



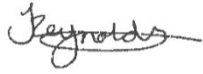
mosodi

mobility solutions through design and innovation

Proposed Commercial Development
At Houghton Main, Barnsley
Transport Assessment Rev 2

February 2022

Quality Management

Houghton Main, Barnsley Document Ref: 21034/Transport Assessment				
File reference	L:\Houghton Main, Barnsley - 21034\TEXT\REPORTS			
Issue/revision	Initial Issue	Revision 1	Revision 2	Revision 3
Remarks	Draft	Final	Final	
Date	August 2021	14th September 2021	15th February 2022	
Prepared by	J Reynolds	J Reynolds	J Reynolds	
Signature				
Checked by	K Griffiths	K Griffiths	K Griffiths	
Signature				
Authorised by	R Murphy	R Murphy	R Murphy	
Signature				

This document has been prepared for the exclusive use of the Client and unless otherwise agreed in writing by them or by Mosodi, no other party may use, make use of or rely on the contents of this document. This document cannot be assigned or transferred to any third party without the written agreement of Mosodi and the client

Contents

1. Introduction.....	2
2. Baseline Conditions.....	4
3. Proposed Development and Access Strategy.....	12
4. Site Accessibility.....	14
5. Trip Generation and Distribution.....	16
6. Traffic Flows and Development Impact.....	20
7. Summary and Conclusions.....	22

IMAGES

Image 2.1	Site Location.....	4
Image 2.2	Public Right of Way	5
Image 2.3	NCN Cycle Routes.....	6
Image 2.4	Cycle Routes.....	7
Image 2.5	Extract taken from Barnsley Bus Network Map.....	9
Image 2.6	Road Conditions 25 th March 2022.....	11
Image 5.1	Census Lower Layer Super Output Area Barnsley 006C	17

TABLES

Table 2.1	Local Bus Services.....	8
Table 2.2	Local Rail Services	9
Table 5.1	Summary of Trip Rates.....	16
Table 5.2	HGV Trip Rates	16
Table 5.3	Proposed Trip Generations	16
Table 5.4	HGV Trip Generations.....	16
Table 5.5	Proposed Vehicular Distribution	19

FIGURES

Figure 1	Site Location Plan
Figure 2	Pedestrian Accessibility
Figure 3	Cycle Accessibility

TRAFFIC FLOW FIGURES

Figure 10	AM 2017 Count
Figure 11	PM 2017 Count
Figure 12	AM 2021 Base Flows
Figure 13	PM 2021 Base Flows
Figure 14	AM 2026 Base Flows
Figure 15	PM 2026 Base Flows
Figure 16	Distribution
Figure 17	AM Development Flows
Figure 18	PM Development Flows
Figure 19	AM Committed Development
Figure 20	PM Committed Development
Figure 21a	AM 2026 Design Flows
Figure 22a	PM 2026 Design Flows

APPENDICES

Appendix A	Masterplan
Appendix B	Accident Data
Appendix C	Access Arrangement
Appendix D	Swept Path Analysis
Appendix E	Rockingham Extract – TRICS
Appendix F	Distribution
Appendix G	Pen Hill TS Extract – Base Flows
Appendix H	Pen Hill Estate TS Extract – Committed Development
Appendix I	Modelling Outputs
Appendix J	Accessibility Audit
Appendix K	Speed Survey Data

1. Introduction

1.1.1 This Transport Assessment (TA) has been prepared on behalf of Harworth to support an outline planning application on land at Houghton Main, Barnsley.

1.1.2 The revision to this TA has been prepared to address comments raised by highway officers from Barnsley Metropolitan Borough Council (BMBC) following submission of the planning application and the TA dated 14th September 2021. The additions to this TA are as follows:

- Speed survey data is included;
- Journeys to and from the Site by mode are included;
- The modelling has been updated to include separate HGV movements as opposed to Passenger Car Unit modelling. This does not materially affect the results;
- A more detailed accessibility audit has been appended to this report.

1.1.3 An illustrative layout is shown on the architects plans in Appendix A and comprises:

- Ghost island priority access from the A6195 Park Spring Road; and
- 19,837sqm of employment land (use class E/B2 and B8) Industrial.

1.1.4 The site is allocated for employment ES23 in the Barnsley Local Plan 2019 and named Land East of Park Spring Road, Houghton.

1.1.5 In order to provide flexibility for future tenants and minimise delay on any future reserved matters application, the worst case trip generation assessment will be undertaken within this report, full details of which are provided in Chapter 5.

1.1.6 This Transport Assessment (TA) has been prepared in accordance with guidance relating to transport statements prepared and issued by the Department for Communities and Local Government (DCLG).

1.1.7 Discussions with Barnsley Council have been held with Barnsley regarding the access proposals. As part of these discussions Barnsley also requested a crossing facility to the north of the access to assist public transport access to the development and this has been incorporated into the latest access arrangement. It should be noted that Mosodi have taken on this project from another consultant. Early iterations of the drawing and discussions with highway officers were completed by the previous consultant.

1.1.8 This report sets out the transport issues relating to the proposed development and identifies if any measures are required to accommodate the anticipated transport impacts of the scheme.

1.1.9 The report should be read in conjunction with the Framework Travel Plan (FTP) that also supports the application and gives a detailed description of the measures that will be implemented to achieve mode shift away from single occupancy car when compared with baseline travel surveys that will be undertaken post occupation.

1.1.10 The TA considers the sustainability of the Site, reviewing the provision and quality of facilities and connections to and from the surrounding areas. It covers a variety of topics and the document structure is as follows:

- Chapter 2 – describes the Site and the existing transport conditions including a review of accident data;
- Chapter 3 – defines the development proposals including the access strategy;
- Chapter 4 – describes the accessibility of the Site by non-car modes including accessibility to local facilities/services;
- Chapter 5 – describes the trip generations and distributions of development trips;
- Chapter 6 – describes the impact on the highway network from the Site Access; and
- Chapter 7 – summarises and concludes the report.

2. Baseline Conditions

2.1.1 This chapter describes the Site and considers the existing conditions on the surrounding highway network for a range of transport modes. It also includes a review of accident data.

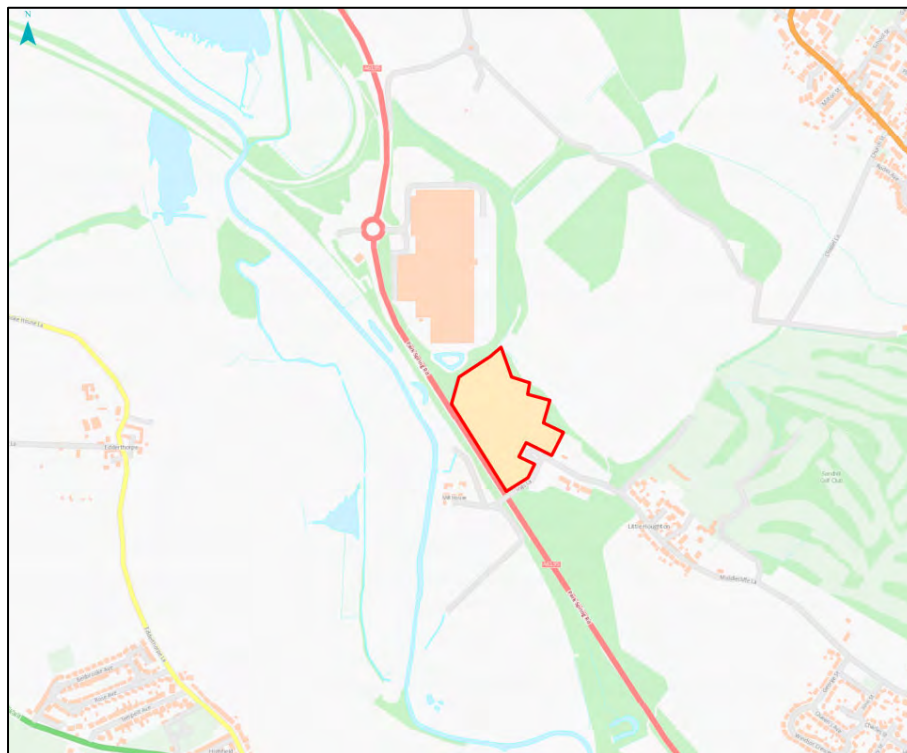
2.2 Existing Site

2.2.1 The Site is located to the south of GXO Logistics/ASOS warehouse and is bordered to the west by Park Spring Road (A6195) and to the south by Ings Lane, accessed from the west via a bridge over Park Spring Road (A6195).

2.2.2 The Site is approximately 7km east of Barnsley, 13km north of Rotherham and 16km west of Doncaster.

2.2.3 The Site in relation to the strategic and local transport networks is shown on Figure 1, an extract of which is shown in Image 2.1.

Image 2.1 Site Location



2.2.4 The existing site is undeveloped and therefore there is no provision of age related infrastructure or provision for disabled access.

2.2.5 The existing site is undeveloped and therefore there is no provision for mobility impaired people including tactile paving, way finding, disabled parking, lifts etc.

2.3 Existing Local Highway Network

2.3.1 Park Spring Road (A6195) bounds the Site to the west and is a single carriageway road with a lane running in each direction.

2.3.2 Park Spring Road (A6195) has a width of 7.3m with a shared footway/cycleway is provided parallel to the west of the northbound carriageway

to a width of 2.1m, which is separated from the carriageway by a 1.5m verge. The road is subject to a speed limit of 60mph along the site frontage.

2.3.3 Approximately 430m to the north west of the site, Park Spring Road (A6195) joins the ASOS Barnsley access via a roundabout junction. A dropped kerb crossing with a pedestrian refuge island is provided on Park Spring Road (A6195) at the roundabout give way line.

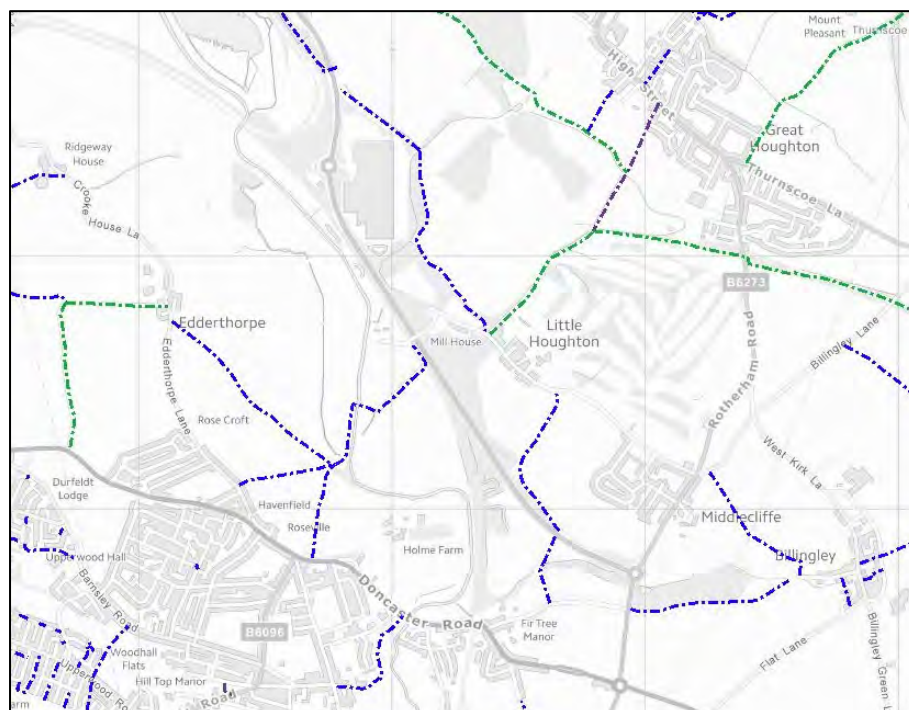
2.3.4 Located approximately 1.2km to the south east of the site, Park Spring Road (A6195) joins Rotherham Road via a roundabout junction. A dropped kerb crossing with a pedestrian refuge island is provided on Park Spring Road (A6195) at the roundabout give way line.

2.4 Public Rights of Way

2.4.1 Image 2.2 below shows an image of the extract of the Public Rights of Way map taken from Barnsley Metropolitan Borough Council's (BMBC) website. Footpaths are shown in blue and bridleways in green.

2.4.2 The image shows that a public footpath runs along the eastern boundary of the proposed development site. Where possible the design team have sought to ensure that the public rights of way can be accommodated without the need for realignment. No defined public rights of way are affect by the proposed development.

Image 2.2 Public Right of Way



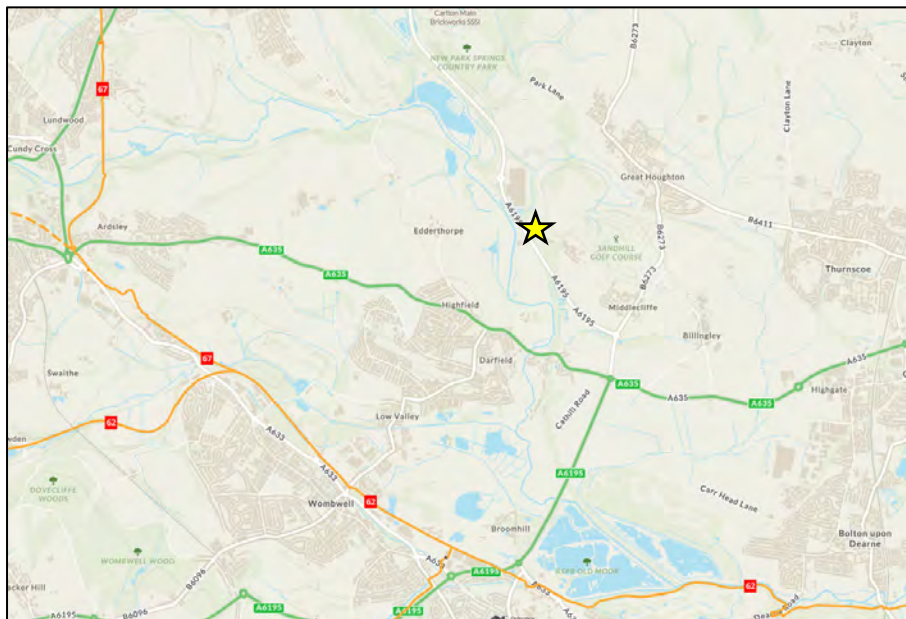
2.5 Cycle Infrastructure

2.5.1 The National Cycle Network (NCN) Route 62 is approximately 3.6km to the south of the Site, it connects Fleetwood in Lancashire with Selby in North Yorkshire, forming the west and central sections of the Transpennine Trail.

2.5.2 Located approximately 4.6km to the west of the Site is NCN Route 67 which connected runs from Long Whatton near Loughbrough and joins Route 71 near Northallerton in Yorkshire, forming a main route of the Transpennine Trail (central).

2.5.3 Image 2.3 shows the Site (yellow star) in relation to the existing national cycle network.

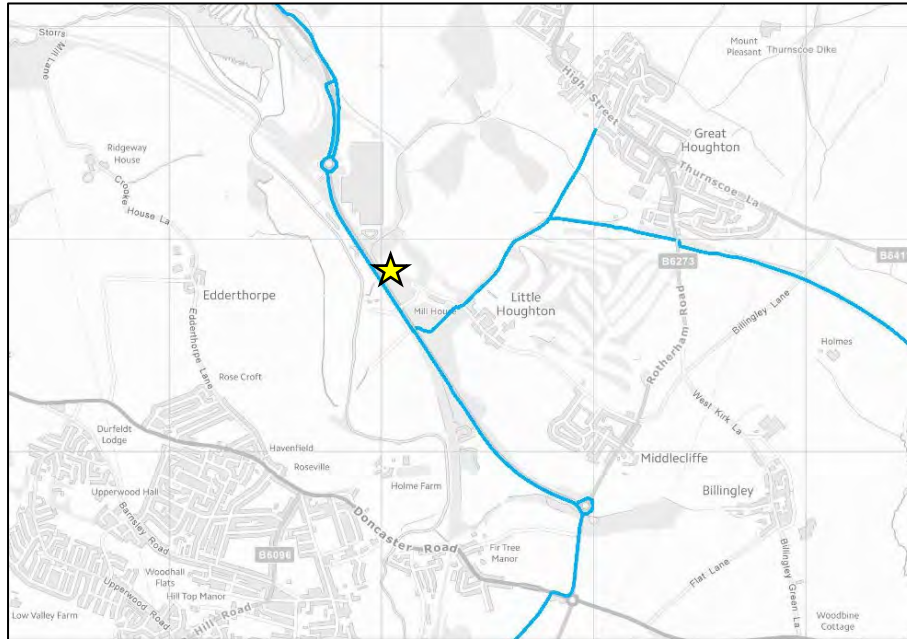
Image 2.3 NCN Cycle Routes



2.5.4 In addition to the NCN, Barnsley have a network of cycle infrastructure. Image 2.4 shows an extract of a map taken from Barnsley Metropolitan Borough Council website showing the cycle infrastructure within the vicinity of the Site.

2.5.5 The blue line shows existing local cycle routes which includes Park Spring Road (A6195) running along the western boundary of the proposed development site.

Image 2.4 Cycle Routes



2.6 Existing Bus Services/Facilities

2.6.1 There are a number of bus services operating within the vicinity of the Site, with the nearest stop provided along the southern boundary of the site on Middlecliffe Lane. The development proposals will enhance access to this stop.

2.6.2 A further bus stop is located approximately 300m north of the Site along Park Spring Road. It is proposed as part of the development access proposals that new bus stops will be provided thereby enhancing access to public transport. This is discussed in subsequent sections of this report.

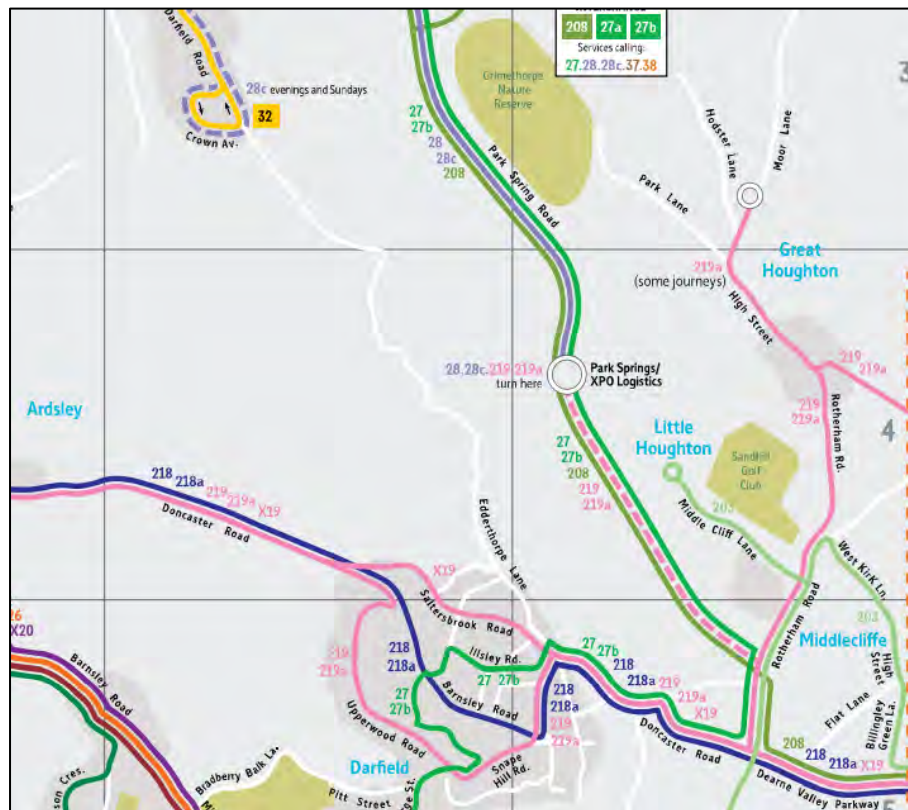
2.6.3 The services available at the nearest stops are summarised in Table 2.1.

Table 2.1 Local Bus Services

Location	Stop ID	Distance	Facilities	Regular Destinations	Service Numbers	Approx. Frequency
Middlecliffe Lane	37055110	5m from boundary edge	Pole	Wombwell, Doncaster Town Centre, Thurnscoe	203, 449	8 per day
Park Spring Road (northbound)	37056050	300m	Seating, Shelter & Timetable	Barnsley Town Centre	4, 27, 27a, 27b, 208, 219, 219a	2 per hour
Park Spring Road (southbound)	37056049	500m	Shelter, Seating & Timetable	Wombwell	27, 27a, 27b, 28, 28c, 208	4 per hour

2.6.4 The existing bus service network is shown in Image 2.5.

Image 2.5 Extract taken from Barnsley Bus Network Map



2.6.5 These services provide regular connections to Barnsley, Doncaster and Wombwell.

2.7 Existing Rail Services/Facilities

2.7.1 Thurnscoe Rail Station and Goldthorpe Rail Station are located approximately 4km east and south east respectively of the proposed Site.

2.7.2 The typical service frequency and facilities are shown in Table 2.2.

Table 2.2 Local Rail Services

Station	Facilities	Regular Destinations	Approx. Combined Frequency
Thurnscoe	Step Free Access, Ticket Machine, 8 cycle spaces with shelter and CCTV and 60 car parking spaces	Leeds, Doncaster & Sheffield	2 per hour
Goldthorpe	Step Free Access and Ticket Machine	Leeds, Doncaster & Sheffield	2 per hour

2.8 Existing Accident Data Analysis

2.8.1 Personal injury accident data has been obtained from crashmap.co.uk for the five year period between January 2016 and December 2020 for the highway network in the vicinity of the Site. The accident data obtained is attached in Appendix B.

2.8.2 For the five year period, there have been a total of seven accidents, four of which were slight, three were serious, and no fatal accidents occurred. All incidents occurred along Park Spring Road (A6195) between the roundabout junction north of the Site (GXO Logistics/ASOS access) and the roundabout junction south of the site (A6195/B6273)

2.8.3 Of the three serious incidents, two occurred as a result of poor manoeuvres, namely overtaking along the stretch of the A6195. One incident, which occurred at the GXO Logistics/ASOS roundabout junction, did not provide sufficient evidence to assume the cause of the incident.

2.8.4 Of the four slight incidents, one occurred from misjudging stopping distance, one from hitting the kerb and one from a poor manoeuvre at a roundabout. An incident at the GXO Logistics/ASOS roundabout did not provide sufficient to assume the cause of incident.

2.8.5 Whilst any accident is regrettable having reviewed the accidents in detail there is no evidence to suggest a common cause or that any accidents have been attributed to the highway layout, based on the information available.

2.9 Speed Survey Analysis

2.9.1 A speed survey was undertaken in accordance with Design Manual for Road and Bridges CA 185 that recorded the following speeds approaching the location of the proposed junction.

2.9.2 Surveys were undertaken on Thursday 24th and Friday 25th February 2022 using radar.

2.9.3 To calculate the 85th percentile speed a sample of 200 readings in each direction was taken on 25th March 2022 commencing at 13:00 hours when the road surface was dry as shown in the image below.

Image 2.6 Road Conditions 25th March 2022



2.9.4 This raw survey data is attached at Appendix K along with the extracted 85th percentile speed which show the following recorded dry weather 85th percentile design speeds:

- Northbound 50.8 mph; and
- Southbound 53.4 mph.

2.9.5 The speed surveys extract shows that the recorded design speed is less than the plated speed limit which has been used for the design of the proposed access.

2.9.6 The full data for the Friday shows the following dry weather 85th percentile design speeds:

- Northbound 50.6 mph; and
- Southbound 54.2 mph.

3. Proposed Development and Access Strategy

3.1 Development Proposals

3.1.1 The proposed layout is shown on the architects plans in Appendix A and comprises:

- Ghost island priority access from the A6195 Park Spring Road; and
- 19,837sqm of employment land (use class B1/B2 and B8) Industrial.

3.2 Pedestrian/Cycle Access

3.2.1 Pedestrian/cycle access to the Site will be provided via the main vehicular access along the proposed footways as shown in Appendix A.

3.2.2 Two pedestrian refuge crossing points of the A6195 will be provided as part of the access proposals and will connect to the existing footway/cycleway.

3.2.3 A footway/cycleway connection will also be provided to Middlecliff Lane.

3.3 Vehicular Site Access

3.3.1 The access is to be provided via a ghost island priority junction onto Park Spring Road, to a width of 7.3m with widening on the approach to the junction. The entry radius is provided at 22m and the exit radius at 15m. Through lanes of 3.5m and the turning lane width of 3.25m. The design is in accordance with CD123 of DMRB.

3.3.2 Footpaths are to be provided on either side of the access junction to link into the existing footways on the western side of Park Spring Road, to a width of 2m.

3.3.3 Visibility Splays in accordance with DMRB at 4.8m x 215m are demonstrated in the drawing contained in Appendix C.

3.3.4 Two bus stop laybys are to be incorporated into the access arrangements with the southbound stop provided some 100m south of the access and the northbound layby provided some 65m north of the access.

3.3.5 A swept path drawing showing the acceptable tracking of the largest expected vehicle (16.5m max legal artic) at the Site access is shown in the drawing in Appendix D.

3.4 Internal layout

3.4.1 The internal highways will be provided with a 7.3m carriageway and 2m footways to both sides where demand is expected.

3.4.2 A swept path drawing showing the acceptable tracking of the largest expected vehicle (16.5m max legal artic) on the internal layout is shown in the drawing in Appendix D.

3.4.3 It is proposed to amend the bus turning area on Middlecliffe Lane to a more efficient arrangement as shown on the masterplan. Discussions have been sought with SYPTe without success, however it is anticipated that discussions will be held over this amendment to the turning area.

3.4.4 The turning area is adopted highway with the sub soil being owned by Harworth and will require stopping should planning permission be granted.

3.4.5 The bus turning head currently accommodates just 8 buses a day, the redesign allows for a bus to be parked and another vehicle to pass. This is shown on the attached masterplan.

3.5 Parking Provisions

3.5.1 It should be recognised from the outset that the masterplan attached at Appendix A is an indicative layout and that the plot sizes, building footprint locations and the land uses classifications of the various plots will be subject to on-going reserved matters applications that will be determined by market forces. The purpose of developing a masterplan at this stage is to illustrate how the proposed development layout may look in the future.

3.5.2 Parking provision will be considered at reserved matters stage with age related parking being considered if the use class applied for determines this as appropriate however the illustrative masterplan shows that the development is of appropriate proportions that the necessary parking can be accommodated for a variety of use classes.

3.5.3 All reserved matters applications will consider access for mobility impaired people including tactile paving, way finding, disabled parking, lifts etc.

4. Site Accessibility

4.1.1 The principle of sustainable development was accepted within the allocation of the Site. Details of the accessibility of the Site are set out below for information.

4.2 Pedestrian Accessibility

4.2.1 The residential design guide “Manual for Streets” (MfS) advises that “walkable neighbourhoods are typically characterised by having a range of facilities within ten minutes (up to about 800m) walking distance of residential areas...” (ref para 4.4.1). However, this is not regarded as an upper limit in MfS and reference is also made to walking offering “the greatest potential to replace short car trips, particularly those under 2km”. The acceptability of walking trips up to 2km (an approximate 25 minute walk time) is also supported in the CIHT document ‘Providing for Journeys on Foot’.

4.2.2 Using GIS Network Analyst software typical walk times (up to 30 mins) from the proposed Site centre to specific local facilities situated in close proximity to the proposed Site are shown on Figure 2. This figure demonstrates that:

- Little Houghton is within a 5 minute walk distance;
- Great Houghton is within a 30 minute walk distance via a Bridleway; and,
- Darfield is within a 25 minute walk distance of the Site via a footpath.

4.2.3 There are a number of local facilities within the villages of Little Houghton, Great Houghton and Darfield. It is therefore concluded that the proposed Site will have accessibility by foot to a number of local services including supermarkets and a local workforce in and around the local area.

4.2.4 An enhanced walking accessibility audit has been completed and is provided in Appendix J.

4.3 Accessibility by Cycle

4.3.1 An acceptable and comfortable distance for general cycling trips is considered to be up to 5 kilometres as referred to in Local Transport Note 2/08 (published by the Department for Transport (DfT)). However, the same guidance also refers to commuting cycle trips up to 8km. Using GIS Network Analyst software typical cycle times (with 20 mins approximating to just over a 5km distance) from the Site are shown on Figure 3. This figure shows that:

- A number of local residential areas (Darfield, Wombwell and Goldthorpe) are accessible within a 5-30 minute journey time;
- The Site is located within a 25 minute cycle ride to Thurnscoe Rail Station and Bolton-upon-Deane Rail Station;
- The Site is located within a 20 minute cycle ride to Goldthorpe Rail Station;
- The Site is located within a 30 minute cycle ride to Wombwell Rail Station; and
- The Site is located within a 25 minute cycle distance of the National Cycle Network, providing access throughout the region and further afield.

4.3.2 It is also considered that those more active will choose to cycle further than this guideline distance.

4.3.3 It is therefore concluded that the proposed Site, will provide cycle accessibility to a range of local services and facilities within a 30 minute cycle ride. With many of the routes used, part of the national cycle network.

4.3.4 An enhanced cycling accessibility audit has been completed and is shown in Appendix J.

4.4 Accessibility by Bus

4.4.1 As detailed in Chapter 2 there are several bus services offering frequent services within close proximity to the Site.

4.4.2 The nearest stop is provided along the southern boundary of the site on Middlecliffe Lane. Further bus stops are proposed to be located on the Site frontage within new laybys on Park Spring Road as shown on 21034.GA.101 attached at Appendix C

4.4.3 The local bus stops provide frequent services to key local hubs including Doncaster and Barnsley town centres and Wombwell.

4.4.4 It is therefore concluded that the proposed Site, will provide excellent bus accessibility to a range of local services within a 20-minute bus ride.

4.5 Accessibility by Rail

4.5.1 Thurnscoe Rail Station and Goldthorpe Rail Station are located approximately 4km east and south east respectively of the proposed Site and within a 25 minute cycle ride. The stations provide access to Leeds, Sheffield and Doncaster.

4.5.2 Thurnscoe Rail Station provides a range of facilities including cycle storage and 60 car parking spaces.

4.5.3 It is therefore concluded that the proposed Site will have access to Thurnscoe Station and Goldthorpe Rail Station and will provide an opportunity for future employees to travel by rail and assist in reducing the need to travel by car.

5. Trip Generation and Distribution

5.1.1 In order to understand the impact this development will have on the local highway network an assessment has been undertaken based on agreed trip rates and distributions from the recently approved Rockingham development in Hoyland.

5.2 B2 Trip Rate

5.2.1 The trip rates for the development have been taken from the approved B2 trip rates within the Transport Assessment (page 23) produced by Mosodi for the Rockingham Phase 2 and 3 development (extract attached in Appendix E).

5.2.2 Table 5.1 shows the total vehicular trip rates and Table 5.2 shows the HGV trip rate for the AM and PM peak hour period.

Table 5.1 Summary of Trip Rates

	B2 Total Vehicular Trip Rates (per 100m2) GFA		
	Arrivals	Departures	Total
AM Peak	0.211	0.059	0.270
PM Peak	0.067	0.194	0.261

Table 5.2 HGV Trip Rates

	B2 Total HGV Trip Generations (per 100m2) GFA		
	Arrivals	Departures	Total
AM Peak	0.025	0.026	0.051
PM Peak	0.006	0.002	0.008

5.3 B2 Trip Generations

5.3.1 By multiplying the trip rates set out in Tables 5.1 and 5.2 by 198.37 (total floor space of 19,837sqm divided by 100 as the trip rates are per 100sqm) results in the proposed Total Development Traffic as set out in Table 5.3 and 5.4.

Table 5.3 Proposed Trip Generations

	B2 Total Vehicular Trip Generations (per 100m2) GFA		
	Arrivals	Departures	Total
AM Peak	42	12	54
PM Peak	13	38	52

Table 5.4 HGV Trip Generations

	B2 Total HGV Trip Generations (per 100m2) GFA		
	Arrivals	Departures	Total
AM Peak	5	5	10
PM Peak	1	0	2

5.4 Trip Generations by Mode

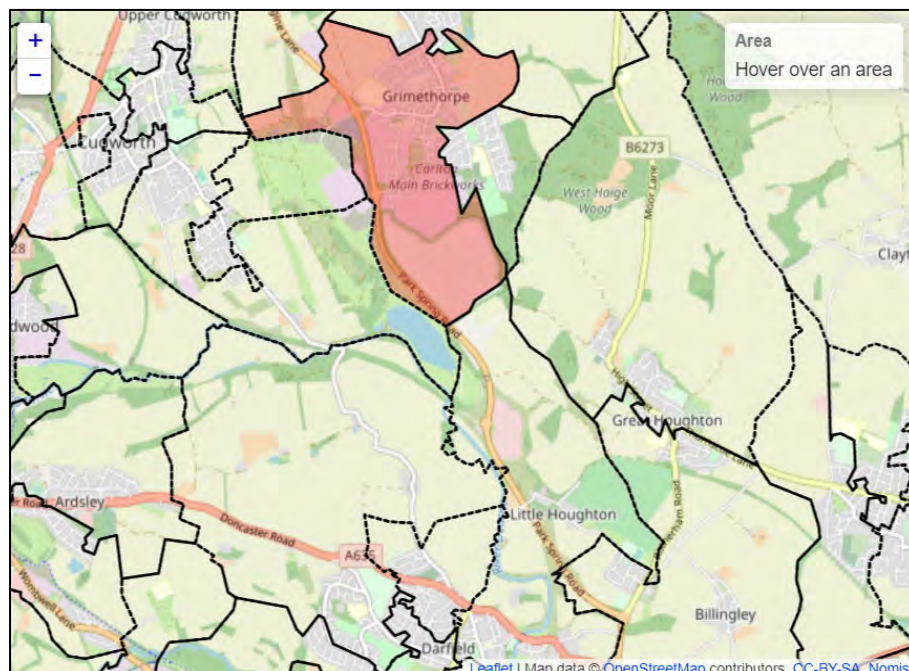
5.4.1 To establish the trip generations by mode for the development the 2011 Census Data has been interrogated for the area of Barnsley 006C Middle Layer Super Output Area as shown in image 5.1, which is considered to reflect the proposed Site characteristics, it shows it covers the residential areas to the east and south of the proposed Site.

5.4.2 The census mode splits for the selected area is shown in Table 5.5.

Table 5.5 Mode Split – Barnsley 006C

Method of Travel to Work	Total Residents	Percentage
Public Transport	215	7.53%
Taxi	10	0.35%
Motorcycle, scooter or moped	29	1.02%
Driving a car or van	2,032	71.17%
Passenger in a car or van	232	8.13%
Bicycle	25	0.88%
On foot	312	10.93%
Total	2,855	100%

Image 5.1 Census Lower Layer Super Output Area Barnsley 006C



5.4.3 Having established the total vehicular trip generations and the census modal split for existing residents, it is possible to calculate the number of trips by mode. To calculate trips by mode the total vehicular arrivals and departures have been multiplied by a factor of the Car/Van Driver and the modal splits shown in Table 5.5.

5.4.4 The resulting predicted number of development trips by different modes is shown in Tables 5.5 and 5.6 for the AM and PM peaks.

Table 5.6 AM Peak Multi Modal Trip Generations

Trip Type	Arrivals	Departures	Total
Public Transport	3	1	4
Taxi	0	0	0
Motorcycle, scooter or moped	0	0	0
Driving a car or van	33	9	42
Passenger in a car or van	4	1	5
Bicycle	0	0	0
On foot	5	1	6
Total	46	13	59

Table 5.7 PM Peak Multi Modal Trip Generations

Trip Type	Arrivals	Departures	Total
Public Transport	1	3	4
Taxi	0	0	0
Motorcycle, scooter or moped	0	0	1
Driving a car or van	10	30	40
Passenger in a car or van	1	3	5
Bicycle	0	0	0
On foot	2	5	6
Total	14	42	56

5.5 Trip Distribution and Assignment

5.5.1 Having established the development traffic distribution using the 2011 Census Data, an assignment exercise has been completed to predict the assignment of these trips onto the highway network.

5.5.2 Application of the journey to work data is considered appropriate for determining the peak hour distribution for the AM and PM Peak.

5.5.3 Having established the geographic distribution of all employee trips from the selected census output areas it is then necessary to assign the 'Car Driver' only distributions to the highway network. This has been completed by associating the destination to a route from the proposed site.

5.5.4 The routes that the car drivers would be most likely to take between their home and the proposed development have then been predicted using a journey time exercise with the quickest route being deemed the most likely.

5.5.5 The vehicular distribution is summarised in Table 5.8. The full assignment process is detailed in the attached Spreadsheet in Appendix F.

Table 5.8 Proposed Vehicular Distribution

Route	Percentage
Park Spring Road North	65.61%
Park Spring Road South	34.39%
Total	100%

5.5.6 The proposed distribution for the Site is shown in Figure 16, applying the trip generations in Table 5.3 and 5.4 to the distributions produced the following figures:

- Figure 17 – AM Peak Hour Development Trip Generations; and
- Figure 18 – PM Peak Hour Development Trip Generations.

6. Traffic Flows and Development Impact

6.1 Introduction

6.1.1 This chapter sets out the traffic flow assumptions and provides an assessment of the development traffic impact on the existing highway network. It also includes an assessment of the impact of the development traffic on the local highway network.

6.2 Base Traffic Flows (2017-2021)

6.2.1 The base traffic flows have been extracted from the SCP Transport Assessment produced for a proposed employment site extension at Pen Hill Estate, Barnsley (January 2021). These manual classified count surveys were undertaken on 8th November 2017, and are attached in Appendix G.

6.2.2 The traffic count flows for 2017 AM and PM are shown in Figures 10 and 11 respectively.

6.2.3 To gain the 2021 base traffic flows, traffic growth rates, between 2017 and 2021, have been obtained from TEMPro using the Barnsley 006 area and these values are as follows:

- 2017-2021 AM growth rate of 1.0782; and
- 2017-2021 PM growth rate of 1.0763.

6.2.4 The 2021 base traffic flows have then been calculated by applying the TEMPro growth factors to the 2017 counts, these future flows are shown in Figures 12 and 13 for the AM and PM Peak hours.

6.3 Future Assessment Year and Traffic Growth

6.3.1 Traffic growth is based on a combination of proposed future developments, car ownership and changing attitudes in the way people use and have access to their vehicles.

6.3.2 A development design year of 2026 is proposed in order to provide sufficient time for construction and occupation of the Site.

6.3.3 Traffic growth rates, between 2021 and 2026, have been obtained from TEMPro v7.2 using the Barnsley 006 area and these values are as follows:

- 2021-2026 AM growth rate of 1.0579; and
- 2021-2026 PM growth rate of 1.0593.

6.3.4 The 2026 base traffic flows have then been calculated by applying the TEMPro growth factors to the 2021 flows, these future flows are shown in Figures 14 and 15 for the AM and PM Peak hours.

6.4 Committed Development

6.4.1 Following a search of the planning application portal only one committed development scheme was considered to have a material impact on the base traffic flows.

6.4.2 Pen Hill Estate Grimethorpe is currently within the planning process (Ref: 2020/1032) and has not yet achieved approval for an extension to an industrial Estate. The trips associated with this development have been taken from the Transport Assessment produced by SCP. An extract of the flows is attached in Appendix H. The consented trips have been distributed across the network for the AM and PM Peak period and are shown in Figures 19 and 20 respectively.

6.5 Design Traffic Flows

6.5.1 Adding the proposed development trips as described in Chapter 5 and shown in Figures 17 and 18 to the 2026 Base traffic flows and Committed Development flows produces the design traffic flows, these are shown diagrammatically in Figures 19 and 20 for the AM and PM peak respectively.

6.6 Capacity Assessment of Site Access

6.6.1 The proposed ghost island priority junction attached at Appendix C onto Park Spring Road has been modelled to assess the impact of the development using the PICADY function in the Junctions 9 software for the 2026 design scenario. As requested by BMBC the percentages breakdown of HGV's has been put into the modelling, and the figures are shown in the attached updated Figures 21a and 22a.

6.6.2 The full outputs are available in Appendix I and are summarised in Table 6.1.

Table 6.1 Summary of Modelling Outputs

Scenario	Lane	AM Peak Hour		PM Peak Hour	
		RFC	Ave Q	RFC	Ave Q
2026 Design	Site Access – Left Turn	0.01	0.0	0.03	0.0
	Site Access – Right Turn	0.03	0.0	0.08	0.1
	Park Spring Road - Right Turn	0.03	0.0	0.01	0.0

6.6.3 A Ratio of Flow to Capacity value below 0.85 indicates that a junction or arm operates within its predicted capacity. An RFC value between 0.85 and 1.00 indicates that there may be occasions during the period modelled when queues will develop, and delays will occur. An RFC value greater than 1.00 indicates that the junction or arm operates beyond its theoretical capacity.

6.6.4 Table 6.1 demonstrates that the junction operates with significant spare capacity in both the AM and PM peak, with no queuing on the network predicted.

7. Summary and Conclusions

7.1.1 Mosodi have been appointed by Harworth to produce this Transport Assessment (TA) in support of a planning application for an employment development at a Site located to the east of the A6195 Park Spring Road.

7.1.2 The proposed layout is shown on the architects plans in Appendix A and comprises:

- Ghost island priority access from the A6195 Park Spring Road; and
- 19,837sqm of employment land (use class E/B2 and B8) Industrial.

7.1.3 The site is an Employment allocation site reference ES23 in the Barnsley Local Plan 2019 and named Land East of Park Spring Road, Houghton.

7.1.4 Access is to be provided via a ghost island priority junction onto Park Spring Road in accordance with CD123 of DMRB. The drawing in Appendix C demonstrates that the required visibility splays of 4.5m X 215m can be achieved. As part of the proposals, two uncontrolled crossings of Park Spring Road and two bus stop laybys are proposed.

7.1.5 A review of the Public Right of Way information shows that there are no public rights of way which impact the proposed Site.

7.1.6 A detailed assessment of the accessibility of the site has been completed in Chapter 4 concluding the following:

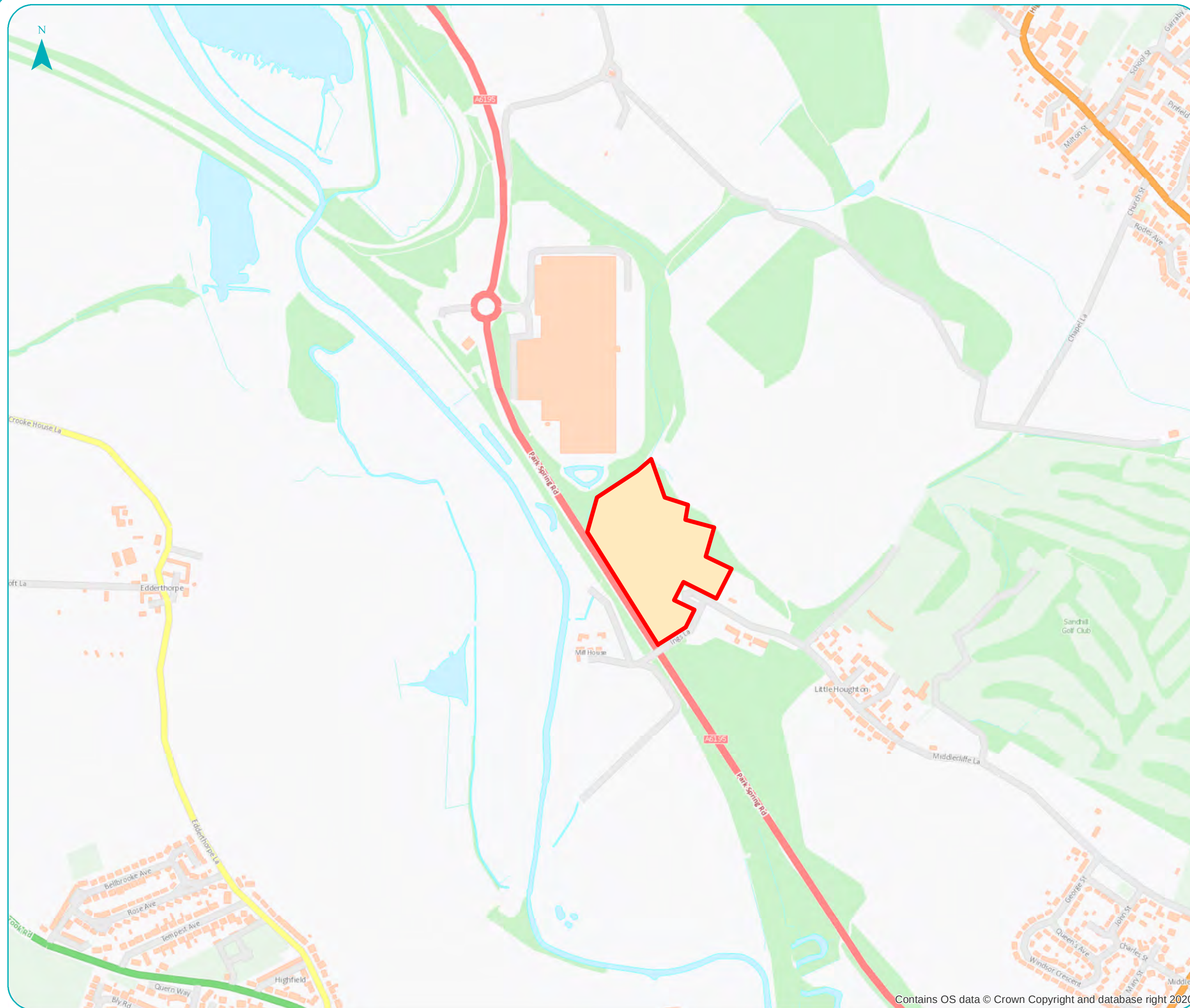
- Residential areas of Little Houghton, Great Houghton and Darfield are within a 25 minute walk distance;
- The Site is located within a 25 minute cycle ride to Thurnscoe Rail Station and Bolton-upon-Deane Rail Station;
- The Site is located within a 20 minute cycle ride to Goldthorpe Rail Station;
- The Site is located within a 30 minute cycle ride to Wombwell Rail Station;
- The Site is located within a 25 minute cycle distance of the National Cycle Network, providing access throughout the region and further afield; and,
- Three bus services are located within close proximity of the proposed Site.

7.1.7 It is therefore concluded that the proposed Site will provide accessibility by foot, cycle and public transport to a large residential population to supply a future workforce at the Site. The proposed development is also supported by a travel plan. An enhanced walking and cycling audit has been carried out and is available in Appendix J.

7.1.8 The distribution and assignment of potential development traffic shows that the increase in traffic is negligible beyond the Site access junction. Capacity assessments have demonstrated that the development traffic can be comfortably accommodated by the proposed Site access junction.

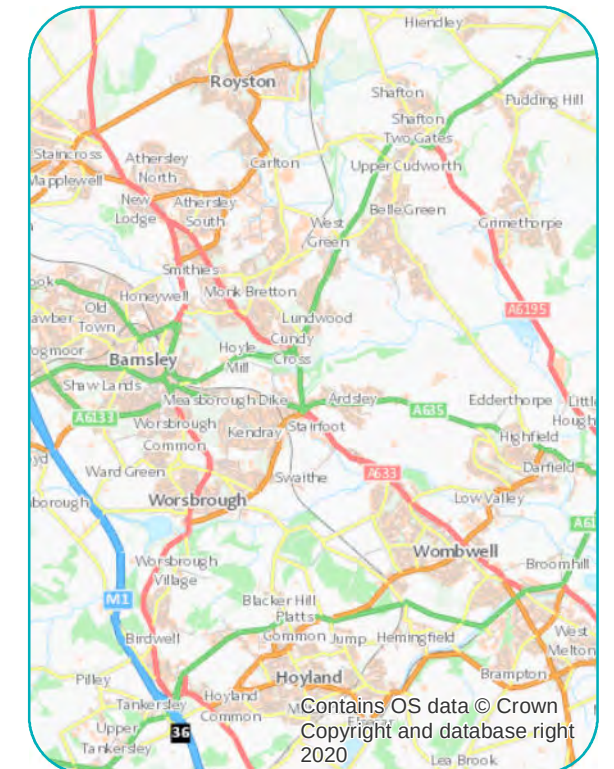
7.1.9 From the work undertaken it is concluded that there are no reasons on highways or transport grounds why the development Site should not be granted planning permission for employment purposes.

Figures



Key

 Site boundary



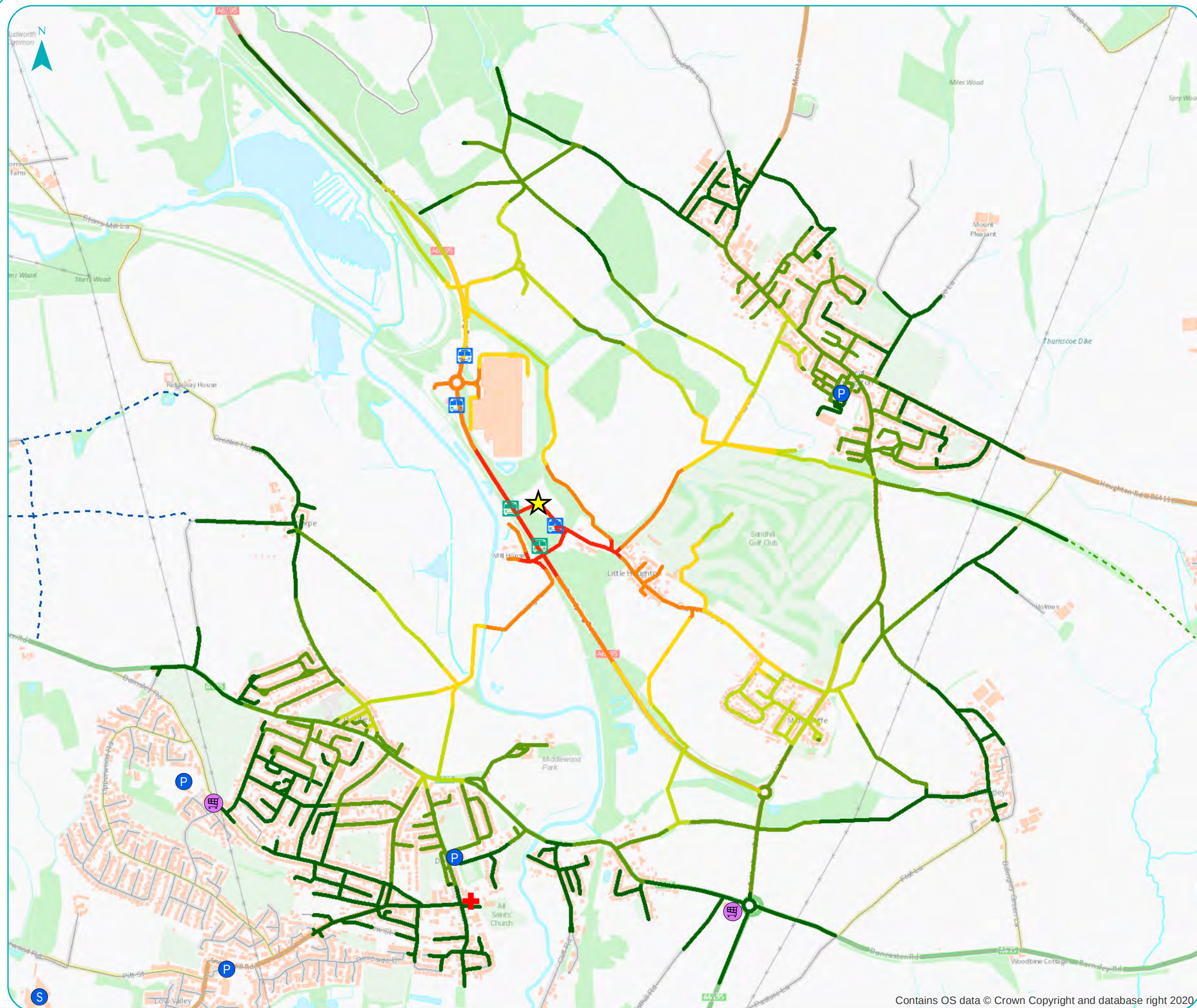
Houghton Main, Barnsley
Commercial Development
Site Location Plan

Figure 1

Scale @ A3 1:7,500

mosodi
mobility solutions through design and innovation

Contains OS data © Crown Copyright and database right 2020



Key

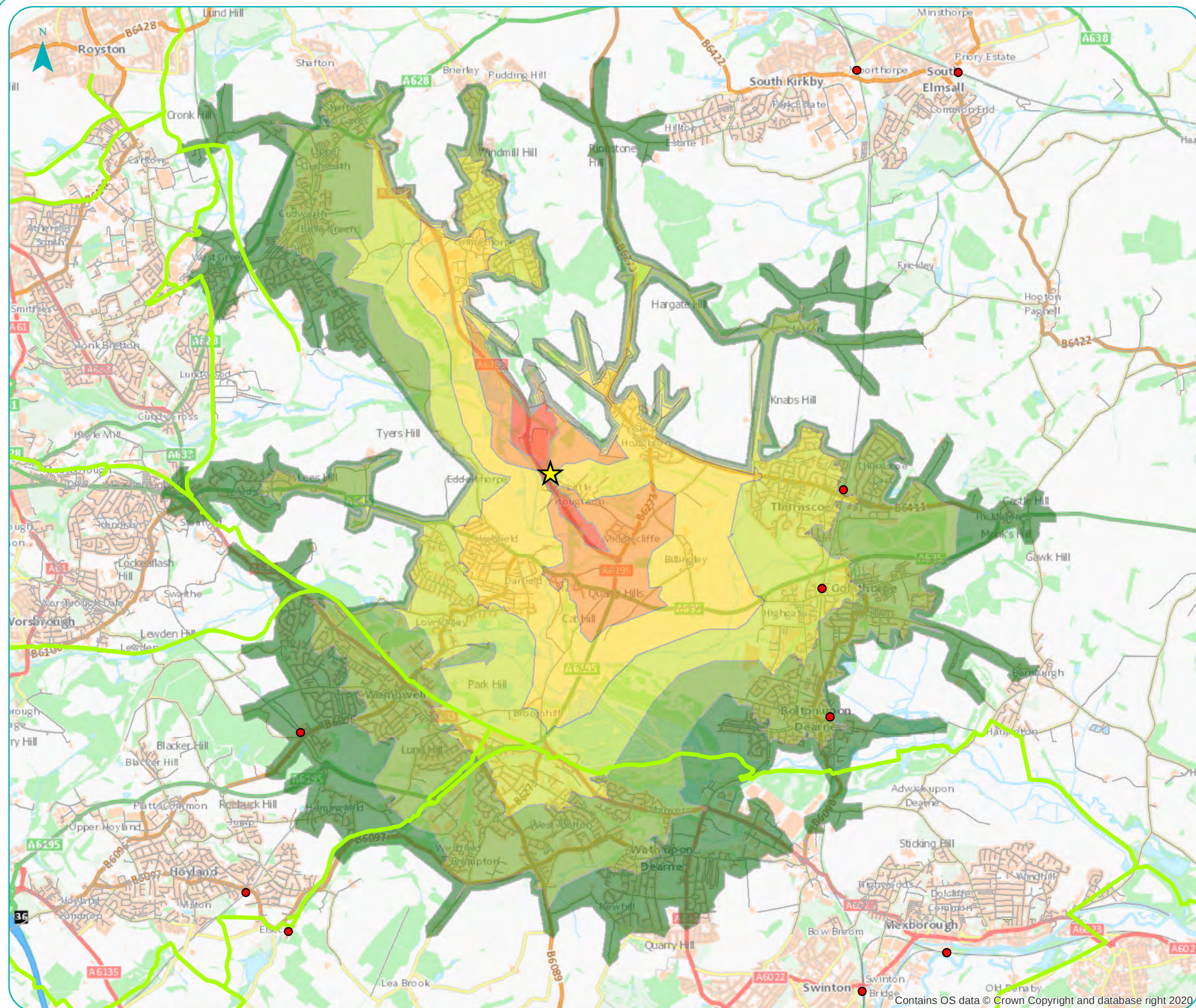
- ★ Site location
- Bridleway
- PRoW
- Bus stops
- Proposed Bus Stops
- Supermarkets
- GP
- Schools
 - All Through
 - Nursery
 - Primary
 - Secondary
 - College
- Pedestrian Accessibility (4.8kph)
 - 0-5 minutes
 - 5-10 minutes
 - 10-15 minutes
 - 15-20 minutes
 - 20-25 minutes
 - 25-30 minutes

Houghton Main, Barnsley
Commercial Development
Pedestrian Accessibility

Figure 2

Scale @ A3 1:15,000

mosodi
mobility solutions through design and innovation



Key

-  Site location
 Railway Stations
 National Cycle Network
 Cycle Accessibility (16kph)
 0-5 minutes
 5-10 minutes
 10-15 minutes
 15-20 minutes
 20-25 minutes
 25-30 minutes

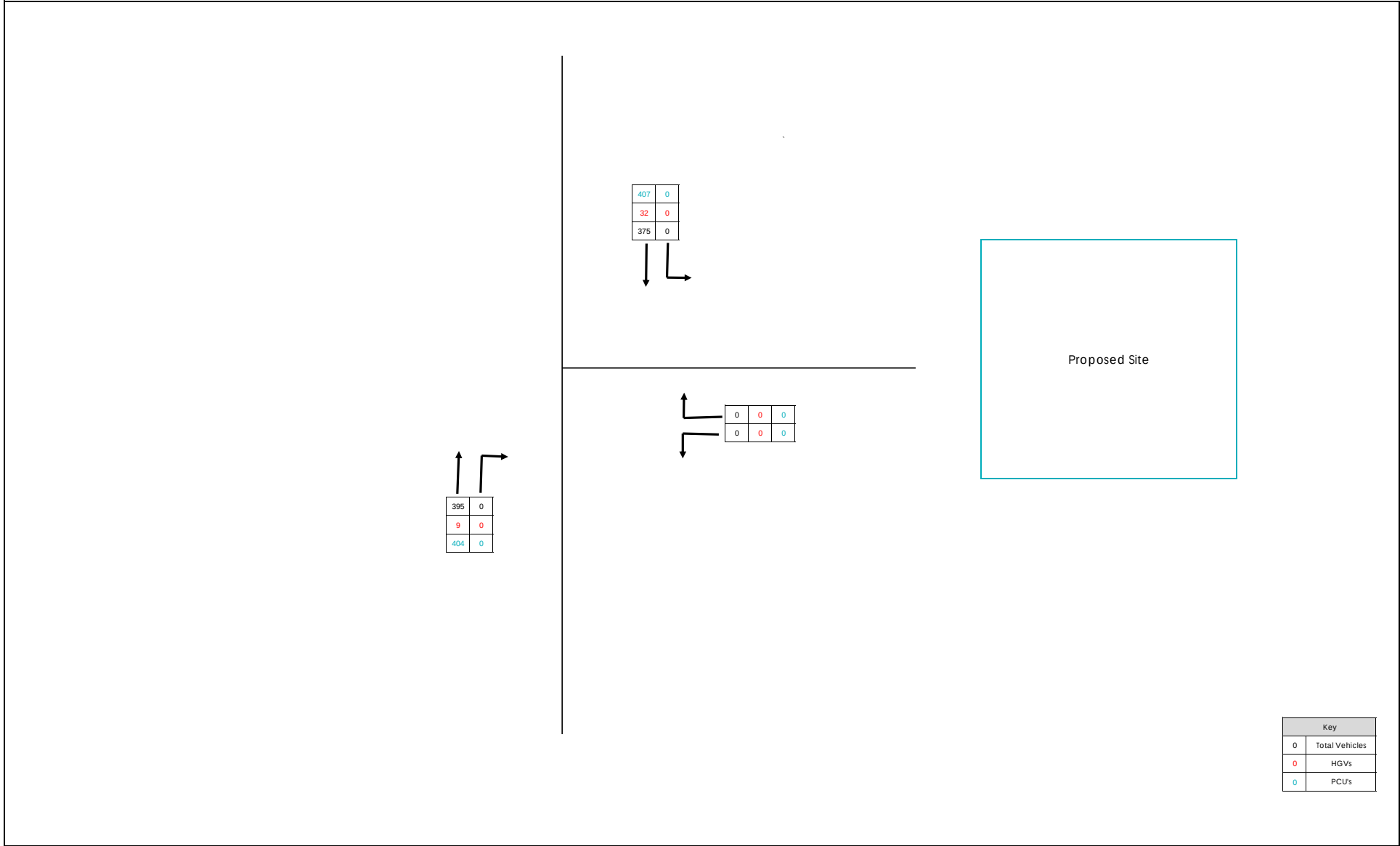
Houghton Main, Barnsley Commercial Development Cycle Accessibility

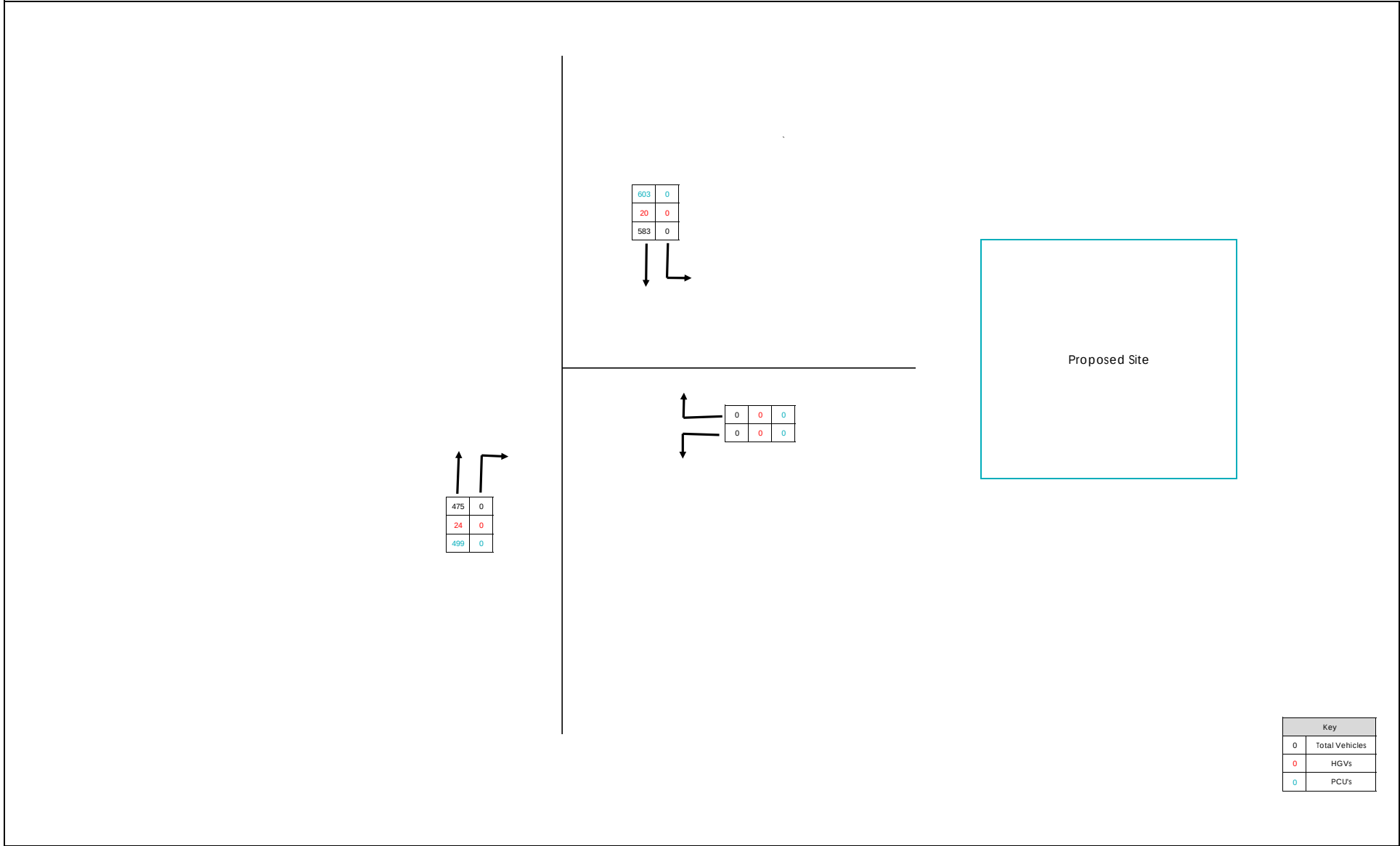
Figure 3

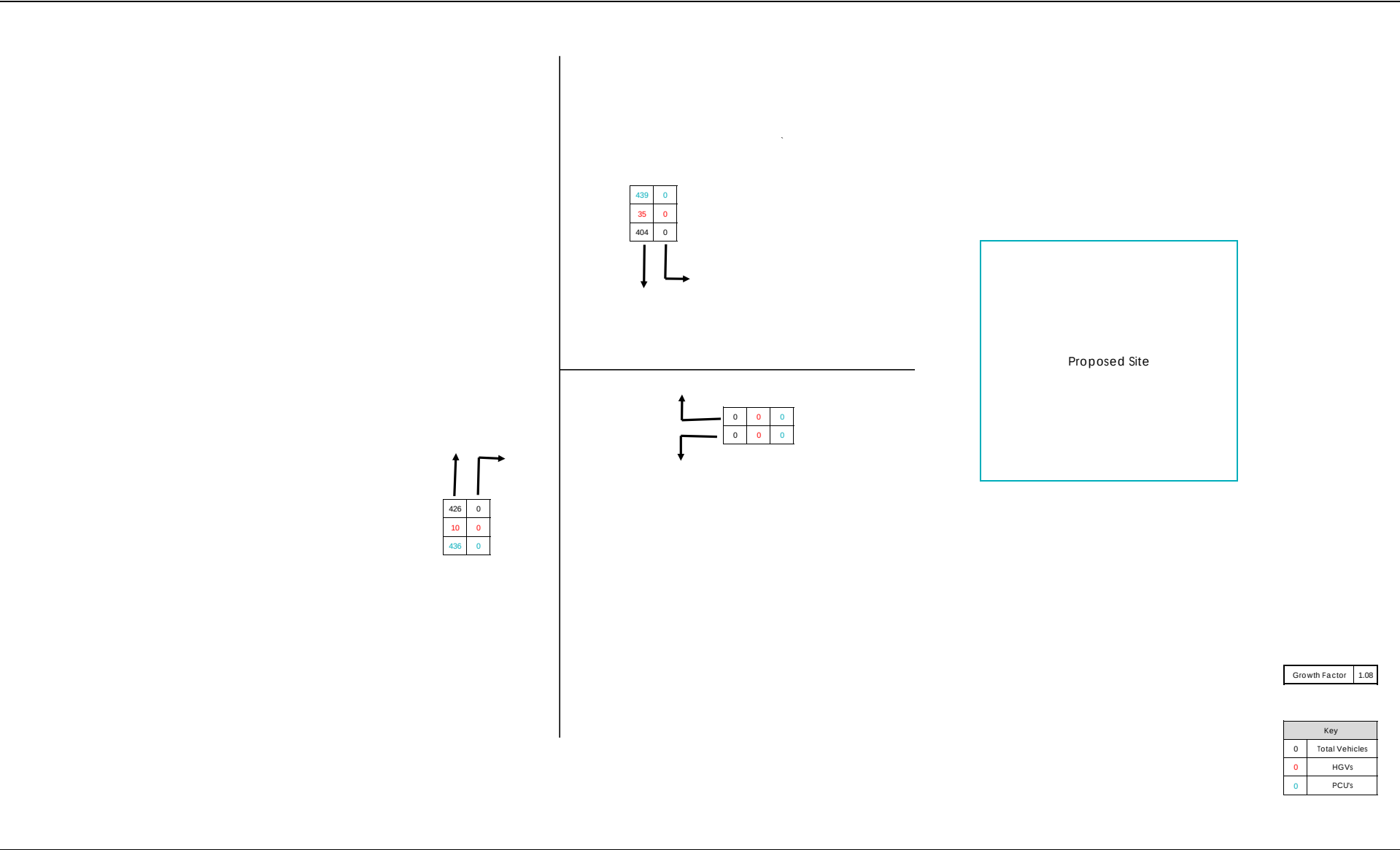
Scale @ A3 1:50,000

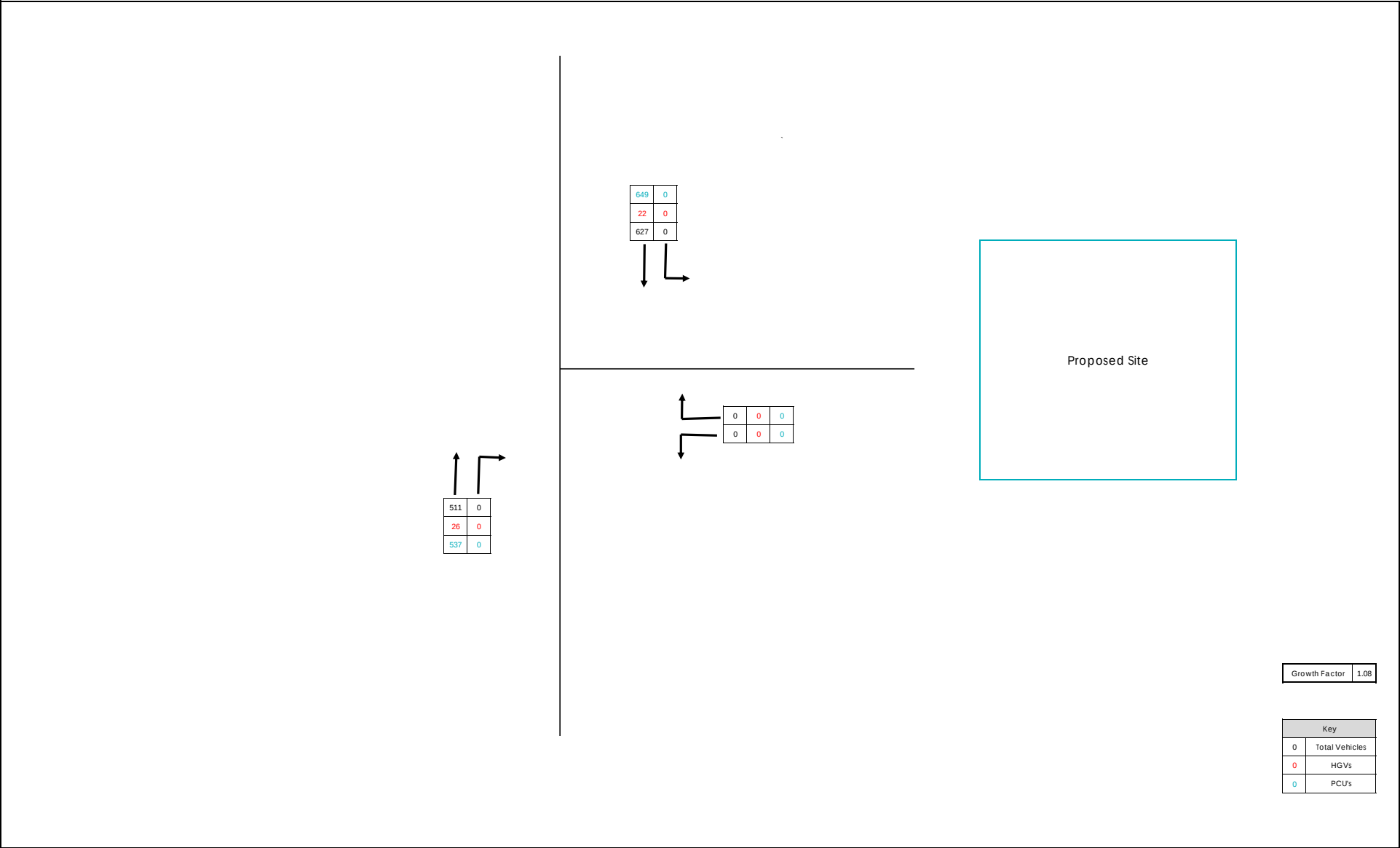
mosodi
mobility solutions through design and innovation

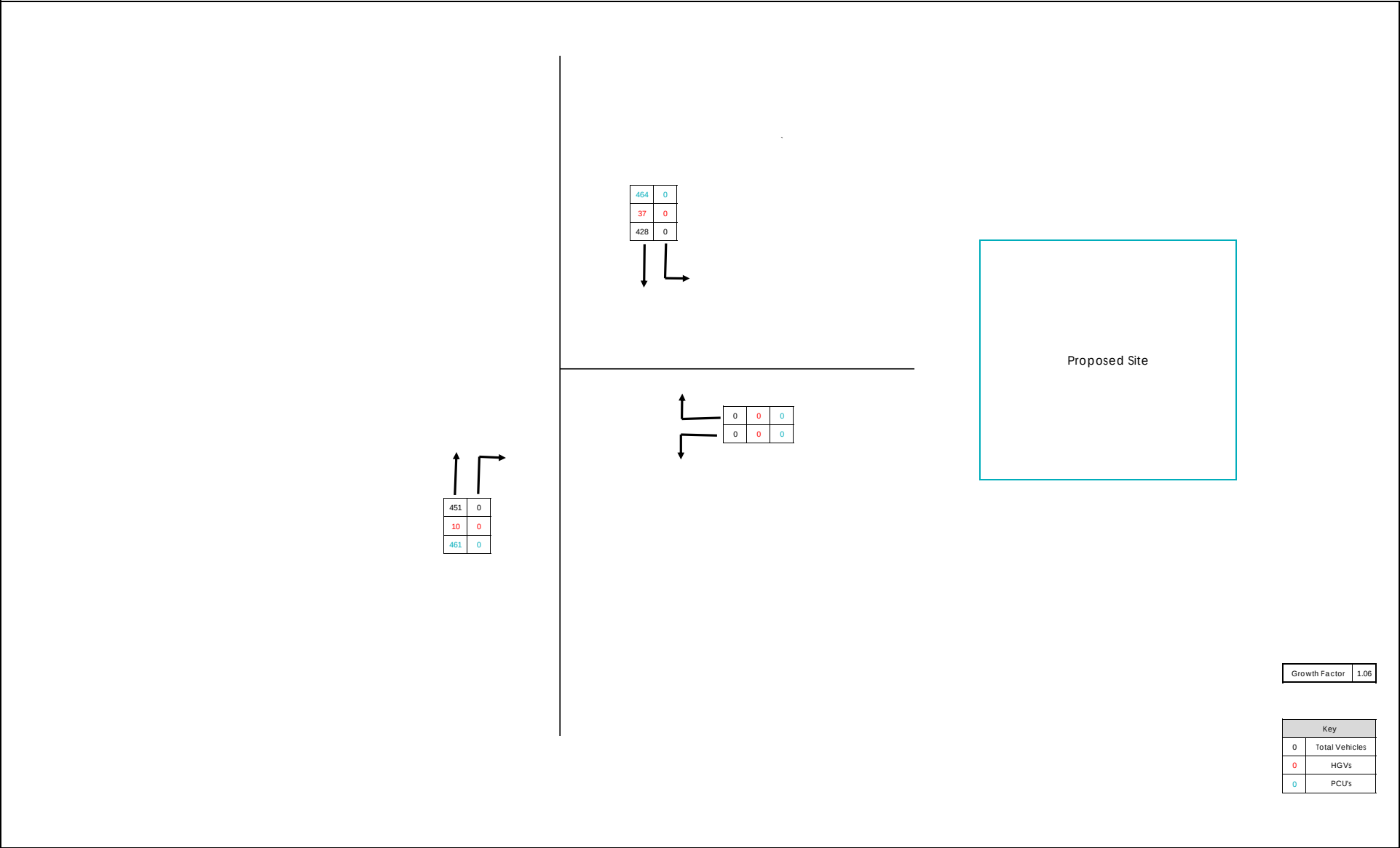
Contains OS data © Crown Copyright and database right 2020

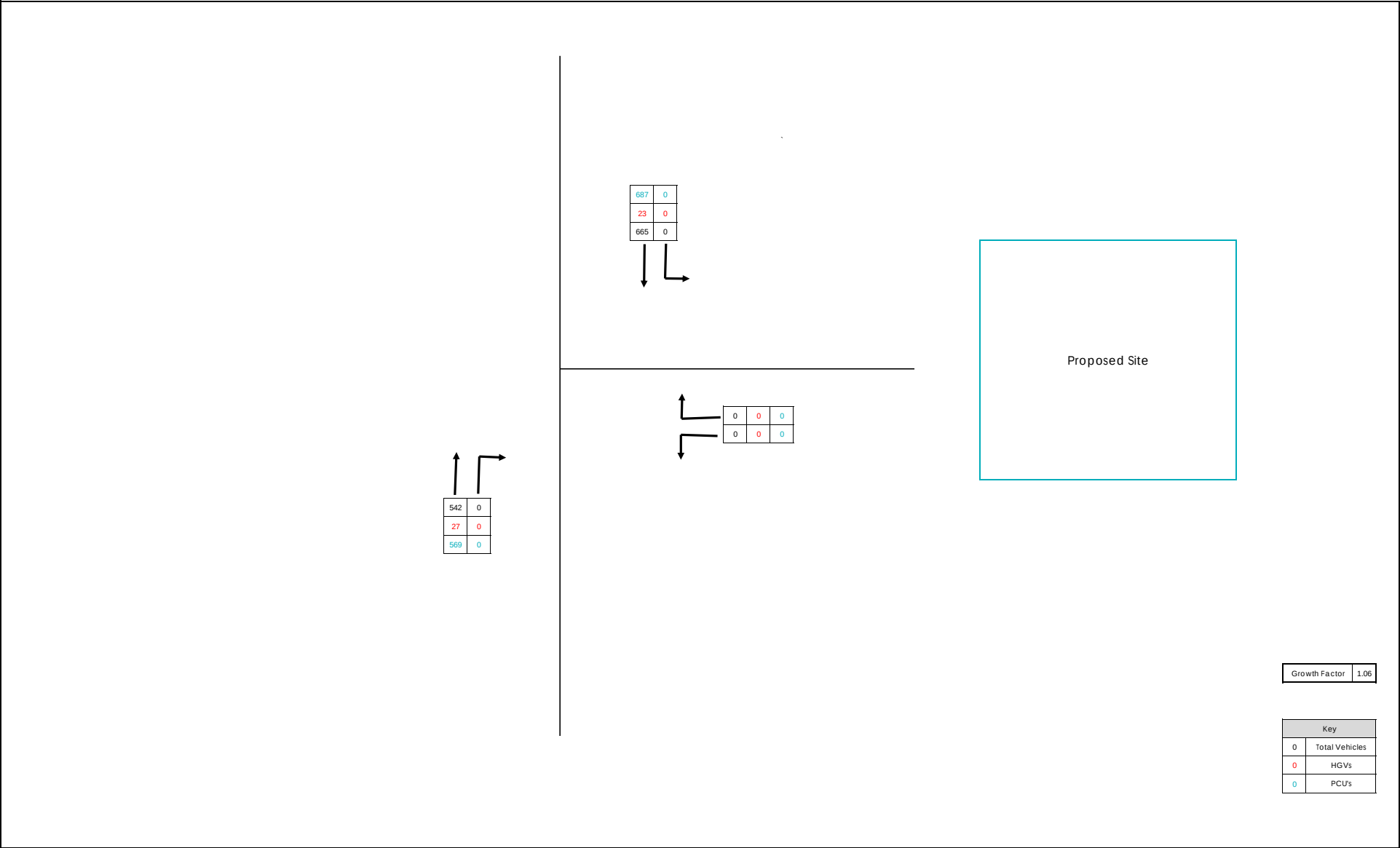


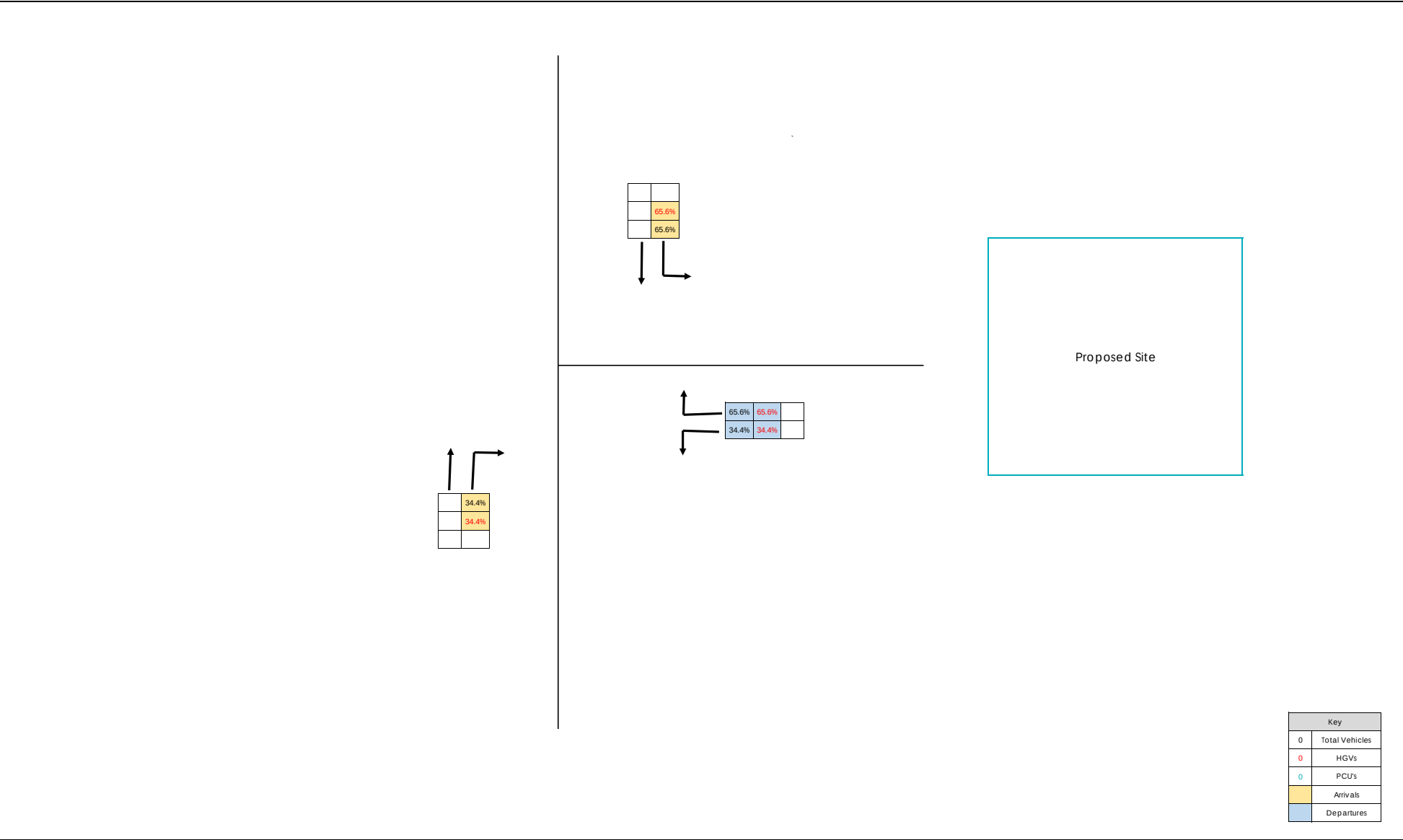


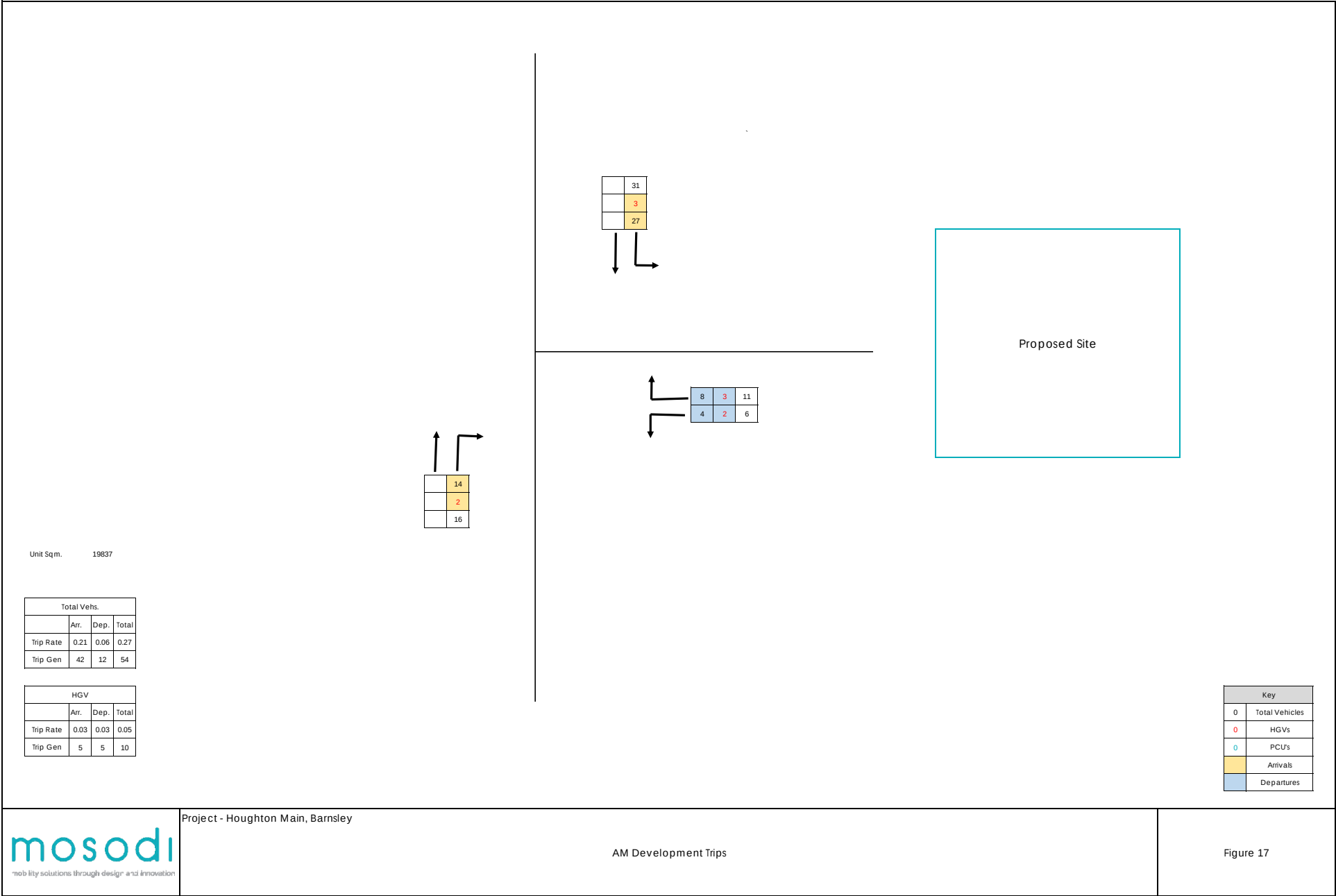


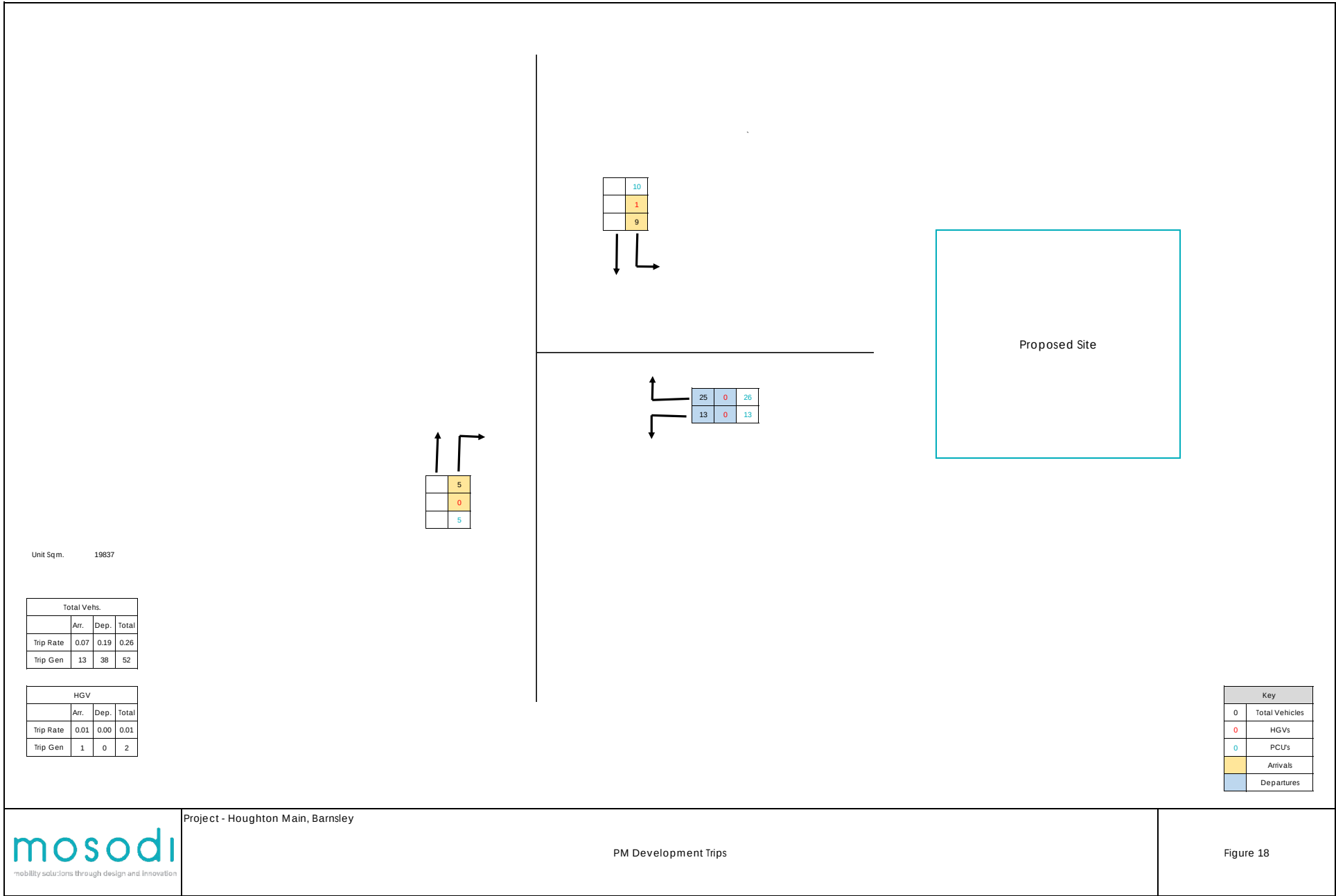


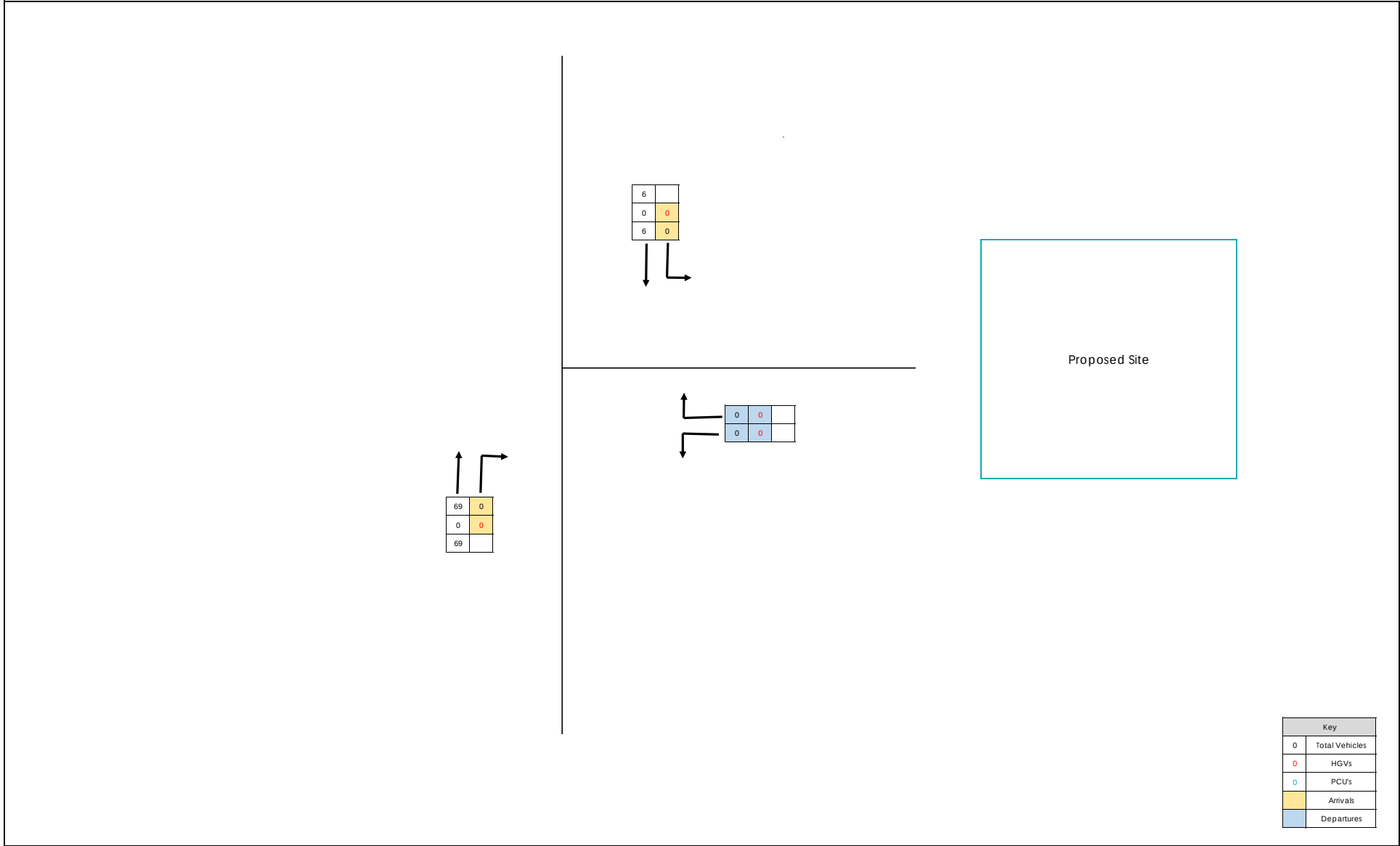


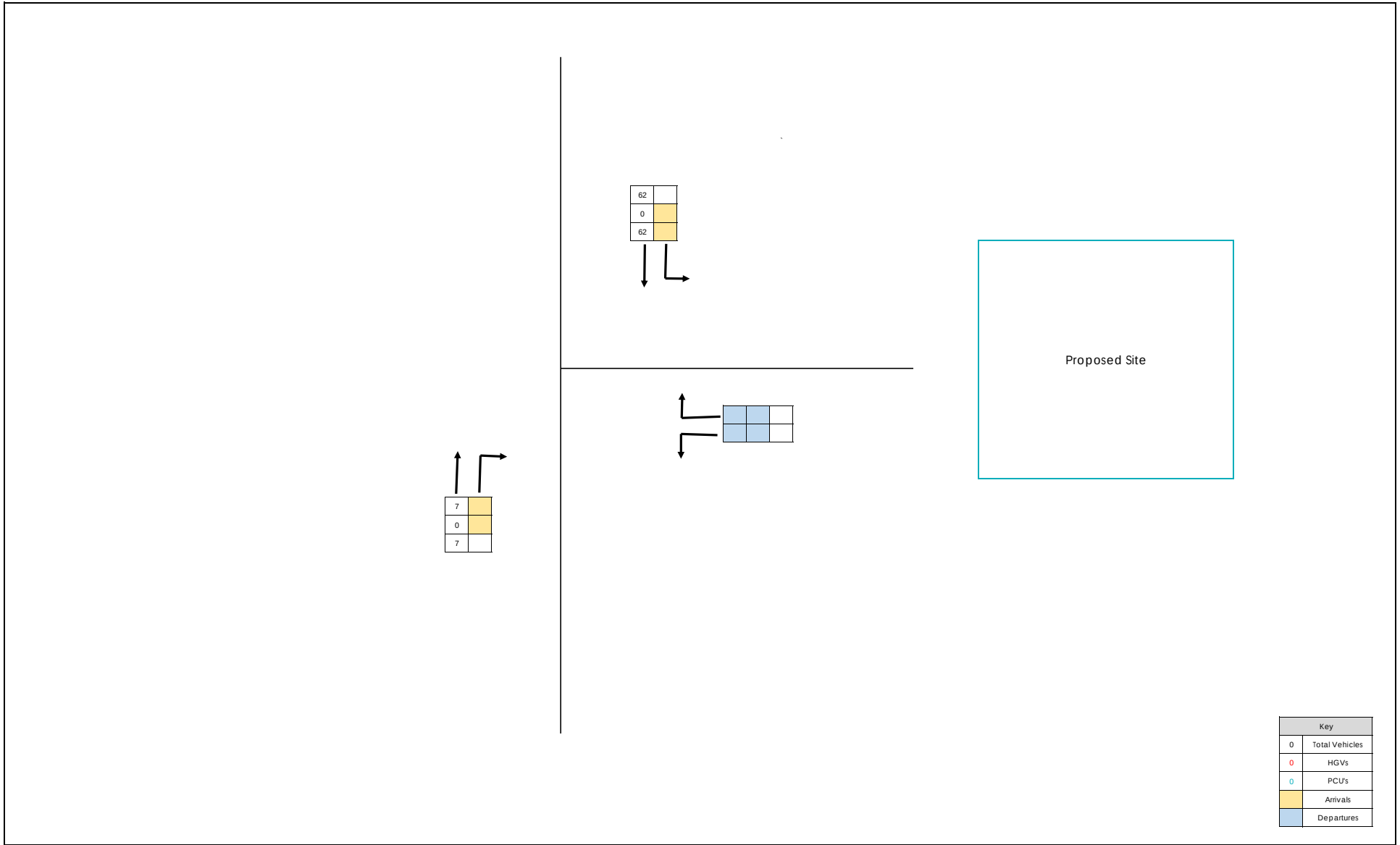


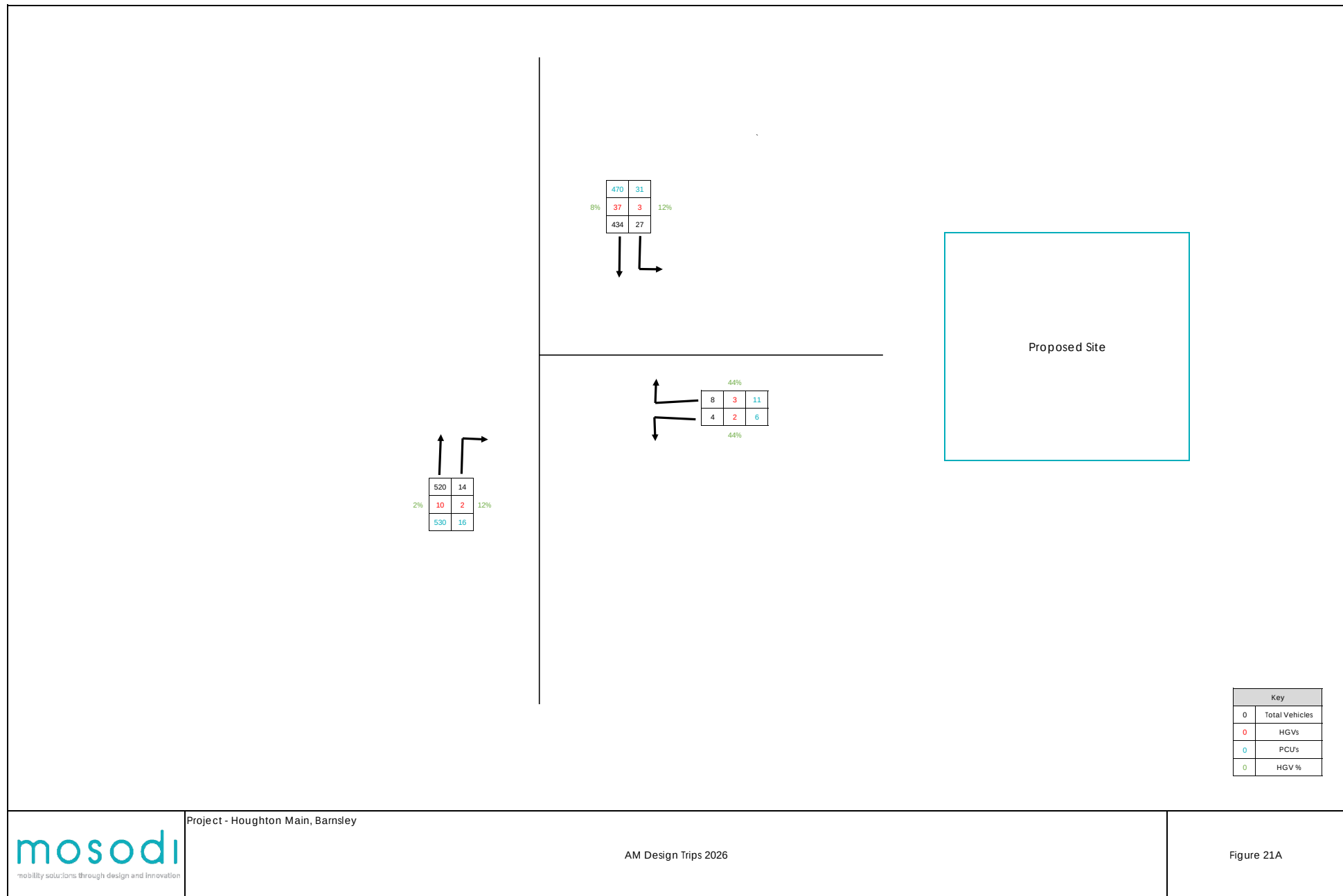


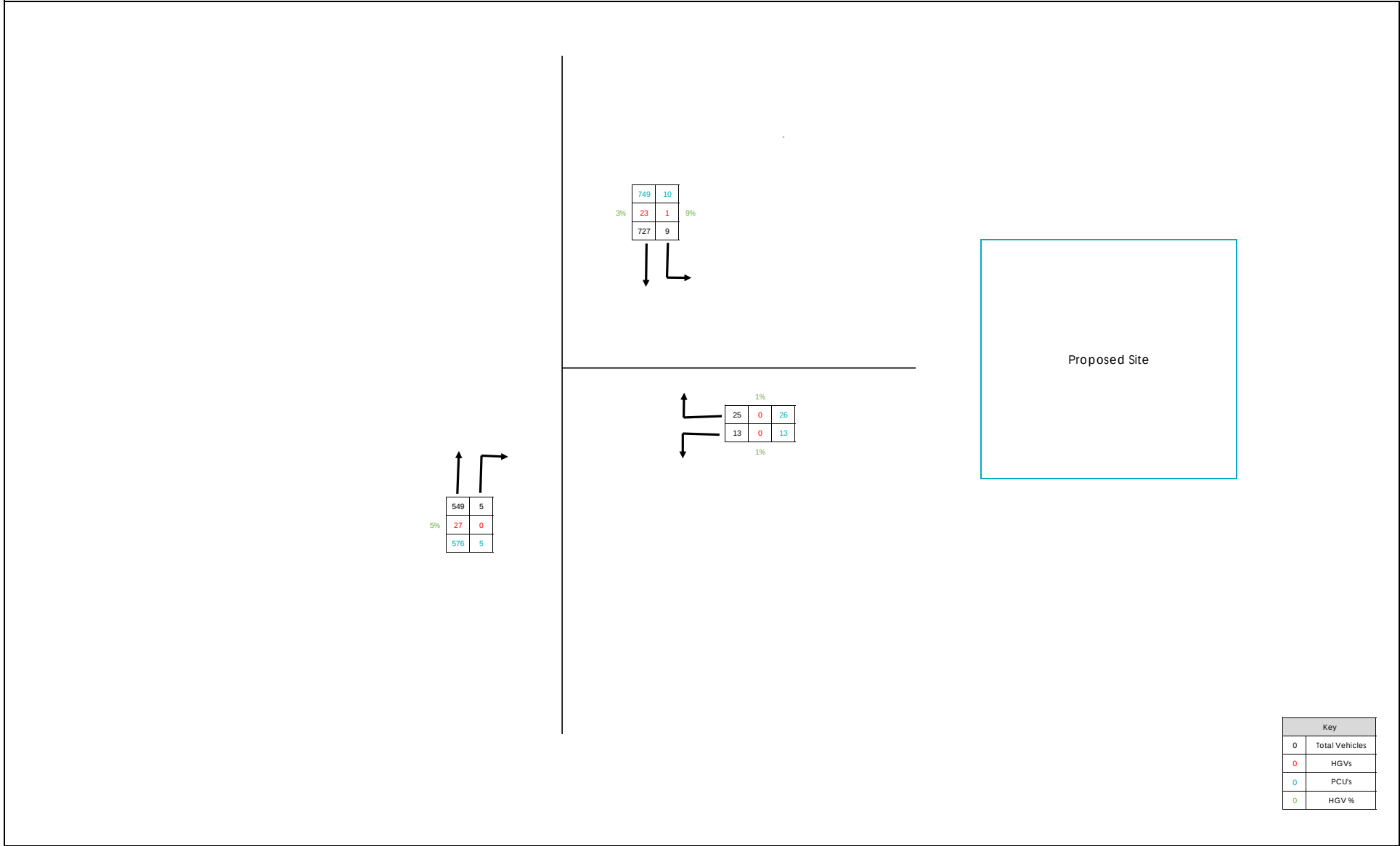












Appendices

Appendix A Masterplan



AREAS KEY

UNIT 01	G/F GIA - 17,210 SQFT F/F GIA - 3,310 SQFT TOTAL GEA - 18,080 sqft CAR PARKING NRS - 19 (INC. 2 DISABLED)
UNIT 02	G/F GIA - 79,080 SQFT F/F GIA - 6,070 SQFT TOTAL GEA - 81,200 SQFT CAR PARKING NRS - 107 (INC 4 DISABLED)
UNIT 03	G/F GIA - 38,970 SQFT F/F GIA - 4,390 SQFT TOTAL GEA - 40,300 SQFT CAR PARKING NRS - 30 (INC. 2 DISABLED)
UNIT 04	G/F GIA - 20,870 SQFT F/F GIA - 3,330 SQFT TOTAL GEA - 21,830 SQFT CAR PARKING NRS - 17 (INC. 2 DISABLED)
UNIT 05	G/F GIA - 29,570 SQFT F/F GIA - 3,300 SQFT TOTAL GEA - 30,740 SQFT CAR PARKING NRS - 51 (INC 3 DISABLED)

E	06/09/2021	Added Pedestrian access into the site from bus turnaround, adjusted line scale for highways. Parking for unit 4 adjusted	BM
D	03/09/2021	Removed repeated information, updated areas table	BM
C	25/08/2021	Added new highways proposed scheme as per Mosodi drawing nr 21034-GA-101	BM
B	16/08/2021	Updated the scheme following meeting's discussion, adjusted public walkway, reduced bus turnaround, increased unit 1's parking	BM
A	28/07/2021	Scheme adjusted from feasibility to planning stage, origin drawing 2621 F400B GA Site Layout Option 1	BM
Rev.	Date	Description	Drawn

htcarchitects

York Place Studio
8 Britannia Street
Leeds
LS1 2DZ

T: (0113) 244 3457
W: www.htcarchitects.co.uk
E: info@htcarchitects.co.uk

client

Harworth Estates

project

Park Spring Road,
Houghton Main

drawing title

GA Site Layout

date

March 2021

status

Planning

scale

1:1250 @ A3

drawn

BM

checked

PH

job no.

2621

dwg no.

P401

rev.

E

Appendix B Accident Data



Validated Data

Crash Date: Friday, October 21, 2016 **Time of Crash:** 2:15:00 AM **Crash Reference:** 2016140122926

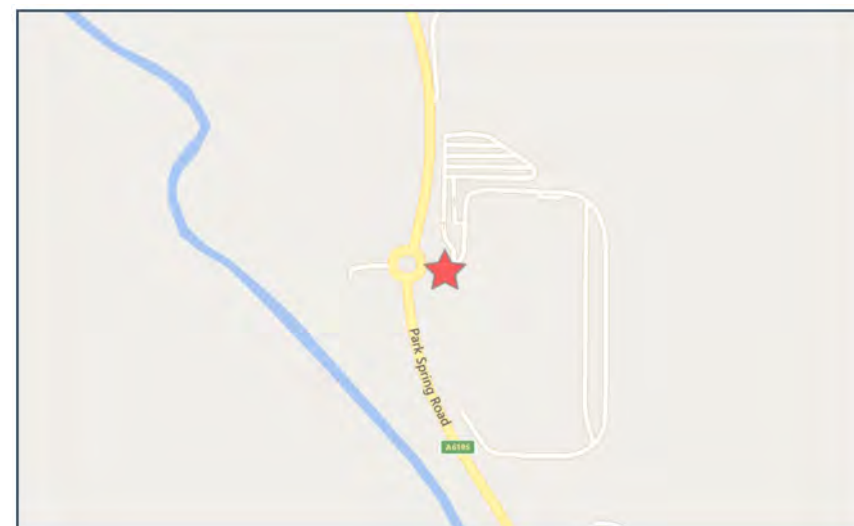
Highest Injury Severity: Slight
Highway Authority: Barnsley
Local Authority: Barnsley Metropolitan Borough
Weather Description: Unknown
Road Surface Description: Dry
Speed Limit: 30
Light Conditions: Darkness: street lights present and lit
Carriageway Hazards: None
Junction Detail: Not at or within 20 metres of junction
Junction Pedestrian Crossing: No physical crossing facility within 50 metres
Road Type: Single carriageway
Junction Control: Not Applicable

Road Number: U0

Number of Casualties: 1

Number of Vehicles: 2

OS Grid Reference: 441810 406352



For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Crash Date: Tuesday, December 05, 2017 **Time of Crash:** 11:24:00 PM **Crash Reference:** 2017140252166

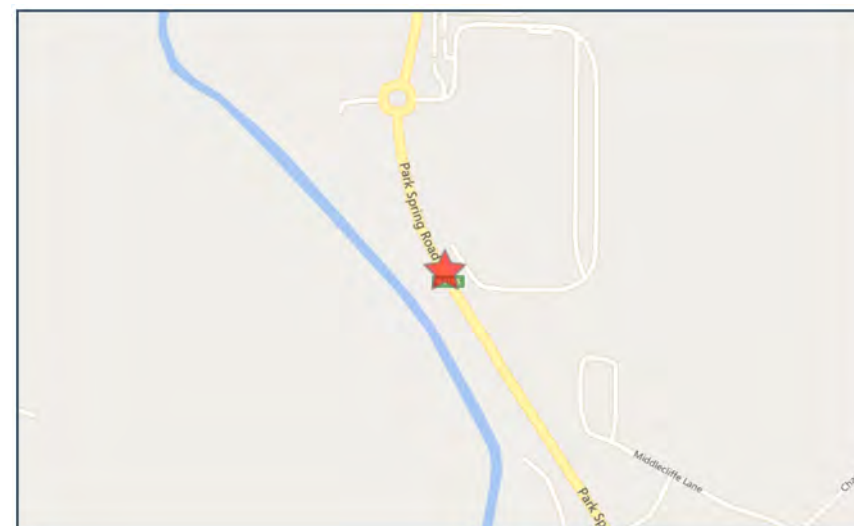
Highest Injury Severity: Slight
Highway Authority: Barnsley
Local Authority: Barnsley Metropolitan Borough
Weather Description: Fine without high winds
Road Surface Description: Dry
Speed Limit: 60
Light Conditions: Darkness: no street lighting
Carriageway Hazards: None
Junction Detail: Not at or within 20 metres of junction
Junction Pedestrian Crossing: No physical crossing facility within 50 metres
Road Type: Single carriageway
Junction Control: Not Applicable

Road Number: A6195

Number of Casualties: 1

Number of Vehicles: 2

OS Grid Reference: 441827 406085



For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



Validated Data

Crash Date: Friday, August 31, 2018 **Time of Crash:** 5:53:00 PM **Crash Reference:** 2018140340726

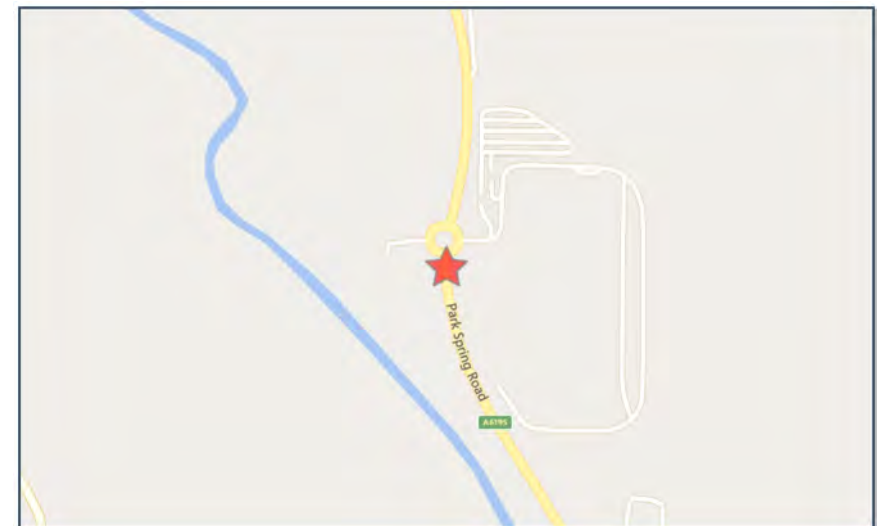
Highest Injury Severity: Slight
Highway Authority: Barnsley
Local Authority: Barnsley Metropolitan Borough
Weather Description: Fine without high winds
Road Surface Description: Dry
Speed Limit: 50
Light Conditions: Daylight: regardless of presence of streetlights
Carriageway Hazards: None
Junction Detail: Crossroads
Junction Pedestrian Crossing: No physical crossing facility within 50 metres
Road Type: Single carriageway
Junction Control: Give way or uncontrolled

Road Number: A6195

Number of Casualties: 1

Number of Vehicles: 1

OS Grid Reference: 441755 406308



For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



crashmap.co.uk

Validated Data

Crash Date: Sunday, March 25, 2018 **Time of Crash:** 12:00:00 PM **Crash Reference:** 2018140285185

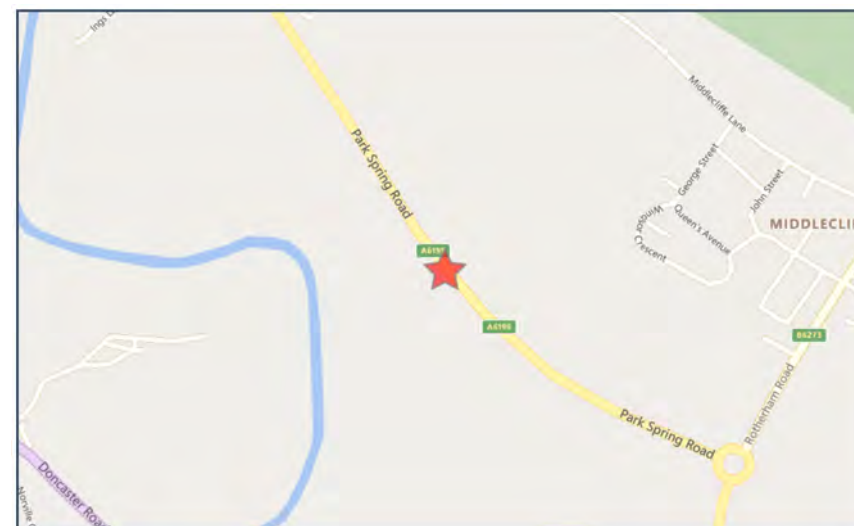
Highest Injury Severity: Serious
Highway Authority: Barnsley
Local Authority: Barnsley Metropolitan Borough
Weather Description: Fine without high winds
Road Surface Description: Dry
Speed Limit: 60
Light Conditions: Darkness: no street lighting
Carriageway Hazards: None
Junction Detail: Not at or within 20 metres of junction
Junction Pedestrian Crossing: No physical crossing facility within 50 metres
Road Type: Single carriageway
Junction Control: Not Applicable

Road Number: A6195

Number of Casualties: 3

Number of Vehicles: 3

OS Grid Reference: 442510 405037



For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services

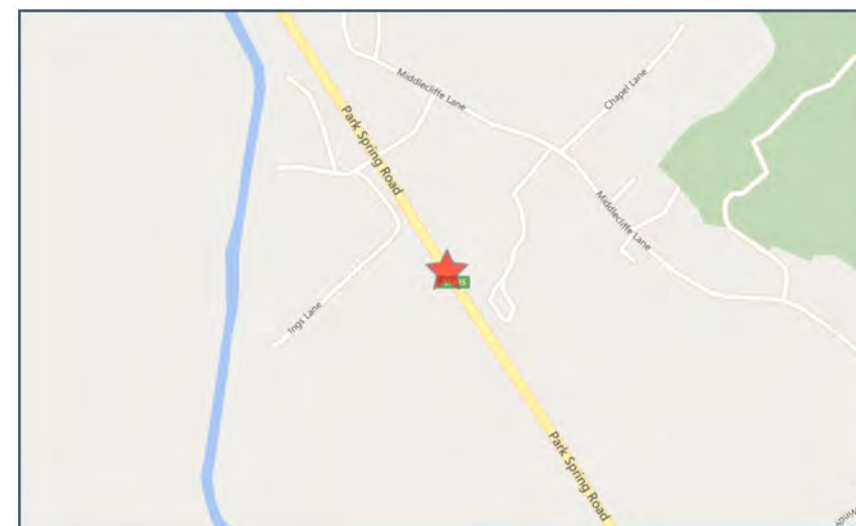


crashmap.co.uk

Validated Data

Crash Date: Sunday, September 08, 2019 **Time of Crash:** 2:38:00 PM **Crash Reference:** 2019140875540

Highest Injury Severity:	Serious	Road Number:	A6195	Number of Casualties:	5
Highway Authority:	Barnsley			Number of Vehicles:	2
Local Authority:	Barnsley Metropolitan Borough			OS Grid Reference:	442202 405503
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	60				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Not Applicable				



For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services



crashmap.co.uk

Provisional Data does not include vehicle and casualty records

Crash Date: Tuesday, January 14, 2020

Time of Crash: 2:10:00 PM

Crash Reference: 2020140919543

Highest Injury Severity: Serious

Road Number: A6195

Number of Casualties: 1

Highway Authority: Barnsley

Number of Vehicles: 1

Local Authority: Barnsley Metropolitan Borough

OS Grid Reference: 441758 406286

Weather Description: Raining with high winds

Road Surface Description: Wet or Damp

Speed Limit: 60

Light Conditions: Daylight: regardless of presence of streetlights

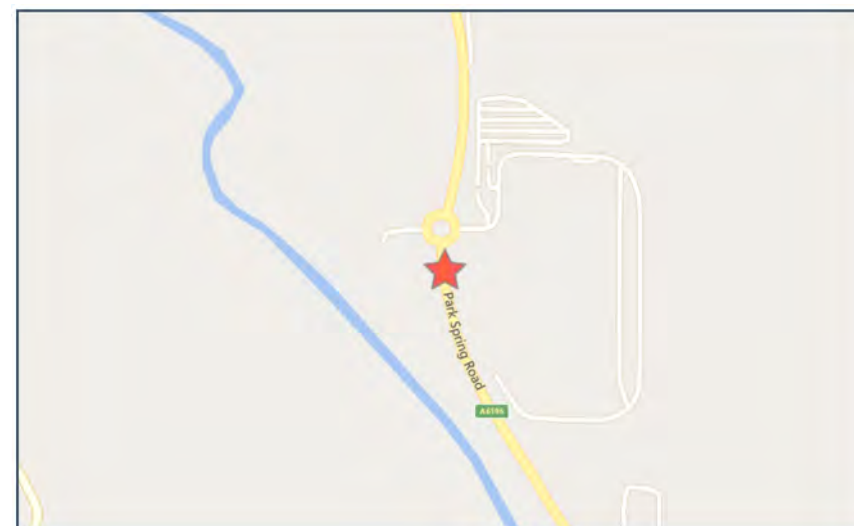
Carriageway Hazards: None

Junction Detail: Not at or within 20 metres of junction

Junction Pedestrian Crossing: No physical crossing facility within 50 metres

Road Type: Single carriageway

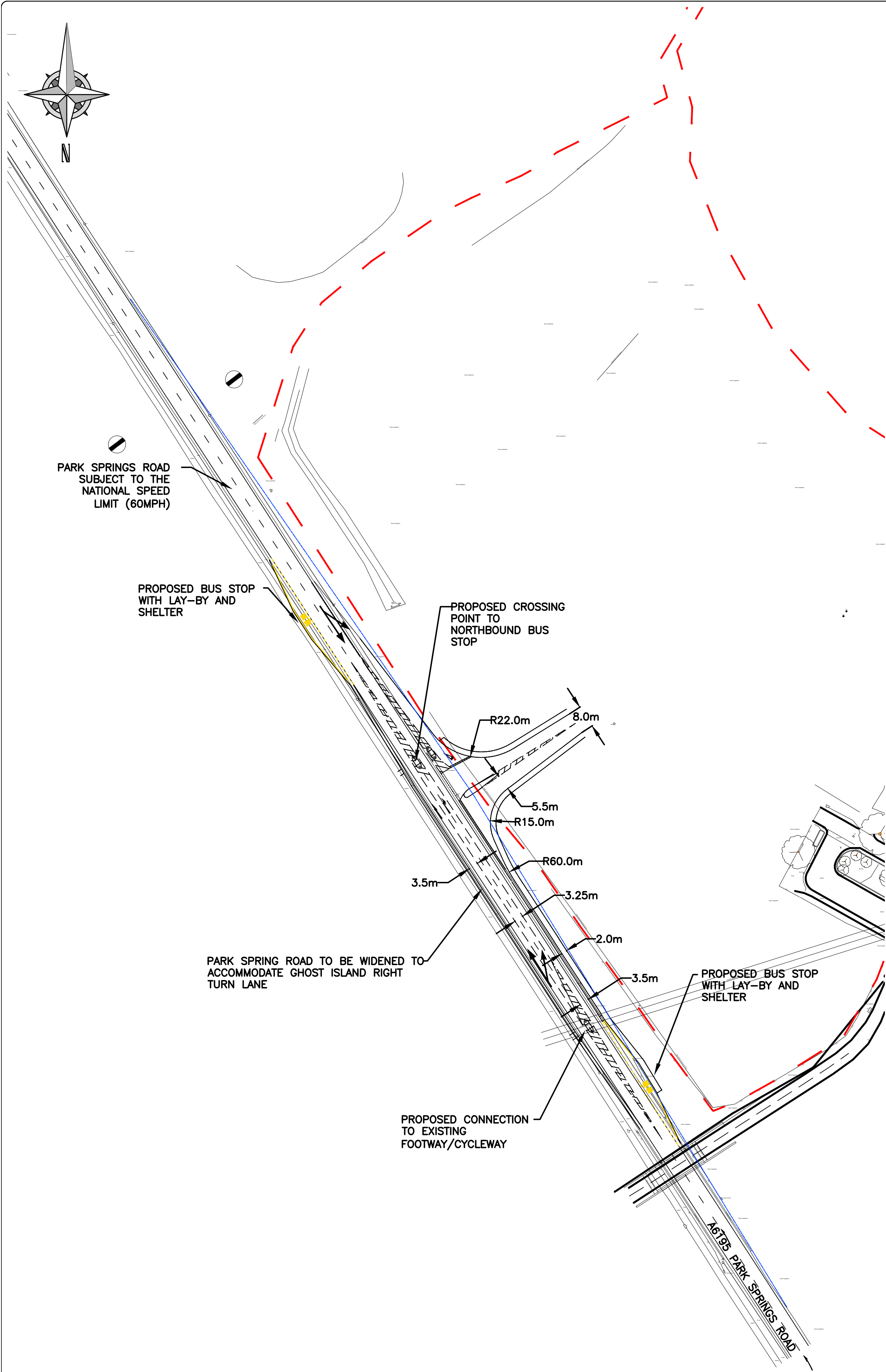
Junction Control: Unknown



For more information about the data please visit: www.crashmap.co.uk/home/Faq

To subscribe to unlimited reports using CrashMap Pro visit www.crashmap.co.uk/Home/Premium_Services

Appendix C Access Arrangement



- Notes:
1. This drawing is subject to copyright and is not to be reproduced in part or whole without approval.
 2. Do not scale this drawing - check all dimensions on site.
 3. Preliminary layout subject to detailed design including full cdm compliance, statutory undertakers search/ diversion requirements, road safety audit highway drainage provision, capacity assessment, land availability and local authority approval.
 4. This drawing is largely based on Drawing No. 20026.GA.02 Rev B prepared by Optima Highways and Transportation on behalf of Harworth. The CAD base has been provided by Optima Highways and has been updated to include additional crossing facilities to aid movements to the northbound bus stop on Park Spring Road.

PARK SPRINGS ROAD
SUBJECT TO THE
NATIONAL SPEED
LIMIT (60MPH)

PROPOSED BUS STOP
WITH LAY-BY AND
SHELTER

PROPOSED CROSSING
POINT TO
NORTHBOUND BUS
STOP

PARK SPRING ROAD TO BE WIDENED TO
ACCOMMODATE GHOST ISLAND RIGHT
TURN LANE

PROPOSED CONNECTION
TO EXISTING
FOOTWAY/CYCLEWAY

PROPOSED BUS STOP
WITH LAY-BY AND
SHELTER

Rev.	24.08.21	INITIAL ISSUE	SJP
Date:		Status/Amendments:	By:

mosodi
mobility solutions through design and innovation

Manchester Leeds
0161 413 5168 0113 323 0854

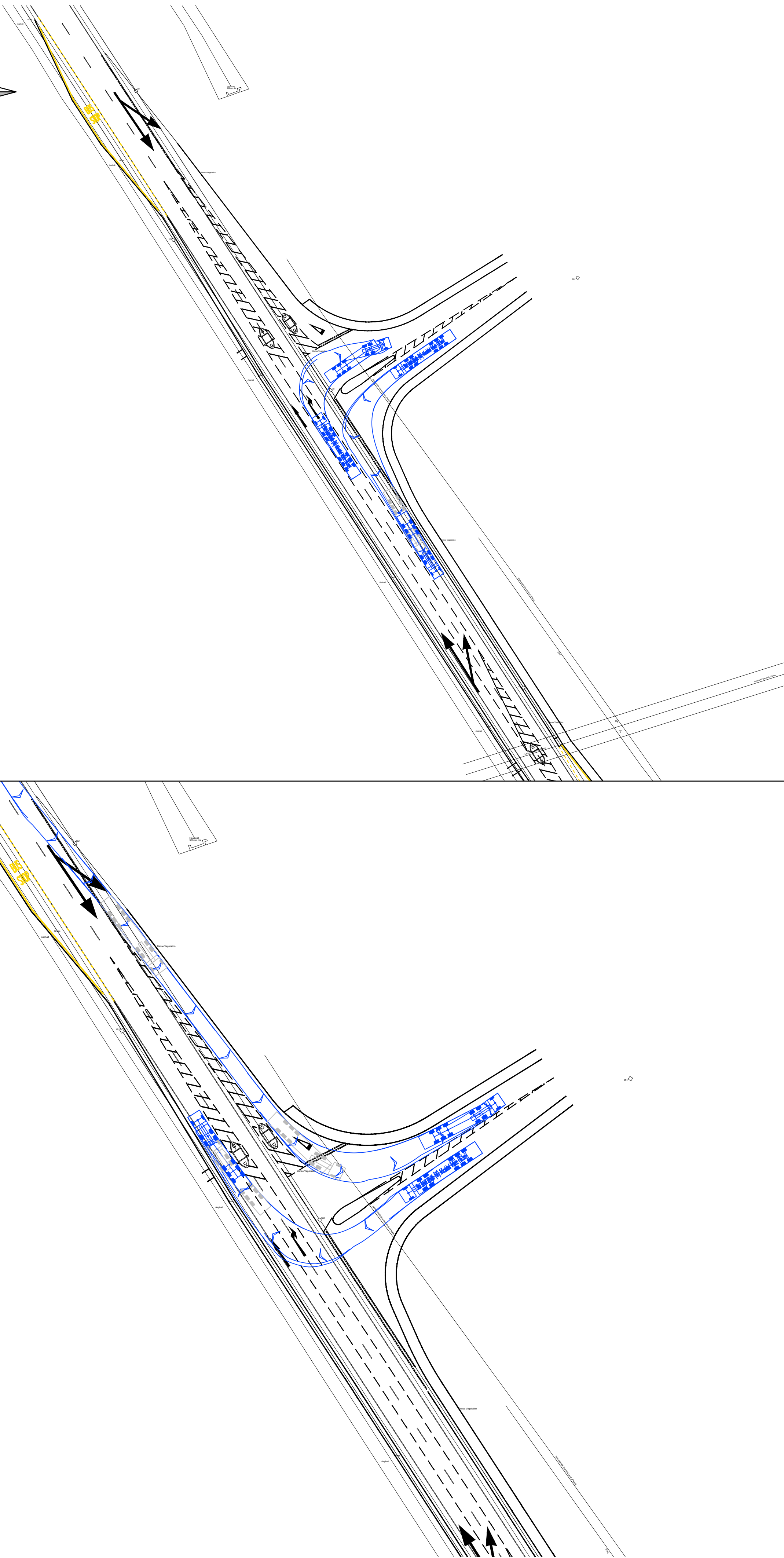
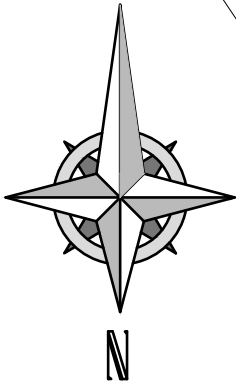
Client:
Harworth

Project:
Houghton Main, Barnsley

Drawing Title:
Proposed Site Access Arrangements.

Drawn By: SJP	Checked By: SJP	Approved By: RAM
Scale: 1:1000	Paper Size: A2	Date Created: 24.08.2021
Drawing Number: 21034.GA.101	Drawing Revision: -	

Appendix D Swept Path Analysis



Notes:

1. This drawing is subject to copyright and is not to be reproduced in part or whole without approval.
2. Do not scale this drawing - check all dimensions on site.
3. Preliminary layout subject to detailed design including full cdm compliance, statutory undertakers search/ diversion requirements, road safety audit highway drainage provision, capacity assessment, land availability and local authority approval.
4. This drawing is largely based on Drawing No. 20026.GA.02 Rev B prepared by Optima Highways and Transportation on behalf of Harworth. The CAD base has been provided by Optima Highways and has been updated to include additional crossing facilities to aid movements to the northbound bus stop on Park Spring Road.

Max Legal Length (UK) Articulated Vehicle (16.5m)
Overall Length 16.500m
Overall Width 2.500m
Overall Body Height 3.661m
Min Body Ground Clearance 0.411m
Max Track Width 2.500m
Look to look time 6.068s
Kerb to Kerb Turning Radius 6.530m

Rev.	24.08.21	INITIAL ISSUE	SJP
Date		Status/Amendments	By

mosodi
mobility solutions through design and innovation

Manchester Leeds
0161 413 5168 0113 323 0854

Client:
Harworth

Project:
Houghton Main, Barnsley

Drawing Title:
Proposed Site Access Arrangements
Swept Path Analysis

Drawn By: SJP	Checked By: SJP	Approved By: RAM
Scale: 1:1000	Paper Size: A2	Date Created: 14.09.2021
Drawing Number: 21034.ATR.01	Drawing Revision: -	

Appendix E Rockingham Extract – TRICS

5.5 B2 Trip Generations

5.5.1 The trip generations over the entire Site (Phase 2 and 3) have been calculated using the B2 trip rate identified in the Fore report and agreed with Highways England and Barnsley in pre-application discussions. The trip rates for total vehicles have been taken from the 2019 Fore Report (Table 6) and are shown in Table 5.1. The HGV trip rate for the B2 use has also been identified from the TRICS information in the Fore report and these are shown in Table 5.2.

Table 5.1 Vehicular Trip Rates (Total Vehicles)

	B2 Total Vehicular Trip Rates (per 100m2) GFA		
	Arrivals	Departures	Total
AM Peak	0.211	0.059	0.270
PM Peak	0.067	0.194	0.261

Table 5.2 HGV Trip Rates

	B2 Total HGV Trip Generations (per 100m2) GFA		
	Arrivals	Departures	Total
AM Peak	0.025	0.026	0.051
PM Peak	0.006	0.002	0.008

5.5.2 By multiplying the trip rates set out in Tables 5.1 and 5.2 by 1021.93 (total floor space of 102,193sqm divided by 100 as the trip rates are per 100sqm) results in the proposed Total Development Traffic as set out in Table 5.3 and 5.4.

Table 5.3 Total Vehicular Trip Generations

	B2 Total Vehicular Trip Generations (per 100m2) GFA		
	Arrivals	Departures	Total
AM Peak	216	60	276
PM Peak	68	198	267

Table 5.4 HGV Trip Generations

	B2 Total HGV Trip Generations (per 100m2) GFA		
	Arrivals	Departures	Total
AM Peak	26	27	52
PM Peak	6	2	8

Appendix F Distribution

currently residing in : 2011 super output area - lower layer	Trips to work - Barnsley 006C		Park Spring Road (N)	Park Spring Road (S)
Barnsley 001A	6	0.51%	0.51%	
Barnsley 001B	9	0.76%	0.76%	
Barnsley 001C	6	0.51%	0.51%	
Barnsley 001D	5	0.42%	0.42%	
Barnsley 002A	10	0.85%	0.85%	
Barnsley 002B	5	0.42%	0.42%	
Barnsley 002C	9	0.76%	0.76%	
Barnsley 002D	8	0.68%	0.68%	
Barnsley 003A	18	1.53%	1.53%	
Barnsley 003B	19	1.61%	1.61%	
Barnsley 003C	13	1.10%	1.10%	
Barnsley 003D	13	1.10%	1.10%	
Barnsley 004A	1	0.08%	0.08%	
Barnsley 004B	2	0.17%	0.17%	
Barnsley 004C	7	0.59%	0.59%	
Barnsley 004D	3	0.25%	0.25%	
Barnsley 004E	7	0.59%	0.59%	
Barnsley 005A	3	0.25%	0.25%	
Barnsley 005B	2	0.17%	0.17%	
Barnsley 005C	4	0.34%	0.34%	
Barnsley 005D	3	0.25%	0.25%	
Barnsley 005E	2	0.17%	0.17%	
Barnsley 006A	68	5.77%	5.77%	
Barnsley 006B	33	2.80%	2.80%	
Barnsley 006C	92	7.80%	7.80%	
Barnsley 006D	60	5.09%	5.09%	
Barnsley 007A	5	0.42%	0.42%	
Barnsley 007B	4	0.34%	0.34%	
Barnsley 007C	7	0.59%	0.59%	
Barnsley 007D	4	0.34%	0.34%	
Barnsley 007E	4	0.34%	0.34%	
Barnsley 007F	1	0.08%	0.08%	
Barnsley 008A	10	0.85%	0.85%	
Barnsley 008B	20	1.70%	1.70%	
Barnsley 008C	25	2.12%	2.12%	
Barnsley 008D	15	1.27%	1.27%	
Barnsley 009A	10	0.85%	0.85%	
Barnsley 009B	12	1.02%	1.02%	
Barnsley 009C	4	0.34%	0.34%	
Barnsley 009D	4	0.34%	0.34%	
Barnsley 009E	5	0.42%	0.42%	
Barnsley 010C	3	0.25%	0.13%	0.13%
Barnsley 010D	4	0.34%	0.17%	0.17%
Barnsley 010E	1	0.08%	0.04%	0.04%
Barnsley 010G	11	0.93%	0.47%	0.47%
Barnsley 010H	4	0.34%	0.17%	0.17%
Barnsley 011A	16	1.36%	1.36%	
Barnsley 011B	4	0.34%	0.34%	
Barnsley 011C	4	0.34%	0.34%	
Barnsley 011D	5	0.42%	0.42%	
Barnsley 012B	4	0.34%	0.34%	
Barnsley 012C	2	0.17%	0.17%	
Barnsley 012D	3	0.25%	0.25%	
Barnsley 012E	1	0.08%	0.08%	
Barnsley 012F	1	0.08%	0.08%	
Barnsley 013A	3	0.25%	0.13%	0.13%
Barnsley 013B	3	0.25%	0.13%	0.13%
Barnsley 013C	3	0.25%	0.13%	0.13%
Barnsley 013D	2	0.17%	0.08%	0.08%
Barnsley 013E	1	0.08%	0.04%	0.04%
Barnsley 013F	5	0.42%	0.21%	0.21%
Barnsley 013G	5	0.42%	0.21%	0.21%
Barnsley 014A	1	0.08%	0.08%	
Barnsley 014B	3	0.25%		0.25%
Barnsley 014C	3	0.25%		0.25%
Barnsley 014D	3	0.25%		0.25%
Barnsley 014E	2	0.17%		0.17%
Barnsley 014F	5	0.42%		0.42%
Barnsley 015A	8	0.68%		0.68%
Barnsley 015B	3	0.25%		0.25%
Barnsley 015C	3	0.25%		0.25%
Barnsley 015D	15	1.27%		1.27%
Barnsley 016A	3	0.25%	0.25%	
Barnsley 016B	3	0.25%	0.25%	
Barnsley 016C	3	0.25%	0.25%	
Barnsley 017A	2	0.17%		0.17%
Barnsley 017B	2	0.17%		0.17%
Barnsley 017C	2	0.17%		0.17%
Barnsley 017D	3	0.25%		0.25%
Barnsley 018A	6	0.51%		0.51%
Barnsley 018B	7	0.59%		0.59%
Barnsley 018C	5	0.42%		0.42%
Barnsley 018D	4	0.34%		0.34%
Barnsley 019A	2	0.17%		0.17%
Barnsley 019B	2	0.17%		0.17%
Barnsley 019D	5	0.42%		0.42%
Barnsley 020A	4	0.34%		0.34%
Barnsley 020B	2	0.17%		0.17%
Barnsley 020C	1	0.08%		0.08%
Barnsley 020D	4	0.34%	0.17%	0.17%
Barnsley 020E	3	0.25%		0.25%
Barnsley 020F	6	0.51%		0.51%
Barnsley 020G	6	0.51%		0.51%
Barnsley 021A	2	0.17%		0.17%
Barnsley 021B	3	0.25%		0.25%
Barnsley 021C	4	0.34%		0.34%
Barnsley 021D	2	0.17%		0.17%
Barnsley 021E	2	0.17%		0.17%
Barnsley 021F	2	0.17%		0.17%
Barnsley 022A	4	0.34%		0.34%
Barnsley 022B	4	0.34%		0.34%
Barnsley 022C	2	0.17%		0.17%
Barnsley 022D	3	0.25%		0.25%
Barnsley 023A	5	0.42%		0.42%
Barnsley 023B	4	0.34%		0.34%

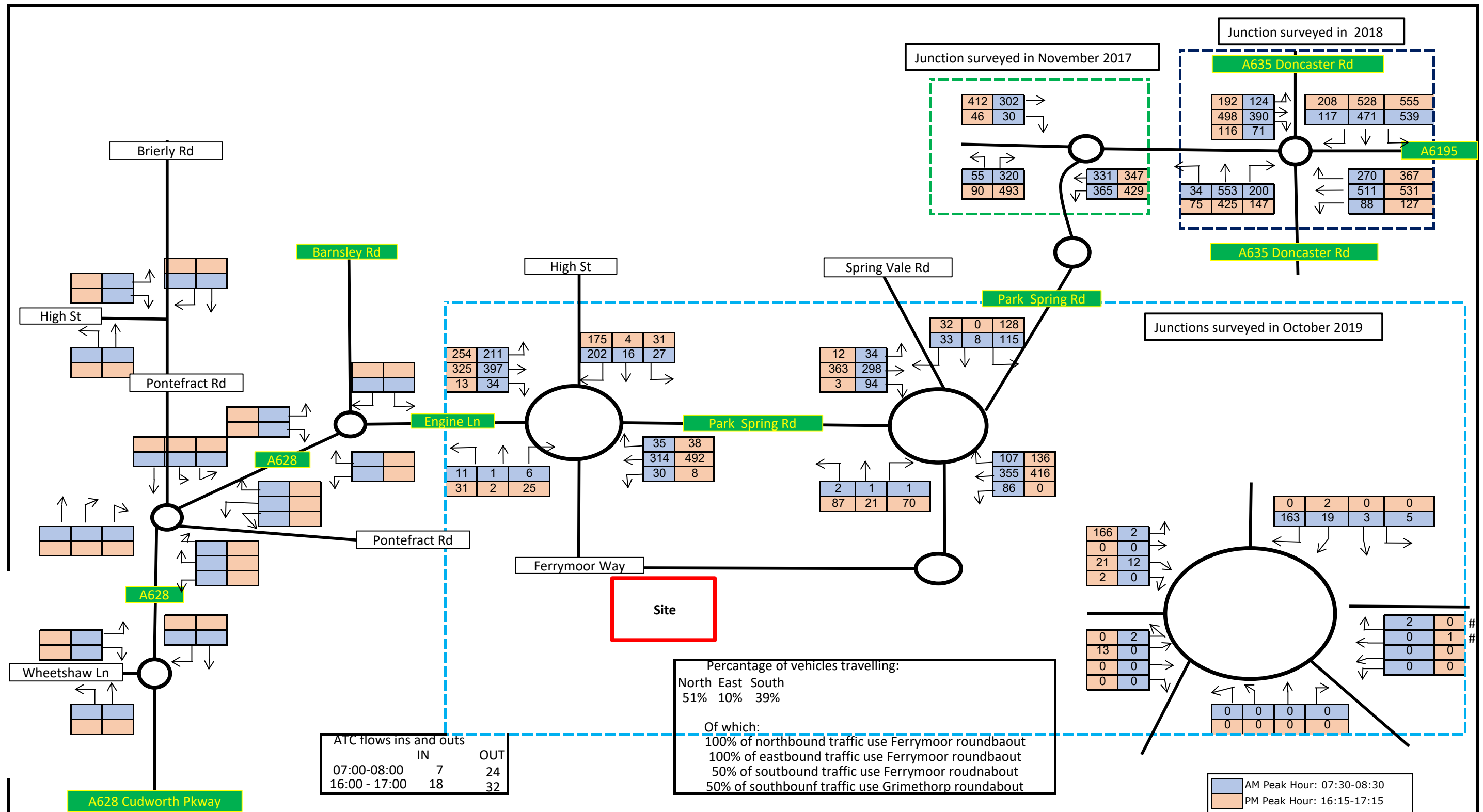
Barnsley 023C	3	0.25%	0.25%
Barnsley 023D	4	0.34%	0.34%
Barnsley 024A	2	0.17%	0.17%
Barnsley 024C	1	0.08%	0.08%
Barnsley 024D	2	0.17%	0.17%
Barnsley 024E	2	0.17%	0.17%
Barnsley 024F	2	0.17%	0.17%
Barnsley 025A	2	0.17%	0.17%
Barnsley 025B	2	0.17%	0.17%
Barnsley 025C	4	0.34%	0.34%
Barnsley 025D	2	0.17%	0.17%
Barnsley 025E	2	0.17%	0.17%
Barnsley 026A	7	0.59%	0.59%
Barnsley 026B	5	0.42%	0.42%
Barnsley 026C	4	0.34%	0.34%
Barnsley 026E	3	0.25%	0.25%
Barnsley 026G	2	0.17%	0.17%
Barnsley 027A	1	0.08%	0.08%
Barnsley 027B	2	0.17%	0.17%
Barnsley 027D	1	0.08%	0.08%
Barnsley 028A	2	0.17%	0.17%
Barnsley 028B	2	0.17%	0.17%
Barnsley 028C	1	0.08%	0.08%
Barnsley 028D	3	0.25%	0.25%
Barnsley 028E	4	0.34%	0.34%
Barnsley 029A	3	0.25%	0.25%
Barnsley 029B	9	0.76%	0.76%
Barnsley 029C	4	0.34%	0.34%
Barnsley 029D	6	0.51%	0.51%
Barnsley 029E	2	0.17%	0.17%
Barnsley 030A	3	0.25%	0.25%
Barnsley 030B	1	0.08%	0.08%
Barnsley 030C	5	0.42%	0.42%
Barnsley 030D	1	0.08%	0.08%
Barnsley 030E	5	0.42%	0.42%
Bassetlaw 009A	1	0.08%	0.08%
Bassetlaw 012A	1	0.08%	0.08%
Bassetlaw 016D	1	0.08%	0.08%
Bolton 030B	1	0.08%	0.08%
Bolton 031B	2	0.17%	0.17%
Burnley 011D	1	0.08%	0.08%
Burnley 014G	1	0.08%	0.08%
Calderdale 010B	2	0.17%	0.17%
Calderdale 017F	1	0.08%	0.08%
Calderdale 018D	1	0.08%	0.08%
Calderdale 018E	1	0.08%	0.08%
Calderdale 027E	1	0.08%	0.08%
Doncaster 002A	1	0.08%	0.08%
Doncaster 002B	1	0.08%	0.08%
Doncaster 002E	1	0.08%	0.08%
Doncaster 006E	1	0.08%	0.08%
Doncaster 007D	1	0.08%	0.08%
Doncaster 008B	1	0.08%	0.08%
Doncaster 009A	1	0.08%	0.08%
Doncaster 009B	1	0.08%	0.08%
Doncaster 009F	1	0.08%	0.08%
Doncaster 010C	2	0.17%	0.17%
Doncaster 012B	1	0.08%	0.08%
Doncaster 018D	1	0.08%	0.08%
Doncaster 020C	2	0.17%	0.17%
Doncaster 021E	2	0.17%	0.17%
Doncaster 022E	1	0.08%	0.08%
Doncaster 022F	1	0.08%	0.08%
Doncaster 023C	1	0.08%	0.08%
Doncaster 024A	1	0.08%	0.08%
Doncaster 029C	1	0.08%	0.08%
Doncaster 030A	1	0.08%	0.08%
Doncaster 031B	1	0.08%	0.08%
Doncaster 031E	2	0.17%	0.17%
Doncaster 031F	1	0.08%	0.08%
Doncaster 032A	2	0.17%	0.17%
Doncaster 033B	1	0.08%	0.08%
Doncaster 033D	1	0.08%	0.08%
Doncaster 035E	1	0.08%	0.08%
Doncaster 037D	1	0.08%	0.08%
Doncaster 038B	2	0.17%	0.17%
East Riding of Yorks	1	0.08%	0.08%
East Riding of Yorks	1	0.08%	0.08%
Harrogate 003A	1	0.08%	0.08%
Harrogate 013B	1	0.08%	0.08%
Harrogate 014A	1	0.08%	0.08%
Herefordshire 011B	1	0.08%	0.08%
Herefordshire 016A	1	0.08%	0.08%
Herefordshire 016C	1	0.08%	0.08%
Hyndburn 002D	1	0.08%	0.08%
Hyndburn 006F	1	0.08%	0.08%
Hyndburn 006G	1	0.08%	0.08%
Kirklees 005A	1	0.08%	0.08%
Kirklees 013D	1	0.08%	0.08%
Kirklees 018C	1	0.08%	0.08%
Kirklees 024D	1	0.08%	0.08%
Kirklees 026D	1	0.08%	0.08%
Kirklees 032A	1	0.08%	0.08%
Kirklees 037B	1	0.08%	0.08%
Kirklees 037C	1	0.08%	0.08%
Kirklees 053F	1	0.08%	0.08%
Kirklees 054C	3	0.25%	0.25%
Kirklees 054D	1	0.08%	0.08%
Kirklees 055E	1	0.08%	0.08%
Kirklees 056B	1	0.08%	0.08%
Kirklees 057C	1	0.08%	0.08%
Kirklees 057D	1	0.08%	0.08%
Leeds 006A	1	0.08%	0.08%
Leeds 012C	1	0.08%	0.08%
Leeds 027B	1	0.08%	0.08%
Leeds 034C	1	0.08%	0.08%
Leeds 048A	2	0.17%	0.08%
Leeds 067H	1	0.08%	0.08%
Leeds 073A	1	0.08%	0.08%

Leeds 077C	1	0.08%	0.08%	
Leeds 082C	1	0.08%		0.08%
Leeds 082F	2	0.17%		0.17%
Leeds 085C	2	0.17%		0.17%
Leeds 086A	1	0.08%		0.08%
Leeds 086B	1	0.08%		0.08%
Leeds 088B	1	0.08%	0.08%	
Leeds 096C	1	0.08%	0.08%	
Leeds 102G	1	0.08%		0.08%
Leeds 103B	1	0.08%	0.08%	
Leeds 106B	1	0.08%	0.08%	
Leeds 106C	1	0.08%	0.08%	
Leeds 108D	1	0.08%	0.08%	
Lincoln 002D	1	0.08%		0.08%
Lincoln 004B	1	0.08%		0.08%
North East Derbyshir	1	0.08%		0.08%
North East Derbyshir	1	0.08%		0.08%
North Kesteven 001F	1	0.08%		0.08%
North Kesteven 009E	1	0.08%		0.08%
Oldham 028A	1	0.08%	0.08%	
Oldham 033D	1	0.08%	0.08%	
Pendle 002B	1	0.08%	0.08%	
Pendle 002D	1	0.08%	0.08%	
Pendle 003A	1	0.08%	0.08%	
Pendle 009A	1	0.08%	0.08%	
Pendle 010D	1	0.08%	0.08%	
Rotherham 001B	1	0.08%		0.08%
Rotherham 001C	3	0.25%		0.25%
Rotherham 001E	1	0.08%		0.08%
Rotherham 002C	2	0.17%		0.17%
Rotherham 002E	1	0.08%		0.08%
Rotherham 002F	1	0.08%		0.08%
Rotherham 003B	1	0.08%		0.08%
Rotherham 003C	1	0.08%		0.08%
Rotherham 003D	1	0.08%		0.08%
Rotherham 004A	1	0.08%		0.08%
Rotherham 004D	1	0.08%		0.08%
Rotherham 005D	1	0.08%		0.08%
Rotherham 005E	1	0.08%		0.08%
Rotherham 006B	2	0.17%		0.17%
Rotherham 007B	1	0.08%		0.08%
Rotherham 009B	2	0.17%		0.17%
Rotherham 012C	1	0.08%		0.08%
Rotherham 013D	1	0.08%		0.08%
Rotherham 014D	1	0.08%		0.08%
Rotherham 015A	2	0.17%		0.17%
Rotherham 015C	1	0.08%		0.08%
Rotherham 015F	1	0.08%		0.08%
Rotherham 019A	1	0.08%		0.08%
Rotherham 020F	1	0.08%		0.08%
Rotherham 023E	1	0.08%		0.08%
Rotherham 025A	1	0.08%		0.08%
Rotherham 025F	2	0.17%		0.17%
Rotherham 027B	1	0.08%		0.08%
Rotherham 028B	4	0.34%		0.34%
Rotherham 029B	1	0.08%		0.08%
Rotherham 029F	1	0.08%		0.08%
Rotherham 032E	1	0.08%		0.08%
Rotherham 033D	1	0.08%		0.08%
Selby 004B	3	0.25%	0.25%	
Selby 008E	1	0.08%	0.08%	
Sheffield 002A	1	0.08%		0.08%
Sheffield 002D	1	0.08%		0.08%
Sheffield 003F	1	0.08%		0.08%
Sheffield 004B	1	0.08%		0.08%
Sheffield 004G	1	0.08%		0.08%
Sheffield 006C	1	0.08%		0.08%
Sheffield 011E	1	0.08%		0.08%
Sheffield 013C	1	0.08%		0.08%
Sheffield 016D	1	0.08%		0.08%
Sheffield 017A	1	0.08%		0.08%
Sheffield 022F	1	0.08%		0.08%
Sheffield 024C	1	0.08%		0.08%
Sheffield 025B	1	0.08%		0.08%
Sheffield 027B	1	0.08%		0.08%
Sheffield 027C	1	0.08%		0.08%
Sheffield 029B	1	0.08%		0.08%
Sheffield 029D	1	0.08%		0.08%
Sheffield 033A	1	0.08%		0.08%
Sheffield 036C	1	0.08%		0.08%
Sheffield 044D	1	0.08%		0.08%
Sheffield 047B	1	0.08%		0.08%
Sheffield 049C	1	0.08%		0.08%
Sheffield 052B	1	0.08%		0.08%
Sheffield 054A	1	0.08%		0.08%
Sheffield 055C	1	0.08%		0.08%
Sheffield 069B	1	0.08%		0.08%
Sheffield 069D	1	0.08%		0.08%
Sheffield 075D	1	0.08%		0.08%
Sheffield 075G	1	0.08%		0.08%
Stockport 009B	1	0.08%		0.08%
Stockport 042C	1	0.08%		0.08%
Wakefield 001B	1	0.08%	0.08%	
Wakefield 003A	1	0.08%	0.08%	
Wakefield 005D	2	0.17%		0.17%
Wakefield 006A	1	0.08%	0.08%	
Wakefield 006D	2	0.17%		0.17%
Wakefield 008A	1	0.08%	0.08%	
Wakefield 009A	1	0.08%	0.08%	
Wakefield 011E	1	0.08%	0.08%	
Wakefield 013C	1	0.08%	0.08%	
Wakefield 013D	3	0.25%	0.25%	
Wakefield 015A	1	0.08%	0.08%	
Wakefield 015C	1	0.08%	0.08%	
Wakefield 015D	1	0.08%	0.08%	
Wakefield 016C	1	0.08%	0.08%	
Wakefield 020E	1	0.08%	0.08%	
Wakefield 022F	1	0.08%	0.08%	
Wakefield 024D	1	0.08%	0.08%	

Wakefield 026A	1	0.08%	0.08%	
Wakefield 026D	1	0.08%	0.08%	
Wakefield 026E	1	0.08%	0.08%	
Wakefield 028C	1	0.08%	0.08%	
Wakefield 029A	1	0.08%	0.08%	
Wakefield 030C	1	0.08%	0.08%	
Wakefield 031A	1	0.08%	0.08%	
Wakefield 032C	1	0.08%	0.08%	
Wakefield 033B	1	0.08%	0.08%	
Wakefield 033C	2	0.17%	0.17%	
Wakefield 034B	1	0.08%	0.08%	
Wakefield 034D	2	0.17%	0.17%	
Wakefield 034F	1	0.08%	0.08%	
Wakefield 035C	1	0.08%	0.08%	
Wakefield 037B	1	0.08%	0.08%	
Wakefield 038A	1	0.08%	0.08%	
Wakefield 038D	1	0.08%	0.08%	
Wakefield 039A	1	0.08%	0.08%	
Wakefield 039B	1	0.08%	0.08%	
Wakefield 039C	6	0.51%	0.51%	
Wakefield 039D	3	0.25%	0.25%	
Wakefield 040B	2	0.17%	0.17%	
Wakefield 040C	5	0.42%	0.42%	
Wakefield 040D	1	0.08%	0.08%	
Wakefield 041C	3	0.25%	0.25%	
Wakefield 042A	5	0.42%	0.42%	
Wakefield 042B	4	0.34%	0.34%	
Wakefield 042C	3	0.25%	0.25%	
Wakefield 042D	2	0.17%	0.17%	
Wakefield 042E	2	0.17%	0.17%	
Wakefield 043A	4	0.34%	0.34%	
Wakefield 043B	3	0.25%	0.25%	
Wakefield 043D	1	0.08%	0.08%	
Wakefield 044A	3	0.25%	0.25%	
Wakefield 044B	1	0.08%	0.08%	
Wakefield 045A	1	0.08%	0.08%	
Wakefield 045B	4	0.34%	0.34%	
Wakefield 045C	3	0.25%	0.25%	
Wakefield 045D	3	0.25%	0.25%	
Wealden 006A	1	0.08%		0.08%
Wealden 006B	1	0.08%		0.08%

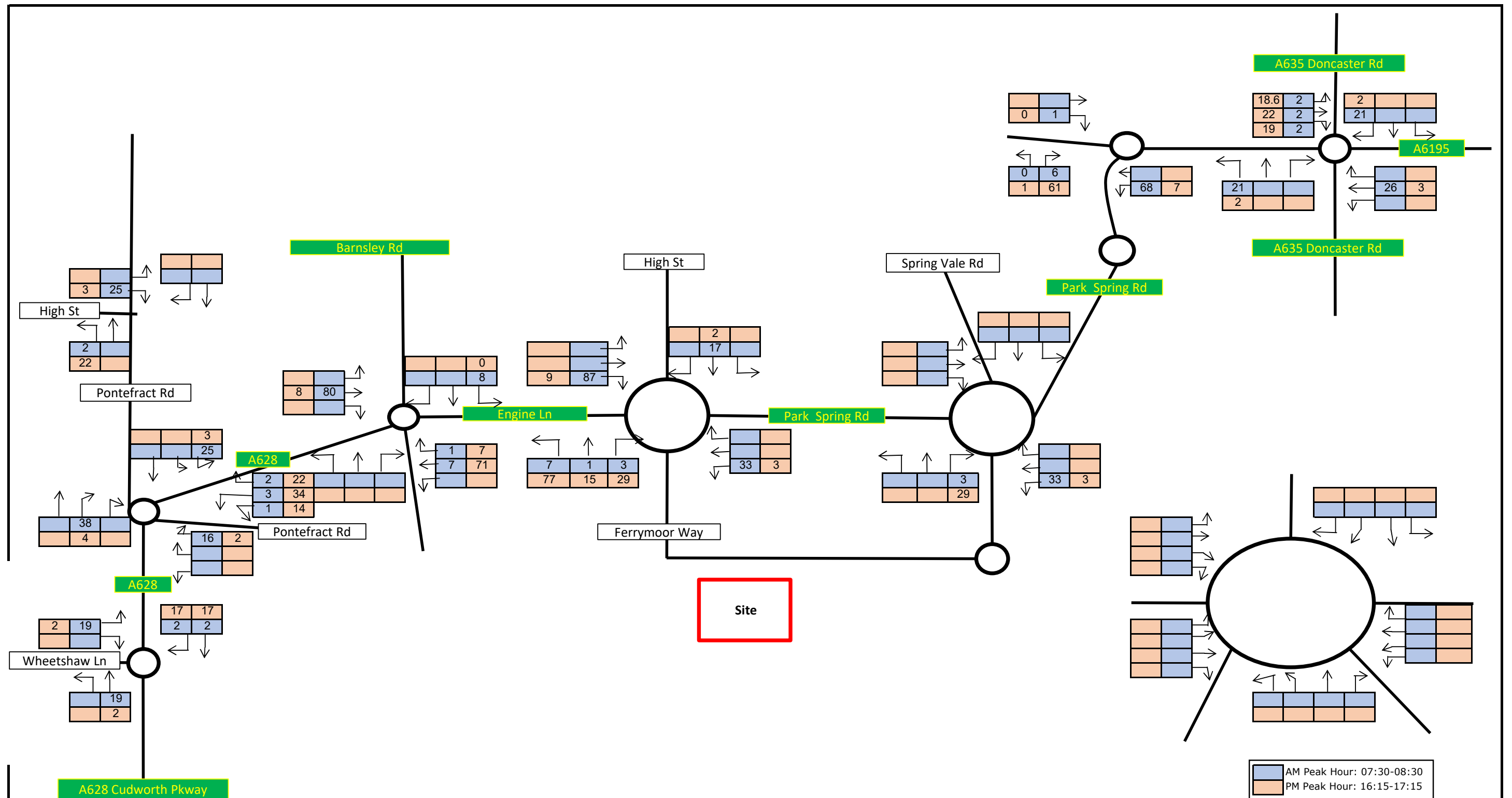
1179	1	65.61%	34.39%
------	---	--------	--------

Appendix G Pen Hill TS Extract – Base Flows



Appendix H

Pen Hill Estate TS Extract – Committed Development



Appendix I Modelling Outputs

Junctions 10									
PICADY 10 - Priority Intersection Module									
Version: 10.0.2.1574									
© 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: 220125 Proposed Ghost Island Access.j10

Path: L:\Houghton Main, Barnsley - 21034\ANALYSIS\CAPACITY\Priority Junctions

Report generation date: 02/03/2022 15:02:17

»2026 Design, AM

»2026 Design, PM

Summary of junction performance

	AM				PM			
	Set ID	Queue (PCU)	Delay (s)	RFC	Set ID	Queue (PCU)	Delay (s)	RFC
2026 Design								
Stream B-C	D1	0.0	8.16	0.01	D2	0.0	6.89	0.03
Stream B-A		0.0	11.31	0.03		0.1	10.85	0.08
Stream C-AB		0.0	6.51	0.03		0.0	6.58	0.01

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

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

File summary

File Description

Title	A6195 Site Access
Location	
Site number	
Date	06/09/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	SJP
Description	Drawing 21034-GA-101

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
D1	2026 Design	AM	ONE HOUR	08:00	09:30	15	✓
D2	2026 Design	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

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

2026 Design, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Site Access - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.26	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.26	A

Arms

Arms

Arm	Name	Description	Arm type
A	Park Springs Road (N)		Major
B	Site Access		Minor
C	Park Springs Road (S)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Park Springs Road (S)	7.00		✓	3.25	250.0	✓	12.00

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

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Site Access	One lane plus flare	10.00	10.00	7.30	5.65	5.36	✓	3.00	250	250

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	793	0.138	0.349	0.220	0.499
B-C	804	0.118	0.298	-	-
C-B	801	0.297	0.297	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2026 Design	AM	ONE HOUR	08:00	09:30	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 (%)
A - Park Springs Road (N)		ONE HOUR	✓	501	100.000
B - Site Access		ONE HOUR	✓	17	100.000
C - Park Springs Road (S)		ONE HOUR	✓	546	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A - Park Springs Road (N)	B - Site Access	C - Park Springs Road (S)
	From			
	A - Park Springs Road (N)	0	31	470
	B - Site Access	11	0	6
	C - Park Springs Road (S)	530	16	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - Park Springs Road (N)	B - Site Access	C - Park Springs Road (S)
	From			
	A - Park Springs Road (N)	12	8	0
	B - Site Access	44	0	44
	C - Park Springs Road (S)	2	12	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.01	8.16	0.0	A	6	8
B-A	0.03	11.31	0.0	B	10	15
C-AB	0.03	6.51	0.0	A	15	22
C-A					486	730
A-B					28	43
A-C					431	647

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	5	1	693	0.007	4	0.0	0.0	7.523	A
B-A	8	2	572	0.014	8	0.0	0.0	9.189	A
C-AB	12	3	689	0.017	12	0.0	0.0	5.956	A
C-A	399	100			399				
A-B	23	6			23				
A-C	354	88			354				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	5	1	672	0.008	5	0.0	0.0	7.779	A
B-A	10	2	530	0.019	10	0.0	0.0	9.975	A
C-AB	14	4	667	0.022	14	0.0	0.0	6.175	A
C-A	476	119			476				
A-B	28	7			28				
A-C	423	106			423				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	7	2	642	0.010	7	0.0	0.0	8.162	A
B-A	12	3	470	0.026	12	0.0	0.0	11.311	B
C-AB	18	4	637	0.028	18	0.0	0.0	6.507	A
C-A	584	146			584				
A-B	34	9			34				
A-C	517	129			517				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	7	2	642	0.010	7	0.0	0.0	8.164	A
B-A	12	3	470	0.026	12	0.0	0.0	11.310	B
C-AB	18	4	637	0.028	18	0.0	0.0	6.507	A
C-A	584	146			584				
A-B	34	9			34				
A-C	517	129			517				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	5	1	672	0.008	5	0.0	0.0	7.783	A
B-A	10	2	530	0.019	10	0.0	0.0	9.977	A
C-AB	14	4	667	0.022	14	0.0	0.0	6.176	A
C-A	476	119			476				
A-B	28	7			28				
A-C	423	106			423				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	5	1	693	0.007	5	0.0	0.0	7.528	A
B-A	8	2	572	0.014	8	0.0	0.0	9.191	A
C-AB	12	3	689	0.017	12	0.0	0.0	5.956	A
C-A	399	100			399				
A-B	23	6			23				
A-C	354	88			354				

2026 Design, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm visibility to right	B - Site Access - Minor arm geometry	Visibility to right expected to have two components if the arm has two lanes, or two lanes in a flared section.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	Two-way	Two-way		0.29	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.29	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
D2	2026 Design	PM	ONE HOUR	17:00	18:30	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 (%)
A - Park Springs Road (N)		ONE HOUR	✓	759	100.000
B - Site Access		ONE HOUR	✓	39	100.000
C - Park Springs Road (S)		ONE HOUR	✓	581	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A - Park Springs Road (N)	B - Site Access	C - Park Springs Road (S)
From	A - Park Springs Road (N)	0	10	749
	B - Site Access	26	0	13
	C - Park Springs Road (S)	576	5	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A - Park Springs Road (N)	B - Site Access	C - Park Springs Road (S)
From	A - Park Springs Road (N)	0	9	3
	B - Site Access	1	0	1
	C - Park Springs Road (S)	5	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-C	0.03	6.89	0.0	A	12	18
B-A	0.08	10.85	0.1	B	24	36
C-AB	0.01	6.58	0.0	A	5	7
C-A					529	793
A-B					9	14
A-C					687	1031

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	10	2	625	0.016	10	0.0	0.0	5.912	A
B-A	20	5	501	0.039	19	0.0	0.0	7.551	A
C-AB	4	0.94	631	0.006	4	0.0	0.0	5.736	A
C-A	434	108			434				
A-B	8	2			8				
A-C	564	141			564				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	12	3	590	0.020	12	0.0	0.0	6.283	A
B-A	23	6	443	0.053	23	0.0	0.1	8.658	A
C-AB	4	1	598	0.008	4	0.0	0.0	6.061	A
C-A	518	129			518				
A-B	9	2			9				
A-C	673	168			673				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	14	4	542	0.026	14	0.0	0.0	6.887	A
B-A	29	7	364	0.079	29	0.1	0.1	10.848	B
C-AB	6	1	553	0.010	5	0.0	0.0	6.576	A
C-A	634	159			634				
A-B	11	3			11				
A-C	825	206			825				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	14	4	542	0.026	14	0.0	0.0	6.889	A
B-A	29	7	364	0.079	29	0.1	0.1	10.852	B
C-AB	6	1	553	0.010	6	0.0	0.0	6.576	A
C-A	634	159			634				
A-B	11	3			11				
A-C	825	206			825				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	12	3	590	0.020	12	0.0	0.0	6.287	A
B-A	23	6	443	0.053	23	0.1	0.1	8.662	A
C-AB	4	1	598	0.008	5	0.0	0.0	6.063	A
C-A	518	129			518				
A-B	9	2			9				
A-C	673	168			673				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	10	2	624	0.016	10	0.0	0.0	5.917	A
B-A	20	5	501	0.039	20	0.1	0.0	7.558	A
C-AB	4	0.94	631	0.006	4	0.0	0.0	5.738	A
C-A	434	108			434				
A-B	8	2			8				
A-C	564	141			564				

Appendix J Accessibility Audit



mosodi

mobility solutions through design and innovation

Proposed Commercial Development
At Houghton Main, Barnsley
for Harworth Group
Accessibility Audit
March 2022

Quality Management

Houghton Main, Barnsley Document Ref: 21034/Accessibility Audit				
File reference	L:\Houghton Main, Barnsley - 21034\TEXT\REPORTS\220302 Accessibility Audit.docx			
Issue/revision	Initial Issue	Revision 1	Revision 2	Revision 3
Remarks				
Date	March 2022			
Prepared by	K Griffiths			
Signature				
Checked by	R Murphy			
Signature				
Authorised by	R Murphy			
Signature				

This document has been prepared for the exclusive use of the Client and unless otherwise agreed in writing by them or by Mosodi, no other party may use, make use of or rely on the contents of this document. This document cannot be assigned or transferred to any third party without the written agreement of Mosodi and the client.

Contents

1. Introduction..... 4

2. Walking Accessibility 5

3. Cycling Accessibility..... 7

IMAGES

Image 2.1 PRow Route to Great Houghton 5

Image 2.2 PRow Route to Darfield 6

FIGURES

Figure 2 Pedestrian Accessibility

Figure 3 Cycling Accessibility

APPENDICES

Appendix A Drawing No. 21034.IN.05

Appendix B Drawing No. 21034.IN.06

Appendix C RWD Park Spring Road General Arrangements Drawing

Appendix D Drawing No. 21034.IN.07

Appendix E Drawing No. 21034.IN.08

1. Introduction

1.1.1 As requested by Barnsley Metropolitan Borough Council (BMBC) this Accessibility Audit has been undertaken and prepared by Mosodi on behalf of Harworth. This report should be read in conjunction with the Transport Assessment and Travel Plan dated February 2022.

1.1.2 A walking and cycling accessibility audit was undertaken at Houghton Main on Monday 14th February 2022, the weather conditions during the site visit were wet.

1.1.3 This report provides a summary of the findings.

2. Walking Accessibility

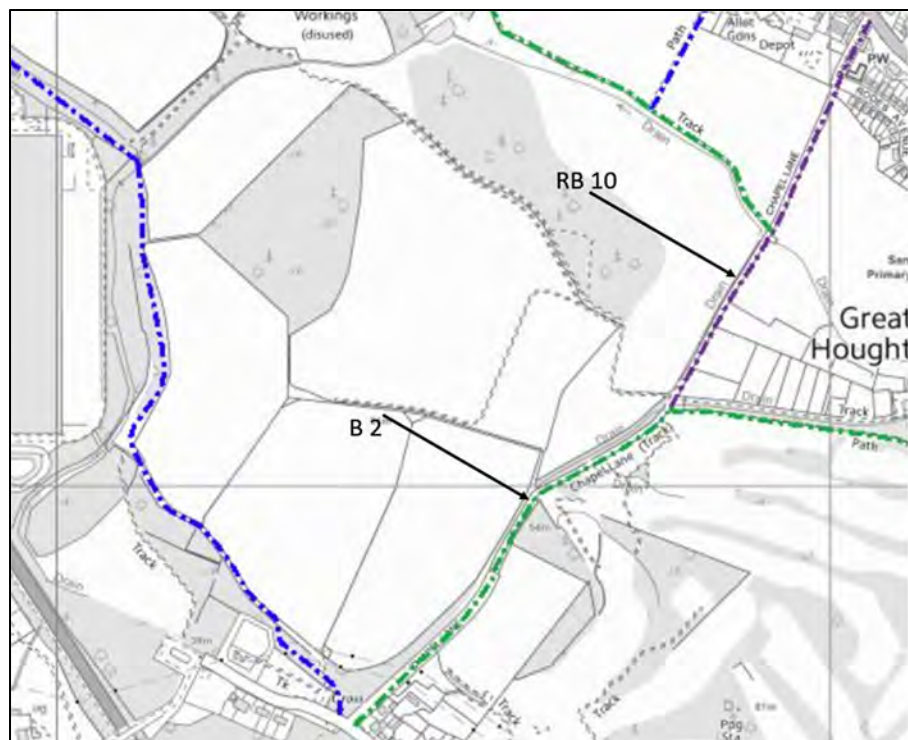
2.1.1 Photographic records of the walking accessibility audit are provided on the drawings attached as 21034.IN.05 and 21034.IN.06 in Appendix A and B respectively.

2.1.2 The audit identified that the residential areas of Little Houghton and Great Houghton can be reached by foot within 10 and 20 minutes respectively, as shown in the attached Figure 2.

2.1.3 The route to Little Houghton is direct along Middlecliffe Lane which has a tarmac footway along the entirety. In some sections a footway is provided on both flanks of the carriageway with a minimum width of circa 1.2m. Where required for residential access, dropped crossings are provided along the entirety of the footway.

2.1.4 To access Great Houghton from the Site the route includes a section of Middlecliffe Lane followed by bridleway route number 2 and restricted byway route number 10, as shown in Image 2.1.

Image 2.1 PRow Route to Great Houghton

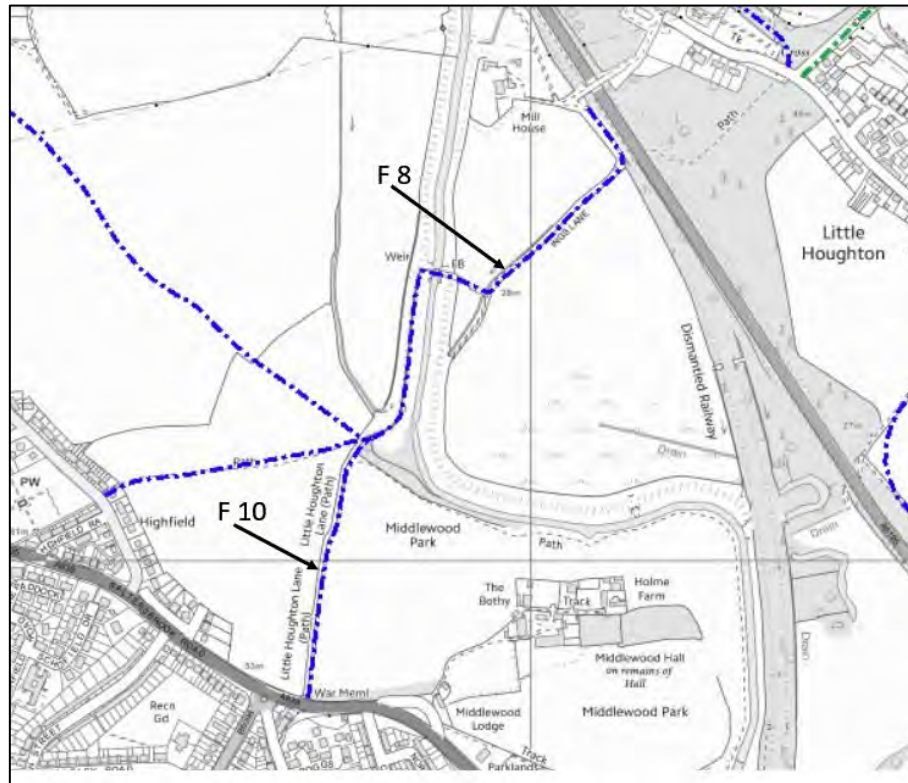


2.1.5 These routes are freely accessible with no obstacles identified at the time of the audit.

2.1.6 Several bus stops are within a comfortable walking distance of the Site, these are accessible via footways and dropped crossings and are clearly marked with poles and timetable information. Shelter and seating are also available at a number of the bus stops along Middlecliffe Lane. New bus stops are proposed as part of the development as shown on the drawing attached at Appendix C.

2.1.7 Darfield is within a 25 minute walk from the Site, as shown in Figure 2. The most efficient route is via PRow Footpath number 8, and Footpath number 10 which is accessed to the west of the Site via the existing bridge over Park Spring Road, this is shown in Image 2.2.

Image 2.2 PRoW Route to Darfield



2.1.8 This PRoW provides direct access to the A635. The route is of sufficient width and at the time of visiting had no obstructions. The initial approximate 360m has a tarmac surface with the remainder of the route a crushed stone path.

2.1.9 Further details are provided on Drawings 21034.IN.05 and 21034.IN.06.

3. Cycling Accessibility

3.1.1 Photographic records of the cycling accessibility audit are provided on the drawing attached as 21034.IN.07 and 21034.IN.08 in Appendix D and E respectively.

3.1.2 On road routes are available to all key destinations mentioned below which are shown on the attached drawings however, during the site audit more convenient routes with less severance were identified which have also been noted and are summarised below.

3.1.3 It is also noted and shown in the attached drawings that much of the key areas are surrounded by residential areas which it is assumed will have lower traffic volumes, lower vehicular speeds and less severance for cyclists.

Thurnscoe Station

3.1.4 Thurnscoe Rail Station are within a 20 minute cycle distance from the Site.

3.1.5 To access Thurnscoe Station, the most efficient route is via Middlecliffe Lane which is subject to a 30mph speed limit along its entirety. Middlecliffe Lane is street lit and parts have double yellow line markings, meaning cyclists will not need to manoeuvre around any potentially parked cars.

3.1.6 Cyclists will then have to cross Rotherham Road via a priority junction which is subject to a 30mph speed limit, there are at present no crossing facilities. Cyclists are then required to continue along Middlecliffe Lane which at this point is subject to the national speed limit with no footways or parking restrictions. Middlecliffe Lane turns into Billingley Lane before joining Houghton Road at a simple priority junction.

3.1.7 At the point of joining Billingley Lane, Houghton Road is subject to the national speed limit and has no direct crossing points. Approximately 550m along Houghton Road the speed limit reduces to 30mph which remains in place for the remainder of the journey to Thurnscoe Rail Station.

Goldthorpe Station

3.1.8 Goldthorpe Rail Station is within a 20 minute cycling distance from the site.

3.1.9 To access Goldthorpe Station, again the most efficient route is via Middlecliffe Lane, crossing at Rotherham Road and continuing on Middlecliffe Lane until the junction with Billingley Lane whereby a right turn is required onto West Kirk Lane. Although West Kirk Lane is subject to the national speed limit, there is a restriction in place for HGV's and as such will have less severance on than the alternative route which is the B6273.

3.1.10 380m along West Kirk Lane it changes to Billingley Green Lane and subsequently the speed limit reduces to 30mph. Street lights are in place along its entirety and a simple priority junction then connects to the A635 which has a segregated pedestrian/cyclist route. The A635 is then followed directly in an eastern direction to reach Goldthorpe Station.

3.1.11 Alternatively, an almost fully off road route is available for cyclists to access Goldthorpe Station, this is shown via the pink line on Drawing 21034.IN.07 at Appendix D.

Bolton upon Dearne Station

3.1.12 Bolton upon Dearne station is within a 25 minute cycle ride from the Site.

3.1.13 As with the routes to Thurnscoe and Goldthorpe Stations the quickest route is via Middlecliffe Lane and to cross Rotherham Road and continue on Middlecliffe Lane until the junction with Billingley Lane.

3.1.14 , whereby a right turn is required onto West Kirk Lane. Although West Kirk Lane is subject to the national speed limit, there is a restriction in place for HGV's and as such will have less severance on than the alternative route which is the B6273.

3.1.15 380m along West Kirk Lane it changes to Billingley Green Lane and subsequently the speed limit reduces to 30mph. Street lights are in place along its entirety and a simple priority junction then connects to the A635 which has a segregated pedestrian/cyclist route.

3.1.16 At the Hollygrove Roundabout a dropped crossing and refuse island are provided for safe crossing of the A635 onto Dudley Drive which has a 30mph speed limit. Dudley Drive forms into Commercial Road and the route follows this then onto Highgate Road, Thurnscoe Road and onto Station Road where Bolton Upon Dearne Station is located.

3.1.17 Along this route the speed limit is 30mph. On Station Road there is a zebra crossing located approximately 165m from the access to the station and a dropped crossing with tactile paving and refuse located approximately 90m from the station access, both of these provide safe crossing for both cyclists and pedestrians.

Darfield and Wombwell/Wombwell Station

3.1.18 Access to Darfield is as mentioned in Chapter 2 via the PRoW footpath number 8. From the PRoW exit on the A635 access to Wombwell Station is a further 18 minute journey via Nanny Marr Road, subject to a 30mph speed limit with sufficiently wide footways on either side of the carriageway. On the northbound carriageway due to the extensive width of the footway, parked cars along Nanny Marr Road do not intercept the highway, reducing severance for cyclists.

3.1.19 Nanny Marr Road forms into Snape Hill Road, the majority of which has double yellow lines on both sides of the carriageway reducing severance for cyclists. This is followed until it meets a simple priority junction with Station Road which again has a 30mph speed limit and is street lit. The route continues on Station Road until a simple priority junction with High Street is met, this is followed for around 50 metres until a left turn is made onto Hough Lane. Wombwell Station is located 1.35km south along Hough Lane which is double yellow lined, subject to a 30mph speed limit and street lit.

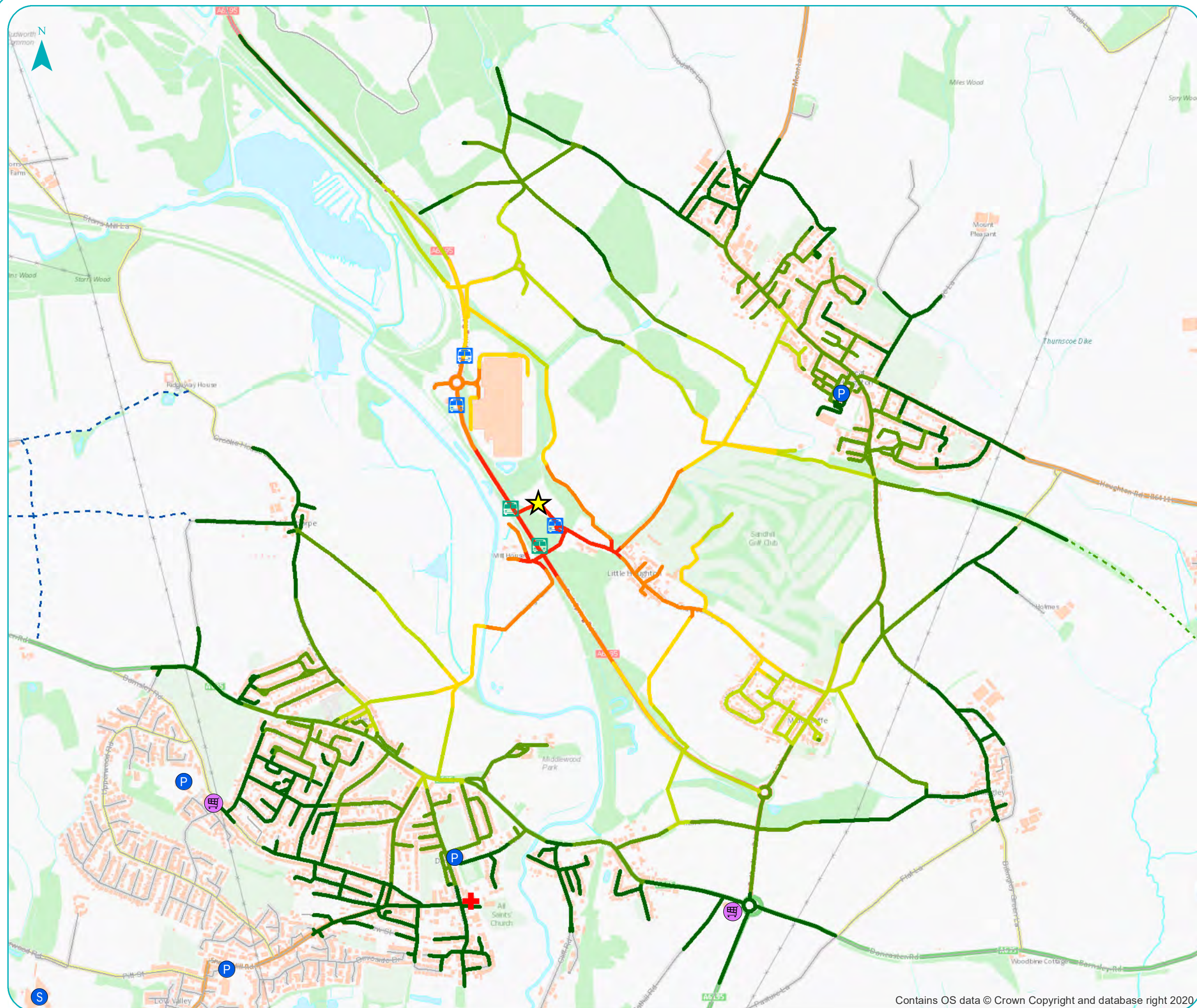
3.1.20 This route is shown on Drawing 21034.IN.08 at Appendix E.

NCN Route 67

3.1.21 The closest section of the NCN to the Site is Route 67, the location of which is shown on Drawing 21034.IN.08 in Appendix E and is an approximate 25 minute cycle ride from the Site. The route to the NCN from the site follows the same path to Wombwell as mentioned above, with access directly off Station Road.

3.1.22 This section of the NCN is part of the central Trans Pennine Trail which runs between Chesterfield and Leeds, large sections of the Trans Pennine Trail section are traffic free and picturesque, they provide a severance free route via disused rail lines and alongside canals

Figures



Key

★ Site location

--- Bridleway

--- PRoW

Bus stops

Proposed Bus Stops

Supermarkets

GP

Schools

● All Through

N Nursery

P Primary

S Secondary

C College

Pedestrian Accessibility (4.8kph)

0-5 minutes

5-10 minutes

10-15 minutes

15-20 minutes

20-25 minutes

25-30 minutes

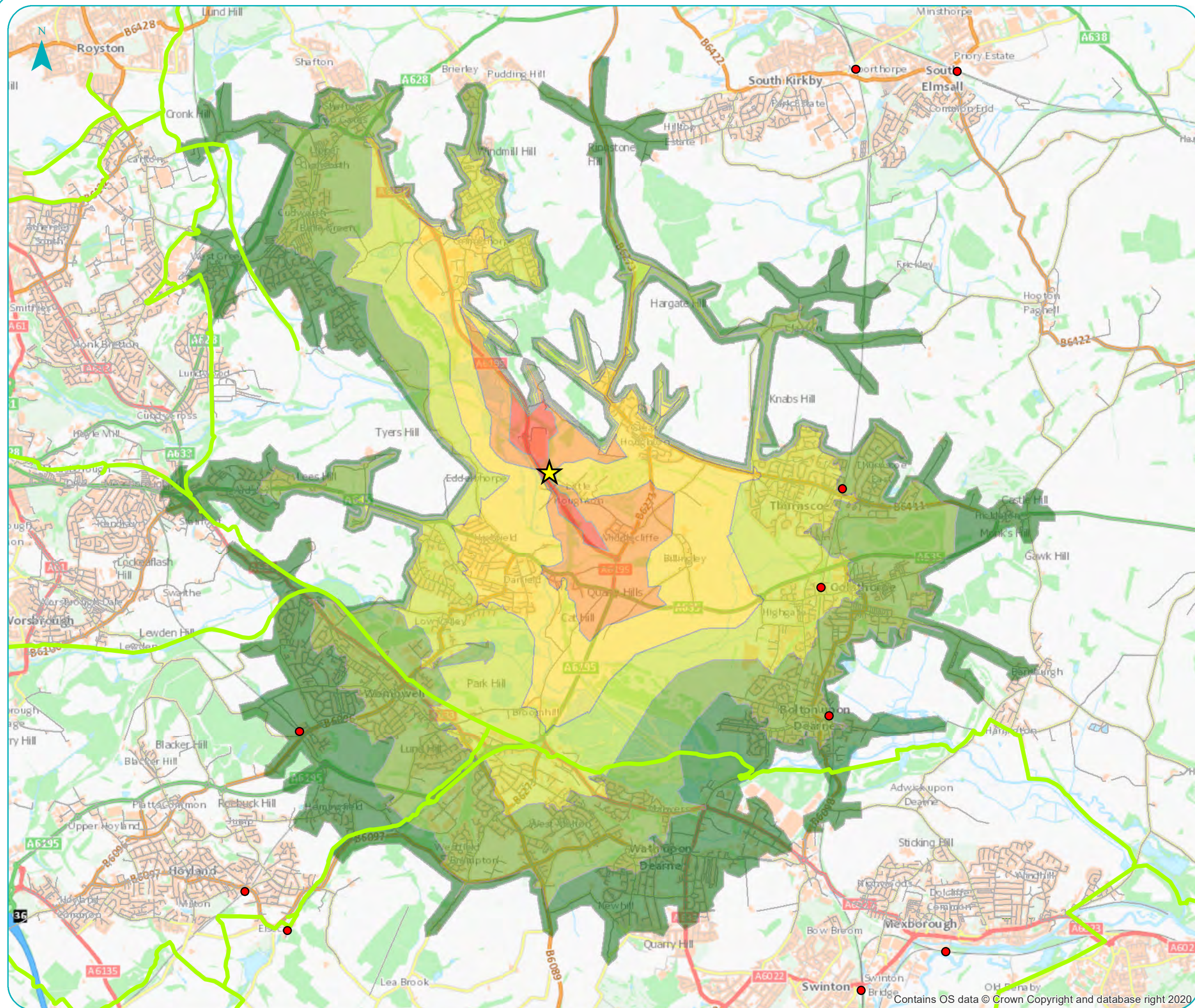
Houghton Main, Barnsley
Commercial Development
Pedestrian Accessibility

Figure 2

Scale @ A3 1:15,000

mosodi
mobility solutions through design and innovation

Contains OS data © Crown Copyright and database right 2020



Key

- ★ Site location
- Railway Stations
- National Cycle Network
- Cycle Accessibility (16kph)
- 0-5 minutes
- 5-10 minutes
- 10-15 minutes
- 15-20 minutes
- 20-25 minutes
- 25-30 minutes

Houghton Main, Barnsley
Commercial Development
Cycle Accessibility

Figure 3

Scale @ A3 1:50,000

mosodi
mobility solutions through design and innovation

Contains OS data © Crown Copyright and database right 2020

Appendices

Appendix A Drawing No. 21034.IN.05



Public Right of Way access, which provides access south to Chapel Lane – Photo taken from South East



Bus stop with shelter and layby located along Park Spring Road – Photo taken facing South



Dropped crossings and pedestrian refuse areas on all arms of the roundabout – Photo taken facing East



Footways provided on either side of Middlecliffe Lane for the entirety to a minimum width of circa 1.3m – Photo taken facing South East



Public Right of Way access to Great Houghton via Chapel Lane – Photo taken facing North East



Public Right of Way access to Chapel Lane from Great Houghton – Photo taken facing South



Junction along Chapel Lane public right of way – Photo taken facing North East



Public Right of Way access joining Great Houghton to Chapel Lane – Photo taken facing West



Crossing point with dropped kerbs, tactile paving and central island where southbound carriageway footpath ends. Allows crossing to NB bus stop – Photo taken from South



Bus Stop accessed from the south of the Site



Bus Stop located at the Chapel Lane/Middlecliffe Lane junction – Photo taken facing South East



Alternative Public Right of Way access parallel to Chapel Lane – Photo taken facing North East

Notes:

1. This drawing is subject to copyright and is not to be reproduced in part or whole without approval.
2. Do not scale this drawing - check all dimensions on site.

GENERAL COMMENTS

15.02.22 INITIAL ISSUE

Rev: 1

Date: 15.02.22

Status/Amendments:

By: KG

mosodi

mobility solutions through design and innovation

Manchester

0161 413 5168

Leeds

0113 323 0854

Client

Harworth

Project

Houghton Main

Drawing Title

Walking Accessibility Audit

Drawn By

KG

Checked By

RM

Approved By

RM

Scale

1:1000

Paper Size

A0

Date Created

07.08.20

Drawing Number

21034.IN.05

Drawing Revision

-