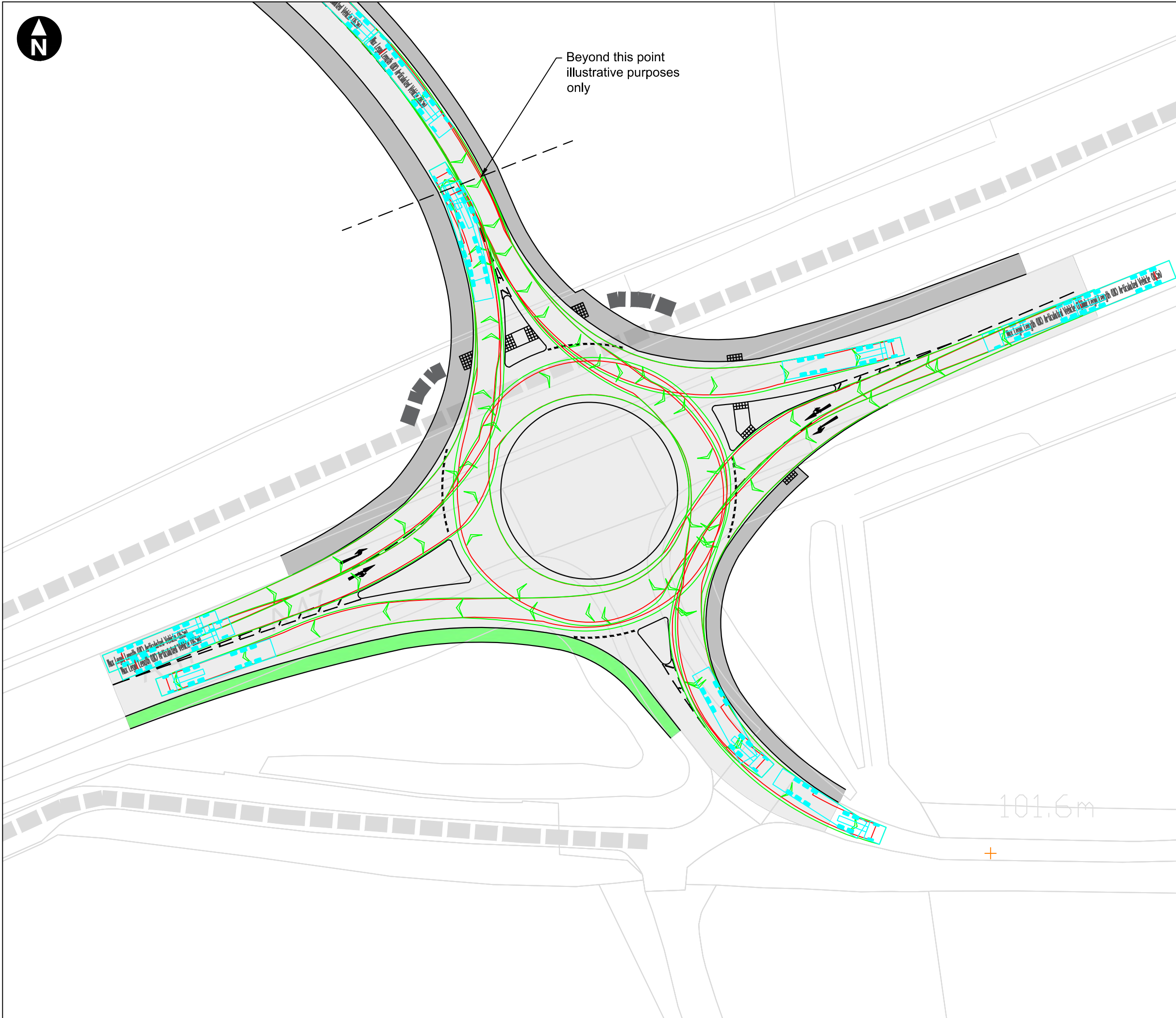


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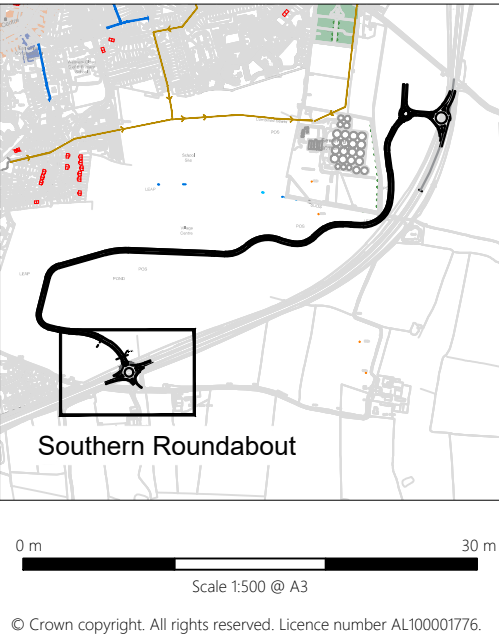
Key

- Vehicle's wheelbase
- Vehicle's body

Note:

- Do not scale from this drawing. All dimensions are in meters unless stated otherwise.
- All levels are in meters relative to Ordnance Datum Newlyn unless stated otherwise.
- This drawing is not for construction.

Max Legal Length (UK) Articulated Vehicle (16.5m)	16.500m
Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.41m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

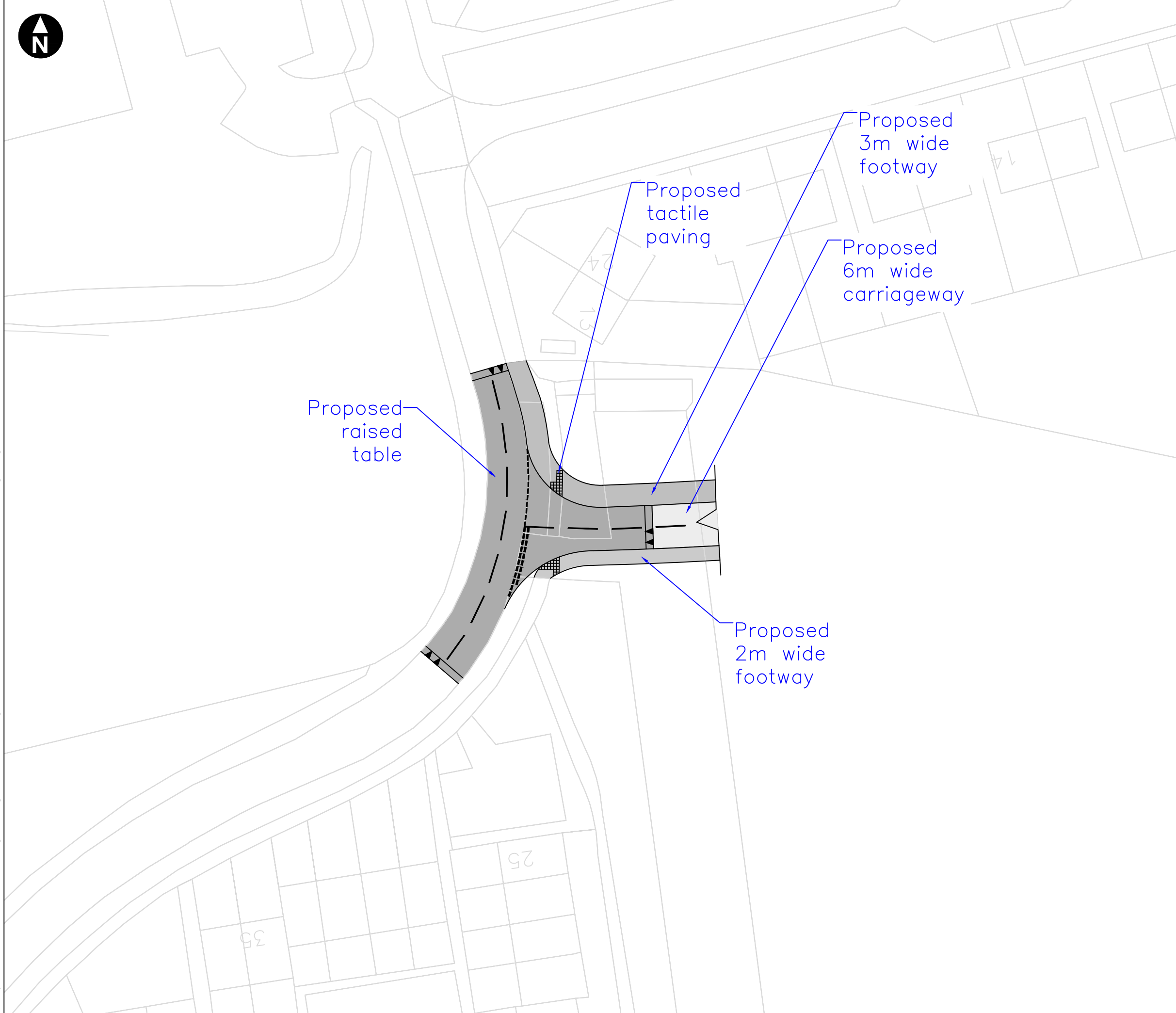


Earl Shilton SUE
Transport Assessment

Figure 4.5
Southern access from A47 - swept path analysis

November 2021

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Key

- Existing
- Proposed carriageway
- Proposed footway
- Proposed raised table

Note:

- Junction table to be designed in accordance with Leicestershire Highway Design Guide (Figures DG6d and DG6e).
- Alternative access to the playing fields will be suitably located beyond the cut line and that the detail will be submitted as part of the relevant reserved matter application.

0 m 30 m
Scale 1:500 @ A3

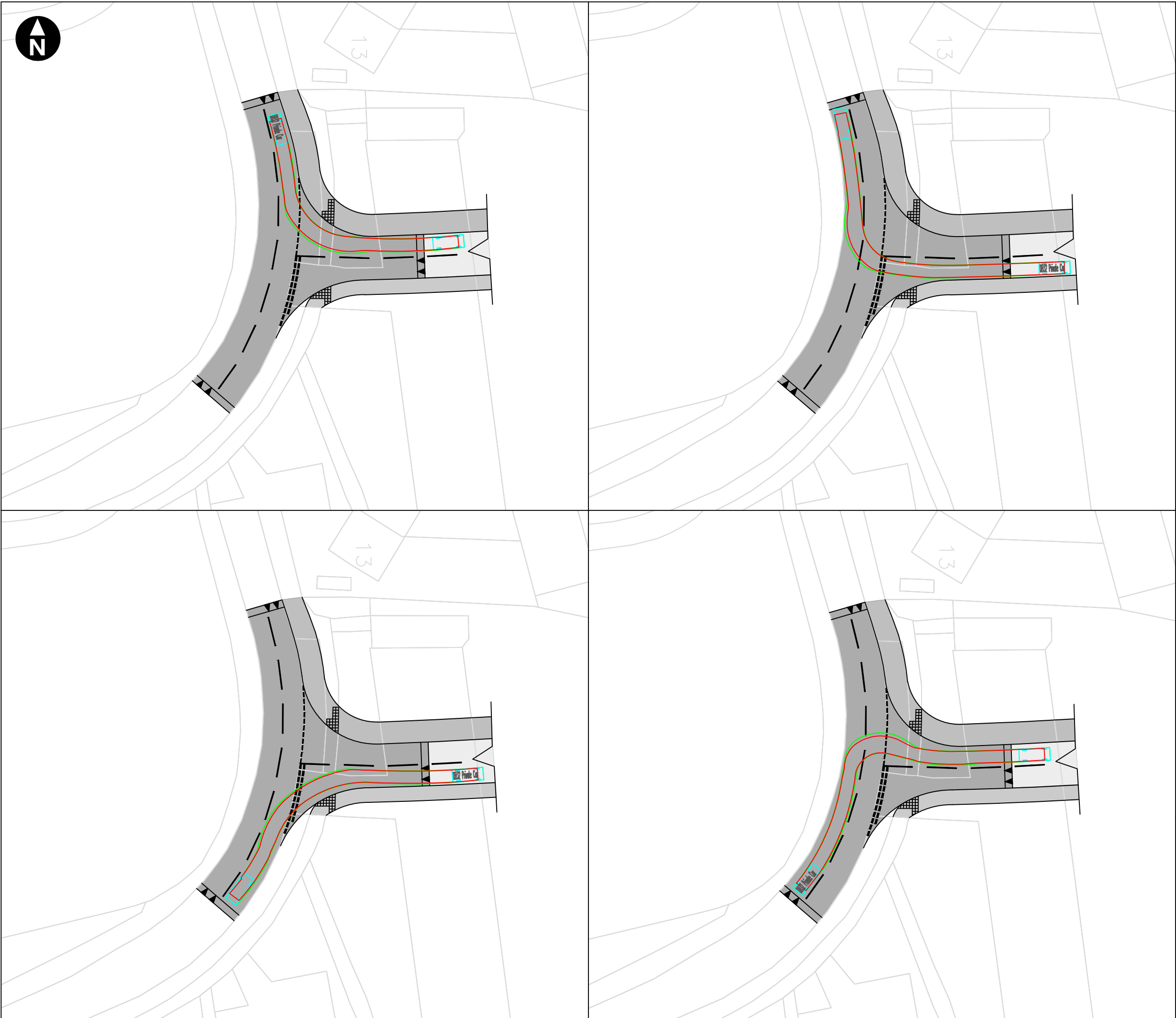
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Earl Shilton SUE
Transport Assessment

Figure 4.6
Proposed site access from Astley Road

November 2021

wood.

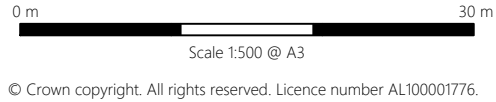


Key

Vehicle's wheelbase

Vehicle's body

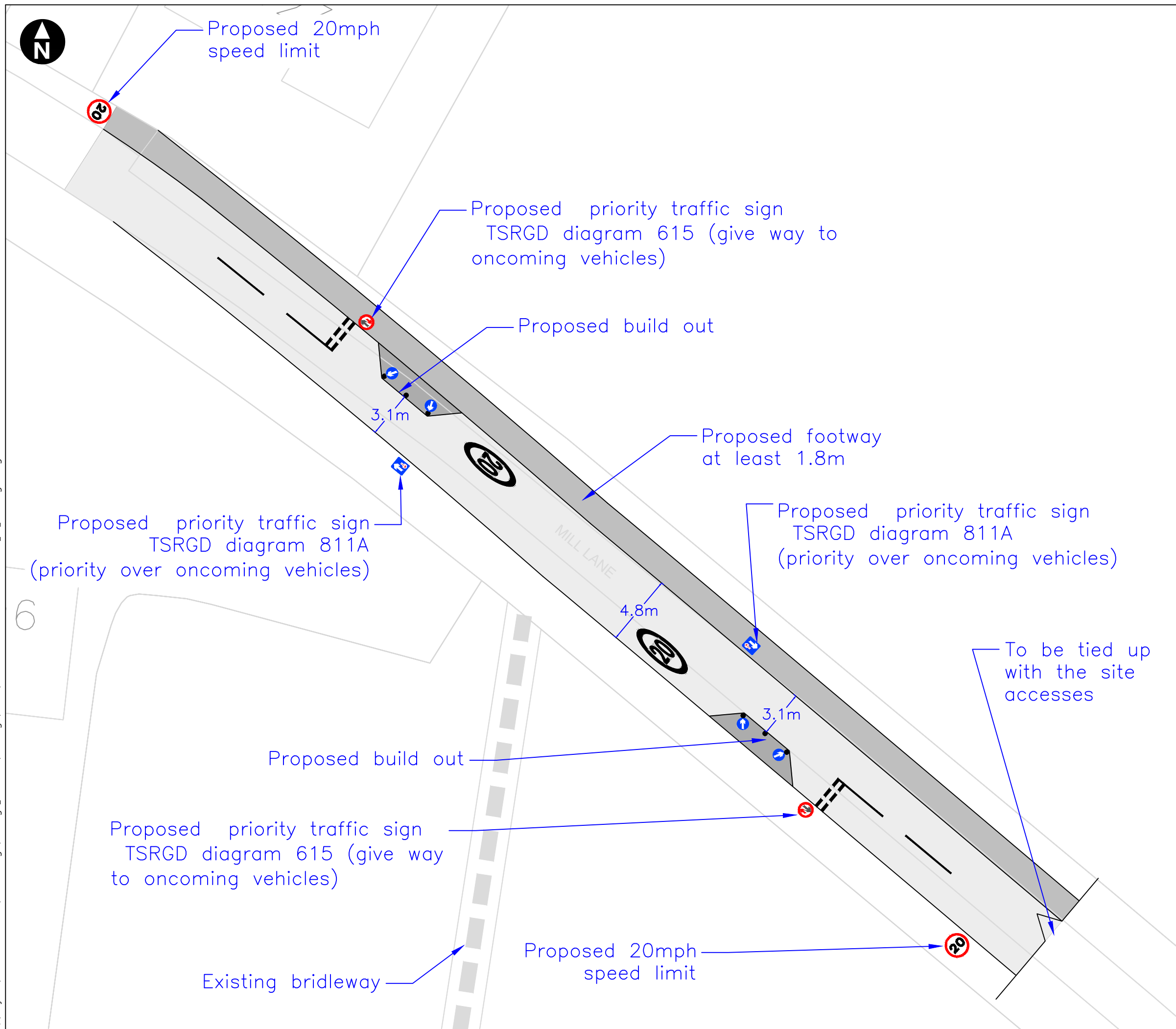
DB32 Private Car	
Overall Length	4.223m
Overall Width	1.715m
Overall Body Height	1.392m
Min Body Ground Clearance	0.253m
Max Track Width	1.629m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	5.780m



Earl Shilton SUE
Transport Assessment

Figure 4.7
Site access from Astley Road - Swept
Path Analysis

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Key

- Existing
- Proposed carriageway
- Proposed footway
- Proposed build out

Note:

1. All the proposed traffic management schemes are indicative and to be subject to agreement with Leicestershire County Council as a local highway authority.
2. Improvements to Mill Lane beyond cut off point and the detail of the proposed access to land north and south of Mill Lane will be submitted as part of the relevant reserved matters applications.

0 m 15 m

Scale 1:250 @ A3

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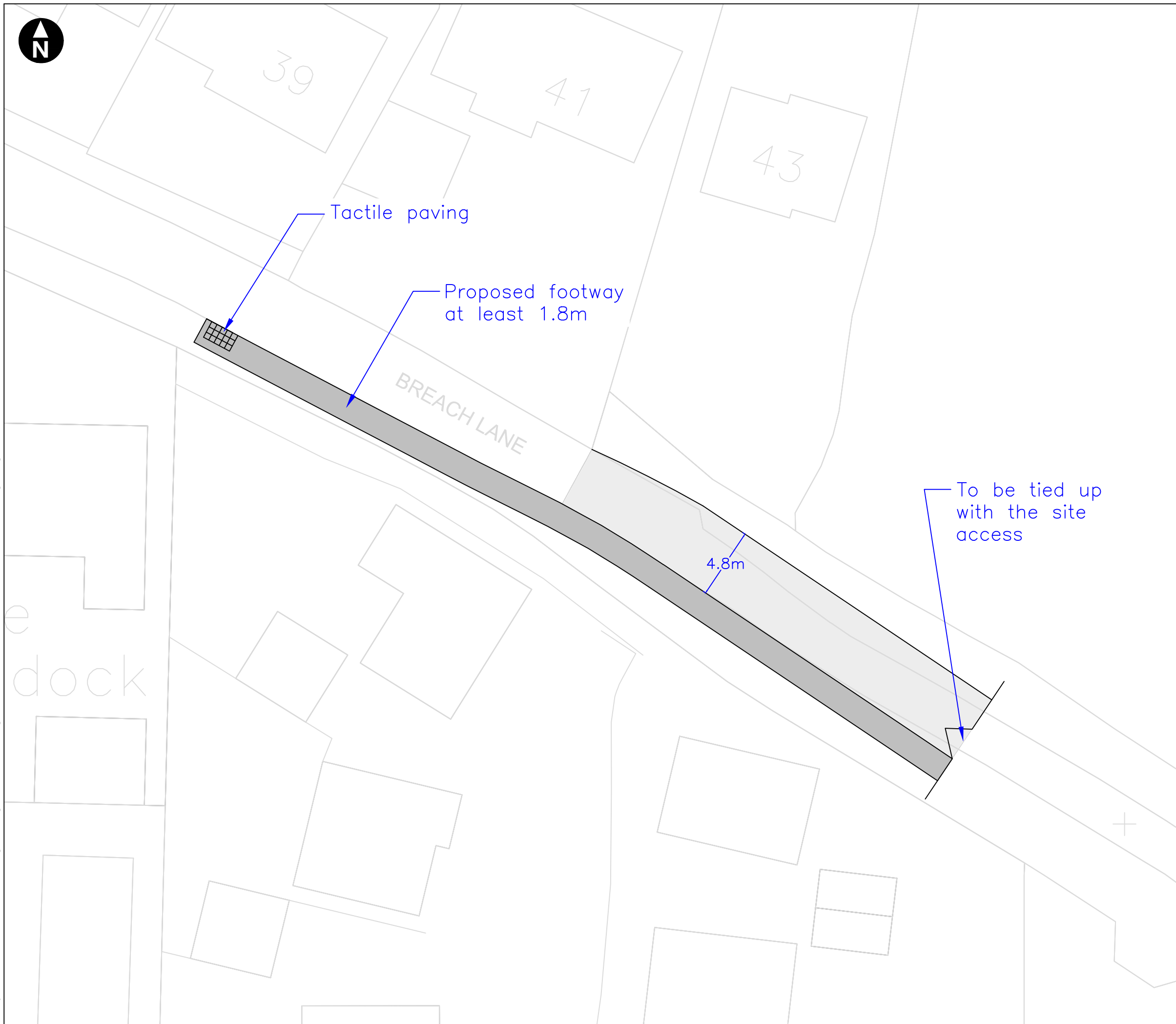
Earl Shilton SUE
Transport Assessment

Figure 4.8
Mill Lane proposed access

November 2021

wood.

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Key

- Existing
- Proposed carriageway
- Proposed footway

Note:

1. All the proposed traffic management schemes are indicative and to be subject to agreement with Leicestershire County Council as a local highway authority.
2. Improvements to Breach Lane beyond cut off point and the detail of the proposed access to land north of Breach Lane will be submitted as part of the relevant reserved matters applications.

0 m 15 m

Scale 1:250 @ A3

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Earl Shilton SUE
Transport Assessment

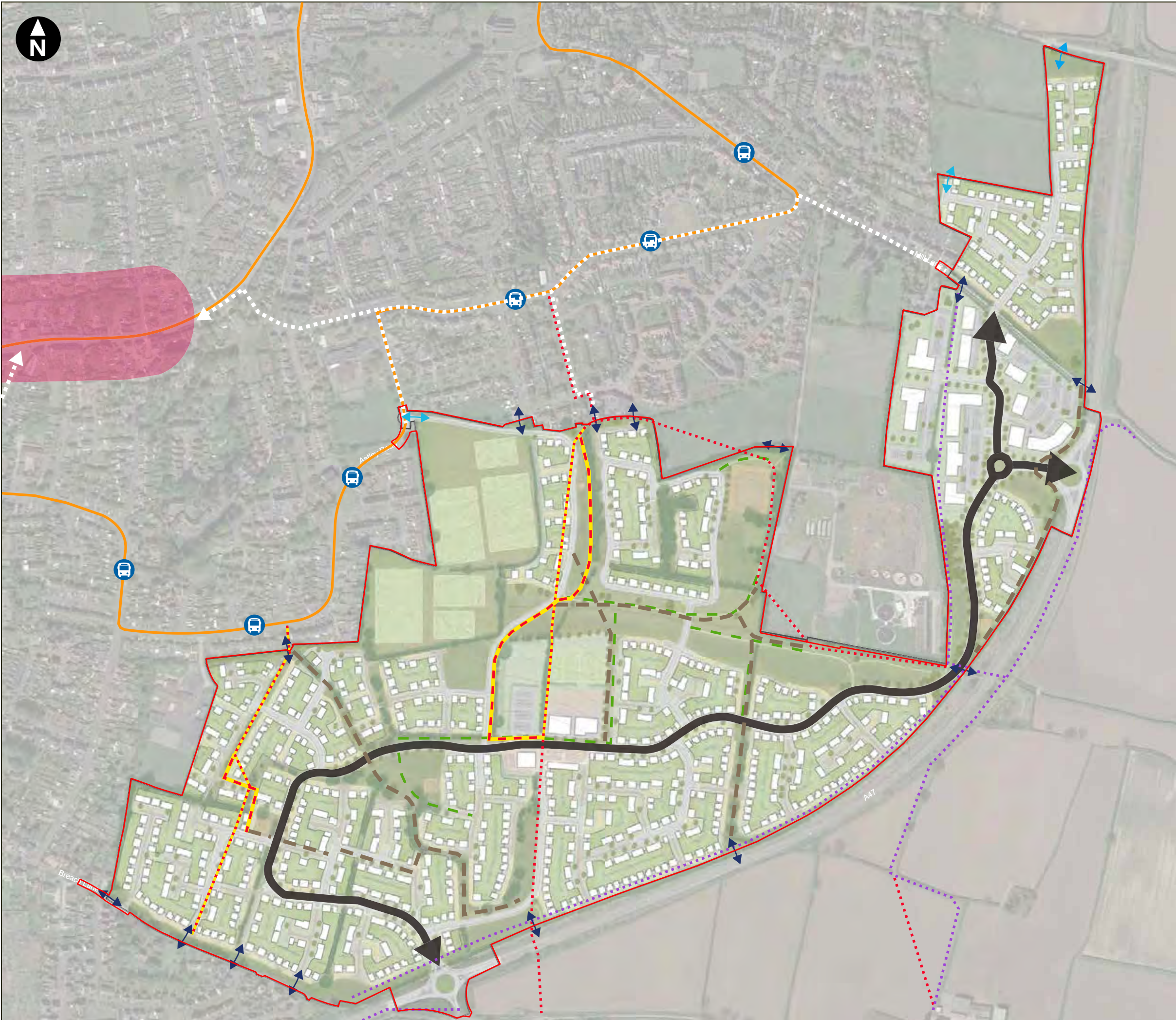
Figure 4.9
Breach Lane proposed access

November 2021

wood.

Originator: SOFIA BROWNING

H:\Projects\41047 South Cheshire Growth Village\5 Design\Drawings\42523-WOOD-XX-XX-FG-A-0007_S3_P01.1 Footpaths and cycleways.ai



Key

- Site boundary
- Main spine road with dedicated cycle provision
- Existing routes to town centre
- Indicative proposed additional footpath link
- Opportunity to improve existing connection
- Potential for additional connection subject to detail design
- Public footpaths
- Public bridleways
- Existing footpath section requiring diversion
- Indicative proposed diversion of existing footpath
- Potential for additional recreation and leisure route
- Existing bus route
- Bus stops
- Town centre

0 m 300 m

Scale 1:5000 @ A3

© 2014 Google

Earl Shilton SUE
Transport Assessment

Figure 4.10
Access and movement strategy

November 2021

wood.

5. Development Traffic Generation and Distribution

5.1 Introduction

- 5.1.1 This TA has considered the traffic generation from the Earl Shilton SUE in order to assess the full traffic implications. 42523-WOOD-XX-XX-TN-OT-0004_S3_P01_Traffic Gen Tech Note v5ii included in **Appendix C** sets out the approach to traffic generation agreed with LCC Highways and National Highways.
- 5.1.2 During the scoping process, LCC Highways identified that the approach to identifying the traffic generation for the Proposed Development would need to be consistent with that already agreed recently for the Barwell SUE.
- 5.1.3 Traffic modelling has been undertaken by WSP, a transport modelling consultant that is approved under the LCC Modelling Framework. Two forecast years have been considered – the year of opening, identified as 2026 and the year of completion, identified as 2036.

The Earl Shilton SUE Scheme Proposals

- 5.1.4 Based on the Proposed Development details set out in **Section 4** the following land use schedule has been used as the basis for assessment in this TA. It should be noted that land uses (such as open space) that are not included in the list below are not considered to generate traffic in the AM or PM peak periods and have therefore been discounted from the assessment in this TA:
- 1,600 dwellings (the full SUE allocation rather than the OPA and for the purpose of the assessment, 100% private has been assumed thus providing a worst case scenario);
 - 2,000m² GFA (gross floor area) of B1 (this is attached to the B2 and B8, but for the purpose of the assessment, this has been assumed to be standalone office space which will represent a worst case scenario);
 - 11,400m² GFA of B2 (light industry);
 - 11,400m² GFA of B8 (warehousing);
 - 2,000m² GFA of local shops; and
 - 420 pupils (two form entry) primary school.

5.2 Development Trip Rates

- 5.2.1 Traffic generation has been calculated based on a combination of trip rates that LCC Highways had already agreed with the Barwell SUE transport consultant and trip rates derived from the latest version of the TRICS database for those land uses that are not part of the Barwell SUE.
- 5.2.2 The trip rates for the Barwell SUE have been assumed for the following land uses:
- Residential (private dwellings);
 - Employment – B2;
 - Retail – local shops; and

- Education – primary school.

- 5.2.3 The Barwell SUE trip rate for B8 has not been adopted as the trip rate identified by Wood is considered to be more robust and includes HGV rates.
- 5.2.4 The Barwell SUE development land use mix does not include B1 employment.
- 5.2.5 The commercial land uses will comprise a mix of blended uses within the new Use Class Order E. For the purpose of the TA, local retail has been assumed as the worst-case scenario traffic generator and the Barwell SUE trip rate has been adopted.
- 5.2.6 A summary of the resultant total vehicular trip rates is provided in **Table 5.1**. The TRICS outputs generated by Wood are included in the technical note in **Appendix C**.

Table 5.1 Summary of Trip Rates – Total Vehicles

Land Use	Quantum of Development	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
		Arrivals	Departures	Arrivals	Departures
Residential (private dwellings)*	Dwelling	0.151	0.441	0.392	0.160
Employment B1**	100m2 GFA	1.825	0.142	0.13	1.753
Employment B2*	100m2 GFA	0.392	0.181	0.130	0.395
Employment B8**	100m2 GFA	0.262	0.177	0.154	0.290
Retail - Local Shops*	100m2 GFA	6.209	6.019	6.777	7.062
Education - Primary School*	Pupil	0.285	0.174	0.021	0.035

Notes: * Trip rate same as for Barwell SUE ** Trip rate identified by Wood

- 5.2.7 The Barwell SUE traffic generation note does not include trip rates for HGVs, therefore the TRICS outputs generated by Wood have been used. A summary of the resultant HGV trip rates is provided in **Table 5.2**. The TRICS outputs generated by Wood are included in **Appendix C**.

Table 5.2 Summary of Trip Rates – HGVs

Land Use	Quantum of Development	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
		Arrivals	Departures	Arrivals	Departures
Employment B1	100m2 GFA	0.005	0.000	0	0
Employment B2	100m2 GFA	0.022	0.016	0.003	0.002
Employment B8	100m2 GFA	0.050	0.088	0.092	0.058
Retail - Local Shops	100m2 GFA	0.107	0.092	0.036	0.05

- 5.2.8 These trip rates have been used to develop the total traffic generation estimates for the Earl Shilton SUE. The following sections set out the details of this traffic generation as well as the assumptions regarding internalisation of the development traffic for the Earl Shilton SUE.

5.3 Earl Shilton Traffic Generation

Total Traffic Generation

- 5.3.1 Based on the trip rates set out above and anticipated land use schedule **Table 5.3** sets out the proposed total traffic generation for all vehicles and **Table 5.4** sets out the total HGV movements.

Table 5.3 Total Development Traffic - Earl Shilton SUE

Land Use	Quantum of Development	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
		Arrivals	Departures	Arrivals	Departures
Residential (private dwellings)	1600 dwellings	242	706	627	256
Employment B1	2,000m2 GFA	37	3	3	35
Employment B2	11,400m2 GFA	45	21	15	45
Employment B8	11,400m2 GFA	30	20	18	33
Retail - Local Shops	2,000m2 GFA	124	120	136	141
Education - Primary School	420 pupils	120	73	9	15
Total		598	943	808	525

- 5.3.2 The number of HGVs has been calculated based on the trip rates in **Table 5.2** and summarised in **Table 5.4**.

Table 5.4 Total Development HGVs - Earl Shilton SUE

Land Use	Quantum of Development	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
		Arrivals	Departures	Arrivals	Departures
Employment B1	2,000m ² GFA	0	0	0	0
Employment B2	11,400m ² GFA	3	2	0	0
Employment B8	11,400m ² GFA	6	10	10	7
Retail - Local Shops	2,000m ² GFA	2	2	1	1
Total		11	14	11	8

Adjustments for Internalisation

Primary School

- 5.3.3 The phasing of the school is unknown at this stage, however, given the scale of the development and based on Wood's experience of other SUE developments, it is anticipated that the opening of the school would be required by the time that the 300th dwelling is occupied. Before the school is built and opened, school children from the SUE will need to be accommodated in the local schools which are near to the periphery of the SUE, and it is acknowledged that once the school does open, it will likely enrol children from the surrounding area outside of the SUE.
- 5.3.4 The assumption adopted for the 2014 draft TA was that each household generates 0.24 primary school pupils, which, based on 1,600 dwellings for the allocation as a whole, would result in 384 primary school pupils which represents 91.4% of the 2FE school population of 420 pupils. The remaining 36 pupils (8.4% of the school) would be expected to be from a local catchment around the school from the existing residential areas, which are within walkable distances. Whilst it was considered robust to assume that 80% of pupils will be from the SUE as a whole (1,600 dwelling allocation), for the purpose of consistency with the Barwell SUE, it has been assumed that 50% of the pupils will be from within the SUE (and are internal trips, i.e. from within the Site) and 50% will be from outside the SUE (external trips).
- 5.3.5 The resultant traffic generation is set out in **Table 5.5**.

Table 5.5 Primary School – Internal and External Trips

Land Use	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
	Arrivals	Departures	Arrivals	Departures
Total Primary School Trips	120	73	9	15
50% External Pupil Trips	60	37	5*	5
50% Internal Trips	60	36	4*	5

* rounded up

Employment

- 5.3.6 For the previous assessment, it was suggested by LCC Highways that reference should be made to the Barwell SUE TA regarding the level of internal trips. The original Barwell TA identified that 11.4% of residents would work locally and travel by sustainable means which was based on the Journey to Work data from the 2001 Census.
- 5.3.7 A revised assessment of the 2011 journey to work census data shows that 11% of the working population in Earl Shilton work in Earl Shilton. Therefore, for the purpose of this assessment it is assumed that 11% of the employment trips would originate from within Earl Shilton, comprising the existing town and the proposed SUE.
- 5.3.8 To determine the level of internalisation within the SUE, the following calculation has been undertaken.
- Existing Earl Shilton population - 10,047 residents;
 - Estimated population for Earl Shilton SUE - 3,680 residents based on 2.3 persons per household from the 2011 Census;

- The combined population would be 13,727 residents, of which Earl Shilton would comprise 27% of the total population; and
- Therefore, of the 11% local employment trips, it is assumed that 3% of the trips will be internal to the Earl Shilton SUE and 8% external but from Earl Shilton.

5.3.9 The approach taken by the Barwell SUE assumes that 6.8% would be internal to the SUE, which is lower than that assumed for Earl Shilton SUE.

Summary of Traffic Generation

Based on the methodology identified in **Section 5.3** above, a summary of the traffic generation is set out in **Table 5.6** and **Table 5.7**.

Table 5.6 AM Peak – Breakdown of Traffic Generation

Land use	Total Traffic Generation		Internal Traffic		External Traffic	
	Arrival	Departure	Arrival	Departure	Arrival	Departure
Total residential	242	706			242	706
Employment - B1	37	3	1	0	36	3
Employment – B2	45	21	1	1	44	20
Employment – B8	30	20	1	0	29	20
Retail - Local Shops	124	120			124	120
Education – Primary School	120	73	60	36	60	37
Total Vehicles	598	943	62	37	536	906
HGVs	11	14			11	14

5.3.10 **Table 5.7** provides a summary of the total traffic generation, the internal traffic and the resultant external traffic in the PM peak hour.

Table 5.7 PM Peak – Breakdown of Traffic Generation

Land use	Total Traffic Generation		Internal Traffic		External Traffic	
	Arrival	Departure	Arrival	Departure	Arrival	Departure
Total residential	627	256			627	256
Employment - B1	3	35	0	1	3	34
Employment – B2	15	45	0	1	15	44
Employment – B8	18	33	0	1	18	32

Land use	Total Traffic Generation		Internal Traffic		External Traffic	
	Arrival	Departure	Arrival	Departure	Arrival	Departure
Retail - Local Shops	136	141			136	141
Education – Primary School	9	15	4	5	5	10
Total Vehicles	808	525	4	8	804	517
HGVs	11	8			11	8

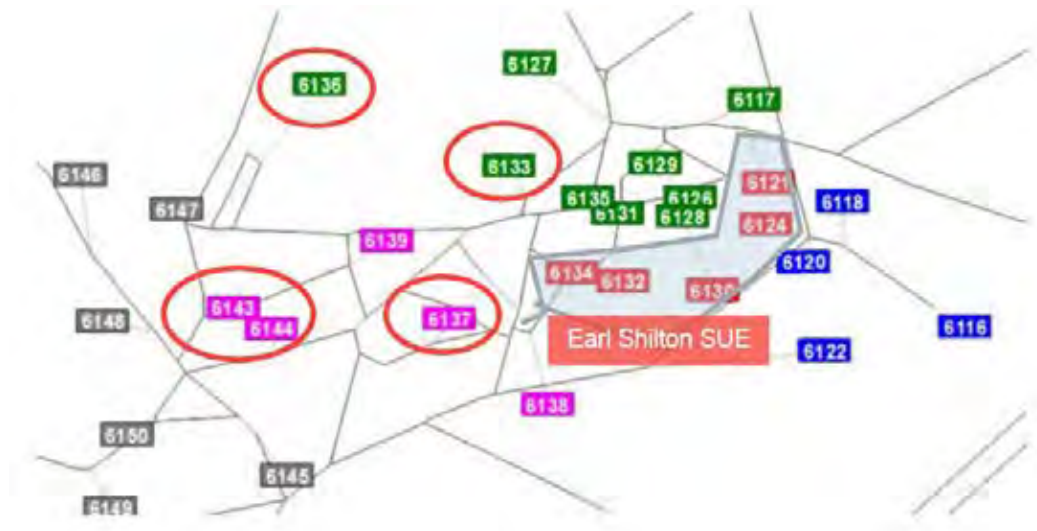
5.4 Development Traffic Distribution

- 5.4.1 Development traffic distribution has been derived from the PRTM with relevant model run simulations undertaken by consultants WSP on behalf of the Applicant. The PRTM is a SATURN (Simulation and Assignment of Traffic to Urban Road Network) model covering the County and the wider Midlands area. PRTM is an extension of the LLITM.
- 5.4.2 A technical note produced by WSP which sets out the process and results of the strategic traffic assessment is provided at **Appendix D**. The Proposed Development traffic distribution has been based on the PRTM model. The trip distribution for the Proposed Development has been undertaken based on the 'distribution from parent zones' approach. In this approach a set of donor zones near a new development that reflect similar land use characteristics are identified and are used for informing the distribution of the trips generated by the new development.

Parent Zones and Locations

- 5.4.3 The proposed Earl Shilton SUE development site is a mixed-use development located on the southern and eastern edges of Earl Shilton. Within the PRTM forecast model, the two existing zones, 6124 and 6130, with no significant existing development were used to represent the Earl Shilton SUE development in the Baseline + Development Scenario.
- 5.4.4 The trip distribution for the Proposed Development has been undertaken using a demand weighted distribution from a set of nearby parent zones of a similar land use type. The trip distribution of the identified parent zones was first reviewed in the base year PRTM model and, when found satisfactory, the demand weighted distribution of the same zones in the PRTM forecast model was used for the trip distribution for the new zones representing the Earl Shilton SUE development. This approach allows the forecast years to incorporate future interactions between the existing PRTM zones and other growth locations around the town.
- 5.4.5 The PRTM model parent zones used to inform the Earl Shilton SUE Development trip distribution include zones 6133, 6136, 6137, 6144 and 6143 where land use characteristics are similar to the Earl Shilton SUE Development site. These parent zones are circled in **Figure 5.1**.

Figure 5.1 Parent Zones used for trip distribution – PRTM



Distribution

5.4.6 The trip distribution for trips related to the Proposed Development have been, analysed using select link analysis (SLA) of the SATURN highway model for 2026 AM and PM peak hours Results are presented in **Figure 5.2** and **Figure 5.3** respectively.

Figure 5.2 Development trip distribution 2026 AM Peak – PRTM Model

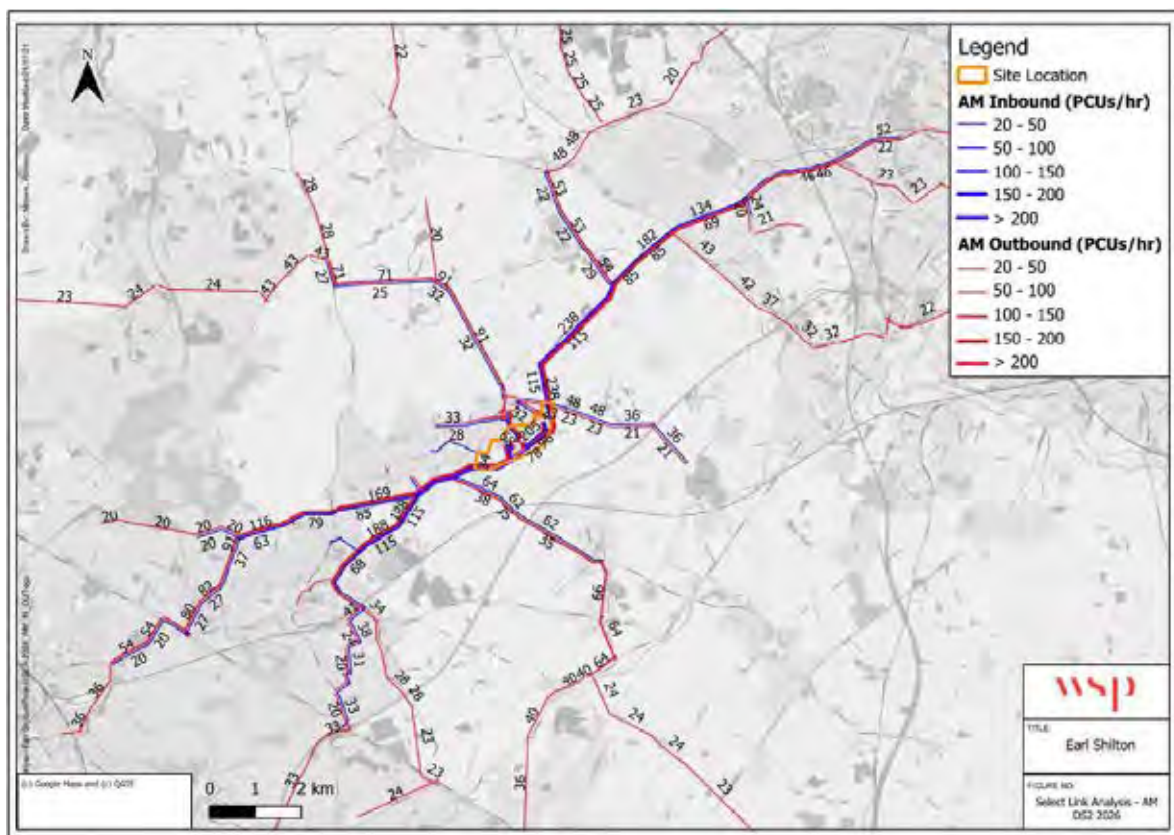
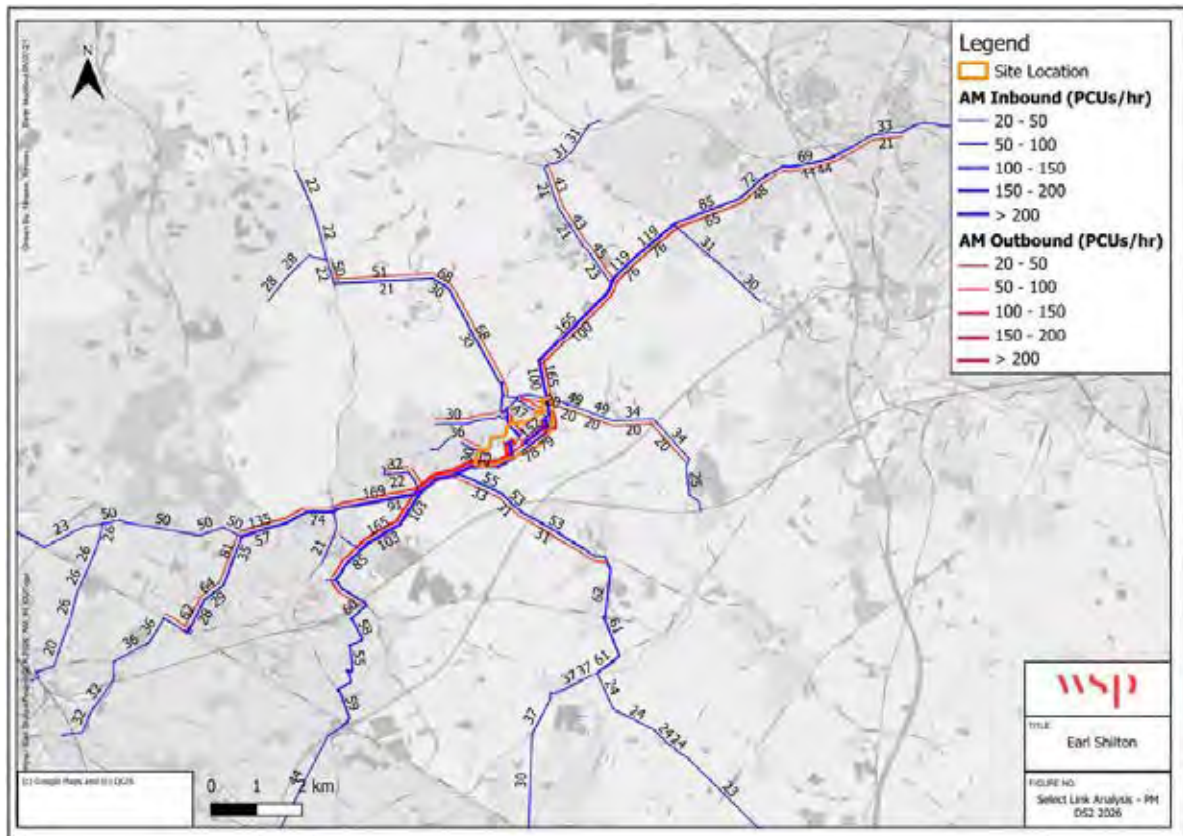


Figure 5.3 Development trip distribution 2026 PM Peak – PRTM Model



5.4.7 The distribution for 2036 AM and PM peak hours are presented in **Figure 5.4** and **Figure 5.5**.

Figure 5.4 Development trip distribution 2036 AM Peak – PRTM Model

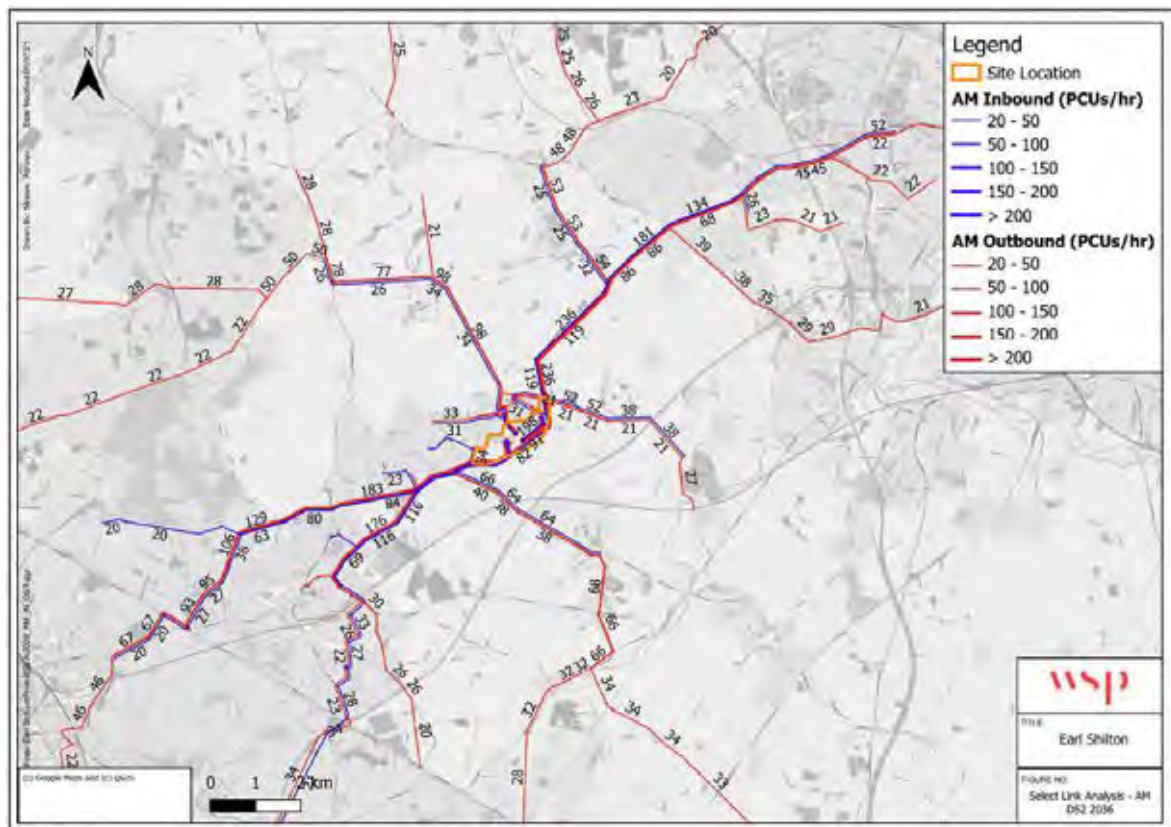
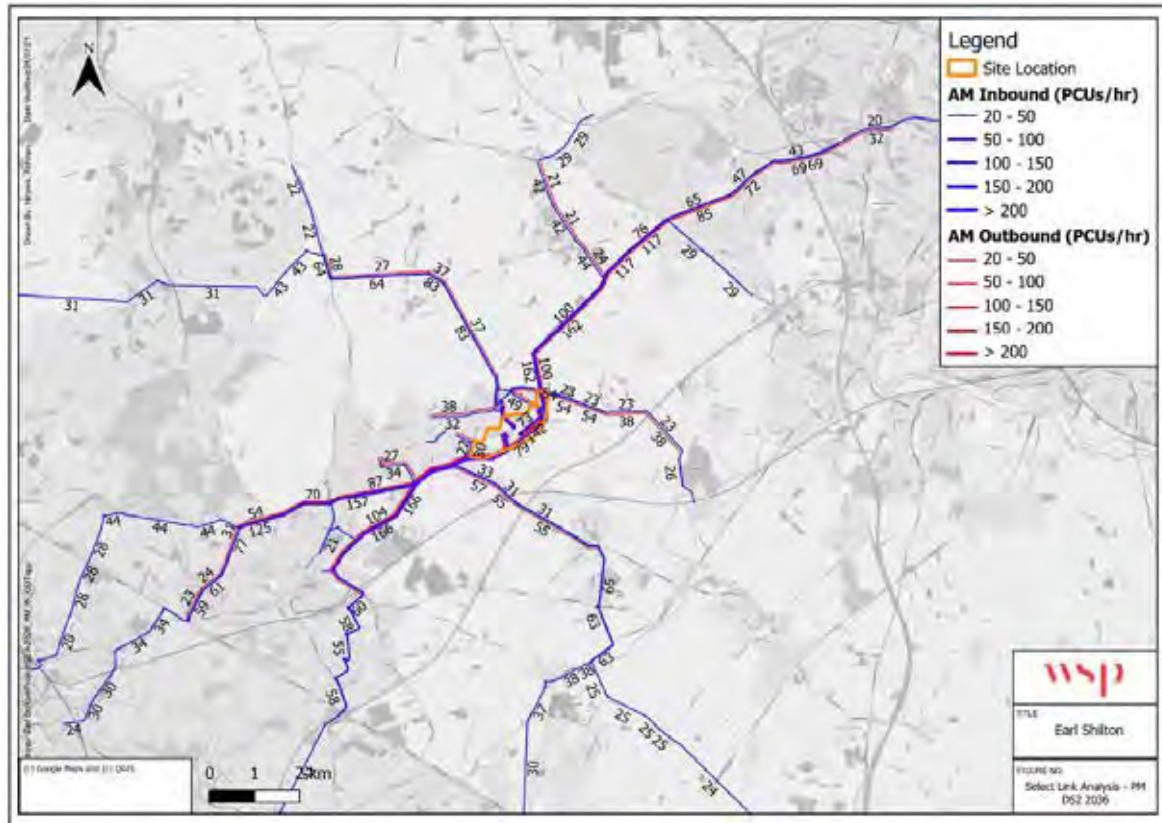


Figure 5.5 Development trip distribution 2036 PM Peak – PRTM Model



- 5.4.8 In **Figures 5.2 to 5.5**, the traffic going to the development (inbound flows) are shown in blue, whereas traffic departing from the development (outbound flows) are shown in red. The flows are measured in passenger car equivalent units per hour (PCUs/hr).
- 5.4.9 It is apparent that the majority of trips from the Earl Shilton development distribute towards urban parts of Leicester and Hinckley; A small proportion of trips travel to the North i.e. Kirkby Mallory.
- 5.4.10 The key roads impacted by traffic related to the Proposed Development include the A47, and B581, and Shilton Road.

6. Traffic Impact Assessment

6.1 Introduction

- 6.1.1 This section sets out the assessment scenarios, the scope of the PRTM work, proportional impact assessment and junction capacity assessment.

6.2 Assessment Scenarios

- 6.2.1 In order to establish a basis for the understanding of the impact of any new development, it is necessary to develop the future baseline traffic flows. It has been agreed with LCC and National Highways that assessment would be undertaken of the opening year which is 2026 and the completion year which is 2036.
- 6.2.2 The traffic flows for all the scenarios are based on LCC's PRTM. WSP has provided the following information from the PRTM:
- 2021 Baseline;
 - 2026 Future Baseline;
 - 2026 + Development – for the purpose of assessment of impact on the SRN in line with Circular 02/13);
 - 2036 Future Baseline;
 - 2036 + Development (Earl Shilton); and
 - selected link analysis of the Proposed Development traffic on the road network in 2026 and 2036.
- 6.2.3 The data provided to Wood from the PRTM has been provided in **Appendix E**.
- 6.2.4 The following section provides a summary of how the traffic flows for the Baseline and Baseline + Development scenarios have been developed in PRTM model.

Production of the Baseline Scenario

- 6.2.5 The LCC Modelling Framework team provided WSP with the latest Baseline Core Scenario in November/December 2020. This Core Scenario includes all committed schemes and developments proposed for each corresponding forecast year and incorporates the latest planning data provided by HBBC.
- 6.2.6 WSP reviewed the PRTM planning inputs and uncertainty logs which confirm that the model includes the proposed SUE access arrangements, highway improvements associated with SUE and the Earl Shilton SUE development. The Baseline Scenario models using the National Trip End Model (NTEM) constrained version of PRTM has been updated to remove the existing Earl Shilton SUE and associated infrastructure.
- 6.2.7 For the traffic impact assessment of any development, it is important that the 'Baseline Scenario', against which the impact of the development is assessed is based on the most realistic projection of transport schemes and planned land use that would be present in the locality of the proposed development in the assessment year.

- 6.2.8 In the context of the Earl Shilton SUE, the Barwell SUE is a major committed development nearby and is likely to have a significant impact on the traffic in the surrounding area. It was therefore important that the Barwell SUE is included in the 'Baseline Scenario' of the model used for the Earl Shilton assessment. The modelled assumptions were checked and updated using the Stantec Barwell trip generation note (*Barwell Sustainable Urban Extension, Transport Technical Note 03*, 11th September 2020).

Production of Baseline + Development Scenario

- 6.2.9 The 'Baseline + Development Scenario' for Earl Shilton SUE was built on the Baseline Scenario with the Earl Shilton SUE demand and infrastructure changes associated with the Proposed Development added in.
- 6.2.10 The PRTM currently represents Earl Shilton SUE with five zones (6121, 6124, 6130, 6132 and 6134). Three of these zones (6121, 6132 and 6134) contain existing demand and other developments in addition to the proposed Earl Shilton SUE (see **Figure 5.1**). Using mostly empty zones with little to no existing development would enable easier analysis of the inbound and outbound trips of the Proposed Development via select link analysis in the Baseline + Development Scenario. Therefore, the two existing zones, 6124 and 6130, with no significant existing development were used to represent the Earl Shilton SUE development in the Baseline + Development Scenario.

6.3 PRTM Modelling

- 6.3.1 As mentioned in **Section 5.4**, all the traffic data for transport assessments were provided by WSP from PRTM. The Earl Shilton SUE development assessment has been undertaken using PRTM forecast model for AM and PM peak hours.
- 6.3.2 The development proposals identified in **Section 4** were incorporated in the PRTM. The coding of proposed access and localised highway access arrangements was undertaken in SATURN based on scheme drawings provided by Wood.
- 6.3.3 The following modelling scenarios were generated to undertake the traffic modelling for the Earl Shilton SUE for AM and PM peak for each scenario.

2021 Forecast Year

- 2021 Do Minimum: Core – no development and no associated infrastructure (this is assumed to be the 'existing' baseline).

2026 Forecast Year

- 2026 Do Minimum: Core – no development and no associated infrastructure.
 - 2026 Do Something: Core + Full Development + Access Arrangements – 100% occupancy.
 - 2036 Forecast Year2036 Do Minimum: Core – no development and no associated infrastructure.
 - 2036 Do Something: Core + Full Development + Access Arrangements – 100% occupancy.
- 6.3.4 Traffic flows from the relevant scenarios mentioned above have been used for all the transport assessments related to the proposed development.

6.4 Development Traffic Proportional Assessment

- 6.4.1 In order to identify the junctions that require a detailed assessment of traffic impact, an assessment has been undertaken of the proportional increase in traffic as a result of the Proposed Development. This has been undertaken for the 2036 Future year.
- 6.4.2 An initial assessment of the impact of the proposed development has been investigated using the Geoffrey E. Havers (GEH) statistic to compare the baseline data and the with development traffic volumes. This a form of the Chi-squared statistic that incorporates both relative and absolute errors and is defined as:

$$GEH = \sqrt{\frac{(M - C)^2}{(M + C)/2}}$$

In this instance M is the base flow and C is the base plus development flow.

- 6.4.3 Traffic flows were considered to be materially the same if the GEH value was less than 2 or the percentage difference was less than 5%. A GEH less between 2 and 5 was considered to be a minor change, whilst a GEH greater than 5 was considered to be a material change in flows and a junction assessment would be required.
- 6.4.4 **Table 6.1** sets out the impact of the Proposed Development in the 2036 Future year.

Table 6.1 Traffic Flow Impact

Jct.	Description	AM					PM				
		2036 B	2036 B+D	Diff.	% Diff	GEH	2036 B	2036 B+D	Diff.	% Diff	GEH
1	A47/Leicester Road (N);	2961	3077	116	3.9%	2.1	3153	3358	205	6.5%	3.6
2	A47/Station Road (B581)	2268	2442	174	7.7%	3.6	2371	2686	315	13.3%	6.3
3	A47/Wilkinson Road	1577	1784	207	13.1%	5.0	1549	1859	310	20.0%	7.5
4	A47/Masefield Drive	1241	1471	230	18.5%	6.2	1093	1502	409	37.4%	11.4
5	A47/Leicester Road (W).	1768	1658	-110	-6.2%	2.7	1641	1582	-59	-3.6%	1.5
6	A47 Hinckley Road/B582 Leicester Lane/B582 Desford Road	3401	3481	80	2.4%	1.4	3435	3463	28	0.8%	0.5
7	A47 Normandy Way/A447 Ashby Road/B4667 Ashby Road	2971	3030	59	2.0%	1.1	3029	3086	57	1.9%	1.0

Jct.	Description	AM					PM				
		2036 B	2036 B+D	Diff.	% Diff	GEH	2036 B	2036 B+D	Diff.	% Diff	GEH
8	A5(T) Watling Street/A47 Dodwell Road/B4666 Coventry Road	4534	4567	33	0.7%	0.5	4279	4285	6	0.1%	0.1
9	A5(T) Watling Street/A47 Long Shoot	3534	3570	36	1.0%	0.6	3384	3403	19	0.6%	0.3

B = Base, D = Development Traffic; No material change Minor change Material change

6.4.5 In the 2036 Future year scenario, there is no material impact on junctions 6 to 9 whereas there is on junctions 1 to 4. There is also minor material impact on junction 5. Therefore, junctions 1, 2, 3, 4 and 5 need to be modelled to assess the impact of the Proposed Development.

Conclusion

6.4.6 It was concluded that the Study Area should be refined to junctions 1 to 5 for standalone junction modelling.

6.5 Scope of Assessment

6.5.1 The assessment of the five junctions (identified in **Section 6.4**) has been undertaken for all future year scenarios (2026 Baseline, 2036 Baseline and 2036 + Development) and the 2021 Baseline Scenario to understand the capacity of the existing junctions. The proposed site access junctions have been assessed for 2036 with development scenario as these are new junctions. Although the Proposed Development will be opened in 2026, it will be completed in 2036 when the impact of the development related traffic will be highest. The junctions assessed identified below.

Junction Capacity Assessments

6.5.2 The following junctions have been assessed.

Proposed Access Junctions (2036 + Development scenario only)

- A47/North Site Access Junction;
- A47/South Site Access Junction; and
- Astley Road/Site Access Junction.

Existing Junctions

- A47/Leicester Road (N);
- A47/Station Road (B581);
- A47/Wilkinson Road;
- A47/Masefield Drive; and

- A47/Leicester Road (W).

Modelling Thresholds

6.5.3 The traffic junctions have been assessed using the following programmes:

- Signal Junctions – LinSig 3; and
- Roundabout and Priority Junctions – Junctions 9.

6.5.4 The models provide results which show the capacity of the junctions. For LinSig models:

- all arms with results of a degree of saturation (DOS) over the standard threshold of 90% are considered to be above capacity;
- all arms with results of a degree of saturation (DOS) below the standard threshold of 90% are considered to be below capacity; and
- all arms with results of a degree of saturation (DOS) at the standard threshold of 90% are considered to be at capacity.

6.5.5 For Junction 9 models:

- all arms with results of ratio of flow to capacity (RFC) over the standard threshold of 0.85 are considered to be above capacity;
- all arms with results of ratio of flow to capacity (RFC) below the standard threshold of 0.85 are considered to be below capacity; and
- all arms with results of ratio of flow to capacity (RFC) at the standard threshold of 0.85 are considered to be at capacity.

6.5.6 These thresholds which have been used to understand the requirement for mitigation as a result of the development, as it can be judged as to if the impact of the development traffic pushes junctions from having spare capacity to being over capacity. If this is the case, then mitigation may be required.

6.6 Access Junctions

6.6.1 This section summarises the capacity assessments of the proposed site access junctions.

A47 North Access Junction

6.6.2 This proposed site access junction has been assessed to show that this junction layout in the 2036 + Development scenario will operate within capacity and the relevant metrics are set out in **Table 6.2**.

Table 6.2 A47/North Site Access – 2036+Development

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (N)	0.25	0.4	0.05	0.35	0.5	0.06
A47 (S)	0.27	0.4	0.05	0.24	0.3	0.04
Site Access	0.34	0.5	0.10	0.19	0.2	0.07
Junction Delay (mins)			0.06			0.06

6.6.3 **Table 6.2** shows that there is ample capacity at the junction in the 2036 with Earl Shilton development traffic scenario. Whilst this level of capacity suggests that the size of the roundabout could be reduced, given the speed limit, the function and the characteristics of the A47, plus the HGV traffic accessing the employment area, it is considered that roundabout design is appropriate.

6.6.4 It is considered therefore that the junction design is appropriately scaled as an access junction and as well as providing access to the Site it will not have a detrimental impact on the mainline flow of the A47.

6.6.5 Details of all the capacity assessment presented within this section are provided within **Appendix F**.

A47 South Access Junction

6.6.6 This proposed site access junction has been assessed to show that this junction layout in the 2036 + Development scenario will operate within capacity and the relevant metrics are set out in **Table 6.3**.

Table 6.3 A47/South Site Access – 2036+Development

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (E)	0.22	0.3	0.05	0.26	0.4	0.05
Breach Lane	0.03	0.0	0.09	0.01	0.0	0.08
A47 (W)	0.37	0.6	0.05	0.42	0.7	0.05
Site Access	0.32	0.5	0.08	0.18	0.2	0.06
Junction Delay (mins)			0.06			0.05

6.6.7 **Table 6.3** shows that there is ample capacity at the junction in the 2036 with Earl Shilton development traffic scenario. As for the northern access, it is considered that roundabout design is appropriate given the speed limit, the function and the characteristics of the A47,

6.6.8 Details of all the capacity assessment presented within this section are provided within **Appendix F**.

Astley Road Access

- 6.6.9 This proposed scheme has been assessed to show that this junction in the 2036 + Development will operate within capacity and the junction model results are set out in **Table 6.4**.

Table 6.4 Astley Road Access Junction – 2036 + Development

Movement	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
B - C	0.02	0.0	0.08	0.01	0.0	0.08
B - A	0.27	0.4	0.14	0.13	0.1	0.12
C - AB	0.01	0.0	0.10	0.01	0.0	0.10
Junction Delay (mins)			0.06			0.03

Arm A: Astley Road (N)

Arm B: Site Access

Arm C: Astley Road (S)

- 6.6.10 **Table 6.4** shows that the above junction in 2036 with Earl Shilton development traffic will comfortably operate within capacity.
- 6.6.11 It is considered therefore that the junction design is appropriately scaled as an access junction and as well as providing access to the Site it will not have a detrimental impact on the mainline flow of Astley Road.
- 6.6.12 Details of all the capacity assessment presented within this section are provided within **Appendix F**.

6.7 Off-Site Junctions

A47/Leicester Road (N)

- 6.7.1 This junction is located approximately one mile (1.6km) south-west of the Site and forms one of the key junctions for traffic from the Site to A5.
- 6.7.2 This junction is a standard three arm roundabout, the two A47 arms running east/west. There is pedestrian and cyclist crossing with refuge facility and shared cycle and pedestrian route around the junction.
- 6.7.3 Details of all the capacity assessment presented within this section are provided within **Appendix G**.
- 6.7.4 A capacity analysis of the existing layout of the junction based on the 2021 Baseline traffic flows using Junction 9 software has been undertaken. The results of this analysis are presented in **Table 6.5**.

Table 6.5 A47/Leicester Road (N) - 2021 Baseline

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (E)	0.48	1.0	0.06	0.42	0.7	0.05
A47 (W)	0.33	0.5	0.03	0.53	1.1	0.05
Leicester Road (N)	0.38	0.6	0.06	0.24	0.3	0.05
Junction Delay (mins)			0.05			0.05

6.7.5 **Table 6.5** indicates that the junction operates within capacity in the AM and PM peaks. The RFC values are comfortably below the 0.85 threshold indicating the spare capacity in the junction.

6.7.6 **Table 6.6** presents out the results of the 2026 Future Baseline scenario for the AM and PM peaks.

Table 6.6 A47/Leicester Road (N) - 2026 Future Baseline

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (E)	0.53	1.1	0.06	0.47	0.9	0.05
A47 (W)	0.37	0.6	0.04	0.56	1.3	0.05
Leicester Road (N)	0.42	0.7	0.06	0.28	0.4	0.05
Junction Delay (mins)			0.05			0.05

6.7.7 **Table 6.6** indicates that the growth in background traffic between 2021 and 2026 increases queue and delay slightly at the junction in both the AM and PM peaks. However, the junction would continue to operate within capacity.

6.7.8 **Table 6.7** presents the results of the assessment for the 2036 Future Baseline scenario for the AM and PM peak.

Table 6.7 A47/Leicester Road (N) – 2036 Future Baseline

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (E)	0.54	1.2	0.07	0.51	1.1	0.06
A47 (W)	0.40	0.7	0.04	0.57	1.3	0.05
Leicester Road (N)	0.45	0.8	0.07	0.29	0.4	0.05
Junction Delay (mins)			0.06			0.05

- 6.7.9 **Table 6.7** indicates that the growth in background traffic between 2021 and 2036 increases delay slightly at the junction in both the AM and PM peaks. However, the junction would continue to operate within capacity.
- 6.7.10 **Table 6.8** presents the results of the assessment for the 2036 Future Baseline + Development scenario for the AM and PM peak.

Table 6.8 A47/Leicester Road (N) – 2036 + Development

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (E)	0.57	1.4	0.07	0.58	1.4	0.07
A47 (W)	0.41	0.7	0.04	0.61	1.6	0.06
Leicester Road (N)	0.48	1.0	0.07	0.28	0.4	0.06
Junction Delay (mins)			0.06			0.06

- 6.7.11 **Table 6.8** indicates that the development traffic will have minor impact on the junction capacity, however, the junction would continue to operate within capacity.

A47/Station Road (B581)

- 6.7.12 This junction is located approximately 0.7 miles (1.1km) south-west of the Site. The B581 forms the main route from the Site towards establishment located south of A47 bypass such as Stoney Stanton, Broughton Astley. This is a three arm signalised junction.
- 6.7.13 The junction is signal controlled with provision for safe crossing by both pedestrians and cyclists. On the northern side of the A47 and the eastern side of the B581 there is a shared cycle pedestrian route.
- 6.7.14 Details of all the capacity assessments presented within this section are provided within **Appendix G**.
- 6.7.15 A capacity analysis of the existing layout of the junction has been undertaken based on the 2021 Baseline traffic flows using LinSig software. The results of this analysis are presented in **Table 6.9**.

Table 6.9 A47/Station Road (B581) - 2021 Baseline

Link	Link Description	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)
1/1+1/2	A47 (W) Ahead Right	59.3%	7.2	20.2	63.7%	9.7	16.2
2/2+2/1	A47 (E) Left Ahead	58.6%	7.5	23.2	57.5%	6.7	32.4
3/1+3/2	Station Road Right Left	57.0%	8.8	26.1	54.4%	7.8	19.3
	Total PRC = 51.8				Total PRC = 41.4		
	Total Delay = 12.55				Total Delay = 12.33		
	Cycle Time = 90				Cycle Time = 90		

6.7.16 **Table 6.9** indicates that the junction is operating within capacity with 2021 Baseline flows in both peaks. This is shown by the degree of saturation which is lower than the 90% threshold.

6.7.17 **Table 6.10** presents the results of the 2026 Future Baseline scenario for the AM and PM peaks.

Table 6.10 A47/Station Road (B581) - 2026 Future Baseline

Link	Link Description	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)
1/1+1/2	A47 (W) Ahead Right	59.4%	7.6	19.9	70.5%	11.8	17.4
2/2+2/1	A47 (E) Left Ahead	63.5%	8.4	21.9	63.5%	7.6	33.6
3/1+3/2	Station Road Right Left	62.7%	9.8	29.9	56.6%	8.9	19.9
	Total PRC = 41.7				Total PRC = 27.6		
	Total Delay = 13.99				Total Delay = 14.04		
	Cycle Time = 90				Cycle Time = 90		

6.7.18 **Table 6.10** indicates the growth in background traffic between 2021 and 2026 increases the degree of saturation and mean max queue in both peaks. However, the junction still operates within capacity thresholds.

6.7.19 **Table 6.11** presents the results of the 2036 Future Baseline scenario for the AM and PM peaks.

Table 6.11 A47/Station Road (B581) - 2036 Future Baseline

Link	Link Description	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)
1/1+1/2	A47 (W) Ahead Right	62.0%	9.2	20.1	73.0%	12.5	18.2
2/2+2/1	A47 (E) Left Ahead	64.7%	8.7	21.4	66.5%	8.3	33.4
3/1+3/2	Station Road Right Left	63.8%	10.1	30.9	62.0%	10.7	21.7
	Total PRC = 39.2				Total PRC = 23.4		
	Total Delay = 14.63				Total Delay = 15.42		
	Cycle Time = 90				Cycle Time = 90		

6.7.20 **Table 6.11** indicates that the growth in background traffic between 2021 and 2036 increases the degree of saturation and mean max queue in both peaks. However, the junction still operates within capacity thresholds.

6.7.21 **Table 6.12** presents results of the assessment for the 2036 Future Baseline + Development scenario for the AM and PM peak.

Table 6.12 A47/ Station Road (B581) – 2036+Development

Link	Link Description	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)
1/1+1/2	A47 (W) Ahead Right	70.7%	11.7	21.7	87.4%	22.8	26.0
2/2+2/1	A47 (E) Left Ahead	69.8%	9.7	21.1	74.2%	10.0	32.1
3/1+3/2	Station Road Right Left	62.7%	9.1	32.4	69.1%	13.1	26.1
	Total PRC = 27.4				Total PRC = 3.0		
	Total Delay = 16.12				Total Delay = 20.78		
	Cycle Time = 90				Cycle Time = 90		

6.7.22 **Table 6.12** indicates the junction performance in 2036 with development traffic. Although mean max queue and degree of saturation increase slightly, the junction continues to operate within capacity.

A47/Wilkinson Lane

6.7.23 This junction is located approximately 0.5 miles (800 m) south-west of the Site. Station Road forms the main route between Earl Shilton town centre and the A47 bypass and links the Site via Breach Lane. This junction is a newly built, high standard, three arm signalised junction.

6.7.24 There is a toucan crossing facility on every arm of this junction. On the northern side of the A47 through the junction is a shared cycle pedestrian route.

- 6.7.25 Details of all the capacity assessments presented within this section are provided within **Appendix G**.
- 6.7.26 A capacity analysis of the existing layout of the junction has been undertaken based on the 2021 Baseline traffic flows using LinSig software. The results of this analysis are presented in **Table 6.13**.

Table 6.13 A47/Wilkinson Lane - 2021 Baseline

Link	Link Description	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)
1/2+1/1	A47 (W) Ahead Left	37.3%	4.5	18.7	51.3%	6.6	17.0
2/1	Wilkinson Lane Left Right	56.5%	7.0	36.3	50.0%	5.1	39.9
3/1+3/2	A47(E) Ahead Right	57.5%	9.4	26.2	41.6%	6.1	21.4
	Total PRC = 56.4				Total PRC = 75.4		
	Total Delay = 9.15				Total Delay = 8.26		
	Cycle Time = 90				Cycle Time = 90		

- 6.7.27 **Table 6.13** shows that the junction is operating within capacity with 2021 Baseline flows in both peaks. This is shown by the degree of saturation being below 90%.
- 6.7.28 **Table 6.14** presents the results of the 2026 Future Baseline scenario for the AM and PM peaks.

Table 6.14 A47/Wilkinson Lane - 2026 Future Baseline

Link	Link Description	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)
1/2+1/1	A47 (W) Ahead Left	43.2%	5.3	17.3	55.1%	7.2	16.2
2/1	Wilkinson Lane Left Right	61.0%	7.1	40.7	55.4%	5.3	43.7
3/1+3/2	A47 (E) Ahead Right	64.0%	11.6	25.2	45.3%	7.2	19.8
	Total PRC = 40.6				Total PRC = 62.5		
	Total Delay = 10.06				Total Delay = 8.73		
	Cycle Time = 90				Cycle Time = 90		

- 6.7.29 **Table 6.14** indicates that the growth in background traffic between 2021 and 2026 increases both the degree of saturation and mean max queue length in both the AM and PM peaks. However, despite these increases the junction still operates within capacity.
- 6.7.30 **Table 6.15** presents the results of the 2036 Future Baseline scenario for the AM and PM peaks.

Table 6.15 A47/Wilkinson Lane – 2036 Future Baseline

Link	Link Description	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)
1/2+1/1	A47 (W) Ahead Left	46.6%	5.9	16.5	56.5%	7.4	16.4
2/1	Wilkinson Lane Left Right	65.2%	7.1	44.7	55.1%	5.3	43.7
3/1+3/2	A47 (E) Ahead Right	67.9%	13.2	24.9	50.1%	8.3	20.5
	Total PRC = 32.5				Total PRC = 59.2		
	Total Delay = 10.82				Total Delay = 9.21		
	Cycle Time = 90				Cycle Time = 90		

6.7.31 **Table 6.15** indicates the growth in background traffic between 2021 and 2036 increases the degree of saturation and mean max queue in both peaks. However, the junction still operates within capacity thresholds.

6.7.32 **Table 6.16** presents the results of the assessment for the 2036 Future Baseline + Development scenario for the AM and PM peak.

Table 6.16 A47/Wilkinson Lane – 2036 + Development

Link	Link Description	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)	Degree of Saturation (%)	Mean Max Queue (pcu)	Delay (s/pcu)
1/2+1/1	A47 (W) Ahead Left	51.6%	6.6	14.6	64.0%	8.7	15.0
2/1	Wilkinson Lane Left Right	74.6%	7.3	56.4	63.9%	5.1	53.4
3/1+3/2	A47 (E) Ahead Right	73.2%	15.6	23.8	61.7%	11.8	19.6
	Total PRC = 20.6				Total PRC = 40.6		
	Total Delay = 12.00				Total Delay = 10.56		
	Cycle Time = 90				Cycle Time = 90		

6.7.33 **Table 6.16** indicates the junction performance in 2036 with development traffic. Although mean max queue and degree of saturation increase slightly, the junction continues to operate within capacity.

A47/Masefield Drive

6.7.34 This junction is located approximately 0.8 miles (1.3 km) south-west of the Site and is a ghost island three arm priority junction with Masefield Drive giving way to the A47 and a right-hand turning lane on the A47. On the northern side of the A47 is a shared cycle pedestrian route. There are dropped kerbs with tactile paving on either side of the Masefield Drive, and also road markings for pedestrians and cyclists.

- 6.7.35 Details of all the capacity assessment presented within this section are provided within **Appendix G**.
- 6.7.36 A capacity analysis of the existing layout of the junction based on the 2021 Baseline traffic flows using Junction 9 software has been undertaken. The results of this analysis are presented in **Table 6.17**.

Table 6.17 A47/Masefield Drive - 2021 Baseline

Stream	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
B - C	0.02	0.0	0.10	0.01	0.0	0.10
B - A	0.09	0.1	0.14	0.03	0.0	0.13
C - B	0.01	0.0	0.09	0.03	0.0	0.09
Junction Delay (mins)			0.01			0.00

Arm A: A47 (W)

Arm B: Masefield Drive

Arm C: A47 (E)

- 6.7.37 **Table 6.17** indicates that the junction operates within capacity in the AM and PM peaks. The RFC values are comfortably below the 0.85 threshold indicating the spare capacity in the junction.
- 6.7.38 **Table 6.18** sets out the results of the 2026 Future Baseline scenario for the AM and PM peak.

Table 6.18 A47/Masefield Drive - 2026 Future Baseline

Stream	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
B - C	0.02	0.0	0.10	0.01	0.0	0.10
B - A	0.10	0.1	0.15	0.04	0.0	0.14
C - B	0.01	0.0	0.09	0.03	0.0	0.10
Junction Delay (mins)			0.01			0.00

Arm A: A47 (W)

Arm B: Masefield Drive

Arm C: A47 (E)

- 6.7.39 **Table 6.18** indicates that the growth in background traffic between 2021 and 2026 increases the queue and delay slightly at the junction in both peaks. However, the junction would continue to operate within capacity as the increases are small.
- 6.7.40 **Table 6.19** presents the results of the assessment for the 2036 Future Baseline scenario for the AM and PM peak.

Table 6.19 A47/Masefield Drive – 2036 Future Baseline

Stream	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
B - C	0.02	0.0	0.11	0.01	0.0	0.10
B - A	0.12	0.1	0.17	0.04	0.0	0.15
C - B	0.01	0.0	0.10	0.03	0.0	0.10
Junction Delay (mins)			0.01			0.00

Arm A: A47 (W)

Arm B: Masefield Drive

Arm C: A47 (E)

- 6.7.41 **Table 6.19** indicates that the growth in background traffic between 2021 and 2036 increases the queue and delay slightly at the junction in both peaks. However, the junction operates well within capacity in the AM and PM as the RFC values are below the 0.85 threshold.
- 6.7.42 **Table 6.20** presents the results of the assessment for the 2036 Future Baseline + Development scenario for the AM and PM peak.

Table 6.20 A47/Masefield Drive – 2036 + Development

Stream	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
B - C	0.02	0.0	0.12	0.01	0.0	0.12
B - A	0.14	0.2	0.21	0.05	0.1	0.20
C - B	0.00	0.0	0.00	0.03	0.0	0.11
Junction Delay (mins)			0.01			0.00

Arm A: A47 (W)

Arm B: Masefield Drive

Arm C: A47 (E)

- 6.7.43 **Table 6.20** indicates that the Proposed Development traffic will have minor impact on the junction capacity and the junction would continue to operate within capacity.

A47/Leicester Road (W)

- 6.7.44 This is located approximately 1.4 miles (2.3 km) north-east of the Site. This junction is a standard three arm roundabout junction with Hinckley Road (A47) to the east, A47 bypass to the south and Leicester Road to the east.
- 6.7.45 There are shared pedestrian/cycle routes on each side of the junction with crossing facilities in the form of road markings and dropped kerbs and tactile paving across the splitter islands and at the kerbside.
- 6.7.46 Details of all the capacity assessment presented within this section are provided within **Appendix G**.

6.7.47 A capacity analysis of the existing layout of the junction based on the 2021 Baseline traffic flows using Junction 9 software has been undertaken. The results of this analysis are presented in **Table 6.21**. The 2021 Junction 9 model has been validated against the queue survey undertaken at the same time as traffic counts.

Table 6.21 A47/Leicester Road (W) – 2021 Baseline

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue	Delay (mins)
A47 (NE)	0.29	0.4	0.04	0.34	0.5	0.04
A47 (S)	0.23	0.3	0.05	0.27	0.4	0.05
Leicester Road (W)	0.15	0.2	0.04	0.10	0.1	0.04
Junction Delay (mins)			0.04			0.04

6.7.48 **Table 6.21** indicates that the junction operates within capacity in the AM and PM as the RFC values are comfortably below the 0.85 threshold.

6.7.49 **Table 6.22** presents the results of the 2026 Future Baseline scenario for the AM and PM peaks.

Table 6.22 A47/Leicester Road (W) - 2026 Future Baseline

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (NE)	0.34	0.6	0.04	0.37	0.6	0.04
A47 (S)	0.29	0.4	0.05	0.33	0.5	0.05
Leicester Road (W)	0.20	0.3	0.04	0.11	0.1	0.04
Junction Delay (mins)			0.05			0.05

6.7.50 **Table 6.22** indicates that the growth in background traffic between 2021 and 2026 increases the queue and delay slightly at the junction in both peaks. However, the junction would continue to operate within capacity as the increase in delay and queuing is small.

6.7.51

6.7.52

Table 6.23 presents the results of the assessment for the 2036 Future Baseline scenario for the AM and PM peak.

Table 6.23 A47/Leicester Road (W) - 2036 Baseline

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (NE)	0.38	0.6	0.05	0.39	0.6	0.05
A47 (S)	0.34	0.6	0.06	0.34	0.5	0.05
Leicester Road (W)	0.19	0.2	0.04	0.12	0.1	0.04
Junction Delay (mins)			0.05			0.05

6.7.53

6.7.54 **Table 6.23** indicates that the growth in background traffic between 2021 and 2036 increase the queue and delay slightly at the junction in both peaks. However, the junction would continue to operate within capacity as the increase in delay and queuing is small.

6.7.55 **Table 6.24** presents the results of the assessment for the 2036 Future Baseline + Development scenario for the AM and PM peak.

Table 6.24 A47/Leicester Road (W) - 2036 + Development

Arms	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue (pcu)	Delay (mins)	RFC	Queue (pcu)	Delay (mins)
A47 (NE)	0.28	0.4	0.04	0.41	0.7	0.05
A47 (S)	0.39	0.7	0.06	0.28	0.4	0.05
Leicester Road (W)	0.21	0.3	0.05	0.11	0.1	0.04
Junction Delay (mins)			0.05			0.05

6.7.56 **Table 6.24** indicates that the Proposed Development traffic increase the queue and delay slightly at the junction in both peaks. However, the junction would continue to operate within capacity as the increase in delay and queuing is small.

6.8 Impact on Earl Shilton Road Network

6.8.1 The impact of the Proposed Development on roads within Earl Shilton has also been considered and an assessment of the following road links has been carried out for the 2036 Future year.

- Mill Lane;
- Alexander Avenue - South of Mill Lane;
- Alexander Avenue - West of Astley Road;
- Astley Road - North of the proposed site access;
- Astley Road - South of the proposed site access;
- High Street - North of Alexander Avenue;
- High Street - South of Alexander Avenue; and
- Wood Street;

6.8.2 For the purpose of this assessment, it is assumed that the traffic that routes along High Street (south of the junction with Alexander Avenue) is representative of those routes which pass through the town centre itself.

Proportional Impact

6.8.3 **Table 6.25** and **Table 6.26** summarise the percentage difference in the traffic flows on the above links due to the Proposed Development traffic for AM and PM peaks respectively.

Table 6.25 Change in traffic flows: 2036 AM peak hour

Link Name	2036 Base (pcu)	2036 + Development (pcu)	% Change in total traffic
Mill Lane	3	138	4046.4%
Alexander Avenue - South of Mill Lane	63	95	50.5%
Alexander Avenue - West of Astley Road	59	149	151.2%
Astley Road - North of the proposed site access	143	360	151.7%
Astley Road - South of the proposed site access	143	164	14.7%
High Street - North of Alexander Avenue	479	527	9.9%
High Street - South of Alexander Avenue	530	664	25.4%
Wood Street	577	693	20.2%

Table 6.26 Change in traffic flows: 2036 PM peak hour

Link Name	2036 Base (pcu)	2036 + Development (pcu)	% Change in total traffic
Mill Lane	5	159	3433.3%
Alexander Avenue - South of Mill Lane	79	122	54.2%
Alexander Avenue - West of Astley Road	61	133	118.7%
Astley Road - North of the proposed site access	112	317	183.0%
Astley Road - South of the proposed site access	112	125	11.6%
High Street - North of Alexander Avenue	548	573	4.5%
High Street - South of Alexander Avenue	606	700	15.5%
Wood Street	687	710	3.3%

6.8.4 The percentage increase in traffic should be treated with caution given the low volume of baseline traffic (without development) as this method of comparison gives results in a disproportionate impact.

Mill Lane

6.8.5 **Table 6.25** and **Table 6.26** show negligible traffic flows of 3 and 5 vehicles in the 2036 Future Baseline during AM and PM peak respectively. The increase in traffic flows is 135 in the AM peak and 154 in the PM peak hour which equates to an average of less than three vehicles per minute which will not have any significant impact on this link. One of the major contributors to the increase in flows at this section of Mill Lane is the reassignment of background traffic to/from the A47 by routing through the Site to the northern access roundabout. In order to minimise this movement, traffic management measures in the form of pinch points will be implemented on Mill Lane within the Site boundary.

Alexander Avenue

- 6.8.6 The increase in traffic flows is up to 43 in the AM peak and 90 in the PM peak hour which equates to an average of less than one vehicle and two vehicles per minute respectively which will not have any significant impact on Alexander Avenue.

Astley Road

- 6.8.7 The increase in traffic flows is highest on the northern section with up to 217 in the AM peak and 205 in the PM peak hour which equates to an increase of less than four vehicles per minute or one vehicle every 17 seconds in the AM peak and every 18 seconds in the PM peak. One of the major contributors to the increase in flows on Astley Road is the reassignment of background traffic to/from the A47 by routeing through the Site to the southern access roundabout. In order to minimise through background traffic, traffic management measures in the form of pinch points will be implemented within the Site boundary near to the Astley Road junction. In addition, it is proposed that the junction will have a speed table to keep speeds low.

Road Capacity Assessment

- 6.8.8 To understand the capacity of these links to accommodate the 2036 Base with Development traffic flow, link capacity assessments have been carried out based on the DMRB Advice Note *Traffic Capacity of Urban Roads* (TA 79/99). This archived document is intended to assist stakeholders in determining whether existing road network has enough capacity to accommodate desire traffic flows.
- 6.8.9 **Table 6.27** and **Table 6.28** summarise the capacity assessment of the links in AM and PM peak respectively.

Table 6.27 Capacity assessment (two-way): 2036 AM peak hour

Link Name	Classification	Capacity (100%)	2036 + Development (pcu)	% of capacity (will be utilised)
Mill Lane	UAP*4	1250	138	11%
Alexander Avenue - South of Mill Lane	UAP4	1250	95	8%
Alexander Avenue - West of Astley Road	UAP4	1250	149	12%
Astley Road - North of the proposed site access	UAP4	1250	360	29%
Astley Road - South of the proposed site access	UAP4	1250	164	13%
High Street - North of Alexander Avenue	UAP4	1250	527	42%
High Street - South of Alexander Avenue	UAP4	1250	664	53%
Wood Street	UAP4	1250	693	55%

*Urban all-purpose

Table 6.28 Capacity assessment (two-way): 2036 PM peak hour

Link Name	Classification	Capacity (100%)	2036 + Development (pcu)	% of capacity will be utilised
Mill Lane	UAP*4	1250	159	13%
Alexander Avenue - South of Mill Lane	UAP4	1250	122	10%
Alexander Avenue - West of Astley Road	UAP4	1250	133	11%
Astley Road - North of the proposed site access	UAP4	1250	317	25%
Astley Road - South of the proposed site access	UAP4	1250	125	10%
High Street - North of Alexander Avenue	UAP4	1250	573	46%
High Street - South of Alexander Avenue	UAP4	1250	700	56%
Wood Street	UAP4	1250	710	57%

*Urban all-purpose

6.8.10 **Table 6.27** and **Table 6.28** show that all the links have ample capacity to accommodate the 2036 Future Base with development traffic. Therefore, it is concluded that no further assessment is required for town centre roads and junctions.

Summary

6.8.11 The assessment above indicates that none of the junctions within the agreed scope of this TA require mitigation. The assessment of the town centre indicates that the Proposed Development will have a low impact.

6.9 Strategic Road Network

- 6.9.1 With regard to the wider road network, the following four strategic junctions have been considered to understand the impact of the Proposed Development traffic on their operational capacity:
- A47 Hinckley Road/B582 Leicester Lane/B582 Desford Road; known locally as Desford Cross Roads;
 - A47 Normandy Way/A447 Ashby Road/B4667 Ashby Road; known locally as Ashby Cross Roads;
 - A5(T) Watling Street/A47 Dodwell Road/B4666 Coventry Road; known locally as Dodwell Roundabout; and
 - A5(T) Watling Street/A47 Long Shoot; known locally as Long Shoot traffic signals.
- 6.9.2 The Proposed Development traffic proportional assessment in the **Section 6.4** shows that there will be no material change on the above junctions due to the development traffic. Therefore, the junction capacity assessment of these junctions has not been carried out.

6.10 Conclusions

- 6.10.1 The result of the junction modelling shows that all access junctions will operate with ample capacity for the 2036 with development scenario. The assessment indicates that none of the junctions within the scope of this TA require mitigation. The assessment of the town centre indicates that the Proposed Development will have a low impact.

7. Conclusions

7.1 Introduction

7.1.1 Wood has been commissioned by the Applicants to provide a detailed assessment of the impact of the proposed Earl Shilton SUE development in terms of highways and transport. This TA, supported by the FTP provides the evidence base to demonstrate that the overall impact of the Proposed Development on the transport network will be acceptable. The TA has been developed in consultation with LCC Highways and National Highways.

7.2 Summary of Transport Proposals

7.2.1 As part of the development proposals the following are proposed:

- a new three-arm roundabout junction on the A47 to the north of the site to provide high quality access to the Site and employment area;
- a new four-arm roundabout junction on the A47 to the south of the site to provide access to the Site;
- a priority junction on Astley Road to allow access to from the central Earl Shilton facilities;
- secondary accesses on Mill Lane and Breach Lane, the latter for a discrete parcel of the Proposed Development;
- high quality internal links within the Site with a key focus of trips to the town centre;
- traffic calming measures on Mill Lane and Astley Road to reduce traffic speeds along the route and promote it as an attractive route for cycling and walking;
- improved pedestrian links on Mill Lane and Breach Lane;
- provision of local services at the heart of the development, such as the primary school and small retail outlets;
- spine road through the Site and bus stop infrastructure designed to accommodate a bus service;
- access to public transport from commencement of occupation of the Proposed Development; and
- facilitation and promotion of alternatives to the private car through a robust travel plan from commencement of occupation of the Proposed Development.

7.3 Conclusions

7.3.1 This TA demonstrates that the traffic generated by the Proposed Development can be accommodated on the local and strategic road network. The proposals will also improve travel and transport options throughout the area by providing a high quality sustainable transport network to the benefit of all.