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traffic engineering and transport planning

Keepmoat Homes

Proposed Residential Development
Keresforth Road, Dodworth
Transport Assessment

May 2022

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Client Commission			
Client:	Keepmoat Homes	Date Commissioned:	November 2021

LTP Quality Control					
Job No:	LTP/21/4283	File Ref:	Keresforth Road Dodworth TA Final Issue 1A		
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1	B	Minor amendments	MR	-	11/05/2022
1	A	Updated access design	MR	-	28/04/2022
1	-	Final for planning submission	JH	MR	15/12/2021
			Authorised for Issue:		SW

LTP PROJECT TEAM

As part of our commitment to quality the following team of transport professionals was assembled specifically for the delivery of this project. Relevant qualifications are shown and CVs are available upon request to demonstrate our experience and credentials.

Team Member	LTP Designation	Qualifications
Steven Windass	*Technical Director (Developments)*	*BSc(Hons) MSc(Eng) CEng FIHE MCIHT*
Jack Hearnshaw	*Principal Transport Planner*	*BA(Hons) MIHE*
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PROPOSED RESIDENTIAL DEVELOPMENT KERESFORTH ROAD, DODWORTH TRANSPORT ASSESSMENT

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EXECUTIVE SUMMARY

This Transport Assessment (TA) provides a detailed appraisal of transport aspects associated with proposals to provide a residential development of up to 215 dwellings at a site located to the north of Keresforth Road in Dodworth, Barnsley. The key findings of this TA are summarised below:

- Access to the proposed development is to be provided via a new simple priority T-junction connecting with Keresforth Road on the southern boundary of the site, with the design of the junction compliant with local and national highway design guidance. Pedestrian/cycle access is also to be provided via Keresforth Road, with footways to be provided alongside roads within the site.
- The application site is well placed to generate trips by sustainable modes of transport, with amenities in Dodworth and Gilroyd within a 2km walk, and the majority of the built-up area of Barnsley within an 8km cycle ride of the site. The nearest existing bus stops to the site are on Keresforth Road and are within a 180m walk of the proposed site access junction. These stops accommodate frequent bus services to Barnsley town centre. The nearest rail station is Dodworth Rail Station, located approximately 1.5km walk to the west.
- A Travel Plan (LTP, 2022) has been produced in association with this TA to help promote and encourage sustainable travel to/from the proposed development.
- A road casualty study showed that 12 Personal Injury Collisions (PICs) occurred within the study area around the proposed development site during the 5-year study period. Analysis of the study collisions has not revealed any identifiable existing collision issues associated with the expected movements generated by the development, therefore it is considered that there are no existing road safety issues pertinent to the development of the site.
- The trip generation projections indicate that the proposed development is expected to generate 122 two-way vehicle trips during each of the respective AM (08:00-09:00) and PM (17:00-18:00) peak hours. A total of 55.8% of trips generated by the development are expected to be made by vehicle trip generating modes.
- The distribution of development traffic across the local highway network has been predicted using a gravity model derived from analysis of travel to work patterns for the local resident population.
- Given that only slightly in excess of 30 two-way trips are expected to occur at a number of local junctions, it is considered that the proposed development will not have a significant impact on the operation of these junctions, subject to agreement with BMBC Highways.
- A capacity assessment of the proposed site access/Keresforth Road junction has been undertaken using Junctions 9 modelling software. The results demonstrate that the junction would be expected to operate well within capacity with the proposed development in place.

This TA demonstrates that the proposed development would not be expected to have a significant impact in terms of sustainable travel, traffic impact and road safety. As the impact of the proposals is not expected to be severe, the proposals are therefore considered to be in accordance with the National Planning Policy Framework (NPPF).

1. INTRODUCTION

1.1 Background

1.1.1 Local Transport Projects Ltd (LTP) has been commissioned to produce a Transport Assessment (TA) in support of an outline planning application (all matters reserved except for access) for a proposed residential development of up to 215 dwellings at a site located to the north of Keresforth Road in Dodworth, Barnsley. This TA provides a detailed appraisal of the expected transport impacts of the proposals.

1.1.2 The local planning and highway authority for the site is Barnsley Metropolitan Borough Council (BMBC).

1.1.3 A Travel Plan (LTP, 2022) that provides a strategy for encouraging sustainable travel at the proposed development site has been produced in conjunction with this TA as a separate document.

1.2 Scope

1.2.1 This report is written in accordance with the Government's *'National Planning Policy Framework'* (MHCLG, 2021) and *'Planning Practice Guidance'* (MHCLG, 2014), with the scope summarised below:

- ***Executive Summary:*** A non-technical summary of the report outlining the key outcomes of the assessment.
- ***Introduction & Description of Proposals:***
  - Description of the development site, including location and any existing access arrangements;
  - Summary of relevant planning and allocation history for the site;
  - Description of the proposed development including site layout, pedestrian/cycle facilities and proposed access arrangements.
- ***Site Assessment:***
  - Site assessments to determine existing traffic conditions, such as posted speed limits, road restrictions, highway geometry, on-street parking restrictions and any other relevant features of the local area;
  - Assessment of the sustainable transport infrastructure (pedestrian, cycle and public transport) local to the site.
- ***Road Casualty Appraisal:*** Examination of road collision records (5 year study period) and assessment of the road safety impact of the proposed development on the local highway network.
- ***Traffic Impact:***
  - Calculation of the projected trip generation for the proposed development, utilising data from the industry-standard TRICS database;
  - Consideration of any relevant consented developments within the local area and any committed changes to the surrounding highway network;
  - Establish baseline traffic flows utilising data within TAs for other developments within the local area;

- Prediction of the distribution of the vehicle trips generated by the site onto the local highway network, utilising existing traffic flow patterns and/or a gravity model;
- Junction capacity assessment of the proposed site access/Keresforth Road priority junction;
- Assessment of the likely traffic impact of the proposed development on the operation of the local highway network.

- ***Access, Parking & Internal Layout:*** Description of the proposed access arrangements and internal layout of the site, including consideration of the proposed parking provision, access/servicing arrangements and suitability of the proposed access arrangements.
- ***Conclusions:*** Conclusions summarising the outcomes of the TA, including a commentary on the suitability of the proposals in terms of sustainable travel, traffic impact and road safety.

1.2.2 This TA report has been prepared in accordance with the above scope and reference has been made to the following documents where appropriate:

- National Planning Policy Framework (MHCLG, 2021);
- Barnsley Local Plan (BMBC, 2019a);
- Barnsley Local Plan – Policies Map (BMBC, 2019b);
- Sustainable Travel Supplementary Planning Document (BMBC, 2019c);
- The Strategic Road Network and the Delivery of Sustainable Development (DfT, 2013);
- Planning Practice Guidance (MHCLG, 2014);
- Guidance on Transport Assessment (DfT, 2007a); and
- Manual for Streets (DfT, 2007b).

2. SITE BACKGROUND

2.1 Site Location & Existing Use

2.1.1 The application site is located to the east of the village of Dodworth, approximately 2.4km south-west of Barnsley town centre. The site is bound by grassland to the north, the M1 motorway to the east, Keresforth Road (B6099) and dwellings served via Wood End Court to the south, and by a tree line and dwellings served via culs-de-sac off Water Royd Drive and Wareham Grove to the west.

2.1.2 The site is currently agricultural land, with the access road serving Wood End Court located to the southern extents. The approximate boundary of the application site is shown in Figure 1:

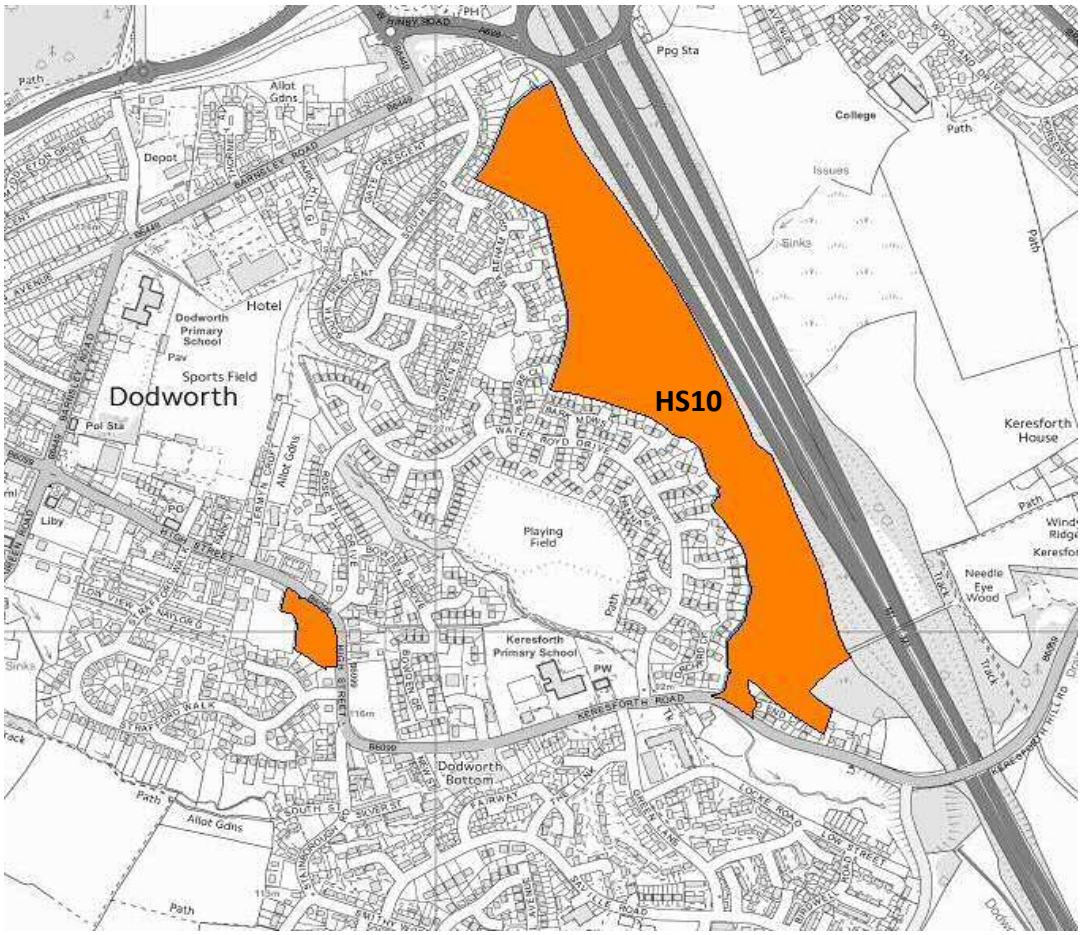
Figure 1: Site Location

Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

2.2 Allocation Status & Planning History

2.2.1 The proposed site forms part of the *'HS10'* site, which is allocated for residential development within the adopted *'Barnsley Local Plan'* (BMBC, 2019a). The southern extents of the HS10 site, as it appears in the adopted Local Plan, is shown in Figure 2.

Figure 2: HS10 Allocation



Source: BMBC, 2019b

2.2.2 There are two highways related requirements for the site, as detailed within the adopted Local Plan, as outlined below:

- *"Provide pedestrian links through the development to the footbridge across the M1 Motorway" and*
- *"Provide appropriate vehicular access"*

2.2.3 Details of the proposed vehicular and pedestrian access arrangements are outlined within Section 3 below.

2.2.4 A planning application (ref: 2018/0456) was submitted to BMBC in April 2018 by Persimmon Homes for the construction of 146 dwellings within the northern part of the site, with access proposed via Bark Meadows. The application was supported by a TA (Fore, 2018a) and TP (Fore, 2018b), however the application was ultimately withdrawn.

3. DEVELOPMENT PROPOSALS & ACCESS ARRANGEMENTS

3.1 Development Proposals

3.1.1 The proposals involve the development of the site to accommodate up to 215 dwellings, with a mixture of dwelling size and type expected to be provided. A proposed site layout plan is included as Appendix 1.

3.1.2 To ensure that that the conclusions of this TA are robust, the traffic impact assessments have been based on a slightly larger development of up to 220 dwellings.

3.2 Proposed Vehicular Access Arrangements

3.2.1 The principle of access to the proposed development has been discussed with BMBC Highways (ref: Wayne Lake) as part of pre-application discussions. Access to the proposed development is to be provided via a simple priority T-junction connecting with Keresforth Road on the southern boundary of the site. A preliminary design drawing (ref: LTP/4283/P2/01.01 Rev G) showing the proposed access arrangements is included as Appendix 2.

3.2.2 The proposed site access is to be provided slightly to the west of the location of the existing Wood End Court/Keresforth Road junction, with Wood End Court to be realigned to connect with the proposed site access road at a simple priority T-junction. The preliminary design shows junction spacing between the nearside carriageway edge of Keresforth Road and the centreline of Wood End Court is approximately 16.5m, which is considered sufficient junction spacing to allow for at least two vehicles to wait on the access road before encroaching the free-flow of vehicles on Keresforth Road, as demonstrated in the drawing (ref: LTP/4283/P2/01/08 Rev B) attached within Appendix 2.

3.2.3 The Wood End Court access has been designed to form more of a domestic type design as per the existing arrangements. There are numerous examples of private drives within new developments that operate successfully where they are close to main access roads, and these are often show home areas.

3.3 Visibility Splays

3.3.1 The adopted access junction visibility splay guidance outlined within BMBC's *'Sustainable Travel Supplementary Planning Document (SPD)'* (BMBC, 2019c) states that *"DMRB will apply to all classified roads and MfS will apply to all other lower category of residential roads"*. The application of DMRB standards on Keresforth Road is considered onerous. It is therefore considered that the visibility requirements within Manual for Streets (MfS) are more appropriate in this location.

3.3.2 The argument over the application of MfS or DMRB standards in relation to access junction visibility requirements was one of the items disputed as part of the planning appeal (ref: APP/R4408/W/19/3242646) associated with residential development on land to the south of Lee Lane in Royston. The appeal was ultimately dismissed on other grounds; however the Planning Inspector supported the application of MfS rather than the more onerous DMRB standards when establishing the visibility requirements, with the relevant sections of the appeal decision extracted below:

"I turn to whether the proposed priority junction is acceptable in terms of highway safety. At the heart of the disputed matter are differing views about which highway standards should be utilised to assess it. The appellant uses Manual for Streets (MfS) and its companion guide MfS2 as highway design guidance, whilst the Council maintain that Design Manual for Roads and Bridges (DMRB) standards should be applied instead. The choice is important because the proposed site access meets the MfS standards but falls short of the DMRB standards…

…The Council's case for applying DMRB rests largely on a single point set out in the 'Sustainable Travel' SPD (paragraph 9.8), which states that DMRB will apply to all classified roads. It is unclear why such a rigid application of DMRB is promoted in the Borough, when MfS2 specifically notes that MfS should be a starting point for any scheme affecting non-trunk roads. MfS2 further recommends that DMRB (or other standards or guidance) is only used where the guidance contained in MfS is not sufficient, or where particular evidence leads a designer to conclude that MfS is not applicable. Section 3.2 warns against a slavish adherence to technical standards.

MfS2 also recognises that local context varies; not only from street to street but along the length of a street. Place characteristics should not therefore be ignored in any new road design. Lee Lane is a long and straight stretch of 'B' road, not a trunk road nor is there evidence before me to suggest it is a strategic route. It is an unlit rural road approximately 7m in width, with a footway of varying width to one side. It is a local road which provides a connection between the settlements of Staincross/Mapplewell and Royston. The area character changes distinctly towards the new roundabout from rural to urban. The section of Lee Lane alongside the site has little in common with a trunk road where drivers can reasonably expect to be able to maintain a steady speed.

Taking the above points into account, it would not be appropriate to design the access to the standards of the current speed limit of 60mph or to the trunk road standards set out in DMRB. The MfS standards should be the primary determining factor in this particular case.

Stopping Sight Distances (SSD) and existing speeds have been appropriately surveyed here. In this case MfS standards have been used to design the junction and visibility splays would be 2.4m x 59m, based on 37mph speeds".

3.3.3 During the pre-application meeting, BMBC Highways highlighted that they are looking to change the current guidance in relation to the rigid application of DMRB on all classified roads. BMBC Highways acknowledged that the use of MfS may be acceptable in this location due to the existing 30mph speed limit, in a built-up area, however it was requested that the visibility requirements were based on measured speeds on Keresforth Road rather than the posted 30mph speed limit.

3.3.4 An Automatic Traffic Count (ATC) survey was undertaken on Keresforth Road adjacent to Wood End Court between Wednesday 25th August 2021 and Tuesday 31st August 2021. The exact location of the ATC is highlighted in Photo 1 below.

Photo 1: ATC Location

3.3.5 The survey results are summarised in Table 1 below and attached in full as Appendix 3.

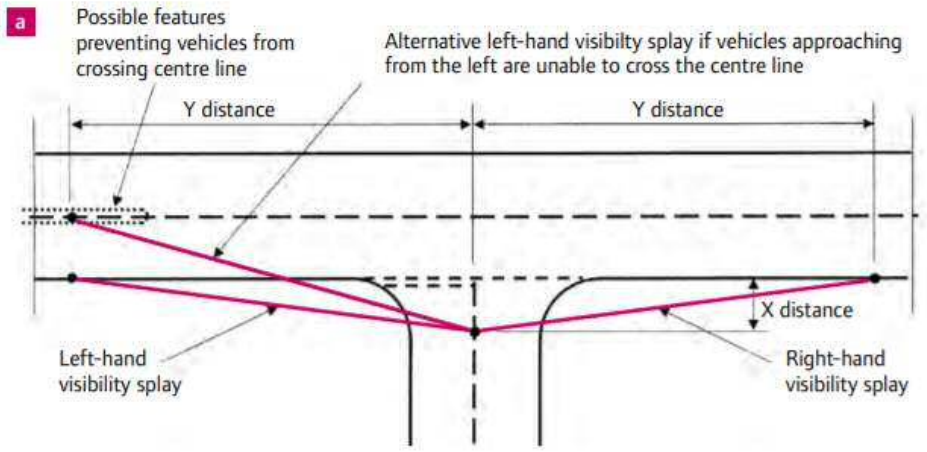
Table 1: Weekly Vehicle Flow & Speed Data

ATC	Eastbound	Westbound	Two-Way
24-Hour Daily Vehicle Flow	3,065	3,082	6,147
Mean Speed (mph)	30.7	31.0	30.8
85th Percentile Vehicle Speed (mph)	33.4	34.2	33.8

3.3.6 Table 1 shows that the 85th percentile speeds on Keresforth Road in the vicinity of Wood End Court are 33.4mph in the eastbound direction and 34.2mph in the westbound direction.

3.3.7 For information, Figure 3 illustrates the definition and measurement of the visibility splay distances described in this section.

Figure 3: Definition of 'X' & 'Y' Distances



Source: DfT, 2007

X Distance

3.3.8 MfS states that "*an 'x' distance of 2.4m should normally be used in most built-up situations*" (DfT, 2007). Therefore, it is considered that an X distance of 2.4m would be applicable in this instance, in accordance with MfS standards.

Y Distances

3.3.9 The 'Y' distance requirements are based on the SSD, which is "*the distance within which drivers need to be able to see ahead and stop from a given speed. It is calculated from the speed of the vehicle, the time required for a driver to identify a hazard and then begin to brake (the perception-reaction time), and the vehicle's rate of deceleration*" (CIHT, 2010).

3.3.10 The basic formula for calculating SSD (in metres) is provided below:

$SSD = vt + v^2 / 2(d+0.1a)$

Where

v = Speed (m/s)

t = driver perception – reaction time (seconds)

d = deceleration (m/s^s)

a = longitudinal gradient (%)

3.3.11 The SSD, and therefore the Y distance visibility splay requirements, have been calculated based on the ATC results outlined in Table 1, based on the measured 85th percentile vehicle speeds. Table 2 identifies the calculated SSDs for the measured 85th percentile vehicle speeds, based upon the SSD parameters adopted within MfS and shown within Appendix 4.

Table 2: Stopping Sight Distances

Speed Category	Eastbound	Westbound
Calculated SSD requirement	50m	52m

3.3.12 It is therefore acknowledged that, based on the recorded vehicle speeds within the vicinity of the proposed access location on Keresforth Road, the visibility splay requirements for the junction are 2.4m x 52m to the left (westbound) and 2.4m x 50m to the right (eastbound) based on MfS criteria.

3.3.13 The updated preliminary design demonstrates that the required horizontal visibility splays are achievable from the proposed access junction on Keresforth Road as shown in Appendix 2 (ref: LTP/4283/P2/01.05 Rev G).

3.3.14 Furthermore, a review of road collision data for the latest 10-year period indicates that no collisions occurred at the existing Keresforth Road/Wood End Court junction, although it is acknowledged that the number of vehicle movements turning left/right out of Wood End Court onto Keresforth Road is low.

3.4 Access Road Gradient

3.4.1 The revised preliminary design was previously amended to ensure that the maximum gradient for the majority of the access road was in accordance with the desirable gradient of 1 in 20 (5%) outlined in *the 'South Yorkshire Residential Design Guide'* (TSY, 2011). However, in order to get back to near the existing ground level there was a small section where the gradient is 9%, although this is within the maximum gradient of 1 in 10 (10%) outlined in the Residential Design Guide:

"In steep terrain, carriageway gradients of up to 10% (1 in 10) may be permissible, at the discretion of the highway authority".

3.4.2 Notwithstanding the above, during pre-application discussions, BMBC Highways highlighted that the maximum acceptable gradient of the access road would be 8%. At detailed design stage, the gradient of the access road will be designed to ensure the maximum gradient is in accordance with the requirements of BMBC Highways.

3.5 Swept Path Analysis

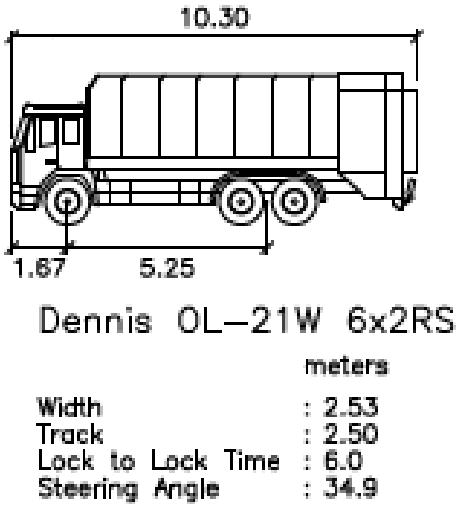
3.5.1 From the traffic flows captured as part of the ATC, the average weekday AM peak hour two-way traffic flows on Keresforth Road are below 500 vehicles in the AM peak hour (404), although exceed 500 vehicles in the PM peak hour (562). Overall, the average peak hour two-way traffic flow on Keresforth Road is below the 500 vehicles per hour threshold (483) stated within the '*South Yorkshire Residential Design Guide'* (TSY, 2011) which would trigger the requirement for more onerous swept path movements.

3.5.2 The refuse vehicle utilised for the initial analysis was more onerous than the current vehicle used for refuse collection in Barnsley and therefore the suggested refuse vehicle was utilised as part of the updated SPA, as outlined below:

"Refuse Vehicle – Dennis 10.3m rear steer (For information the refuse vehicles currently in use in Barnsley has a wheelie Bin Lifting facility and measures 10.3m x 2.5m.)"

3.5.3 During the pre-application discussions with BMBC, the use of the vehicle shown in Figure 4 was accepted by BMBC Highways, however there were concerns with the proximity of the refuse vehicle against the proposed kerbline.

Figure 4: SPA Test Vehicle



3.5.4 Following the pre-application meeting, the access road carriageway was widened within the extents of the junction with Keresforth Road and Wood End Court to 7m in order to provide some additional carriageway space for the movements of a refuse vehicle. The results of the SPA are attached as Appendix 2 and demonstrate that the refuse vehicle can adequately navigate the proposed access junction on Keresforth Road.

3.6 Proposed Pedestrian & Cycle Access Arrangements

3.6.1 Pedestrian and cycle access to the site is to be provided via a 3m shared foot/cycleway on the western side of the proposed site access road, which connect with the existing footway provision on the northern side of Keresforth Road. A 2.0m footway is expected to be provided on at least one side of the carriageway on all roads within the site, with shared surfaces to be provided on some connecting culs-de-sac.

3.6.2 There is an existing Public Right of Way (PRoW) which runs within in an approximately east-west direction through the site, linking Lambert Fold with the footbridge over the M1 motorway. The alignment of this PRoW is expected to be retained under the development proposals. There is also a PRoW which runs in an approximately northeast-southwest direction between Keresforth Road and the east-west PRoW. It is expected that this PRoW will be diverted under the development proposals.

3.7 Proposed Parking Arrangements

3.7.1 The local parking standards applicable to the development are contained within BMBC's '*Parking Supplementary Planning Document*' (BMBC, 2019d), and suggest that dwellings with 1 or 2 bedrooms should provide 1 parking space, with dwellings with 3 bedrooms or more requiring 2 parking spaces. It is expected that the parking provision at the site will be provided in accordance with these parking standards, although it is noted that the current planning application is seeking outline consent for the dwellings, and therefore parking provision is likely to be agreed at the reserved matters stage.

4. SITE ASSESSMENT

4.1 Local Highway Network

4.1.1 As previously outlined, access to the site is to be provided via Keresforth Road (B6099) on the southern boundary. Keresforth Road is a two-way single carriageway which measures approximately 7m in width within the vicinity of the site and is subject to a 30mph speed limit.

Photo 1: Keresforth Road (B6099)

4.1.2 Keresforth Road meets Keresforth Hill Road (B6099)/Gilroyd Lane at a simple priority T-junction approximately 270m east of the proposed site access junction, at which the posted speed limit on the major road (B6099) changes from 30mph to 40mph. Keresforth Hill Road continues to the east and meets Broadway (A6133) at a signalised junction approximately 1.2km to the north-east of the site.

4.1.3 Keresforth Road continues to the west of the site, becoming High Street and connecting with Dodworth Green Road/Barnsley Road (B6449) and Station Road (B6099) at a priority crossroads junction approximately 1.1km to the west of the site. Barnsley Road continues to the north and east, connecting with Whinby Road at a roundabout approximately 2km travel distance north-west of the site.

4.1.4 Whinby Road connects with Dodworth Roundabout, a signalised Grade-Separated Junction (GSJ) which forms Junction 37 of the M1 motorway. The M1 forms part of the Strategic Road Network (SRN) that is managed and maintained by National Highways.

4.1.5 There are not any existing waiting restrictions in place on Keresforth Road within the vicinity of the site.

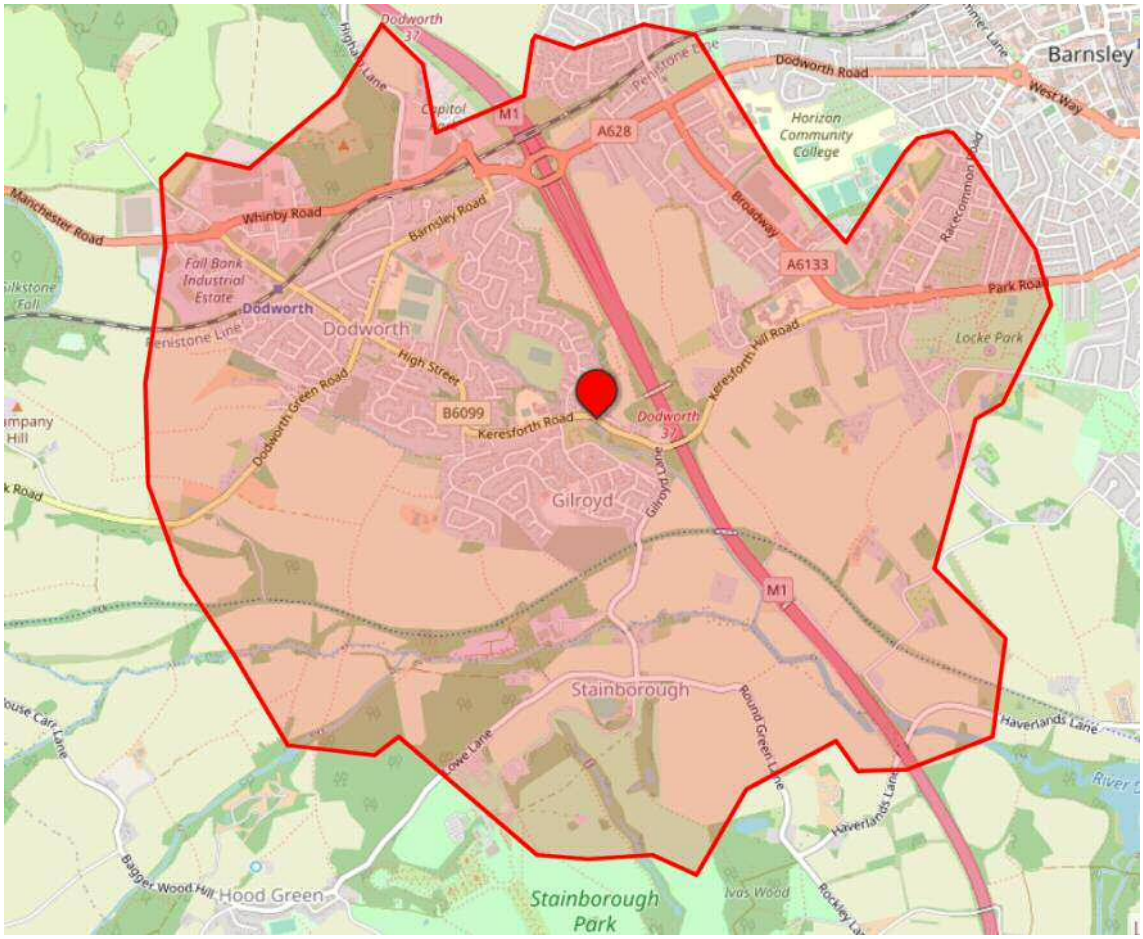
4.1.6 Wood End Court is a two-way single carriageway which measures approximately 4.5m in width and serves six dwellings. It currently connects with Keresforth Road at a footway crossover junction. As previously outlined, it is proposed that access to the development will be provided at the location of the existing Wood End Court/Keresforth Road junction, with access to Wood End Court to be provided via a simple priority T-junction connecting with the development access road.

Photo 2: Wood End Court

4.2 Pedestrian Provision

4.2.1 Guidance from Chartered Institution of Highways & Transportation (CIHT) suggests a preferred maximum walking distance of 2km for a number of trips, including commuting and school trips (IHT, 2000). The proposed development site is located within a 2km walking distance of the entire built-up areas of Dodworth and Gilroyd, along with the Kingstone area of Barnsley. The isochrone map within Figure 5 shows the areas that are within an approximately 2km walk of the site.

Figure 5: 2km Walking Isochrone



Source: ORS, 2021

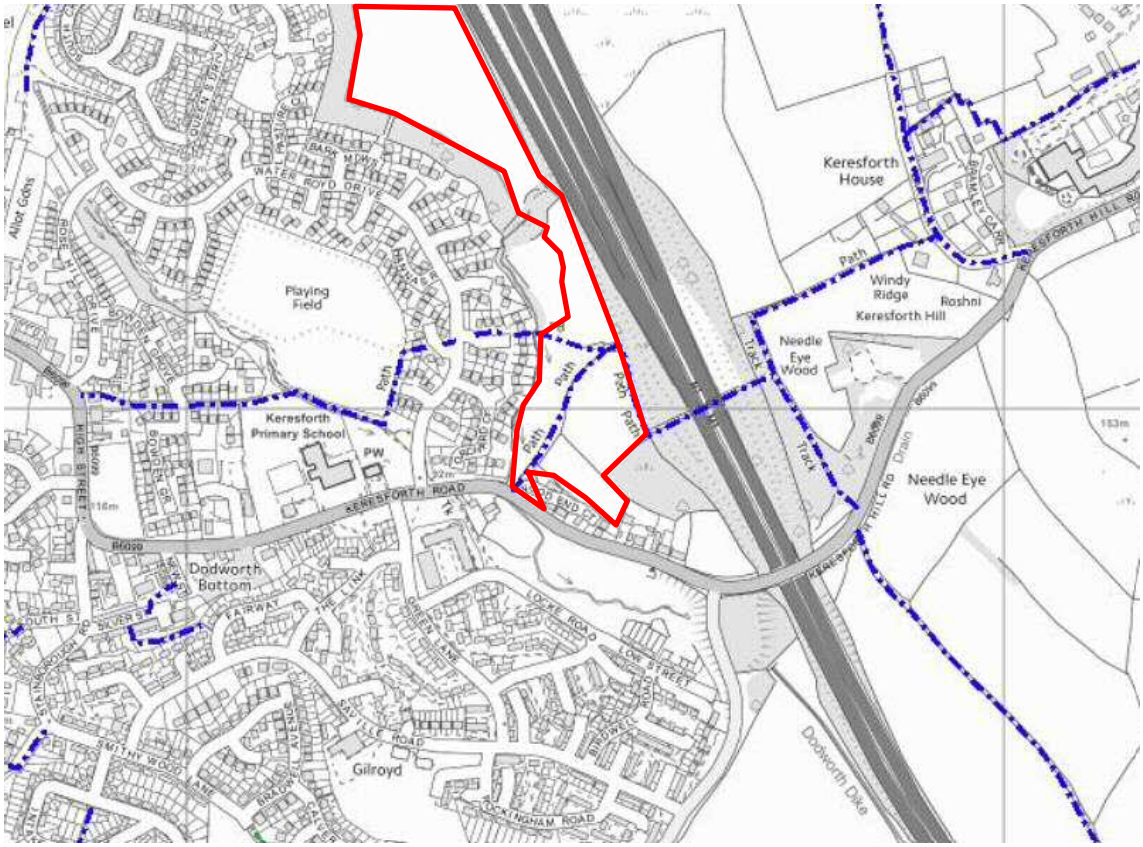
4.2.2 Keresforth Primary School is located an approximately 200m walk to the west of the site via Keresforth Road. Dodworth village centre is also within a 1.2km walk of the site, and includes various amenities such as a Co-operative supermarket, medical centre, and hot food takeaways.

4.2.3 As previously outlined, a shared foot/cycleway measuring 3m in width will be provided on the western side of the proposed access road. This facility will connect with the existing footway provision on the northern side of Keresforth Road to the east and west of the site. There are also footways on the southern side of Keresforth Road to the east and west of the site, which connect with the existing provision on Gilroyd Lane and Water Royd Drive respectively.

Photo 3: Footway on Keresforth Road

4.2.4 There are a number of Public Rights of Way (PRoW) within the vicinity of the site, as shown on the plan within Figure 6. The location of the site is indicated in red, with footpaths shown in blue.

Figure 6: Public Rights of Way



Source: BMBC, 2021

4.2.5 Figure 6 shows that Barnsley PRoW #278 runs in an approximately northeast-southwest direction through the southern part of the site, connecting Keresforth Road with Barnsley PRoW #272, which runs in an approximately east-west direction through the site. Barnsley PRoW #272 connects Lambert Fold to the west with Dark Lane to the east and crosses the M1 motorway at a footbridge. It also connects with Barnsley PRoW #273 to the east, which connects to Keresforth Hill Road. As discussed within Section 3.6, it is expected that the alignment of PRoW #272 will be retained, and that PRoW #278 will be diverted as part of the development proposals.

4.2.6 The existing and proposed pedestrian infrastructure within the vicinity of the site appears to generally be sufficient to facilitate the movements of mobility and visually impaired people, with the provision of dropped kerbs and tactile paving at local junctions and roundabouts within the local area. The footways are generally of sufficient width and surface quality to accommodate the passage of wheelchairs (DfT, 2002).

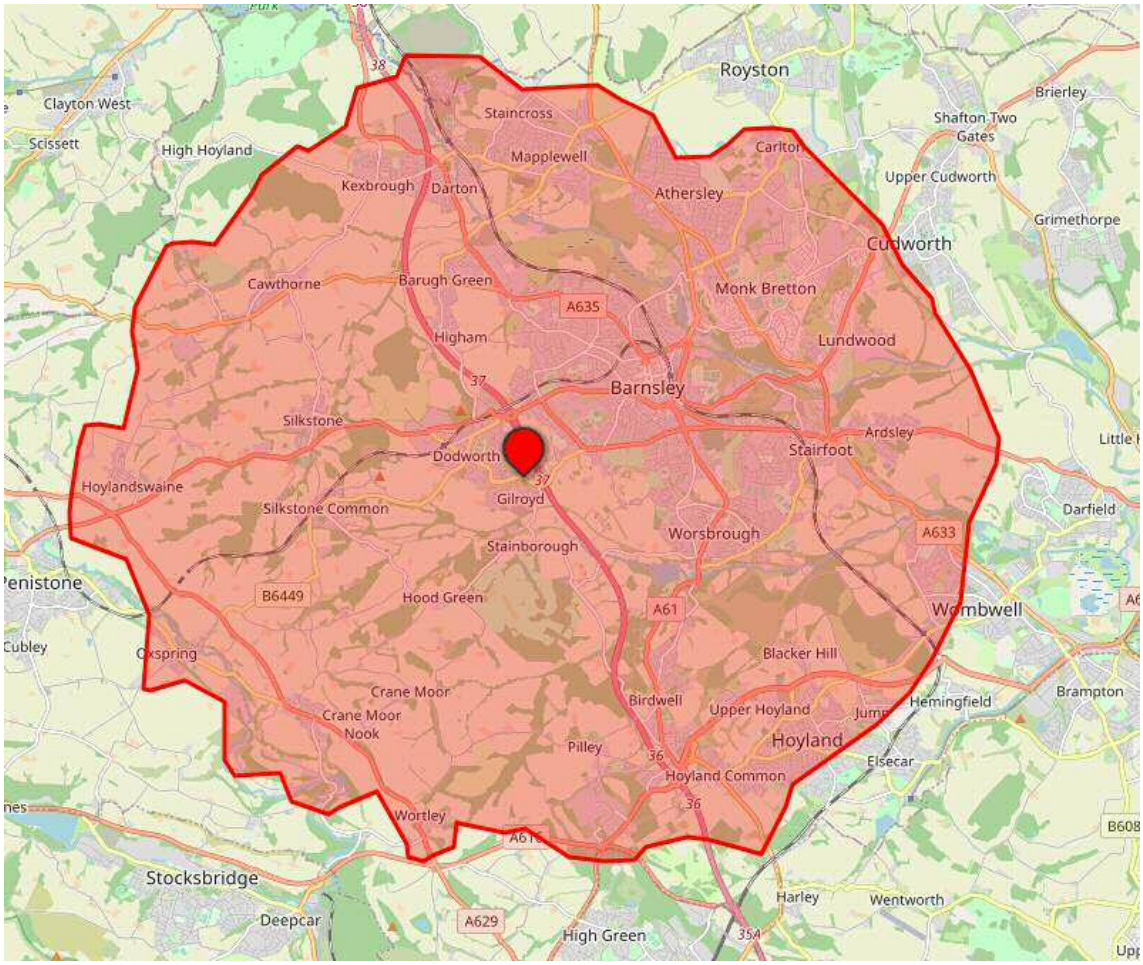
4.2.7 The proposed internal pedestrian routes will be of adequate width, with step-free access between the site and the local footway network to allow the site to be suitably accessed on foot by all users, including those accompanied by young children and the mobility impaired.

4.3 Cycling Provision

4.3.1 Cycling is a low cost and healthy alternative to car use, which can substitute for short car trips, or can form part of a longer journey by public transport. The Department for Transport (DfT) state that journeys up to five miles (circa 8km) are "*an achievable distance to cycle for most people"* (DfT, 2020).

4.3.2 The proposed development site is located within a reasonable cycle ride, up to 8km (approximately 25 minutes at the average cycling speed of 12mph), of the majority of the built-up area of Barnsley, along with outlying settlements including Darton, Staincross, Silkstone and Hoyland, as illustrated within Figure 7.

Figure 7: 8km Cycle Isochrone



Source: ORS, 2021

4.3.3 National Cycle Network (NCN) Route 62, which also forms part of the Trans Pennine Trail (TPT) is accessible via Gilroyd Lane, approximately 700m to the south of the site. NCN Route 62 is a long-distance cycle route which runs between Fleetwood in Lancashire and Selby in North Yorkshire. Locally, the route is largely off-road and connects to settlements, including Worsbrough, Silkstone Common and Penistone.

4.4 Public Transport Provision

4.4.1 Advice within *'Guidelines for Public Transport in Development'* (IHT, 1999) states that the generally acceptable maximum distance that a bus stop should be located from a development site is 400m, although it is acknowledged that actual walking distances can be notably longer.

4.4.2 The nearest existing bus stops to the proposed development are located on Keresforth Road, approximately 120m west of the proposed site access junction (westbound), and approximately 180m east (eastbound) respectively. There are also stops in both directions on Keresforth Hill Road approximately 320m to the east, which provide access to additional services.

Photo 4: Westbound Bus Stop on Keresforth Road

4.4.3 Details of the bus services that operate from these stops are outlined within Table 3 below:

Table 3: Local Bus Services

Service	Route	Weekday Frequency*
Services from Keresforth Road (<180m)		
21a	Barnsley Interchange – **Dodworth** – Gilroyd – Silkstone – Silkstone Common – Oxspring – Cubley – Penistone – Millhouse Green	Hourly (evenings only)
22	Barnsley Interchange – **Dodworth** – Gilroyd	Every 30 minutes
410	Barnsley – Dodworth – Gilroyd – Hood Green – Thurgoland – Penistone Grammar School	1 school service in each direction
Services from Keresforth Hill Road (circa. 320m)		
24/24a	Barnsley Interchange – Keresforth Hill Road – Gilroyd – Hood Green – Thurgoland – Oxspring – Penistone – Ingbirchworth	Every 2 hours

*Refers to the general daytime service between 08:00 and 17:00

4.4.4 The nearest rail station to the site is Dodworth Rail Station, located approximately 1.5km walk to the west. Dodworth Rail Station is located on the Sheffield to Huddersfield line, and accommodates hourly Northern services to local stations including Barnsley, Wombwell, Elsecar, Silkstone Common and Penistone. A total of 10 cycle parking spaces are provided at the station, and step free access is available to the platform.

5. ROAD CASUALTY APPRAISAL

5.1 Collision Record

5.1.1 Personal Injury Collision (PIC) data for the highway network local to the site for the most recent available five-year study period (01/01/2016 to 31/12/2020) was obtained via a search of the Department for Transport's (DfT) road safety data (DfT, 2021).

5.1.2 A total of 12 collisions occurred within the study area, which includes an approximately 2.4km section of the B6099 between and including the Dodworth Green Road/Barnsley Road (B6449)/Station Road (B6099) junction to the west, and the Broadway (A6133) junction to the east. The study area extents and the locations of the collisions are indicated on the plan included as Appendix 5.

5.1.3 Table 4 below outlines the collision history of the study area.

Table 4: Collision History

Year	2016	2017	2018	2019	2020	Total
Fatal	-	-	-	-	-	**0**
Serious	-	2	1	-	1	**4**
Slight	2	2	2	-	2	**8**
Total	**2**	**4**	**3**	**0**	**3**	**12**

5.1.4 The collision records show that the number of collisions has fluctuated throughout the study period, with the most collisions recorded in 2017, and no collisions recorded in 2019. There were 4 KSI (Killed or Seriously Injured) collisions recorded during the study period, resulting in a 33.3% severity ratio.

5.2 Collision Conditions

5.2.1 Table 5 below summarises the collisions by road surface, weather and lighting conditions:

Table 5: Collision Conditions

Road Surface	Collisions	%
Dry	7	**58.3%**
Wet or damp	5	**41.7%**
Weather	**Collisions**	**%**
Fine	9	**75%**
Rain	2	**16.7%**
Other	1	**8.3%**
Lighting	**Collisions**	**%**
Daylight	9	**75%**
Dark	3	**25%**

5.2.2 As illustrated in Table 5, the majority of the collisions occurred without any adverse road surface, weather or lighting conditions.

5.3 Collision Times

5.3.1 Table 6 summarises the collisions by time of year:

Table 6: Collisions by Time of Year

Time of Year	Collisions	%
Winter (Dec-Feb)	1	**8.3%**
Spring (Mar-May)	4	**33.3%**
Summer (Jun-Aug)	5	**41.7%**
Autumn (Sep-Nov)	2	**16.7%**

5.3.2 Table 6 shows that most of the collisions were recorded during the spring (33.3%) or summer (41.7%) months, with fewest collisions recorded in autumn and winter.

5.3.3 Table 7 below summarises the collisions by day of week and also the time of day:

Table 7: Collisions by Day & Time

Day	Morning (06:00-11:00)	Lunch (11:00-14:00)	Afternoon (14:00-19:00)	Evening (19:00-01:00)	Night (01:00-06:00)	Total	%
Monday	-	-	2	1	-	**3**	**25%**
Tuesday	-	-	-	-	-	**0**	**-**
Wednesday	-	1	1	-	-	**2**	**16.7%**
Thursday	-	-	-	1	-	**1**	**8.3%**
Friday	-	-	1	2	-	**3**	**25%**
Saturday	-	-	1	1	-	**2**	**16.7%**
Sunday	1	-	-	-	-	**1**	**8.3%**
Total	**1**	**1**	**5**	**5**	**0**	**12**	
%	**8.3%**	**8.3%**	**41.7%**	**41.7%**	**-**		

5.3.4 Table 7 shows that there was spread of collisions across days of the week, with most collisions recorded on a Monday or Friday (25% respectively) and no collisions recorded on a Tuesday. Most collisions were recorded during the afternoon or evening period (41.7% respectively), with no collisions recorded overnight.

5.4 Collision Locations

5.4.1 The locations of the 12 study collisions (shown on the plot attached as Appendix 5) can be summarised as follows:

- 2 PICs occurred at the Dodworth Green Road/Barnsley Road (B6449)/Station Road/High Street (B6099) priority crossroads;
- 2 PICs occurred at the Keresforth Road/Keresforth Hill Road/Gilroyd Lane priority junction;
- 2 PICs occurred on Keresforth Road, to the west of the junction with Gilroyd Lane;
- 2 PICs occurred on Keresforth Hill Road, within the vicinity of the M1 overbridge;

- 2 PICs occurred on Keresforth Hill Road, within the vicinity of the Needlewood access;
- 1 PIC occurred on Keresforth Hill Road, within the vicinity of Greenacre School; and
- 1 PIC occurred on Keresforth Road, within the vicinity of Keresforth Primary School.

5.4.2 It is noted that no collisions occurred within the immediate vicinity of the proposed site access junction with Keresforth Road.

5.5 Casualties

5.5.1 A total of 16 casualties occurred as a result of the 12 recorded injury collisions during the study period. Table 8 below provides a breakdown of the casualties according to the mode of travel and age group:

Table 8: Casualty Road User Groups

	Age (years)							
Road User Group	**0 to 15**	**16 to 20**	**21 to 25**	**26 to 45**	**46 to 65**	**66+**	**Total**	**%**
Pedestrian	-	-	1	-	-	1	**2**	**12.5%**
Cyclist	-	-	-	1	1	-	**2**	**12.5%**
Powered Two-Wheeler (PTW)	-	-	1	-	1	-	**2**	**12.5%**
Car Driver	-	-	-	2	3	2	**7**	**43.8%**
Car Passenger	1	1	-	-	-	1	**3**	**18.8%**
Total	**1**	**1**	**2**	**3**	**5**	**4**	**16**	
%	**6.3%**	**6.3%**	**12.5%**	**18.8%**	**31.3%**	**25%**		

5.5.2 Table 8 shows that most casualties were car occupants (62.6%), with the remainder being vulnerable road user casualties (pedestrians, cyclists and PTW riders). Almost a third of casualties were aged between 46-65 years (31.3%) with low proportions aged 20 years and under.

5.6 Road Safety Impact

5.6.1 A total of 12 collisions, resulting in 16 casualties, have occurred within the study area during the five year study period. Analysis of the study collisions has not revealed any identifiable existing collision issues associated with the expected movements of the proposed development; therefore, it is considered that there are no existing road safety issues pertinent to the development of the site.

5.6.2 If the proposed site access junction and internal roads are designed with due consideration to road safety, with appropriate highway design features incorporated into the detailed design, then the proposals should not have a detrimental road safety impact on the local transport network and should not adversely affect the safety of other road users.

6. TRIP GENERATION & TRAFFIC IMPACT

6.1 Proposed Vehicle Trip Generation

6.1.1 The TRICS database is an industry-standard collection of traffic counts and trip generation statistics for calculating trip rates at development sites. The TRICS database has been interrogated to find suitable data to assist in projecting the trip generation of the proposed residential development.

6.1.2 In order to derive reflective trip rates, vehicle trip generation statistics within the *'Houses Privately Owned'* category (03-A) of the TRICS database have been interrogated. To ensure that only trip generation statistics for comparable sites were used in calculations, the TRICS sites were filtered to the following criteria:

- Database version: 7.7.3;
- Survey type: Multi-modal sites;
- Size: 200 to 400 dwellings;
- TRICS location type: 'Edge of Town' and 'Suburban Area';
- Regions: UK, excluding Greater London and Ireland sites;
- Weekday survey data only (exclusion of Saturday and Sunday surveys); and
- Recent survey data only (exclusion of surveys undertaken prior to 01/01/2012).

6.1.3 As there were less than 20 comparable sites in the database after filtering (7 survey sites), mean trip rates (as weighted and calculated by the TRICS software) have been used to project the vehicle trip generation of the proposed development, in accordance with good practice guidelines (TCL, 2021). Details of the site selection and trip rates taken from the TRICS database are attached in full within Appendix 6, with the projected vehicle trip rates and generation shown in Table 9.

Table 9: Projected Vehicle Trip Generation

	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
Residential Development (03-A)	**Arrivals**	**Departures**	**Total**	**Arrivals**	**Departures**	**Total**
Vehicle Trip Rates (per dwelling)	0.138	0.418	0.556	0.401	0.154	0.555
Proposed Vehicle Trips (220 dwellings)	30	92	122	88	34	122

6.1.4 The trip generation projections shown in Table 9 indicate that the proposed development could be expected to generate up to 122 two-way vehicle trip movements during each of the respective AM (08:00-09:00) and PM (17:00-18:00) peak hours.

6.1.5 The current proposals for the development are seeking full planning consent for up to 215 dwellings, as shown on the site layout attached as Appendix 1. However, to ensure that that the conclusions of this TA are robust, the trip generation projections have been based on a slightly larger development of up to 220 dwellings.

6.1.6 Whilst not new trips on the wider highway network, it is noted that the existing vehicle trips generated by Wood End Court will also utilise the proposed site access junction with Keresforth Road. A summary of the existing peak hour trips likely to be generated by the six dwellings on Wood End Court is provided within Table 10 below.

Table 10: Wood End Court Vehicle Trip Generation

	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
Residential Development (03-A)	**Arrivals**	**Departures**	**Total**	**Arrivals**	**Departures**	**Total**
Vehicle Trips (6 dwellings)	1	3	4	2	1	3

6.1.7 Table 10 demonstrates that Wood End Court is likely to generate 4 two-way vehicle trips during the AM peak hour, with 3 during the PM peak hour.

6.1.8 A Travel Plan (LTP, 2022) has been produced in association with this TA to help promote and encourage sustainable travel to/from the proposed development. In order to ensure that this assessment robustly analyses a *'worst-case scenario'*, the potential vehicle trip reducing benefits of the site Travel Plan have not been considered within the trip generation projections. However, it is worth noting that the Travel Plan would be expected to increase the number of trips generated by sustainable modes and reduce the number of car trips.

6.2 Modal Split

6.2.1 The TRICS sites utilised to predict the traffic generation of the development (see Section 5.1) contain multi-modal information, therefore the modal split of the development has been predicted based on travel pattern information from the comparable residential development sites in the TRICS database, with the number of trips generated by each mode projected utilising the total person trip generation for the site, as summarised in Table 11:

Table 11: Projected Modal Split Generation

Person Trips	**Modal Split**	**12-Hour (07:00-19:00) Two-Way Trips**
Vehicle Drivers	55.8%	1,049
Vehicle Passengers	35.4%	666
Vehicle Occupants	**91.2%**	**1,715**
Pedestrians	5.4%	102
Cyclists	1.2%	22
Public Transport Users	2.2%	42
TOTAL	**100%**	**1,880**

* The total may not represent the sum of its parts due to rounding

6.2.2 These modal split predictions indicate that almost half of person trips (44.2%) generated by the development would be expected to be made by sustainable modes (pedestrian, cycle, public transport and car passenger).

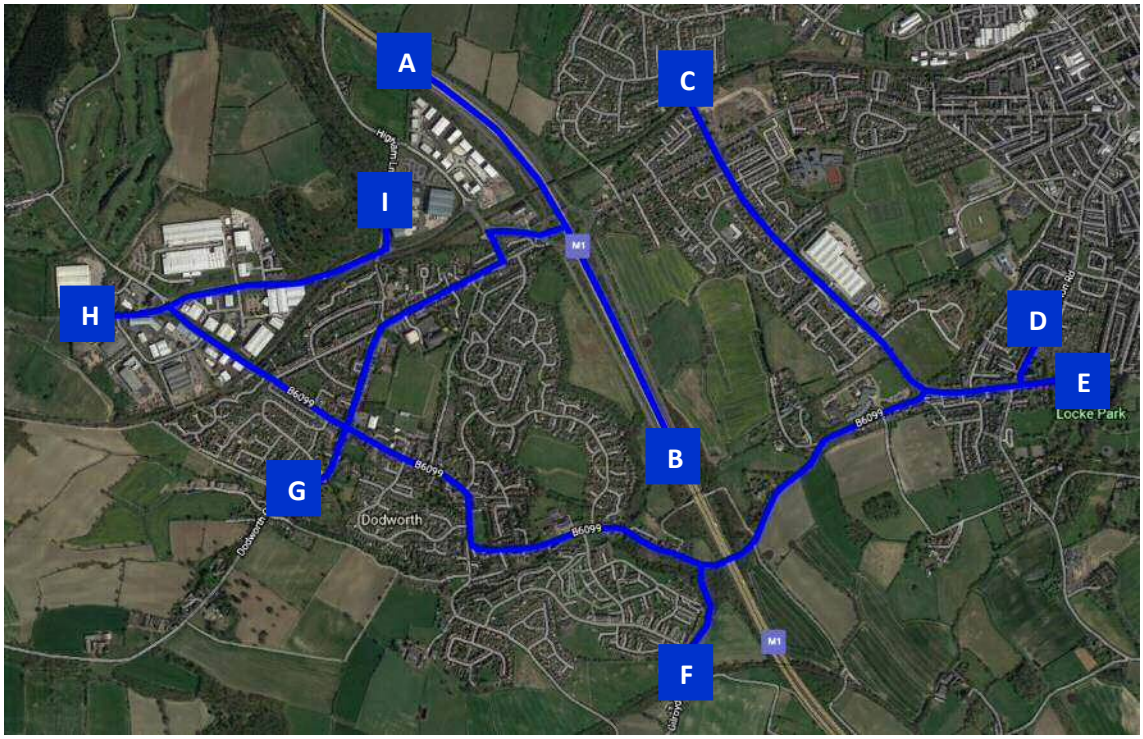
6.2.3 It is noted that journey to work data from the 2011 National Census could be utilised to predict the modal split of trips generated by the site, however this dataset only represents commuting trips and does not account for journey purposes associated with other trips generated by residential sites (e.g. trips to school/retail), with varying modal splits across different journey purposes and time periods. It is therefore considered to be more representative to base the modal split projections for the proposed residential development on recorded trip generation data from comparable sites within the TRICS database.

6.3 Traffic Distribution & Assignment

6.3.1 The distribution of projected traffic associated with the proposed development has been predicted utilising a gravity model based upon commuting patterns of existing residents of the *'Barnsley 019'* Middle-Layer Super Output Area (MSOA), in which the site is wholly located. '*Location of usual residence and place of work by method of travel to work'* data from the 2011 National Census (ONS, 2014) shows the proportion of existing residents of the Barnsley 019 MSOA travelling to each workplace destination (MSOAs and local authority/district) by mode of travel. MSOA level is the most detailed geography that origin-destination data is publicly available for, with Output Area (OA) or Workplace Zone data not available.

6.3.2 This trip distribution data has been combined with an assessment of route choice (traffic assignment) to determine the likely distribution of development traffic across the highway network. The predicted traffic assignment has been undertaken utilising journey planning tools to help determine the relative attractiveness of alternative routes, with consideration of influences such as the location and size of settlements and places of employment within each area, and known existing traffic conditions on the relevant routes. The defined zones utilised within the gravity model calculations are illustrated in Figure 8:

Figure 8: Gravity Model Zones



Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

6.3.3 The detailed calculations of the gravity model are attached as Appendix 7, with the results summarised in Table 12.

Table 12: Gravity Model Results

Zone	Route	Proportion of Development Traffic
A	M1 (North)	15.8%
B	M1 (South)	14.6%
C	Pogmoor Road	9.5%
D	Racecommon Road	12.6%
E	A6133 (East)	25.7%
F	Gilroyd Lane	5.6%
G	Dodworth Green Road	0.6%
H	A628 (West)	12.3%
I	Higham Lane	3.4%

6.3.4 Table 12 indicates that there would be an approximately split of 53.3% of trips to/from the east (zones C, D, E and F) and 46.7% to/from the west (zones A, B, G, H and I) at the proposed site access junction with Keresforth Road. Network diagrams showing the distribution of proposed development trips at the site access junction are included as Appendix 8.

6.4 Impact on Local Junctions

6.4.1 The predicted increase in traffic across the local highway network as a result of each development scenario is summarised in Table 13.

Table 13: Projected Traffic Impact at Local Junctions

Junction	AM Peak Impact	PM Peak Impact
Proposed Site Access/Keresforth Road junction	+122	+122
Keresforth Hill Road/A6133 signalised junction	+58	+58
A6133/Racecommon Road/Keresforth Hall Road signalised junction	+47	+47
B6099 High Street/B6449 Barnsley Road/Dodworth Green Road priority crossroads	+57	+57
B6449 Barnsley Road/Mitchelson Avenue priority T-junction	+37	+37
B6449 Barnsley Road/North Road mini-roundabout	+37	+37
B6449/A628 Whinby Road roundabout	+37	+37
A628/M1 Dodworth Roundabout	+37	+37
M1 Northbound On-Slip	+15	+5
M1 Southbound On-Slip	+13	+5
M1 Northbound Off-Slip	+4	+13
M1 Southbound Off-Slip	+5	+14

6.4.2 The DfT has previously issued guidance that transport assessment of development impacts could be based on a threshold of *"30 two-way peak hour vehicle trips"* (DfT, 2007a). This guidance acknowledged that this threshold was not to be applied rigidly, but rather that it provided *"a useful point of reference from which to commence discussions"*.

6.4.3 This national DfT guidance has now been superseded and replaced with the *'National Planning Policy Framework'* (NPPF) (MHCLG, 2021) and its accompanying *'Planning Practice Guidance'* (PPG) (MHCLG, 2014). NPPF and PPG require that transport assessment is undertaken for *"developments that generate significant amounts of movement"*, although this is not defined. It is therefore acknowledged that there is no set threshold for assessment within the current national planning policy.

6.4.4 A junction capacity assessment of the proposed site access junction with Keresforth Road has been undertaken to test the suitability of the junction to accommodate the trips generated by the development, as detailed within Section 6.5 below.

6.4.5 Whilst over 30 two-way peak hour trips are expected to occur at the Keresforth Hill Road/A6133 signalised junction, A6133/Racecommon Road/Keresforth Hall Road signalised junction and the B6099 High Street/B6449 Barnsley Road/Dodworth Green Road priority crossroads, it is considered unlikely that the proposed development would have a significant impact on the operation of these junctions, subject to agreement with BMBC Highways.

6.4.6 Given that only slightly in excess of 30 two-way trips (37 trips during each respective peak hour) are expected to occur at junctions, including B6449 Barnsley Road/Mitchelson Avenue priority T-junction, B6449 Barnsley Road/North Road mini-roundabout, B6449/A628 Whinby Road roundabout and A628/M1 Dodworth Roundabout, it is considered that the proposed development will not have a significant impact on the operation of these junctions.

6.4.7 Less than 30 peak hour trips (maximum of 15 trips) are expected to occur on each of the M1 on/off slip roads, therefore the proposed development is not expected to have a significant impact on the operation of the SRN.

6.5 Proposed Site Access/Keresforth Road Junction Capacity Assessment

6.5.1 In order to assess the ability of the proposed site access/Keresforth Road junction to accommodate the traffic associated with the proposed development, a junction capacity assessment has been undertaken using Junctions 9 modelling software (ARCADY module), which is a software package produced by TRL that provides an industry-standard method for assessing capacity, queuing and delay at priority junctions (PICADY) and roundabouts (ARCADY).

6.5.2 The proposals have been tested against the weekday AM and PM peak hour traffic flows on Keresforth Road, considering a 2027 design year, five years after registration of the planning application and in line with DfT guidance (DfT, 2007a). Baseline traffic data on Keresforth Road has been established through traffic surveys undertaken in June 2016, as presented within the TA (Fore, 2018a) for the previous Persimmon Homes application.

6.5.3 The network traffic flows in 2027 have been predicted using the DfT's *'National Traffic Model'* (NTM). The regional growth factor obtained from the NTM has been adjusted to reflect local circumstances using TEMPro software (Ref: Yorkshire & Humber Dataset Version 7.2), see Appendix 9.

6.5.4 The projected future peak hour traffic flows have been assessed against the proposed junction layout as shown within Appendix 2. The results of the capacity assessment are shown in full within the complete modelling output (see Appendix 10) and are summarised in Table 14.

Table 14: Proposed Site Access/Keresforth Road Capacity Assessment

Peak	Arm	2027 With Development	
		Max. RFC	Max. End Q
AM	Site Access (Left-Turn)	10.4%	0.1
	Site Access (Right-Turn)	13.7%	0.2
	Keresforth Road (E)	4.7%	0.1
	TOTAL	**13.7%**	**0.2**
PM	Site Access (Left-Turn)	3.5%	0.0
	Site Access (Right-Turn)	4.9%	0.1
	Keresforth Road (E)	14.5%	0.4
	TOTAL	**14.5%**	**0.4**

6.5.5 The capacity assessment results shown in Table 14 indicate that the proposed site access/Keresforth Road junction would be expected to operate within capacity in 2027 with the proposed development in place, with a worst-case Ratio of Flow to Capacity (RFC) of 14.5% (Keresforth Road E arm, PM peak) and low levels of queuing on all arms. It is therefore considered that the proposed junction is suitable to accommodate the traffic associated with the proposed development.

6.6 Traffic Impact Summary

6.6.1 Based upon the assessments outlined within this section, it is considered that the proposed development will not have a severe impact on the operation of the local highway network or SRN and that the proposed site access junction with Keresforth Road is suitable to accommodate the traffic associated with the proposed development.

6.6.2 Therefore the proposals are considered to be in accordance with the *'National Planning Policy Framework'* (MHCLG, 2021), which 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"*.

7. CONCLUSIONS

7.1.1 This TA provides a detailed appraisal of the transport aspects associated with proposals to provide a residential development of approximately up to 215 dwellings at a site located to the north of Keresforth Road in Dodworth, Barnsley. The proposed site forms part of the *'HS10'* site, which is allocated for residential use within the adopted *'Barnsley Local Plan'* (BMBC, 2019a).

7.1.2 Access to the proposed development is to be provided via a new simple priority T-junction connecting with Keresforth Road on the southern boundary of the site. Visibility splays in line with the requirements of MfS are available at the proposed access junction, based on measured vehicle speeds on Keresforth Road. The swept path movements are compliant with the requirements of the South Yorkshire Residential Design Guide. Preliminary design drawings of the proposed access arrangements are included as Appendix 2.

7.1.3 Pedestrian and cycle access to the development is to also be provided via Keresforth Road, with a 3m shared foot/cycleway on the western side of the access road linking with the existing provision on the northern side of Keresforth Road. There are two Public Rights of Way which run through the site, with one of these expected to be diverted as part of the development proposals.

7.1.4 The entire built-up areas of Dodworth and Gilroyd are located within a 2km walk of the site, along with the Kingstone area of Barnsley. The site is located within a reasonable cycle ride (8km) of the majority of the built-up area of Barnsley, along with outlying settlements including Darton, Staincross, Silkstone and Hoyland. The nearest bus stops to the site are located on Keresforth Road, within a 180m walk of the proposed site access junction and accommodate frequent bus services to Barnsley town centre. The nearest rail station to the site is Dodworth Rail Station, located approximately 1.5km walk to the west.

7.1.5 A road casualty study showed that 12 PICs occurred within the study area around the proposed development site during the most recent 5-year study period. Analysis of the study collisions has not revealed any identifiable existing collision issues associated with the expected movements of the proposed development; therefore it is considered that there are no existing road safety issues pertinent to the development of the site. If the proposed access junction and internal roads of the development are designed with due consideration to road safety, then the proposals should not have a detrimental road safety impact on the local transport network and should not adversely affect the safety of other road users.

7.1.6 The vehicle trip generation of the proposed development has been projected using the industry-standard TRICS database. The projections indicate that when fully-built, the proposed development is expected to generate up to 122 two-way vehicle trips during each of the respective AM (08:00-09:00) and PM (17:00-18:00) peak hours. To ensure that the conclusions of this TA are robust, the trip generation projections have been based on a slightly larger development of 220 dwellings.

7.1.7 The modal split of the proposed development has been predicted based on travel pattern information from the comparable residential development sites in the TRICS database. The modal split projections indicate that almost half of person trips (44.2%) generated by the development would be expected to be made by sustainable modes (pedestrian, cycle, public transport and car passenger).

7.1.8 A Travel Plan (LTP, 2022) has been produced in association with this TA to help promote and encourage sustainable travel to/from the proposed development. In order to ensure that this assessment robustly analyses a *'worst-case scenario'*, the potential vehicle trip reducing benefits of the site Travel Plan have not been considered within the trip generation projections. However, it is worth noting that the Travel Plan would be expected to increase the number of trips generated by sustainable modes and reduce the number of car trips.

7.1.9 The distribution of development traffic across the local highway network has been predicted using a gravity model derived from analysis of travel to work patterns for the local resident population of the '*Barnsley 019'* MSOA. There is expected to be a split of approximately 53.3% of trips to/from the east and 46.7% to/from west at the site access junction with Keresforth Road.

7.1.10 Given that only slightly in excess of 30 two-way trips are expected to occur at a number of local junctions, it is considered that the proposed development will not have a significant impact on the operation of these junctions, subject to agreement with BMBC Highways.

7.1.11 Less than 30 peak hour trips (maximum of 15 trips) are expected to occur on each of the M1 on/off slip roads, therefore the proposed development is not expected to have a significant impact on the operation of the SRN.

7.1.12 In order to assess the ability of the proposed site access/Keresforth Road junction to accommodate the traffic associated with the proposed development, a junction capacity assessment has been undertaken using Junctions 9 modelling software. The results demonstrate that the junction would be expected to operate well within capacity with the proposed development in place, with a maximum RFC of 14.5% and low levels of queuing on all arms.

7.1.13 It is therefore considered that the proposals will not have a significant impact on the operation of the local highway network or SRN. The proposals are therefore considered to be in accordance with the '*National Planning Policy Framework*' (NPPF) which 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"* (MHCLG, 2021).

7.1.14 It is concluded from the assessments within this TA that the proposed development would not be expected to have a significant impact in terms of sustainable travel, traffic impact and road safety.

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Appendix 1 – Proposed Site Layout Plan

Key

- Application site boundary
- Existing (retained) trees & hedgerow (TBC)
- Indicative proposed planting
- Open space
- Indicative surface water attenuation basin
- Existing Public Right of Way
- Re-directed Public Right of Way
- Indicative development cell
- Potential locations of landmark buildings
- Proposed street
- Proposed block paving
- Private drive

M1

Main Street

Surface Water Attenuation

Pumping Station

Sub Station

Main Street

Main Street

Keresforth Road

M1

0 10 50 m

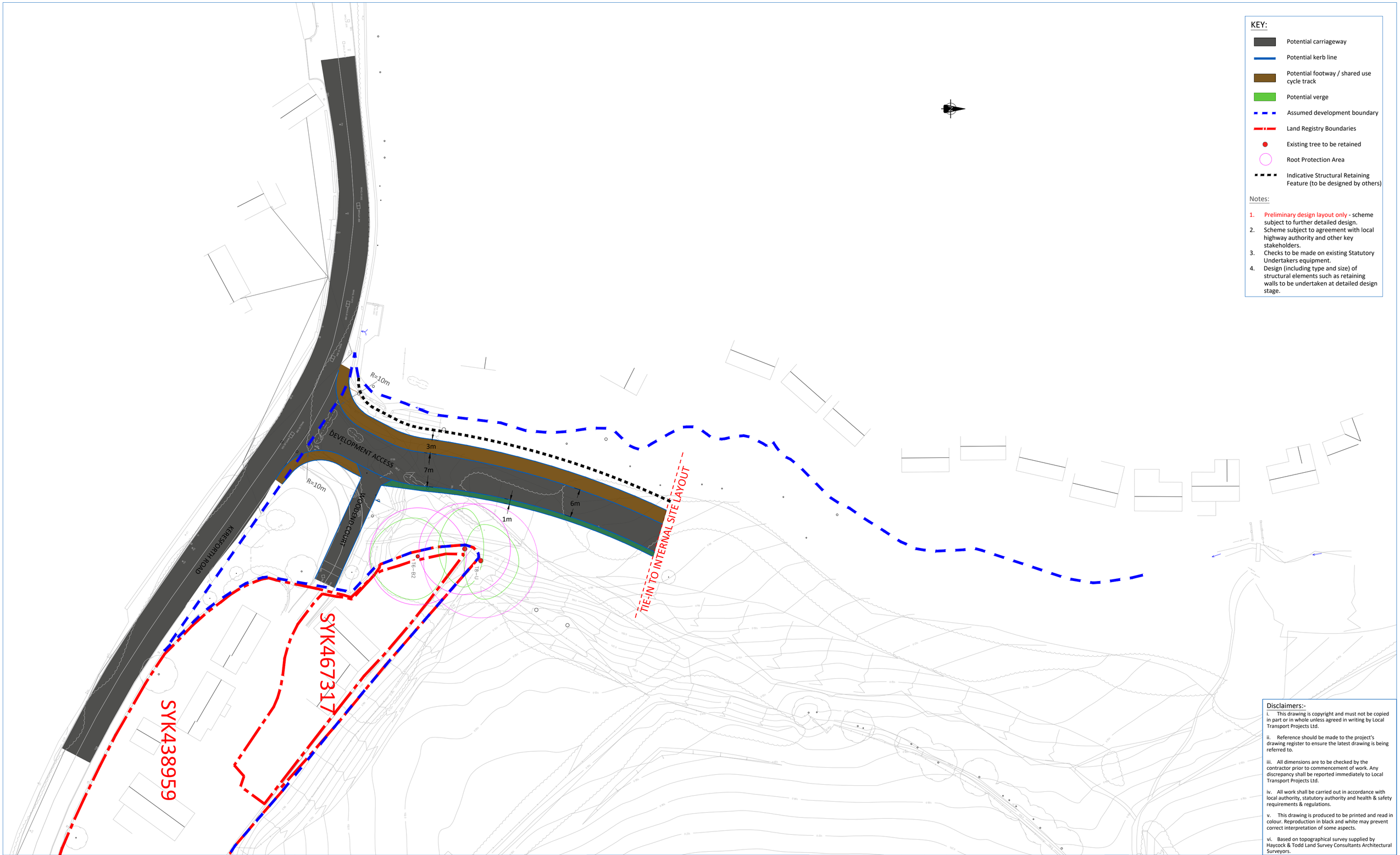
Keepmoat Homes

Project
Keresforth Road, Dodworth

Drawing Title
Masterplan

Project Code	Drawing Nr	Rev
n1664	005	A
Date	Drawing Scale	
15.12.2021	1:1,000 @ A1	

Appendix 2 – Preliminary Design Drawings



Client: Keepmoat Homes

Project: Proposed Residential Development, Keresforth Road, Dodworth

Title: Potential Residential Access Road Preliminary Design Layout

Status: PRELIMINARY

Drawing number: LTP / 4283 / P2 / 01 . 01 / G

Project	Job	Drawing	Sheet	Revision
LTP	4283	P2	01	G

Drawn: CW

Date: 13 09 21

Scale: 1 : 500

Checked: MR

Approved: TK

Rev.	Date	By	Chk	Description
D	28 04 22	SL	MR	Indicative retaining wall location added
E	03 05 22	SL	MR	Development access moved west to avoid existing tree
F	04 05 22	MH	MR	Access Road reduced to 6.0m beyond the Wood End Court Access to accommodate visibility splay
G	05 05 22	MH	MR	Indicative retaining feature added

10mm

A2

local transport projects
traffic engineering and transport planning
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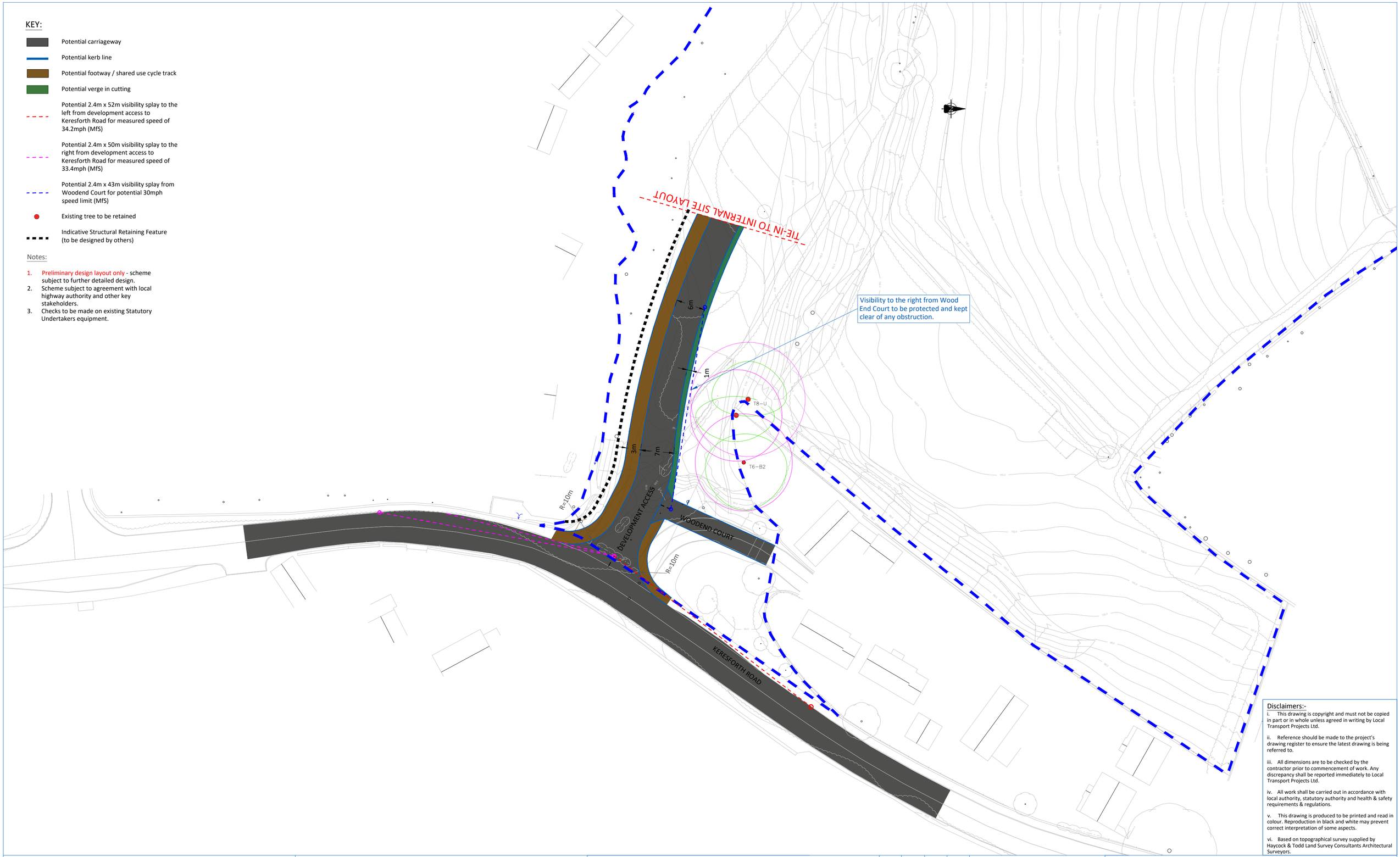
The Flemingate Centre,
Beverley,
East Riding of Yorkshire.
HU17 0NW.
t 01482 679 911
info@ltp.co.uk
www.local-transport-projects.co.uk
Registered No. 5295328

KEY:

- Potential carriageway
- Potential kerb line
- Potential footway / shared use cycle track
- Potential verge in cutting
- Potential 2.4m x 52m visibility splay to the left from development access to Keresforth Road for measured speed of 34.2mph (MfS)
- Potential 2.4m x 50m visibility splay to the right from development access to Keresforth Road for measured speed of 33.4mph (MfS)
- Potential 2.4m x 43m visibility splay from Woodend Court for potential 30mph speed limit (MfS)
- Existing tree to be retained
- Indicative Structural Retaining Feature (to be designed by others)

Notes:

1. Preliminary design layout only - scheme subject to further detailed design.
2. Scheme subject to agreement with local highway authority and other key stakeholders.
3. Checks to be made on existing Statutory Undertakers equipment.



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v. This drawing is produced to be printed and read in colour. Reproduction in black and white may prevent correct interpretation of some aspects.

vi. Based on topographical survey supplied by Haycock & Todd Land Survey Consultants Architectural Surveyors.

Client: Keepmoat Homes

Project: Proposed Residential Development, Keresforth Road, Dodworth

Title: Potential Residential Access Road
Preliminary Design Layout
Visibility Splays

Status: PRELIMINARY

Drawing number: LTP / 4283 / P2 / 01 . 05 — Revision G

Drawn: CW

Date: 13 09 21

Scale: 1 : 500

Checked: MR

Approved: TK

Rev.	Date	By	Chk	Description
D	28 04 22	SL	MR	Indicative retaining wall location added
E	03 05 22	SL	MR	Development access moved west to avoid existing tree
F	04 05 22	MH	MR	Access Road reduced to 6.0m beyond the Wood End Court Access to accommodate visibility splay
G	05 05 22	MH	MR	Indicative retaining feature added

10mm

A2

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traffic engineering and transport planning
INSTITUTE OF HIGHWAY ENGINEERS
25 000 LIVES TO SAVE
Accredited Contractor
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Beverley,
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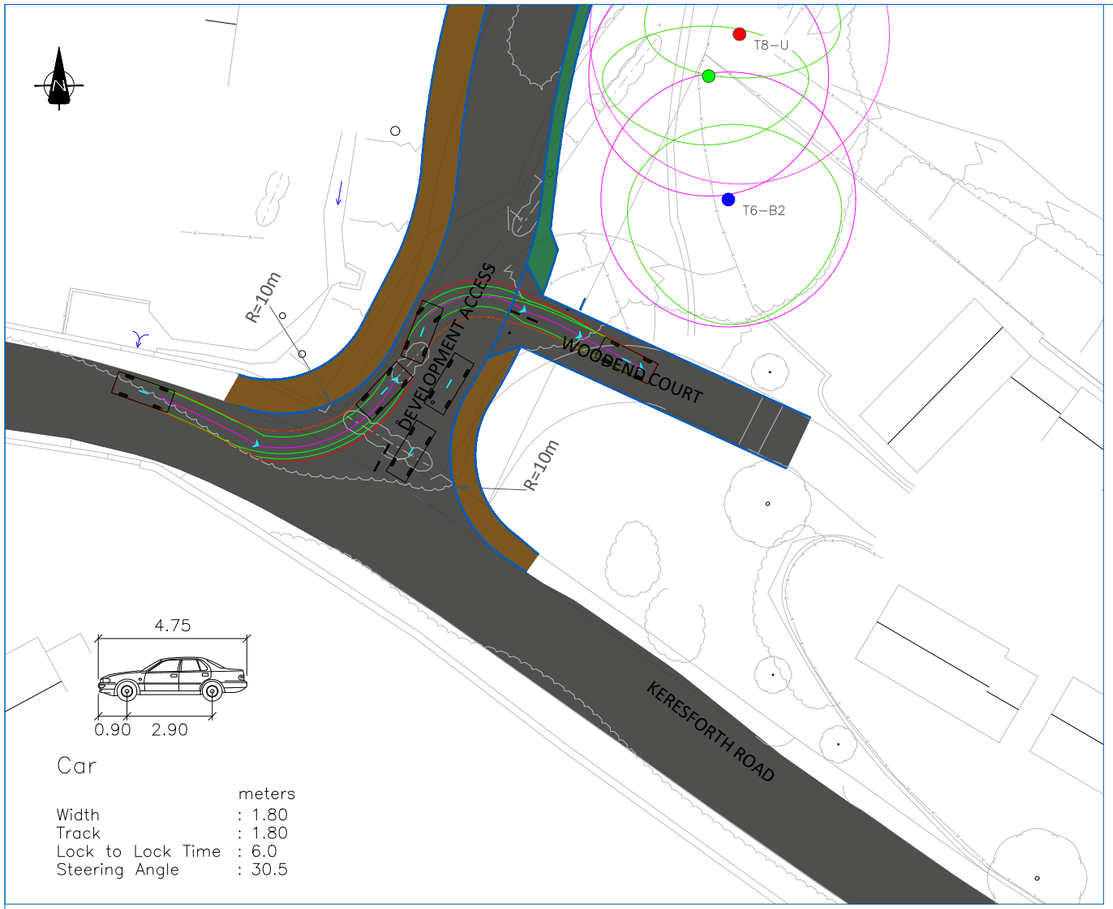
Registered No. 5295328



Car

	meters
Width	: 1.80
Track	: 1.80
Lock to Lock Time	: 6.0
Steering Angle	: 30.5

10mm

A3

Key:-

	Outer Wheel Track
	Vehicle Swept Path
	Vehicle Centreline and Direction

Notes:

1. Preliminary design layout only - scheme subject to further detailed design.
2. Scheme subject to agreement with local highway authority and other key stakeholders.
3. Checks to be made on existing Statutory Undertakers equipment.
4. Simulated speed - not more than 5mph.
5. Actual vehicle dimensions and track may vary.

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vi. Based on topographical survey supplied by Haycock & Todd Land Survey Consultants Architectural Surveyors.

Rev.	Date	By	Chk	Description
B	03 05 22	SL	MR	Swept paths amended to reflect new layout of residential access.
A	28 04 22	SL	MR	Swept paths amended to reflect new layout of residential access.

Client

Keepmoat Homes

Project

Proposed Residential Development, Keresforth Road, Dodworth

Title

Potential Residential Access Road
Preliminary Design Layout
Swept Path Analysis
Cars to Woodend Court

local transport projects
traffic engineering and transport planning

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Drawn	Date
CW	14 10 21

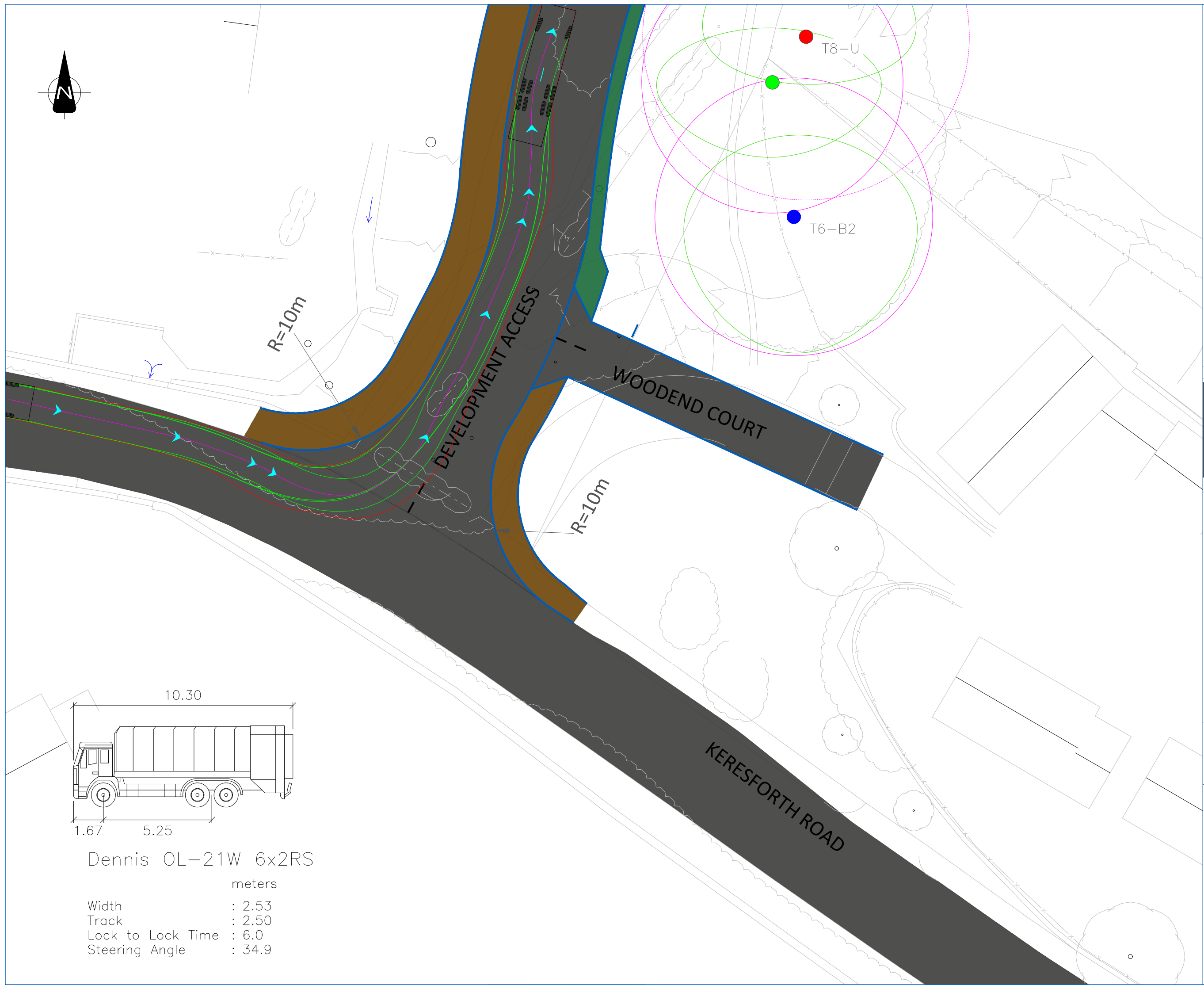
Scale	Checked	Approved
1 : 500	MR	TK

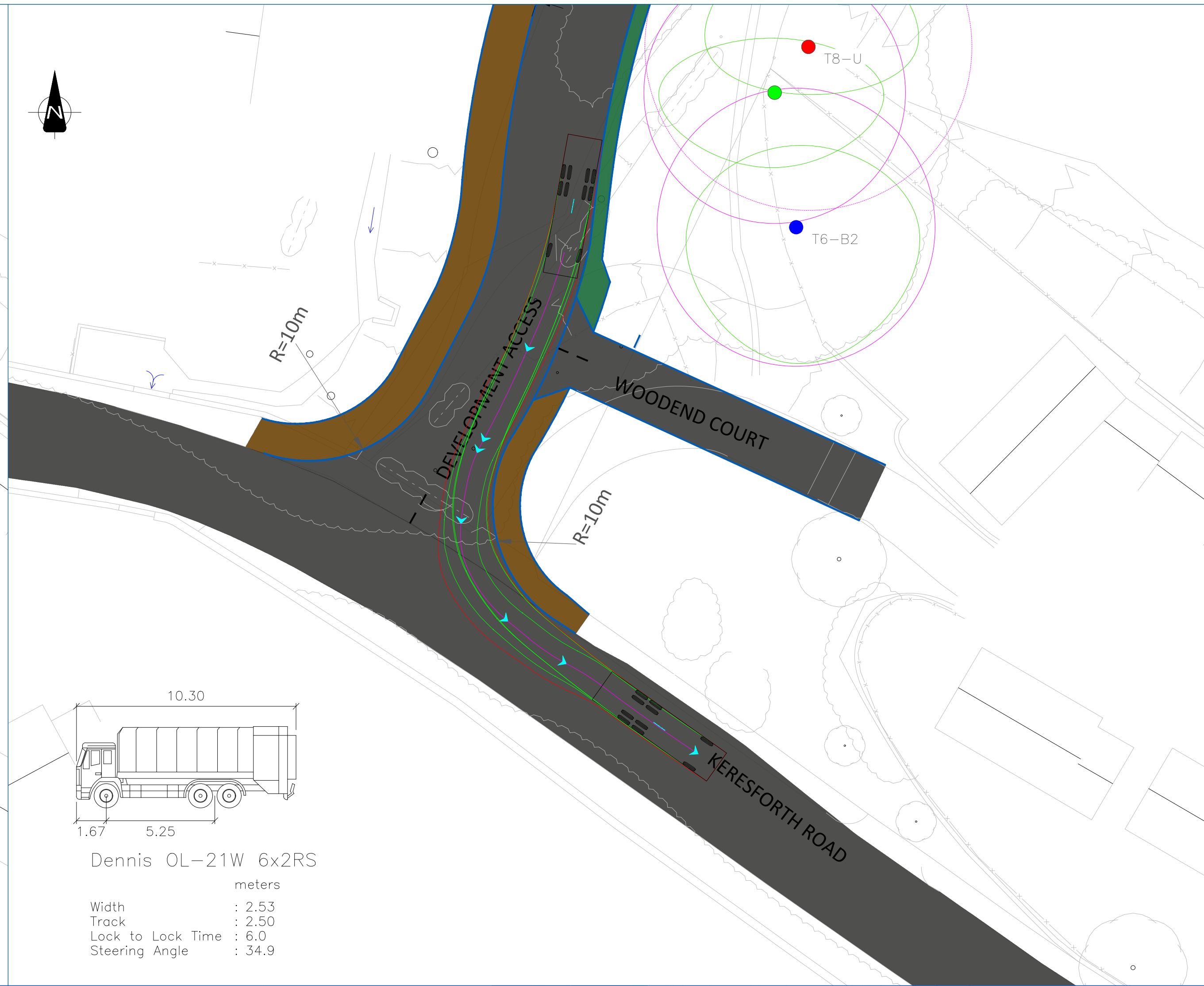
Status

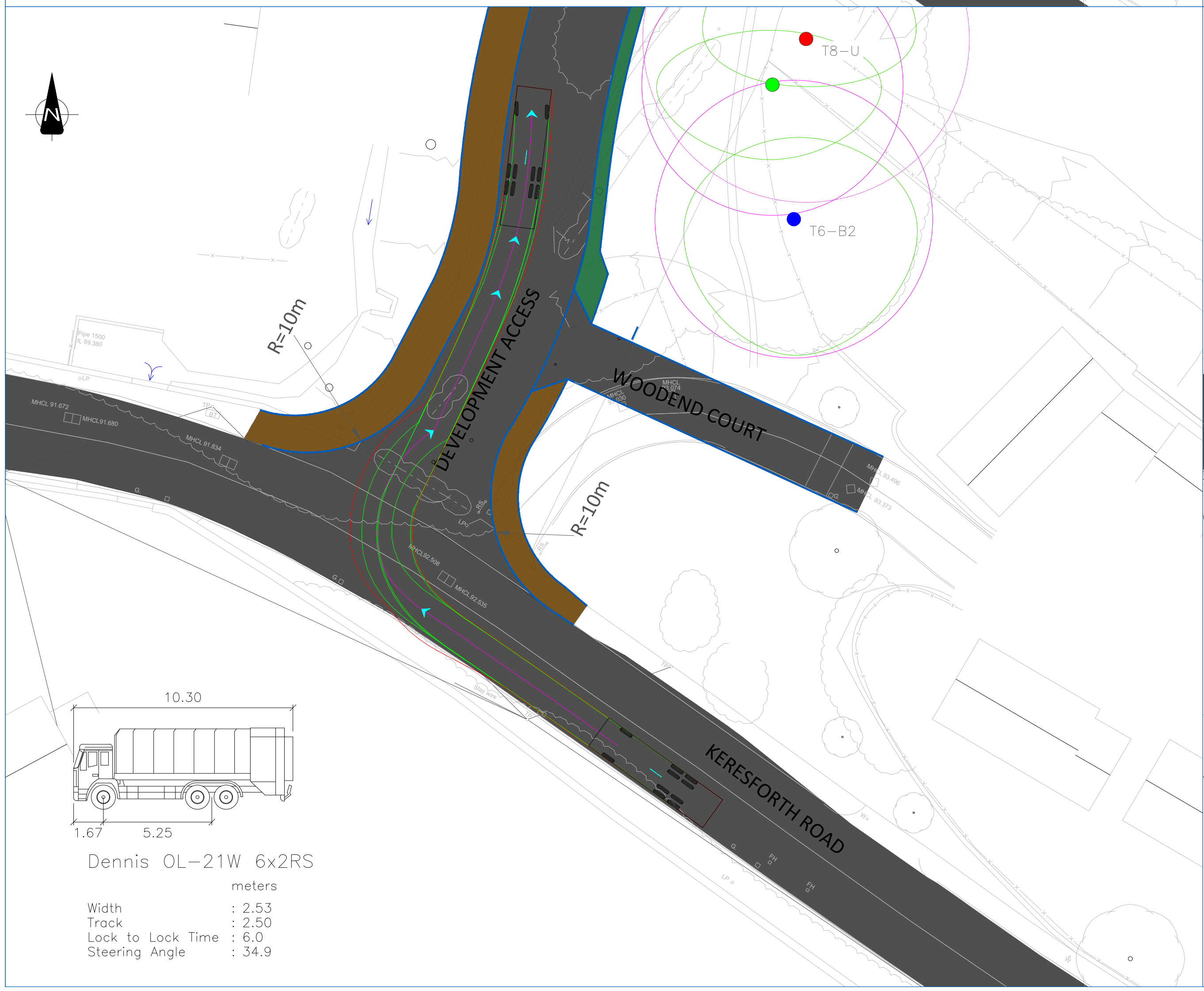
PRELIMINARY

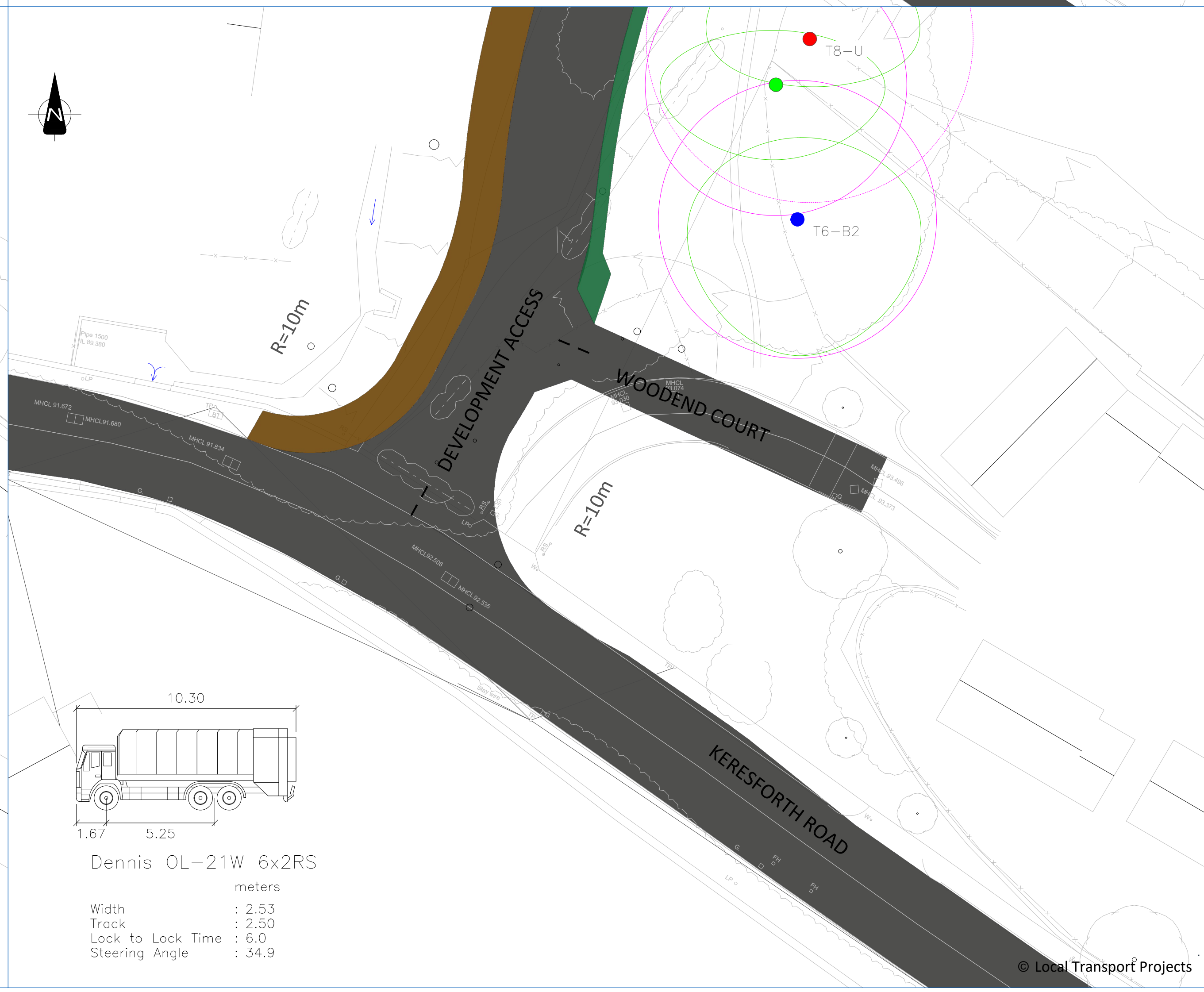
Drawing number

Project	Job	Drawing	Sheet	Revision
LTP/ 4283	/ P2	/ 01	.08	B









10mm

A3

Key:-

- Outer Wheel Track
- Vehicle Swept Path
- Vehicle Centreline and Direction

Notes:

1. Preliminary design layout only - scheme subject to further detailed design.
2. Scheme subject to agreement with local highway authority and other key stakeholders.
3. Checks to be made on existing Statutory Undertakers equipment.
4. Simulated speed - not more than 5mph.
5. Actual vehicle dimensions and track may vary.

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vi. Based on topographical survey supplied by Haycock & Todd Land Survey Consultants Architectural Surveyors.

Rev.	Date	By	Chk	Description
D	03 05 22	SL	MR	Swept paths amended to reflect new layout of residential access.
C	28 04 22	SL	MR	Swept paths amended to reflect new layout of residential access.
B	14 10 21	CW	MR	Swept paths amended to reflect new layout of residential access.

Client

Keepmoat Homes

Project

Proposed Residential Development, Keresforth Road, Dodworth

Title

Potential Residential Access Road
Preliminary Design Layout
Swept Path Analysis
Refuse Vehicle - Sheet 1 of 2

local transport projects
traffic engineering and transport planning

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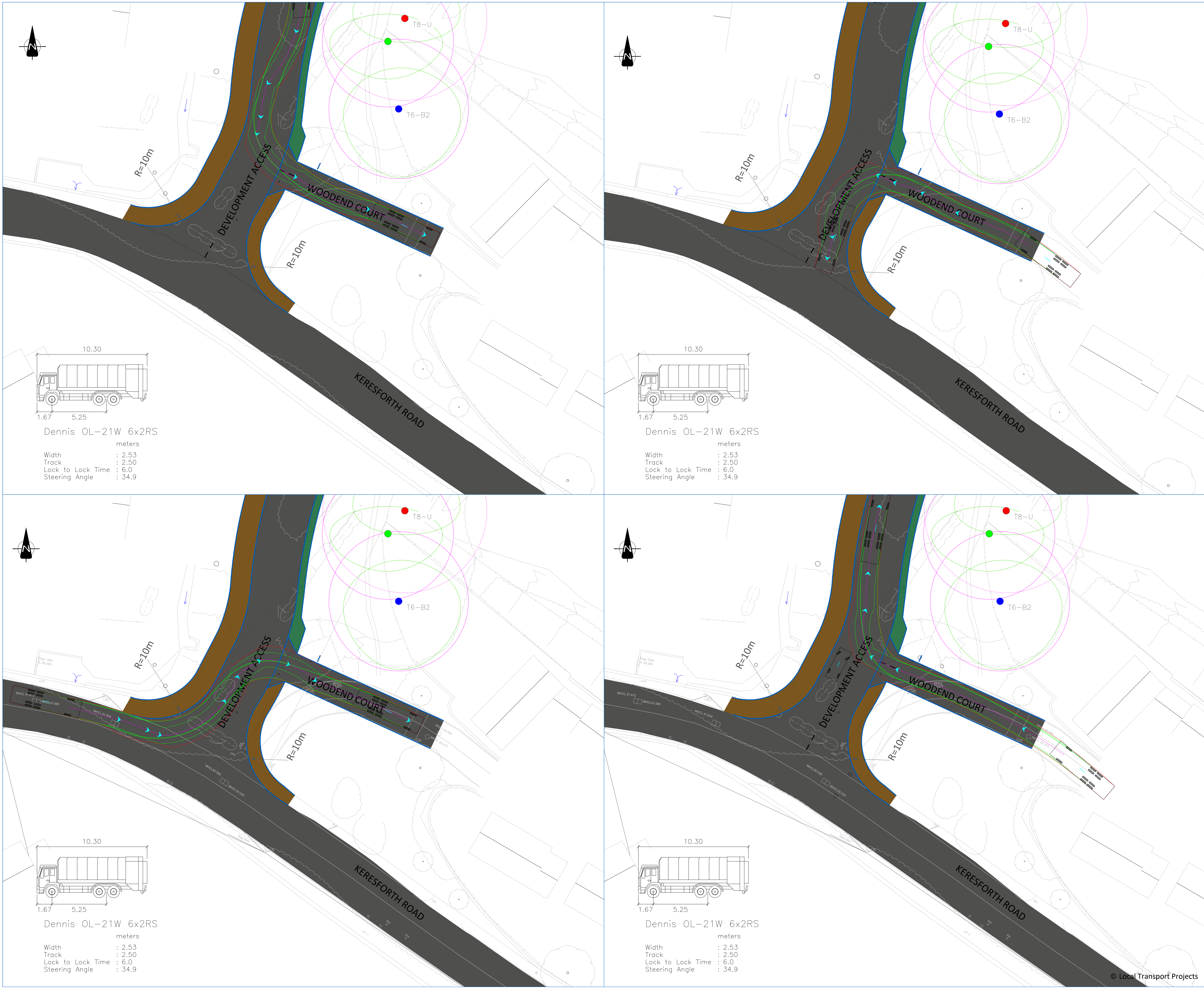
Drawn	Date		
CW	14 09 21		
Scale		Checked	Approved
1 : 500		MR	TK

Status

PRELIMINARY

Drawing number

Project	Job	Drawing	Sheet	Revision
LTP/	4283/	P2 / 01	.06	D



A3

10mm

Key:-

(green line)	Outer Wheel Track
(red line)	Vehicle Swept Path
(magenta line with arrow)	Vehicle Centreline and Direction

Notes:

1. Preliminary design layout only - scheme subject to further detailed design.
2. Scheme subject to agreement with local highway authority and other key stakeholders.
3. Checks to be made on existing Statutory Undertakers equipment.
4. Simulated speed - not more than 5mph.
5. Actual vehicle dimensions and track may vary.

vi. Based on topographical survey supplied by Haycock & Todd Land Survey Consultants Architectural Surveyors.

Rev.	Date	By	Chk	Description
D	03 05 22	SL	MR	Swept paths amended to reflect new layout of residential access.
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B	14 10 21	CW	MR	Swept paths amended to reflect new layout of residential access.

Client

Keepmoat Homes

Project

Proposed Residential Development, Keresforth Road, Dodworth

Title

Potential Residential Access Road
Preliminary Design Layout
Swept Path Analysis
Refuse Vehicle - Sheet 2 of 2

local transport projects

traffic engineering and transport planning

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Drawn: CW	Date: 14 09 21	
Scale: 1 : 500	Checked: MR	Approved: TK

Status

PRELIMINARY

Drawing number

Project	Job	Drawing	Sheet	Revision
LTP/ 4283/	P2 /	01	.07	D

Appendix 3 – Vehicle Speed Survey Data

Dodworth ATC, Keresforth Road

Produced by Streetwise Services Ltd.

Channel 1 - Eastbound

	25/08/2021 Wednesday	26/08/2021 Thursday	27/08/2021 Friday	28/08/2021 Saturday	29/08/2021 Sunday	30/08/2021 Monday	31/08/2021 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	3442	3441	3629	2937	2062	2305	3637	3291	3065
Mean Speed	30.5	30.6	30.7	31.1	30.8	30.9	30.5	30.6	30.7
85%ile Speed	33.6	33.9	33.6	33.2	33.1	33.3	33.0	33.5	33.4
No. Vehicles > 30 MPH Limit	1716	1758	1888	1611	1084	1213	1797	1674	1581
% Vehicles > 30 MPH Limit	49.9	51.1	52.0	54.9	52.6	52.6	49.4	51.0	51.8
No. Vehicles > 45 MPH	6	2	11	3	7	2	6	5	5
% Vehicles > 45 MPH	0.2	0.1	0.3	0.1	0.3	0.1	0.2	0.2	0.2

Channel 2 - Westbound

	25/08/2021 Wednesday	26/08/2021 Thursday	27/08/2021 Friday	28/08/2021 Saturday	29/08/2021 Sunday	30/08/2021 Monday	31/08/2021 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	3428	3453	3755	3037	2040	2319	3541	3299	3082
Mean Speed	30.9	30.8	30.9	31.3	31.5	31.2	30.3	30.8	31.0
85%ile Speed	33.9	33.2	33.4	33.8	38.4	33.3	33.6	33.5	34.2
No. Vehicles > 30 MPH Limit	1783	1751	1888	1684	1183	1276	1635	1667	1600
% Vehicles > 30 MPH Limit	52.0	50.7	50.3	55.4	58.0	55.0	46.2	50.8	52.5
No. Vehicles > 45 MPH	12	8	12	13	12	15	4	10	11
% Vehicles > 45 MPH	0.4	0.2	0.3	0.4	0.6	0.6	0.1	0.3	0.4

Channels 1+2 - Eastbound & Westbound

	25/08/2021 Wednesday	26/08/2021 Thursday	27/08/2021 Friday	28/08/2021 Saturday	29/08/2021 Sunday	30/08/2021 Monday	31/08/2021 Tuesday	5-DAY MEAN	7-DAY MEAN
0000-2400 Vehicle Flow	6870	6894	7384	5974	4102	4624	7178	6590	6147
Mean Speed	30.7	30.7	30.8	31.2	31.2	31.1	30.4	30.7	30.9
85%ile Speed	33.8	33.6	33.5	33.5	35.8	33.3	33.3	33.5	33.8
No. Vehicles > 30 MPH Limit	3499	3509	3776	3295	2267	2489	3432	3341	3181
% Vehicles > 30 MPH Limit	50.9	50.9	51.1	55.2	55.3	53.8	47.8	50.9	52.1
No. Vehicles > 45 MPH	18	10	23	16	19	17	10	16	16
% Vehicles > 45 MPH	0.3	0.1	0.3	0.3	0.5	0.4	0.1	0.2	0.3

Class No	Vehicle Description	Class No	Vehicle Description
1	Car, Light Van Taxi	5	Rigid 2 Axle HGV + 2 Axle (Close coupled) Trailer
1	Light Goods Vehicle	6	Rigid 3 Axle HGV + 2 Axle Drawbar Trailer
1	Car or Light Goods Vehicle + 1 Axle Caravan or Trailer	6	Rigid 3 Axle HGV + 3 Axle Drawbar Trailer
1	Car or Light Goods Vehicle + 2 Axle Caravan or Trailer	7	Artic, 2 Axle Tractor + 1 Axle Semi-Trailer
2	Rigid 2 Axle Heavy Goods Vehicle	8	Artic, 2 Axle Tractor + 2 Axle Semi-Trailer
3	Rigid 3 Axle Heavy Goods Vehicle	9	Artic, 2 Axle Tractor + 3 Axle Semi-Trailer
3	Rigid 3 Axle Heavy Goods Vehicle	10	Artic, 3 Axle Tractor + 1 Axle Semi-Trailer
4	Rigid 4 Axle Heavy Goods Vehicle	10	Artic, 3 Axle Tractor + 2 Axle Semi-Trailer
4	Rigid 4 Axle Heavy Goods Vehicle	11	Artic, 3 Axle Tractor + 3 Axle Semi-Trailer
5	Rigid 2 Axle HGV + 2 Axle Drawbar Trailer	12	Bus or Coach, 2 Axle
5	Rigid 2 Axle HGV + 3 Axle Drawbar Trailer	12	Bus or Coach, 3 Axle
5	Rigid 2 Axle HGV + 1 Axle Caravan or Trailer	13	Vehicle with 7 or more Axles

Appendix 4 – MfS Visibility Requirements

Stopping Sight Distance (SSD) Calculations

SSD = vt + v^2 / 2 (d + 0.1a)

MfS Adopted Constants

		v	t	d	a				
Speed (mph)	**Speed (kph)**	**Speed (m/s)**	**Driver perception-reaction time (s)**	**Deceleration Rate (m/s2)**	**Gradient (%)**	**SSD (m)**	**Rounded**	**Add Bonnet Length**	**Rounded**	
9.94	16	4.44	1.5	4.41	0%	8.91	9	11.31	11	
12.43	20	5.56	1.5	4.41	0%	11.83	12	14.23	14	
14.91	24	6.67	1.5	4.41	0%	15.04	15	17.44	17	
15.53	25	6.94	1.5	4.41	0%	15.88	16	18.28	18	
18.64	30	8.33	1.5	4.41	0%	20.37	20	22.77	23	
19.88	32	8.89	1.5	4.41	0%	22.29	22	24.69	25	
24.85	40	11.11	1.5	4.41	0%	30.66	31	33.06	33	
27.96	45	12.50	1.5	4.41	0%	36.47	36	38.87	39	
29.83	48	13.33	1.5	4.41	0%	40.16	40	42.56	43	
31.07	50	13.89	1.5	4.41	0%	42.70	43	45.10	45	
37.28	60	16.67	1.5	4.41	0%	56.49	56	58.89	59	

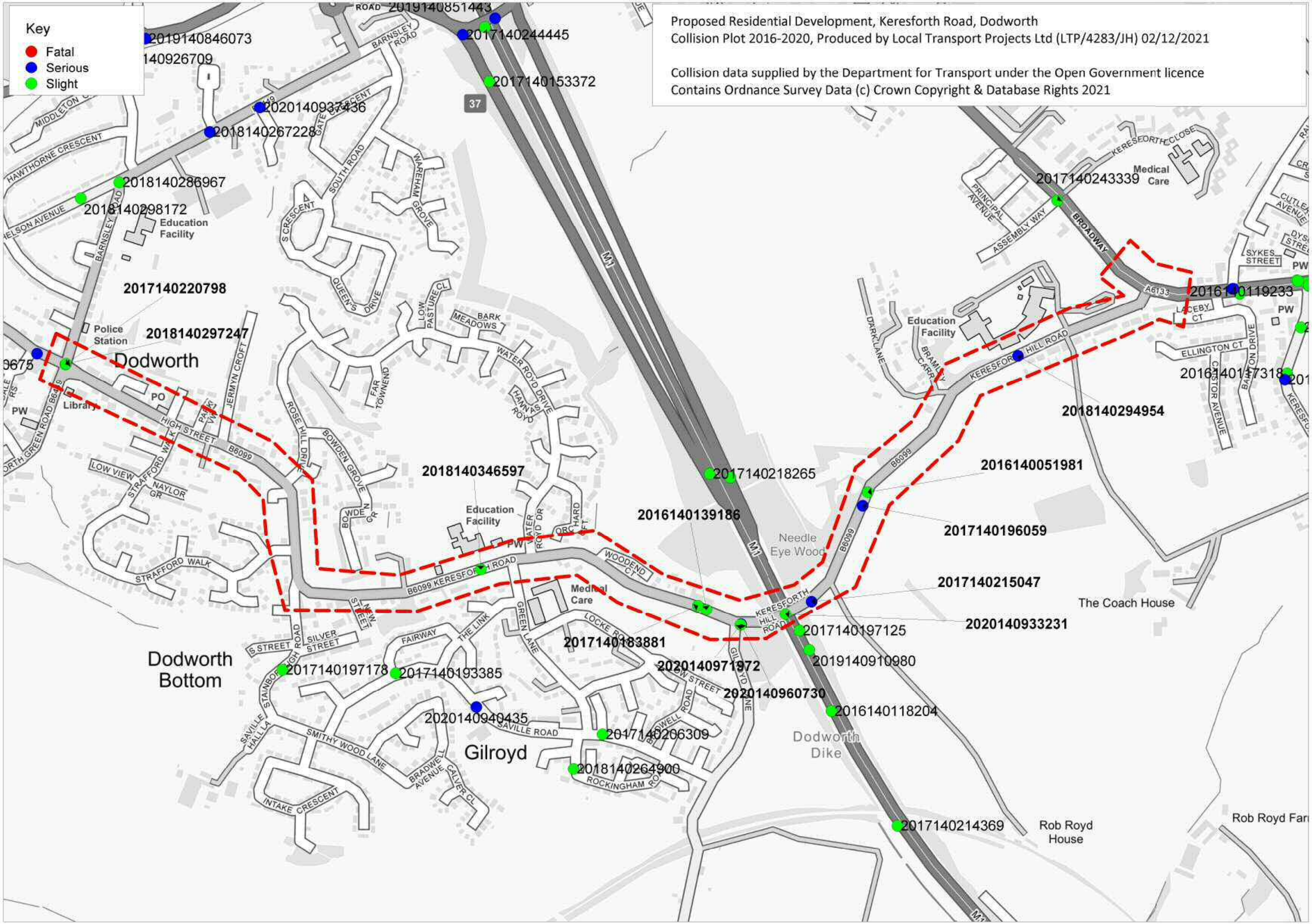
33.4	53.75	14.93	1.5	4.41	0%	47.67	48	50.07	50	Eastbound (to the right)
34.2	55.04	15.29	1.5	4.41	0%	49.44	49	51.84	52	Westbound (to the left)

* Deceleration rate for light vehicles adopted

** Gradients estimated based on approximate elevation details and on-site observations

	0	0.00	1.5	4.41	0%	0.00	0	2.40		40mph
	0	0.00	1.5	4.41	0%	0.00	0	2.40		30mph
	0	0.00	1.5	4.41	0%	0.00	0	2.40		20mph

Appendix 5 – Collision Plot



Proposed Residential Development, Keresforth Road, Dodworth
Collision Plot 2016-2020, Produced by Local Transport Projects Ltd (LTP/4283/JH) 02/12/2021
Collision data supplied by the Department for Transport under the Open Government licence
Contains Ordnance Survey Data (c) Crown Copyright & Database Rights 2021
Key
Fatal
Serious
Slight
2019140851443
2019140846073
2017140244445
2017140153372
2020140937436
2018140267228
2018140286967
2018140298172
2017140243339
2017140220798
2018140297247
2016140119233
2018140294954
2017140218265
2016140051981
2018140346597
2016140139186
2017140196059
2017140215047
2020140933231
2017140183881
2017140197125
2020140971972
2019140910980
2017140197178
2017140193385
2020140960730
2016140118204
2020140940435
2017140206309
2018140264900
2017140214369
Dodworth
Dodworth Bottom
Gilroyd
Needle Eye Wood
Dodworth Dike
The Coach House
Rob Royd House
Education Facility
Medical Care
Police Station
Library
B6099 KERESFORTH HILL ROAD
BROADWAY
M1
37

Appendix 6 – Trip Generation Projections

Calculation Reference: AUDIT-342901-201020-1013

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	ES	EAST SUSSEX	1 days
	KC	KENT	2 days
	SC	SURREY	1 days
04	**EAST ANGLIA**		
	NF	NORFOLK	1 days
05	**EAST MIDLANDS**		
	DS	DERBYSHIRE	1 days
06	**WEST MIDLANDS**		
	ST	STAFFORDSHIRE	1 days

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

Primary Filtering selection:

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

Parameter: No of Dwellings
Actual Range: 207 to 371 (units:)
Range Selected by User: 200 to 400 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/12 to 23/09/19

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

Selected survey days:

Monday	3 days
Tuesday	1 days
Wednesday	3 days

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

Selected survey types:

Manual count	7 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	6

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

Selected Location Sub Categories:

Residential Zone	7

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

Secondary Filtering selection:

Use Class:

C3	7 days

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

Population within 500m Range:

All Surveys Included

Population within 1 mile:

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

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

Population within 5 miles:

50,001 to 75,000	2 days
75,001 to 100,000	2 days
125,001 to 250,000	3 days

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

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	4 days
1.6 to 2.0	1 days

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

Travel Plan:

Yes	2 days
No	5 days

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

PTAL Rating:

No PTAL Present	7 days

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

LIST OF SITES relevant to selection parameters

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

Edge of Town
Residential Zone
Total No of Dwellings: 371
Survey date: TUESDAY *10/07/18* *Survey Type: MANUAL*

2 **ES-03-A-03** **MIXED HOUSES & FLATS** **EAST SUSSEX**
SHEPHAM LANE
POLEGATE

Edge of Town
Residential Zone
Total No of Dwellings: 212
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

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

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 363
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

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

Edge of Town
Residential Zone
Total No of Dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

5 **NF-03-A-06** **MIXED HOUSES** **NORFOLK**
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total No of Dwellings: 275
Survey date: MONDAY *23/09/19* *Survey Type: MANUAL*

6 **SC-03-A-05** **MIXED HOUSES** **SURREY**
REIGATE ROAD
HORLEY

Edge of Town
Residential Zone
Total No of Dwellings: 207
Survey date: MONDAY *01/04/19* *Survey Type: MANUAL*

7 **ST-03-A-07** **DETACHED & SEMI-DETACHED** **STAFFORDSHIRE**
BEACONSIDE
STAFFORD
MARSTON GATE
Edge of Town
Residential Zone
Total No of Dwellings: 248
Survey date: WEDNESDAY *22/11/17* *Survey Type: MANUAL*

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

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL TOTAL VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	7	281	0.094	7	281	0.357	7	281	0.451
08:00 - 09:00	7	281	0.138	**7**	**281**	**0.418**	**7**	**281**	**0.556**
09:00 - 10:00	7	281	0.130	7	281	0.171	7	281	0.301
10:00 - 11:00	7	281	0.113	7	281	0.134	7	281	0.247
11:00 - 12:00	7	281	0.127	7	281	0.144	7	281	0.271
12:00 - 13:00	7	281	0.156	7	281	0.151	7	281	0.307
13:00 - 14:00	7	281	0.157	7	281	0.140	7	281	0.297
14:00 - 15:00	7	281	0.176	7	281	0.174	7	281	0.350
15:00 - 16:00	7	281	0.264	7	281	0.171	7	281	0.435
16:00 - 17:00	7	281	0.304	7	281	0.172	7	281	0.476
17:00 - 18:00	**7**	**281**	**0.401**	7	281	0.154	7	281	0.555
18:00 - 19:00	7	281	0.332	7	281	0.181	7	281	0.513
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.392			2.367			4.759

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

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

Parameter summary

Trip rate parameter range selected:	207 - 371 (units:)
Survey date date range:	01/01/12 - 23/09/19
Number of weekdays (Monday-Friday):	7
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

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

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

MULTI-MODAL TOTAL PEOPLE

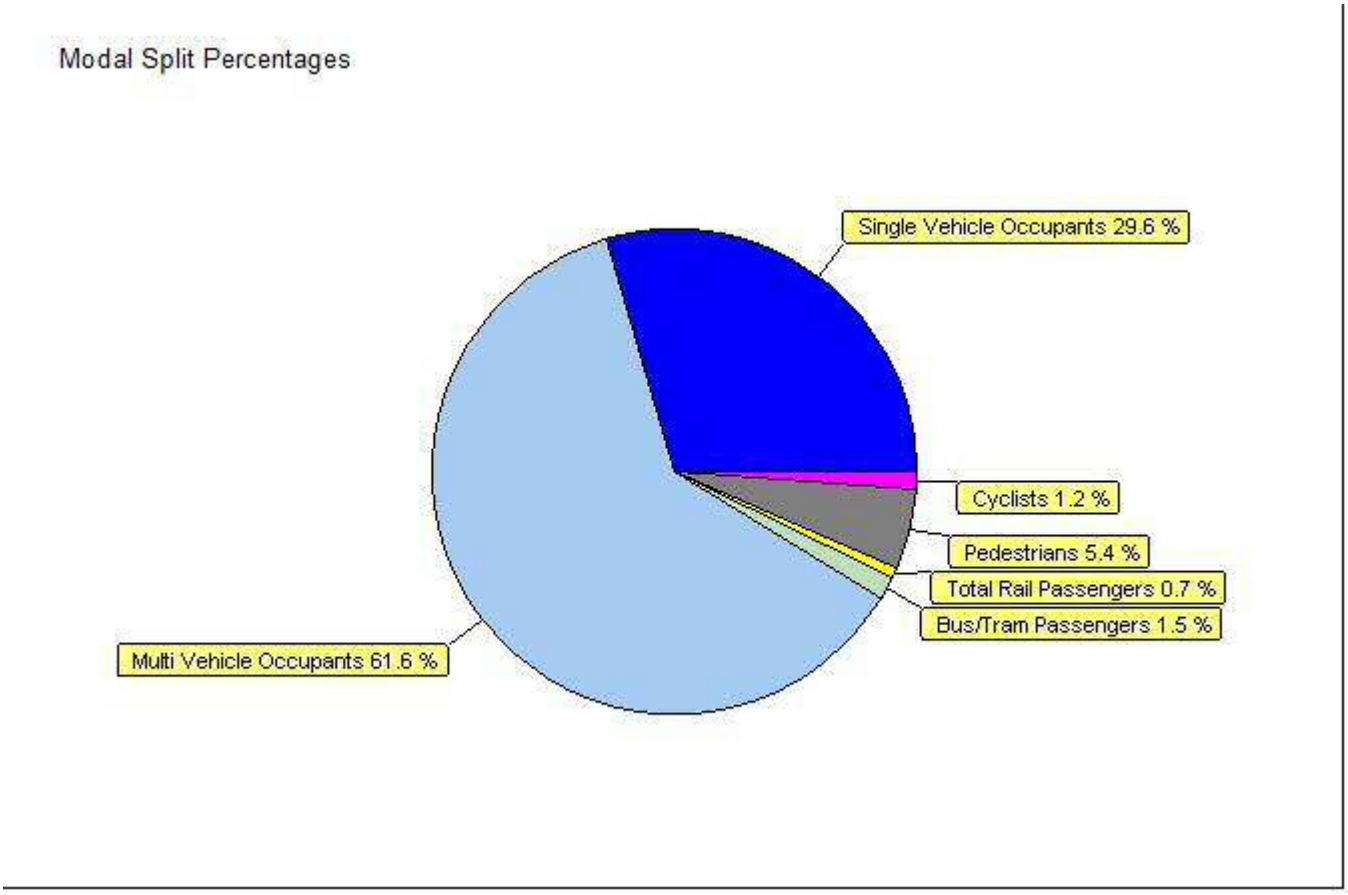
Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	7	281	0.130	7	281	0.618	7	281	0.748
08:00 - 09:00	7	281	0.207	**7**	**281**	**0.862**	**7**	**281**	**1.069**
09:00 - 10:00	7	281	0.197	7	281	0.301	7	281	0.498
10:00 - 11:00	7	281	0.172	7	281	0.238	7	281	0.410
11:00 - 12:00	7	281	0.195	7	281	0.260	7	281	0.455
12:00 - 13:00	7	281	0.259	7	281	0.244	7	281	0.503
13:00 - 14:00	7	281	0.263	7	281	0.241	7	281	0.504
14:00 - 15:00	7	281	0.275	7	281	0.291	7	281	0.566
15:00 - 16:00	7	281	0.542	7	281	0.295	7	281	0.837
16:00 - 17:00	7	281	0.637	7	281	0.304	7	281	0.941
17:00 - 18:00	**7**	**281**	**0.758**	7	281	0.266	7	281	1.024
18:00 - 19:00	7	281	0.617	7	281	0.363	7	281	0.980
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.252			4.283			8.535

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

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



Time Range/Peak Period Selection
Direction: Totals / Use All Times

Projected Vehicle Trip Generation **220** dwellings

Vehicle Trip Rates (per dwelling) *Vehicle Trips*

Time	IN	OUT	TOTAL	IN	OUT	TOTAL
07:00-08:00	0.094	0.357	0.451	21	79	100
08:00-09:00	0.138	0.418	0.556	30	92	122
09:00-10:00	0.130	0.171	0.301	29	38	67
10:00-11:00	0.113	0.134	0.247	25	29	54
11:00-12:00	0.127	0.144	0.271	28	32	60
12:00-13:00	0.156	0.151	0.307	34	33	67
13:00-14:00	0.157	0.140	0.297	35	31	66
14:00-15:00	0.176	0.174	0.350	39	38	77
15:00-16:00	0.264	0.171	0.435	58	38	96
16:00-17:00	0.304	0.172	0.476	67	38	105
17:00-18:00	0.401	0.154	0.555	88	34	122
18:00-19:00	0.332	0.181	0.513	73	40	113
TOTAL	**2.392**	**2.367**	**4.759**	**527**	**522**	**1049**

TRICS v7.7.3 - MM, Mean 03-A, 200-400 dwells, UK (exc. Ireland and Greater London), Edge of Town & Suburban Area exc. Sat/Sun, 2012+ (7)

Projected Person Trip Generation

Person Trip Rates (per dwelling) *Person Trips*

Time	IN	OUT	TOTAL	IN	OUT	TOTAL
07:00-08:00	0.130	0.618	0.748	29	136	165
08:00-09:00	0.207	0.862	1.069	46	190	236
09:00-10:00	0.197	0.301	0.498	43	66	109
10:00-11:00	0.172	0.238	0.410	38	52	90
11:00-12:00	0.195	0.260	0.455	43	57	100
12:00-13:00	0.259	0.244	0.503	57	54	111
13:00-14:00	0.263	0.241	0.504	58	53	111
14:00-15:00	0.275	0.291	0.566	61	64	125
15:00-16:00	0.542	0.295	0.837	119	65	184
16:00-17:00	0.637	0.304	0.941	140	67	207
17:00-18:00	0.758	0.266	1.024	167	59	226
18:00-19:00	0.617	0.363	0.980	136	80	216
TOTAL	**4.252**	**4.283**	**8.535**	**937**	**943**	**1880**

TRICS v7.7.3 - MM, Mean 03-A, 200-400 dwells, UK (exc. Ireland and Greater London), Edge of Town & Suburban Area exc. Sat/Sun, 2012+ (7)

Projected Modal Split

Proportion of Vehicle Trips

Time	IN	OUT	TOTAL
07:00-08:00	72.3%	57.8%	60.3%
08:00-09:00	66.7%	48.5%	52.0%
09:00-10:00	66.0%	56.8%	60.4%
10:00-11:00	65.7%	56.3%	60.2%
11:00-12:00	65.1%	55.4%	59.6%
12:00-13:00	60.2%	61.9%	61.0%
13:00-14:00	59.7%	58.1%	58.9%
14:00-15:00	64.0%	59.8%	61.8%
15:00-16:00	48.7%	58.0%	52.0%
16:00-17:00	47.7%	56.6%	50.6%
17:00-18:00	52.9%	57.9%	54.2%
18:00-19:00	53.8%	49.9%	52.3%
TOTAL	**56.3%**	**55.3%**	**55.8%**

Projected Modal Trip Generation

		AM Peak			PM Peak			12-Hour (07:00-19:00)		
Mode	**Split**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**
Vehicle Drivers	55.8%	30	92	122	88	34	122	527	522	1049
Vehicle Passengers	35.4%	16	67	83	59	21	80	332	334	666
Vehicle Occupants Sub-Total	**91.2%**	**46**	**159**	**205**	**147**	**55**	**202**	**859**	**856**	**1715**
Pedestrian	5.4%	2	10	12	9	3	12	51	51	102
Pedal-cycle	1.2%	1	2	3	2	1	3	11	11	22
Public Transport	2.2%	1	4	5	4	1	5	21	21	42
	8.8%	4	16	20	15	5	20	83	83	166
Total Person Trips	**100%**	**46**	**190**	**236**	**167**	**59**	**226**	**937**	**943**	**1880**

TRICS v7.7.3 - MM, Mean 03-A, 200-400 dwells, UK (exc. Ireland and Greater London), Edge of Town & Suburban Area exc. Sat/Sun, 2012+ (7)

Appendix 7 – Gravity Model

Proposed Trip Distribution - Gravity Model

Residence: Barnsley 019

Area of Workplace	Type	All categories	Work mainly at or from home	Underground, metro, light rail or tram	Train	Bus, minibus or coach	Taxi	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot	Other
Barnsley 013	MSOA	343	0	0	2	54	4	1	229	30	4	19	0
Sheffield	LA	227	0	2	26	4	1	3	173	13	1	3	1
Barnsley 012	MSOA	219	0	0	3	19	0	1	157	17	6	16	0
Wakefield	LA	133	0	0	3	4	0	0	119	5	1	1	0
Barnsley 019	MSOA	225	0	0	1	12	1	0	99	11	0	100	1
Leeds	LA	114	0	0	11	3	0	0	94	4	0	2	0
Barnsley 015	MSOA	93	0	0	0	13	3	1	66	5	0	5	0
Barnsley 002	MSOA	57	0	0	0	3	0	0	48	3	3	0	0
Doncaster	LA	48	0	0	1	2	0	0	44	1	0	0	0
Kirklees	LA	48	0	0	2	0	0	0	42	3	0	1	0
Rotherham 002	MSOA	50	0	0	0	3	0	1	41	4	1	0	0
Barnsley 007	MSOA	58	0	0	0	1	0	0	40	8	0	9	0
Barnsley 010	MSOA	57	0	0	0	13	0	0	38	3	0	3	0
Barnsley 016	MSOA	51	0	0	0	3	0	2	37	7	2	0	0
Barnsley 028	MSOA	39	0	0	0	0	0	0	37	2	0	0	0
Barnsley 005	MSOA	35	0	0	0	0	1	1	26	5	1	1	0
Barnsley 027	MSOA	37	0	0	0	3	0	0	26	6	0	1	1
Barnsley 023	MSOA	32	0	0	0	1	0	1	22	6	0	2	0
Barnsley 030	MSOA	23	0	0	0	0	0	0	20	2	0	1	0
Barnsley 017	MSOA	27	0	0	1	4	0	0	18	3	0	1	0
Bradford	LA	18	0	0	0	0	0	0	17	1	0	0	0
Barnsley 011	MSOA	21	0	0	0	0	0	0	17	3	1	0	0
Barnsley 021	MSOA	21	0	0	0	2	0	0	16	1	0	2	0
Barnsley 004	MSOA	19	0	0	0	1	0	0	15	2	0	1	0
Barnsley 024	MSOA	23	0	0	1	4	0	0	15	2	0	1	0
Rotherham 017	MSOA	15	0	0	0	0	0	0	13	1	0	1	0
Barnsley 026	MSOA	17	0	0	0	0	0	0	12	3	2	0	0
Barnsley 018	MSOA	15	0	0	0	2	1	0	11	1	0	0	0
Barnsley 008	MSOA	13	0	0	0	1	0	0	10	2	0	0	0
Barnsley 022	MSOA	12	0	0	0	1	0	0	10	1	0	0	0

	Vehicle Trip Generating Mode	%
	234	15.25%
	177	11.54%
	158	10.30%
	119	7.76%
	100	6.52%
	94	6.13%
	70	4.56%
	48	3.13%
	44	2.87%
	42	2.74%
	42	2.74%
	40	2.61%
	38	2.48%
	39	2.54%
	37	2.41%
	28	1.83%
	26	1.69%
	23	1.50%
	20	1.30%
	18	1.17%
	17	1.11%
	17	1.11%
	16	1.04%
	15	0.98%
	15	0.98%
	13	0.85%
	12	0.78%
	12	0.78%
	10	0.65%
	10	0.65%
TOTAL:	1,534	100.0%

Route Assignment									
A	B	C	D	E	F	G	H	I	
			50%	50%					100%
	100%								100%
		80%						20%	100%
100%									100%
							100%		100%
100%									100%
				100%					100%
			50%	50%					100%
	50%			50%					100%
20%							80%		100%
				80%	20%				100%
			50%	50%					100%
			50%	50%					100%
							100%		100%
	20%				80%				100%
10%		40%						50%	100%
					60%	20%	20%		100%
				100%					100%
	20%				80%				100%
				100%					100%
100%									100%
			50%	50%					100%
					100%				100%
10%		50%						40%	100%
						30%	70%		100%
	100%								100%
				100%					100%
				100%					100%
			50%	50%					100%
				100%					100%

	Route Assignment									
	A	B	C	D	E	F	G	H	I	
	0.00%	0.00%	0.00%	7.63%	7.63%	0.00%	0.00%	0.00%	0.00%	
	0.00%	11.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	8.24%	0.00%	0.00%	0.00%	0.00%	0.00%	2.06%	
	7.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.52%	0.00%	
	6.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.00%	4.56%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	1.56%	1.56%	0.00%	0.00%	0.00%	0.00%	
	0.00%	1.43%	0.00%	0.00%	1.43%	0.00%	0.00%	0.00%	0.00%	
	0.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.19%	0.00%	
	0.00%	0.00%	0.00%	0.00%	2.19%	0.55%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	1.30%	1.30%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	1.24%	1.24%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.54%	0.00%	
	0.00%	0.48%	0.00%	0.00%	0.00%	1.93%	0.00%	0.00%	0.00%	
	0.18%	0.00%	0.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.91%	
	0.00%	0.00%	0.00%	0.00%	0.00%	1.02%	0.34%	0.34%	0.00%	
	0.00%	0.00%	0.00%	0.00%	1.50%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.26%	0.00%	0.00%	0.00%	1.04%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.00%	1.17%	0.00%	0.00%	0.00%	0.00%	
	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.55%	0.55%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.00%	0.00%	1.04%	0.00%	0.00%	0.00%	
	0.10%	0.00%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.39%	
	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.29%	0.68%	0.00%	
	0.00%	0.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.00%	0.78%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.00%	0.78%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.33%	0.33%	0.00%	0.00%	0.00%	0.00%	
	0.00%	0.00%	0.00%	0.00%	0.65%	0.00%	0.00%	0.00%	0.00%	
	15.8%	**14.6%**	**9.5%**	**12.6%**	**25.7%**	**5.6%**	**0.6%**	**12.3%**	**3.4%**	100.0%
AM Peak:	19	18	12	15	31	7	1	15	4	
PM Peak:	19	18	12	15	31	7	1	15	4	

												<10 excluded
Barnsley 009	E02001517	11	0	0	0	1	0	0	9	1	0	0	0	9
Barnsley 020	E02001528	12	0	0	0	1	0	0	9	1	0	1	0	9
Rotherham 001	E02001578	12	0	0	0	1	0	0	9	1	0	1	0	9
Rotherham 023	E02001600	9	0	0	0	0	0	1	8	0	0	0	0	9
Rotherham 025	E02001602	10	0	0	2	0	0	0	8	0	0	0	0	8
Selby	E41000195	8	0	0	0	0	0	0	7	1	0	0	0	7
Barnsley 006	E02001514	11	0	0	0	2	0	1	7	0	0	1	0	8
Barnsley 001	E02001509	8	0	0	0	0	0	0	6	1	0	1	0	6
Rotherham 014	E02001591	5	0	0	0	0	0	0	5	0	0	0	0	5
Barnsley 029	E02001537	5	0	0	0	1	0	0	4	0	0	0	0	4
Rotherham 009	E02001586	7	0	0	1	0	0	2	4	0	0	0	0	6
Barnsley 014	E02001522	6	0	0	0	0	0	0	3	0	0	3	0	3
Rotherham 016	E02001593	4	0	0	0	0	0	0	3	1	0	0	0	3
Calderdale	E41000289	5	0	0	0	0	0	0	2	3	0	0	0	2
Rotherham 008	E02001585	2	0	0	0	0	0	0	2	0	0	0	0	2
Rotherham 020	E02001597	2	0	0	0	0	0	0	2	0	0	0	0	2
Rotherham 022	E02001599	2	0	0	0	0	0	0	2	0	0	0	0	2
Rotherham 026	E02001603	3	0	0	0	0	0	0	2	1	0	0	0	2
Rotherham 032	E02001609	4	0	0	0	0	0	0	2	2	0	0	0	2
Craven	E41000189	1	0	0	0	0	0	0	1	0	0	0	0	1
East Riding of Yorkshire	E41000011	1	0	0	0	0	0	0	1	0	0	0	0	1
Hambleton	E41000190	1	0	0	0	0	0	0	1	0	0	0	0	1
Harrogate	E41000191	2	0	0	0	0	0	1	1	0	0	0	0	2
North East Lincolnshire	E41000012	1	0	0	0	0	0	0	1	0	0	0	0	1
North Lincolnshire	E41000013	2	0	0	0	0	0	0	1	0	0	1	0	1
York	E41000014	2	0	0	1	0	0	0	1	0	0	0	0	1
Barnsley 003	E02001511	1	0	0	0	0	0	0	1	0	0	0	0	1
Barnsley 025	E02001533	2	0	0	0	1	0	0	1	0	0	0	0	1
Rotherham 003	E02001580	2	0	0	0	0	0	0	1	1	0	0	0	1
Rotherham 006	E02001583	1	0	0	0	0	0	0	1	0	0	0	0	1
Rotherham 007	E02001584	1	0	0	0	0	0	0	1	0	0	0	0	1
Rotherham 010	E02001587	1	0	0	0	0	0	0	1	0	0	0	0	1
Rotherham 018	E02001595	1	0	0	0	0	0	0	1	0	0	0	0	1
Rotherham 027	E02001604	1	0	0	0	0	0	0	1	0	0	0	0	1
Rotherham 028	E02001605	2	0	0	0	0	0	0	1	1	0	0	0	1
Rotherham 031	E02001608	1	0	0	0	0	0	0	1	0	0	0	0	1
Rotherham 033	E02001610	1	0	0	0	0	0	0	1	0	0	0	0	1
Kingston upon Hull, City of	E41000010	0	0	0	0	0	0	0	0	0	0	0	0	0
Richmondshire	E41000192	0	0	0	0	0	0	0	0	0	0	0	0	0
Ryedale	E41000193	0	0	0	0	0	0	0	0	0	0	0	0	0
Scarborough	E41000194	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 004	E02001581	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 005	E02001582	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 011	E02001588	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 012	E02001589	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 013	E02001590	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 015	E02001592	1	0	0	0	1	0	0	0	0	0	0	0	0
Rotherham 019	E02001596	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 021	E02001598	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 024	E02001601	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 029	E02001606	0	0	0	0	0	0	0	0	0	0	0	0	0
Rotherham 030	E02001607	0	0	0	0	0	0	0	0	0	0	0	0	0

Trip Distribution Routes

A	M1 North
B	M1 South
C	Pogmoor Road
D	Racecommon Road
E	A6133
F	Gilroyd Lane
G	Dodworth Green Road
H	A628 W
I	Higham Lane

	AM Peak	**PM Peak**
Proposed Site Access:	122	122
Keresforth Hill Road/A6133 signalised junction:	58	58
A6133/Racecommon Road/Keresforth Hall Road signalised junction:	47	47
B6099 High Street/B6449 Barnsley Road/Dodworth Green Road priority crossroads:	57	57
B6099/A628/Elmhirst Lane roundabout:	19	19
B6449 Barnsley Road/Mitchelson Avenue priority T-junction:	37	37
B6449 Barnsley Road/North Road mini-roundabout:	37	37
B6449/A628 Whinby Road roundabout:	37	37
A628/M1 Dodworth Roundabout:	37	37
M1 Northbound on-slip:	15	5
M1 Southbound on-slip:	13	5
M1 Northbound off-slip:	4	13
M1 Southbound off-slip:	5	14

To/from West	46.7%
To/from East	53.3%

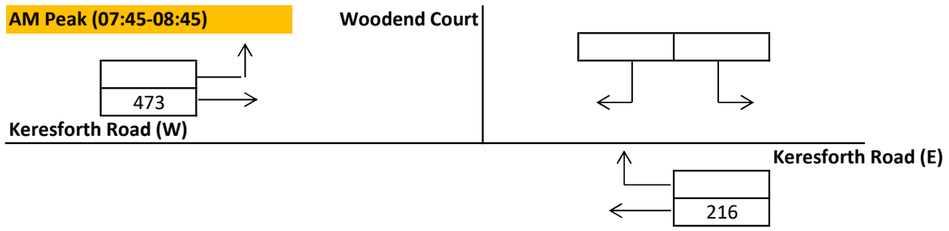
Source: 2011 National Census - Location of usual residence and place of work by method of travel to work (MSOA level)
Table ID: WU03EW
Area Types: MSOA and above

Areas with fewer than 10 travelling by vehicle trip generating modes have been excluded

Appendix 8 – Network Diagrams

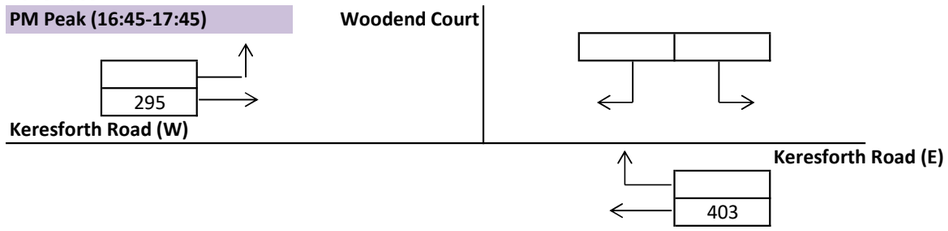
2016 Base

AM Peak (07:45-08:45)



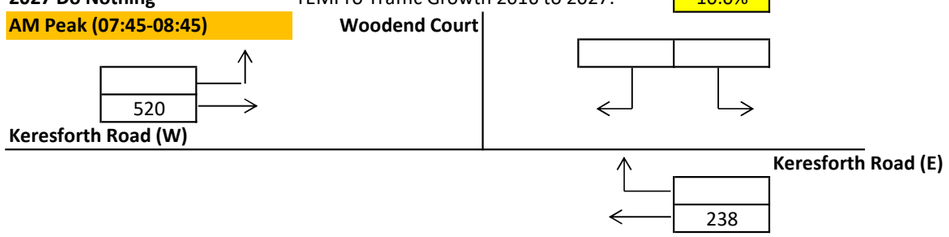
2016 Base

PM Peak (16:45-17:45)



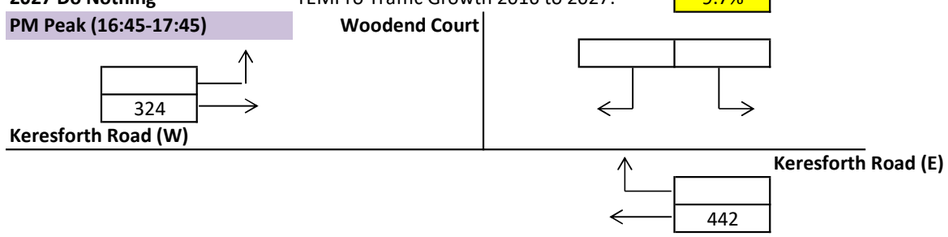
2027 Do Nothing TEMPro Traffic Growth 2016 to 2027: 10.0%

AM Peak (07:45-08:45)



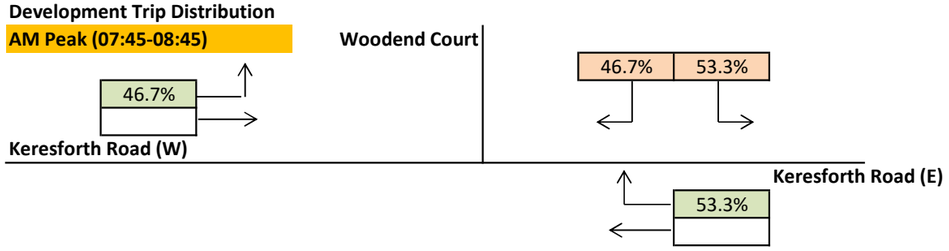
2027 Do Nothing TEMPro Traffic Growth 2016 to 2027: 9.7%

PM Peak (16:45-17:45)



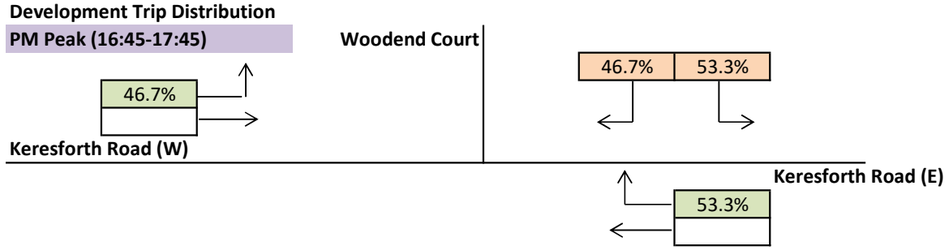
Development Trip Distribution

AM Peak (07:45-08:45)



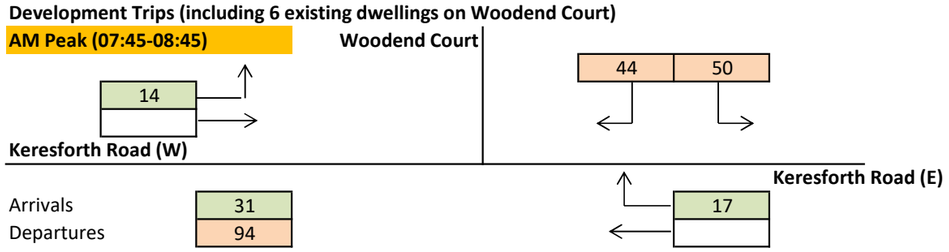
Development Trip Distribution

PM Peak (16:45-17:45)



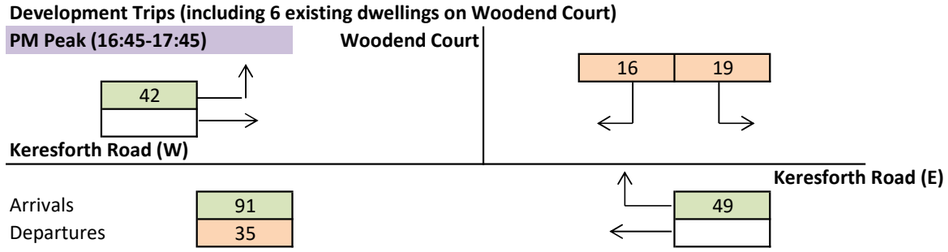
Development Trips (including 6 existing dwellings on Woodend Court)

AM Peak (07:45-08:45)



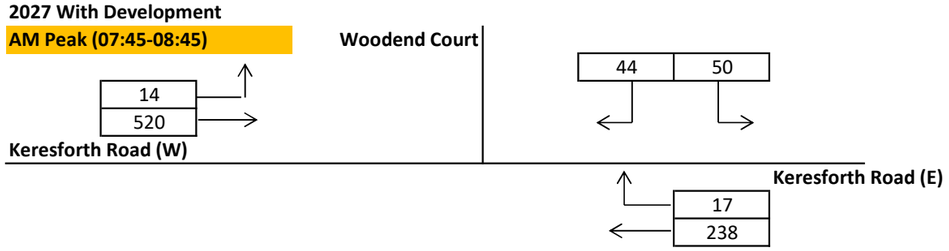
Development Trips (including 6 existing dwellings on Woodend Court)

PM Peak (16:45-17:45)



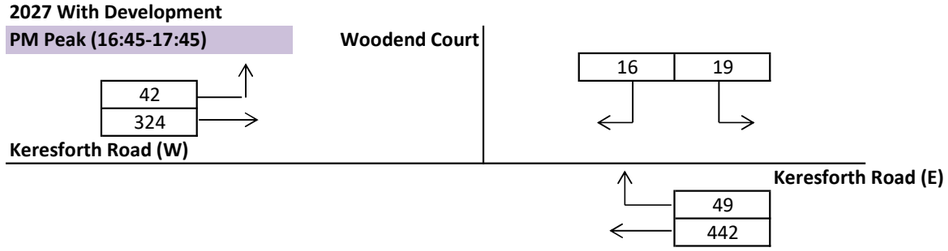
2027 With Development

AM Peak (07:45-08:45)



2027 With Development

PM Peak (16:45-17:45)



Appendix 9 – TEMPro Growth Factors

Traffic Growth Forecasts

Base Year:	2016
Assessment Year:	2027
Period (years):	11
Area Type:	N/A
Road Type:	Principal
Area Served:	N/A
NTM Dataset:	RTF 2018 Scenario 1 - Reference
Region Data Set Version:	Yorkshire & Humber v7.2
Software Version:	TEMPRO v7.2b
Area:	Barnsley 019

Factor	Households (HH)	Jobs
Base Year Unadjusted	2691	2682
Forecast Year Unadjusted	2914	2775
Growth Unadjusted	223	93
Committed Developments		
Do Nothing Adjusted	2914	2775
Proposed Development	**220**	
Do Something Adjusted	2694	2775

Scenario	Weekday AM Peak Period (07:00-09:59)	Weekday PM Peak Period (16:00-18:59)
Unadjusted	**1.1002**	**1.0972**
Unadjusted Growth Factor:	**10.0%**	**9.7%**

Appendix 10 – Site Access/Keresforth Road Modelling

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: Proposed Site Access Keresforth Road Junction.j9
Path: Z:\Projects\4283 Bark Meadows Dodworth\Data\Modelling
Report generation date: 09/12/2021 09:49:00

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Proposed Layout - 2027 With Development									
Stream B-C	D1	0.1	8.38	0.10	A	D2	0.0	6.91	0.04	A
Stream B-A		0.2	12.93	0.14	B		0.1	11.67	0.05	B
Stream C-AB		0.1	6.36	0.05	A		0.4	5.60	0.15	A

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

File summary

File Description

Title	Potential Site Access Junction
Location	Keresforth Road/Woodend Court
Site number	
Date	20/10/2020
Version	
Status	
Identifier	
Client	Keepmoat Homes
Jobnumber	4283
Enumerator	LTP\JH
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2027 With Development	AM	ONE HOUR	07:30	09:00	15	✓
D2	2027 With Development	PM	ONE HOUR	16:30	18:00	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Proposed Layout	✓	100.000	100.000

Proposed Layout - 2027 With Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Keresforth Road/Woodend Court (Site Access) Junction	T-Junction	Two-way		1.31	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Keresforth Road (W)		Major
B	Woodend Court		Minor
C	Keresforth Road (E)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Keresforth Road (E)	7.30			46.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Woodend Court	One lane plus flare	10.00	5.10	3.50	3.50	3.50	✓	1.00	28	26

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	534	0.092	0.232	0.146	0.331
B-C	695	0.101	0.254	-	-
C-B	601	0.220	0.220	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2027 With Development	AM	ONE HOUR	07:30	09:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Keresforth Road (W)		ONE HOUR	✓	534	100.000
B - Woodend Court		ONE HOUR	✓	94	100.000
C - Keresforth Road (E)		ONE HOUR	✓	255	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Keresforth Road (W)	B - Woodend Court	C - Keresforth Road (E)
From	A - Keresforth Road (W)	0	14	520
	B - Woodend Court	44	0	50
	C - Keresforth Road (E)	238	17	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Keresforth Road (W)	B - Woodend Court	C - Keresforth Road (E)
From	A - Keresforth Road (W)	10	10	10
	B - Woodend Court	10	10	10
	C - Keresforth Road (E)	10	10	10

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.10	8.38	0.1	A	46	69
B-A	0.14	12.93	0.2	B	40	61
C-AB	0.05	6.36	0.1	A	24	36
C-A					210	315
A-B					13	19
A-C					477	716

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	38	9	582	0.065	37	0.0	0.1	7.264	A
B-A	33	8	412	0.080	33	0.0	0.1	10.437	B
C-AB	18	4	641	0.028	18	0.0	0.0	6.355	A
C-A	174	44			174				
A-B	11	3			11				
A-C	391	98			391				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	45	11	559	0.080	45	0.1	0.1	7.694	A
B-A	40	10	388	0.102	39	0.1	0.1	11.360	B
C-AB	23	6	650	0.035	23	0.0	0.1	6.309	A
C-A	206	52			206				
A-B	13	3			13				
A-C	467	117			467				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	55	14	527	0.104	55	0.1	0.1	8.378	A
B-A	48	12	355	0.137	48	0.1	0.2	12.911	B
C-AB	31	8	665	0.047	31	0.1	0.1	6.245	A
C-A	250	62			250				
A-B	15	4			15				
A-C	573	143			573				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	55	14	527	0.104	55	0.1	0.1	8.384	A
B-A	48	12	355	0.137	48	0.2	0.2	12.926	B
C-AB	31	8	665	0.047	31	0.1	0.1	6.247	A
C-A	250	62			250				
A-B	15	4			15				
A-C	573	143			573				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	45	11	559	0.080	45	0.1	0.1	7.704	A
B-A	40	10	388	0.102	40	0.2	0.1	11.378	B
C-AB	23	6	650	0.035	23	0.1	0.1	6.315	A
C-A	206	52			206				
A-B	13	3			13				
A-C	467	117			467				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	38	9	582	0.065	38	0.1	0.1	7.279	A
B-A	33	8	412	0.080	33	0.1	0.1	10.465	B
C-AB	18	4	641	0.028	18	0.1	0.0	6.362	A
C-A	174	44			174				
A-B	11	3			11				
A-C	391	98			391				

Proposed Layout - 2027 With Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Keresforth Road/Woodend Court (Site Access) Junction	T-Junction	Two-way		0.99	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2027 With Development	PM	ONE HOUR	16:30	18:00	15	✓

Default vehicle mix	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - Keresforth Road (W)		ONE HOUR	✓	366	100.000
B - Woodend Court		ONE HOUR	✓	35	100.000
C - Keresforth Road (E)		ONE HOUR	✓	491	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A - Keresforth Road (W)	B - Woodend Court	C - Keresforth Road (E)
From	A - Keresforth Road (W)	0	42	324
	B - Woodend Court	16	0	19
	C - Keresforth Road (E)	442	49	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Keresforth Road (W)	B - Woodend Court	C - Keresforth Road (E)
From	A - Keresforth Road (W)	10	10	10
	B - Woodend Court	10	10	10
	C - Keresforth Road (E)	10	10	10

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.04	6.91	0.0	A	17	26
B-A	0.05	11.67	0.1	B	15	22
C-AB	0.15	5.60	0.4	A	92	139
C-A					358	537
A-B					39	58
A-C					297	446

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	14	4	627	0.023	14	0.0	0.0	6.462	A
B-A	12	3	413	0.029	12	0.0	0.0	9.876	A
C-AB	65	16	773	0.084	64	0.0	0.2	5.586	A
C-A	305	76			305				
A-B	32	8			32				
A-C	244	61			244				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	17	4	613	0.028	17	0.0	0.0	6.643	A
B-A	14	4	389	0.037	14	0.0	0.0	10.558	B
C-AB	87	22	809	0.107	87	0.2	0.3	5.486	A
C-A	354	89			354				
A-B	38	9			38				
A-C	291	73			291				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	21	5	594	0.035	21	0.0	0.0	6.912	A
B-A	18	4	357	0.049	18	0.0	0.1	11.662	B
C-AB	125	31	861	0.145	124	0.3	0.4	5.385	A
C-A	416	104			416				
A-B	46	12			46				
A-C	357	89			357				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	21	5	594	0.035	21	0.0	0.0	6.913	A

B-A	18	4	357	0.049	18	0.1	0.1	11.667	B
C-AB	125	31	861	0.145	125	0.4	0.4	5.392	A
C-A	415	104			415				
A-B	46	12			46				
A-C	357	89			357				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	17	4	613	0.028	17	0.0	0.0	6.646	A
B-A	14	4	389	0.037	14	0.1	0.0	10.566	B
C-AB	87	22	810	0.108	88	0.4	0.3	5.496	A
C-A	354	89			354				
A-B	38	9			38				
A-C	291	73			291				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	14	4	627	0.023	14	0.0	0.0	6.467	A
B-A	12	3	413	0.029	12	0.0	0.0	9.887	A
C-AB	65	16	773	0.084	66	0.3	0.2	5.603	A
C-A	304	76			304				
A-B	32	8			32				
A-C	244	61			244				