

# Technical Note

**Project:** East Market Harborough

**Subject:** Transport Technical Appraisal

<b>Client:</b>	Catesby Estates	<b>Version:</b>	B
<b>Project No:</b>	07076	<b>Author:</b>	SC
<b>Date:</b>	23/02/2024	<b>Approved:</b>	JW

## I Introduction

### I.1 Background Information

1.1.1 PJA has been commissioned by Catesby Estates to provide transport advice in relation to the proposed development at East Market Harborough. The site is being promoted for residential-led development to the emerging Harborough District Local Plan, providing 1,000 residential units, a primary school and local centre.

1.1.2 As demonstrated in this report, the site can be made accessible by walking, cycling and public transport, capitalising on existing infrastructure to provide access to employment, leisure, retail and educational facilities. Allocation of the site for residential development would support the objectives of the Local Plan Issues and Options consultation document, and the strategic transport goals of the Leicestershire Local Transport Plan, both of which seek to deliver development in sustainable locations and improve transport by sustainable modes.

### I.2 Structure of Report

1.2.1 The remainder of this report is structured as follows:

- **Chapter 2: Baseline Conditions**
  - Provides context of the site location, local highway network, local facilities, accessibility of the site by active travel and public transport and a summary of highway safety.
- **Chapter 3: Proposed Development**
  - Provides an overview of the development proposals, access strategy, on-site public transport, walking and cycling infrastructure and mobility hubs.
- **Chapter 4: Integrated Transport Strategy**
  - Provides a summary of the walking and cycling strategy and public transport strategy.

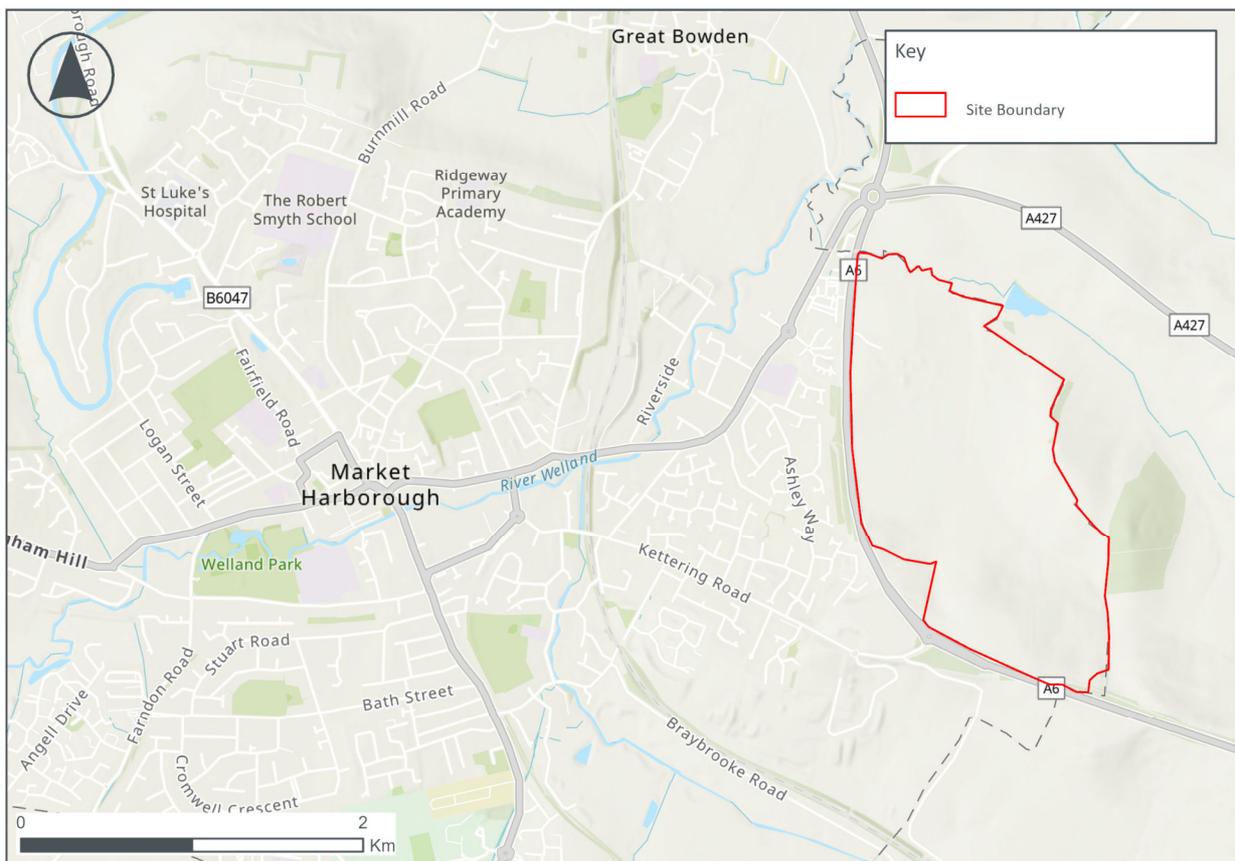
- **Chapter 5: Travel Demand**
  - Sets out the anticipated trip generation, opportunities to reduce trip generation, and capacity of the site access.
- **Chapter 6: Conclusions**
  - Summarises the findings of the assessment.

## 2 Baseline Conditions

### 2.1 Introduction

2.1.1 The site is approximately 1.8km to the east of Market Harborough Town Centre. The site is bounded by agricultural land to the north and east and the A6 to the south and west. The site location is shown at Figure 1.

**Figure 1: Site Location**



Credits: Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

2.1.2 This chapter sets out the transport context of the site and considers opportunities and constraints which have influenced the transport strategy.

## **2.2 Local Highway Network**

### **A6**

2.2.1 The road forms the western and southern boundaries of the site, and provides a key link between Market Harborough and Leicester, in addition to providing onward connections to Kettering via the A14.

2.2.2 The carriageway to the west of the site is approximately 10.5m wide and to the south 10m wide. The A6 is a single carriageway northbound and a dual carriageway southbound, providing a climbing lane to allow vehicles to overtake HGVs. The road is subject to the national speed limit (60mph).

### **Kettering Road**

2.2.3 Kettering Road is located to the west of the site and can be accessed via the recently completed A6/Kettering Road roundabout.

2.2.4 The road provides access to Market Harborough Town Centre and is subject to a 40mph speed limit, reducing to 30mph on approach to Market Harborough Town Centre.

### **Harborough Road (A427)**

2.2.5 Harborough Road is located to the north of the site, accessed via the Rockingham Road/Dingley Road/A6/Harborough Road roundabout and provides connections west to Market Harborough and onward connections via the A6. To the east, the road provides access to Corby.

2.2.6 The carriageway in the vicinity of the site is approximately 7m wide. Harborough Road is a single carriageway road, subject to the national speed limit (60mph), reducing to 30mph on approach to the village of Dingley.

## **2.3 Accessibility – Active Travel**

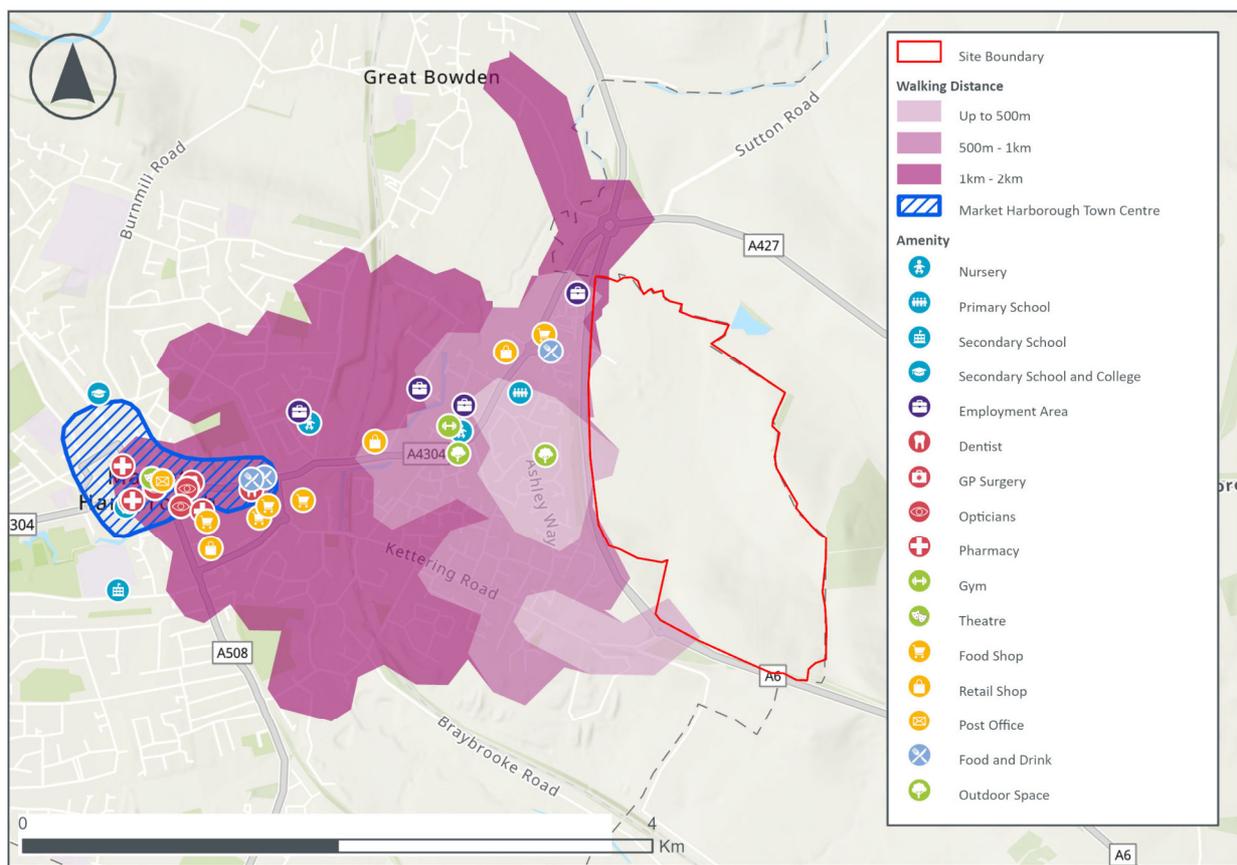
2.3.1 Guidance provided by the Institution of Highways and Transportation (IHT) in their publication *‘Guidelines for Providing for Journeys on Foot’* (2000) suggests that in terms of commuting, walking to school and recreational journeys; walking distances of up to 2,000m can be considered as a preferred maximum, with 1,000m being considered ‘acceptable’ and 500m being ‘desirable’, although journeys of a longer length are often undertaken.

2.3.2 For non-commuter journeys, the Guidance suggests that walking distances of up to 1,200m can be considered as a preferred maximum with 800m being acceptable and 400m being desirable.

## 2.4 Local Facilities

2.4.1 There are a number of facilities located within a reasonable walking and cycling distance of the site, Table 1 provides a summary of the nearest facilities and the distance and time taken to access these from the proposed pedestrian and cycle access points described in Section 3 of this report. Figure 2 and highlights the location of these facilities in relation to the site.

**Figure 2: Local Facilities**



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**Table 1: Local Facilities**

Type	Amenity	Distance from Site Access	Walking Time	Cycling Time	IHT Standard
Education	Meadowdale Primary School	460m	5	2	Desirable
	Mini Adventures Pre School	650m	8	2	Acceptable

Type	Amenity	Distance from Site Access	Walking Time	Cycling Time	IHT Standard
	Castle Lane Day Nursery	1.3km	15	5	Preferred Maximum
	Little Stars Pre School	1.9km	23	7	Preferred Maximum
	Welland Park Academy	2.3km	27	9	-
	Brooke House College	2.4km	29	9	-
Employment	Welland Business Park	550m	7	2	Acceptable
	The Point Business Park	980m	12	4	Acceptable
	Riverside Industrial Estate	1.0km	12	4	Acceptable
	St Marys Business Park	1.3km	15	5	Preferred Maximum
Medical	Brookside Dental	1.4km	17	5	-
	Davis Opticians	1.6km	19	6	-
	MedicSpot Clinic	1.8km	21	7	-
	Moins Chemist & Wellbeing Centre	1.8km	21	7	-
Leisure	Snap Fitness	650m	8	2	Acceptable
	Harborough Theatre	1.8km	21	7	-
Retail	B&M Home Store & Garden Centre	750m	9	3	Acceptable
	Tesco Express Petrol Station and Shop	770m	9	3	Acceptable
	Halfords	900m	11	3	Preferred Maximum
	ALDI	1.4km	17	5	-
	Waitrose	1.5km	18	6	-
	Lidl	1.5km	18	6	-
	Homebase	1.8km	21	7	-
	Sainsbury's	1.8km	21	7	-
	Post Office	1.8km	21	7	-
Market Harborough Town Centre (various retail stores, cafes and restaurants)	1.8km	21	7	-	
Food and Drink	Roebuck Public House	800m	10	3	Acceptable

Type	Amenity	Distance from Site Access	Walking Time	Cycling Time	IHT Standard
	Avatar Dining, Indian Restaurant	1.3km	15	5	Preferred Maximum
	The Freemasons Arms Public House	1.4km	17	5	Preferred Maximum
Outdoor Space	Rock Park	130m	2	1	Desirable
	Rockingham Road Play Park	570m	7	2	Acceptable

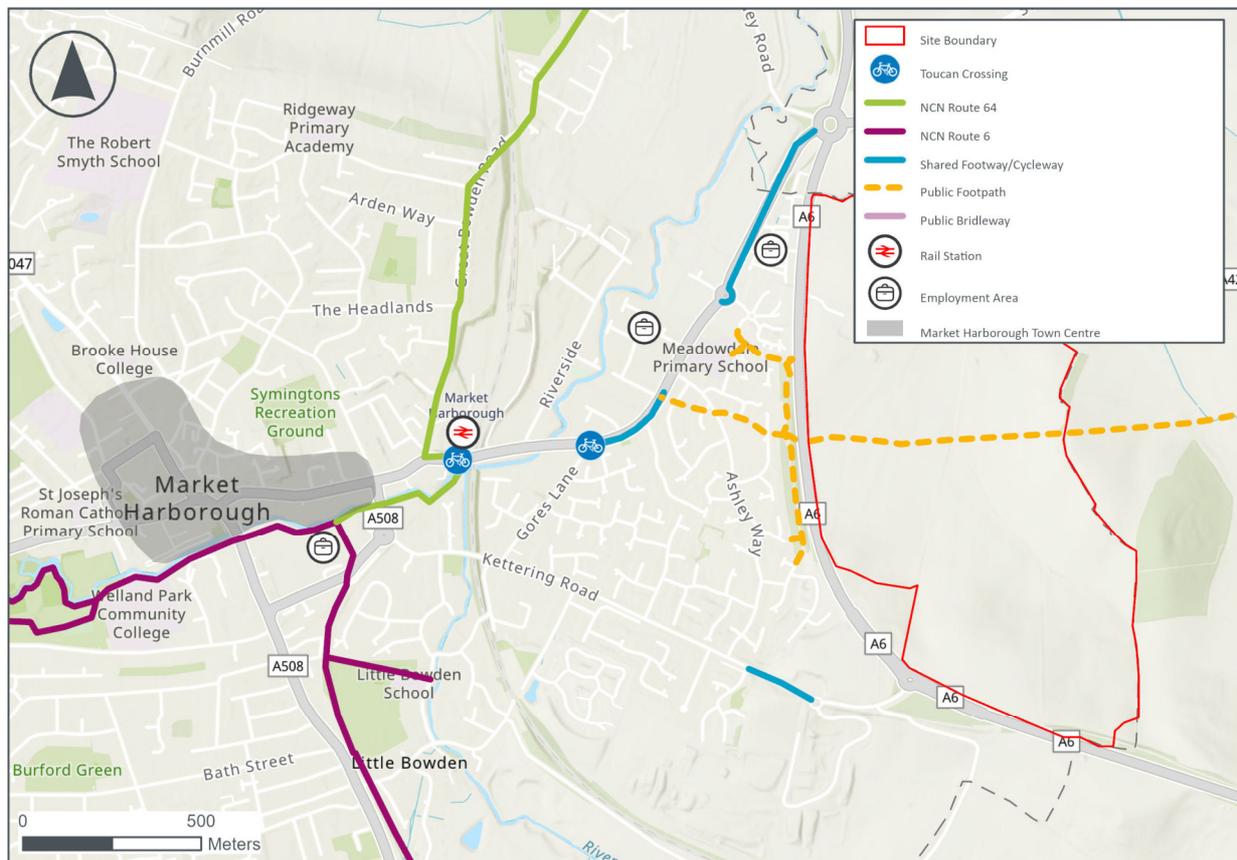
2.4.2 In terms of walking and cycling accessibility:

- Figure 2 and Table 1 indicate that there are a range of facilities available within a desirable, acceptable or preferred maximum walking distance of the site, including employment sites, educational facilities, retail stores and leisure facilities.
- All of the facilities included at Figure 2 and Table 1 are within a 2km walking distance of the site boundary, via the proposed pedestrian crossing of the A6. These will be supplemented by on-site facilities, including a primary school and local centre.
- The access strategy for the site will facilitate sustainable trip making patterns to these facilities, reducing dependence on the private car for local trip making.
- There are significant employment opportunities within the vicinity of the site, with various Business and Industrial Parks located within a reasonable walking distance of the site, including Welland Business Park, The Point Business Park, Riverside Industrial Estate and St Marys Business Park. In addition, Market Harborough Town Centre is located approximately 1.8km to the west of the site and provides numerous employment facilities with various retail stores, restaurants and cafes located there.

#### **Walking and Cycling Infrastructure**

2.4.3 Based on the accessibility analysis set out above, a series of key local active travel corridors have been identified which connect the site via existing infrastructure to local facilities, as shown at Figure 3.

**Figure 3: Local walking and cycling routes**



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### *Walking*

- 2.4.4 A public footpath is located to the west of the A6, forming part of existing residential development. This footpath continues over the A6 through the Site. To the west, the footpath connects into a network of lightly trafficked residential streets to the west of the A6 and provides a route to Meadowdale Primary School.

### *Cycling*

- 2.4.5 A shared footway / cycleway is provided intermittently on Rockingham Road, providing access to Market Harborough Railway Station. As can be seen in Figure 3, there are gaps in the existing infrastructure where cyclists are required to re-join the carriageway.
- 2.4.6 To the west of Market Harborough Railway Station, National Cycle Network (NCN) Route 64 can be accessed, providing connections north towards Great Bowden. The route is predominantly

an on-road cycle route, following Great Bowden Road, a residential road subject to a 30mph speed limit.

2.4.7 To the south of the Railway Station, NCN Route 6 can be accessed, providing connections south towards Little Bowden and west towards the western extent of Market Harborough. The route is predominantly traffic-free, largely following the route of the River Welland.

2.4.8 On Kettering Road, there is a small section of shared footway/cycleway provided adjacent to a recently developed residential site, following this, cyclists are required to re-join the carriageway.

### **Accessibility by Walking and Cycling Conclusions**

2.4.9 The existing walking and cycling infrastructure provides strong connections within the urban settlements of Market Harborough to existing facilities, particularly local employment sites, the local primary school, Market Harbrough Railway Station and Town Centre. However, there is currently a lack of integrated cycle infrastructure along these routes, particularly where existing shared use routes are intermittent.

2.4.10 It is recognised that the A6 presents a barrier to movement. This is to be addressed within the access strategy outlined in Section 3.

2.4.11 The public footpath that is located to the east of the A6 provides direct access to Rockingham Road to enable onward connections to employment sites and the railway station. As it is currently a footpath, cyclists are not permitted to use the route and therefore there is an opportunity to upgrade the footpath to a bridleway in order to accommodate cyclists.

## **2.5 Public Transport**

### **Bus**

2.5.1 The 33B bus route serves bus stops located on Rockingham Road, which can be accessed via a 470m walk from the proposed pedestrian crossing point over the A6.

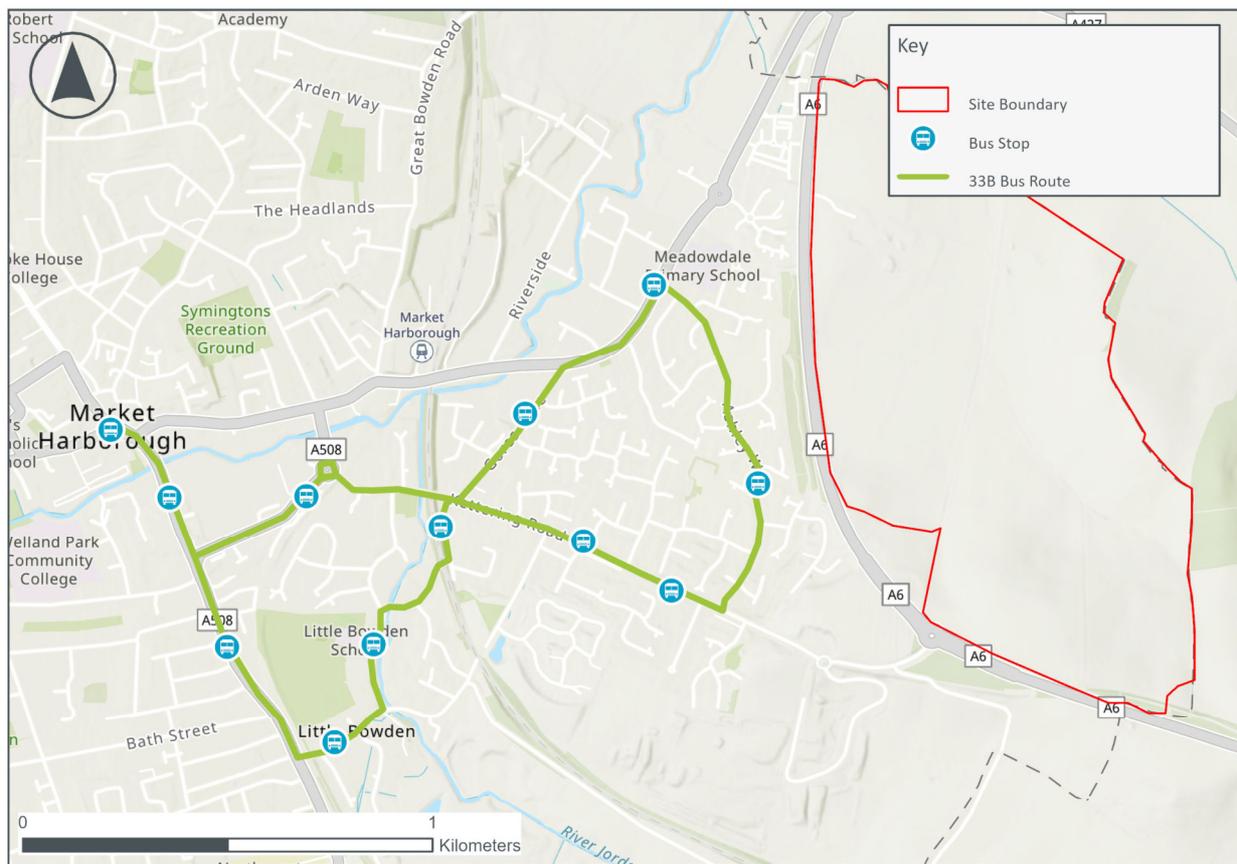
2.5.2 The bus service provides an hourly circular route to Market Harborough Town Market Hall, running Monday to Saturday.

2.5.3 A summary of local bus services has been provided below and further details regarding all bus services in Market Harborough is provided at **Appendix A**.

**Table 2: Local Bus Services**

Service No.	Bus Stop Location	Destinations	Frequency		
			Mon-Fri	Sat	Sun
33B	Rockingham Road/Kettering Road	Market Harborough Circular Route	Hourly	Hourly	N/A

**Figure 4: Local Bus Stops & 33B Bus Route**



Credits: Esri, Intermap, NASA, NGA, USGS, Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, Foursquare,

**Rail**

- 2.5.4 Market Harborough Railway Station is located approximately 1.1km from the site’s boundary with the A6.
- 2.5.5 The station benefits from 100 cycle storage spaces, which are provided in a secure cycle storage hub, which is accessible by obtaining a fob. The hub is sheltered and covered by CCTV.
- 2.5.6 There are also 314 car parking spaces available at the station, offering the opportunity for residents at the site to park at the station and continue their onward journey by train.

2.5.7 The main services from Market Harborough are summarised below:

- **London St Pancras (via Kettering and Wellingborough):**
  - Half hourly service (06:00-23:05)
  - Journey time to London St Pancras approximately 1hr
- **Nottingham (via Leicester, Loughborough, East Midlands Parkway and Beeston):**
  - Half hourly service (06:18-23:32)
  - Journey time to Nottingham approximately 45mins

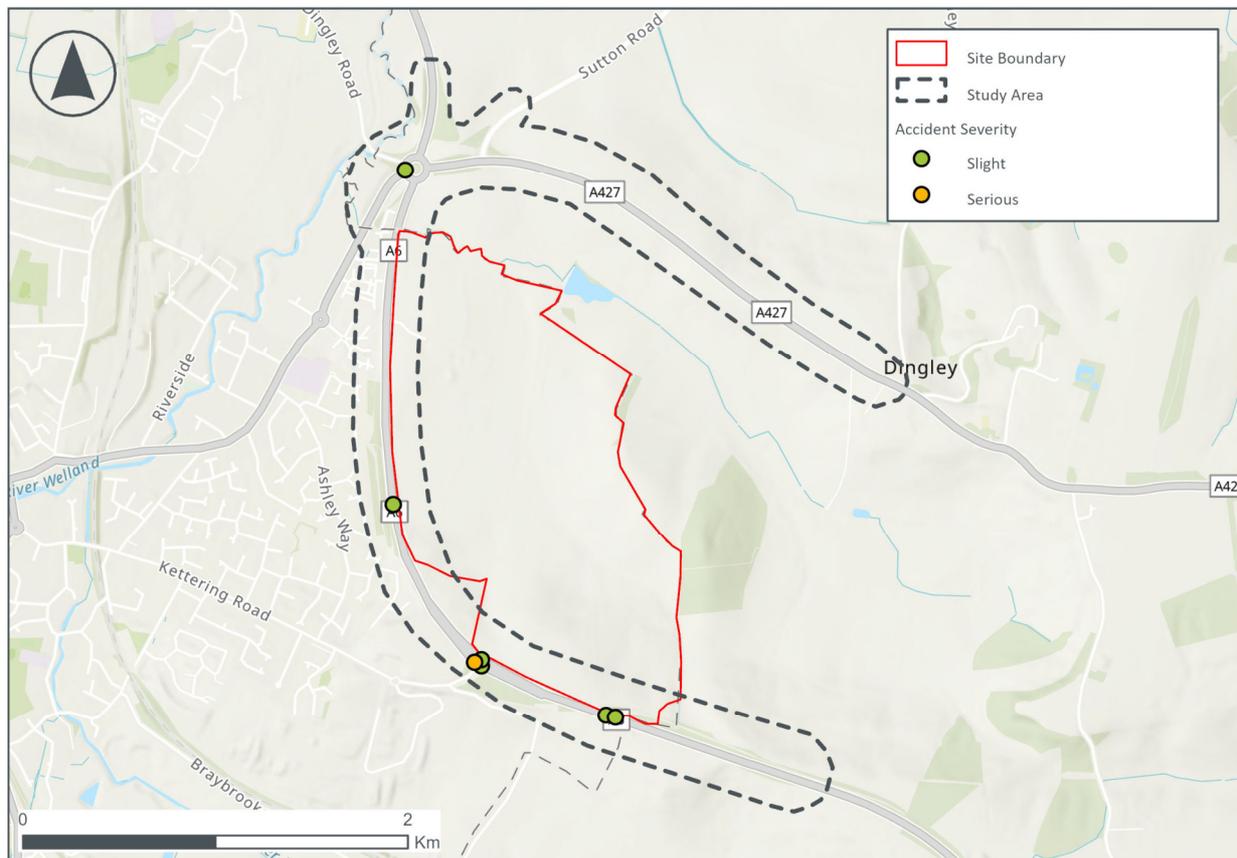
## **2.6 Highway Safety**

### **Collision Data**

2.6.1 In order to establish whether there are any safety concerns on the local highway network that could be exacerbated by travel demand associated with the proposed development, the collision record for the most recent five-year period available has been sourced from Leicestershire County Council and North Northamptonshire Council.

2.6.2 There has been a total of seven collisions across the whole study area within a five-year period, six of the collisions were recorded as slight, one of the collisions was recorded as serious, and no collisions were recorded as fatal. This is shown in Figure 5.

**Figure 5: Collision Locations**



Credits: Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, Accident Data has been sourced from Leicestershire County Council and North Northamptonshire Council

2.6.3 Table 3 provides a summary of the locations (junctions/links) in the vicinity of the site (junctions/links), including the severity of the collision.

**Table 3: Collision Data Summary**

Junction/Link	Number of Collisions				Sensitive Road User Involvement			
	Slight	Serious	Fatal	Total	Pedestrian	Cyclist	Motorcyclist	Total
A6 / Kettering Road	2	1	0	3	0	0	1	1
A6	3	0	0	3	0	0	0	0
A6 / A427 / A4304 / Dingley Road	1	0	0	1	0	1	0	1

**A6 / Kettering Road**

2.6.4 At the A6 / Kettering Road junction, three collisions have been recorded within the study area, two were recorded as slight and one was recorded as serious. This is a collision rate of less than

one recorded collision per annum. The serious collision involved a motorcyclist colliding with a car turning right onto the A6.

- 2.6.5 The junction was upgraded to a roundabout junction in 2021 as part of a mitigation scheme provided by a nearby residential development. No collisions have been recorded at this junction since the junction layout was changed from a priority junction to a roundabout junction.

#### **A6**

- 2.6.6 Along the A6, three slight collisions have been recorded within the study area. Two collisions occurred to the east of the A6 / Kettering Road junction, and one collision occurred to the west of the A6 / Kettering Road junction.
- 2.6.7 Two slight collisions involved a car making a U-turn colliding with another car, and the other slight collision was a rear shunt collision between two cars.

#### **A6 / A427 / A4304 / Dingley Road**

- 2.6.8 At the A6 / A427 / A4304 / Dingley Road junction, one slight collision has been recorded within the study area. The collision involved a cyclist changing lane to the left colliding with the offside of a car in dry conditions.

#### **Highway Safety Summary**

- 2.6.9 Based on analysis of the collision data, the low frequency of collisions and common causation factors, and the recent improvements to the A6/Kettering Road roundabout, it is not considered that there are any highway safety concerns in the vicinity of the site which would be exacerbated by the proposed development.

## **2.7 Constraints and Opportunities**

- 2.7.1 The transport strategy presented in Sections 3 and 4 of this report has been prepared based around the following constraints and opportunities.

#### **Constraints**

- There are currently no formal active travel crossings provided at the A6, limiting access to facilities in Market Harborough.
- No bus services currently serve the east of the A6.
- There is currently a shortfall of bus services in the vicinity of the site.

### **Opportunities**

- The site is located in close proximity to a number of employment sites.
- The site is located within a reasonable walking and cycling distance of Market Harborough Rail Station.
- A development of this size is able to support a primary school and local centre, reducing the need to travel off-site to access these amenities.
- The Market Harborough LCWIP is planned to be adopted in Spring 2025, with the initial public engagement on the draft LCWIP network undertaken in Autumn 2023. There is therefore an opportunity to provide off-site walking and cycling infrastructure improvements that align with the draft LCWIP network.

## **3 Proposed Development**

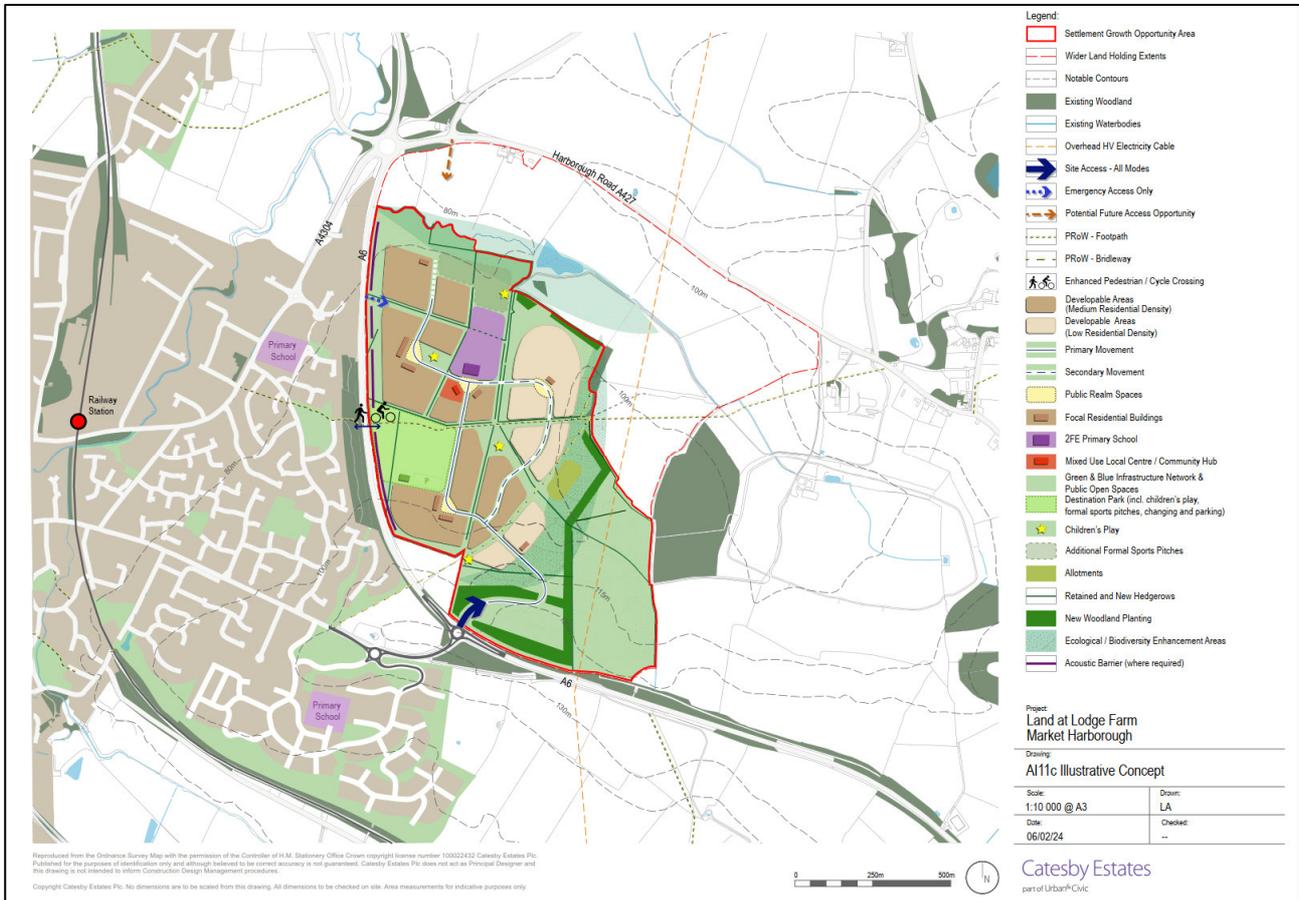
### **3.1 Overview**

3.1.1 The development proposals comprise:

- In the region of 1,000 dwellings;
- A Primary School;
- Local Centre; and,
- Sports pitches and community facilities.

3.1.2 This section sets out the transport strategy to deliver access to the site and the on-site transport facilities that will be provided. An extract of the illustrative masterplan is provided at Figure 6.

**Figure 6: Illustrative Masterplan**



## 3.2 Access Strategy

### A6

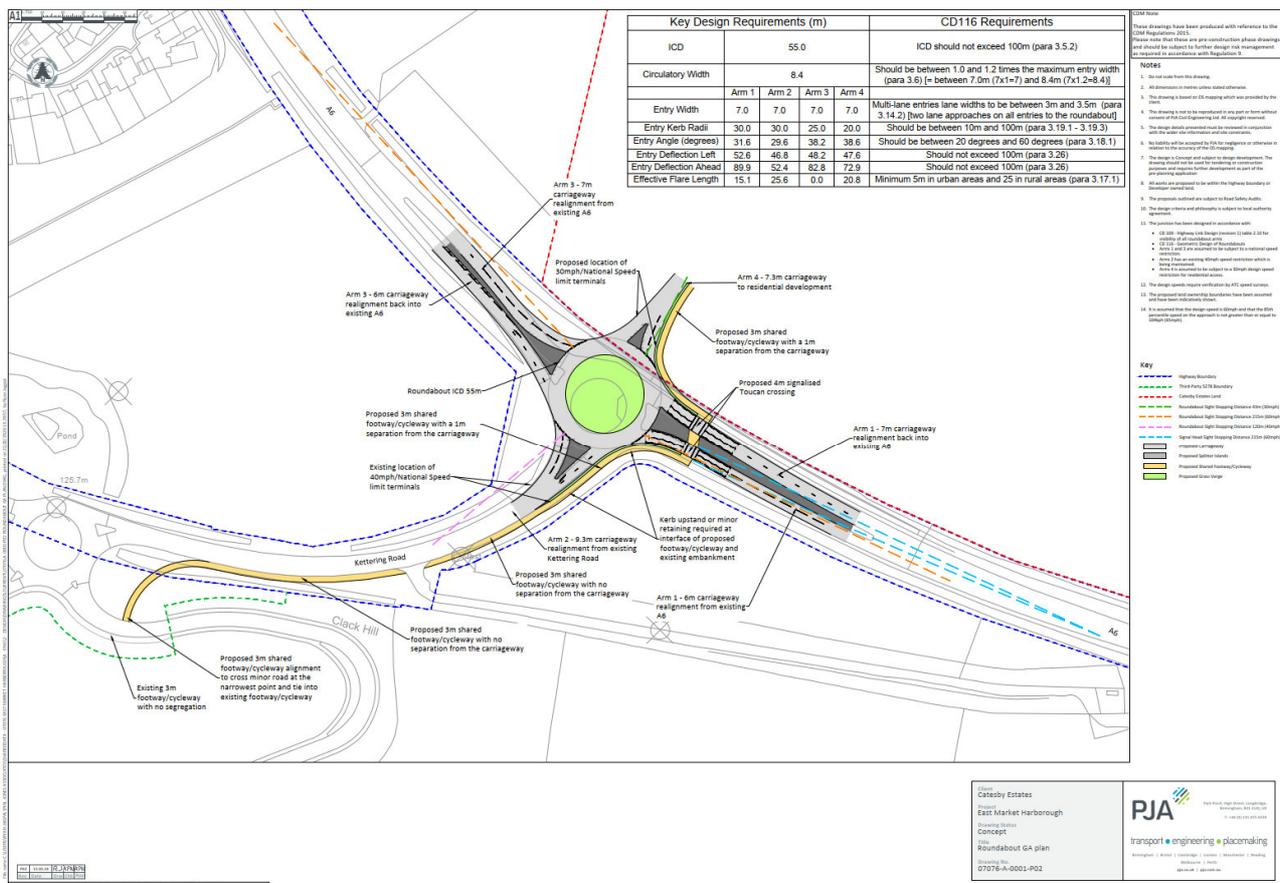
#### Active Travel Access

- 3.2.1 It is proposed that active travel access is provided via a ramped foot/cycle bridge over the A6, tying into an existing public footpath. It is anticipated that discussions with Leicestershire County Council (LCC) will be made regarding the change in use of the footpath to a shared footway cycleway to enable access for cyclists.
- 3.2.2 The provision of the bridge over the A6 will improve the accessibility of the site significantly, allowing pedestrians and cyclists, including those with disabilities to access existing facilities within Market Harborough, where the A6 currently acts as a barrier to accessibility. In addition, this will provide access to the existing public footpath that routes through the site.

## Kettering Road

3.2.3 It is proposed that the existing A6/Kettering Road roundabout is re-aligned to accommodate a fourth arm that will act as the main vehicular access to the site. An indicative layout has been provided at Figure 7 below, also provided at **Appendix B**.

**Figure 7: Indicative Kettering Rd/A6/Site Access Roundabout Layout**

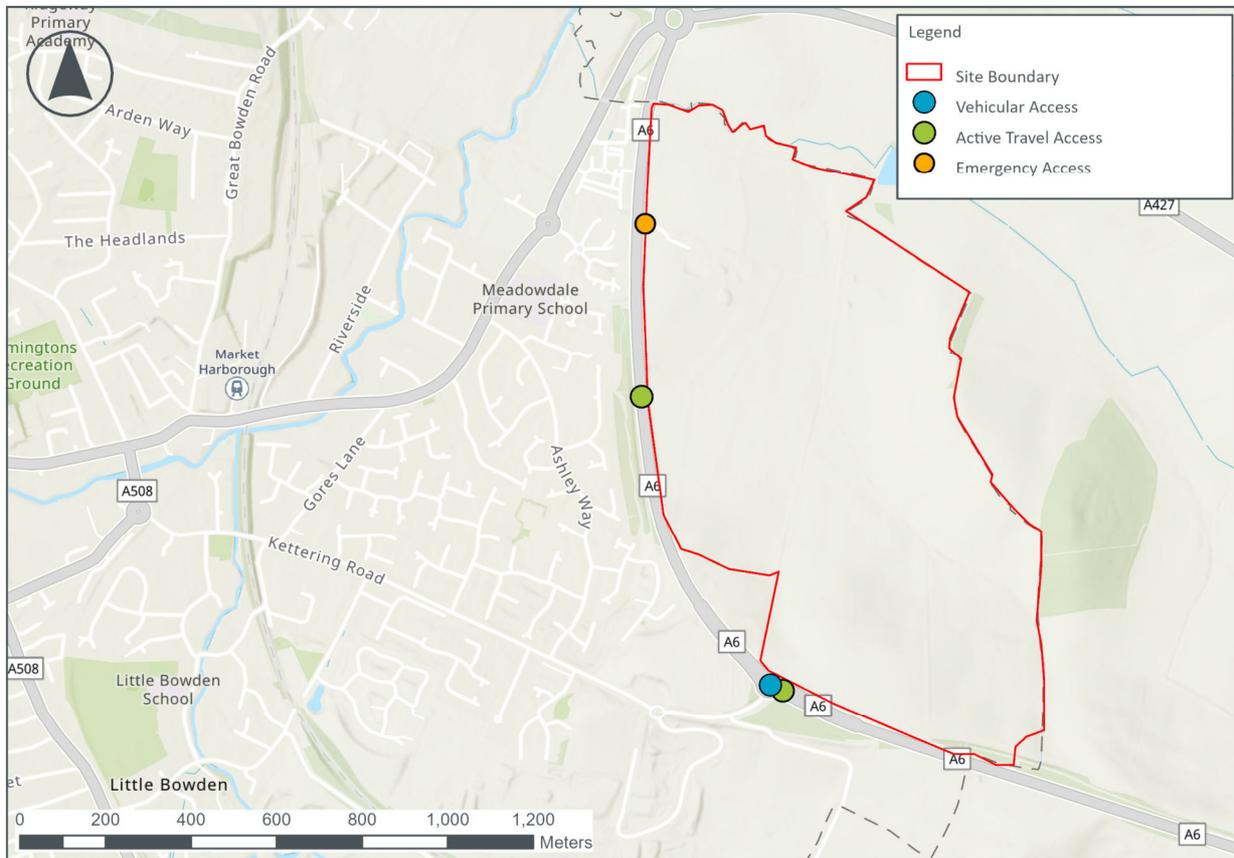


3.2.4 It is also proposed that toucan crossing facilities will be provided at the junction to accommodate pedestrian and cyclists crossing the junction. This provision will tie directly into the proposed active travel infrastructure to be provided at the spine road of the site. Access can be delivered entirely within the adopted highway boundary and in accordance with DMRB standards.

## Emergency Access

3.2.5 An emergency access point is proposed to be provided at the existing farm access off the A6, this will serve as an emergency vehicular access only.

**Figure 8: Access Strategy**



Credits: Esri, Intermap, NASA, NGA, USGS, Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, Foursquare,

### 3.3 Public Transport Infrastructure

3.3.1 As detailed further in the below sections, it is proposed that a new bus service is provided to connect the development with Market Harborough Town Centre, provided at a minimum of two buses per hour. To accommodate this, the primary road through the site will be designed to accommodate a bus route.

### 3.4 Walking and Cycling Infrastructure

3.4.1 Within the development there would be a network of high quality walking and cycling routes in accordance with the guidance set out in LTN 1/20. The potential for the site to accommodate these routes would be demonstrated as the scheme evolves.

3.4.2 LTN 1/20 provides guidance on the appropriate level of protection from motor traffic on highways (Figure 9), which is based on traffic speeds and volumes.

Figure 9: LTN 1/20 Extract

Speed Limit <sup>1</sup>	Motor Traffic Flow (pcu/24 hour) <sup>2</sup>	Protected Space for Cycling			Cycle Lane (mandatory/ advisory)	Mixed Traffic
		Fully Kerbed Cycle Track	Stepped Cycle Track	Light Segregation		
20 mph <sup>3</sup>	0	Green	Green	Green	Green	Green
	2000	Green	Green	Green	Green	Green
	4000	Green	Green	Green	Yellow	Yellow
	6000+	Green	Green	Green	Yellow	Pink
30 mph	0	Green	Green	Green	Yellow	Yellow
	2000	Green	Green	Green	Yellow	Yellow
	4000	Green	Green	Green	Yellow	Pink
	6000+	Green	Green	Green	Yellow	Pink
40 mph	Any	Green	Yellow	Yellow	Pink	Pink
50+ mph	Any	Green	Pink	Pink	Pink	Pink

Notes:

1. If the 85<sup>th</sup> percentile speed is more than 10% above the speed limit the next highest speed limit should be applied
2. The recommended provision assumes that the peak hour motor traffic flow is no more than 10% of the 24 hour flow
3. In rural areas achieving speeds of 20mph may be difficult, and so shared routes with speeds of up to 30mph will be generally acceptable with motor vehicle flows of up to 1,000 pcu per day

Legend:

- Green: Provision suitable for most people
- Yellow: Provision not suitable for all people and will exclude some potential users and/or have safety concerns
- Pink: Provision suitable for few people and will exclude most potential users and/or have safety concerns

3.4.3 In the context of the proposed development, the network of walking and cycling infrastructure is likely to include:

- Segregated cycle routes alongside the main spine road, connecting to the proposed active travel access over the A6;
- Regular pedestrian and cycle crossings to be provided along the spine road to align with desire lines;
- A network of traffic free walking and cycling routes through public open space; and
- On-carriageway cycling along the remaining estate roads where these are designed to support a 20mph speed limit and where there are less than 2,000 vehicle movements per day.

3.4.4 As described in Section 4, the network of on-site routes can be successfully integrated with improvements to the off-site walking and cycling network.

### 3.5 Mobility Hubs

3.5.1 Mobility hubs are a recognisable place with an offer of different and connected transport modes supplemented with enhanced facilities and information features to both attract and benefit the traveller.

3.5.2 Mobility hubs are included within the Leicestershire County Council National Bus Strategy Bus Improvement Plan (Oct 2021). The plan states that:

*‘LCC will work to implement significant mobility hubs at key points to achieve better integration with active travel modes and e-mobility. This will include facilities for safe and secure cycle parking, as well as hire points for e-mobility and bicycles in some locations. It will also include other community facilities e.g. parcel collection, cycle maintenance).’*

3.5.3 Figure 10 provides an indication of the scale and type of facilities a mobility hub could offer.

**Figure 10: Mobility Hub Example (CoMoUK Mobility Hub Guidance)**

### Components of mobility hubs

Mobility hubs can be seen as an interface between the transport network and spatial structure of an area. Mobility hubs include a range of different components. This diagram illustrates some of the most commonly used components:

- A1: Mobility components: Public Transport**
- A2: Mobility components: Non - public transport**
- B: Mobility related components**
- C: Non-mobility & Urban realm improvement**

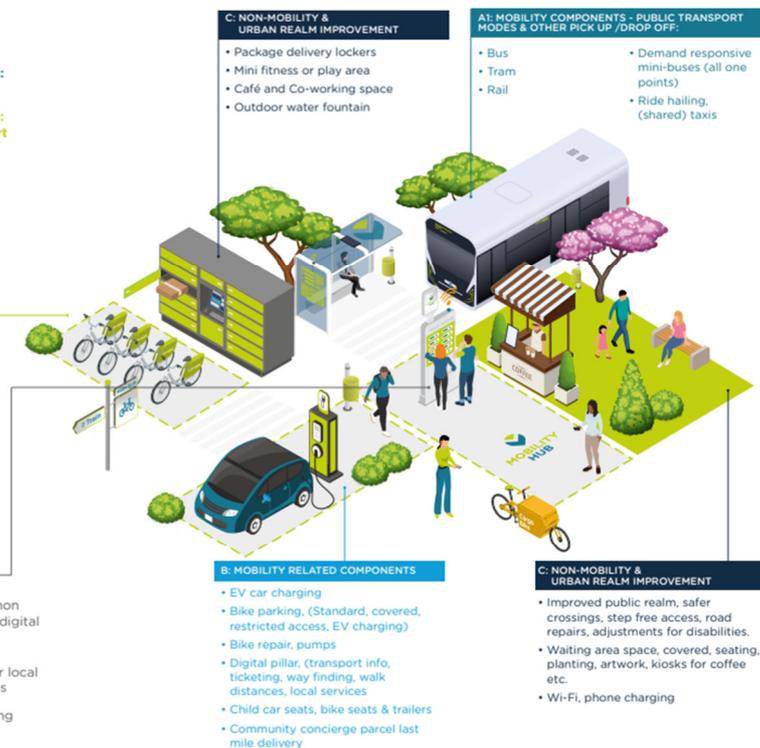
#### A2: MOBILITY COMPONENT: SHARED MOBILITY

- Car share: back to base, one way, electric.
- Bike share: back to base, one way, electric.
- Cargo bike share, cargo bike logistics store
- Other future micro-mobility options e.g. e-scooters, moped share
- Ride sharing

#### Branded pillar

Mobility hubs require a prominent sign or pillar with a common brand to make them visible to the public. The inclusion of a digital element in a pillar can provide:

- Access to a local transport website for information on services
- A way finding option for local walking and cycling trips
- A journey planning service for multi-modal trips
- Registration and ticketing
- Customer services.



8

UK Mobility Hub Guidance 2019/20

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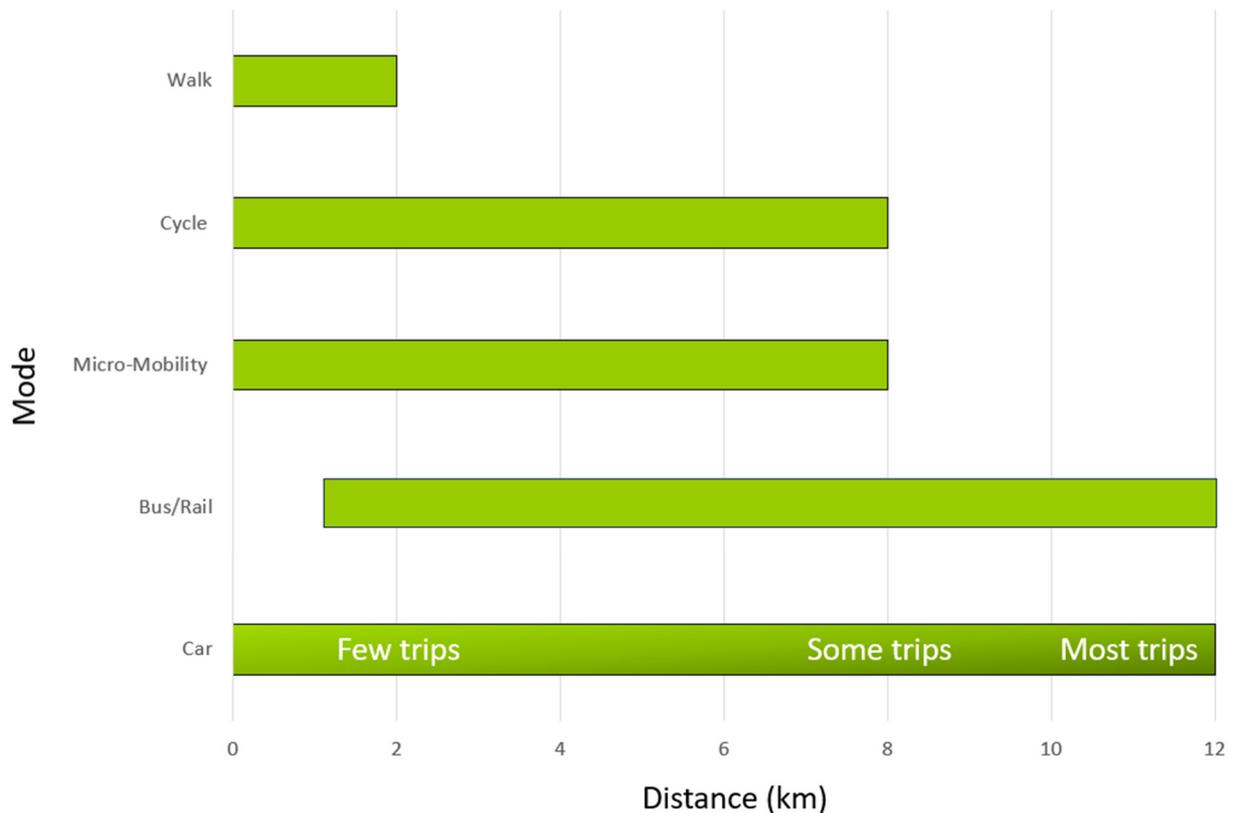
## 4 Integrated Transport Strategy

### 4.1 Overview

4.1.1 The preceding section has presented the on-site transport strategy which includes the means of access, a link road through the site, local centre (with integrated mobility hub) and primary school, in addition to a network of high quality walking and cycling routes.

4.1.2 This section presents the integrated transport strategy which will connect the site to surrounding destinations with an emphasis on the movement framework in Figure 11.

**Figure 11: Modal Choice by Distance**



4.1.3 The preceding section has presented the site proposals including, access from the A6, on site facilities including a primary school, mobility hub and local centre, and a network of walking and cycling routes.

4.1.4 The section sets out the integrated transport strategy which will connect the site to surrounding destinations by all modes, including:

- Enabling shorter journeys by walking, cycling and micro-mobility;
- A public transport strategy to improve access to existing bus services and enable longer journeys;
- A highway improvement strategy to deliver improvements to the local road network, where required.

## 4.2 Walking and Cycling Strategy

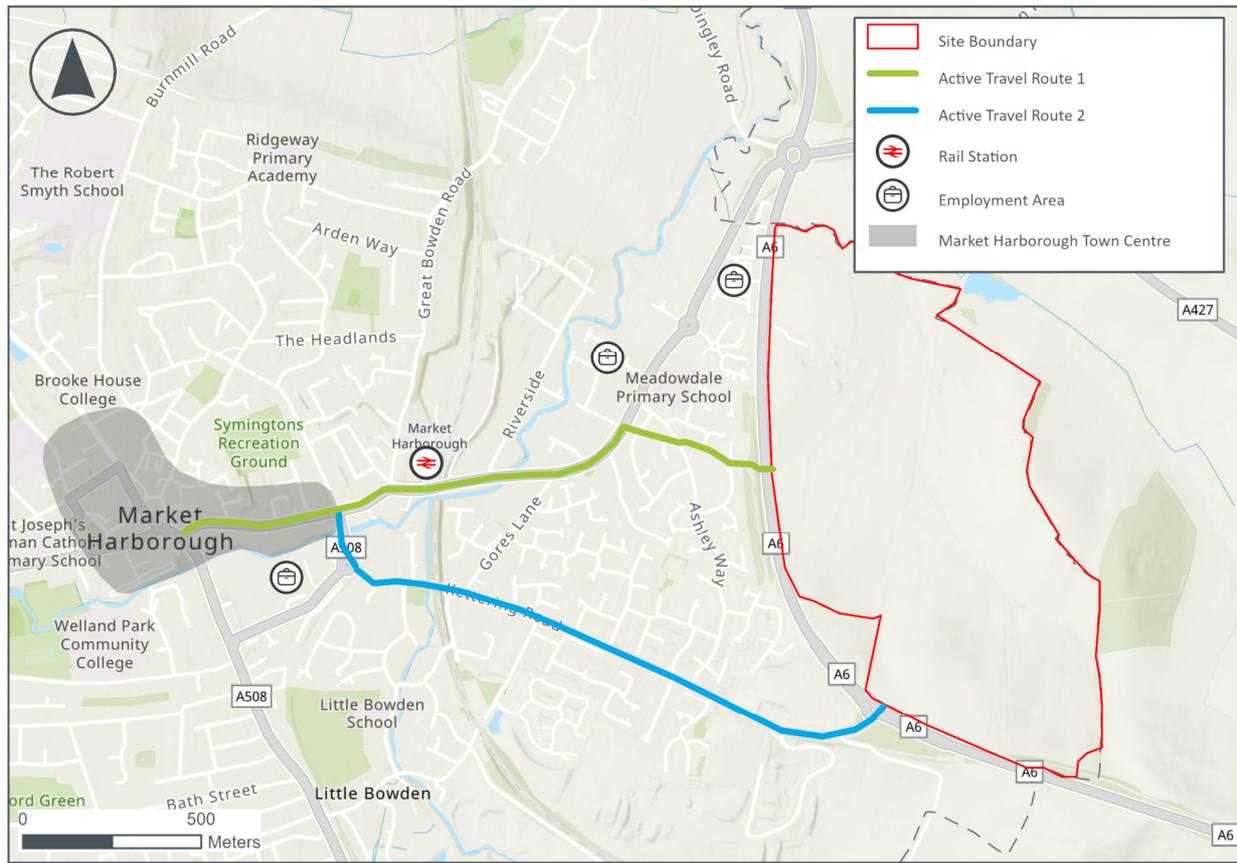
4.2.1 In line with Leicestershire's Walking and Cycling Strategy, developments should include:

- *'Secure cycle parking at residences, shops, transport hubs and workplaces*
- *Location of services with consideration given to walking and cycling routes and distances*
- *Developer contributions to improve walking and cycling facilities on existing highways impacted by developments, as well as revenue funding to support encouraging and enabling activities. Where appropriate this could also include 'in kind' contributions of land adjacent to existing highways, that would allow new facilities to be provided (or existing facilities to be widened)'.*

4.2.2 The key routes and destinations for active travel are highlighted in Figure 12, and are considered to include:

- **Route 1** – crossing A6, continuing on Ashley Way to connect to existing shared use cycle route towards Market Harborough Rail Station and onwards to NCN Route 64 and 6.
- **Route 2** – crossing A6, continuing to Kettering Road to connect to shared footway cycleway that has been provided as part of the 'South of Kettering Road' development.

**Figure 12: Key Active Travel Desire Lines**



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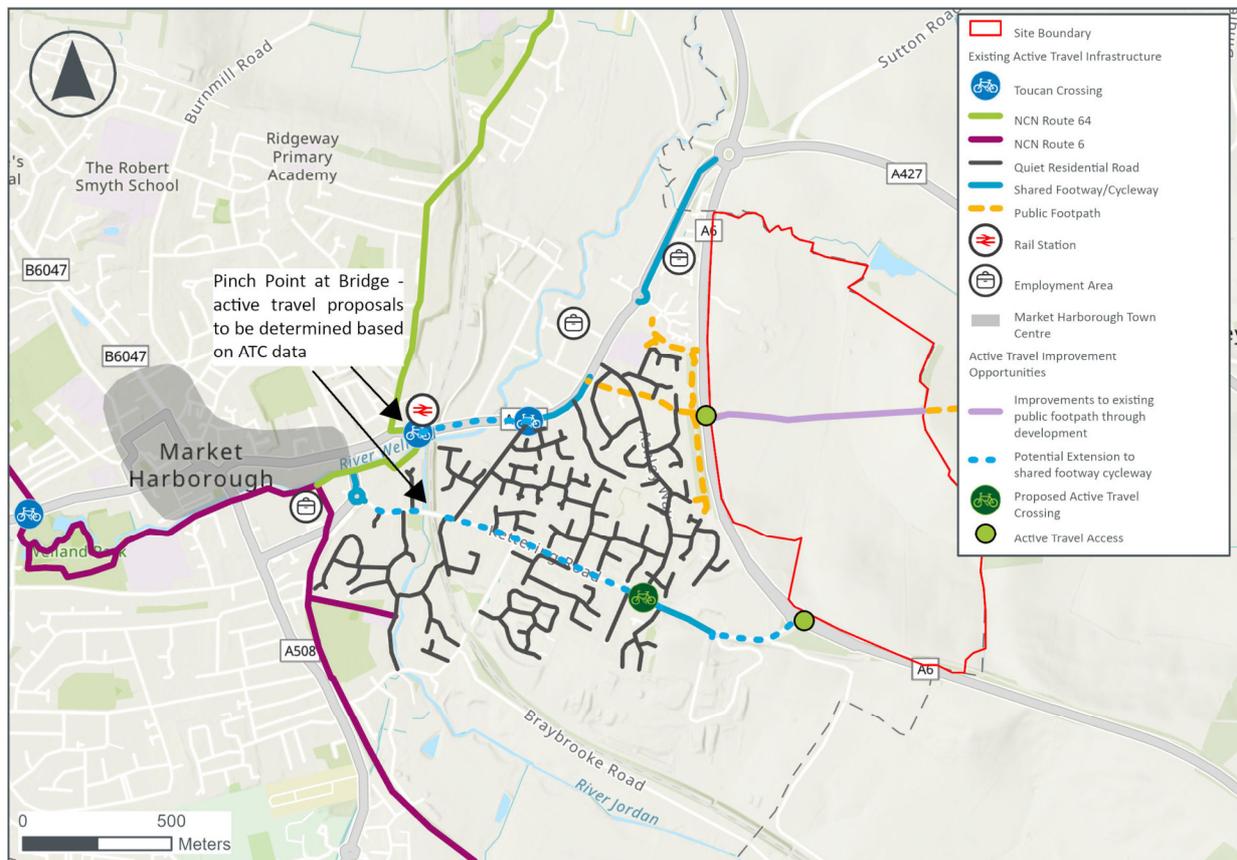
4.2.3 A review of both of these routes against guidance outlined in LTN 1/20 has been summarised below:

**Table 4: Active Travel Key Routes Assessment**

Destination	Route	Quality of Existing Route	Compliance with LTN 1/20	Proposed/Potential Improvements
Market Harbourough Rail Station NCN route 64 & 6 Market Harbourough Town Centre	Route 1	<ul style="list-style-type: none"> <li>- The route is currently restricted on the basis that there are no suitable active travel crossing facilities provided to assist movements across the A6.</li> <li>- An existing public footpath is located to the west of the A6, connecting to existing residential areas. It is noted that access is therefore not currently permitted for cyclists.</li> <li>- Local residential roads to the east of the A6 provide suitable footways and are likely to have</li> </ul>	<ul style="list-style-type: none"> <li>- Local residential roads to the east of the A6 are considered to be suitable for cyclists to be on carriageway, mixed with vehicles, where it is assumed that vehicle flows are below 2,000vpd in line with Figure 4.1 of LTN 1/20.</li> </ul>	<ul style="list-style-type: none"> <li>- It is proposed that a grade separated crossing facility be provided at the A6 to assist active travel movements across the A6.</li> <li>- Discussions will be made with the local authority to determine whether the existing footpath can be upgraded to permit access for cyclists.</li> <li>- Improvements to existing shared use facilities on the A4304 to provide a continuous route, providing a betterment to</li> </ul>

Destination	Route	Quality of Existing Route	Compliance with LTN 1/20	Proposed/Potential Improvements
		<p>low traffic flows as a result of a lack of through routes through this area.</p> <ul style="list-style-type: none"> <li>- The pedestrian footpath and local residential roads provide direct access to Rockingham Road (A4304) where shared use facilities are provided, though these facilities are currently intermittent along the route towards Market Harborough Rail Station.</li> <li>- The railway bridge on approach to Market Harborough Railway Station is currently restrained, with limited ability to provide cyclist infrastructure in this location.</li> </ul>		<p>the existing intermittent provision.</p> <ul style="list-style-type: none"> <li>- Potential active travel improvements at the railway bridge are to be determined based on ATC data collected in this location.</li> </ul>
Market Harborough Town Centre & Springfield Retail Park	Route 2	<ul style="list-style-type: none"> <li>- There is currently no crossing provision available to accommodate active travel movements between the site and Kettering Road.</li> <li>- A shared footway/cycleway is provided at Kettering Road for a small section, providing access to new residential development to the south of Kettering Road.</li> <li>- A shared footway cycleway is provided adjacent to Springfield Retail Park that provides a connection to NCN Route 64.</li> </ul>	<ul style="list-style-type: none"> <li>- The speed limit on the A6 adjacent to the proposed vehicular site access is 60mph, meaning that only a grade separated crossing facility would currently be suitable in this location, in accordance with Table 10-2 of LTN 1/20.</li> </ul>	<ul style="list-style-type: none"> <li>- A signalised crossing is proposed to be provided as part of the realignment of the A6/Kettering Road roundabout. To ensure that the crossing is compliant with table 10-2 of LTN 1/20, the speed limit on approach to the crossing may require a reduction.</li> <li>- There is an opportunity to provide an extension to the shared footway cycleway on Kettering Road, providing access to Springfield Retail Park.</li> <li>- In addition, an active travel crossing facility could be provided to provide a connection between the shared footway cycleway on Kettering Road with existing quiet residential streets to the west of the site such as Ashley Way.</li> <li>- Potential active travel improvements at the railway and river bridge are to be determined based on ATC data collected in this location.</li> </ul>

**Figure 13: Active Travel Strategy**



Credits: Esri, Intermap, NASA, NGA, USGS, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, © OpenStreetMap contributors, Contains public sector information licensed under the Open Government Licence v3.0.

4.2.4 The following improvements are proposed to facilitate travel on these routes:

**Connections to Ashley Way/Rockingham Road**

4.2.5 A new grade separated crossing facility is proposed to be provided over the A6 to provide a direct connection to existing traffic free routes to the east of Ashley Way.

4.2.6 Recent public consultation on the draft LCWIP demonstrates a local desire for a footbridge or underpass over the A6 to connect the existing public footpath which is currently used to accommodate access to Dingley Village in addition to being used as a leisure route for pedestrians, in particular dog walkers.

4.2.7 The route between the A6 and Ashley Way/Rockingham Road is currently accommodated by a public footpath, it is recommended that this be upgraded to a bridleway to allow permission for cyclists to also use the route.

### **Improvements to Rockingham Road**

- 4.2.8 A shared footway cycleway is currently provided at Rockingham Road, though there are gaps in the provision. There is an opportunity to provide improvements along the route, such as the potential to provide entry treatment at side roads to prioritise pedestrian and cyclist movements.
- 4.2.9 There is also an opportunity to extend the existing shared footway cycleway to connect directly with Market Harborough Railway Station, noting that the railway bridge is a constraint along the route. Active travel proposals at this point will be determined based on ATC data.
- 4.2.10 These improvements would improve active travel access to Market Harborough Railway Station.

### **Connection to Kettering Road**

- 4.2.11 A site access point is proposed at the A6/Kettering Road junction. Should the speed limit of the road be reduced to 50mph in this location, this would allow for the opportunity to provide a signalised pedestrian and cycle crossing to tie in with the shared footway cycleway that has been provided as part of the 'South of Kettering Road' development.
- 4.2.12 In addition, there is potential to provide an active travel crossing to tie the shared footway cycleway into quiet residential roads to the west of the site such as Ashley Way.
- 4.2.13 Whilst there is potential to provide an extension to the shared footway cycleway along Kettering Road, it is recognised that there is a pinch point at the railway and river bridge. A signalised one-way system, complete with advanced cycle stop lines, cycle bypass and advisory cycle lanes is already in place at the junction. There is potential to improve this facility to accommodate a continuous route for cyclists, though this will be determined by ATC data.
- 4.2.14 The provision of this connection would improve active travel access to Market Harborough Town Centre and Springfield Retail Park.
- 4.2.15 Through the walking and cycling strategy set out above, connections between the site and existing facilities within Market Harborough will be much more accessible, for both residents of the site and to existing residents in the town.

## **4.3 Public Transport Strategy**

- 4.3.1 It is proposed that an additional bus service be provided that connects the development with Market Harborough Town Centre, to be provided at a minimum of two services per hour, subject to discussions with local transport providers, including to determine the route of the service.

- 4.3.2 The new service will be able to connect the site with Market Harborough Railway Station, Market Harborough Town Centre and Welland Park Academy (secondary school).
- 4.3.3 Cost and revenue calculations for the provision of a new bus service have been provided at **Appendix C** demonstrating that the service would become viable after approximately nine years, with a developer contribution subsidising the service during this period.
- 4.3.4 There is also the potential to extend the 33B bus service to connect with the site, providing an additional vehicle, with an hourly service. This offers an alternative option should the implementation of a new bus service not be feasible following discussions with local transport providers.

## 5 Travel Demand

### 5.1 Overview

- 5.1.1 The Harborough District Council Climate Emergency Action Plan (2022-2030), highlights that the council has committed to reducing its own emission to net zero, as far as practically possible, by 2030. As part of this a change in attitudes towards transport is required to directly address barriers to travelling sustainably, providing solutions and mitigations as part of the planning process.
- 5.1.2 Traditionally, a ‘predict and provide’ approach has been adopted which uses current or historical data to determine the development requirements and future need for infrastructure. This embeds the requirement on the private motor vehicle and provides little incentive for change.
- 5.1.3 The ‘decide and provide’ approach sets out a preferred vision of the future with measures to provide the means to work towards that and accommodating other uncertain future scenarios. This offers the opportunity to advocate for sustainable and active travel from the start of the planning process instead of entrenching car-dependent development.
- 5.1.4 This section presents the travel demand for the proposed development and demonstrates how mode shift could be achieved.

### 5.2 Trip Rates

- 5.2.1 The TRICS database has been used to extract a ‘typical’ trip rate for the proposed development of approximately 1,000 dwellings. The following search criteria has been used:

- Land Use: Residential, Houses Privately Owned

- Regions: Great Britain (excluding Greater London)
- Units: 500 – 1,500 dwellings (Actual 514 - 1146)
- Date Range: 01/01/15 to 22/09/22
- Selected Days: Tuesday to Thursday
- Selected Locations: Edge of Town

### Multi-Modal Trip Rates

5.2.2 A summary of the vehicular trip rates for the residential element of the site are summarised in Table 5. The full TRICS outputs are provided at **Appendix D**.

**Table 5: Residential Trip Rates (Weekday)**

Mode	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)			Daily (12 Hours)		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Total People	0.226	0.823	1.049	0.557	0.284	0.841	3.518	3.524	7.042
Pedestrians	0.028	0.098	0.126	0.035	0.038	0.073	0.343	0.353	0.696
Cyclists	0.003	0.020	0.023	0.010	0.005	0.015	0.060	0.060	0.120
Public Transport Users	0.000	0.018	0.018	0.013	0.002	0.015	0.075	0.079	0.154
Vehicle Occupants	0.195	0.687	0.882	0.499	0.238	0.737	3.041	3.035	6.076
Vehicles	0.167	0.431	0.598	0.376	0.172	0.548	2.256	2.241	4.497

### Multi Modal Trip Generation

5.2.3 The resultant multi-modal trip generation using the trip rates in Table 5 for 1,000 residential units is set out in Table 6.

**Table 6: Residential Trip Generation - 1,000 dwellings (Weekday)**

Mode	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)			Daily (12 Hours)		
	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Total People	226	823	1049	557	284	841	3518	3524	7042
Pedestrians	28	98	126	35	38	73	343	353	696
Cyclists	3	20	23	10	5	15	60	60	120
Public Transport Users	0	18	18	13	2	15	75	79	154
Vehicle Occupants	195	687	882	499	238	737	3041	3035	6076
Vehicles	167	431	598	376	172	548	2256	2241	4497

5.2.4 Table 6 demonstrates that a development of this size is likely to generate a maximum of 598 two-way vehicle movements in any peak period. It should be noted that this assumes all trips generated by the site are external, however, there is potential to significantly reduce the overall trip generation as described in the following sections.

5.2.5 In terms of active travel movements, it is anticipated that the development will generate 126 pedestrian trips in the AM peak and 73 in the PM peak period. 23 two way cycle trips are anticipated to be generated by the development in the AM peak and 15 in the PM peak period.

### **5.3 Opportunities to Reduce Trip Generation**

5.3.1 The opportunities to reduce trip generation have been considered for work, education and retail based trips, on a three-phased approach:

- 1 Reduce the need to travel externally to the site
- 2 Improve access to local facilities that could be undertaken by active travel
- 3 Improve access to public transport for longer distance journeys

#### **Work-based trips**

5.3.2 In accordance with data gathered from the National Travel Survey 2022, work trips (commuting and business) in England account for approximately 18% of trips in the AM peak hour and 32% in the PM peak hour.

#### *Reducing the Need to Travel*

5.3.3 Travelling to work can be reduced by:

- Providing employment opportunities through the primary school and local centre to be provided on-site, allowing trips to be internalised; and
- Providing high quality facilities to work from home, which could include high speed broadband or a 'homeworking hub' in the local centre.

#### *Local Journeys by Active Travel*

5.3.4 The proposed infrastructure improvements will enable access to the local employment opportunities located to the west of the site, where multiple industrial and business parks are located. With the provision of a grade separated crossing of the A6, these facilities can be readily accessed.

5.3.5 In addition, this will assist journeys to Market Harborough Town Centre by active travel, whereby numerous employment opportunities are available at the various retail stores, restaurants and cafes.

*Longer Journeys*

5.3.6 There is a significant opportunity to promote a modal shift for work based trips to public transport, with the provision of a new bus service that will connect the site to Market Harborough Railway Station and Market Harborough Town Centre.

5.3.7 Census data from 2011 revealed that within the Harborough district, 38% of journeys to work were internal to the Harborough district. Of all journeys, 2% were by bus.

5.3.8 Approximately 33% of trips were by bus internally within the Harborough district, the majority (23%) were towards Market Harborough. There is therefore a significant existing demand towards Market Harborough by bus.

5.3.9 There is also an opportunity to focus improvements to active travel infrastructure around access to Market Harborough Rail Station. Of all journeys to work made by residents living with the Harborough District, 3% were by rail.

**Education Trips**

*Reducing the Need to Travel*

5.3.10 In accordance with data gathered from the National Travel Survey 2022, education trips form approximately 28% of trips in the network AM peak and 3% of trips in the network PM peak.

5.3.11 The development is to provide a primary school on site, thus accommodating the vast majority of primary education trips internally.

*Local Journeys by Active Travel*

5.3.12 Meadowdale Primary School is also located within 460m of the proposed A6 grade separated crossing facility, located within a reasonable walking or cycling distance of the site.

*Longer Journeys*

5.3.13 The nearest secondary school to the site, Welland Park Academy, is located approximately 2.2km to the west of the proposed footbridge. It is accessible via the 33B bus service, within an 8 minute walk of bus stops located within Market Harborough Town Centre. There is potential

however for the secondary school to be made more accessible through the provision of a new bus service, that is proposed to connect the site directly with Welland Park Academy.

### **Retail Trips**

- 5.3.14 In accordance with data gathered from the National Travel Survey 2022, retail trips form approximately 4% of trips in the AM peak and 12% in the PM peak.

#### *Reducing the Need to Travel*

- 5.3.15 The development proposals include a local centre which would provide small-scale retail uses, internalising trips within the site. The mobility hub could also include package delivery/concierge services, which reduces the need to travel to collect items from physical stores.

#### *Local Journeys by Active Travel*

The facilities in the Manor Retail Park and Welland Business Park and can be accessed via the proposed footbridge and adjoining existing public footpath. These facilities would therefore be made accessible by walking and cycling with the proposed infrastructure improvements.

#### *Longer Journeys*

- 5.3.16 Further retail opportunities are located within Market Harborough Town Centre, with supermarkets including ALDI, Lidl, Waitrose and Sainsbury's all located here, in addition to non-food retail stores. The Town Centre is located approximately 1.8km to the west of the proposed footbridge and are all accessible via the 33B bus service and would also be accessible via the new development bus service.

### **Conclusions**

- 5.3.17 The exercise above demonstrates that there is significant potential for development in this location to enable a modal shift through internalisation of trips, active travel and the use of high frequency public transport. This has the potential to substantially reduce any residual impacts of the development.

## **5.4 Development Traffic Impact**

### **Site Access/A6 Junction**

- 5.4.1 The proposed site access junction, to be formed through the realignment of the existing A6/Kettering Road roundabout, has been modelled using the Junctions 10 modelling software.

The full output files for the junction, showing geometry and capacity calculations, are included at **Appendix E**.

5.4.2 The results for the full development scenario (2031 Base + Committed + Development) are summarised in Table 7.

**Table 7: Site Access/A6/Kettering Road Roundabout**

Arm	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	RFC	Queue	Delay (s)	RFC	Queue	Delay (s)
A6 (N)	0.46	1	4	0.61	2	6
Site Access	0.60	2	8	0.19	0	5
A6 (S)	0.57	1	5	0.57	1	5
Kettering Road	0.44	1	5	0.50	1	5

5.4.3 The results of the capacity assessment show that the proposed realignment of the roundabout and addition of development traffic will result in the roundabout operating within capacity, with a maximum queue of 2 vehicles across any peak at any arm and a maximum delay of 8 seconds.

## 6 Conclusions

6.1.1 PJA have been commissioned by Catesby Estates to provide transport advice in relation to the proposed development at East Market Harborough. The site is being promoted for residential-led development to the Harborough District emerging Local Plan.

6.1.2 Development of the site aligns with local, regional and national sustainability objectives of the emerging local plan and the Harborough District Council Climate Emergency Action Plan.

6.1.3 The site is well located adjacent to the principal road network. Vehicular access to the site would be provided via a four arm roundabout off the A6, provided through the realignment of the existing A6/Kettering Road roundabout.

6.1.4 The results of the capacity analysis undertaken for the proposed roundabout found that the roundabout is anticipated to operate within capacity, with a maximum queue of 2 vehicles across any peak at any arm and a maximum delay of 8 seconds.

6.1.5 Pedestrian and cycle access, including for those with disabilities, would be provided from the A6 via grade separated and signalised crossings.

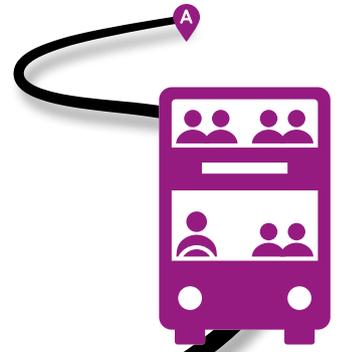
6.1.6 The site is well located to access local amenities within Market Harborough, in particular to employment opportunities at nearby retail and industrial parks. Local facilities would be made more accessible by the proposed walking and cycling infrastructure improvements.

- 6.1.7 The development is likely to have the support of local bus service provider, with an additional bus service proposed to serve the development, which could also benefit existing residential areas accessed off Kettering Road. This service would connect the site to Market Harborough Rail Station, Market Harborough Town Centre and Welland Park Academy.
- 6.1.8 An initial assessment of the site's travel demand has found that there is significant potential to reduce the need to travel by car from the site, by internalising trips, improving the accessibility of the site by active travel, or by public transport through the provision of a new bus service.
- 6.1.9 It can therefore be concluded that the site is suitable for inclusion within the emerging Local Plan.

## **Appendix A      Market Harborough Local Bus Services**

# Market Harborough Bus map & guide

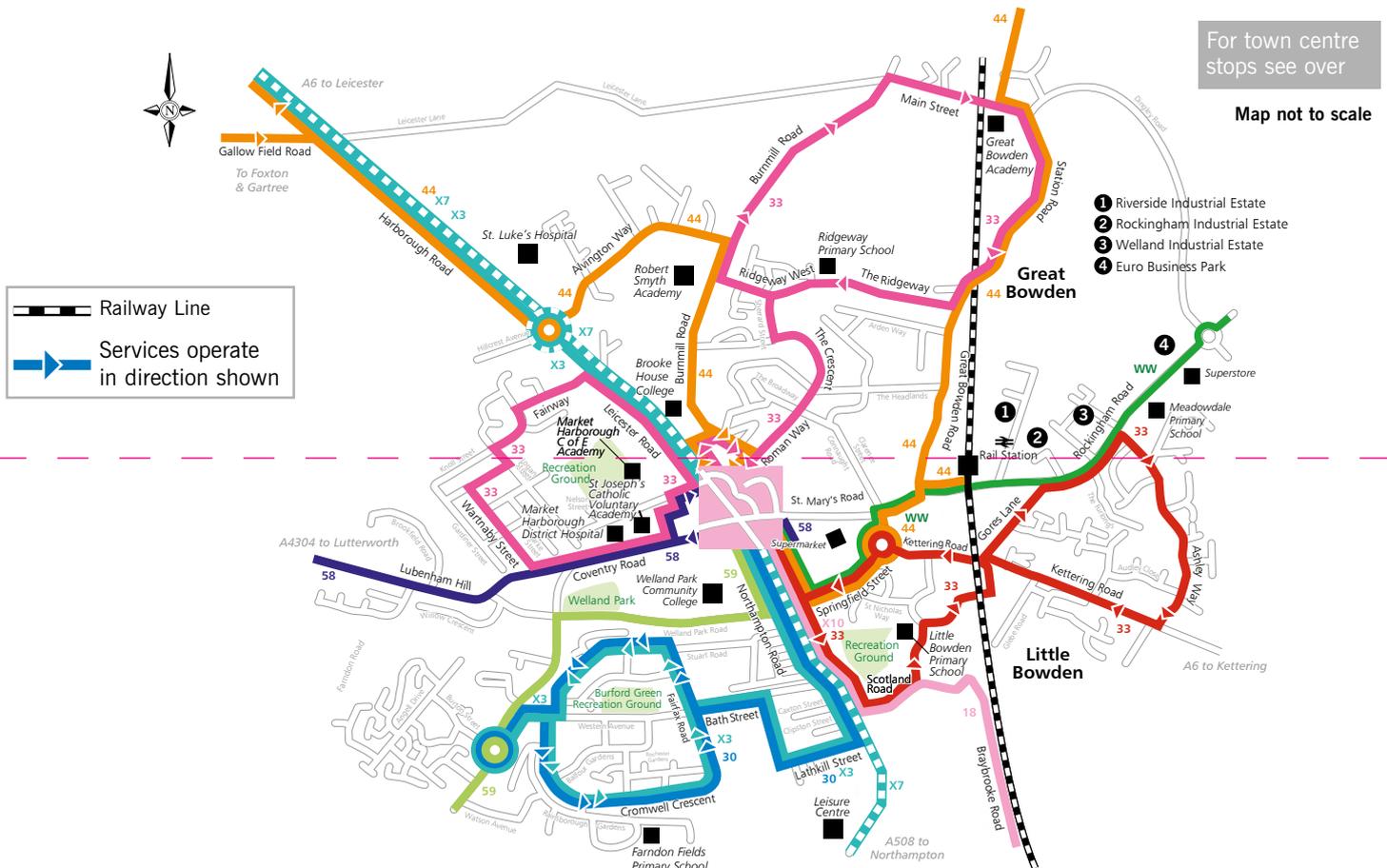
June 2019

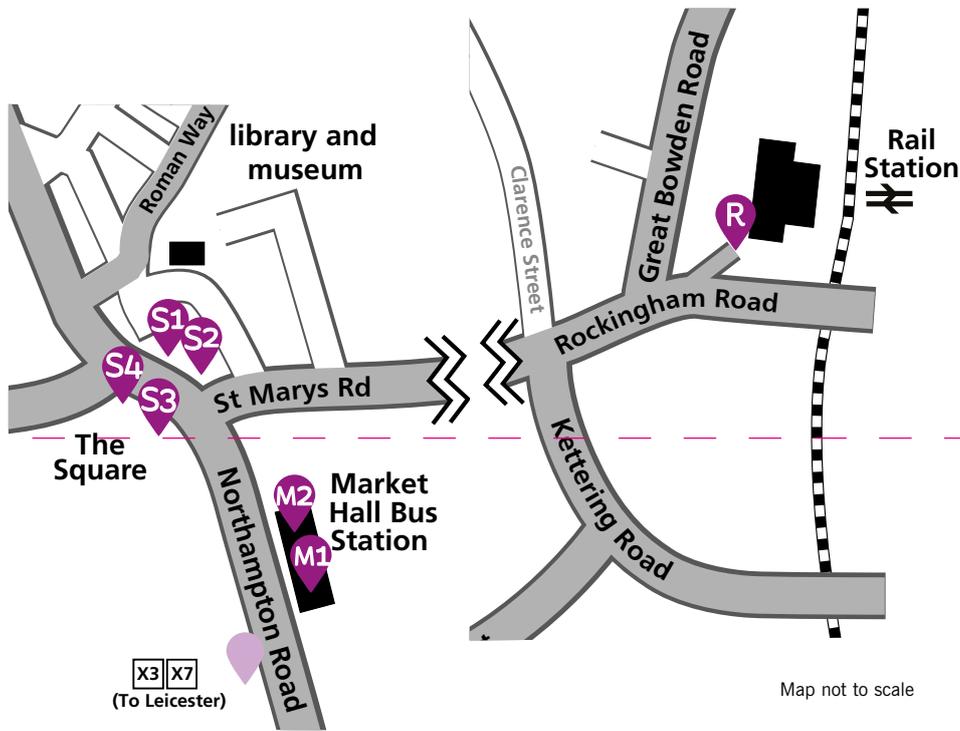


Service	Operator(s)	Route	FREQUENCY		
			Monday – Saturday Daytime	Monday – Saturday Evenings	Sunday and Bank Holidays
18	Stagecoach	MARKET HARBOROUGH - Ise Lodge, Kettering	hourly	no service	no service
30	Centrebus	MARKET HARBOROUGH Town Service: Southern Estates	hourly off peak only	no service	no service
33	Centrebus	MARKET HARBOROUGH Town Service: Scotland Road & Little Bowden	hourly	no service	no service
33	Centrebus	MARKET HARBOROUGH Town Service: Great Bowden	hourly	no service	no service
44	Centrebus	Fleckney via the Langtons - MARKET HARBOROUGH - Foxton	hourly	no service	no service
58	Centrebus	MARKET HARBOROUGH - Lutterworth	infrequent	no service	no service
59	Centrebus	MARKET HARBOROUGH - East Farndon - Marston Trussell - Sibbertoft - Clipston - Naseby - Welford	once a day	no service	no service
WW	Cawsons of Corby	MARKET HARBOROUGH - Cottingham	once a week (Tuesday)	no service	no service
X3	Arriva	MARKET HARBOROUGH - Kibworth - Oadby - Leicester	30 mins	no service	hourly
X3	Arriva	MARKET HARBOROUGH Town Service: Southern Estates	60/90 mins peak only	no service	hourly
X7	Stagecoach	Northampton - MARKET HARBOROUGH - Leicester	2 per hour Mkt Harborough - Leicester 1 per hour Mkt Harborough - Northampton	infrequent Mkt Harborough - Leicester hourly Mkt Harborough - Northampton	hourly

Underlined services are supported by Leicestershire County Council

**KEY:** ■ Operates via Great Glen





**The Square**

**S1** 44, X3, X7 (towards Northampton)  
SMS code: leijmtjw

**S2** 33 SMS code: leijmtma

**S3** 44, X3, X7 (towards Leicester)  
SMS code: leijmtmg

**S4** 33, 58, X3 SMS code: leijmtmd

**R Rail Station**  
44, 18 SMS code: leijmwjt

**Market Hall**

**M1** 33, 58, 59, X7 (towards Northampton)  
SMS code: leijmtmw

**M2** 18, 30, X3, WW SMS code: leijmtmt

For the next timetabled departures from a specific bus stop, text the 8 letter SMS code to 84268.

Normal text message rates apply and the return text message costs 25p.

A large print version of this guide is available upon request. Please contact the Helpline on 0116 305 0002.

**KEY** This map shows the main departure points in the town centre.

Bus Stops Other Bus Stops Bus Served Roads

[www.Choosehowyoumove.co.uk](http://www.Choosehowyoumove.co.uk) View other local bus guides and sign up for email updates at [www.choosehowyoumove.co.uk/publictransport](http://www.choosehowyoumove.co.uk/publictransport)

@CHYMLEics ChooseHowYouMove

**Further information**

**Concessionary travel for older people and for disabled people**

The English National Concessionary Travel Scheme offers free off-peak travel on local bus services in all parts of England. For more information please call 0116 305 0002.

**Community Transport in and around Market Harborough**

For older or disabled people who cannot use ordinary buses Voluntary Action South Leicestershire offers a social car scheme and accessible minibus services. Further details may be obtained by telephoning 01858 468 499.

**CountyConnect**

This service operates in this area, see map for details.

[www.traveline.info](http://www.traveline.info)  
0871 200 22 33  
calls cost 12p per minute plus your phone company's access charge

0344 800 4411 [www.arrivabus.co.uk](http://www.arrivabus.co.uk)

0844 351 1120 [www.centrebus.info](http://www.centrebus.info)

0344 800 4411 [www.arrivabus.co.uk/hinckleybus](http://www.arrivabus.co.uk/hinckleybus)

01604 67 60 60 [www.stagecoachbus.com](http://www.stagecoachbus.com)

03457 48 49 50 [www.nationalrail.co.uk](http://www.nationalrail.co.uk)

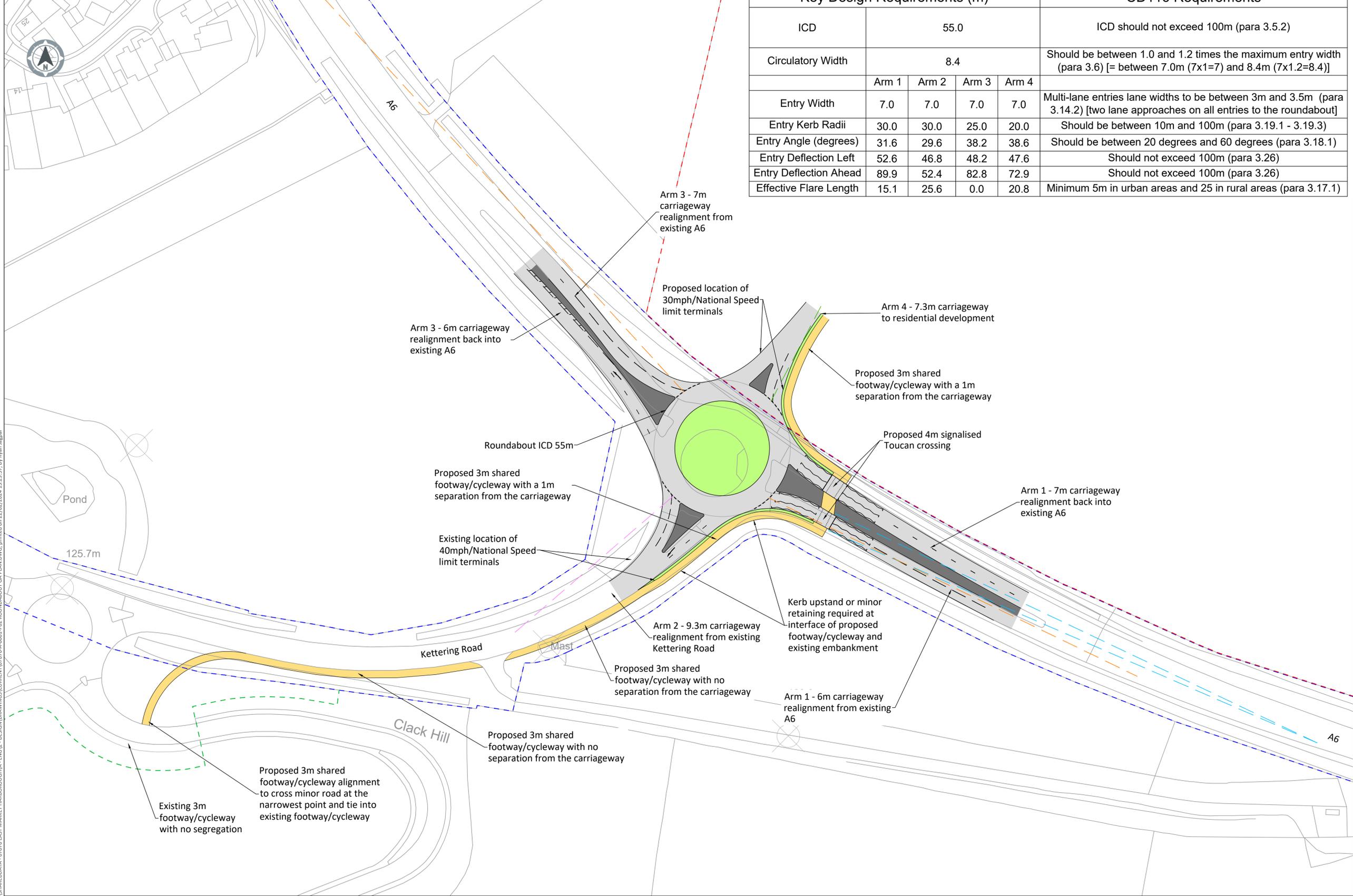
This guide shows the bus services in Market Harborough and the main departure points in the town centre. You will find a summary of the services and frequencies in the timetable overleaf. Some single directional or infrequent services may exist but might not be included. For a comprehensive timetable or more information call Traveline on the number provided (07.00 – 22.00). You can also visit local libraries, tourist information centres, local council offices and bus company travel shops.

Visit [www.choosehowyoumove.co.uk/publictransport](http://www.choosehowyoumove.co.uk/publictransport) to see our other bus guides and to sign up for email notifications. Online updates will only occur if services change.

[www.choosehowyoumove.co.uk/publictransport](http://www.choosehowyoumove.co.uk/publictransport) • 0116 305 0002 • [choosehowyoumove@leics.gov.uk](mailto:choosehowyoumove@leics.gov.uk)  
Safe and Sustainable Travel Team, Environment and Transport, Leicestershire County Council, Glenfield, Leicester, LE3 8RJ

The information contained in this leaflet is correct at time of printing, but may be subject to change. Every effort will be made to maintain these services. However, no liability can be accepted for failure to operate the services as specified.

## **Appendix B      Proposed Site Access/A6/Kettering Road Roundabout**



Key Design Requirements (m)					CD116 Requirements
ICD	55.0				ICD should not exceed 100m (para 3.5.2)
Circulatory Width	8.4				Should be between 1.0 and 1.2 times the maximum entry width (para 3.6) [= between 7.0m (7x1=7) and 8.4m (7x1.2=8.4)]
Entry Width	Arm 1	Arm 2	Arm 3	Arm 4	Multi-lane entries lane widths to be between 3m and 3.5m (para 3.14.2) [two lane approaches on all entries to the roundabout]
Entry Kerb Radii	30.0	30.0	25.0	20.0	Should be between 10m and 100m (para 3.19.1 - 3.19.3)
Entry Angle (degrees)	31.6	29.6	38.2	38.6	Should be between 20 degrees and 60 degrees (para 3.18.1)
Entry Deflection Left	52.6	46.8	48.2	47.6	Should not exceed 100m (para 3.26)
Entry Deflection Ahead	89.9	52.4	82.8	72.9	Should not exceed 100m (para 3.26)
Effective Flare Length	15.1	25.6	0.0	20.8	Minimum 5m in urban areas and 25 in rural areas (para 3.17.1)

**CDM Note**  
 These drawings have been produced with reference to the CDM Regulations 2015. Please note that these are pre-construction phase drawings and should be subject to further design risk management as required in accordance with Regulation 9.

**Notes**

- Do not scale from this drawing.
- All dimensions in metres unless stated otherwise.
- This drawing is based on OS mapping which was provided by the client.
- This drawing is not to be reproduced in any part or form without consent of PJA Civil Engineering Ltd. All copyright reserved.
- The design details presented must be reviewed in conjunction with the wider site information and site constraints.
- No liability will be accepted by PJA for negligence or otherwise in relation to the accuracy of the OS mapping.
- The design is Concept and subject to design development. The drawing should not be used for tendering or construction purposes and requires further development as part of the pre-planning application.
- All works are proposed to be within the highway boundary or Developer owned land.
- The proposals outlined are subject to Road Safety Audits.
- The design criteria and philosophy is subject to local authority agreement.
- The junction has been designed in accordance with:
  - CD 109 - Highway Link Design (revision 1) table 2.10 for visibility of all roundabout arms
  - CD 116 - Geometric Design of Roundabouts
  - Arms 1 and 3 are assumed to be subject to a national speed restriction.
  - Arms 2 has an existing 40mph speed restriction which is being maintained.
  - Arms 4 is assumed to be subject to a 30mph design speed restriction for residential access.
- The design speeds require verification by ATC speed surveys.
- The proposed land ownership boundaries have been assumed and have been indicatively shown.
- It is assumed that the design speed is 60mph and that the 85th percentile speed on the approach is not greater than or equal to 104kph (65mph).

**Key**

	Highway Boundary
	Third-Party S278 Boundary
	Catesby Estates Land
	Roundabout Sight Stopping Distance 43m (30mph)
	Roundabout Sight Stopping Distance 215m (60mph)
	Roundabout Sight Stopping Distance 120m (40mph)
	Signal Head Sight Stopping Distance 215m (60mph)
	Proposed Carriageway
	Proposed Splitter Islands
	Proposed Shared Footway/Cycleway
	Proposed Grass Verge

File name: C:\Users\RYAN.JAGPAL\PHIL JONES ASSOCIATES\SHARED\DATA - 07076 EAST MARKET HARBOROUGH\A - ENG12 - DESIGN\DRAWINGS\CURRENT\07076-A-0001-P02 ROUNDABOUT GA PLAN.DWG, printed on 22/02/2024, 13:29:57, by Ryan Jagpal

P02	15.02.24	RJ	APM	APM
Rev	Date	Drw	Chk	App

Client  
Catesby Estates

Project  
East Market Harborough

Drawing Status  
Concept

Title  
Roundabout GA plan

Drawing No.  
07076-A-0001-P02

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**Appendix C      New Bus Service - Cost and Revenue Calculations**

year		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	
					1	2	3	4	5	6	7	8	9	10	
Units					100	100	100	100	100	100	100	100	100	100	
Cummulative					100	200	300	400	500	600	700	800	900	1000	
Inflation		1.00	1.05	1.08	1.11	1.14	1.17	1.20	1.23	1.26	1.29	1.32	1.35	1.38	
Trips / dwelling	8				800	1600	2400	3200	4000	4800	5600	6400	7200	8000	
Internalisation	40%				480	960	1440	1920	2400	2880	3360	3840	4320	4800	
Bus Mode share	7.5%				36	72	108	144	180	216	252	288	324	360	
Annualisers															
u16	190														
16-65	156														
65+	306														
Age profile															
5-16	14.50%														
16-65	63.40%														
65+	22.10%														
Annual Demand															
u16					992	1,984	2,975	3,967	4,959	5,951	6,943	7,934	8,926	9,918	
16-65					3,561	7,121	10,682	14,242	17,803	21,363	24,924	28,484	32,045	35,605	
65+					2,435	4,869	7,304	9,738	12,173	14,607	17,042	19,476	21,911	24,345	
TOTAL					6,987	13,974	20,961	27,948	34,934	41,921	48,908	55,895	62,882	69,869	
Annual Revenue															
5 -16	50%				£1,578	£3,156	£4,734	£6,311	£7,889	£9,467	£11,045	£12,623	£14,201	£15,779	
16 -65	100%				£11,329	£22,658	£33,987	£45,316	£56,645	£67,974	£79,303	£90,632	£101,961	£113,290	
65+	61%				£4,725	£9,450	£14,176	£18,901	£23,626	£28,351	£33,076	£37,802	£42,527	£47,252	
					£17,632	£35,264	£52,896	£70,528	£88,160	£105,792	£123,425	£141,057	£158,689	£176,321	
					£19,572	£40,201	£61,889	£84,634	£108,437	£133,299	£159,218	£186,195	£214,230	£243,323	
Day ticket	£7.00	est from other fares													
2.2 trips / day	2.2														
One bus		£160,000	£168,000	£172,800	£177,600	£182,400	£187,200	£192,000	£196,800	£201,600	£206,400	£211,200	£216,000	£220,800	
Nett Position					-£158,028	-£142,199	-£125,311	-£107,366	-£88,363	-£68,301	-£47,182	-£25,005	-£1,770	£22,523	<b>-£763,527</b>

**Appendix D TRICS Output**

Filtering Summary

Land Use	03/A	RESIDENTIAL/HOUSES PRIVATELY OWNED
Selected Trip Rate Calculation Parameter Range	500-1500 DWELLS	
Actual Trip Rate Calculation Parameter Range	514-1146 DWELLS	
Date Range	Minimum: 01/01/15	Maximum: 22/09/22
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	
Days of the week selected	Tuesday	2
	Wednesday	2
	Thursday	1
Main Location Types selected	Edge of Town	5
Inclusion of Servicing Vehicles Counts	Servicing vehicles Included	3 - Selected
	Servicing vehicles Excluded	4 - Selected
Population within 500m	All Surveys Included	
Population <1 Mile ranges selected	5,001 to 10,000	2
	10,001 to 15,000	1
	15,001 to 20,000	2
Population <5 Mile ranges selected	25,001 to 50,000	1
	75,001 to 100,000	2
	125,001 to 250,000	2
Car Ownership <5 Mile ranges selected	0.6 to 1.0	1
	1.1 to 1.5	3
	1.6 to 2.0	1
PTAL Rating	No PTAL Present	5

Calculation Reference: AUDIT-231601-240118-0148

**TRIP RATE CALCULATION SELECTION PARAMETERS:**

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

**MULTI-MODAL TOTAL VEHICLES**

Selected regions and areas:

<b>02</b>	<b>SOUTH EAST</b>	
	SC SURREY	1 days
	WS WEST SUSSEX	1 days
<b>04</b>	<b>EAST ANGLIA</b>	
	NF NORFOLK	3 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: 514 to 1146 (units: )  
Range Selected by User: 500 to 1500 (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: 01/01/15 to 22/09/22

*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:

Tuesday 2 days  
Wednesday 2 days  
Thursday 1 days

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

Selected survey types:

Manual count 5 days  
Directional ATC Count 0 days

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

Selected Locations:

Edge of Town 5

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

Selected Location Sub Categories:

Residential Zone 4  
Out of Town 1

*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.*

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included 3 days - Selected  
Servicing vehicles Excluded 4 days - Selected

**Secondary Filtering selection:**

Use Class:

C3 5 days

*This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.*

Population within 500m Range:

All Surveys Included

**Secondary Filtering selection (Cont.):**

Population within 1 mile:

5,001 to 10,000	2 days
10,001 to 15,000	1 days
15,001 to 20,000	2 days

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

Population within 5 miles:

25,001 to 50,000	1 days
75,001 to 100,000	2 days
125,001 to 250,000	2 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	1 days
1.1 to 1.5	3 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	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	5 days
-----------------	--------

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

LIST OF SITES relevant to selection parameters

Site(1):	NF-03-A-23	Site area:	26.43 hect
Development Name:	MIXED HOUSES & FLATS	No of Dwellings:	514
Location:	WYMONDHAM	Housing density:	27
Postcode:	NR18 9FP	Total Bedrooms:	1606
Main Location Type:	Edge of Town	Survey Date:	22/09/21
Sub-Location Type:	Out of Town	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	1274
Site(2):	NF-03-A-28	Site area:	38.00 hect
Development Name:	MIXED HOUSES & FLATS	No of Dwellings:	1146
Location:	NORWICH	Housing density:	40
Postcode:	NR7 8DN	Total Bedrooms:	3078
Main Location Type:	Edge of Town	Survey Date:	22/09/22
Sub-Location Type:	Residential Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	2464
Site(3):	NF-03-A-38	Site area:	18.06 hect
Development Name:	MIXED HOUSES	No of Dwellings:	537
Location:	GREAT YARMOUTH	Housing density:	36
Postcode:	NR31 9FT	Total Bedrooms:	1466
Main Location Type:	Edge of Town	Survey Date:	20/09/22
Sub-Location Type:	Residential Zone	Survey Day:	Tuesday
PTAL:	n/a	Parking Spaces:	1373
Site(4):	SC-03-A-08	Site area:	46.80 hect
Development Name:	MIXED HOUSES	No of Dwellings:	790
Location:	HORLEY	Housing density:	31
Postcode:	RH6 8NT	Total Bedrooms:	2204
Main Location Type:	Edge of Town	Survey Date:	04/05/22
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	1740
Site(5):	WS-03-A-11	Site area:	50.00 hect
Development Name:	MIXED HOUSES	No of Dwellings:	918
Location:	WEST HORSHAM	Housing density:	50
Postcode:	RH12 3LN	Total Bedrooms:	2865
Main Location Type:	Edge of Town	Survey Date:	02/04/19
Sub-Location Type:	Residential Zone	Survey Day:	Tuesday
PTAL:	n/a	Parking Spaces:	1894

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**

Total People to Total Vehicles ratio (all time periods and directions): 1.57

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.079	5	781	0.321	5	781	0.400
08:00 - 09:00	5	781	0.167	<b>5</b>	<b>781</b>	<b>0.431</b>	<b>5</b>	<b>781</b>	<b>0.598</b>
09:00 - 10:00	5	781	0.134	5	781	0.145	5	781	0.279
10:00 - 11:00	5	781	0.111	5	781	0.125	5	781	0.236
11:00 - 12:00	5	781	0.113	5	781	0.124	5	781	0.237
12:00 - 13:00	5	781	0.147	5	781	0.139	5	781	0.286
13:00 - 14:00	5	781	0.139	5	781	0.135	5	781	0.274
14:00 - 15:00	5	781	0.138	5	781	0.172	5	781	0.310
15:00 - 16:00	5	781	0.261	5	781	0.161	5	781	0.422
16:00 - 17:00	5	781	0.279	5	781	0.157	5	781	0.436
17:00 - 18:00	<b>5</b>	<b>781</b>	<b>0.376</b>	5	781	0.172	5	781	0.548
18:00 - 19:00	5	781	0.312	5	781	0.159	5	781	0.471
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.256			2.241			4.497

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.

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**Parameter summary**

Trip rate parameter range selected: 514 - 1146 (units: )  
Survey date date range: 01/01/15 - 22/09/22  
Number of weekdays (Monday-Friday): 5  
Number of Saturdays: 0  
Number of Sundays: 0  
Surveys automatically removed from selection: 2  
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 shown. 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 TAXIS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.003	5	781	0.003	5	781	0.006
08:00 - 09:00	<b>5</b>	<b>781</b>	<b>0.006</b>	<b>5</b>	<b>781</b>	<b>0.007</b>	<b>5</b>	<b>781</b>	<b>0.013</b>
09:00 - 10:00	5	781	0.002	5	781	0.002	5	781	0.004
10:00 - 11:00	5	781	0.001	5	781	0.001	5	781	0.002
11:00 - 12:00	5	781	0.001	5	781	0.001	5	781	0.002
12:00 - 13:00	5	781	0.002	5	781	0.002	5	781	0.004
13:00 - 14:00	5	781	0.002	5	781	0.002	5	781	0.004
14:00 - 15:00	5	781	0.003	5	781	0.002	5	781	0.005
15:00 - 16:00	5	781	0.006	5	781	0.006	5	781	0.012
16:00 - 17:00	5	781	0.004	5	781	0.004	5	781	0.008
17:00 - 18:00	5	781	0.002	5	781	0.003	5	781	0.005
18:00 - 19:00	5	781	0.002	5	781	0.002	5	781	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.034			0.035			0.069

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.

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

**MULTI-MODAL OGVS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.001	5	781	0.001	5	781	0.002
08:00 - 09:00	5	781	0.000	5	781	0.000	5	781	0.000
09:00 - 10:00	5	781	0.001	5	781	0.001	5	781	0.002
10:00 - 11:00	5	781	0.001	5	781	0.001	5	781	0.002
11:00 - 12:00	5	781	0.001	5	781	0.001	5	781	0.002
12:00 - 13:00	5	781	0.000	5	781	0.001	5	781	0.001
13:00 - 14:00	<b>5</b>	<b>781</b>	<b>0.002</b>	<b>5</b>	<b>781</b>	<b>0.002</b>	<b>5</b>	<b>781</b>	<b>0.004</b>
14:00 - 15:00	5	781	0.001	5	781	0.000	5	781	0.001
15:00 - 16:00	5	781	0.001	5	781	0.001	5	781	0.002
16:00 - 17:00	5	781	0.001	5	781	0.001	5	781	0.002
17:00 - 18:00	5	781	0.001	5	781	0.001	5	781	0.002
18:00 - 19:00	5	781	0.000	5	781	0.000	5	781	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.010			0.010			0.020

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.

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

**MULTI-MODAL PSVS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.001	5	781	0.001	5	781	0.002
08:00 - 09:00	<b>5</b>	<b>781</b>	<b>0.001</b>	<b>5</b>	<b>781</b>	<b>0.001</b>	5	781	0.002
09:00 - 10:00	5	781	0.001	5	781	0.001	5	781	0.002
10:00 - 11:00	5	781	0.001	5	781	0.001	5	781	0.002
11:00 - 12:00	5	781	0.001	5	781	0.001	5	781	0.002
12:00 - 13:00	5	781	0.000	5	781	0.000	5	781	0.000
13:00 - 14:00	5	781	0.001	5	781	0.001	5	781	0.002
14:00 - 15:00	5	781	0.001	5	781	0.001	5	781	0.002
15:00 - 16:00	5	781	0.001	5	781	0.001	5	781	0.002
16:00 - 17:00	5	781	0.001	5	781	0.001	5	781	0.002
17:00 - 18:00	5	781	0.001	5	781	0.001	5	781	0.002
18:00 - 19:00	5	781	0.000	5	781	0.000	5	781	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.010			0.010			0.020

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.

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

**MULTI-MODAL CYCLISTS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.003	5	781	0.009	5	781	0.012
08:00 - 09:00	5	781	0.003	<b>5</b>	<b>781</b>	<b>0.020</b>	<b>5</b>	<b>781</b>	<b>0.023</b>
09:00 - 10:00	5	781	0.003	5	781	0.004	5	781	0.007
10:00 - 11:00	5	781	0.002	5	781	0.001	5	781	0.003
11:00 - 12:00	5	781	0.001	5	781	0.002	5	781	0.003
12:00 - 13:00	5	781	0.002	5	781	0.002	5	781	0.004
13:00 - 14:00	5	781	0.002	5	781	0.001	5	781	0.003
14:00 - 15:00	5	781	0.004	5	781	0.003	5	781	0.007
15:00 - 16:00	<b>5</b>	<b>781</b>	<b>0.012</b>	5	781	0.002	5	781	0.014
16:00 - 17:00	5	781	0.012	5	781	0.006	5	781	0.018
17:00 - 18:00	5	781	0.010	5	781	0.005	5	781	0.015
18:00 - 19:00	5	781	0.006	5	781	0.005	5	781	0.011
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.060			0.060			0.120

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.

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

**MULTI-MODAL VEHICLE OCCUPANTS**

Calculation factor: 1 DWELLS

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.091	5	781	0.412	5	781	0.503
08:00 - 09:00	5	781	0.195	<b>5</b>	<b>781</b>	<b>0.687</b>	<b>5</b>	<b>781</b>	<b>0.882</b>
09:00 - 10:00	5	781	0.164	5	781	0.180	5	781	0.344
10:00 - 11:00	5	781	0.142	5	781	0.161	5	781	0.303
11:00 - 12:00	5	781	0.147	5	781	0.161	5	781	0.308
12:00 - 13:00	5	781	0.181	5	781	0.172	5	781	0.353
13:00 - 14:00	5	781	0.179	5	781	0.156	5	781	0.335
14:00 - 15:00	5	781	0.182	5	781	0.210	5	781	0.392
15:00 - 16:00	5	781	0.450	5	781	0.210	5	781	0.660
16:00 - 17:00	5	781	0.404	5	781	0.220	5	781	0.624
17:00 - 18:00	<b>5</b>	<b>781</b>	<b>0.499</b>	5	781	0.238	5	781	0.737
18:00 - 19:00	5	781	0.407	5	781	0.228	5	781	0.635
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.041			3.035			6.076

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.

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

**MULTI-MODAL PEDESTRIANS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.012	5	781	0.038	5	781	0.050
08:00 - 09:00	5	781	0.028	<b>5</b>	<b>781</b>	<b>0.098</b>	<b>5</b>	<b>781</b>	<b>0.126</b>
09:00 - 10:00	5	781	0.020	5	781	0.014	5	781	0.034
10:00 - 11:00	5	781	0.015	5	781	0.015	5	781	0.030
11:00 - 12:00	5	781	0.017	5	781	0.014	5	781	0.031
12:00 - 13:00	5	781	0.020	5	781	0.017	5	781	0.037
13:00 - 14:00	5	781	0.020	5	781	0.019	5	781	0.039
14:00 - 15:00	5	781	0.030	5	781	0.030	5	781	0.060
15:00 - 16:00	<b>5</b>	<b>781</b>	<b>0.081</b>	5	781	0.027	5	781	0.108
16:00 - 17:00	5	781	0.029	5	781	0.015	5	781	0.044
17:00 - 18:00	5	781	0.035	5	781	0.038	5	781	0.073
18:00 - 19:00	5	781	0.036	5	781	0.028	5	781	0.064
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.343			0.353			0.696

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.

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

**MULTI-MODAL BUS/TRAM PASSENGERS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.001	<b>5</b>	<b>781</b>	<b>0.022</b>	<b>5</b>	<b>781</b>	<b>0.023</b>
08:00 - 09:00	5	781	0.000	5	781	0.015	5	781	0.015
09:00 - 10:00	5	781	0.002	5	781	0.005	5	781	0.007
10:00 - 11:00	5	781	0.002	5	781	0.005	5	781	0.007
11:00 - 12:00	5	781	0.004	5	781	0.006	5	781	0.010
12:00 - 13:00	5	781	0.003	5	781	0.004	5	781	0.007
13:00 - 14:00	5	781	0.001	5	781	0.003	5	781	0.004
14:00 - 15:00	5	781	0.004	5	781	0.005	5	781	0.009
15:00 - 16:00	<b>5</b>	<b>781</b>	<b>0.015</b>	5	781	0.002	5	781	0.017
16:00 - 17:00	5	781	0.015	5	781	0.001	5	781	0.016
17:00 - 18:00	5	781	0.012	5	781	0.002	5	781	0.014
18:00 - 19:00	5	781	0.010	5	781	0.001	5	781	0.011
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.069			0.071			0.140

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.

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

**MULTI-MODAL TOTAL RAIL PASSENGERS**

Calculation factor: **1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.000	<b>5</b>	<b>781</b>	<b>0.003</b>	<b>5</b>	<b>781</b>	<b>0.003</b>
08:00 - 09:00	5	781	0.000	5	781	0.002	5	781	0.002
09:00 - 10:00	5	781	0.000	5	781	0.001	5	781	0.001
10:00 - 11:00	5	781	0.000	5	781	0.000	5	781	0.000
11:00 - 12:00	5	781	0.000	5	781	0.000	5	781	0.000
12:00 - 13:00	5	781	0.000	5	781	0.001	5	781	0.001
13:00 - 14:00	5	781	0.000	5	781	0.001	5	781	0.001
14:00 - 15:00	5	781	0.000	5	781	0.000	5	781	0.000
15:00 - 16:00	5	781	0.001	5	781	0.000	5	781	0.001
16:00 - 17:00	5	781	0.000	5	781	0.000	5	781	0.000
17:00 - 18:00	5	781	0.002	5	781	0.000	5	781	0.002
18:00 - 19:00	<b>5</b>	<b>781</b>	<b>0.003</b>	5	781	0.000	5	781	0.003
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.006			0.008			0.014

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.

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

**MULTI-MODAL COACH PASSENGERS**

Calculation factor: **1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.000	5	781	0.000	5	781	0.000
08:00 - 09:00	5	781	0.000	<b>5</b>	<b>781</b>	<b>0.001</b>	<b>5</b>	<b>781</b>	<b>0.001</b>
09:00 - 10:00	5	781	0.000	5	781	0.000	5	781	0.000
10:00 - 11:00	5	781	0.000	5	781	0.000	5	781	0.000
11:00 - 12:00	5	781	0.000	5	781	0.000	5	781	0.000
12:00 - 13:00	5	781	0.000	5	781	0.000	5	781	0.000
13:00 - 14:00	5	781	0.000	5	781	0.000	5	781	0.000
14:00 - 15:00	5	781	0.000	5	781	0.000	5	781	0.000
15:00 - 16:00	<b>5</b>	<b>781</b>	<b>0.000</b>	5	781	0.000	5	781	0.000
16:00 - 17:00	5	781	0.000	5	781	0.000	5	781	0.000
17:00 - 18:00	5	781	0.000	5	781	0.000	5	781	0.000
18:00 - 19:00	5	781	0.000	5	781	0.000	5	781	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.001			0.001

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.

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

**MULTI-MODAL PUBLIC TRANSPORT USERS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.001	<b>5</b>	<b>781</b>	<b>0.025</b>	<b>5</b>	<b>781</b>	<b>0.026</b>
08:00 - 09:00	5	781	0.000	5	781	0.018	5	781	0.018
09:00 - 10:00	5	781	0.002	5	781	0.006	5	781	0.008
10:00 - 11:00	5	781	0.002	5	781	0.005	5	781	0.007
11:00 - 12:00	5	781	0.004	5	781	0.006	5	781	0.010
12:00 - 13:00	5	781	0.003	5	781	0.004	5	781	0.007
13:00 - 14:00	5	781	0.001	5	781	0.004	5	781	0.005
14:00 - 15:00	5	781	0.005	5	781	0.005	5	781	0.010
15:00 - 16:00	<b>5</b>	<b>781</b>	<b>0.016</b>	5	781	0.002	5	781	0.018
16:00 - 17:00	5	781	0.015	5	781	0.001	5	781	0.016
17:00 - 18:00	5	781	0.013	5	781	0.002	5	781	0.015
18:00 - 19:00	5	781	0.013	5	781	0.001	5	781	0.014
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.075			0.079			0.154

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.

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**

Total People to Total Vehicles ratio (all time periods and directions): 1.57

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.107	5	781	0.483	5	781	0.590
08:00 - 09:00	5	781	0.226	<b>5</b>	<b>781</b>	<b>0.823</b>	<b>5</b>	<b>781</b>	<b>1.049</b>
09:00 - 10:00	5	781	0.188	5	781	0.204	5	781	0.392
10:00 - 11:00	5	781	0.161	5	781	0.182	5	781	0.343
11:00 - 12:00	5	781	0.170	5	781	0.182	5	781	0.352
12:00 - 13:00	5	781	0.207	5	781	0.195	5	781	0.402
13:00 - 14:00	5	781	0.201	5	781	0.180	5	781	0.381
14:00 - 15:00	5	781	0.220	5	781	0.248	5	781	0.468
15:00 - 16:00	<b>5</b>	<b>781</b>	<b>0.559</b>	5	781	0.240	5	781	0.799
16:00 - 17:00	5	781	0.460	5	781	0.241	5	781	0.701
17:00 - 18:00	5	781	0.557	5	781	0.284	5	781	0.841
18:00 - 19:00	5	781	0.462	5	781	0.262	5	781	0.724
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
<b>Total Rates:</b>			3.518			3.524			7.042

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.

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

**MULTI-MODAL CARS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.064	5	781	0.286	5	781	0.350
08:00 - 09:00	5	781	0.144	<b>5</b>	<b>781</b>	<b>0.396</b>	<b>5</b>	<b>781</b>	<b>0.540</b>
09:00 - 10:00	5	781	0.115	5	781	0.126	5	781	0.241
10:00 - 11:00	5	781	0.090	5	781	0.104	5	781	0.194
11:00 - 12:00	5	781	0.095	5	781	0.105	5	781	0.200
12:00 - 13:00	5	781	0.128	5	781	0.116	5	781	0.244
13:00 - 14:00	5	781	0.118	5	781	0.112	5	781	0.230
14:00 - 15:00	5	781	0.119	5	781	0.154	5	781	0.273
15:00 - 16:00	5	781	0.234	5	781	0.135	5	781	0.369
16:00 - 17:00	5	781	0.241	5	781	0.136	5	781	0.377
17:00 - 18:00	<b>5</b>	<b>781</b>	<b>0.342</b>	5	781	0.154	5	781	0.496
18:00 - 19:00	5	781	0.286	5	781	0.144	5	781	0.430
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.976			1.968			3.944

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.

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

**MULTI-MODAL LGVS**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.010	<b>5</b>	<b>781</b>	<b>0.029</b>	5	781	0.039
08:00 - 09:00	5	781	0.015	5	781	0.023	5	781	0.038
09:00 - 10:00	5	781	0.015	5	781	0.016	5	781	0.031
10:00 - 11:00	5	781	0.016	5	781	0.018	5	781	0.034
11:00 - 12:00	5	781	0.016	5	781	0.017	5	781	0.033
12:00 - 13:00	5	781	0.017	5	781	0.020	5	781	0.037
13:00 - 14:00	5	781	0.016	5	781	0.016	5	781	0.032
14:00 - 15:00	5	781	0.014	5	781	0.015	5	781	0.029
15:00 - 16:00	5	781	0.017	5	781	0.015	5	781	0.032
16:00 - 17:00	<b>5</b>	<b>781</b>	<b>0.030</b>	5	781	0.014	<b>5</b>	<b>781</b>	<b>0.044</b>
17:00 - 18:00	5	781	0.028	5	781	0.013	5	781	0.041
18:00 - 19:00	5	781	0.019	5	781	0.010	5	781	0.029
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.213			0.206			0.419

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.

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

**MULTI-MODAL MOTOR CYCLES**

**Calculation factor: 1 DWELLS**

**BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	781	0.001	5	781	0.002	5	781	0.003
08:00 - 09:00	5	781	0.001	<b>5</b>	<b>781</b>	<b>0.004</b>	5	781	0.005
09:00 - 10:00	5	781	0.001	5	781	0.000	5	781	0.001
10:00 - 11:00	5	781	0.002	5	781	0.002	5	781	0.004
11:00 - 12:00	5	781	0.000	5	781	0.001	5	781	0.001
12:00 - 13:00	5	781	0.001	5	781	0.001	5	781	0.002
13:00 - 14:00	5	781	0.001	5	781	0.002	5	781	0.003
14:00 - 15:00	5	781	0.001	5	781	0.000	5	781	0.001
15:00 - 16:00	5	781	0.003	5	781	0.003	5	781	0.006
16:00 - 17:00	5	781	0.002	5	781	0.001	5	781	0.003
17:00 - 18:00	5	781	0.003	5	781	0.001	5	781	0.004
18:00 - 19:00	<b>5</b>	<b>781</b>	<b>0.005</b>	5	781	0.002	<b>5</b>	<b>781</b>	<b>0.007</b>
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.021			0.019			0.040

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.

**Appendix E      Site Access/A6/Kettering Road roundabout capacity  
analysis**

Junctions 10
ARCADY 10 - Roundabout Module
Version: 10.0.4.1693 © Copyright TRL Software Limited, 2021
For sales and distribution information, program advice and maintenance, contact TRL Software: +44 (0)1344 379777 software@trl.co.uk trlsoftware.com
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

**Filename:** 07076\_A\_01\_A\_Site Access-Kettering Rd Rbt (55 ICD) - Concept Design (Full Scenario).j10  
**Path:** C:\PJA\OneDrive - Phil Jones Associates\07076 East Market Harborough\3. Technical\3.2 Modelling  
**Report generation date:** 16/02/2024 12:55:59

- »2031 Base + Committed + Dev, AM
- »2031 Base + Committed + Dev, PM

**Summary of junction performance**

	AM							PM						
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS
2031 Base + Committed + Dev														
Arm 1	D7	0.9	3.83	0.46	A	5.32	A	D8	1.5	5.57	0.61	A	4.96	A
Arm 2		1.5	8.19	0.60	A				0.2	4.48	0.19	A		
Arm 3		1.4	5.20	0.57	A				1.3	4.49	0.57	A		
Arm 4		0.8	4.53	0.44	A				1.0	4.95	0.50	A		

*Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.*

**File summary**

**File Description**

<b>Title</b>	
<b>Location</b>	
<b>Site number</b>	
<b>Date</b>	25/01/2024
<b>Version</b>	
<b>Status</b>	(new file)
<b>Identifier</b>	
<b>Client</b>	
<b>Jobnumber</b>	
<b>Enumerator</b>	PJA\shannon connolly
<b>Description</b>	

**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	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use iterations with HCM roundabouts	Max number of iterations for roundabouts
5.75						0.85	36.00	20.00		500

### 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
D7	2031 Base + Committed + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D8	2031 Base + Committed + Dev	PM	ONE HOUR	16:45	18:15	15	✓

### Analysis Set Details

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

# 2031 Base + Committed + Dev, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	5.32	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.32	A

## Arms

### Arms

Arm	Name	Description	No give-way line
1	A6 (North)		
2	Site Access		
3	A6 (South)		
4	Kettering Rd		

### Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1	7.00	7.00	0.0	25.0	55.0	38.0		
2	3.65	7.00	20.8	20.0	55.0	38.6		
3	6.00	7.00	15.1	30.0	55.0	31.6		
4	4.54	7.00	25.6	30.0	55.0	29.6		

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.649	2083
2	0.580	1722
3	0.658	2090
4	0.640	1980

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

## 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
D7	2031 Base + Committed + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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 (%)
1		ONE HOUR	✓	764	100.000
2		ONE HOUR	✓	598	100.000
3		ONE HOUR	✓	873	100.000
4		ONE HOUR	✓	579	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To				
		1	2	3	4	
From	1	0	60	631	73	
	2	215	0	102	281	
	3	519	28	0	326	
	4	227	78	274	0	

## Vehicle Mix

### Heavy Vehicle Percentages

		To				
		1	2	3	4	
From	1	0	0	4	0	
	2	0	0	0	0	
	3	4	0	0	3	
	4	1	0	2	0	

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.46	3.83	0.9	A	701	1052
2	0.60	8.19	1.5	A	549	823
3	0.57	5.20	1.4	A	801	1202
4	0.44	4.53	0.8	A	531	797

### Main Results for each time segment

#### 07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	575	144	285	1898	0.303	573	721	0.0	0.4	2.803	A
2	450	113	734	1296	0.347	448	125	0.0	0.5	4.234	A
3	657	164	426	1810	0.363	655	756	0.0	0.6	3.219	A
4	436	109	571	1614	0.270	434	510	0.0	0.4	3.087	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	687	172	341	1861	0.369	686	863	0.4	0.6	3.162	A
2	538	134	878	1213	0.443	537	149	0.5	0.8	5.318	A
3	785	196	511	1754	0.447	784	904	0.6	0.8	3.835	A
4	521	130	684	1542	0.337	520	610	0.4	0.5	3.566	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	841	210	418	1812	0.464	840	1055	0.6	0.9	3.820	A
2	658	165	1075	1098	0.599	656	182	0.8	1.5	8.082	A
3	961	240	624	1680	0.572	959	1107	0.8	1.4	5.155	A
4	637	159	837	1445	0.441	636	747	0.5	0.8	4.506	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	841	210	418	1811	0.464	841	1058	0.9	0.9	3.831	A
2	658	165	1077	1097	0.600	658	183	1.5	1.5	8.193	A
3	961	240	626	1678	0.573	961	1109	1.4	1.4	5.196	A
4	637	159	839	1443	0.442	637	749	0.8	0.8	4.527	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	687	172	342	1861	0.369	688	867	0.9	0.6	3.175	A
2	538	134	881	1211	0.444	540	150	1.5	0.8	5.386	A
3	785	196	514	1752	0.448	787	907	1.4	0.8	3.868	A
4	521	130	687	1540	0.338	522	613	0.8	0.5	3.587	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	575	144	286	1897	0.303	576	725	0.6	0.5	2.817	A
2	450	113	737	1295	0.348	451	125	0.8	0.5	4.274	A
3	657	164	429	1808	0.364	658	759	0.8	0.6	3.242	A
4	436	109	575	1612	0.270	436	513	0.5	0.4	3.103	A

# 2031 Base + Committed + Dev, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.96	A

### Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	4.96	A

## 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
D8	2031 Base + Committed + Dev	PM	ONE HOUR	16:45	18:15	15	✓

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 (%)
1		ONE HOUR	✓	907	100.000
2		ONE HOUR	✓	172	100.000
3		ONE HOUR	✓	979	100.000
4		ONE HOUR	✓	677	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	135	654	118
	2	62	0	29	81
	3	588	64	0	327
	4	130	177	370	0

## Vehicle Mix

### Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	2	0	0
	2	0	0	0	0
	3	4	0	0	1
	4	0	0	1	0

## Results

### Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.61	5.57	1.5	A	832	1248
2	0.19	4.48	0.2	A	158	237
3	0.57	4.49	1.3	A	898	1348
4	0.50	4.95	1.0	A	621	932

### Main Results for each time segment

#### 16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	683	171	458	1785	0.382	680	585	0.0	0.6	3.261	A
2	129	32	857	1225	0.106	129	282	0.0	0.1	3.282	A
3	737	184	196	1962	0.376	735	790	0.0	0.6	3.007	A
4	510	127	536	1637	0.311	508	395	0.0	0.5	3.199	A

#### 17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	815	204	549	1727	0.472	814	700	0.6	0.9	3.951	A
2	155	39	1025	1127	0.137	154	338	0.1	0.2	3.699	A
3	880	220	234	1936	0.455	879	945	0.6	0.9	3.494	A
4	609	152	641	1570	0.388	608	472	0.5	0.6	3.761	A

#### 17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	999	250	671	1647	0.606	996	857	0.9	1.5	5.525	A
2	189	47	1254	994	0.190	189	413	0.2	0.2	4.469	A
3	1078	269	287	1902	0.567	1076	1157	0.9	1.3	4.469	A
4	745	186	785	1478	0.504	744	578	0.6	1.0	4.921	A

#### 17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	999	250	673	1646	0.607	999	859	1.5	1.5	5.574	A
2	189	47	1257	993	0.191	189	414	0.2	0.2	4.480	A
3	1078	269	287	1901	0.567	1078	1159	1.3	1.3	4.490	A
4	745	186	786	1477	0.505	745	579	1.0	1.0	4.946	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	815	204	551	1726	0.473	818	703	1.5	0.9	3.988	A
2	155	39	1030	1125	0.137	155	339	0.2	0.2	3.711	A
3	880	220	235	1936	0.455	882	949	1.3	0.9	3.517	A
4	609	152	643	1568	0.388	610	474	1.0	0.6	3.781	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	683	171	461	1784	0.383	684	588	0.9	0.6	3.285	A
2	129	32	861	1223	0.106	130	283	0.2	0.1	3.296	A
3	737	184	197	1961	0.376	738	794	0.9	0.6	3.027	A
4	510	127	538	1636	0.312	510	397	0.6	0.5	3.220	A