Land South of Wixams, Bedford – Wixams End

Baseline Transport Appraisal

Client: Wates Developments

i-Transport Ref: TW/ITB15565-001c

Date: 14 August 2020

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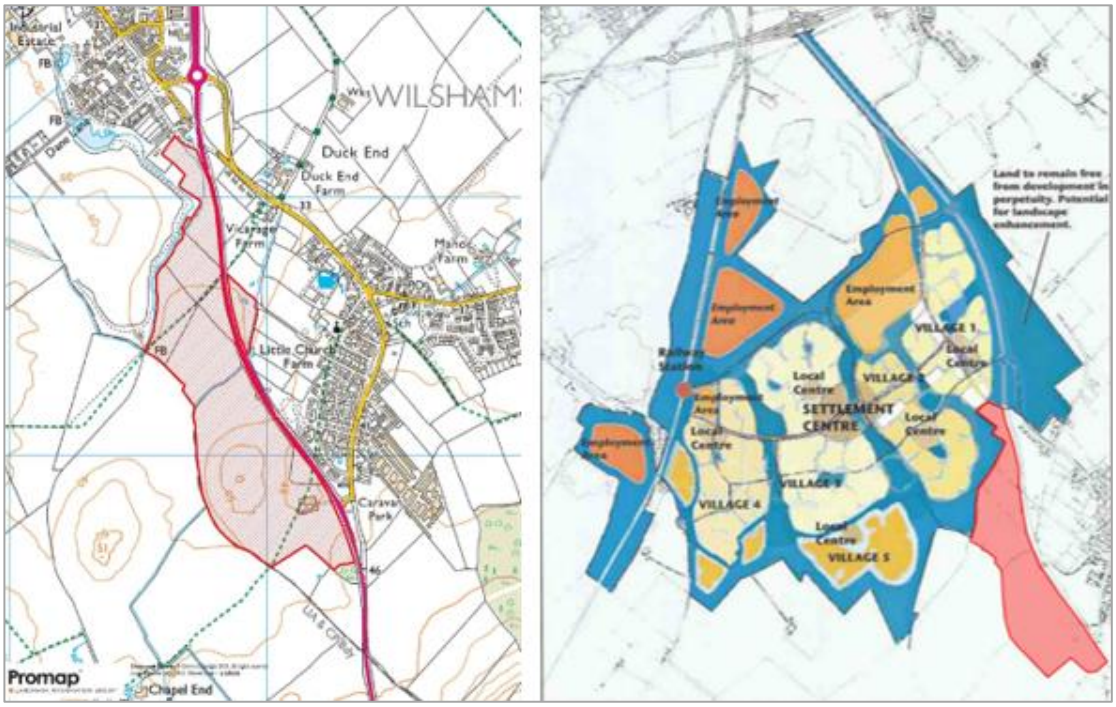
SECTION 1 Introduction

1.1 This report provides a Baseline Transport Appraisal of Land to the South of Wixams, Bedford (Wixams End) which is being promoted for residential development by Wates Developments. The site is expected to deliver around 415 dwellings as a sustainable extension to Wixams.

1.2 The site is located to the south of Wixams with the A6 and Wilstead Village located to the east of the site, and agricultural land located to the west. A new community of 4,500 dwellings and a strategic employment area (36,500m^2) is being delivered as part of the Bedford Local Plan on the site of the former Elstow Storage Depot. The site location plan is shown as **Figure 1** (extracted as **Image 1.1**) in its context with the wider Wixams development.

Image 1.1: Site Plan and Context Plan



1.3 This appraisal provides an initial assessment of the transport deliverability of the site against the key tests set out in paragraphs 108 and 109 of the NPPF, i.e.:

- Have appropriate opportunities to promote sustainable transport modes been identified and taken up, given the type of development and its location;
- Can safe and suitable access to the site can be achieved for all users;
- Can any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, be mitigated to an acceptable degree.

SECTION 2 Sustainable Travel Opportunities

2.1.1 The site is located approximately 1km to the south of the centre of Wixams. It is on the edge of Wixams village and Wilstead is located circa 700m to the east across the A6.

2.1.2 The Wixams new community is being provided as four villages and will deliver a large range of land uses to serve its population of circa 10,000 people. Village 1 is mostly completed and is delivering around 1,000 dwellings, a mixed use local centre, middle school, nursery, creche, village hall and sports facilities. The local centre provides a good range of everyday facilities within ~1km of the site, a 10-12 minute walk, making key facilities accessible by foot and cycle.

2.1.3 In the wider area, there are further facilities, including significant employment, primary and secondary schools, convenience shopping, leisure facilities and healthcare. **Table 2.1** summarises the key facilities close to the site, and travel times to reach each by foot and cycle.

Table 2.1: Summary of Local Facilities

Purpose	Destination	Distance	Walk Time	Cycle Time
Leisure	Portu Gallos Restaurant	1,100	13	4
	Lakeview Village Hall	1,100	13	4
	The Red Lion Pub	1,350	16	5
	The Woolpack Pub	1,400	17	5
	Wilstead Jubilee Centre	1,450	17	5
	Wixam Hatters F.C	1,550	18	6
	Jubilee Playing Fields	1,550	18	6
	Wilstead Bowls Club	1,550	18	6
	Wilstead Park	1,750	21	7
Retail	Budgens	1,100	13	4
	Wilstead Post Office & Stores	1,550	18	6
Employment	Wilstead Industrial Park	1,550	18	6
Education	Lakeview School	1,050	13	4
	Wixamtree Primary	1,300	15	5
	Wixams Academy	1,450	17	5
	Wilstead Lower School	1,550	18	6
Healthcare	Wilstead Pharmacy	1,400	17	5

Source: Consultants Measurements

2.1.4 Walking accounts for around 80% of all journeys up to one mile (1.6km), as well as over 30% of journeys up to two miles (3.2k) *(NTS 2019)*. Average cycle journeys are 3.3 miles (5.3km).

2.1.5 The wider Wixams development (**Figure 2**) will deliver further key facilities including:

- A new Town Centre (Village 3) – 1,850m (~20 minute walk, 7 minute cycle)
- Sports Facilities (Village 2 and 3) – 1,650m – 2,050m (~20 minute walk, 6 minute cycle)
- Strategic Employment Area – 2,350m (<25 minute walk, 10 minute cycle)
- Potential Rail Station – 3,450m (13 minute cycle)

2.1.6 There is good opportunity for the site to deliver sustainable travel outcomes.

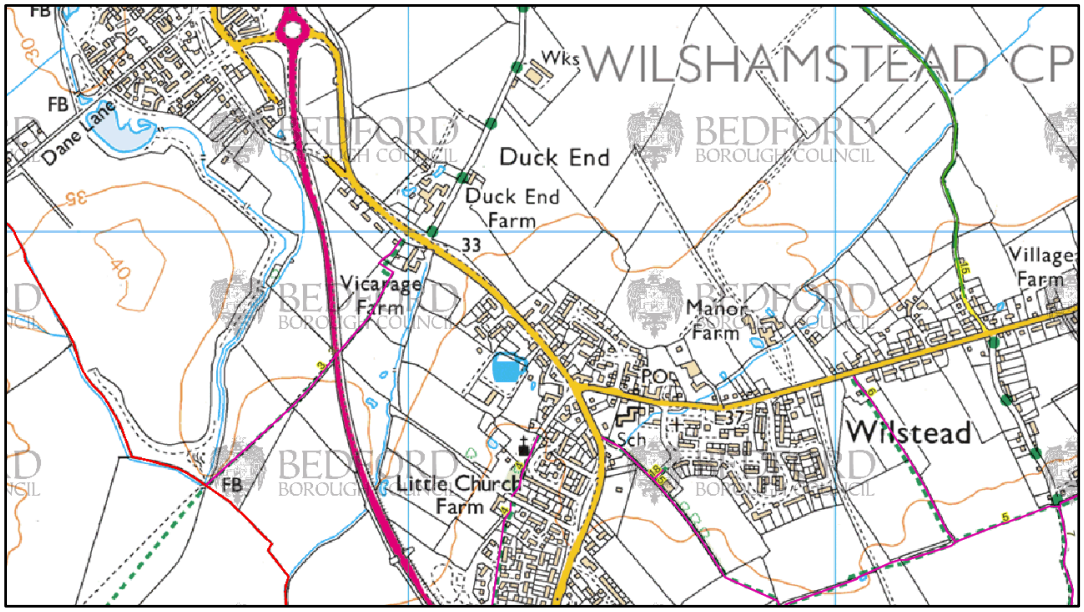
2.2 Pedestrian Provision

2.2.1 There is an established footway and cycleway network that connects to the site at Bedford Road. There are continuous off-road lit footways on Bedford Road leading north to the Village 1 local centre and providing access to the wider Wixams community on a developing network of streets.

2.2.2 At Bedford Road there is a pedestrian / cycle underpass that travels eastwards under the A6 and provides access to Wilstead village and its associated local facilities.

2.2.3 A Public Rights of Way (PROW) network is also provided within the vicinity of the site and an extract of the PROW map is provided in **Image 2.1**.

Image 2.1: Bedford PROW Map



2.2.4 Footpath 3 passes through the site connecting across the A6 to Bedford Road to the north-east and onward towards Wilstead, and eastwards to access the Village 2 network.

2.2.5 To ensure that the site is integrated with local facilities, pedestrian and cycle connections will be provided to Bedford Road to the north of the site. This will provide for safe, direct and legible access to key local facilities in Wixams and Wilstead. In addition, improvements will be made to Footpath 3 to ensure the site is well connected to the services and facilities surrounding the site.

2.3 Public Transport

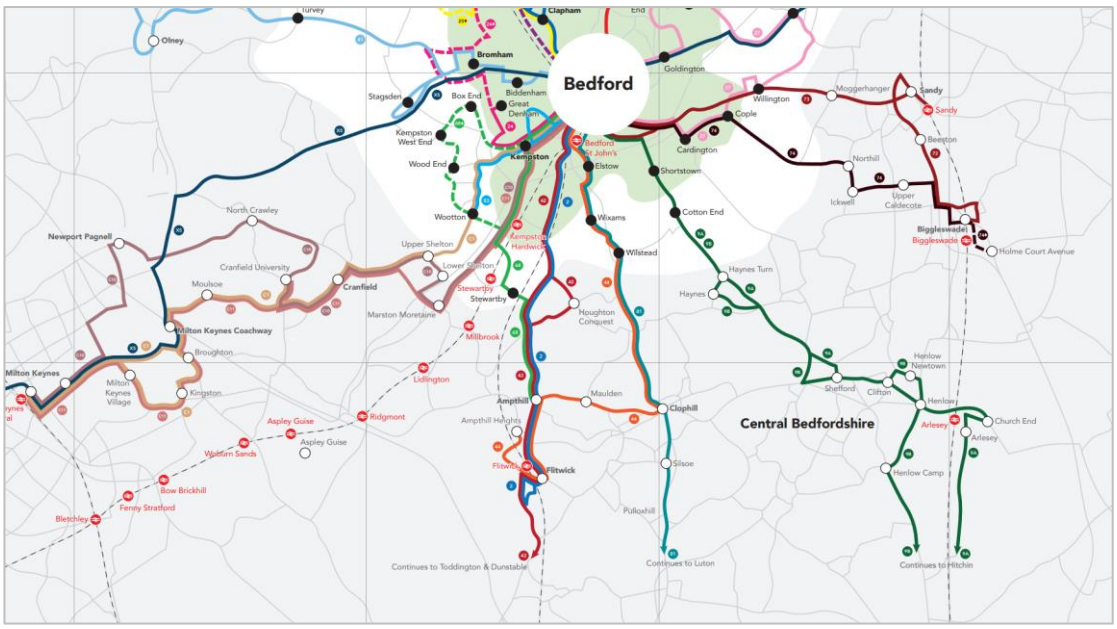
2.3.1 The closest bus stops to the site are located on Southern Cross approximately 250m north of the site, with the full site within 700m of the bus stops. Further bus stops are available at Duck End Lane, 450m from the site, east of the A6 towards Wilstead. **Table 2.2** provides a brief summary of the bus services operating from these bus stops, including key destinations served and frequencies, while **Image 2.2** presents the overall bus network.

Table 2.2: Summary of Local Bus Services

Service	Route	Mon-Fri	Sat
44	Bedford – Clophill – Ampthill – Flitwick – Ampthill – Ampthill Heights	Hourly service	Hourly service
81	Bedford - Luton	Hourly service	Hourly service

Source: Traveline

Image 2.2: Bedford Bus Map



Source: Bedford Borough Council

2.3.2 The combined services offer half hourly services to Bedford, which is the key higher order settlement in the area, and connection to Luton, as well as other locally important destinations.

2.3.3 As part of the wider Wixams community several new bus routes are planned which will improve bus accessibility in the local area. The site offers the opportunity to develop bus service extension to integrate the site and to support existing and planned services. Measures to promote bus accessibility to the site will be developed as the site proposals emerge and the local operators will be engaged.

2.3.4 Bedford St Johns is the closest railway station, located some 6.4km to the north of the site. The railway station is accessible by both bus service no. 44 and no. 81. A summary of the rail services at this station are summarised in **Table 2.3**.

Table 2.3: Summary of Local Rail Services

Destination	Frequency (per hour)		
	Peak	Off Peak	Duration (mins)
Luton	7-8 services per hour	6 services per hour	20 mins
Bletchley	Hourly service	Hourly service	43 mins
Corby	1-2 services per hour*	Hourly service	46 mins
London St Pancras	6-7 services per hour	5-6 services per hour	56 mins
Gatwick Airport	4-7 services per hour	3-4 services per hour	104 mins

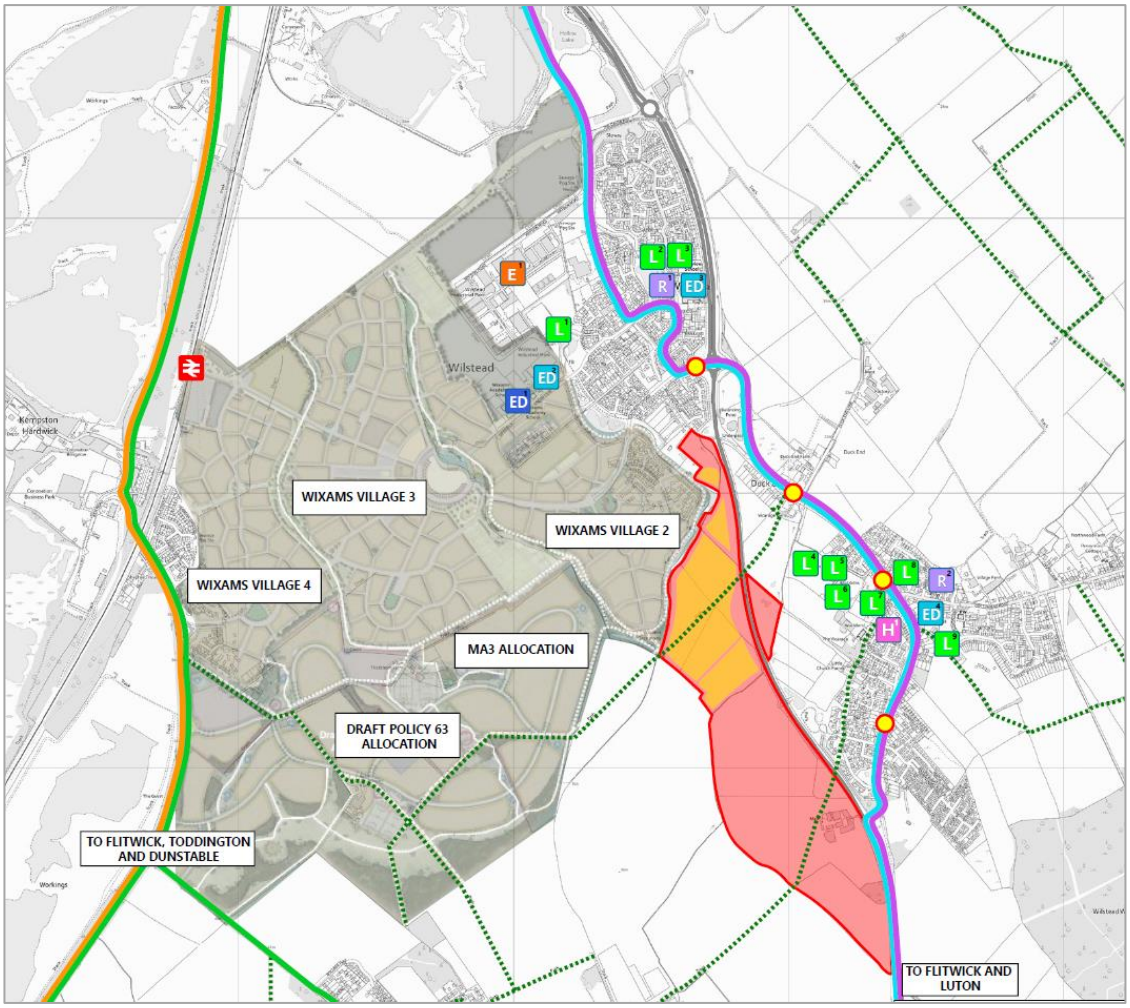
Source: National Rail

2.3.5 Other rail opportunities are available at Flitwick, which can be reached via bus service no. 44.

2.3.6 As part of the new community at Wixams, a new railway station is being considered, although that is currently under review as part of the emerging proposals for the East-West rail project. If delivered, this would significantly enhance the accessibility of the area.

2.3.7 **Figure 2**, an extract of which is shown as **Image 2.3**, illustrates that there is a very good variety of local services and amenities within the vicinity of the site.

Image 2.3: Accessibility Plan



Source: Figure 2

Promotion of Sustainable Transport

2.3.8 The site is well served by local bus routes and is well positioned with regard to the local facilities and services being delivered as part of the wider Wixams proposals. There are good locational opportunities for travel to be promoted by sustainable travel modes, including walking, cycling and public transport.

2.3.9 To ensure opportunities to promote the uptake of sustainable transport modes are taken up, a series of measures will be delivered as part of a Sustainable Transport Strategy for the site. The detail of the strategy will be worked up as the proposals emerge and through liaison with the Council and local transport operators.

2.3.10 The principles of this strategy are outlined in **Table 2.4**.

Table 2.4 – Sustainable Transport Strategy Principles

Category	Measures
Encouragement of Walking and Cycling	• Information on walking and cycling routes and facilities within the area to be provided to resident's through a resident's travel information pack. • Setting up of a bicycle user group • Negotiation of discounts or promotions for residents at local cycle stores. • Creation of well-designed and safe walking and cycling routes within the site and wider area • Improvement of Footpath 3 through the site.
Encouragement of the use of Public Transport	• Information on the public transport routes and facilities made available through the resident's travel information pack. • Promotion of new bus routes planned within Wixams and any service extensions to integrate the site to such services, including the potential to deliver a bus connection through the site. • The promotion railway services available at Bedford St Johns • Bus stop improvements
Measures to encourage Car-Sharing	• Car sharing to be promoted amongst new residents of the development – particularly in relation to journeys to work
Information Provision and Travel Marketing	• Provision of a resident's travel information pack including promotional material, travel discounts, travel information. • Details regarding the provision of broadband access – to enable easy access to local home delivery services and home-working. • A plan of the development, highlighting nearby local facilities and services and the walking and cycling routes to these locations. • Details of cycle training schemes, bus and train timetables and information on journey planning services.

2.4 Accessibility Summary

2.4.1 The site is well located to local facilities and services being delivered as part of Wixams and would form a natural, well integrated and cohesive extension to Wixams.

2.4.2 The site is well located in transport sustainability terms, close to a good range of local facilities and benefits from direct connections to established walking and cycling networks. Opportunities to access public transport are available close to the site.

2.4.3 It is therefore concluded that the site will be well integrated and will offer good opportunities to promote sustainable transport. A Sustainable Transport Strategy will be delivered to ensure opportunities for sustainable movement are taken up.

SECTION 3 Site Access Strategy

3.1 Wider Wixams Settlement

3.1.1 The access strategy adopted for the wider Wixams settlement was to upgrade and re-align the A6, creating a dual carriageway section of road for some 2.5km south of the A421. The A421 is a trunk road between the A1 and M1, administered by Highways England. Whilst the A6 is a county road, it is nonetheless an important connection between Bedford and Luton. The junction of the A6 / A421 has also been improved recently.

3.1.2 Two 70m ICD roundabouts are provided as the northern and southern gateways to Wixams from which the new community is served by an interconnecting network of streets.

3.1.3 The realignment of the A6 also reduces the impacts on the wider villages, primarily Wilstead which the old A6 passed through. The old A6 is now provided as a pedestrian / cycle route only and the provision of limited access to the A6.

3.2 Access Strategy

Vehicular Access

3.2.1 In view of the established access strategy for the wider Wixams development, any access to the site will need to ensure that it does not cause any significant impact on the strategic flow of traffic on the A6. The proposed access strategy comprises:

- Vehicular access to the A6, mirroring the agreed approach for the remainder of Wixams;
- Pedestrian / Cycle / Emergency Vehicle access to Bedford Road; and
- Pedestrian and cycle connections to Bedford Road and the PROW network.

3.2.2 To achieve access to the A6, agreement will be required from BBC and it will need to be designed to reduce potential impacts of increased delay on the wider highway network.

3.2.3 A traffic signal junction would be likely to create additional delays of A6 traffic and a simple priority junction would not deliver sufficient capacity to safely serve the site.

3.2.4 On this basis, it is proposed that the site will be served by a new 'normal' roundabout junction to the A6. This is consistent with the form of junction that serves the wider Wixams community and generally maintains the free flow of traffic on the wider A6.

3.2.5 Highway boundary data has been obtained from BBC to determine the extent of the public highway for the design of the access roundabout which is provided in **Appendix A**.

3.2.6 **Image 3.1** presents the proposed access comprising of a new three arm roundabout to the A6 (**Drawing ITB15565-GA-001)** which has been designed in accordance with DMRB Standards.

Image 3.1 – A6 Access Roundabout

Source: Drawing ITB15565-GA-001

3.2.7 The proposed access roundabout comprises:

- A 60m ICD roundabout – whilst the two existing roundabout to the A6 serving Wixams are slightly larger (70m ICD), this section of the A6 is single carriageway rather than dual;
- Two lane entries on each arm of the junction, to facilitate turning movements into the site, but also to maintain the free-flow of the A6 traffic across the junction;
- Forward visibility of 215m on A6 approaches, consistent with the existing speed limit;
- Entry path deflection of <100m; and
- Forward visibility of 43m on the site access arm, consistent with a 30mph design speed, the same as the Wixams accesses.

3.2.8 An initial appraisal of the operation of the site access junction has been carried using the traffic flow profiles agreed for the Wixams development and which account for the latest committed developments, considering future conditions in 2032.

Table 3.1 – Operational Assessment – Proposed A6 Access – 2032 Future Year

Arm	AM Peak Hour				PM Peak Hour			
	RFC	Queue (veh)	Delay (s/veh)	LOS	RFC	Queue (veh)	Delay (s/veh)	LOS
A6 (North)	0.64	1.7	5.24	A	0.75	2.9	7.25	A
Site Access	0.75	2.9	7.81	A	0.69	2.1	6.31	A
A6 (South)	0.18	0.2	4.27	A	0.07	0.1	3.39	A

3.2.9 The assessment, summarised in **Table 3.1**, demonstrates that the proposed junction will operate wholly within capacity under 'Free Flow' conditions, with no material queueing or delay. Each arm demonstrates a Level of Service category 'A', the highest category of performance. Delays on each approach are inconsequential and no material queueing is projected.

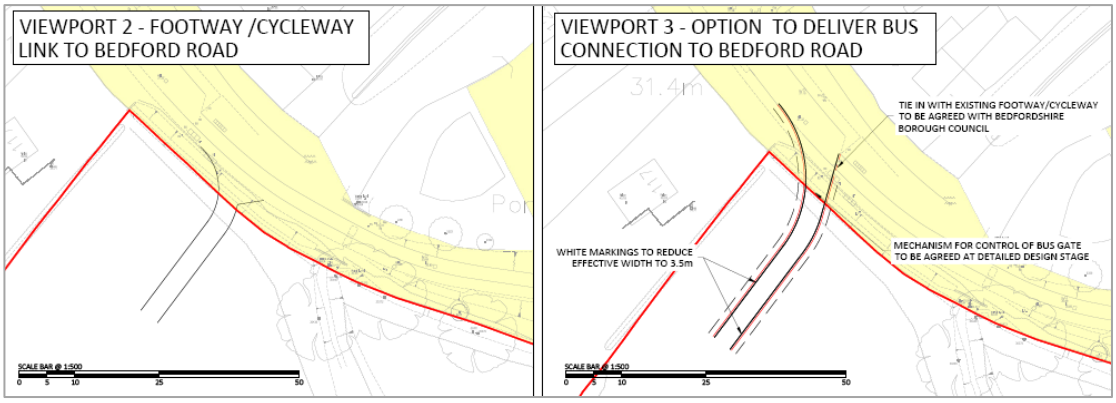
Pedestrian Access

3.2.10 No footways are present on the A6 within the vicinity of the site. Given the strategic nature of the A6, provisions for pedestrians / cyclists along the A6 between the site and Southern Cross are unlikely to be considered acceptable. As a result, consideration has been given to the provision of a non-motorised connection to Bedford Road, located to the north of the site.

3.2.11 Bedford Road is a single lane two-way cul-de-sac some 5.5m in width and is subject to a 30mph speed limit along the site frontage. 2m wide footways are present on both sides of the carriageway. At its northern end, i.e. at its junction with Southern Cross, a 3m wide shared footway / cycleway is present on the southern side of Southern Cross and provides a connection westbound to Village 2. At its southern end, adjacent to the site boundary, a dedicated traffic free segregated pedestrian footway / cycleway some 5m in width is present on Bedford Road and provides a connection directly to Bedford Road in Duck End, and onwards to Wilstead.

3.2.12 Consideration has been given to the provision of either a dedicated shared footway / cycleway and / or a 'Bus Only' connection on to Bedford Road. **Drawing ITB15656-GA-001** presents both indicative arrangements, an extract of which is shown at **Image 3.2**. This would also double as an emergency vehicle access.

Image 3.2: Indicative Non-Motorised Connection to Bedford Road



Source: Consultant

3.3 Access Summary

3.3.1 Whilst access arrangement will be subject to discussions and agreement with the highways officers at Bedford Borough Council in due course, it is demonstrated that safe and suitable access for all users can be achieved to the site. The proposed vehicular access can be delivered in line with design standards and initial assessment confirms that it would operate efficiently, in free-flow conditions.

SECTION 4 Traffic Impact

4.1.1 This section of the Appraisal considers the high-level traffic impacts that may arise from the development of the site and considers the ability of the local network to accommodate the site.

4.2 Traffic Generation

4.2.1 To determine the likely traffic generation for a development of circa 415 dwellings, vehicle trip rates were extracted from the TRICS database. The following parameters were utilised:

- **Region -** Sites in England (excluding Greater London);
- **Size Relevance –** Sites between 250 and 550 homes;
- **Time Period –** Surveys dated for the last seven years;
- **Location Relevance –** Surveys in 'Suburban' and 'Edge of Town' locations; and
- **Date Relevance –** Surveys undertaken on weekdays only.

4.2.2 The extracted TRICs trip rates and associated vehicle trips for a 415 dwelling development, are summarised in **Table 4.1**. The full TRICS output report is contained at **Appendix B**.

Table 4.1: Proposed Residential Traffic Generation – Vehicles (415 Dwellings)

	Morning Peak Hour (0800-0900)			Evening Peak Hour (1700-1800)		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
Trip Rate	0.135	0.415	0.550	0.383	0.170	0.553
Trips	56	172	228	159	71	229

Source: TRICS Database and Consultant's calculations

4.2.3 The data in **Table 4.1** indicates that a development of circa 415 dwellings at the site will likely generate around 230 two-way vehicle movements in both the morning and evening peak periods. This equates to circa three to four vehicle movements per minute and is consistent with the traffic generation estimates of the initial Wixams appraisal

4.2.4 The Wixams assessment also concluded that 40% of vehicle trips would be contained to Wixams itself and not travel outside of the town. This same assumption has been applied in this appraisal.

4.3 Traffic Distribution

4.3.1 The Wixams traffic estimates suggested that some 80% of external traffic demand (that not contained to Wixams) is expected to route north towards the A421, Bedford and beyond, with the remaining 20% of traffic expected to route south.

4.3.2 These estimates were sense checked through the development of a traffic distribution model, comprising Journey to Work data (extracted from the 2011 Census) and a P/T^2 gravity model.

Journey Purpose

4.3.3 The likely journey purpose for the generated car driver peak hour trips has been determined using data derived from the NTS 2018 (DfT). The proportion of the peak hour trips by journey purpose by car is presented in **Table 4.2**.

Table 4.2: Proportion of Peak Hour Trips by Journey Purpose (Car Driver Only)

Trip Purpose	Morning Peak Hour	Evening Peak Hour
Commuting/ Business	37.6%	43.9%
All Other Journey Purposes	62.4%	56.1%
Total	**100%**	**100%**

Source: Car driver trip start time by trip purpose (Monday to Friday only): Great Britain 2014/2018, National Travel Survey, DfT, 2018

4.3.4 The NTS 2018 data has been used to distribute the development generated traffic. The analysis has been undertaken on the basis that 43.9% of vehicular trips generated by the development will be for employment journeys and the remaining 56.1% of vehicle journeys will be for other purposes for both the morning and evening peak hours. These proportions are derived from National Travel Survey data.

Commuting Journeys

4.3.5 Journey to Work data contained within the 2011 Census has been reviewed for the local area to identify the likely destinations for employment journeys. The analysis is summarised in **Table 4.3** and presented in full in **Appendix C**.

Table 4.3: Summary of Employment Trips Distribution (Travel by Car)

Destination	Percentage of Trips to Work	Percentage of All Trips
Luton	9.0%	4.0%
Milton Keynes	6.5%	2.8%
Sandy	2.6%	1.1%
Biggleswade	0.9%	0.4%
Cranfield	2.4%	1.0%
Ampthill	3.7%	1.6%
Marston Moretaine	0.6%	0.3%
Shefford	3.4%	1.5%
Flitwick	1.5%	0.7%
Harlington	1.2%	0.5%
Bedford	59.1%	26.0%
Huntingdon	0.9%	0.4%
Hemel Hempstead	0.4%	0.2%
Hitchin	1.1%	0.5%
Stevenage	0.9%	0.4%
Northampton	0.5%	0.2%
Shortstown	5.3%	2.3%
Total	**100.0%**	**44.0%**

Source: Census 2011

Non-employment Journeys

4.3.6 The distribution of non-employment trips has been estimated using a P/T^2 gravity model. This considers destinations within a 20-minute drive time of the site to reflect the more local nature of the likely destinations of these trips.

4.3.7 The population of key urban areas (likely destinations for non-employment trips) has been estimated from the 2011 Census. Journey times were then estimated using Journey planning software from the Google Maps Directions facility, based on peak hour journey times.

4.3.8 A summary of the distribution of trips for non-employment journey purposes by destination is presented in **Table 4.4**. The gravity model is presented in full in **Appendix C**.

Table 4.4: Distribution of Other Journey Purposes (Car Drivers Only)

Destination	Percentage of Trips for Non-employment Purposes	Percentage of All Trips
Bedford	52.2%	29.2%
Biggleswade	5.2%	2.3%
Flitwick	6.3%	3.6%
Shortstown	4.4%	2.5%
Wilstead	26.6%	14.9%
Ampthill	5.4%	3.0%
Total	**100.0%**	**56.1%**

Combined Distribution

4.3.9 The traffic distribution associated with the employment and non-employment trips have been combined and the overall traffic distributions for the development traffic are summarised in **Table 4.5** and presented in full in **Appendix C**.

Table 4.5: Combined Distribution (Car Drivers Only)- Key Destinations Only

Destination	Percentage of all Trips - Work	Percentage of all Trips – Non-work	Percentage of all Trips
Luton	4.0%	-	4.0%
Milton Keynes	2.8%	-	2.8%
Sandy	1.1%	-	1.1%
Biggleswade	0.4%	2.9%	3.3%
Cranfield	1.0%	-	1.0%
Ampthill	1.6%	3.0%	4.6%
Shefford	1.5%	-	1.5%
Flitwick	0.7%	3.6%	4.3%
Harlington	0.5%	-	0.5%
Bedford	26.0%	29.2%	55.2%
Stevenage	0.4%	-	0.4%
Northampton	0.2%	-	0.2%
Shortstown	2.3%	2.5%	4.8%
Wiltstead	-	14.9%	14.9%
Other	1.5%	-	1.4%
Total	**44.0%**	**56.0%**	**100.0%**

Source: Census 2011 and Consultant's Calculations

4.3.10 The traffic expected to be generated by the potential residential development at the site (ref: **Table 4.1**) has been distributed across the local highway network to the destinations summarised in **Table 4.5** and identified fully in **Appendix C**.

4.3.11 To determine the routing of trips to these destinations, reference has been made to the Google Maps 'Directions' facility. A morning peak hour start time for journeys was utilised to ensure that peak period traffic conditions were reflected. **Table 4.6** summarises the assignment of trips.

Table 4.6: Summary of Traffic Assignment

Decision Points	Route Choice	Percentage of Routing
1 (Site Access)	A6 (North)	83.5%
	A6 (South)	16.5%
Total		**100.0%**
2	A6 (North)	56.8%
	A421 (West)	6.1%
	A421 (East)	3.3%
	Bedford Road (East)	17.3%
Total		**83.5%**

Source: Consultant's Calculations

4.3.12 The detailed distribution analysis supports the initial Wixams traffic distribution, with circa 80% of traffic likely to travel north to the A421, Bedford and beyond and circa 20% to route south.

4.3.13 To put the distribution of the potential residential development into context, **Table 4.7** provides an estimate of the traffic impact of the development on the local highway network.

Table 4.7: Development Impact Assessment – External Trips (415 Dwellings)

Route		2032		Development Trips		Impact	
		AM	PM	AM	PM	AM	PM
North of Wixams	NB	1136	953	83	34	7%	4%
	SB	1046	1198	27	76	3%	6%
	Total	**2182**	**2151**	**110**	**110**	**5%**	**5%**
South of Wixams	NB	1233	1102	7	19	1%	2%
	SB	1046	1198	21	8	2%	1%
	Total	**2279**	**2300**	**27**	**28**	**1%**	**1%**

Source: Wixams Traffic Estimates, Consultant Calculations

4.3.14 Overall, the development would be expected to increase traffic flows to the north of Wixams on the A6 by some 5% and by around 1% to the south of Wixams. In real terms, this equates to an average of 1-2 additional vehicle movements on the A6 north of Wixams in the morning and evening peaks, and one additional vehicle every two minutes south of Wixams. These increases in traffic are not significant and will not be likely to have a material impact on the operation of the local highway network.

4.4 Background Capacity Assessment

4.4.1 To consider the potential traffic increases in the context of the local network, recent junction capacity analysis undertaken to support the Employment Quarter in Wixams (prepared by Mode) has been reviewed to determine existing network operation. This assessment considered the cumulative impact of growth in the area including particularly the delivery of Wixams.

A6 (North) / Bus Gate / A6 (South) / The Causeway Roundabout

Approach	AM Peak Hour (08:00 - 09:00)		PM Peak Hour (17:00 – 18:00)	
	Queue (Veh)	RFC	Queue (Veh)	RFC
2023 Future Baseline + Committed Development				
The Causeway	1	0.43	1	0.35
Old A6 (S)	1	0.28	1	0.24
Northern Distributor Road	1	0.18	1	0.19
Old A6 (N) – Bus Gate	1	0.05	0	0.01
2023 Future Baseline + Committed Development + Proposed Development				
The Causeway	1	0.46	1	0.34
Old A6 (S)	1	0.29	1	0.24
Northern Distributor Road	1	0.20	1	0.21
Old A6 (N) – Bus Gate	1	0.05	0	0.01

Source: Table 5.4 of TA submitted in support of EQ development (prepared by Mode)

4.4.2 The junction capacity analysis indicates that the roundabout is likely to operate well within capacity during the future year scenarios, in both the morning and evening peak periods with RFC values of 0.46 and 0.34 on the worst performing arms. Queuing of one vehicle on approaches is projected.

4.4.3 The residential development of Land South of Wixams, which adds less than two vehicles each minute to the junction, will not materially impact on the operation of the junction.

A6 / The Causeway Roundabout

Approach	AM Peak Hour (08:00 - 09:00)		PM Peak Hour (17:00 – 18:00)	
	Queue (Veh)	RFC	Queue (Veh)	RFC
2023 Future Baseline + Committed Development				
A6 (S)	3	0.70	2	0.61
The Causeway	2	0.60	2	0.52
A6 (N)	3	0.68	4	0.80
2023 Future Baseline + Committed Development + Proposed Development				
A6 (S)	3	0.71	2	0.61
The Causeway	2	0.62	2	0.55
A6 (N)	3	0.69	5	0.80

Source: Table 5.6 of the TA submitted in support of the EQ development (prepared by others)

4.4.4 The junction capacity analysis indicates that the roundabout is likely to operate well within capacity during the future year scenarios, in both the morning and evening peak periods with RFC values well below 0.85, being 0.71 and 0.8, with queues of 2-3 vehicles. The traffic associated with the residential development would not materially alter the operation of the junction.

A421 / A6 Roundabout

Approach	AM Peak Hour (08:00 - 09:00)		PM Peak Hour (17:00 – 18:00)	
	Queue (Veh)	RFC	Queue (Veh)	RFC
2023 Future Baseline + Committed Development				
A421 (E)	3	0.76	10	0.93
A6 (S)	24	0.99	11	0.93
Holiday Inn	1	0.31	1	0.28
A421 (W)	4	0.77	8	0.90
A6 (N)	5	0.83	14	0.95
2023 Future Baseline + Committed Development + Proposed Development				
A421 (E)	4	078	11	0.93
A6 (S)	28	0.99	12	0.93
Holiday Inn	1	0.31	1	0.29
A421 (W)	4	0.78	9	0.91
A6 (N)	6	0.84	15	0.95

Source: Table 5.7 of TA submitted in support of EQ development (prepared by others)

4.4.5 The A421 / A6 junction is a grade separated roundabout providing a key intersection between two major A-roads. The junction capacity analysis indicates that the junction is forecast to operate close to its theoretical capacity in the future year scenarios, both during the morning and evening peak periods, with significant queues projected on the A6 (s) arm particularly.

4.4.6 The potential residential development is forecast to distribute circa 80% of external development traffic north along the A6 towards the A421, Bedford and beyond. Whilst in real terms this equates to a small number of vehicle movements (less than two each minute), it is likely that the residential development traffic will result in a worsening in junction performance.

4.4.7 In view of the forecast constraints at the junction, the Employment Quarter TA presents a potential improvement scheme, which involves the part-signalisation of the roundabout – specifically the A421 off-slips. This is in line with the South East Midlands Local Enterprise Partnership (SEMLEP) Infrastructure Investment Plan. A drawing of the mitigation scheme is attached in **Appendix D**. The results of the improved junction are presented below.

A421 / A6 – Mitigation Scheme

Approach	AM Peak Hour (08:00 - 09:00)		PM Peak Hour (17:00 – 18:00)	
	Deg Sat (%)	MMQ (pcu)	Deg Sat (%)	MMQ (pcu)
2023 Future Baseline + Committed Development				
A6 (N)	77.7	2.5	84.6	4.2
A421(E)	68.0	5.4	77.3	7.2
A6 (S)	92.1	12.4	86.0	7.7
Hotel/PFS access	28.0	0.4	22.7	0.1
A421(W)	79.1	11.3	82.3	13.0
PRC	-2.3		4.7	
2023 Future Baseline + Committed Development + Proposed Development				
A6 (N)	78.3	2.7	84.9	4.2
A421(E)	71.4	5.8	75/1	6.9
A6 (S)	92.6	12.7	86.3	8.0
Hotel/PFS access	28.3	0.5	22.9	0.1
A421(W)	82.9	12.3	83.4	13.3
PRC	-2.9		4.3	

Source: Table 5.8 of TA submitted in support of EQ development (prepared by others)

4.4.8 The modelling of the mitigation scheme indicates that the junction would operate within theoretical capacity in the future year scenarios, in both the morning and evening peak periods. However, the A6 (South) arm would continue to operate close to capacity and therefore the residual cumulative impact of the potential development on the operation of the junction (particularly the southern A6 arm) will need to be carefully considered as the project moves forward and in the event that further mitigation is required, this will need to be developed.

4.4.9 Given the wider aspirations to deliver an improvement scheme at the A6/A421 junction, the development South of Wixams can assist in delivering an improvement at the junction. The Transport Assessment will consider this in greater detail alongside BBC engagement.

4.5 Traffic Impact Summary

4.5.1 The initial Wixams traffic distribution estimates were sense checked through the development of a detailed traffic distribution model. The original estimates were supported by the results of the distribution model, with circa 80% of development traffic forecast to route north toward the A421, Bedford and beyond and the remaining 20% to route south along the A6. Of development traffic generated, 60% are expected to result in trips external to Wixams.

4.5.2 The development of Land South of Wixams would be expected to generate some 230 peak period vehicle movements. Taking account of the traffic assignment analysis, this equates to an increase in traffic flows to the north of Wixams on the A6 by some 5% and by around 1% to the south of Wixams. In real terms, this equates to an average less than two additional vehicles each minute on the A6 north of Wixams in the morning and evening peaks, and one additional vehicle every two minutes south of Wixams. These increases in traffic are not significant and will not be likely to have a material impact on the operation of the local highway network.

4.5.3 Assessment of the local network carried out in accordance with the Employment Quarter has been considered. This demonstrates that local junctions on the A6 are likely to have sufficient capacity to accommodate development traffic. There are forecast capacity constraints at the A6 / A421 junction, and a mitigation scheme has been developed to improve operation of the network. The development can assist in bringing forward improvements at this location and through the Transport Assessment will consider the need for any further mitigation schemes.

4.5.4 On the basis of this high-level assessment, it is concluded that any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, are capable of being cost effectively mitigated to an acceptable degree.

SECTION 5 Summary and Conclusions

5.1 This Baseline Transport Appraisal considers the potential for the delivery of up to around 415 dwellings on Land South of Wixams. This appraisal presents a high-level assessment of the site against the key transport tests of the NPPF, i.e.:

i Have appropriate opportunities to promote sustainable transport modes been identified and taken up, given the type of development and its location;

ii Can safe and suitable access to the site can be achieved for all users;

iii Can any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, be mitigated to an acceptable degree.

Sustainable Travel

5.2 The site is well located to local facilities and services being delivered as part of Wixams and would form a natural, well integrated, and cohesive extension to Wixams. The site is well located in transport sustainability terms, close to a good range of local facilities and benefits from direct connections to established walking and cycling networks. Opportunities to access public transport are available close to the site.

5.3 It is therefore concluded that the site will be well integrated and will offer good opportunities to promote sustainable transport. A Sustainable Transport Strategy will be delivered to ensure opportunities for sustainable movement are taken up.

Site Access

5.4 Access to the site can be achieved via a roundabout onto the A6. This is consistent with the strategy for the Wider Wixams development and early assessment demonstrates and a roundabout junction can be delivered in line with design requirements, and will operate efficiently, maintaining the free flow of traffic on the wider A6. Agreement will be required from BBC and will need to be designed to ensure the benefit of the re-alignment of the A6 is not lost.

5.5 To deliver non-vehicular connections to the wider community, a secondary access point is shown at the north of the site, to Bedford Road. This could be provided as an access for sustainable modes such as pedestrians, cyclists and potential public transport vehicles. This would also double as an emergency vehicle access.

5.6 Overall, it is concluded that safe and suitable access can be delivered for all users.

Traffic Impact

5.7 The development of Land South of Wixams would be expected to generate some 230 peak period vehicle movements. This equates to an increase in traffic flows to the north of Wixams on the A6 by some 5% and by around 1% to the south of Wixams.

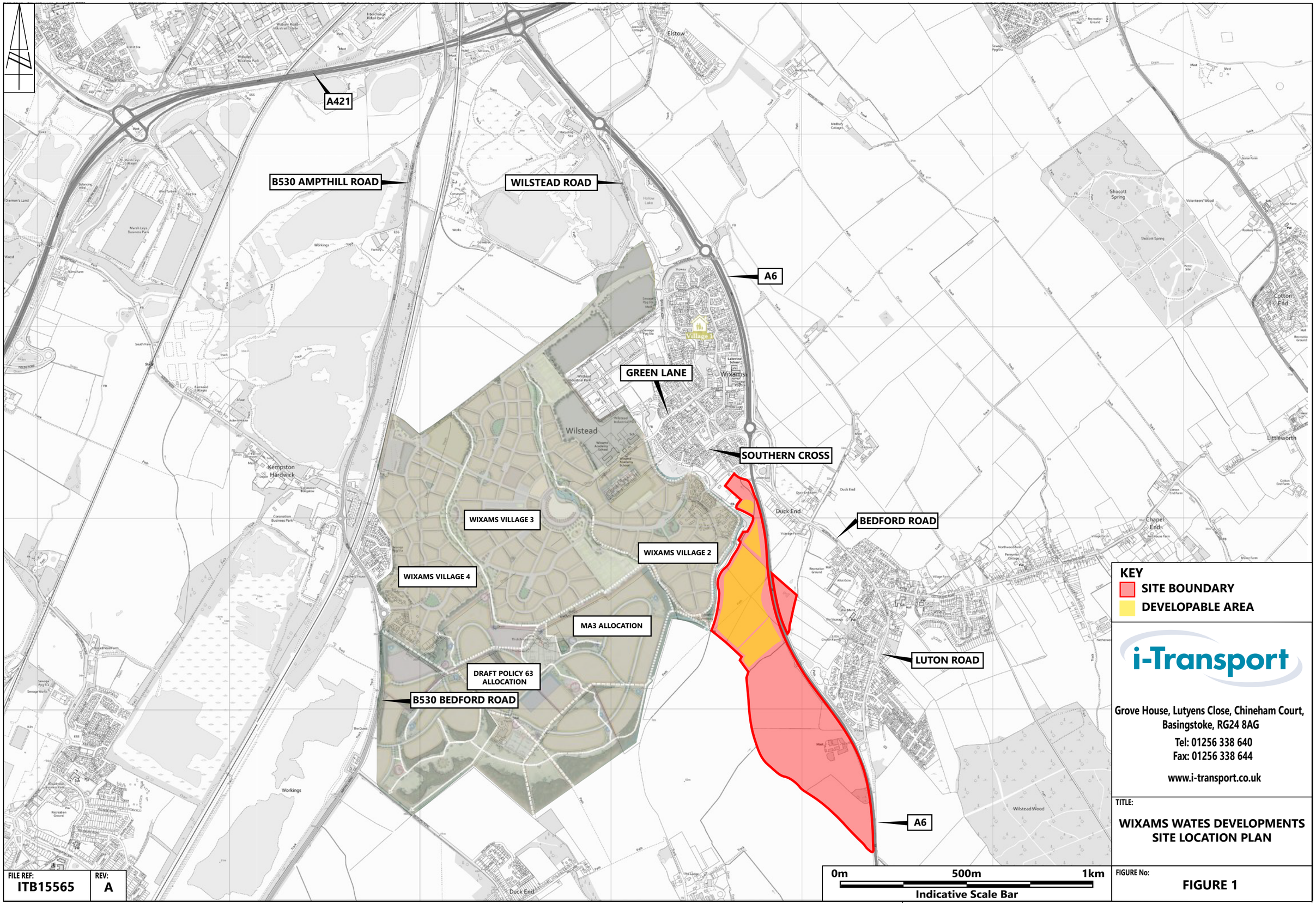
5.8 Recent assessment of the local network demonstrates that local junctions on the A6 are likely to have sufficient capacity to accommodate development traffic. There are forecast capacity constraints at the A6 / A421 junction, and a mitigation scheme has been developed to improve operation of the network. The development can assist in bringing forward improvements at this location and through the Transport Assessment will consider the need for any further mitigation schemes in this location and on the wider network.

5.9 On the basis of this high-level assessment, it is concluded that any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, are capable of being cost effectively mitigated to an acceptable degree.

Conclusion

5.10 On the basis of the Baseline Transport Appraisal, it is concluded that there are no reasons that the development of Land South of Wixams (Wixams End) cannot be delivered in an acceptable manner in transport terms. The site is in a sustainable location with good potential for sustainable travel modes, access can be achieved to the site in a safe and acceptable manner, and any traffic impacts are likely to be capable of being mitigated to an acceptable level.

FIGURES



KEY

- SITE BOUNDARY
- DEVELOPABLE AREA

i-Transport

Grove House, Lutyens Close, Chineham Court, Basingstoke, RG24 8AG

Tel: 01256 338 640
Fax: 01256 338 644

www.i-transport.co.uk

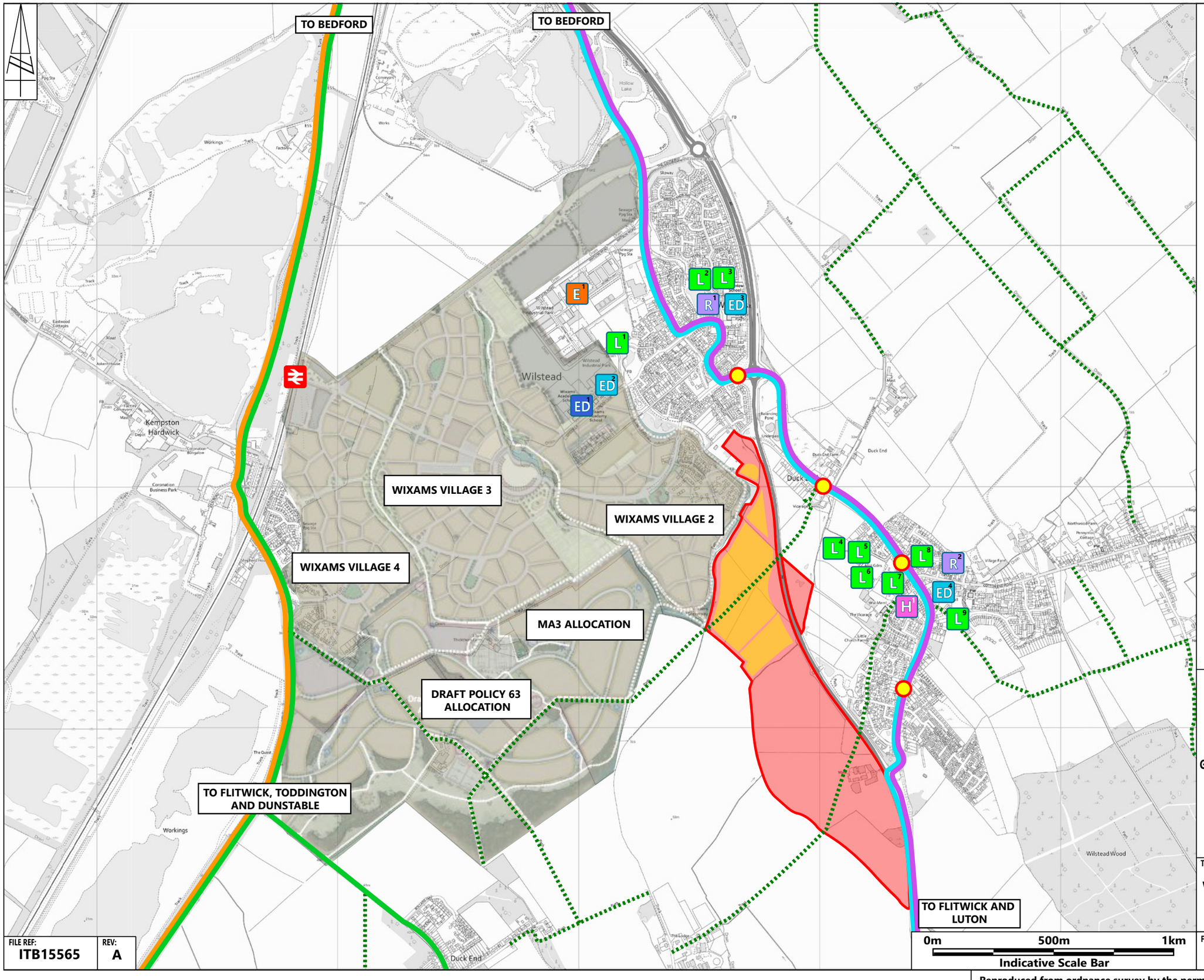
TITLE:

WIXAMS WATES DEVELOPMENTS SITE LOCATION PLAN

FILE REF: ITB15565

REV: A

FIGURE No: **FIGURE 1**



KEY

- SITE BOUNDARY
- DEVELOPABLE AREA
- POTENTIAL RAIL STATION
- FUTURE TOWN CENTRE
- EXISTING BUS STOP
- SERVICE 42
- SERVICE 2
- SERVICE 44
- SERVICE 81
- PROW NETWORK

EXISTING LEISURE FACILITIES

- L1 WIXAM HATTERS F.C.
- L2 PORTU GALLOS RESTAURANT
- L3 LAKEVIEW VILLAGE HALL
- L4 JUBILEE PLAYING FIELDS
- L5 WILSTEAD JUBILEE CENTRE
- L6 WILSTEAD BOWLS CLUB
- L7 THE RED LION PUB
- L8 THE WOOLPACK PUB
- L9 WILSTEAD PARK

EXISTING EMPLOYMENT

- E1 WILSTEAD INDUSTRIAL PARK

EXISTING RETAIL

- R1 BUDGENS
- R2 WILSTEAD POST OFFICE AND STORES

EXISTING EDUCATION

- ED1 WIXAMS ACADEMY
- ED2 WIXAMTREE PRIMARY
- ED3 LAKEVIEW SCHOOL
- ED4 WILSTEAD LOWER SCHOOL

EXISTING HEALTHCARE

- H1 WILSTEAD PHARMACY

i-Transport

Grove House, Lutyens Close, Chineham Court, Basingstoke, RG24 8AG

Tel: 01256 338 640
Fax: 01256 338 644

www.i-transport.co.uk

TITLE:

WIXAMS, WATES DEVELOPMENTS ACCESSIBILITY PLAN

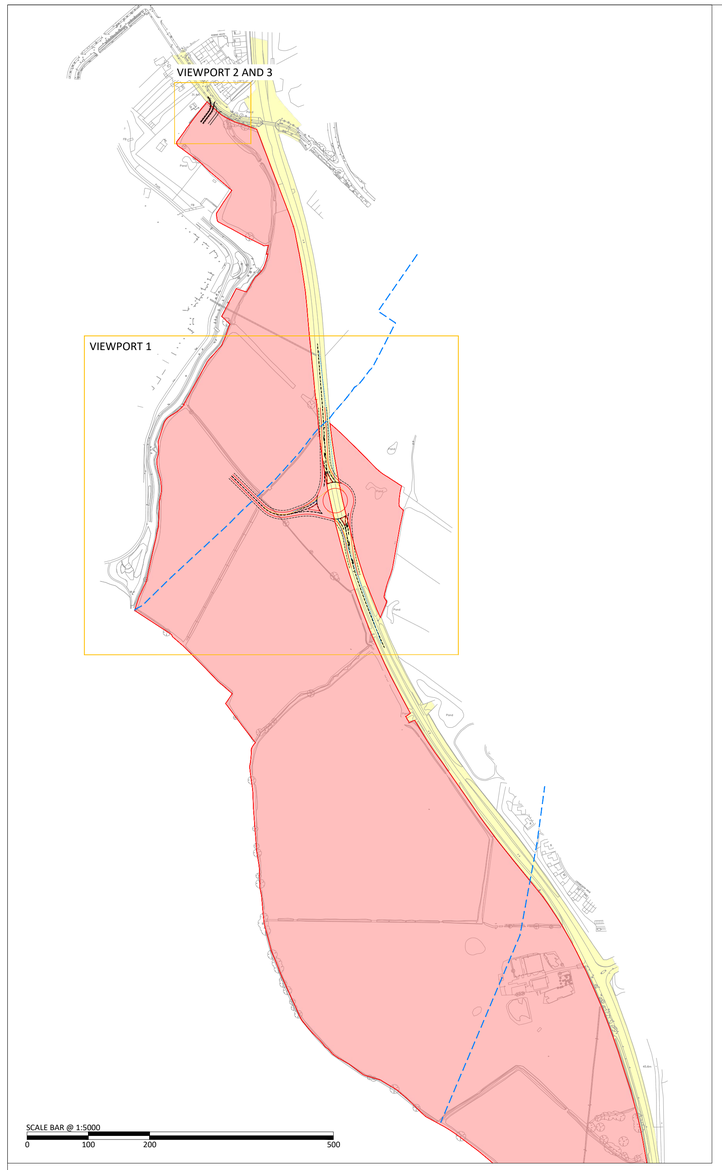
FIGURE No:

FIGURE 2

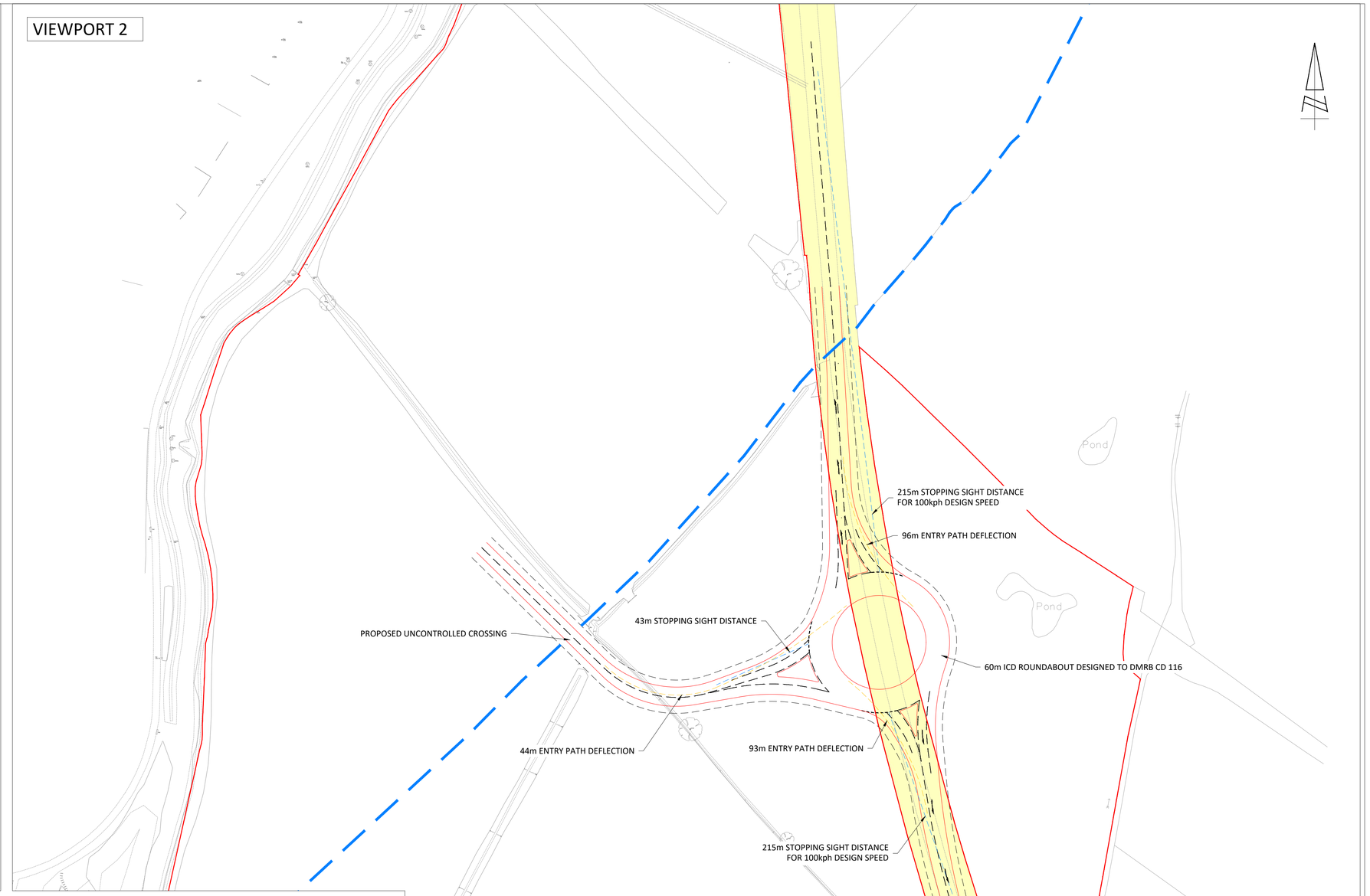
FILE REF: ITB15565

REV: A

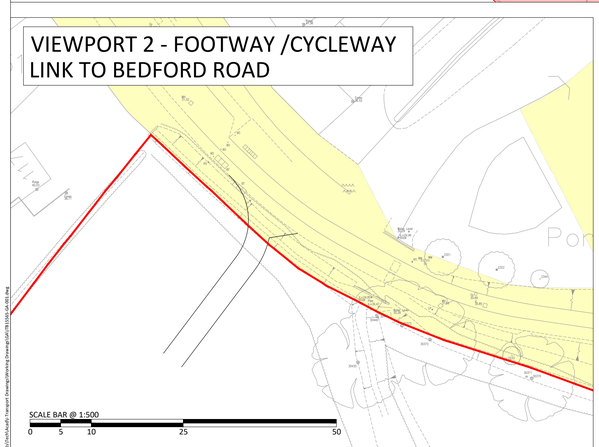
DRAWINGS



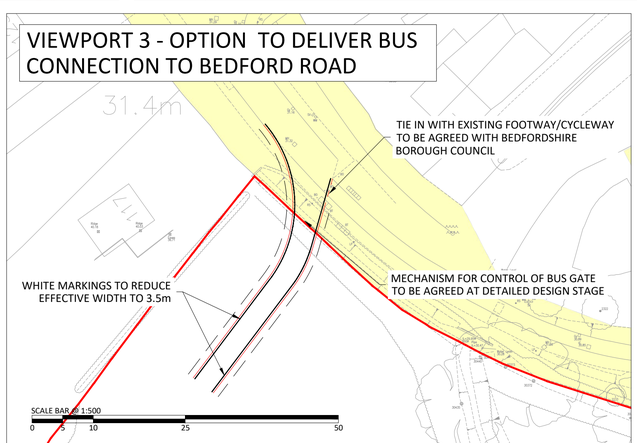
VIEWPORT 2



VIEWPORT 2 - FOOTWAY /CYCLEWAY LINK TO BEDFORD ROAD



VIEWPORT 3 - OPTION TO DELIVER BUS CONNECTION TO BEDFORD ROAD



i-Transport

Grove House, Lutyens Close, Chineham
Basingstoke, Hampshire, RG24 8AG

Tel: 01256 338640

www.i-transport.co.uk

KEY:

- SITE BOUNDARY
- EXTENTS HIGHWAY BOUNDARY
- PUBLIC RIGHT OF WAY

REV	DATE	BY	DESCRIPTION	CHK	APD

STATUS: FOR INFORMATION

TITLE: PROPOSED SITE ACCESS ARRANGEMENTS

PROJECT: LAND EAST OF WIXAMS, WIXAMS

CLIENT: WATES DEVELOPMENTS

DRAWN:	CHECKED:	APPROVED:
MC	MC	TW
PROJECT No:	**SCALE @ A1:**	**DATE:**
ITB15565	AS SHOWN	05.03.20

DRAWING No: ITB15565-GA-001 REV: -

APPENDIX A. Highway Boundary Data

Wilstead	Scale 1:2500 @ A0
Land Registry & Highways overlay on OS mapping	January 2019

APPENDIX B. TRICS Data

Calculation Reference: AUDIT-236601-200309-0339

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST		
	KC	KENT	2 days
04	EAST ANGLIA		
	NF	NORFOLK	2 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	1 days

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

Secondary Filtering 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: 275 to 432 (units:)
Range Selected by User: 250 to 550 (units:)

Parking Spaces Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/11 to 23/09/19

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	2 days
Tuesday	1 days
Wednesday	2 days
Friday	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	1 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)	1
Edge of Town	5

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

Selected Location Sub Categories:

Residential Zone	4
Out of Town	1
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.

Secondary Filtering selection:

Use Class:

C3	6 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
10,001 to 15,000	2 days
20,001 to 25,000	1 days

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

Population within 5 miles:

25,001 to 50,000	1 days
50,001 to 75,000	3 days
75,001 to 100,000	1 days
125,001 to 250,000	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	3 days
1.1 to 1.5	3 days

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

Travel Plan:

Yes	2 days
No	4 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.

PTAL Rating:

No PTAL Present	6 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 DS-03-A-02 MIXED HOUSES DERBYSHIRE
RADBOURNE LANE
DERBY

Edge of Town
Residential Zone
Total Number of dwellings: 371
Survey date: TUESDAY *10/07/18* *Survey Type: MANUAL*

2 KC-03-A-06 MIXED HOUSES & FLATS KENT
MARGATE ROAD
HERNE BAY

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 363
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

3 KC-03-A-07 MIXED HOUSES KENT
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total Number of dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

4 NE-03-A-02 SEMI DETACHED & DETACHED NORTH EAST LINCOLNSHIRE
HANOVER WALK
SCUNTHORPE

Edge of Town
No Sub Category
Total Number of dwellings: 432
Survey date: MONDAY *12/05/14* *Survey Type: MANUAL*

5 NF-03-A-06 MIXED HOUSES NORFOLK
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total Number of dwellings: 275
Survey date: MONDAY *23/09/19* *Survey Type: MANUAL*

6 NF-03-A-07 MIXED HOUSES & FLATS NORFOLK
SILFIELD ROAD
WYMONDHAM

Edge of Town
Out of Town
Total Number of dwellings: 297
Survey date: FRIDAY *20/09/19* *Survey Type: DIRECTIONAL ATC COUNT*

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/A - HOUSES PRIVATELY OWNED
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	6	338	0.086	6	338	0.347	6	338	0.433
08:00 - 09:00	6	338	0.135	6	338	0.415	6	338	0.550
09:00 - 10:00	6	338	0.140	6	338	0.157	6	338	0.297
10:00 - 11:00	6	338	0.115	6	338	0.145	6	338	0.260
11:00 - 12:00	6	338	0.117	6	338	0.129	6	338	0.246
12:00 - 13:00	6	338	0.159	6	338	0.149	6	338	0.308
13:00 - 14:00	6	338	0.154	6	338	0.145	6	338	0.299
14:00 - 15:00	6	338	0.164	6	338	0.187	6	338	0.351
15:00 - 16:00	6	338	0.299	6	338	0.188	6	338	0.487
16:00 - 17:00	6	338	0.321	6	338	0.180	6	338	0.501
17:00 - 18:00	6	338	0.383	6	338	0.170	6	338	0.553
18:00 - 19:00	6	338	0.329	6	338	0.211	6	338	0.540
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.402			2.423			4.825

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:	275 - 432 (units:)
Survey date date range:	01/01/11 - 23/09/19
Number of weekdays (Monday-Friday):	10
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	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.

APPENDIX C. Distribution Model

i-Transport Project No ITB15565
i-Transport Project Title - Wixams

Journey to Work Distribution Model

Broad Destination	Total		Proportion per route	By Route	Route 1	Route 2	Route 3	Route 4	Route 5
	Proportion by Car	Driving a car or van		Proportion by car					
Luton	9.0%	228	50%	4.5%	A6 - South	-	-		
			50%	4.5%	A6 - North	A421 - West	-		
Milton Keynes	6.5%	163	100%	6.5%	A6 - North	A421 - West	-		
Sandy	2.6%	65	70%	1.8%	A6 - North	A421 - East	-		
			30%	0.8%	A6 - North	Bedford Road - East	-		
Briggleswade	0.9%	23	50%	0.5%	A6 - South	-	-		
			50%	0.5%	A6 - North	Bedford Road - East	-		
Cranfield	2.4%	60	50%	1.2%	A6 - North	A421 - West	-		
			50%	1.2%	A6 - South	-	-		
Ampthill	3.7%	94	100%	3.7%	A6 - South	-	-		
Marston Moretaine	0.6%	15	70%	0.4%	A6 - North	A421 - West	-		
			30%	0.2%	A6 - South	-	-		
Shefford	3.4%	85	50%	1.7%	A6 - South	-	-		
			50%	1.7%	A6 - North	Bedford Road - East	-		
Flitwick	1.5%	38	100%	1.5%	A6 - South	-	-		
Harlington	1.2%	30	55%	0.7%	A6 - South	-	-		
			45%	0.5%	A6 - North	A421 - West	-		
Bedford	59.1%	1490	100%	59.1%	A6 - North	A6 - North	-		
Huntingdon	0.9%	23	100%	0.9%	A6 - North	A421 - East	-		
Hemel Hempstead	0.4%	11	50%	0.2%	A6 - North	A421 - West	-		
			50%	0.2%	A6 - South	-	-		
Hitchin	1.1%	27	100%	1.1%	A6 - South	-	-		
Stevenage	0.9%	23	50%	0.5%	A6 - South	-	-		
			50%	0.5%	A6 - North	Bedford Road - East	-		
Northampton	0.5%	13	100%	0.5%	A6 - North	A421 - West	-		
Shortstown	5.3%	133	50%	2.6%	A6 - North	A421 - East	-		
			50%	2.6%	A6 - North	Bedford Road - East	-		
Total	100.0%	2521		100.00%					

Route 1	Proportions of Cars	44%
A6 - South	16%	7%
A6 - North	84%	37%
		0%
	100%	44%

Route 2	Proportions of Cars	44%
A421 - West	14%	6%
A421 - East	5%	2%
Bedford Road - East	6%	3%
-	16%	7%
A6 - North	59%	26%
	100%	44%

Route 3	Proportions of Cars	44%
-	100%	44%
	100%	44.0%

Luton	4.0%
Milton Keynes	2.8%
Sandy	1.1%
Briggleswade	0.4%
Cranfield	1.0%
Ampthill	1.6%
Marston Moretaine	0.3%
Shefford	1.5%
Flitwick	0.7%
Harlington	0.5%
Bedford	26.0%
Huntingdon	0.4%
Hemel Hempstead	0.2%
Hitchin	0.5%
Stevenage	0.4%
Northampton	0.2%
Shortstown	2.3%

i-Transport Project No ITB15565

i-Transport Project Title - Wixams

Residential Gravity Model

Starting Point: Wixams

			2011																		
Location	**Time (mins)**	**Average Journey Time**	**Total Population**	**P/T**	**P/T^2**	**% of total**	**Car driver mode split**		**% of Car Driver**	**% of Car by Route**	**1st Route**		**2nd Route**		**3rd Route**						
Bedford	20	20	106,940	5,347	267	52.2%	**77%**	40.2%	54.9%	100%	A6 - North	54.9%	A6 - North	54.9%	-	54.9%					
Biggleswade	25	25	16,551	662	26	5.2%	**92%**	4.8%	6.5%	50%	A6 - South	3.2%	-	3.2%	-	3.2%					
										50%	A6 - North	3.2%	Bedford Road - East	3.2%	-	3.2%					
Flitwick	20	20	12,998	650	32	6.3%	**83%**	5.2%	7.2%	100%	A6 - South	7.2%	-	7.2%	-	7.2%					
Shortstown	12	12	3,239	270	22	4.4%	**59%**	2.6%	3.5%	50%	A6 - North	1.8%	A421 - East	1.8%	-	1.8%					
										50%	A6 - North	1.8%	Bedford Road - East	1.8%	-	1.8%					
Wilstead	4	4	2,177	544	136	26.6%	**59%**	15.6%	21.3%	100%	A6 - North	21.3%	Bedford Road - East	21.3%	-	21.3%					
Ampthill	16	16	7,028	439	27	5.4%	**91%**	4.9%	6.7%	100%	A6 - South	6.7%	-	6.7%	-	6.7%					
Total			**148,933**	**7,912**	**512**	**100%**	*from census data*		**100.0%**		Total	**100.0%**	Total	**100.0%**	Total	**100.0%**	Total	**0.0%**			0.0%

Summary - From above									
A6 - North	82.9%	A6 - North	54.9%	-	100.0%				
A6 - South	17.1%	-	17.1%						
		Bedford Road - East	26.3%						
		A421 - East	1.8%						
Total	**100.0%**	**Total**	**100%**	**Total**	**100.0%**	**Total**	**0.0%**	**Total**	**0.0%**

Proportion of Non-Commuting Trips by Car Driver 56%

A6 - North	46.4%	A6 - North	30.7%	-	56.0%				
A6 - South	9.6%	-	9.6%						
		Bedford Road - East	14.7%						
		A421 - East	1.0%						
Total	**56.0%**	**Total**	**56%**	**Total**	**56.0%**	**Total**	**0.0%**	**Total**	**0.0%**

i-Transport Project No ITB15565

i-Transport Project Title - Wixams

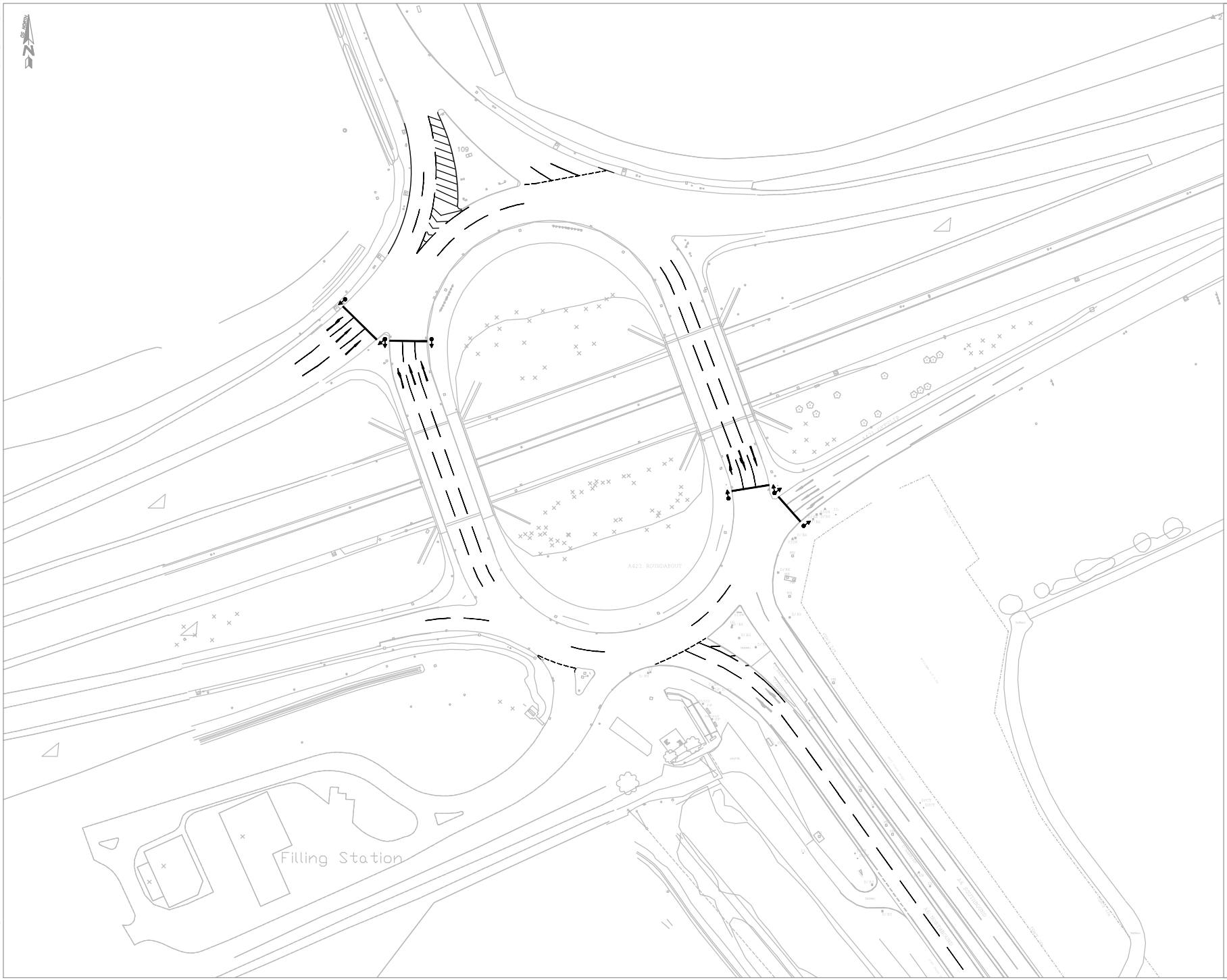
Combined Travel to Work and Gravity Model Distribution - Routing

Route 1	100.00%
A6 - North	83.5%
A6 - South	16.5%

Route 2	100.00%
A421 - West	6.1%
A421 - East	3.3%
Bedford Road - East	17.3%
-	16.5%
A6 - North	56.8%

Route 3	100.00%
-	100.0%

APPENDIX D. A6 / A421 Mitigation Scheme



mode
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notes:

1. this drawing is to be read in conjunction with all other relevant drawings, any discrepancies, errors or omissions to be brought to the attention of overseeing organisation.
2. all dimensions to be checked before commencement of work on site.
3. all dimensions in metres unless otherwise stated.
4. the design is subject to approval of bedfordshire county council.
5. drawing based on drawing 27760 - RG-M-19C - Illustrative Masterplan provided by Barton Willmore.

issue/revision

i/r	date	description
-	04/05/2018	issued

client: GALLAGHER ESTATES

project: Future Wixams Development

project number: J323397

scale: 1:1000@A3

drawing title:
Partial Signalisation Junction Improvements

drawing number:
J32-3397-PS-003

i-Transport – Basingstoke | Manchester | London | Leeds
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