



Keepmoat Homes

Residential Development Eakring Road, Bilsthorpe

Transport Assessment

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1.0 INTRODUCTION

1.1 Background

1.1.1 Travis Baker are appointed by Keepmoat Homes to advise on the highways and transport issues affecting proposed residential development at Eakring Road, Bilsthorpe. The development site comprises approximately 3.6 hectares of undeveloped land to the east of Eakring Road. The location of the site in the wider context is shown on **Figure 1** and a more detailed location plan, showing the surrounding local road network is provided as **Figure 2**.

1.1.2 The local highway authority is Nottinghamshire County Council (NCC) and the local planning authority is Newark and Sherwood District Council (NSDC).

1.2 Planning History

1.2.1 The site has outline planning approval, granted in June 2018 (NSDC planning ref: 17/01139/OUTM), for 85 dwellings, up to 280sqm of retail development (Class A1) and associated access works including a new access junction from Eakring Road.

1.3 Proposed Development

1.3.1 Keepmoat Homes intend to submit a full planning application of 103 residential dwellings with associated landscaping, infrastructure and open space. It is understood that the full or reserved-matters planning application for the retail development (Class A1) will be submitted separately by another developer.

1.3.2 The access scheme is consistent with that approved in respect of the previous outline application and includes a new priority junction access with Eakring Road. A new footway will also be constructed on the eastern side of Eakring Road to connect with the existing footways to the south and opposite. The current development masterplan is presented in **Appendix A**.

1.4 Scope

1.4.1 This Transport Assessment (TA) has been prepared to support a full planning application for the residential scheme to NSDC and is structured as follows:

- Planning and transport policies relevant to the assessment are reviewed;
- The site and surrounding transport network are described;
- Existing traffic conditions and road safety in the vicinity of the site are considered;
- Opportunities for access to the site by sustainable travel modes are considered;
- The proposed development scheme and access arrangements are described;
- The scheme's traffic generation is estimated;
- The proposed development trip distribution is presented;
- Appropriate scheme assessment years are identified;
- Future year traffic forecasts are presented;
- The development's traffic impacts are assessed;



- Junction capacity assessments are undertaken as required;
- The need for highway mitigation is considered;
- Conclusions are presented.

1.4.2 The report concludes that satisfactorily vehicular access to the site can be achieved and that the impact of the development on the local highway network would not be significant, subject to the access and other transport measures proposed in this report. The development would be within reach of a wide range of local facilities and would be accessible by sustainable travel modes. Accordingly, it is considered that there are no transport or highways issues of significance that would prevent the grant of a planning consent for the scheme as proposed.

2.0 POLICY AND PLANNING BACKGROUND

2.1 Overview

2.1.1 It is considered that the most significant transport related policies of relevance to the proposal are contained within the following documents.

- The National Planning Policy Framework (NPPF)
- The Newark and Sherwood Amended Core Strategy
- The third Local Transport Plan for Nottinghamshire, 2011 – 2026 (LTP3)

2.2 Planning Status

2.2.1 The site received outline planning approval in June 2018 for a residential development of up to 85 dwellings and a Class A1 retail development of up to 280m² (NSDC planning ref: 17/01139/OUTM). The outline planning application was supported by a Transport Assessment (TA) undertaken by ADC Infrastructure Ltd. and dated June 2017.

2.2.2 The site is identified for development in NSDC's *Adopted Allocations and Development Management Development Plan Document (DPD)* as "***Bilsthorpe – Mixed Use Site 1***" (Policy Bi/MU/1), to provide around 75 dwellings and retail development.

2.3 The National Planning Policy Framework

2.3.1 The revised NPPF was published in February 2019 and sets out the Government's policies for helping to deliver sustainable development through the planning system. Local authorities are required to take these policies into account when formulating local development plans and they are also a material consideration when determining planning applications.

2.3.2 To ensure that sustainable development is pursued in a positive way, the NPPF's over-arching policy theme is that there is a presumption in favour of sustainable development. Local authorities are required to determine planning applications favourably where they accord with an up-to-date development plan.

2.3.3 Where there is no current development plan policy in place, or the policies which are most important for determining the application are out-of-date, applications should be approved unless: the NPPF policies that protect natural or heritage assets provide a clear reason for refusal, or; that the adverse impacts of doing so would "*significantly and demonstrably outweigh the benefits*" when assessed against the policies in the NPPF as a whole.

2.3.4 The NPPF states that the planning system should seek to guide significant developments to locations that are or can be made sustainable, by limiting the need to travel and providing a choice of travel modes. It recognises, however, that opportunities to maximise the use of sustainable travel options will vary between urban and rural locations.

2.3.5 Decisions on planning applications or proposed site allocations should then take account of whether:

- *appropriate opportunities to promote sustainable transport modes can be – or have been - taken up, given the type of development and its location;*
- *safe and suitable access to the site can be achieved for all users; and*

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

2.3.6 The NPPF further states that:

Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

2.3.7 Therefore, developments should:

- *give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second - so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus and other public transport services, and appropriate facilities that encourage public transport use;*
- *address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- *create places that are safe, secure layouts and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- *allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- *be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.*
- *be supported by a Transport Assessment or Statement and, where they would generate significant movement, a Travel Plan.*

2.3.8 The proposed site access and movement strategy has full regard to the objectives of the NPPF and seeks to ensure that the site is satisfactorily connected to the adjacent strategic highway and sustainable travel networks. Details of the proposed development and access arrangements are provided in Section 5.

2.4 The Amended Core Strategy

2.4.1 The original Core Strategy was adopted by NSDC in 2011. Following implementation of the NPPF, NSDC adopted an Amended Core Strategy in March 2019. The Amended Core Strategy DPD is a key element of the NSDC Local Development Framework (LDF).

2.4.2 The Amended Core Strategy provides policies that seek to deliver development over the period 2013 to 2033. Policies relevant to this TA are reviewed below.

2.4.3 Because of its size, the Newark and Sherwood District has been subdivided into distinct areas based on common characteristics, in order that policies meet the differing needs of each area. The development site lies within Sherwood area, as defined within the DPD.

2.4.4 **Spatial Policy 6: Infrastructure for Growth.** This policy is concerned with the delivery of infrastructure to support growth within the District. It states that the Council will secure improvements to the strategic highway network and other highway infrastructure via the

Community Infrastructure Levy (CIL), which will be targeted at “Strategic Infrastructure” improvements identified within an Infrastructure Delivery Plan (IDP). Local infrastructure will also be secured via planning obligations, including facilities and services that are essential for development to take place on individual sites, or which are needed to mitigate the impact of development at the site or neighbourhood level.

2.4.5 **Spatial Policy 7: Sustainable Transport.** This policy addresses the need to encourage and support development proposals that promote an improved and integrated transport network and emphasises non-car modes for access to services and facilities. Development proposals should contribute to the implementation of the LTP (see below) and should:

- *minimise the need for travel, through measures such as travel plans for all development which generate significant amounts of movement, and the provision or enhancement of local services and facilities;*
- *provide safe, convenient and attractive accesses for all, including the elderly and disabled, and others with restricted mobility, and provide links to the existing network of footways, bridleways and cycleways, so as to maximise opportunities for their use;*
- *be appropriate for the highway network in terms of the volume and nature of traffic generated, and ensure that the safety, convenience and free flow of traffic using the highway are not adversely affected;*
- *avoid highway improvements which harm the environment and character of the area;*
- *provide appropriate and effective parking provision, both on and off-site, and vehicular servicing arrangements in line with Highways Authority best practice; and*
- *ensure that vehicular traffic generated does not create new, or exacerbate existing on street parking problems, nor materially increase other traffic problems, taking account of any contributions that have been secured for the provision of off-site works.*

2.4.6 The policy also safeguards highway or public transport schemes identified within the LTP and its implementation plan. It also states that:

"High quality, safe, cycle, footpath and bridleway networks will be safeguarded and extended to provide opportunities to reduce the number of short car journeys and for cycling, walking and horse riding for recreation in the countryside. Disused railway lines will be protected from other forms of development, to safeguard their potential to be reinstated to their former use for commercial or leisure purposes, or to extend the cycling or footpath networks."

2.4.7 The policy requires that all major developments are well-located for convenient access by non-car modes (walking, cycling and high quality public transport).

2.4.8 **Spatial Policy 9: Selecting Appropriate Sites for Allocation.** This policy states that sites allocated for housing, employment and community facilities will be (*inter-alia*): adjacent to an existing settlement; accessible and well-related to facilities; accessible by public transport (or would be, subject to viable improvements); and sustainable in terms of impact on existing infrastructure (or would be, subject to provision of new infrastructure).

2.4.9 **Core Policy 9: Sustainable Design.** This policy states that the Council will expect development proposals to demonstrate a high standard of sustainable design, which protects and enhances the natural environment and is accessible to all.

2.4.10 **Core Policy 11: Rural Accessibility.** This policy states that the Council will promote rural access through partnership with NCC, in order to secure improved public transport to villages and provide increased access to services, facilities and employment opportunities in the various local centres.

2.4.11 In the Sherwood area the Council will seek improve public transport to villages and links to the local service centres of Ollerton & Boughton, Edwinstowe, the "Principal Village" of Bilsthorpe and applicable centres in neighbouring districts.

2.5 Local Transport Plan

2.5.1 The third Nottinghamshire Local Transport Plan (LTP3) covers the period 2011 to 2026 and comprises two main documents:

- The Local Plan Strategy which sets out how transport improvements will be made across the County Council in line with its transport vision and which is reviewed every 5 years.
- The LTP Implementation Plan, which is reviewed annually and sets out how the County Council will use its transport funding to deliver the Strategy.

2.5.2 The key goals of LTP3 are to provide a resilient transport system which supports thriving economy and growth whilst encouraging sustainable and healthy travel. It seeks to improve access to key services and to minimise the impacts of transport on people's lives, whilst maximising opportunities to improve the environment.

2.5.3 These goals are underpinned by 12 local transport objectives. The key objectives of particular relevance to this TA are concerned with the need to reduce the traffic impact of development on the local highway network and the environment by encouraging more walking, cycling and use of public transport, with the additional aim of improving health. The objectives of improving accessibility and personal safety are also identified.

2.5.4 **The LTP Implementation Plan** provides a package of measures that sets out how the County Council will use its transport funding to deliver the Strategy. It is reviewed annually to ensure:

- The effective delivery of the local transport strategy and transports improvements in Nottinghamshire.
- The effectiveness of the measures contained within it.
- That it reflects the County Council priorities at the time of review.
- That it reflects feasibility work undertaken to identify transport schemes that help deliver the "opportunity Area "growth corridors" detailed in the Place Departmental Strategy.
- That programmes are based on up to date levels of funding available to the County Council.

2.5.5 The LTP's third Implementation Plan is currently in Draft format and will cover the period 1 April 2018 to 31 March 2021. The Plan includes a wide range of improvements to the transport network in Newark and Sherwood, and identifies the A614 and A617 routes as Nottinghamshire's Major Road Network (MRN) and corridors for future growth in the County.

3.0 EXISTING CONDITIONS

3.1 Site Description

3.1.1 The development site is located at the eastern edge of the existing Bilsthorpe urban area. It comprises a parcel of open agricultural land. The site's only highway frontage is to Eakring Road, which forms its western boundary. The southern boundary is formed by existing non-residential development and the eastern boundary adjoins undeveloped woodland. The northern boundary adjoins a former railway line, which to the west of Eakring Road is now part of the National Cycle Network.

3.1.2 The site has an existing ungated field access from Eakring Road, which comprises a dropped-kerb facility and is located approximately 80m north of Mickledale Lane.

3.2 Local Highway Network

3.2.1 **Eakring Road** is a local distributor route of single carriageway standard, which links Deerdale Lane to the north with the A617 (via Kirklington Road and Farnsfield Road) to the south. Eakring Road crosses the former railway line at the northern end of the site via an over-bridge, before entering the Bilsthorpe village area and passing through on its eastern side.

3.2.2 In the vicinity of the site, Eakring Road has an urban frontage on its western side, with direct access to driveways, and side road junctions with Mickledale Lane and Church Street. The speed limit is 30mph within Bilsthorpe, which increases to the national speed limit (60mph), approximately 400m north of the centre of the site frontage. Street lighting is provided throughout the built-up area and as far as the Bilsthorpe Business Park access, to the north.

3.2.3 In the vicinity of the site, Eakring Road has a carriageway width that varies between 6.4m and 7.2m. A continuous footway is provided on the west side of Eakring Road, opposite the site frontage, to a point north of the railway bridge, where the footway switches to the eastern side of the road and is continued as far as the Bilsthorpe Business Park access. On the eastern side, the footway commences at the Mickledale Lane junction.

3.2.4 **Mickledale Lane** is a single carriageway local distributor road, which connects Eakring Road with the A614 to the west. The junction with the A614 is a ghost-island priority cross-roads junction, at which Mickledale Lane and Inkersall Lane opposite form the minor arms. From the A614 junction eastwards, the national speed limit (60mph) is initially in force but reduces to 30mph at the start of the Bilsthorpe village urban area.

3.2.5 Within Bilsthorpe, Mickledale Lane is predominately urban in character, with street lighting and mostly residential frontages with direct property accesses on both sides. There are frequent junctions with side roads, most notably Saville Road, Crompton Road and Cross Street, which provide access to the main local facilities in the centre of Bilsthorpe.

3.2.6 Mickledale Lane has a carriageway width of approximately 7.4m and there are continuous footways on both sides. The northern side footway terminates close to where the speed limit increases to 60mph, whereas the southern footway is continued as far as the A614 junction.

3.2.7 The **A614**, also known as Old Rufford Road, is a major single carriageway inter-urban route that connects the A1 and A57 to the north with the A60 at the northern edge of Nottingham. It is rural in character and is subject to a speed limit of 50mph, enforced by average speed cameras. In the

vicinity of the Mickledale Lane junction, the route has street lighting. There is also a narrow footway on the east side of the A614, which extends for approximately 400m south of Mickledale Lane. Elsewhere, the route has hard strips on each side of the carriageway.

3.2.8 Approximately 2.5km south of Mickledale Lane, the A614 connects with the **A617 Kirklington Road** at a 4-arm roundabout junction, where street lighting is provided. The A617 is a major route of mostly single carriageway standard, which connects Mansfield and Sutton-in-Ashfield to the west with Newark-on-Trent to the east. To the east of the A614 roundabout, the A617 is subject to a 50mph speed limit; whereas to the west, the national speed limit (60mph) is in force.

3.3 Study Area

3.3.1 The primary study area considered in this TA is shown in **Figure 3** and comprises the following junctions:

- Proposed Eakring Road Site Access
- Junction 1: Eakring Road/Mickledale Lane
- Junction 2: A614/Mickledale Lane/Inkersall Lane
- Junction 3: A614/A617 Roundabout
- Junction 4: A617/Farnsfield Road
- Junction 5: Deerdale Road/Eakring Road

3.3.2 This study area comprises the routes most likely to be taken by development traffic and hence the sections of highway network and key junctions that would be most significantly affected by the scheme.

3.3.3 A wider area beyond this primary study area has also been considered for the purpose of assessing the accessibility of local facilities from the site by walking, cycling and public transport services.

3.4 Existing Traffic Flows

3.4.1 Data on existing traffic flows and speeds was obtained from an Automatic Traffic Count (ATC) undertaken on Eakring Road, approximately 75m north of Mickledale Lane and just north of the proposed site access location. The grid coordinates (latitude, longitude) were 53.14232, -1.03109.

3.4.2 The ATC recorded passing vehicle flows and speeds continuously over a 7-day period from Wednesday 09 to Tuesday 15 October 2019. Full results are presented in **Appendix B**. The key traffic flows and speeds identified by the ATC are summarised in **Table 3.1**.

Table 3.1: Recorded Traffic Flows and Speeds on Eakring Road (October 2019)

Direction	Eakring Road north of Mickledale Lane		
	AM Peak Hour (08:00-09:00)	PM Peak Hour (17:00-18:00)	24-hours (week average)
Flow (vehicles)			
Northbound	131	100	1246
Southbound	92	133	1232
Average speeds			
Northbound	-	-	28mph
Southbound	-	-	29mph
85th Percentile speeds			
Northbound	-	-	34mph
Southbound	-	-	35mph

- 3.4.3 It can be seen that Eakring Road currently carries modest traffic flows during both of the usual peak hours and across a typical day. It was noted that the highest hourly traffic flows occurred during the periods 07:00 to 08:00 and 16:00-17:00, and were slightly greater than those quoted for the “standard” peak hours in Table 3.1.
- 3.4.4 Recorded average speeds in both directions of travel were below the 30mph speed limit. The recorded 85th percentile speeds were around 35mph.
- 3.4.5 Manual Classified Counts (MCC) were also undertaken at the five study area junctions on Wednesday 09 October 2019. Full traffic survey results are presented in **Appendix B**. The data includes analysis undertaken by Travis Baker to determine the peak hours and conversion of vehicle flows to Passenger Car Units (PCUs).
- 3.4.6 The surveys also recorded peak period queues on the junction approaches. The observed queue lengths have been used to check the validity of the capacity assessment models of the existing study area junctions, as detailed in Section 8.

3.5 Road Accident History

- 3.5.1 Records of Personal Injury Collisions (PICs) were requested from Via East Midlands for the study area shown on **Figure 3**. Data was requested for the most recent complete 5-year period available at 07 October 2019.
- 3.5.2 NCC supplied data for a 60-month period from 01 January 2014 to 30 June 2019, during which 41 PICS were recorded. The supplied collision plan and data are included in **Appendix C** and a summary of the collisions by link or junction number is provided in **Table 3.2**. The link and junction locations are shown on Figure 3 (links are defined as sections of road connecting two of the study area junctions together).

Table 3.2: Summary of PIC Data

Location	Number of PICs Recorded						
	Total	Slight	Serious	Fatal	Involving Pedestrian	Involving Cyclist	Involving Motor Cyclist
LINKS							
L1: A614 from A617 Roundabout to Mickledale Lane	1	1					
L2: A614 from Mickledale Lane to Deerdale Lane	2	1	1				1
L3: Mickledale Lane from A614 to Crompton Road	4	2	2		1		1
L4: Eakring Road from Deerdale Lane to Mickledale Lane	1	1					
L5: Eakring Road from Mickledale Lane to Brailwood Road/Forest Link	3	2	1				1
L6: Kirklington Road from Brailwood Road/Forest Link to Maid Marian Ave	1	0	1		1		
L7: Kirklington Road/Farnsfield Road from Maid Marian Ave to A617	4	3	1		1	1	
L8: A617 from Farnsfield Road to A614	2	1	1				1
JUNCTIONS							
J1: Eakring Road/Mickledale Lane	0	0					
J2: A614/Mickledale Lane/Inkersall Lane	6	6					
J3: A614/A617 Roundabout	5	3	2				3
J4: A617/Farnsfield Road	2	2				1	
J5: Deerdale Lane/Eakring Road	0	0					
Other PICS within the Study Area	10	8	2		3		3
Total	41	30	11	0	6	2	10

3.5.3 Table 3.2 shows that 11-serious injury PICs were recorded during the study period, whilst the remaining 30 PICS resulted in slight injuries. There were no fatal injury collisions. No PICSs were recorded at the location of the proposed site access.

3.5.4 The data was examined to identify the number of PICs involving Vulnerable Road Users (VRUs). VRUs include pedestrians, cyclists and motorcycle riders. Of the total recorded collisions, 6 (15%) involved pedestrians, 2 (5%) involved cyclists and 10 (24%) involved a motorcycle.

3.5.5 The data also confirmed that of the 41 collisions, 11 (27%) occurred during the hours of darkness and 15 (37%) occurred when road surface conditions were wet or icy.

3.5.6 To determine any locations with patterns of common contributory factors that might indicate a particular road safety issue, PIC cluster sites have been identified. A cluster site is defined as any junction or link where 3 or more PICs and/or at least one fatal or serious injury PIC were recorded. Collisions are defined as having occurred at a junction if they were at or within 20m of the junction control area.

3.5.7 From Table 3.2, the following locations can be identified as cluster sites and require further analysis:

- Junctions 2 and 3;
- Links 2, 3, 5, 6, 7 and 8.

J2: A614/Mickledale Lane/Inkersall Lane

3.5.8 This junction attracted the largest number of collisions over the five-year period. A total of 6 PICs was recorded, or just over 1 per year. Of these, all 6 resulted in slight injury and none involved a VRU. Details are summarised below:

- Three of the recorded PICs appear to have resulted from vehicles turning across the paths of others when turning right into Mickledale Lane from the northbound approach on the A614.
- A further PIC occurred on the southern approach, when a vehicle slowed behind traffic turning into Mickledale Lane. The vehicle behind failed to slow down, resulting in a rear-end shunt type collision.
- A further rear-end shunt type collision occurred on Mickledale Lane, where a vehicle was waiting to turn left onto the A614.
- The final recorded PIC occurred on the northbound approach, when a car entered the right turn lane intending to turn to Mickledale Lane, but the driver hesitated and then re-joined the main carriageway colliding with a goods vehicle.

3.5.9 The types of collisions recorded at this location are consistent with what might be expected at a busy ghost-island priority junction, particularly in view of the high traffic flows along this section of the A614. An improvement scheme is being investigated by NCC, which would introduce traffic signal control and would be expected to address any existing road safety issues that have been identified. The improvement scheme is discussed further elsewhere in this TA.

J3: A614/A617 Roundabout

3.5.10 A total of 5 PICs was recorded at this junction, or approximately 1 per year. Of these, two resulted in serious-injury and 3 involved motorcyclists. Details are summarised below:

- A serious-injury PIC occurred on the A614 south approach, where the road widens into two lanes. A car and a motorcycle both attempted to change lanes resulting in the motorcycle colliding with the car. The motorcyclist fell and crossed the centre-line before colliding with an oncoming vehicle.
- A further serious injury occurred when a car collided with a stationary vehicle waiting to enter the circulatory carriageway.
- A slight-injury PIC occurred as a result of a rear-end collision on the circulatory carriageway.
- A further PIC involving a motorcycle occurred on the circulatory carriageway, where a car changed lanes into the path of the motorcyclist resulting in a collision.
- The final slight injury PIC occurred on the A617 western approach, where a stationary car was waiting in the left lane. An HGV in the right lane intending to travel ahead mis-judged the manoeuvre and collided with the car.

3.5.11 The collision details show that 3 of the recorded PICs involved vehicles changing lanes. However, this does not in itself indicate a strong pattern of collisions. The total number of collisions recorded,

whilst meeting the criteria of a cluster site, is not considered unduly high for a junction of this type carrying high traffic flows. The number and severity of PICs is not considered to indicate a local accident problem that might be related to traffic conditions or road geometry.

L2: A614 from Mickledale Lane to Deerdale Lane

3.5.12 Two PICs were recorded along this link over the 5-year period, as follows:

- A serious-injury collision occurred involving a motorcyclist who collided with the off-side rear of a car performing a U-turn in heavy traffic.
- A slight-injury PIC occurred at the junction with Deerdale Lane, where a right turning vehicle turned across the path of an oncoming vehicle.

3.5.13 It can be seen that these were isolated and un-related incidents. Given that this section of the A614 carries significant traffic flows, the number and severity of PICs on this link is not considered unduly high or indicative of a local accident problem that might be related to traffic conditions or road geometry.

L3: Mickledale Lane from A614 to Crompton Road

3.5.14 Four PICs were recorded along this link over the 5-year period, two of which resulted in serious injury. These are described below:

- The first serious-injury PIC involved a car turning across the path of a motorcyclist heading towards the A614 at the access to the Strawson factory.
- The second serious-injury PIC occurred whilst a motorcyclist was reversing into the carriageway and was struck by an eastbound car that was overtaking a stationary vehicle.

3.5.15 Although both serious-injury PICs involved motorcyclists, they are unrelated in terms of contributory factors.

3.5.16 Two slight-injury PICs were also recorded on this link, as summarised below:

- A car travelling westbound failed to see a stationary vehicle waiting to pass a parked vehicle, resulting in a collision.
- A pedestrian was struck by a car at the junction with Crompton Road.

3.5.17 The above collisions appear to have resulted from poor driver judgement and are clearly unrelated in terms of contributory factors. The PIC details therefore provide no evidence of any local accident problem on this link that might be related to traffic conditions or road geometry.

L5: Eakring Road from Mickledale Lane to Brailwood Road/Forest Link

3.5.18 During the 5-year study period, 3 PICs were recorded along this link, one of which resulted in serious injury to a VRU (motorcyclist) travelling north along Eakring Road, which collided with a car turning into its path.

3.5.19 Two slight-injury PICs were also recorded as follows:

- A single vehicle lost control and struck with the offside kerb, leaving the carriageway

and colliding with property fences.

- A vehicle attempted to overtake a parked vehicle, resulting in a collision with an oncoming vehicle.

3.5.20 Again, all collisions appear to have resulted from poor driver judgement and are unrelated in terms of contributory factors. The PIC details therefore provide no evidence of any local accident problem on this link that might be related to traffic conditions or road geometry.

L6: Kirklington Road from Brailwood Road/Forest Link to Maid Marian Ave

3.5.21 A single serious injury PIC occurred along this link at the junction of Eakring Road and Benet Drive, involving a pedestrian who was struck by a vehicle turning left into Benet Drive. This was clearly an isolated incident and, whilst regrettable, provides no evidence of any local accident problem on this link that might be related to traffic conditions or road geometry.

L7: Kirklington Road/Farnsfield Road from Maid Marian Ave to A617

3.5.22 Three slight-injury and one serious-injury PICs occurred on this link. The details are summarised below:

- The serious-injury accident involved a single vehicle which lost control and struck the nearside verge.
- A slight-injury PIC, also a loss of control accident, occurred in wet conditions and at a different location to the above serious-injury PIC.
- A further slight-injury PIC involved a pedal cyclist who collided with a car drivers' door that had been opened as the cyclist approached.
- The final slight-injury PIC occurred when a pedestrian crossed the carriageway between two parked vehicles into the path of a vehicle travelling towards Bilsthorpe.

3.5.23 Once again, all collisions appear to have resulted from errors of judgement and are unrelated in terms of contributory factors. The PIC details therefore provide no evidence of any local accident problem on this link that might be related to traffic conditions or road geometry.

L8: A617 from Farnsfield Road to A614

3.5.24 A total of two PICs occurred on this link during the five-year study period, one of which involved serious injury. Details are summarised below:

- The serious injury accident involved a motorcyclist who lost control when a vehicle ahead braked, causing the motorcycle to skid.
- The slight injury PIC was a rear-end shunt type collision involving two vehicles.

3.5.25 An examination of local road conditions and geometry has not revealed any obvious deficiencies that could have contributed to these collisions. The collisions appear to be un-related in terms of contributory factors and the available details provide no evidence of any local accident problem on this link that might be related to traffic conditions or road geometry.

Other Collisions within the Study Area

- 3.5.1 Although 10 additional collisions were recorded in the study area during the most 5-year period, they were spread over a significant area. Of these, 2 involved serious injury as summarised below:
- A serious-injury PIC was recorded on Scarborough Road.
 - A serious-injury PIC was recorded and at the junction of Deerdale Lane and Swish Lane.
- 3.5.2 Both of the above PICs were clearly isolated events. The volume of development traffic using these routes is not expected to be significant and the scheme is therefore not expected to give rise to a material increase in the risk of collisions at either location.

3.6 Road Safety Summary

- 3.6.1 Throughout most parts of the study area network, the available data provides no strong evidence of specific local accident problems that might be related to traffic conditions or road geometry. The number and severity of PICs is considered to be consistent with a typically busy urban and rural highway network. Following a review of existing highway conditions, it is considered that there are no significant shortcomings in terms of the local road geometry.
- 3.6.2 At the A614/Mickledale Lane junction and its approaches, a significant number of PICs was recorded and a proportion of these were related to conflicts between turning movements. However, NCC is developing proposals to improve the junction, which would include the installation of traffic signals. It is reasonable to expect that this scheme would address existing road safety issues. The need for the development to provide a financial contribution to this scheme is considered later in this report.
- 3.6.3 Having regard to the above, it is considered that the introduction of the proposed development, which is forecast to generate relatively modest additional traffic flows, would not give rise to any material increase in the risk of road traffic accidents in the local area.

4.0 SUSTAINABLE TRAVEL OPPORTUNITIES

4.1 Walking

4.1.1 Guidance on walking distances to local amenities is provided in the Chartered Institution of Highways and Transportation (CIHT) document, "Providing for Journeys on Foot" (2000). The Guidelines indicate that a walking distance of 400m is acceptable for trips within town centres and that a distance of 800m is acceptable elsewhere. The corresponding walking distances for commuting or trips to/from schools are given as 500m and 1km respectively. A "preferred maximum" walking distance of 2km is identified.

4.1.2 The 2km distance was subsequently adopted in central government guidance and was incorporated into the former PPG13 advice note, which stated that:

"Walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly those under two kilometres".

4.1.3 Current guidance within the Manual for Streets (MfS) continues to adopt this guidance. Paragraph 4.4.1 of MfS states that:

"Walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800 m) walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPS13 states that walking offers the greatest potential to replace short car trips, particularly those under 2 km."

4.1.4 These guideline distances remain in use by local authorities to determine access to facilities by walking. The CIHT Guidance advises that the 400m distance is equivalent to an approximate walking time of 5 minutes and this standard is typically adopted as the desirable maximum walking distance to local bus services. The corresponding walking distances of 1km and 2km are equivalent to approximately 12 minute and 25-minute walk times respectively.

4.1.5 The main walking routes and local amenities in the vicinity of the proposed development are shown on **Figure 4**, together with indicative walking catchments of 400m, 1km and 2km from the approximate centre of the site. These distances are generally acknowledged to be equivalent to typical walking times of 5 minutes, 12 minutes and 25 minutes respectively. Facilities lying within these distances offer the greatest scope to attract trips on foot.

4.1.6 The isochrones shown on Figure 4 take into account existing roads and established local footpath links/Public Rights of Way (PRoW) within the surrounding area.

4.1.7 It can be seen that the nearest local bus stops on Eakring Road and Mickledale Road can be reached within the recommended 400m walking distance.

4.1.8 A range of local facilities and amenities can be accessed within a walking distance of 1km or less of the site centre. These include schools, shops, employment sites and recreation facilities as follows:

- Bilsthorpe Surgery
- Convenience Store, The Crescent
- Fast Food Outlets, The Crescent
- Knights Bilsthorpe Pharmacy
- Miners Welfare Social Club
- Hairdressers, The Crescent

- Bilsthorpe Flying High Academy
- Post Office
- Bilsthorpe Library

4.1.9 In addition, the following local facilities (not an exhaustive list) can be reached within a walk of between 1km and approximately 2km (up to 25 minutes) from the site:

- Premier Convenience Store, Kirklington Road
- Fast Food Outlet, Kirklington Road
- Butchers/Bakers, Kirklington Road
- Hairdressers
- The Limes Café, A614

4.1.10 The site therefore lies within a comfortable walking distance of local schools, shops and employment opportunities, in accordance with the recommended maximum walking distances as advised in the CIHT guidance.

4.1.11 The proposed convenience store, to be built adjacent to the site, will further widen the choice of retail opportunities for existing and future development residents. This store would be within less than 400m of all parts of the residential development site.

4.1.12 The proposed development access scheme would provide a new footway to connect the site with the existing footways on Eakring Road to the south and opposite the site. The scheme would include opportunities to cross Eakring Road at dropped-kerb crossing points. Traffic flows and speeds along Eakring Road are relatively modest, as demonstrated in Section 3, and visibility is generous. It is therefore considered that crossing movements could be undertaken without undue difficulty and in reasonable safety.

4.1.13 A comprehensive network of footways and paths permeates the surrounding residential area and provides suitable links to both local amenities and adjacent employment areas, as shown on **Figure 4**.

4.1.14 Having regard to the above, it is considered that the site would be well connected to the existing pedestrian network. A range of local facilities and amenities is available within reasonable walking distances of the site and there is significant potential for a proportion of development trips to be made on-foot, without the need to use a private car. This would be further strengthened on completion of the proposed retail unit at the southern end of the site.

4.2 Cycling

4.2.1 The previous PPG13 guidance provided advice on cycling journey lengths. Although PPG13 has since been superseded, it is still commonly accepted that cycling offers strong potential to replace car-based trips for those journeys under 5km, or those made as part of a multi-modal trip that includes cycling and public transport (especially rail). A 5km distance is equivalent to a typical cycling time of 15 to 20 minutes.

4.2.2 The area benefits from a relatively flat surrounding topography, and is generally conducive to cycling. A 5km cycling radius (equivalent to a cycling time of 15 to 20 minutes) is shown on **Figure 5**.

4.2.3 Significant destinations within the 5km cycle catchment include:

- Bilsthorpe
- Eakring Village
- Farnsfield
- Center Parcs (employment and leisure)

4.2.4 Rainworth lies just beyond the 5km distance, but is still comfortably accessible by cycle. Mansfield town centre lies 12.5km from the site, which would be within cycling distance for more confident cyclists. The Mansfield urban area provides extensive employment, recreation, health, transport and shopping facilities.

4.2.5 National Cycle Network (NCN) Route 645 passes directly adjacent to the site frontage along Eakring Road. It has both on and off-road sections and connects NCN Route 6 to the west with Farnsfield to the east. Further local cycle routes are shown on an extract from the NCC interactive cycle network map, included in **Appendix D**.

4.2.6 Having regard to the above it is considered that there are opportunities for some trips generated by the proposed development to be made by cycle.

4.3 Bus Services

4.3.1 The centre of the site is located within approximately 200m of the nearest bus stop, which is on Eakring Road. Alternatively, buses can be accessed from bus stops located on Mickledale Lane, within 400m of the site.

4.3.2 The existing bus stops on Eakring Road are marked with a flag and pole with timetable information provided. These stops are served by the 27x/28b bus route, which connects Mansfield with Eakring and provides a 60-minute frequency service between Bilsthorpe and Mansfield during the main travel demand periods.

4.3.3 Alternative bus stops on Mickledale Lane also can be reached within 400m from the site. These stops are served by the same routes as the Eakring Road stops as well as the "Sherwood Arrow", which connects New Ollerton with Worksop and Nottingham, providing access to additional employment opportunities.

4.3.4 The bus routes and nearest stops are shown on **Figure 6**. A summary of the local bus services is provided in **Table 4.1**. Bus times were correct at the date of this report and timetable information can be made available upon request.

Table 4.1: Summary of Local Bus Services

Route No.	Service Provider	Route	Nearest Stops	Service Frequency (minutes)		
				Mon - Fri	Sat	Sun
27x/28b	Stagecoach	Mansfield – Rainworth – Bilsthorpe - Eakring	Eakring Road	60	60	NO SERVICE
Sherwood Arrow	Stagecoach	Worksop – New Ollerton – Sherwood Forest – Bilsthorpe – Farnsfield – Redhill – Daybrook – Nottingham Victoria	Mickledale Road	120	120	<u>Limited Service</u> 4 per day

- 4.3.5 It can be seen that the development would have convenient access to a regular bus service providing access to Mansfield. At the closest stop on Eakring Road, a service frequency of 1 bus per hour is available in each direction of travel.
- 4.3.6 The Sherwood Arrow also provides a two-hourly service to New Ollerton, Worksop and Nottingham and can be accessed from Mickledale Road, within a 400m walking distance from the centre of the site.
- 4.3.7 Connecting bus services are available at Mansfield, Worksop and Nottingham, which can be reached using the services listed above.
- 4.3.8 Therefore, it is considered that the proposed development would be well-served by existing bus services to the local and wider urban areas. These services would provide a viable option for local travel and for access to employment and amenities in Mansfield, Worksop and Nottingham.

4.4 Rail Services

- 4.4.1 The closest station to the site is Mansfield Station, on the Robin Hood Line and is operated by East Midlands Railway. The station is located approximately 12.8km from the centre of the site, equivalent to a cycle time of approximately 40 minutes.
- 4.4.2 The station is open 24 hours per day, has storage for 3 cycles and 103 car parking spaces. Additional facilities include a ticket office, ticket machines, customer help points, payphones, toilets, seating and step-free access to trains and platforms.
- 4.4.3 The bus station at Mansfield is located adjacent to the railway station, allowing for multi modal travel between the site and the wider Nottinghamshire area and can be reached using the 27x/28b bus service described above.
- 4.4.4 Rail-served destinations from Mansfield railway station include Worksop, Mansfield Woodhouse, Kirkby in Ashfield and Nottingham, with trains running every 30 minutes during daytimes and every 60 minutes during the evenings. Journeys to Worksop and Nottingham each take around 35 minutes.
- 4.4.5 Access to the railway network is therefore good and as a result, rail services would be a realistic travel option for longer distance trips between the site and major urban areas beyond, particularly Nottingham.

5.0 PROPOSED DEVELOPMENT

5.1 Scheme Content

5.1.1 The proposed development comprises 103 dwellings providing between 2 and 4 bedrooms. A proportion of these would be affordable homes. The scheme also includes ancillary infrastructure, landscaping and public open space. The proposed development layout plan is provided in **Appendix A**.

5.1.2 At the south-eastern end of the site, a small convenience retail store would be provided. Whilst this facility forms part of the outline planning consent at the site, it does not form part of the residential scheme for which detailed planning permission is now sought. It will be subject to a separate detailed/reserved matters planning application and has been treated as a committed development within this TA.

5.2 Vehicle Access Strategy

5.2.1 In accordance with the outline planning consent, the entire development site will be served from a new simple priority junction with Eakring Road, approximately 50m north of the existing Mickledale Lane junction.

5.2.2 There would be no direct frontage access to individual plots from Eakring Road, and the entire development would be served from the proposed new junction. The access has therefore been designed to serve both the retail and residential uses.

5.2.3 It is understood that principle of a single vehicle access to the site was reviewed by NCC as part of the outline application process and is acceptable in-principle

5.3 Visibility Splays

5.3.1 Condition 22 of the outline planning consent requires that no part of the development is brought into use until visibility splays of 2.4m x 43m have been provided. Such visibility splays are in accordance with the Manual for Streets MfS requirement for vehicle speeds of up to 30mph.

5.3.2 The vehicle speed survey data described in Section 3 provided 85th percentile speeds on Eakring Road as follows:

- Southbound approach = 35mph
- Northbound approach = 34mph

5.3.3 The Stopping Sight Distance (SSD) values appropriate to these approach speeds, have been calculated in accordance with the Manual for Streets (MfS) methodology. To provide a robust assessment, the usual wet weather corrections of -2.5mph in each direction (as prescribed in the DMRB), have not been applied as weather conditions were variable at the time of the survey. Full details are presented in **Appendix E**. The resulting major road SSD values as follows:

- North of access: 54.9m
- South of access: 54.1m

5.3.4 **Drawing T19017/SK01** shows that visibility splays in accordance with the above values can be provided on land within the site and/or existing highway boundary.

5.4 Internal Roads

5.4.1 From the proposed access, the development spine road would have a carriageway width of 5.5m with 2.0m wide footways to either side. A network of cul-de-sac roads would extend from this route and would be provided to a similar standard, with turning heads at the end of each branch.

5.4.2 The spine road would also provide access to the food retail store and a small car park, which would have a single entry/exit point approximately 35m east of the junction with Eakring Road. The indicative retail scheme layout, included on the plan in **Appendix A**, shows a car park with 19 spaces and a service yard. However, further details will be provided separately as part of the retail scheme detailed planning application.

5.4.3 Other roads within the site would serve dwellings through direct frontage access or via private drives leading from them. The internal roads would be designed in accordance with the *Manual for Streets* design guidance, such that the proposed layout would seek to limit vehicle speeds to 20mph.

5.5 Servicing

5.5.1 Vehicle swept path analysis of the proposed site access and internal road and turning head layouts has been undertaken for a design refuse collection vehicle. The analysis shown on drawing numbers **T196017/SK02, SK03** and **SK04** demonstrates that this design vehicle would be able to access the site and manoeuvre within it such that the refuse can be collected from all properties.

5.5.2 In accordance with *Manual for Streets*, the layout of the site would also ensure that total refuse drag distances do not exceed 30m for residents and 25m for waste collection operatives. Where necessary, bin collection points will be included within the development layout.

5.6 Access for Non-Motorised Modes

5.6.1 Condition 21 of the outline planning consent requires that no part of the development is brought into use until a scheme to provide a footways on the eastern side of Eakring Road from Mickledale Lane to the NCN cycle route has been approved.

5.6.2 A proposed new 2.0m wide footway along Eakring Road to the north and south of the site access would connect the development with the existing bus stops and the existing footway network at the junction with Mickledale Lane to the south of the site. It would also include a crossing point to enable pedestrians to reach the opposite footway and the NCN to the north, as required by the outline consent.

5.6.3 The internal layout of the development would be designed to create a safe and low-speed environment that gives priority to pedestrians and encourages walking. Footways would be provided adjacent to all internal roads.

5.7 Mobility-Impaired Users

5.7.1 The detailed design of both the development and associated infrastructure would be undertaken in accordance with the requirements of relevant disability discrimination legislation and current good practice.

5.8 Vehicle Parking

5.8.1 The NPPF requires local authorities to set car parking standards for new development, taking into account:

- The development's accessibility.
- Development type and mix.
- Availability of/opportunity to provide public transport.
- Local car ownership levels.
- Overall need to reduce the use of high-emission vehicles.

5.8.2 Car parking provision at the development is to be provided at a general rate of 2 spaces per dwelling, in line with typical NCC requirements. However, it is noted that the current Nottinghamshire Highway Design Guide, Section DG17, states that:

"You should not consider vehicle, motor cycle or cycle parking provision in isolation from travel plans. The level and design of on-site parking and any proposed travel plan measures should reflect and complement each other."

5.8.3 A full Residential Travel Plan (RTP) for the scheme will be therefore prepared and submitted separately.

5.8.4 Where garages are provided, they have minimum internal dimensions sufficient to allow them to be used as a parking space.

5.9 Cycle Parking

5.9.1 The current Nottinghamshire Highway Design Guide, Table DG14, provides guidance for the minimum parking provision for cycles. For residential dwellings the guidance states:

"For developments with common facilities, such as flats, one cycle space is required for every five dwellings. Parking to be under cover and secure. Where spaces are allocated, there should be one space for each dwelling."

5.9.2 Cycle parking for dwelling houses would be provided within garages (where available) or within the curtilage of each dwelling.

6.0 DEVELOPMENT TRIP GENERATION

6.1 Overview

6.1.1 This section of the report presents the proposed trip generation rates and traffic generation forecasts for use in assessing the impact of the scheme.

6.2 Trip Generation

6.2.1 An assessment of the vehicle trips that would be generated by the proposed development has been undertaken using the trip rates derived from the TRICS database (version 7.6.3).

6.2.2 The residential scheme will include an element of affordable housing. Reference to the TRICS database shows that houses for rent exhibit lower trip generation rates than those in private ownership. However, no separate allowance for rented homes has been made. The exclusive use of trip generation rates for privately-owned houses can therefore be considered robust.

6.2.3 The criteria for selection of TRICS sites used for the trip rate calculations were as follows and are intended to select data from similar developments and areas collected on appropriate survey dates, in accordance with the TRICS Good Practice Guide:

Land use and trip rate selection

- Residential land use category 03A: "*Houses Privately Owned*".
- 4-150 range and development size range selected.

Primary Filtering

- Weekday Counts only.
- "Suburban Area", "Edge of Town Centre" sites removed.

Secondary Filtering

- C1 and "Not Known" use classes removed
- Population <1 Mile: 15,001 to 20,000 or more were deselected.
Population <5 Miles: 50,001 to 75,000 or more were deselected

6.2.4 No other manual filtering of sites or parameters within TRICS was undertaken

6.2.5 The TRICS database selections and outputs are included in **Appendix F**. The resulting vehicle trip rates are as shown in **Table 6.1**.

Table 6.1: Residential Trip Rates (Vehicle Trips per Dwelling)

Time Period	Arrivals	Departures	TOTAL
AM (08:00 – 09:00)	0.126	0.429	0.555
PM (17:00 – 18:00)	0.394	0.220	0.614

6.2.6 Application of the above trip rates to the proposed development of 103 dwellings results in peak hour traffic generation forecasts for the development as summarised in **Table 6.2**.

Table 6.2: Residential Traffic Generation (Vehicle Trips)

Time Period	Arrivals	Departures	TOTAL*
AM (08:00 – 09:00)	13	44	57
PM (17:00 – 18:00)	41	23	63

**Figures may not sum exactly due to rounding of decimal places.*

6.2.7 These traffic generation forecasts have been taken forward to assess the impact of the scheme on the study area highway network.

6.3 Vehicle Trip Distribution

6.3.1 An estimation of the distribution of development traffic on the highway network was provided in the TA undertaken by ADC Infrastructure in support of the outline planning application that was subsequently approved. ADC's trip distribution model was based on census data population and travel-to-work data available from the 2011 National Census statistics. The development site is located within the Newark and Sherwood Middle-Layer Super-Output Area 005 (MSOA).

6.3.2 **Table 6.3** summarises the estimated trip distribution provided by ADC. As the distribution is based on the most current available census data, it remains valid and has therefore been adopted for this TA.

Table 6.3: Development Trip Distribution

Route	Route Description	Distribution (% Trips)
A	Deerdale Lane	11.0%
B	A617 Kirklington Road (East)	8.3%
C	A614 (South)	44.8%
D	A617 (West)	23.7%
E	A614 (North)	12.1%

Figures may not sum exactly to 100% due to rounding of decimal places.

6.4 Modal Split

6.4.1 The modal split of development trips has been assessed by reference to the 2011 Method of Travel-to-Work census data (QS701EW) for the Newark and Sherwood 005 MSOA. The wider Newark and Sherwood district area has also been considered for comparison purposes.

6.4.2 A summary of the resulting modal splits is presented in **Table 6.4** and provides a basis for assessing the effect of various modal shift initiatives as part of a future Residential Travel Plan (RTP).

Table 6.4: Modal Split Summary (2011 Census)

From National Census 2011, Neighbourhood Statistics		PERSONS BY CATEGORY	MODAL SPLIT (% of trips made)	PERSONS BY CATEGORY	MODAL SPLIT AT (% of trips made)
CAT	Group	Newark and Sherwood 005 Super Output Area Middle Layer		Newark and Sherwood Local District	
1	All Usual Residents Aged 16 to 74	6467	-	84145	-
1	Work Mainly at or From Home	344	-	3401	-
2	Underground, Metro, LRT, Tram	5	0.13%	77	0.15%
3	Train	35	0.93%	868	1.70%
4	Bus, Minibus or Coach	85	2.25%	1406	2.75%
5	Taxi	3	0.08%	95	0.19%
6	Motorcycle, Scooter or Moped	20	0.53%	384	0.75%
7	Driving a Car or Van	3041	80.53%	36809	71.96%
8	Passenger in a Car or Van	196	5.19%	3010	5.88%
9	Bicycle	58	1.54%	2152	4.21%
10	On Foot	304	8.05%	6036	11.80%
11	Other Method of Travel to Work	29	0.77%	317	0.62%
12	Not in Employment	2347	-	29590	-
	Total	6467		84145	
	Total Travelling (i.e. - exc. cat 1 and 12)	3776	100%	51154	100%

6.4.3 It can be seen that the local MSOA has a modal share of car drivers that is higher than the wider Newark and Sherwood district. The car passenger and bus passenger modes have a similar share to the wider district but the modal shares of cycling and walking are lower than the wider district. This is to be expected given the site's small village location.

6.4.4 However, the results overall show that the local MSOA has a good level of sustainable travel mode use. Together, the bus, rail, light rail/tram, walk car share, and cycle modes account for approximately 18% of all trips. This suggests that there is potential for a significant proportion of development trips to be accommodated on sustainable travel modes, subject to satisfactory connections with the sustainable travel network as is proposed in Sections 4 and 5.

7.0 TRAFFIC FORECASTS

7.1 Overview

7.1.1 This section of the TA summarises the traffic forecasts for the future year “No Development” and “With Development” scenarios, and assesses the impact of the proposed residential development scheme. Full details of the traffic flow forecast and network traffic flow diagrams are provided in **Appendix G**.

7.2 Assessment Years and Traffic Growth

7.2.1 It is assumed that if planning permission is granted within a reasonable time period, the scheme could commence in 2020 and be completed by 2022. In accordance with normally recommended practice for local road networks, the impact of the scheme should be assessed 5-years after completion which would require a future assessment year of 2027.

7.2.2 Growth in background traffic flows between the survey year (2019), opening year (2022) and future assessment year (2027) has been calculated in accordance with the National Transport Model (NTM) forecasts, which were adjusted to local values for the Newark and Sherwood Middle Layer Super Output Area (MSOA) 005 and the Newark and Sherwood District area using the TEMPRO 7.2 system and datasets.

7.2.3 The TEMPRO software highlighted that the local MSOA growth factors have a lower level of confidence for the data as aggregated to the district geographical level. Therefore, the growth factors for the Newark and Sherwood local authority area were used.

Table 7.1: Background Traffic Growth Factors

Growth Period	Peak Period	NTM Growth Factors
		Newark and Sherwood
2019-2022	AM	1.048
	PM	1.047
2019-2027	AM	1.118
	PM	1.117

7.3 Committed Development

7.3.1 Committed developments are defined as those having a valid planning consent, but which are currently unimplemented or incomplete. Committed development traffic is only taken into account where it could materially affect future traffic patterns within the study area over and above background traffic growth effects.

7.3.2 A review of approved developments in the local area has identified the following committed developments, based on the above criteria:

- **CDEV 1: Food retail store, land east of Eakring Road (NSDC planning ref: 17/01139/OUTM)**

The proposed food retail store at the south-western corner of the site forms part of the outline consent mixed-use development at the Eakring Road site and would be served

by the residential access spine road. Reserved matters approval for a convenience store is to be sought separately by another developer, but the potential traffic generation of such a scheme at the site access junction must be taken into account in this TA.

The TA undertaken by ADC for the outline application assumed that the retail unit would not generate new trips on the highway network, but would serve local needs thus reducing longer distance car travel to more remote retail opportunities. It is understood that this position was accepted by NCC, and it is therefore not considered necessary to take account of the retail unit in terms of the wider highway network.

However, the retail unit would generate additional turning movements at the site access junction itself. Given that detailed approval of the access scheme is now sought, it is considered necessary to assess the store's potential traffic generation at that location.

Trip rates for this land use have therefore been derived from the TRICS database for land use category "01 – Retail 0 – Convenience Store". These trip rates were applied to the approved floor area of 280m². The resulting traffic flows were assigned to the respective turning movements at the site access in accordance with the residential trip distribution identified in Section 6, which reflects the fact that the majority of trips in the local area are likely to originate from the main village area to the south. It is considered that this approach provides a robust basis for assessing the capacity of the site access junction.

- **CDEV 2: Land off Oldbridge Way (NSDC planning ref: 16/01618/OUTM)**

This scheme is understood to comprise 113 dwellings a proportion of which would be affordable homes. The majority will be accessed off Eakring Road and approximately 20 from Mickledale Lane. The scheme could therefore generate some traffic in the vicinity of the Eakring Road/Mickledale Lane junction and the proposed site access.

The trip generation rates identified in the TA that supported the scheme (BSP Consulting) have been applied to the approved development of 113 dwellings. However, BSP's TA did not consider the assignment of this traffic to the local highway network, and trips generated by this scheme have therefore been assigned to the highway network in accordance with the trip distribution presented in this TA.

- **CDEV 3: Land off Maid Marian Avenue (NSDC Planning Ref: 16/02086/OUTM)**

Bryan G Hall Consulting (BGH) prepared a TA for a development of up to 93 dwellings on land to the north of Maid Marian Avenue. The site has received planning approval for up to 51 dwellings. The trip generation rates and distribution forecasts from the BGH TA have therefore been applied to the approved scheme of 51 dwellings.

- **CDEV 4: Former Noble Food Site (NSDC Planning Ref: 18/00931/OUTM)**

Croft Transport Planning (CTP) prepared a TA for a development of 136 dwellings on the former Noble Foods factory, which is located at the southern end of Bilsthorpe on Kirklington Road. At this location, the development is unlikely to generate any significant additional traffic in the vicinity of the Eakring Road/Mickledale Lane junction and the proposed site access.

The TA by CTP concluded that the scheme would have an imperceptible impact on the operation of the local highway network compared with the former factory use. The scheme was approved on this basis without any requirement for off-site traffic impact assessments.

With regard to this, and given its distance from the site, CDEV 4 has not been considered

further in this TA.

7.4 "No Development" Scenario

- 7.4.1 Traffic flow forecasts for the opening and future year assessments were obtained by factoring base traffic flows at 2019 by the traffic growth factors summarised in Table 7.1. Committed development traffic flows were then added, resulting in set of base-line traffic forecasts for the "No Development" scenario.

7.5 "With Development" Scenario

- 7.5.1 The assigned traffic flows that would be generated by the proposed residential development were added to the No Development scenario forecasts. The resulting "With Development" traffic forecasts have been used in the assessment of the scheme's impact.

7.6 Assessment of Traffic Impact

- 7.6.1 To assess whether material traffic flow increases would occur in or beyond the study area, the advice provided within the former DfT "Guidance on Transportation Assessment" has been followed as a simple guide to the degree of influence of the proposed development. Although this guidance has been superseded, no replacement criteria for the assessment of material traffic flow increases have been made available and the former thresholds are still considered to be informative of the relative degree of impact of a scheme.
- 7.6.2 The former DfT guidelines provide no specific thresholds and do not advocate the use of percentage thresholds alone to determine where there is a material increase in traffic flow. However, they suggest that a two-way increase in traffic flow of more than 30 vehicles may require further consideration or more detailed assessment.
- 7.6.3 The volumetric changes in traffic flows on key parts of the local highway network that would arise from the proposed development are summarised in **Table 7.2**. The link numbers identified in the table correspond to those shown on the relevant traffic flow diagrams in **Appendix G**.

Table 7.2: Changes in Two-Way Traffic Flow Arising from Proposed Development

Link	Change in 2-way flow (vehicles)	
	AM Peak Hour	PM Peak Hour
Eakring Road north of site access	+13	+14
Eakring Road south of Mickledale Lane	+5	+5
Mickledale Lane west of Eakring Road	+39	+44
Deerdale Lane east of Eakring Road	+6	+6
Deerdale Lane west of Eakring Road	+6	+7
A614 North of Deerdale Lane	+6	+7
Mickledale Lane east of A614	+39	+44
A614 north of A617	+39	+44
A614 south of A617	+26	+28
A617 west of A614	+13	+15
A617 east of A614	+0	+0
A617 east of Farnsfield Road	+5	+5

7.6.4 Table 7.2 shows that two-way traffic flow increases would be below 30 vehicles on all routes except for:

- Mickledale Lane between Eakring Road and the A614;
- The A614 between Mickledale Lane and the A617.

7.6.5 The above routes would carry the majority of development-related traffic flows. Forecast traffic flow increases on these routes would be between approximately 30 and 44 vehicles. This would not represent a significant increase relative to the existing traffic flows on these routes. However, the A614/Mickledale Lane junction was found to be particularly sensitive to additional traffic flow increases in the previous TA (ADC) and therefore requires further consideration.

7.6.6 The forecast development traffic flows on the A614 north of the A617 roundabout would be equivalent to less than 2% of existing flows as surveyed in 2019. In practice, increases of this magnitude are unlikely to be distinguishable from daily variations in traffic flow and cannot therefore be regarded as material. Notwithstanding these modest increases, the adjacent A614/A617 Roundabout has nevertheless been included in the detailed assessments that follow, for consistency with the original TA.

7.6.7 Elsewhere, forecast traffic flow increases would not be significant and in most cases below 10 vehicles per hour.

7.6.8 Having regard to the above assessment, the proposed development is forecast to give rise to material increases in traffic flows (i.e. - more than 30 vehicles) through the following study area junctions:

- Junction 1: Eakring Road/Mickledale Lane
- Junction 2: A614/Mickledale Lane/Inkersall Lane



- Junction 3: A614/A617 Roundabout

7.6.9 The capacities of Junctions 1, 2 and 3 are therefore assessed in Section 8 of this TA.

8.0 CAPACITY ASSESSMENTS

8.1 Overview

- 8.1.1 This section of the report provides a summary of the capacity assessments undertaken at the proposed site access and the off-site study area identified in Section 7.
- 8.1.2 The capacity assessments of the existing junction layouts have been undertaken using the TRL JUNCTIONS 9 software, which has been used to assess the operation of each junction under various assessment scenarios described below.

8.2 General Notes

- 8.2.1 All modelling is based on traffic flows expressed as Passenger Car Units (PCUs), which take into account the relative impact of differing vehicle sizes and characteristics by giving larger and hence slower moving vehicles an appropriate weighting.
- 8.2.2 The Ratio of Flow to Capacity (RFC) value provides an indication of how close to capacity each entry will operate. An RFC value of less than or equal to 1.00 indicates that the entry is operating within capacity. The desirable maximum RFC value for new junctions at the appropriate design year is 0.85, allowing some reserve capacity for daily fluctuations in traffic demand.
- 8.2.3 All modelled queues are quoted in PCUs. For the purposes of conversion into queue lengths, a single PCU can be considered to have a length of 5.75 metres.
- 8.2.4 JUNCTIONS 8 results for priority junctions are quoted by traffic stream. The software does not quote results for "free-flow" streams that are not delayed (e.g. – straight ahead major road movement where it is not blocked by vehicles waiting to turn right into the side road), which are therefore marked as "–" within the relevant summary tables. Each arm of a priority junction is identified by a letter and each stream is thus defined by an origin-destination pairing (e.g. C-AB is any movement from Arm C to either Arm A or Arm B).
- 8.2.5 Full capacity assessment reports are included in **Appendix H**.



8.3 Proposed Site Access

8.3.1 **Table 8.1** summarises the capacity assessment results for the proposed access at the opening and assessment years. The assessment takes into account the proposed residential development and the approved convenience store (CDEV1) and therefore represents all future traffic demands at the proposed junction.

8.3.2 The traffic stream labels are as follows:

- A – Eakring Road North
- B – Site Access
- C – Eakring Road South

Table 8.1: Capacity Assessment Results - Proposed Site Access

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
With Dev 2022						
Stream B-C	0.10	6.46	0.09	0.10	6.47	0.07
Stream B-A	0.00	9.09	0.04	0.00	9.37	0.03
Stream C-AB	0.10	5.14	0.05	0.10	5.59	0.09
With Dev 2027						
Stream B-C	0.10	6.48	0.09	0.10	6.50	0.07
Stream B-A	0.00	9.63	0.04	0.00	9.47	0.03
Stream C-AB	0.10	5.07	0.05	0.10	5.57	0.09

8.3.3 The assessment shows that the proposed junction would operate well within capacity in both future assessment years.

8.4 Junction 1: Eakring Road/Mickledale Lane

8.4.1 The capacity modelling of this existing junction is described below. The traffic stream labels used in the JUNCTIONS 9 model are as follows:

- A – Eakring Road south
- B – Mickledale Lane
- C – Eakring Road north

8.4.2 In the first instance, the JUNCTIONS 9 model was run using 2019 surveyed flows in order to provide a comparison between modelled and observed mean maximum queues. **Table 8.2** provides this comparison for each approach to the junction.

Table 8.2: Comparison of Modelled and Observed Queues - Junction 1

Arm	AM Peak Hour (Vehicles)		PM Peak Hour (Vehicles)	
	Modelled	Observed	Modelled	Observed
A – Eakring Road south	-	0	-	1
B – Mickledale Lane	0.20	2	0.20	2
C – Eakring Road north	0.00	0	0.10	0

8.4.3 The differences between modelled and observed queues are not considered significant and the JUNCTIONS 9 model is therefore considered to provide a reasonable representation of the operation of the existing roundabout.

8.4.4 Full results summarising the operation of the junction are provided in **Table 8.3**.

Table 8.3: Capacity Assessment Results - Junction 1

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
	Survey 2019					
Stream B-C	0.10	5.92	0.09	0.10	5.94	0.05
Stream B-A	0.10	8.16	0.10	0.10	8.04	0.10
Stream C-AB	0.00	6.01	0.02	0.10	5.98	0.11
	No Dev 2022					
Stream B-C	0.10	6.20	0.10	0.10	6.23	0.06
Stream B-A	0.20	8.45	0.13	0.20	8.49	0.15
Stream C-AB	0.00	6.05	0.02	0.20	6.03	0.12
	With Dev 2022					
Stream B-C	0.10	6.23	0.12	0.10	6.33	0.11
Stream B-A	0.20	8.84	0.14	0.20	9.03	0.15
Stream C-AB	0.10	6.34	0.08	0.20	6.24	0.15
	No Dev 2027					
Stream B-C	0.10	6.27	0.11	0.10	6.29	0.06
Stream B-A	0.20	8.60	0.14	0.20	8.67	0.15
Stream C-AB	0.00	6.03	0.02	0.20	6.07	0.13
	With Dev 2027					
Stream B-C	0.10	6.31	0.12	0.10	6.41	0.11
Stream B-A	0.20	9.00	0.15	0.20	9.20	0.16
Stream C-AB	0.10	6.33	0.08	0.20	6.28	0.16

8.4.5 The results confirm that the junction would operate well within capacity in both future assessment years. The proposed development would have no significant operation on its performance.

8.5 Junction 2: A614/Mickledale Lane/Inkersall Lane

8.5.1 The capacity assessment of this existing cross-roads junction was undertaken using geometric inputs taken directly from the previous TA prepared by ADC; it is understood that this assessment was previously accepted by NCC.

8.5.2 The traffic stream labels used in the JUNCTIONS 9 model are as follows:

- A – A614 north
- B – Mickledale Lane
- C – A614 south
- D – Inkersall Lane

8.5.3 In the first instance, the model was run using 2019 surveyed flows in order to provide a comparison between modelled and observed mean maximum queues. **Table 8.4** provides this comparison for each approach to the junction.

Table 8.4: Comparison of Modelled and Observed Queues - Junction 2

Arm	AM Peak Hour (Vehicles)		PM Peak Hour (Vehicles)	
	Modelled	Observed	Modelled	Observed
A – A614 north	0.00	0	0.00	0
B – Mickledale Lane	25.30	13	1.40	7
C – A614 south	0.40	2	0.40	2
D – Inkersall Lane	0.10	1	0.10	1

8.5.4 The differences between modelled and observed queues are not considered significant on most arms of the junction. On Mickledale Lane, the model is pessimistic in terms of queuing during the AM peak hour. During the PM peak hour, observed queues on this arm are greater than modelled queues, although the difference is less significant.

8.5.5 It is likely that these differences are due to the model being unable to take full account of how the behaviour of drivers emerging onto the A614 from Mickledale Lane changes in response to the congestion, with drivers choosing to accept smaller gaps than allowed for in the model.

8.5.6 The differences between modelled and observed queues are not considered to be of a magnitude that warrants specific calibration and the model is therefore considered to provide a reasonable representation of the operation of the existing junction. However, the results for the future assessment years must be treated with increased caution, as discussed below.

8.5.7 Full results summarising the operation of the junction are provided in **Table 8.5**.

Table 8.5: Capacity Assessment Results - Junction 2

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Survey 2019						
Stream B-CD	18.50	372.09	1.27	0.60	16.22	0.38
Stream B-AD	6.80	472.25	1.18	0.80	96.87	0.45
Stream A-D	0.00	11.59	0.02	0.00	9.82	0.00
Stream D-ABC	0.10	67.01	0.08	0.10	75.10	0.10
Stream C-B	0.40	14.91	0.27	0.40	15.55	0.24
No Dev 2022						
Stream B-CD	70.20	4061.86	3.95	8.30	171.10	1.06
Stream B-AD	20.20	4349.68	3.85	3.10	332.42	0.91
Stream A-D	0.00	12.26	0.02	0.00	10.54	0.00
Stream D-ABC	2.80	1450.33	999999999.00	0.50	360.67	0.38
Stream C-B	0.60	17.03	0.34	0.50	14.30	0.32
With Dev 2022						
Stream B-CD	89.30	5808.69	5.24	22.50	384.33	1.33
Stream B-AD	21.90	6199.11	5.12	5.40	499.22	1.21
Stream A-D	0.00	12.39	0.02	0.00	10.92	0.00
Stream D-ABC	3.90	2276.33	999999999.00	2.60	1275.22	999999999.00
Stream C-B	0.60	17.77	0.36	0.70	16.18	0.40
No Dev 2027						
Stream B-CD	100.10	1795.99	999999999.00	61.30	3865.40	3.83
Stream B-AD	29.40	1409.49	999999999.00	13.70	4258.71	3.72
Stream A-D	0.00	13.13	0.02	0.00	11.31	0.00
Stream D-ABC	3.90	2291.33	999999999.00	3.40	1621.47	999999999.00
Stream C-B	0.70	19.47	0.38	0.60	15.92	0.36
With Dev 2027						
Stream B-CD	117.50	1514.21	999999999.00	91.50	21903.38	999999999.00
Stream B-AD	29.60	1569.48	999999999.00	18.50	26549.64	999999999.00
Stream A-D	0.00	13.29	0.02	0.00	11.75	0.00
Stream D-ABC	3.90	2341.75	999999999.00	4.70	2312.51	999999999.00
Stream C-B	0.80	20.44	0.41	0.80	18.28	0.44

8.5.8 The results show that the junction is forecast to operate above capacity in both future assessment years, with capacity effectively becoming zero on the Inkersall Lane arm (in 2022) and Mickledale Lane (in 2027 during the PM peak hour). The proposed development is predicted to give rise to a further deterioration in the performance of the junction. However, these results are not considered

to be reliable due to inability of the modelling software to reflect modified driver behaviour in response to congestion, as noted above.

- 8.5.9 By examining the additional turning flows that would be generated by the proposed development, it is clear that the impact of the development at this location would in practice be insignificant. The additional turning flows generated by the proposed development are as shown in **Table 8.6**.

Table 8.6: Forecast Development-Related Increases in Traffic Flow, Junction 2

Turning Movement	AM Peak Hour	PM Peak Hour
A614 RT to Mickledale Lane	+9 vehicles	+28 vehicles
Mickledale Lane LT to A614	+30 vehicles	+16 vehicles

- 8.5.10 It can be seen that the proposed development would generate no additional turning movements to/from the A614 north.
- 8.5.11 The proposed development would increase right turns from the A614 to Mickledale Lane by 9 vehicles during the AM peak hour and by 28 vehicles during the PM peak hour. These are clearly modest increases and this traffic stream (Stream C-B) is predicted to remain within capacity during both peak hours. The development would therefore have no impact on this movement.
- 8.5.12 The left turn from Mickledale Lane to the A614 is predicted to increase by 30 vehicles during the AM peak hour and by 16 vehicles during the PM peak hour. These are clearly modest increases, equivalent to 1 vehicle every 2 minutes on average during the AM peak hour. Given the pessimistic nature of the AM peak hour model, these modest additional flows are not expected to give rise to the significant impacts on capacity predicted by Table 8.5 in practice.
- 8.5.13 It should also be noted that development traffic towards the A614 south of Mickledale Lane could avoid the junction altogether by using Kirklington Road to the south of the site and the A617. The increases in left turn movements from Mickledale Lane to the A614 are therefore likely to be lower than predicted in Table 8.6.
- 8.5.14 It is understood that NCC has already identified this junction for a scheme of improvements through the IDP. A traffic signal scheme was suggested in the original TA and was shown to improve the operation of the junction with the development in place.
- 8.5.15 An "*Options Assessment Report*" in respect of the "*A614/A6097 Major Road Network Improvement Scheme*" has now been prepared by AECOM (May 2019). The report examines options for the improvement of the Mickledale Lane junction and concludes that a traffic signal scheme is the preferred option. It is noted that the report and its junction assessments take into account the development at the Eakring Road site as permitted by the outline planning consent.
- 8.5.16 It is also noted that no developer financial contribution towards a suitable County Council-led scheme was required by the outline planning consent. It is therefore not considered appropriate for this TA to propose any separate mitigation scheme at this location, and it is concluded that no further mitigation is required.



8.6 Junction 3: A614/A617 Roundabout

- 8.6.1 The capacity assessment of this existing roundabout junction is described below. In preparing the JUNCTIONS 9 model, it is noted that the A617 west (eastbound approach) has a two lane entry, the left-hand lane being marked as available for left turning traffic only and the right hand lane being allocated to all other straight-ahead traffic. If these road markings were to result in unequal use of the nearside and off-side lane, an intercept correction would need to be applied in accordance with the "ARCADY Health Warning" paper (B. Chard, 1997).
- 8.6.2 However, examination of the 2019 traffic survey data shows that the volume of traffic turning left onto the A614 (and hence required to use the nearside lane) is not significantly different from the sum of traffic turning right and travelling straight ahead (which would use the off-side lane). The surveyed turning flow data therefore suggests unequal use of these lanes would be insignificant during both peak hours. As a result, no intercept corrections of the base model are required.
- 8.6.3 In the first instance, the JUNCTIONS 9 model was run using 2019 surveyed flows in order to provide a comparison between modelled and observed mean maximum queues. It was initially found that modelled queues were below observed values. It is likely that this is partly due to long approach flares, which are greater than 30m. The software warns that the accuracy of results reduces at this threshold, and all flare lengths were therefore set to a maximum of 30m. Intercept corrections were also applied to each arm in order to further improve the comparison between modelled and observed queues. Following application of these corrections, the comparison of modelled and observed queues is presented in **Table 8.7**.

Table 8.7: Comparison of Modelled and Observed Queues - Junction 3 (Calibrated)

Arm	AM Peak Hour (Vehicles)		PM Peak Hour (Vehicles)	
	Modelled	Observed	Modelled	Observed
A – A617 east	17.80	19	11.80	21
B – A614 south	20.30	17	9.80	20
C – A617 west	21.60	21	12.70	20
D – A614 north	19.40	18	4.80	21

- 8.6.4 The differences between modelled and observed queues shown above are not significant during the AM peak hour. The differences are somewhat greater during the PM peak hour, but are not at a level that is considered to warrant further adjustments to the model. Overall, the calibrated model is considered to provide a reasonable representation of the operation of the existing roundabout across the two peak hours.

8.6.5 Full results summarising the operation of the junction using the calibrated model are provided in **Table 8.8**.

Table 8.8: Capacity Assessment Results - Junction 3 (Calibrated)

	AM			PM		
	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC
Survey 2019						
A - A617 Kirklington Road East	17.80	77.89	0.99	11.80	52.15	0.95
B - A614 Old Rufford Road South	20.30	67.68	0.99	9.80	36.36	0.92
C - A617 Kirklington Road West	21.60	92.69	1.01	12.70	60.99	0.96
D - A614 Old Rufford Road North	19.40	53.52	0.98	4.80	15.36	0.83
No Dev 2022						
A - A617 Kirklington Road East	43.30	161.93	1.08	30.60	114.56	1.04
B - A614 Old Rufford Road South	42.80	124.03	1.05	23.80	76.99	1.00
C - A617 Kirklington Road West	40.90	156.51	1.07	31.20	126.94	1.05
D - A614 Old Rufford Road North	48.80	112.41	1.05	7.50	22.72	0.89
With Dev 2022						
A - A617 Kirklington Road East	45.20	169.18	1.09	33.20	122.94	1.05
B - A614 Old Rufford Road South	45.10	129.50	1.06	29.70	91.51	1.02
C - A617 Kirklington Road West	42.40	161.23	1.08	36.20	144.02	1.07
D - A614 Old Rufford Road North	62.50	138.05	1.07	8.10	24.33	0.90
No Dev 2027						
A - A617 Kirklington Road East	72.30	296.48	1.16	70.50	237.10	1.15
B - A614 Old Rufford Road South	78.70	229.98	1.13	51.20	143.95	1.07
C - A617 Kirklington Road West	69.70	285.92	1.15	56.30	233.89	1.12
D - A614 Old Rufford Road North	93.10	212.31	1.12	13.90	39.90	0.95
With Dev 2027						
A - A617 Kirklington Road East	73.80	306.46	1.16	73.60	248.37	1.16
B - A614 Old Rufford Road South	81.90	241.89	1.13	59.90	164.45	1.09
C - A617 Kirklington Road West	71.60	295.83	1.15	62.20	265.46	1.14
D - A614 Old Rufford Road North	108.80	260.21	1.14	15.40	43.40	0.96

8.6.6 The results show that the junction is forecast to operate above capacity in both future assessment years. Generally, however, the proposed development would not have a significant impact on the performance of the junction.

8.6.7 In the 2022 opening year, the proposed development gives rise to increased queues on each junction arm as summarised in **Table 8.9**.

Table 8.9: Queue Differences - J3: A614/A617 Roundabout (2022)

Arm	Queue Difference (Vehicles)	
	AM	PM
A617 east	+1.9	+2.6
A614 south	+2.3	+5.9
A617 west	+1.5	+5.0
A617 north	+13.7	+0.6

- 8.6.8 It can be seen that in most cases, the forecast increases in queuing in the "With Development" scenario are not significant. The most significant differences occur on the A617 north arm (+13.7 vehicles during the AM peak hour) and A614 south arm (+5.9 vehicles during the PM peak hour). However, the increases across the junction as a whole remain modest.
- 8.6.9 These findings are generally consistent with the original TA, which also considered a 2022 future year and concluded that the proposed development would not have a significant impact on the performance of the junction.
- 8.6.10 It is therefore considered that the assessment presented above confirms the findings of the original TA that supported the outline planning application. That assessment concluded that the impact of the proposed development at the A614/A617 Roundabout would have only a limited impact on junction performance. This position has previously been accepted by NCC.
- 8.6.11 It is therefore considered that the development would not give rise to a severe residual impact at this location in terms of overall capacity or the risk of accidents.

9.0 CONCLUSIONS

9.1 Summary

- 9.1.1 Travis Baker were appointed by Keepmoat Homes to assess the highways and transport issues affecting a proposed residential development on undeveloped land to the east of Eakring Road, Bilsthorpe, Nottinghamshire.
- 9.1.2 The application site received outline planning approval in June 2018 for a mixed-use development comprising 85 dwellings and up to 280sqm of retail development (Class A1), with access from a new simple priority junction with Eakring Road. Keepmoat is now seeking full planning approval for a development scheme of 103 dwellings. It is understood that a reserved matters/full planning application for the retail element of the approved development, which will comprise a small convenience store, is to be submitted separately by another developer.
- 9.1.3 This Transport Assessment (TA) has been prepared to support the proposed residential development. The local planning authority is Newark and Sherwood District Council (NSDC) and highway authority is Nottinghamshire County Council (NCC).
- 9.1.4 The proposed development for which planning permission is sought is based upon the site access strategy that was approved in principle at outline planning stage. The capacity assessment of the site access takes into account the traffic that would be generated by both the residential development and the proposed convenience store, as well as background traffic growth. The assessment shows that the proposed junction would have more than sufficient capacity to accommodate all proposed development at the site.
- 9.1.5 The access scheme would provide visibility splays consistent with measured 85th percentile traffic speeds on Eakring Road at the site frontage. It has also been designed to accommodate the swept paths of the appropriate design vehicles that would serve the residential and retail elements.
- 9.1.6 The development's internal roads would be designed to limit vehicle speeds to 20mph in accordance with current good practice. The scheme seeks to create a safe and low-speed environment that gives priority to pedestrians and encourages walking.
- 9.1.7 The site is located within a reasonable walking distance of local bus services that pass along Eakring Road and Mickledale Lane. These provide a good level of service to/from Mansfield, Worksop and Nottingham.
- 9.1.8 The proposed development would be within a comfortable walking distance of the proposed convenience store and other amenities within Bilsthorpe, which include a range of shops, schools, recreation facilities and employment opportunities.
- 9.1.9 The proposed development is also within a reasonable cycling distance of nearby villages and local amenities. Major employment areas in are also accessible for more ambitious cyclists. National and local rail services can be accessed at Mansfield railway station, which can also be reached using local bus services.
- 9.1.10 Available records of personal injury accidents show that there is no strong evidence of any road-safety related-issues on most parts of the highway network immediately adjacent to the site. However, a more significant number of collisions between turning vehicles was identified at the

A614/Mickledale Lane junction. This location has been identified by NCC for major highway improvements to address existing road safety and congestion issues, as discussed further below.

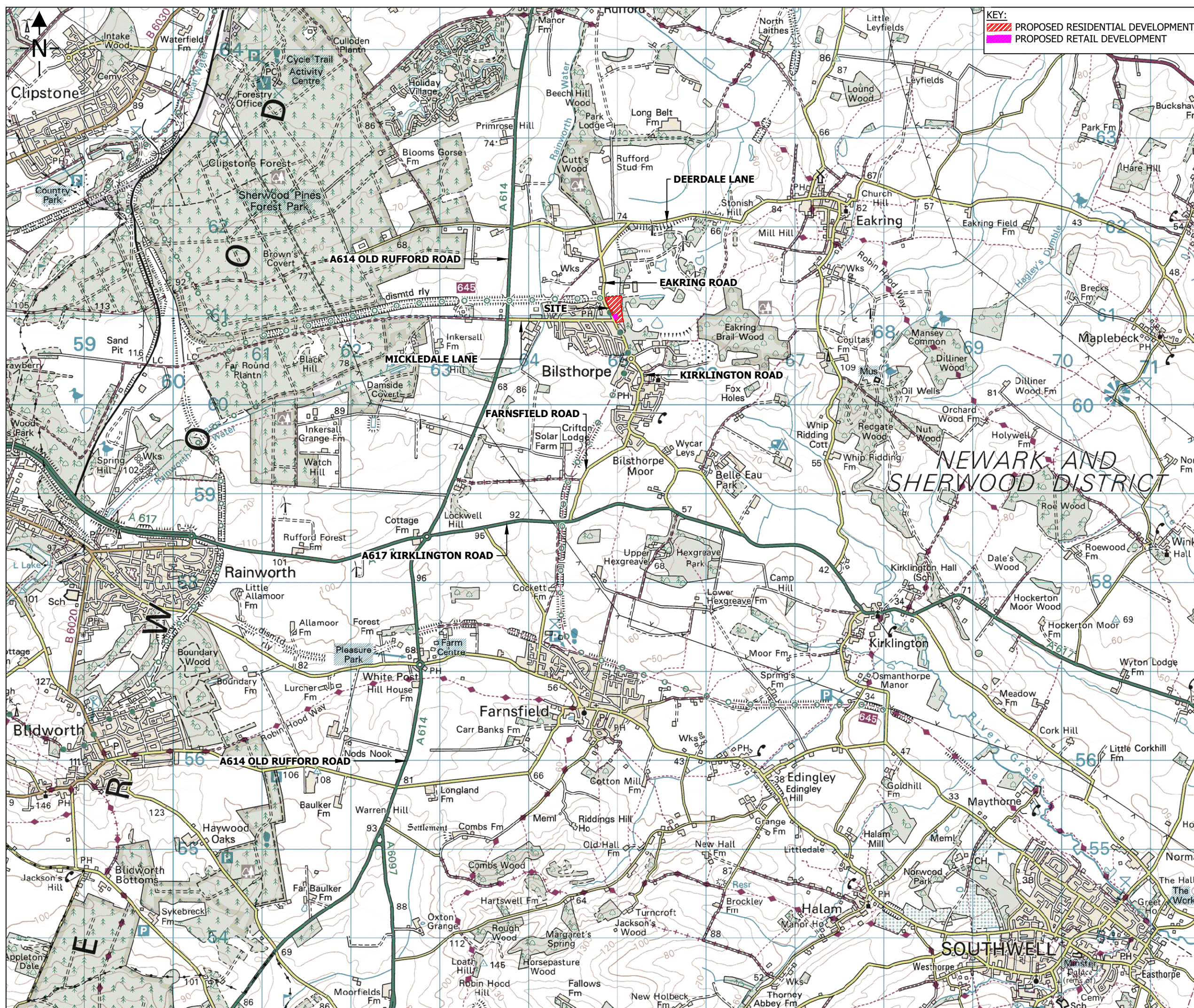
- 9.1.11 A trip generation assessment has been undertaken and an assessment of the scheme's traffic impact has been undertaken, relative to a "No Development" case that includes background traffic growth to the anticipated scheme completion year (2022) and an assessment year 5 years beyond (2027).
- 9.1.12 The assessment study area comprises the same junctions and links that were assessed previously in the TA that supported the outline planning application. Three junctions have been identified as potentially experiencing traffic impacts as a result of the proposed development, as follows:
- Junction 1: Eakring Road/Mickledale Lane
 - Junction 2: A614/Mickledale Lane/Inkersall Lane
 - Junction 3: A614/A617 Roundabout
- 9.1.13 Detailed assessments have been undertaken at these locations. The assessments show that the forecast impact of the development on the operation of Junctions 1 and 3 would not be significant in practice and would not warrant capacity-related highway improvements.
- 9.1.14 Junction 2 (A614/Mickledale Lane) currently operates above capacity, with significant queues on Mickledale Lane. The capacity modelling indicates that conditions at the junction will deteriorate further in the future assessment years as a result of background traffic growth, although the modelling at these future years is considered less reliable.
- 9.1.15 NCC has identified that this junction requires improvements and a preferred scheme that involved the installation of traffic signals has been identified. It is understood that this scheme takes into account the development at Eakring Road as approved by the outline planning consent. Therefore, no separate mitigation scheme is required, and none is identified within this TA.
- 9.1.16 Car parking provision at the development is to be provided at a general rate of 2 spaces per dwelling, in line with typical NCC requirements. However, overall parking provision on-site would be provided in discussion with NCC and in the light of a formal Residential Travel Plan, to be submitted separately.

9.2 Overall Conclusion

- 9.2.1 Satisfactorily vehicular access to the site can be achieved and the proposed development would also be accessible by sustainable travel modes such as public transport, walking and cycling.
- 9.2.2 The site is considered suitable for the scale and type of development proposed, which complies with relevant transport-related policies and is not forecast to give rise to materially adverse traffic impacts, subject to provision of the access and other transport measures proposed in this report.
- 9.2.3 On this basis, it is considered that the proposed development could be satisfactorily accommodated by the adjacent transport network and there are no significant transport issues that should prevent the planning application from being approved.



Figures



KEY:
 PROPOSED RESIDENTIAL DEVELOPMENT
 PROPOSED RETAIL DEVELOPMENT

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NEWARK AND SHERWOOD DISTRICT

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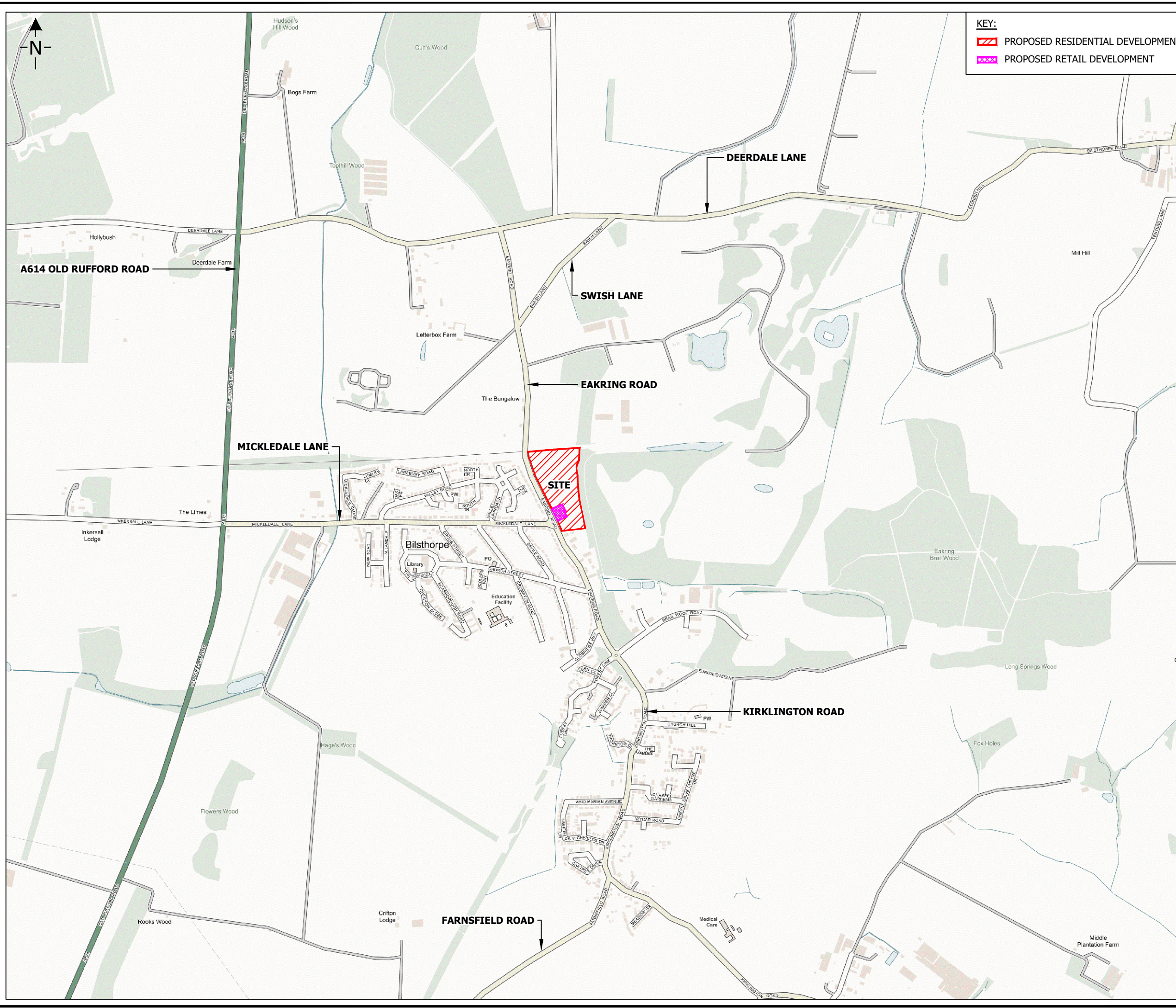
PROJECT
EAKRING ROAD, BILSTHORPE

TITLE
SITE LOCATION

DRAWN	AUTHORISED	SCALE	DATE
JS	SM	N.T.S	04.10.19

PROJECT NO.	DRAWING NO.	REV
T19017	FIG 1	-

STATUS
FOR PLANNING



KEY:

- PROPOSED RESIDENTIAL DEVELOPMENT
- PROPOSED RETAIL DEVELOPMENT

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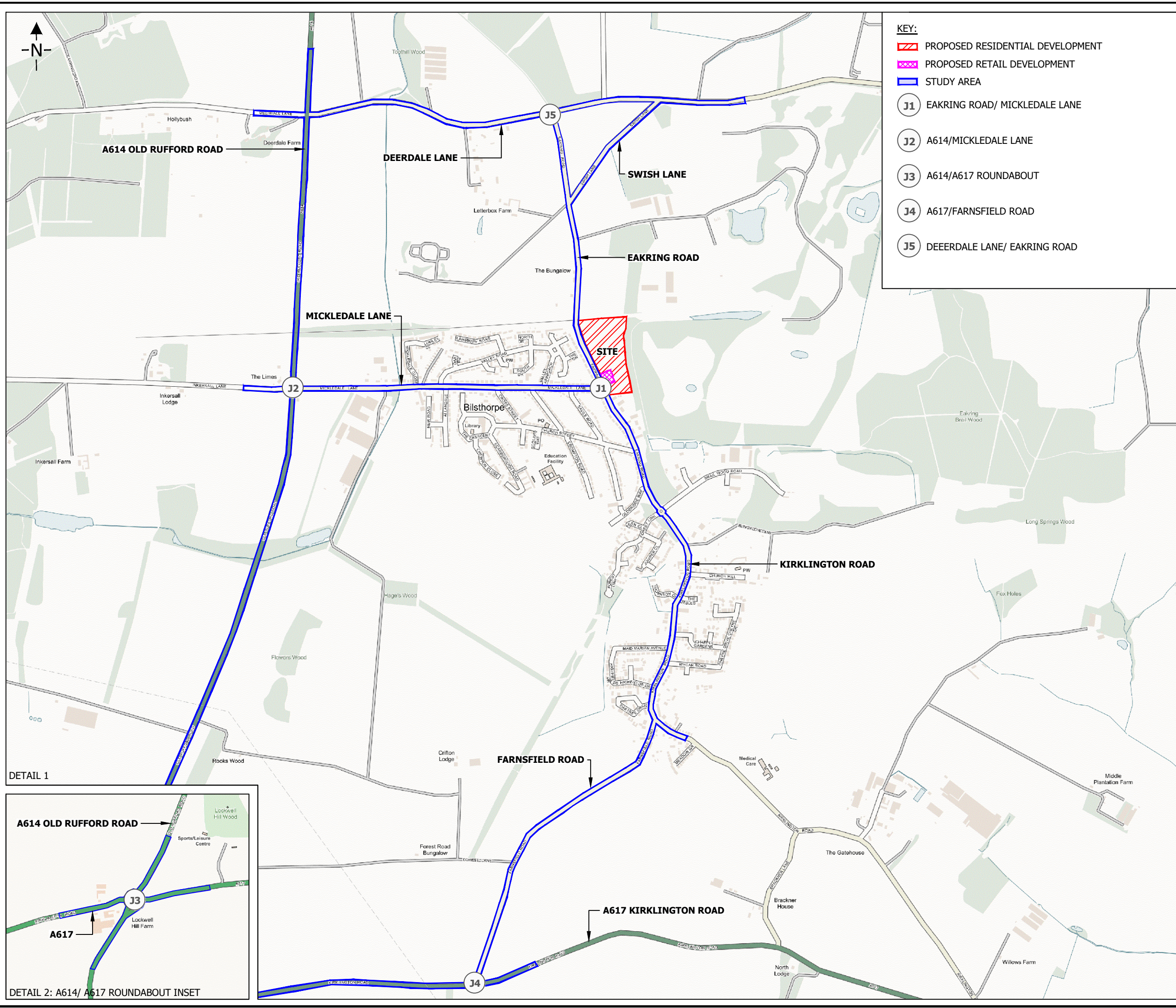
PROJECT
EAKRING ROAD, BILSTHORPE

TITLE
LOCAL HIGHWAY NETWORK

DRAWN JS	AUTHORISED SM	SCALE N.T.S	DATE 04.10.19
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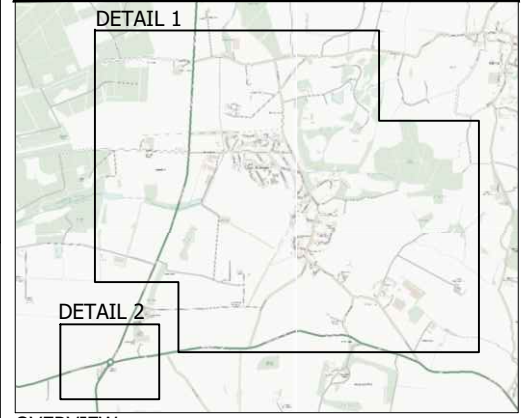
PROJECT NO. T19017	DRAWING NO. FIG 2	REV -
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STATUS: **FOR PLANNING**



- KEY:**
- PROPOSED RESIDENTIAL DEVELOPMENT
 - PROPOSED RETAIL DEVELOPMENT
 - STUDY AREA
- J1 EAKRING ROAD/ MICKLEDALE LANE
 - J2 A614/MICKLEDALE LANE
 - J3 A614/A617 ROUNDABOUT
 - J4 A617/FARNSFIELD ROAD
 - J5 DEERDALE LANE/ EAKRING ROAD

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OVERVIEW

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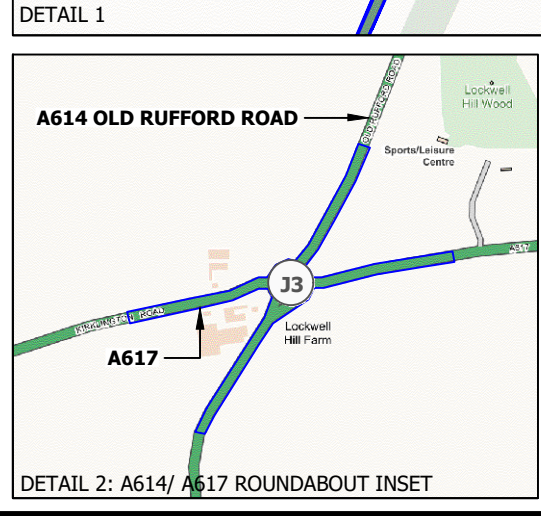
PROJECT
EAKRING ROAD, BILSTHORPE

TITLE
STUDY AREA

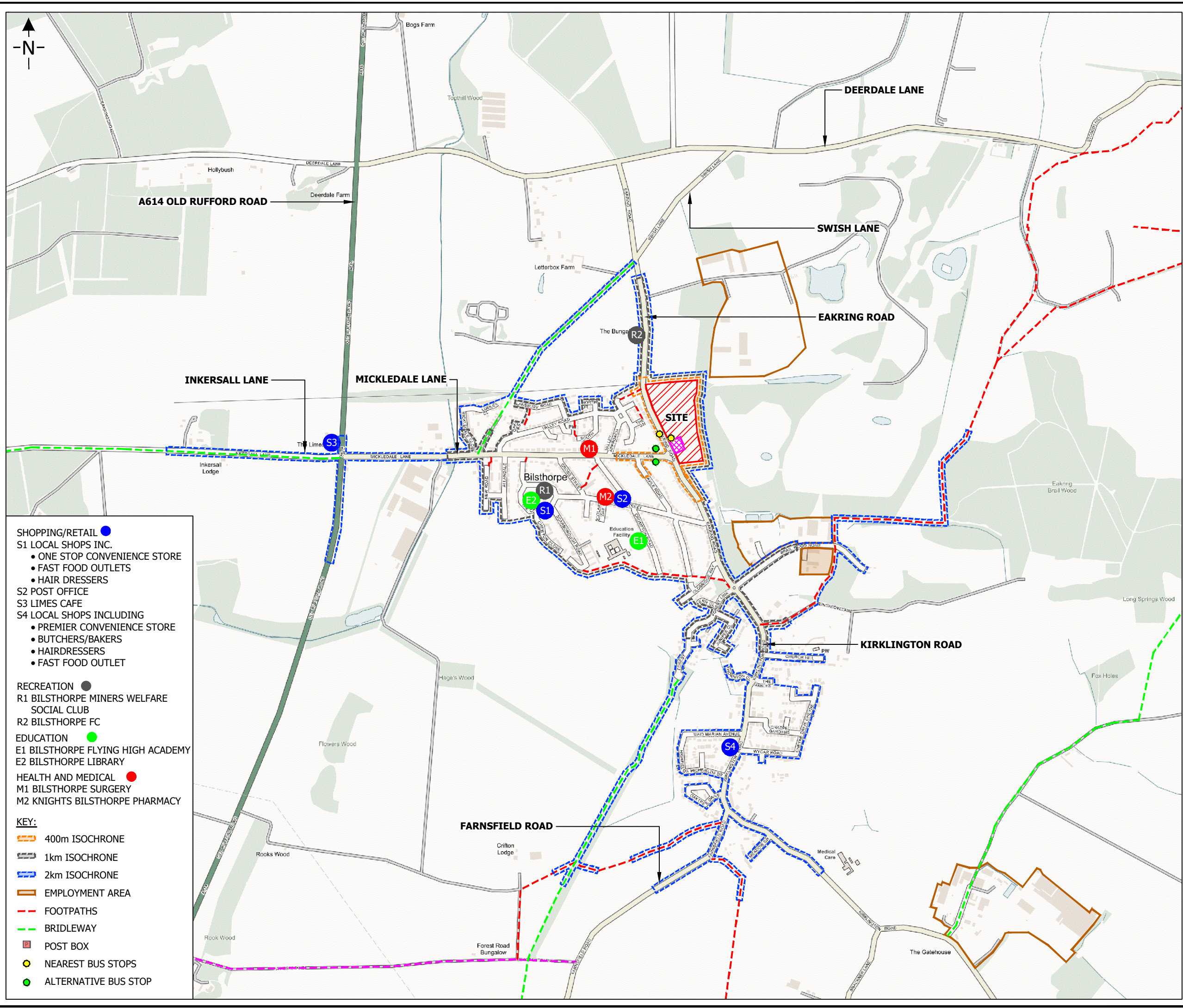
DRAWN JS	AUTHORISED SM	SCALE N.T.S	DATE 04.10.19
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PROJECT NO. T19017	DRAWING NO. FIG 3	REV -
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STATUS: **FOR PLANNING**



DETAIL 2: A614/ A617 ROUNDABOUT INSET



- SHOPPING/RETAIL** ●
- S1 LOCAL SHOPS INC.
 - ONE STOP CONVENIENCE STORE
 - FAST FOOD OUTLETS
 - HAIR DRESSERS
 - S2 POST OFFICE
 - S3 LIMES CAFE
 - S4 LOCAL SHOPS INCLUDING
 - PREMIER CONVENIENCE STORE
 - BUTCHERS/BAKERS
 - HAIRDRESSERS
 - FAST FOOD OUTLET
- RECREATION** ●
- R1 BILSTHORPE MINERS WELFARE SOCIAL CLUB
 - R2 BILSTHORPE FC
- EDUCATION** ●
- E1 BILSTHORPE FLYING HIGH ACADEMY
 - E2 BILSTHORPE LIBRARY
- HEALTH AND MEDICAL** ●
- M1 BILSTHORPE SURGERY
 - M2 KNIGHTS BILSTHORPE PHARMACY
- KEY:**
- 400m ISOCHRONE
 - 1km ISOCHRONE
 - 2km ISOCHRONE
 - EMPLOYMENT AREA
 - FOOTPATHS
 - BRIDLEWAY
 - POST BOX
 - NEAREST BUS STOPS
 - ALTERNATIVE BUS STOP

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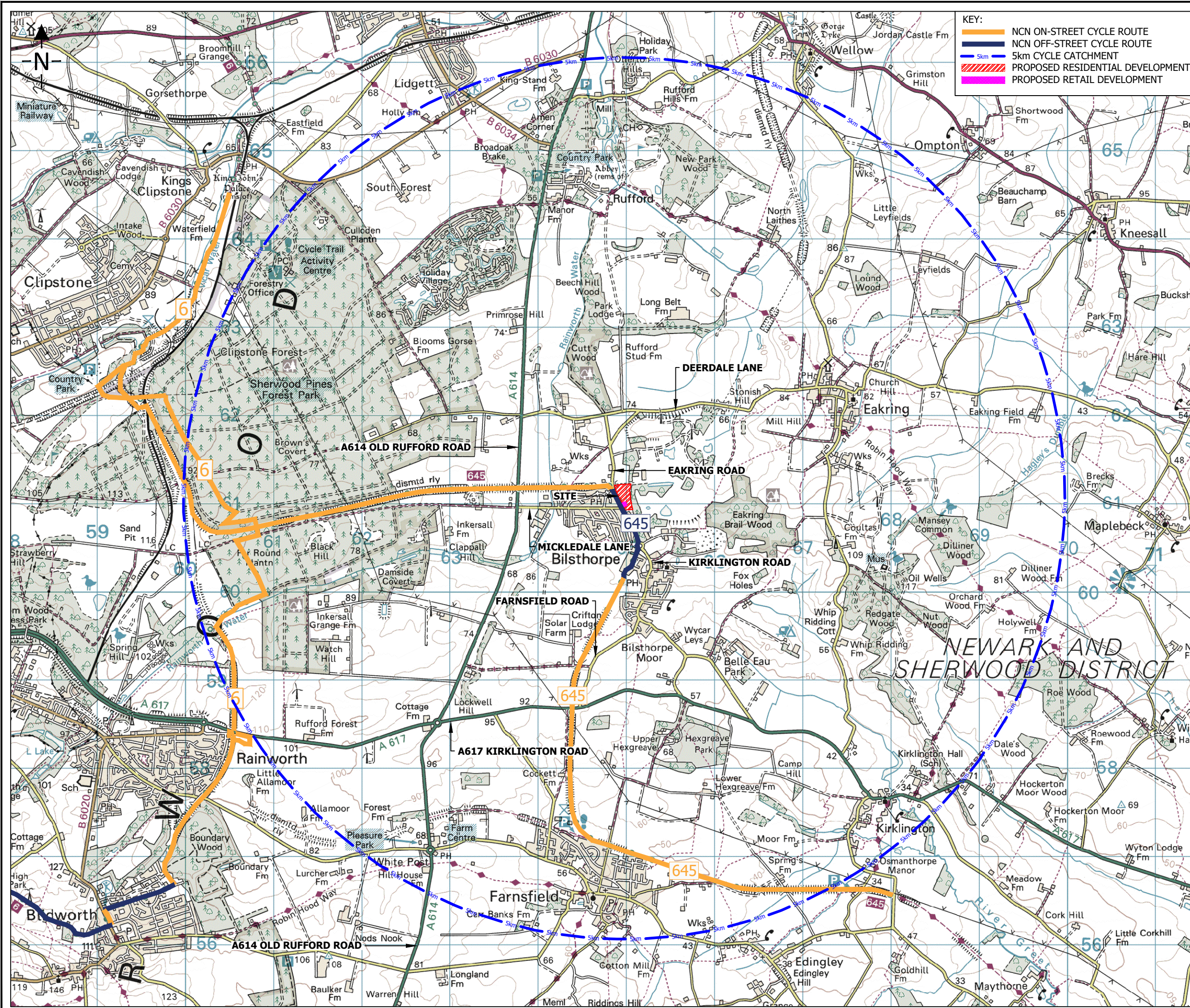
PROJECT
EAKRING ROAD, BILSTHORPE

TITLE
PEDESTRIAN ISOCHRONES AND LOCAL FACILITIES

DRAWN JS	AUTHORISED SM	SCALE N.T.S	DATE 04.10.19
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PROJECT NO. T19017	DRAWING NO. FIG 4	REV -
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STATUS
FOR PLANNING



KEY:

- NCN ON-STREET CYCLE ROUTE
- NCN OFF-STREET CYCLE ROUTE
- - - 5km CYCLE CATCHMENT
- ▨ PROPOSED RESIDENTIAL DEVELOPMENT
- ▨ PROPOSED RETAIL DEVELOPMENT

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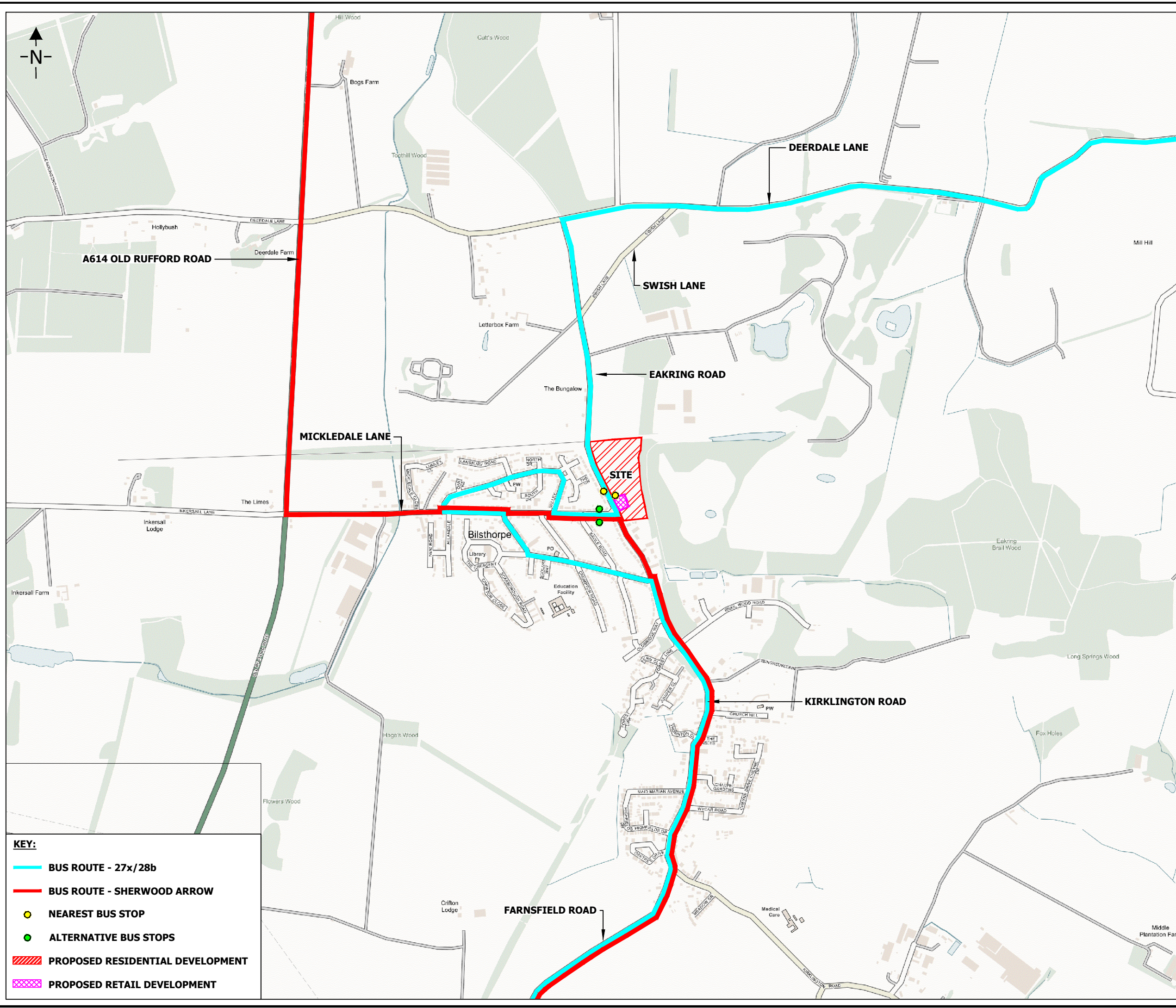
PROJECT
EAKRING ROAD, BILSTHORPE

TITLE
CYCLE CATCHMENTS AND ROUTES

DRAWN JS	AUTHORISED SM	SCALE N.T.S	DATE 04.10.19
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PROJECT NO. T19017	DRAWING NO. FIG 5	REV -
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STATUS
FOR PLANNING



KEY:

- BUS ROUTE - 27x/28b
- BUS ROUTE - SHERWOOD ARROW
- NEAREST BUS STOP
- ALTERNATIVE BUS STOPS
- PROPOSED RESIDENTIAL DEVELOPMENT
- PROPOSED RETAIL DEVELOPMENT

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PROJECT
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TITLE
LOCAL BUS ROUTES

DRAWN JS	AUTHORISED SM	SCALE N.T.S	DATE 04.10.19
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PROJECT NO. T19017	DRAWING NO. FIG 6	REV -
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STATUS: **FOR PLANNING**