warrendale Dental Care, Chase Road	1300	16	5
Pharmacy	Superdrug, Broad Street	1500	19	6
	Boots Pharmacy, Broad Street	1550	19	6
Hospital	Ross-on-Wye Community Hospital, Alton Street	1700	21	6
Doctors	Alton Street Surgery	1700	21	6
Employment				
Employment Area	Ross-on-Wye town centre	600 to 1800	8 to 23	2 to 7
	Ashburton Road Industrial Area	550 to 1150	7 to 14	2 to 4
	Wolf Business Park	800	10	3
	Labels Outlet Shopping Centre	2000	25	8
Job Centre	Jobcentre Plus	1450	18	5
Community Facilities				
Library	Cantilupe Road	1350	17	5
Public House	The Mail Rooms, B2460 Gloucester Road	1350	17	5
Church	Henry Street Evangelical Church	1400	18	5
Post Office	The Maltings, Broad Street	1600	20	6
Shopping/Retail				
Town Centre	Ross-on-Wye (Broad Street, High Street and Gloucester Road)	1200 to 1670	15 to 21	5 to 6
Convenience Store	One Stop Stores	1400	18	5
Supermarket	Morrisons Supermarket, Station Street	1310	16	5
	Sainsbury's Supermarket	1400	18	5
Retail Park	Labels Outlet Shopping Centre	2000	25	8
Leisure				
Gym	Wyefit, Old Gloucester Road	1300	16	5
Theatre	The Phoenix Theatre, St Mary's Street	1600	20	6

Facility		Distance (m)	Journey Times (minutes)	
			Walk	Cycle
Swimming Pool	Ross Swimming Pool, Kyrle Street	1700	21	6
Outdoor Recreation				
Wye Valley Walk	Penyard Lane, adjacent to the Town and County Trail	800	10	3

3.18 It is evident from **Table 3.1** that there is a wide range of facilities such as education, employment, retail, health and leisure uses within close vicinity of the site, the majority of which are within a reasonable walking or cycling distance.

Pedestrian and Cycle Network

3.19 The existing surrounding cyclist and pedestrian facilities in relation to the site are depicted on **Figure 3.**

3.20 A concept masterplan for the development is provided **Appendix A**. Footpaths and cycle ways would be provided within the site's boundaries, to allow ease of movement to the different areas of the development, and from the development to the A40 both at the site access and to the north-west of the development close to The Mead. The proposed Model Farm development to the north proposes a 3m footway/cycleway meeting the A40 directly opposite the site access and provision of pedestrian crossings and improved bus stops on the A40 adjacent to the site to the east.

3.21 There are high quality pedestrian links along the B4260 Gloucester Road towards the town centre and pedestrian island crossings are provided at the A40 / B4260 Gloucester Road roundabout junction.

3.22 There is a shared-use cycleway and footpath (Town and County Trail) approximately 130 metres west of the development's western boundary. There may be possible to form a connection between the pedestrian network within the development and this shared-use path as part of the development proposals. The Town and County Trail is located south-west from the A40 Gloucester Road, approximately 70 metres west of the A40 / B4260 Gloucester Road roundabout junction, via Penyard Lane. This links to Fernbank Road north of Tudorville. Residents of the development could use this designated off-road trail to access areas south of Ross-on-Wye. The shared-use path is clearly signposted at both Hildersley and Tudorville.

3.23 **Figure 3** shows the Public Rights of Way (PROW) network around the site. PROW reference number ZK17 is a footpath that routes between the Town and Country Trail to Alton Road, which could benefit the residents employed on the Wolf Business Park or those intending to access facilities to the south of town centre, including St Joseph's RC Primary School and the Community Hospital. There is also the pleasant Riverside Walk that can be reached from the High Street in the town centre, following the River Wye.

Public Transport – Bus Services

3.24 There are two sets of bus stops located on the A40 Gloucester Road that are within walking distance of the site; both sets of bus stops serve bus service 33 operated by Stagecoach. The first set of bus stops are located immediately east of the proposed vehicular access; the proposed Model Farm development to the north proposes a pedestrian crossing and improved bus stops with shelters in this location which would be similarly provided by the Hildersley Farm development should it come forward before Model Farm.

3.25 The second set of bus stops are located approximately 400 metres further west adjacent to The Mead; these would be beneficial to residents of the western dwellings on the development, as they could utilise the footpath/cyclepath connection from the site past The Mead to join the A40.

3.26 Another set of bus stops serving additional routes are located on Alton Road 700 metres south-west of the site. These stops serves route 40 which operates as a circular service around Ross-on-Wye.

3.27 **Table 3.2** below summarises the route and frequencies of the existing bus services from the aforementioned bus stops. The local public transport facilities within the vicinity of the site are highlighted on **Figure 4.**

Table 3.2 – Local Bus Services

Route No.	Stop	Operator and Route	Frequency				
			Mon-Fri Peaks	Mon-Fri Daytime	Mon-Fri Evening	Sat	Sun
33	A40 Gloucester Road (adj. Hildersley Farm)	**Stagecoach** Gloucester – Lea – Weston upon Penyard – Ross-on-Wye town centre – Peterstow – Hereford	2 per hour	Hourly	No Service	Hourly	No Service
32	A40 Gloucester Road (adj. Hildersley Farm)	**Stagecoach** Gloucester – Lea – Weston upon Penyard – Ross-on-Wye town centre – Peterstow – Hereford	No Service	No Service	1 per 2 hours	Evening Only	No Service
40	Alton Road (adj. Wolf Business Park)	**H&H Coaches** Tudorville – Archenfield – Greytree – Over Ross St – Cantilupe Road – Alton Road – Merrivale Road	No Service	Hourly	No Service	Hourly	No Service

Source: Traveline West Midlands (July 2014)

3.28 **Table 3.2** demonstrates that it is possible to access facilities throughout Ross-on-Wye and in Weston upon Penyard via local bus services, including supermarkets, shops, St Joseph's RC Primary School, John Kryle Secondary School, Weston under Penyard Church of England Primary School and Labels Outlet Shopping Centre. The timetable accommodates for school trips to John Kryle Secondary School by placing additional services during the school peak hours.

3.29 There are additional bus services that route through Ross-on-Wye's town centre (majority departing from Cantilupe Street) to Monmouth, Ledbury and further services to Hereford.

3.30 The main operator providing services surrounding the development is Stagecoach. Standard ticket prices for Stagecoach services in the south Herefordshire region are summarised in **Table 3.3** below.

Table 3.3 – Bus Fare Prices for Stagecoach (July 2014)

Ticket type	Bus Prices
Day	£5.50
Weekly	£18
4 Weeks	£68
13 Weeks	£204
52 Weeks	£790

Public Transport – Rail

3.31 The nearest railway station to the site is located in the town of Ledbury, approximately 18 kilometres to the north. There is one daily bus service to the station, operated by Abbey Cars, from Cantilupe Road in Ross-on-Wye to Ledbury High Street.

3.32 Hereford railway station is located approximately 19 kilometres north-west of the site and can be accessed in approximately 35 minutes via the bus service 33 (accessible from stops directly adjacent to the site). Hereford station provides regular rail services to Wales, Manchester, Birmingham and London Paddington.

3.33 Gloucester railway station is located approximately 23 kilometres east of the site and an approximate 40 minute journey time via the bus service 33 (accessible from stops directly adjacent to the site). Gloucester railway station provides rail services to the South West, West Midlands, Wales and London Paddington.

Existing Modal Share

3.34 The site is located within the ward of Ross-on-Wye East. **Table 3.4** shows how the existing residents of this ward currently travel to work, as obtained from 2011 Census data.

Table 3.4 – Journey to Work Mode Split (Ross-on-Wye East Census 2011)

Mode	Percentage of Journeys to Work
Train	0%
Bus, Minibus or Coach	2%
Taxi	0%
Motorcycle, Scooter or Moped	1%

Mode	Percentage of Journeys to Work
Driving a Car or Van	68%
Passenger in a Car or Van	6%
Bicycle	2%
On Foot	21%
Total	**100%**

3.35 The census data shows that 68% of residents living in the ward of Ross-on-Wye East drive to work, 21% walk to work, 2% use bus services and 2% cycle to work. The modal split shows a large proportion of local residents currently travel to work by single or multiple occupancy car journeys. However, with the close proximity of services, facilities and employment in Ross-on-Wye, there is considerable scope for a greater proportion of journeys to be undertaken using sustainable modes of travel from the proposed development.

4 DEVELOPMENT PROPOSALS

Introduction

4.1 The development is expected to comprise approximately 250 residential dwellings with the planning application submitted in Outline with access to be determined. Hildersley Farm itself and the Business Park do not form part of the application site.

Vehicular Access

4.2 Vehicular access is proposed from the A40, formalising and upgrading the existing western access to Hildersley Farm. The access would be formalised through provision of give-way markings at the junction with the A40. Vegetation would be cut-back on the adjacent site frontages in order to provide appropriate visibility and footway links from the access. The access design has incorporated comments provided by Herefordshire County Council Highways at a pre-application meeting. The proposed access arrangements are shown on drawing JNY8251-03 within **Appendix B**.

Proposed Access by Sustainable Modes of Travel

4.3 Pedestrian and cycle links from the site are available via the primary site access onto the A40 and via a footway/cycleway from the north-western corner of the site to the A40 close to The Mead. There are opportunities to improve the pedestrian and cycle connectivity from this footway/cycleway link to the Town and County Trail and towards town centre as shown on drawing JNY8251-05 within Appendix C.

4.4 The nearest bus stops are located on the A40 Gloucester Road immediately east of the proposed vehicular access. These are proposed to be upgraded as part of the Model Farm employment development to incorporate shelters and timetable provision. If this improvement does not come forward through the Model Farm planning application, the Hildersley Farm development would commit to upgrading the bus stops in this vicinity.

4.5 A number of design measures to cater for pedestrian and cycle movements within the development will be employed, including:

- A street pattern that generates natural surveillance where entrances and frontages face all public routes;
- An internal layout that encourages low vehicle speeds and therefore creates an environment where pedestrians and cyclists are not intimidated by motor traffic; and
- A permeable hierarchy of direct routes within the development comprising a range of shared, segregated and recreational links which would connect all internal areas of the development to the points of access.

5 MANAGEMENT

Introduction

5.1 The Travel Plan will be orientated towards influencing travel behaviour of resident's journeys and will seek to advise residents of the benefits of using alternative transport modes to travel by car by promoting their use as an alternative. The developer will be responsible for the overall implementation of the Travel Plan which will be secured by way of planning condition.

Travel Plan Coordinator

5.2 The developer will appoint an appropriately skilled Travel Plan Coordinator for the residential development. The Travel Plan Coordinator will be responsible for the implementation, administration and monitoring of the Travel Plan. The Travel Plan Coordinator's details will be submitted to Herefordshire Council, and likewise, the Coordinator will be advised of the relevant contact personnel at Herefordshire Council so that a regular dialogue can be established.

5.3 The Travel Plan Coordinator will be appointed towards the end of the initial construction phase and before first occupation, to ensure that the travel planning measures are in place from the outset. The funding for the Travel Plan Coordinator would be provided by the developer.

5.4 The Travel Plan Coordinator will make regular visits to the site in order to become a familiar face with residents and known as a champion of sustainable transport measures in association with the development. Contact details for the Travel Plan Coordinator will also be freely available so residents are able to raise issues and feel that the Travel Plan is well supported at all times.

5.5 The Travel Plan Coordinator will be the first point of contact for residents for all matters regarding travel to and from the site. The responsibilities of the Travel Plan Coordinator have been outlined in more detail below.

5.6 At the construction phase the Travel Plan Coordinator's main tasks will be to:

- Liaise with and train sales staff about transport provision at the site;
- Ensure travel details and accessibility are included in sales information;
- Prepare marketing material advising on travel options to the site to assist potential purchasers;
- Ensure that travel planning measures are in place from the outset; and
- Ensure that an internet site is set up providing information on travel planning measures, incentives and contact details.

5.7 Once residents have started to occupy the site, the Coordinator's tasks at this stage will be:

- Provide a welcome pack to residents including public transport information, location of key services and facilities within walking and cycling distance, local information packs, and information on cycle parking provision on site and in the local area; and

- Undertake an initial travel survey of the occupants of the site within three months after first occupation of the development;
- Organise Personal Travel Planning with residents.

5.8 On an annual basis thereafter:

- The Travel Plan Coordinator would update the Travel Plan through undertaking and analysing travel surveys, annually after the initial travel survey for a minimum of five years after first occupation. If the Headline Target has not been achieved by that stage then the annual monitoring will continue throughout the development period until such point that the Headline Target is achieved;
- The Travel Plan Coordinator would contact the local authority Travel Plan Officer at least annually after the travel survey has been conducted, and as appropriate for travel information updates and feedback of any comments provided by residents relating to the Travel Plan; and
- The Travel Plan Coordinator will seek to raise awareness of the Travel Plan and its importance through a Travel Plan forum, a website and through Personal Travel Planning.

5.9 The developer and management company will fully participate where appropriate with the Travel Plan initiatives and will fully support the Travel Plan Coordinator, where necessary and required in order that they perform their role effectively.

Travel Plan Forum

5.10 The Travel Plan Coordinator will instigate a Travel Plan Forum to which all the residents of the site would be invited via the Welcome Pack which will be issued to all new residents. The presence of the Travel Plan Forum will be advertised within the newsletters, emails and the internet site which will contain an open invite for residents to attend. The aim of the Travel Plan Forum, which would meet on a regular basis, would be to allow the residents to inform the direction of the Travel Plan and raise any issues, concerns or opportunities in relation to travel to and from the site.

On-Going Management

5.11 National Planning Practice Guidance 'Travel Plans, Transport Assessments and Statements in decision-taking' (March 2014) sets out measures for the implementation and ongoing management of the Travel Plan. This firstly covers the construction period, then the initial occupation of the site, followed by the first few monitoring and review periods of the plan. This period is crucial in ensuring that the measures set out within the plan are actively implemented to reduce car use from the outset, to ensure that the objectives and targets identified in the Travel Plan can be met. During this period it is likely that the developer, management company and Travel Plan Coordinator will all need to be closely involved in the management and refinement of the Travel Plan.

5.12 With regards to the management of the Travel Plan over the longer term it is envisaged that, after the initial five year period, the responsibility for the administration and monitoring will pass to a resident's steering group, with support from the Herefordshire Council Travel Plan officer if required.

6 MARKETING AND PROMOTION

Training Sales Staff

6.1 Information and promotion of the Travel Plan from the outset ensures greater buy-in from future residents who may see it as an opportunity to plan changes in their choice of travel. Moving house is a critical 'change moment' in a person's life and it is important that prospective residents are made aware of the transport characteristics of the development from the outset so that their change of home can also incorporate a change to more sustainable travel choices. For example, sales staff can inform future residents about local buses and areas of the city they serve and the layout of cycle and pedestrian routes through the site early on in the process, to demonstrate the development's commitment to sustainable travel and encourage future residents to travel using sustainable modes.

6.2 To ensure that potential residents of the site are informed about the Travel Plan and its goals from the earliest stage, the Travel Plan will have a presence within the sales suite of the development. The sales staff will be given training to promote the Travel Plan as an asset and selling point of the development and key concepts relating to accessibility included in marketing / sales particulars.

6.3 The site is accessible by public transport services and has convenient walking and cycling links. These are positive features of the development which will be emphasised to prospective residents by both the sales staff and any additional sales literature created for the site.

Website

6.4 A website will be set up to be accessed by potential and occupying residents and will contain site specific travel information, contact details for the Travel Plan Coordinator and information relating to incentive schemes / discounts. The Travel Plan Coordinator will be responsible for the internet site and will inform residents of its presence though the welcome packs. The internet site will be updated regularly.

Community Events

6.5 The Travel Plan Coordinator would hold 'Travel Planning Days' annually to promote the Travel Plan and travelling via sustainable modes. It is envisaged that these would be held within the development and would comprise of a 'market stall' type presence which would be used to promote the travelling planning objectives and initiatives.

6.6 The 'Travel Planning Day' events would ideally coincide with national and international events such as Bike Week (http://www.bikeweek.org.uk/), Walk to Work week http://www.walktoworkweek.org.uk/ and World Car Free Day (http://www.worldcarfree.net/wcfd/). These events, to which residents of the development would be welcomed, would highlight the benefits of travelling via alternative modes to the car.

Publicity

6.7 The Department for Transport document *Making Residential Travel Plans Work* (June, 2007) states that:

> **"As soon as residents move in, the developer should work with them to make sure that the commitments of the plan are understood and can be implemented."**

6.8 Sustainable travel information will be prominently displayed in the sales and marketing suite. Maps will be displayed showing the sustainable travel routes and opportunities available from the development along with the benefits of sustainable travel to residents and an example of the Resident's Welcome Travel Information Pack. Thus residents will be encouraged to be engaged with the Travel Plan and sustainable travel from first contact with the Hildersley Farm development.

6.9 Marketing and publicity will be undertaken by the Travel Plan Coordinator to:

- Raise awareness of the health and environmental benefits associated with the use of sustainable modes of travel;
- Promote local and national sustainable travel events and encourage residents to get involved;
- Promote the measures within the Travel Plan including the availability of Personal Travel Planning;
- Draw attention to improved sustainable travel routes, facilities, maps and timetables available in the local area; and
- Maintain awareness of the Travel Plan objectives and targets and the progress being made towards these.

6.10 The Travel Plan Coordinator will be responsible for devising suitable marketing materials and campaigns in order that the development makes progress towards the objectives and targets outlined within the Travel Plan. The Travel Plan Coordinator will work with Herefordshire Council's Travel Choices team to link with other local campaigns and sustainable travel initiatives and to share resources in order to make the most of opportunities to promote sustainable travel.

7 MEASURES AND INITIATIVES

Reducing the need to Travel

7.1 The new homes will have broadband internet access enabled so that this will allow future residents to work from home, shop online for certain goods and services and reduce the need to travel.

7.2 The site will be designed in accordance with the relevant design standards such as Manual for Streets to encourage and give priority to walking and cycling trips, whilst at the same time accommodating service and delivery vehicles to encourage home shopping opportunities.

Residents Welcome Travel Information Pack

7.3 Moving home is a critical "change moment" in a person's life at which there is the opportunity to introduce and encourage sustainable travel from the outset of occupation of a new home. Accordingly, the first occupiers of each new home will be provided with a Welcome Travel Information Pack.

7.4 The Welcome Pack will provide:

- Details of the Travel Plan measures and its objectives and targets;
- Information on alternatives to single occupancy car use;
- Walking and cycling route maps;
- Discounts available to residents;
- Public Transport Information;
- An invitation to join the Residents Travel Plan Forum;
- How to participate in Personal Travel Planning;
- Contact details of Travel Plan Coordinator; and
- Links to other useful information, such as:
  - Herefordshire LiftShare website (www.twoshare.liftshare.com)
  - Walk Budi website;
  - Bike Budi website;
  - Sustrans National Cycle Network website;
  - National Rail Enquiries website; and
  - Herefordshire Live Travel Information website.

7.5 To ensure that the benefits of receiving the Welcome Pack go beyond the first occupants of the residential dwellings, provision would be made to supply this information to future occupants due to re-sales during the development period. This will be organised by the Travel Plan Coordinator as and when required

Newsletter

7.6 A Travel Plan newsletter will be produced every 6 months, distributed to residents either electronically or by post, and also posted online for residents to view.

7.7 The newsletters will detail the progress of the Travel Plan, including against targets once travel surveys have been undertaken. The newsletter will also provide an opportunity to:

- Further encourage residents to travel sustainably;
- Make residents aware of upcoming travel events (such as Bike Week);
- Provide residents with any new promotional offers and discounts;
- Make residents aware of any scheduled changes to public transport services, scheduled road works etc.; and
- Make residents aware of any new or improved sustainable travel facilities in the area.

Personal Travel Planning

7.8 Personal Travel Planning uses face-to-face meetings with residents to help them asses their particular travel needs and offer personalised travel information and advice specific to their particular circumstances. Travel advisors offer motivation and incentives for people to switch to more sustainable travel methods.

7.9 Herefordshire Council's *Local Transport Plan 2013/14 – 2014/15* defines Personal Travel Planning as a:

> **"…a well-established method that informs and supports individuals that want to make sustainable travel choices."**

7.10 The Travel Plan Coordinator will be responsible for ensuring that the first occupiers of all dwellings on the development are given the opportunity to receive Personal Travel Planning within three months of occupation of their new home.

Smarter Car Based Travel

Car Parking Policy

7.11 The site will provide parking in accordance with the guidance provided by Herefordshire Council. However, for parking provision to be effective in encouraging more sustainable travel patterns it must be part of an integrated approach towards satisfying existing and future travel needs in a sustainable manner. This Travel Plan therefore provides the package of planning and transport measures that, together with parking provision, can promote sustainable transport choices.

Car Sharing

7.12 Car sharing is an effective method of reducing peak-hour congestion and car parking stress, and will therefore be encouraged. To ensure sustainable use of the car, residents will be provided with details of internet based car-sharing such as https://www.liftshare.com/uk/ which is part of the UK's national LiftShare network and would provide maximum opportunities for good matches.

7.13 The Travel Plan Coordinator will identify common journeys through the analysis of the travel survey and initiate potential car sharing matches.

7.14 The Travel Plan Coordinator will also actively promote the Liftshare database and assist residents who wish to join a car share scheme. The Travel Plan Coordinator will liaise with LiftShare in order to identify best practice in terms of ensuring the scheme is promoted comprehensively.

Increasing Walking

7.15 The Travel Plan Coordinator will encourage residents to walk to and from the site, by:

- Liaising with the local planning authorities to ensure pedestrian routes to and from the site are appropriately maintained;
- Providing residents with information and advice concerning safe pedestrian routes to and from the site;
- Providing details of WalkBUDi matching services (https://walkbudi.liftshare.com/); and
- Production of a local walking map for residents informing of routes and travel times to key destinations.

7.16 The Institution of Highways and Transportation publication 'Guidelines for providing for Journeys on Foot' (2000) notes that walking accounts for over a quarter of all journeys and four-fifths of journeys less than one mile (1.6 km). Walking is also an essential part of public transport travel, with bus stops usually being accessed on foot. Promoting sustainable, integrated transport involves providing good pedestrian links to public transport facilities.

7.17 Promotional leaflets provided by Herefordshire Council will be supplied to residents informing them of the associated health benefits of walking, and the location of safe walking routes with indicative walking distances and times shown.

Increasing Cycling

7.18 Cycling is considered an important mode of sustainable travel and is generally considered suitable for distances of up to 3 miles (4.8km) for regular journeys in urban areas, and 5 miles (8km) for commuting journeys (source: LTN 2/08, Cycle Infrastructure Design).

7.19 Publicity material highlighting the most suitable, safe, and comfortable cycle routes and likely journey times highlighted will be produced by the Travel Plan Coordinator and made available to the residents within the Welcome Pack and on the website. Advice will be provided on appropriate routes to key destinations by bike. In addition, details of the BikeBUDi matching service will be provided to each resident.

7.20 The feasibility of setting up (or the participation in an existing / future local group) a Bicycle User Group in conjunction with the UK's National Cyclists' Organisation, CTC (http://www.ctc.org.uk), which will offer discounts on cycling and affinity products will be considered. Residents would be able to join for a small charge.

7.21 In order to encourage cycling, cycle parking will be provided within a safe and secure location, within the curtilage of each individual dwelling. In addition, the Travel Plan Coordinator will approach cycle retailers to negotiate discounted cycle purchase vouchers for residents of the development.

7.22 One voucher towards cycle purchase or equipment will be made available to each new household on application as a further means of incentivising residents to consider travelling by cycle.

Increasing Public Transport

7.23 The publicity, marketing, and promotion of the public transport services will inform residents of the benefits of travelling by bus. The Travel Plan Coordinator will ensure that residents are aware of bus routes and train timetables for public transport services operating in the vicinity of the site, with residents being provided with a Welcome Pack which would include these timetables. Bus and train timetables are free from all stations. Details will also be provided on the website.

7.24 The marketing material within the Welcome Pack and on the internet would also contain route maps, the location of public transport hubs/stops, as well as details of travel websites including Traveline (www.traveline.org.uk).

7.25 On application, a promotional bus ticket will be made available for each new household to promote the use of bus services. This would start from the commencement of residence at the site. These taster tickets would be available for use on the existing bus services operating between the site and the surrounding Herefordshire area.

7.26 In addition the Travel Plan Coordinator will seek to maximise the use of public transport in the following ways:

- Seek information from all residents using public transport on ways in which services may be improved and feed this back to the service provider and the local authority through the regular liaisons which form part of the Travel Plan Coordinator's role;
- Encourage Herefordshire Council to display and maintain current timetable information at the existing bus stops; and
- Encourage Herefordshire Council to ensure that pedestrian routes between the existing bus stops and the site are suitably surfaced, lit and clear of any obstructions to safe and convenient use by all pedestrians including people with impaired mobility.

8 TARGETS AND MONITORING

Introduction

8.1 The targets set out within this Travel Plan would provide a clear measure of the Travel Plan's progress towards meeting the objectives. These targets are shown as output targets, where specific actions are undertaken to successfully deliver or monitor the Travel Plan, and outcome targets which demonstrate the specific outcomes of the plan.

8.2 This section reviews data from the National Census 2011 Method of Travel to Work statistics to provide a baseline modal split prior to commencement of development. A commitment to initial travel surveys being undertaken within 3 months of occupation and annually thereafter is given.

Output Targets

8.3 The output targets below demonstrate what will be undertaken in order to ensure the successful delivery of the Travel Plan. The output targets have been listed below:

- Appoint a Travel Plan Coordinator prior to first occupation of the development;
- Provide a 'welcome pack' of travel information to all new households prior to or within two weeks of their occupation;
- Set up a community website prior to first occupation of the site, and update travel details as necessary and at least on a six monthly basis;
- Undertake a baseline monitoring survey, to an agreed methodology, within three month of the first occupation;
- Submit a revised Travel Plan with amended baseline travel patterns within two months of initial survey;
- Undertake annual monitoring surveys annually from the initial travel survey, at a similar time each year. These should be undertaken for a minimum of five years after first occupation. If the Headline Target has not been achieved by that stage then the annual monitoring will continue throughout the development period until such point that the Headline Target is achieved;
- Undertake Personal Travel Planning with residents; and
- Submit a monitoring report to Herefordshire Council within two months of completion of each monitoring survey.

8.4 Further details of the monitoring of the Travel Plan have been set out later in this Section.

SMART Targets

8.5 Best practice guidance emphasises the need for targets to be 'SMART': that is **S**pecific, **M**easurable, **A**chievable, **R**ealistic and **T**ime-bound.

8.6 The following targets are set based upon SMART methodology:

- Between the initial travel survey and first annual travel survey:
  - Achieve a 5% reduction in single occupancy car trips to/from the development over a 12 hour typical weekday (0700-1900) from the baseline (initial travel survey) position;
- Between the first annual travel survey and second annual travel survey:
  - Achieve a further 5% reduction in single occupancy car trips to/from the development over a 12 hour typical weekday (0700-1900) from the baseline (first annual survey) position;
- By the first annual travel survey:
  - Achieve a minimum of 30% of trips to and from the development by sustainable modes (walking, cycling, bus or train) over a 12 hour typical weekday (0700-1900); and
- By the second annual travel survey:
  - Achieve a minimum of 35% of trips to/from the development by sustainable modes (walking, cycling, bus or train) over a 12 hour typical weekday (0700-1900).

8.7 These targets are SMART whilst allowing flexibility in the specific sustainable travel modes which the Travel Plan can promote in order to achieve the targets. This avoids a pitfall presented if targets are specified by mode, which can skew the focus of a travel plan towards specific modes even if the overall aims to increase sustainable travel and reduce single occupancy car use are being met.

8.8 The Travel Plan and all measures contained within it would be in place from the first occupation of the site to ensure that residents of the development will be fully aware of its existence. Sustainable forms of travel will be promoted and residents of the site would benefit from the measures and initiatives from the commencement of their occupation. Much of the mode shift that is likely to occur will be achieved at the outset given that measures and initiatives will be in place from the first occupation of the site.

8.9 The Transport Assessment Report provides an estimate of the baseline trip rates and trip generation that could be expected at the development. **It is considered that a suitable Headline Target for the development would be for a minimum reduction in peak hour vehicle trips generated by the residential dwellings of 5%** compared with the estimated level as set out within the Transport Assessment Report. This target however would only be set following completion and analysis of the Baseline Travel Surveys.

8.10 The baseline peak hour trip rates per dwelling and target trip rates are summarised in **Table 8.1** below. The table also presents the Headline Target trip rates which incorporate a 5% reduction in car trips. The measurement of the headline target using the peak hour trip rates ensures that impact of the travel plan on trip reduction is assessed during the busiest periods where potential impact on the surrounding highway network is at its greatest.

Table 8.1 – Baseline Residential Dwelling Trip Rates and Headline Target Reductions

Trip Rate	AM Peak Hour (0800-0900)	PM Peak Hour (1700-1800)
Predicted Residential Dwelling Vehicular Trip Rates (from Transport Assessment Table 5.1)	0.446	0.522
Minimum Target Vehicular Trip Rates (5% reduction on predicted)	0.424	0.496

8.11 The headline target will be used to monitor the overall performance of the Travel Plan. In addition to the above headline target, secondary targets for each mode of travel have been identified. **Table 8.2** summarises the anticipated baseline mode shares for all modes of travel (derived from journey to work census data for the Ross-on-Wye East ward) and identifies what the minimum targets for these shares should be in order for the headline target to be achieved.

Table 8.2 – Predicted Modal Split and SMART Targets

Main Mode of Travel	2011 Census Percentage	By first annual travel survey	By second annual travel survey
Walk	21%	22%	24%
Cycle	2%	4%	6%
Public Transport	2%	4%	5%
Car Driver	68%	63%	58%
Car Passenger	6%	6%	6%
Motorcycle	1%	1%	1%
Total	**100%**	**100%**	**100%**

8.12 **Table 8.2** presents the effect of SMART targets given above alongside the Census 2011 data in order to show how the change from the baseline situation might look (prior to the initial travel survey) if the Travel Plan targets are achieved.

Monitoring

8.13 The objective of the monitoring process is to regularly assess the residents' travel patterns and identify when/if the plan, or elements of the plan, may need to be changed or if further marketing initiatives are required.

8.14 A programme of monitoring and review will be implemented by the Travel Plan Coordinator to generate information by which the success of the Travel Plan can be evaluated.

8.15 A key outcome of the Travel Plan will be to reduce the use of private cars (particularly single occupancy journeys) from the commencement of first occupation at the site for residential trips. A suitable indicator of success of the Travel Plan will therefore be the number of vehicle trips generated by the site as outlined above.

8.16 A secondary objective of the Travel Plan will be to increase awareness of the environmental implications and health benefits of the travel mode choice. Awareness is less easy to monitor, although one indicator will be the general response to the introduction of the Travel Plan, measured by the feedback as the strategy evolves.

8.17 Monitoring will involve the regular collection of analytical "hard" data and "soft" data in the form of feedback. The Travel Plan Coordinator will:

- Undertake an annual travel survey of residents to determine whether the travel plan targets are being met and to provide information for the next iteration of the Travel Plan;
- Seek feedback from Herefordshire Council and public service operators to establish the perceived level of demand for services;
- Record 'success stories' from Personal Travel Planning for promotion in future iterations of the Travel Plan; and
- Record comments made by residents on the operation of the Travel Plan.

8.18 Information gathered through the monitoring process will be recorded and used through the subsequent review process. It will be made available for inspection by the planning authority.

8.19 The Travel Plan Coordinator will monitor the performance of the Travel Plan on an annual basis for a minimum of five years beyond first occupation. If the Headline Target has not been achieved by that stage then the annual monitoring will continue throughout the development period until such point that the Headline Target is achieved.

8.20 An initial travel survey will be undertaken within three months of the first occupation of the development. The survey would gather baseline data from which performance against the more bespoke, secondary targets can be reviewed. The Travel Plan Coordinator can then refine the measures that are being promoted in response to the performance against the secondary targets to help ensure that the headline target is being achieved. If any of the secondary mode shares targets are achieved during the development period then the Travel Plan Coordinator, in liaison with Herefordshire Council, could identify revised secondary targets to help strive for higher levels of sustainable travel. A draft Residential Travel Survey is included as **Appendix D.**

8.21 The Travel Survey will look to establish the regular travel mode choice of all occupants of the development to a range of locations including work, education, retail and leisure and the reasons why those travel modes are chosen. The residents will be asked to identify improvements to walking, cycling and public transport provision that would encourage the use of sustainable modes of travel.

8.22 Automatic traffic count surveys will be undertaken at the vehicular accesses within three months of the first occupation of the development in order to assess the vehicle trip generation from the site. These surveys will ascertain the vehicle trip generation from the site during the monitoring periods. Monitoring the total number of vehicle trips in and out of the development is a simple and cost effective form of evaluating the performance against the headline mode share target.

8.23 The analysed findings of the initial travel surveys will be submitted to Herefordshire Council for consideration within two months of their completion. The mode share targets would be reviewed and agreed with Herefordshire Council.

8.24 The travel surveys will then be repeated annually throughout the development period. The process will allow the targets to be revised in future years (subject to Herefordshire Council agreement) in response to the results of the ongoing monitoring surveys.

Action Plan

8.25 **Table 8.3** presents a timetable for implementing the Travel Plan's administrative actions and activities. The actions set out in **Table 8.3** all fall under the responsibility of the Travel Plan Coordinator.

Table 8.3 – Action Plan

Approximate Time Period	Administrative	Activity
Prior to First Occupation	▪ Appoint Travel Plan Coordinator; and ▪ Ensure Travel Plan measures are in place from the outset where feasible and appropriate.	▪ Display public transport and walk/cycle route information in site sales office; ▪ Set up website; and ▪ Train sales / marketing staff to inform potential purchasers of travel options.

Approximate Time Period	Administrative	Activity
At First Occupation	▪ Prepare marketing material - including public transport information and welcome packs; ▪ Issue bus taster tickets and cycle purchase vouchers upon application; and ▪ Offer Personal Travel Planning to all residents.	▪ Provide a Welcome pack for residents when they purchase their property; ▪ Display public transport, walking, cycling and car share information on website and in sales suite; and ▪ Arrange to meet with individual residents to offer Personal Travel Planning and outline sustainable travel options available.
Within three months of first occupation of site	▪ Undertake resident travel survey to ascertain baseline travel patterns and establish secondary mode share targets; and ▪ Undertake vehicle count surveys at site accesses and obtain percentage occupation of the site.	▪ Send out, collect and collate surveys; and ▪ Analyse survey information, ascertain trip rates per dwelling.
Within two months following survey results	▪ Update Travel Plan and agree mode share targets.	▪ Review secondary mode share targets, agree with Herefordshire County Council and update Travel Plan.
On-going	▪ Liaise with Herefordshire Council travel plan officer as appropriate for travel information updates; ▪ Update the public transport, walking, cycling and car share information on internet site, if required; and ▪ Undertake Personalised Travel Planning Programs at regular intervals throughout the development period.	▪ Raise awareness of the Travel Plan and its importance; ▪ Hold Travel Plan Days; ▪ Encourage residents to consider sustainable modes of travel.

Approximate Time Period	Administrative	Activity
Annually after initial travel surveys for minimum of 5 years following first occupation or until Headline Target has been achieved	▪ Undertake residential survey to ascertain progress against secondary mode share targets; ▪ Undertake vehicle count surveys at site accesses and obtain percentage occupation of the site to ascertain progress against headline mode share target; and ▪ Revise and amend the Travel Plan, if required, based on survey results, feedback and comments.	▪ Appraise performance against headline and mode share targets. ▪ Provide results to Herefordshire Council within two months of survey completion.

9 SUMMARY AND CONCLUSION

9.1 This Travel Plan has been prepared in connection with the proposed residential development of land to the west of Hildersley Farm, Ross-on-Wye. The development is expected to comprise approximately 250 residential dwellings. Vehicular access is proposed from the A40, formalising and upgrading the existing western access to Hildersley Farm.

9.2 This Travel Plan represents a commitment by the developer to support travel to and from the site via sustainable modes and reduce single occupancy car journeys generated on the external highway network to target levels that would be agreed with Herefordshire Council.

9.3 The overarching objectives which underpin this Travel Plan would be to:

- Reduce the need for unnecessary travel to and from the development;
- Reduce the traffic generated by the development to a lower level than would normally be predicted for the site without the implementation of a Travel Plan, in order to minimise the impact on the local highway network;
- Encourage those travelling to and from the development to use public transport, cycle or walk in a safe and secure manner; and
- Promote healthy lifestyles and sustainable, vibrant local communities.

9.4 The approach and measures set out in the Travel Plan accord with national, regional and local Government objectives and seek to:

- Reduce the impact of traffic on surrounding roads and local communities;
- Promote equal opportunities to residents by offering wider travel choices;
- Develop places for people that encourage community interaction and avoid a car-dominated environment;
- Reduce the cost of personal travel and saving households money through promoting opportunities for cost savings such as car-sharing;
- Offer the potential to avoid costly highway improvements;
- Improve personal and wider community health; and
- Reduce air and noise pollution.

9.5 The site is located in an accessible location with walking, cycling and public transport access to a number and variety of services which would encourage the use of sustainable modes of travel.

9.6 The developer will fund the requirements of the Travel Plan throughout the development period as well as funding the initiatives and the monitoring of the plan.

9.7 Information will be prepared prior to the sale of properties and sales / marketing staff will be trained to promote sustainable travel and sell the Travel Plan aspect of the site to potential buyers. Before residents have started to occupy the site, a Travel Plan Coordinator will be in place and henceforth would work alongside any emerging resident's groups.

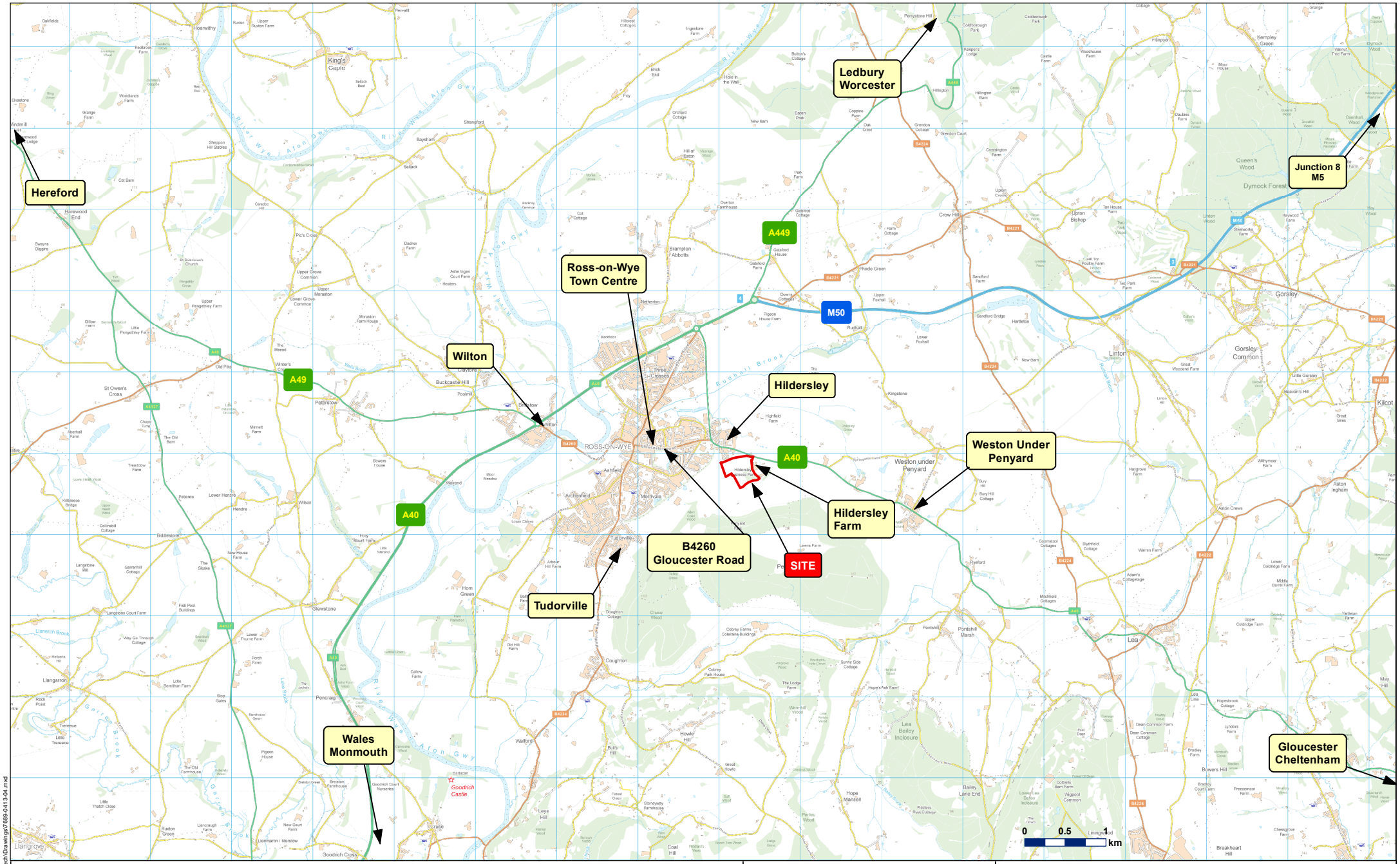
9.8 A headline modal share target for the development has been set which represents at least a 5% annual reduction in vehicle trips generated by the site in the first two years following occupation, when compared with the baseline level as confirmed through the initial travel survey. The Travel Plan Coordinator will work to ensure this target is achieved.

9.9 SMART targets have been set for the use of sustainable travel modes to and from the site and will be assessed using the data collected from the resident travel surveys.

9.10 Initial travel surveys will be undertaken within three months of the first occupation of the development in order to gather baseline data to enable the patterns of each mode of travel to be monitored. The Travel Plan Coordinator can then refine the measures that are being promoted in response to the performance against the secondary targets to help ensure that the headline target is achieved.

9.11 Monitoring surveys would be repeated on an annual basis following the initial travel survey for a minimum of five years from first occupation. If the Headline Target has not been achieved by that stage then the monitoring will continue throughout the development period until such point that the Headline Target is achieved.

FIGURES



Legend

Site

RPS

Date: Jul 2014	Scale: NTS	Rev: --
Drwg. No: JNY8251-01	Drawn: JC	Checked: AW

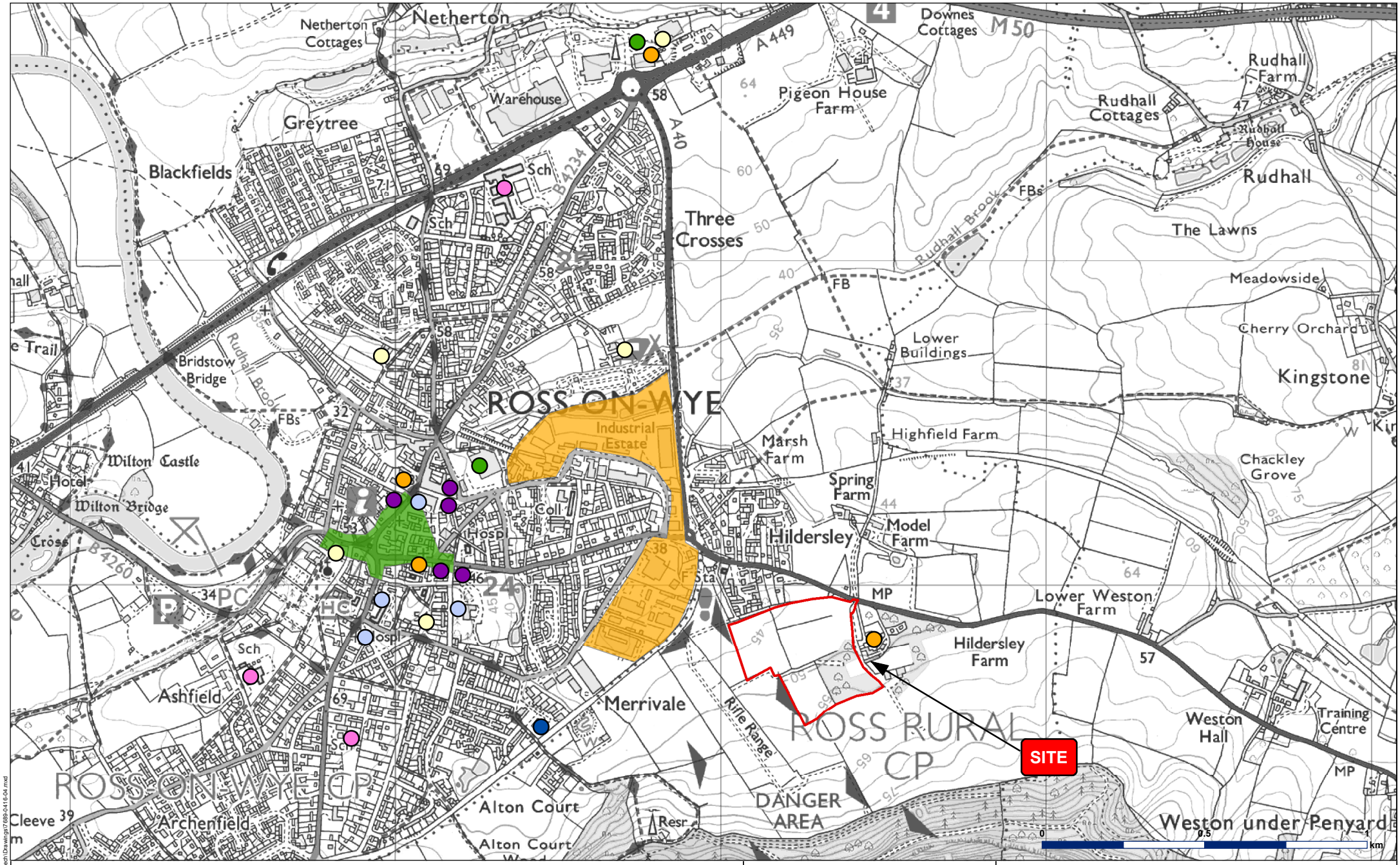
Project:
HILDERSLEY FARM, ROSS-ON-WYE

Title:
SITE LOCATION AND LOCAL HIGHWAY NETWORK

Figure No:
1

Transport

Path: O:\7689 Newbury Tech Support\Tech\Drawings\7689-041-04.mxd



Legend

- Site
- Education Facilities
- Health Facilities
- Outdoor Activities
- Community Facilities
- Employment Facilities
- Leisure Facilities
- Shopping/Retail Facilities

RPS

Date: Jul 2014	Scale: 1:18,000	Rev: --
Drwg. No: JNY8251-02	Drawn: JC	Checked: AW

Project: HILDERSLEY FARM, ROSS-ON-WYE

Title: LOCAL FACILITIES PLAN

Figure No: 2

Transport

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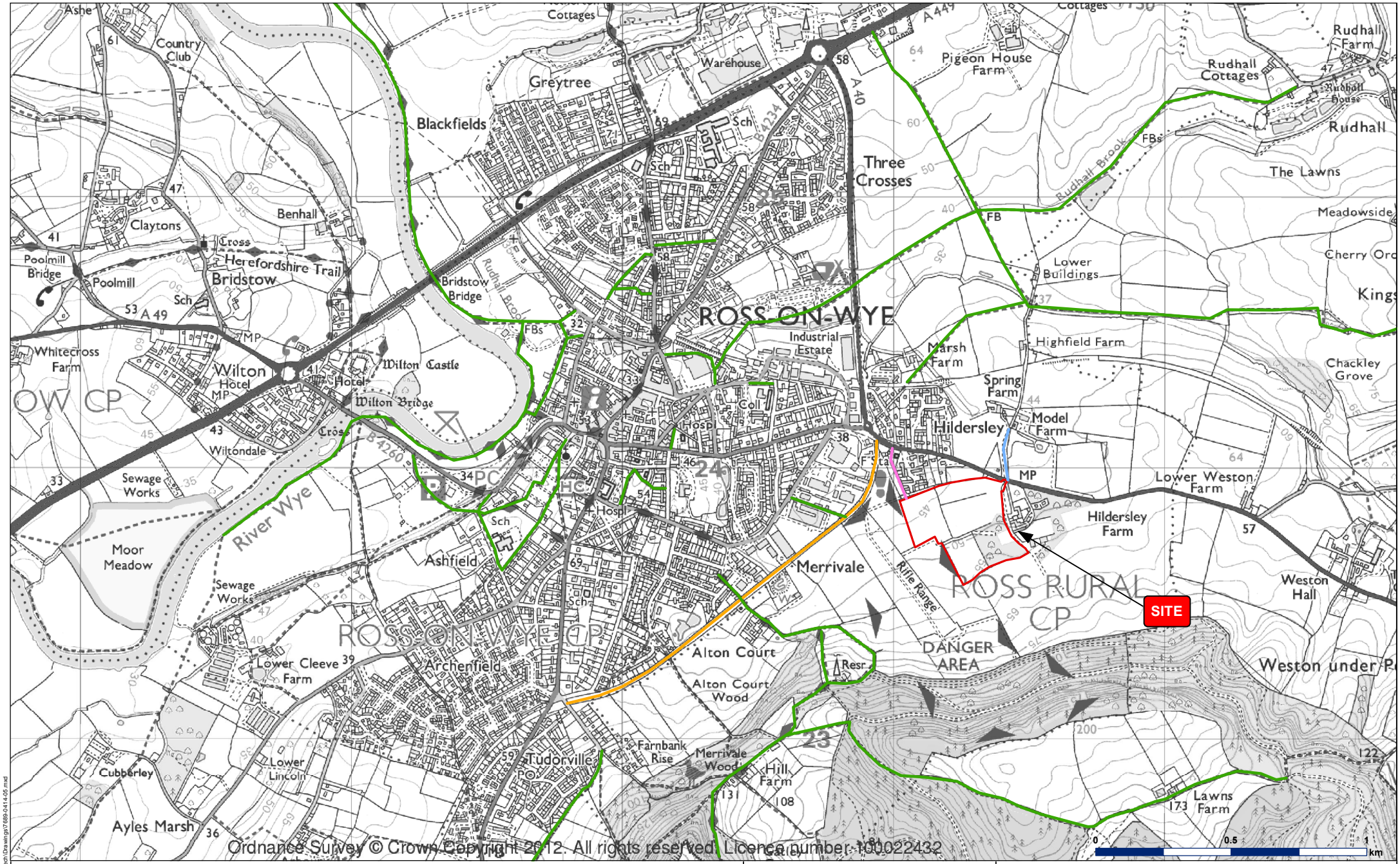

Legend

- Site
- Proposed Shared-use paths
- Shared use path proposed by others
- Billy's Cycle Path
- Public Right of Way

RPS

Date: Oct 2014	Scale: 1:18,000	Rev: --
Drwg. No: JNY8251-03	Drawn: JC	Checked: AW

Project: HILDERSLEY FARM, ROSS-ON-WYE

Title: LOCAL PEDESTRIAN AND CYCLING FACILITIES

Figure No: 3

Transport

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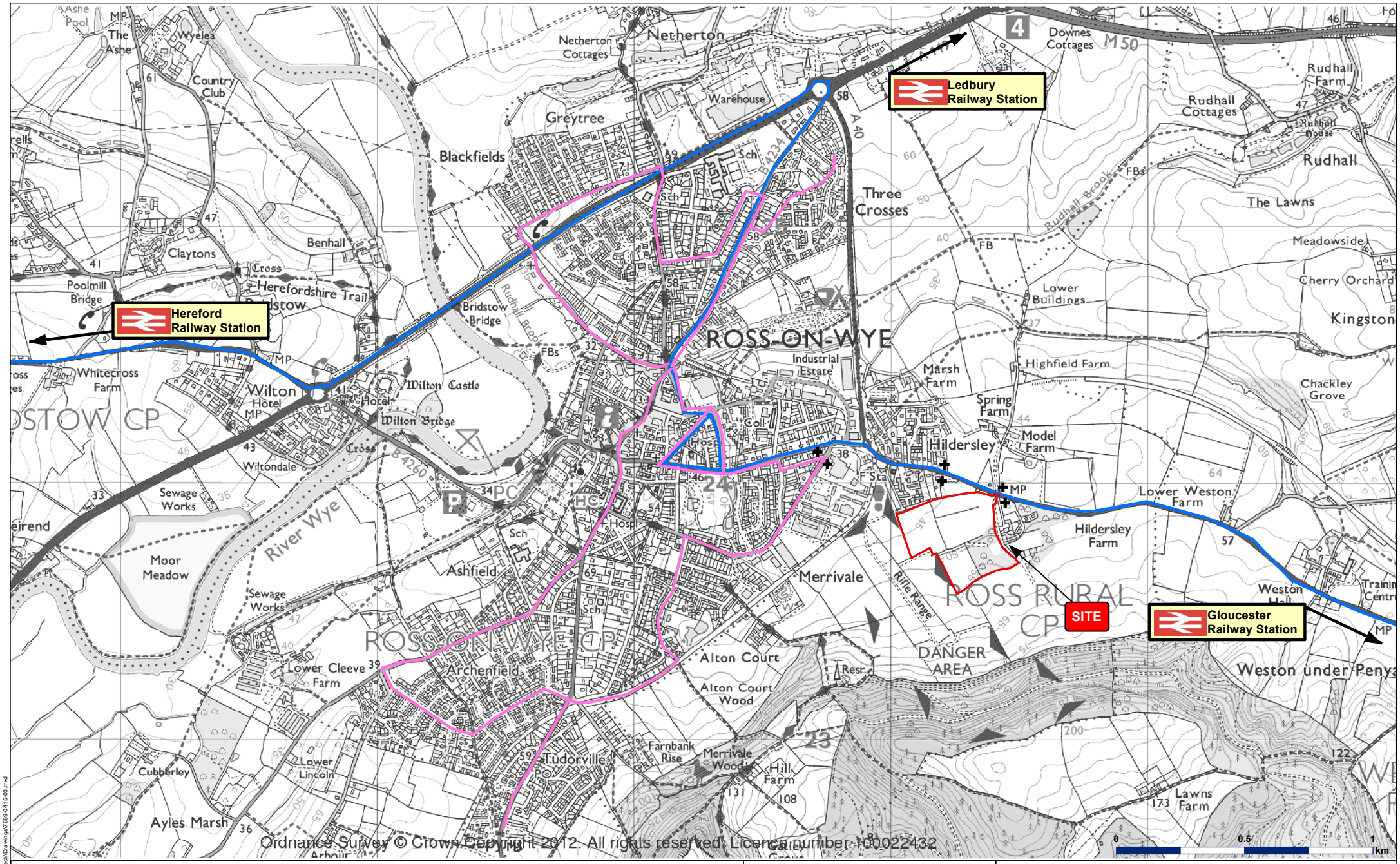

Legend

Site ✚ Bus Stop

Bus Route: 32/33 40

RPS

Date: Jul 2014	Scale: 1:19,000	Rev: --
Drwg. No: JNY8251-04	Drawn: JC	Checked: AW

Project: HILDERSLEY FARM, ROSS-ON-WYE

Title: PUBLIC TRANSPORT FACILITES

Figure No: 4

Transport

Path: G:\7689 Newbury Tech Support\Tech\Drawings\7689-0415-03.mxd

APPENDICES

APPENDIX A – MASTERPLAN

0 20m 100m 150m

Do not scale from this drawing. This drawing is for indicative purposes only.
All information contained on this drawing should be verified through proper survey.

Notes

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- Site Boundary
- Residential
- Informal Open Space
- Infrastructure
- Views to St Marys Church
- Existing Footpath
- Proposed Footpaths
- Site Access
- Pedestrian/Cycle and Emergency Access
- Indicative built form

Rev	Description	Date	Initial	Checked
D	Amendments to red line	25.11.14	AG	AH
C	Amendments to residential area and road alignments to accommodate ecological constraints	19:09:14	AG	AH
B	Drainage ponds added and residential area adjusted	08:09:14	AG	AH
A	residential area amended		AG	AH

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Project Hildersley Farm
Ross-on-Wye

Title Concept Plan

Status	Drawn By	PM/Checked by
DRAFT	AG	AH
Job Ref	**Scale @ A3**	**Date Created**
JBR2514	1:2500	19.09.14

Drawing Number	Rev
503	D

rpsgroup.com

R:\0.0_Project_Numbers\JBR2514 - Hildersley Farm Ross-on-Wye\3 RPS Drawings & Images\2 Drawings in Progress\JBR2514_503_D_Concept Masterplan_25.11.14.dwg

APPENDIX B – SITE ACCESS DRAWING

Proposed uncontrolled pedestrian crossing

Bus stop upgrades as part of Model Farm application

2.4m x 120m Visibility Splay (actual)

2.4m x 120m Visibility Splay (Tangential)

Existing commercial access to remain with proposed vehicular crossover

2.4m x 120m Visibility Splay (actual)

Proposed 5.5m site access with 2 No. 2.0m footway

Proposed uncontrolled pedestrian crossing

Existing farm access to be retained

Existing gate to be relocated

Development Site

Site boundary

General Arrangement

Vehicle Swept Path Access

Vehicle Swept Path Egress

NOTES

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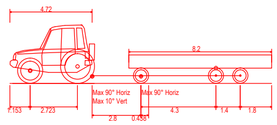
KEY

Highway Boundary

Site Boundary

Vehicle Profile



UoR Farm tractor & hay wagon

Overall Length	15.020m
Overall Width	2.500m
Overall Body	Height 0.438m
Min Body Ground Clearance	0.398m
Max Track Width	2.500m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	4.620m

rev	amendments	by	ckd	date
A	Priority junction with A40 moved west, existing farm access amended and layout amended to suit	HS	SM	24.10.14

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Project: Hildersley Farm, Ross-on-Wye

Title: Primary Site Access & Junction with Existing Farm Access

Drawing Status	Date Created	Drawing Scale
FOR INFORMATION	23-09-14	1:500
Drawing Size	**Project Leader**	**Drawn By**	**Initial Review**
A2	AW	HS	SM

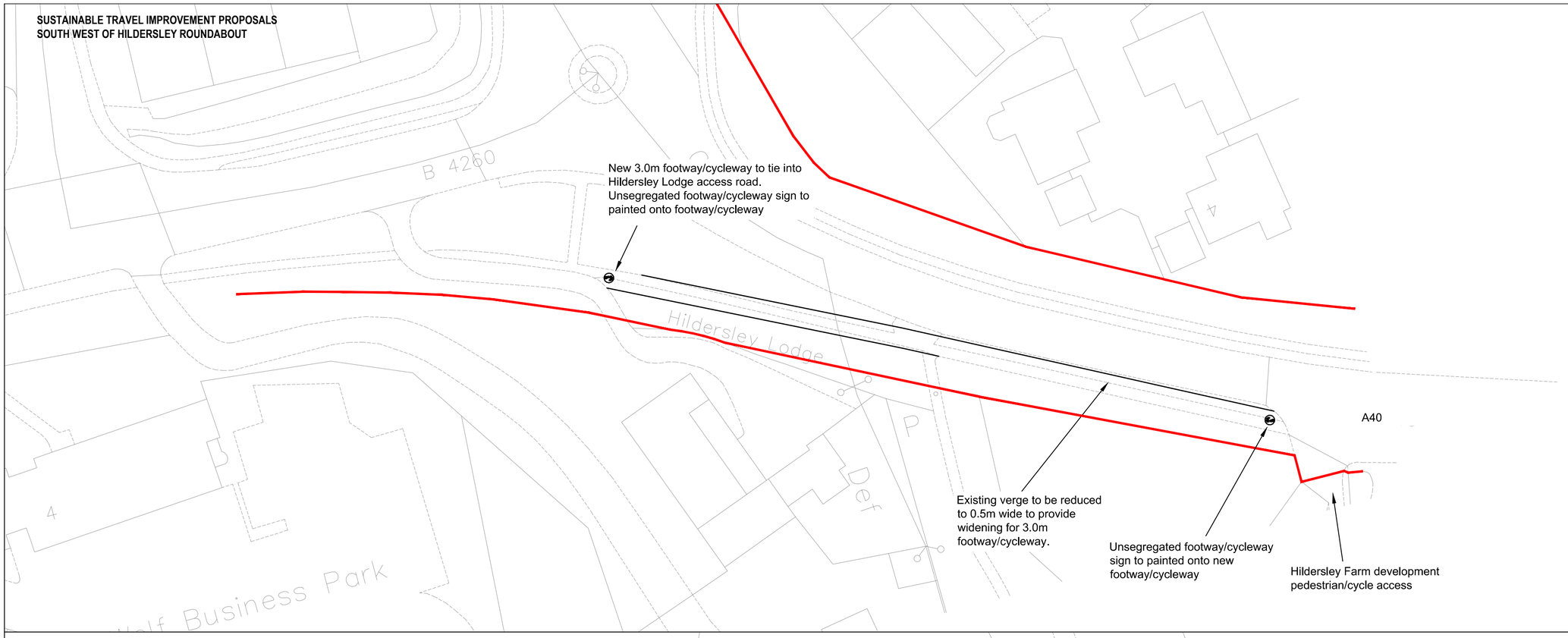
Drawing Number: JNY8251-03

Rev: A

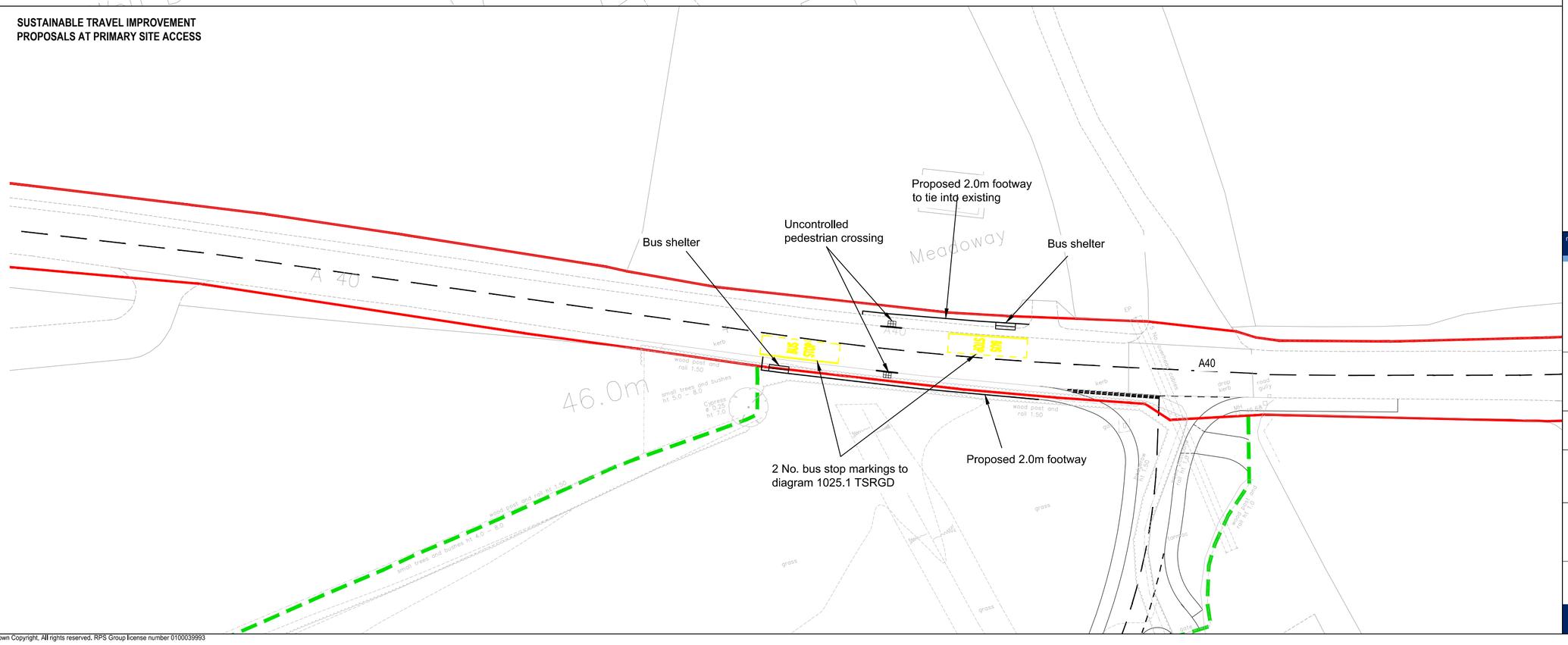
Transport

APPENDIX C – BUS STOP AND SUSTAINABLE TRAVEL IMPROVEMENTS ON A40

SUSTAINABLE TRAVEL IMPROVEMENT PROPOSALS
SOUTH WEST OF HILDERSLEY ROUNDABOUT



SUSTAINABLE TRAVEL IMPROVEMENT
PROPOSALS AT PRIMARY SITE ACCESS



NOTES

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KEY

Highway Boundary

Hildersley Farm Site Boundary

rev	amendments	by	ckd	date

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Title: A40 Sustainable Travel Improvement Proposals

Drawing Status	Date Created	Drawing Scale
FOR INFORMATION	25-11-14	1:500
Drawing Size	**Project Leader**	**Drawn By**	**Initial Review**
A2	AW	HS	AW

Drawing Number: JNY8251-05

Rev:

Transport

APPENDIX D – DRAFT RESIDENTIAL TRAVEL SURVEY

RESIDENTS TRAVEL SURVEY

As part of the monitoring process for the Residential Travel Plan, we are currently conducting a Travel Survey. We would be grateful if one member of your household could complete this brief survey to help us better understand your travel patterns, needs and how we may be able to assist with your travel requirements.

Explanation of the Travel Plan: (TPC to complete)

Who should participate? (TPC to complete)

Who to return completed form to? (TPC to complete)

It will take about 5 minutes to complete and all responses will be treated confidentially.

If you have any queries about the survey, or for guidance on how to complete it, please do not hesitate to contact me at the details provided below:

(TPC to complete) Travel Plan Coordinator: Telephone: E-mail:

Section A: About you and your home

1. Are you:	
Male	
Female	

2. Which are range do you fall into?	
16 – 25	
26 – 35	
36 – 45	
46 – 55	
56 – 65	
65+	

3. What is your Postcode?

4. Do you or any member of your household own a car?	
Yes	
No	
If yes how many in total?	

5. How long have you lived at your current address?	
0 – 6 months	
6 months – 1 year	
1 – 2 years	
2 – 3 years	
3 – 4 years	
4 – 5 years	
Longer than 5 years	

Section B: About your travel to and from your home

6. How do you most frequently travel to and from your home for the following activities? (please choose the mode of travel that you use most often)

Reason for Travel	Walk	Cycle	Bus	Train	Car Share (driver/passenger)	Car (alone)	Motorcycle / Scooter	Other (please specify)
Work								
Shopping								
Education								

7. How often do you use the following modes of travel for journeys from your home? (please tick all modes that you ever use, for all of part of a journey, choosing the frequency with which you use them)

Travel Mode	Very Often (7 or more in every 10 trips)	Quite Often (between 3 & 6 out of every 10 trips)	Occasionally (less than 2 out of every 10 trips)	Never
Walk				
Cycle				
Bus				
Train				
Char Share (driver / passenger)				
Car (alone)				
Motorcycle / scooter				
Other (please specify)				

8. Have you changed your most common mode of transport since relocating to this development?

Yes	
No	

If yes what was the main reason for this change?

Section C: About your future journeys

9. Which of the following changes would most encourage you to cycle for journeys in the local area? (If you already cycle, which would you most like to see)

Physical provision of cycle routes (if so to where?)	
Improved cycle parking within the development site	
Improved cycle parking at local facilities (if so where?)	
Arrangements to buy a bicycle at a discount	
Improved crossing facilities (if so where?)	
None of the above	
Other (please specify)	

10. Which of the following changes would most encourage you to use public transport for your journeys in the local area? (If you already travel by public transport, which would you most like to see)

More direct bus route to… (please specify)	
More frequent bus routes to…(please specify)	
More frequent train services to…(please specify)	
More convenient bus drop-off points	
Improved street lighting around local bus stops	
Improved dissemination of public transport information	
None of the above	
Other (please specify)	

11. Which of the following changes would most encourage you to walk for your journeys in the local area? (If you already walk, which would you most like to see)

Cleaner, better maintained footways	
Better street lighting in the local area	
Further pedestrian crossing facilities	
Slower speed limits within the area	
None of the above	
Other (please specify)	

12. Which of the following changes would most encourage you to car share? (If you already car share, which would you most like to see)

Help finding car share partners who have similar travel patterns	
Further information on car sharing and potential benefits (i.e. cost savings)	
None of the above	
Other (please specify)	

Section D: About the Travel Plan

13. Did you know that this development operated a Travel Plan?

Yes	
No	

14. If yes, how did you find out about the Travel Plan?

During the sales process	
Word of mouth	
Publication (newsletter / notice / website)	
Personalised travel planning process	
Other (please specify)	

15. Would you like to receive more information regarding the Travel Plan?	
Yes	
No	

Please use the following box to provide any comments you wish to make in relation to travel in the local area:

Thank you for your time.