PROOF OF EVIDENCE OF PAUL IRWIN
ON BEHALF OF HALLAM LAND MANAGEMENT

Appeal regarding refusal of an outline planning application for residential development at Deepcar, Stocksbridge

Land At Junction With Carr Road, Hollin Busk Lane, Sheffield, S36 1GH

Planning Inspectorate Reference: APP/J4423/W/21/3267168

Sheffield City Council Planning Reference: 17/04673/OUT
(Formerly PP-06524621)

19 May 2021
Version 2.0

1 Personal Qualifications and Experience

1.1 My name is Paul Irwin. I have an Honours Degree (BSc) in Geography, and a Masters Degree (MSc Eng) in Transport Planning and Engineering from the University of Leeds. I am a Member of the Chartered Institution of Highways & Transportation (MCIHT). I am a Director of Fore Consulting Limited, a specialist Transportation Consultancy. I am a highway and transport consultant based in Leeds, with over 30 years of relevant professional experience in the private sector. I spent 17 years working for Ove Arup & Partners Consulting Engineers before establishing and becoming a Director of Fore Consulting in January 2012.

1.2 I have worked on a wide range of development projects throughout the United Kingdom, including residential developments, employment sites, retail and mixed-use schemes, sport facilities and education projects.

1.3 I have been appointed to represent the appellant (Hallam Land Management) in relation to an appeal of a planning application (planning application reference: 17/04673/OUT) for a proposed development at Land at Junction With Carr Road, Hollin Busk Lane, Sheffield, S36 1GH. I have visited the appeal site and the surrounding area on numerous occasions both prior to and during the preparation of my evidence.

1.4 The planning application was refused on 20 July 2020 by Sheffield City Council (SCC), reference Decision Notice (CD1.9). The application was not refused on highways and transportation grounds.

1.5 Highways issues have been raised by interested parties. The Inspector has requested that these are dealt with through the submission of evidence from the appellant addressing the concerns raised. This Proof of Evidence has therefore been prepared to respond to the issues raised by interested parties in respect of highways and transportation.

1.6 The evidence which I have prepared for this appeal (Reference APP/J4423/W/21/3267168) is true and is given in accordance with the guidance of my professional institute. I confirm that the opinions expressed are my true and professional opinions.

1.7 In providing expert evidence to the inquiry, I am fully aware that my duty is to the inquiry and I provide my honestly held professional views, irrespective of by whom I am employed.

2 Summary of Transport Assessment and Scope of Evidence

Transport Assessment

2.1 In 2016, Fore was commissioned by Hallam Land Management to provide highways and transport advice in relation to the proposed development and a Transport Assessment (Issue v1.0) dated 27 June 2017 (CD1.23) and Residential Travel Plan (Issue v1.0) dated 27 June 2017 (CD1.24) were prepared to accompany the planning application.

2.2 The scope of the Transport Assessment (CD1.23) was discussed and agreed with the Local Highway Authority, Sheffield City Council's Highways Officer, Matthew Dodson (the Council's Highway Services) through regular email and telephone correspondence along with meetings held on Monday 8 August and Friday 26 August 2016.

2.3 In scoping the requirements for the Transport Assessment (CD1.23), the email correspondence received from the Council's Highway Services confirmed:

- That the proposed dates, times and locations of the traffic surveys are acceptable.
- The committed developments to be included as part of the traffic impact analysis.
- The Council's Highway Services contact details for traffic signal, highways adoption records and historical accident data.
- That the predicted residential trip rates for the proposed development are acceptable.
- That the proposed vehicular access arrangement onto Carr Road and the provision of an uncontrolled pedestrian crossing across Carr Road at a point south of the proposed access, are acceptable.
- The extent and estimated cost of the improvement measures to be provided by the developer at the Manchester Road / Vaughton Hill / Carr Road junction.

2.4 Based on the approach agreed with the Council's Highway Services, the submitted Transport Assessment (CD1.23) concluded that:

- The development accords with both national and local transport policy.
- The development offers the opportunity to travel to the site by modes other than single occupancy car trips, including walking, cycling and public transport. A Travel Plan (CD1.24) was prepared, aimed at further encouraging sustainable travel to the site and reducing the number of single occupancy car trips.

- The development provides a suitable access arrangement onto Carr Road. The access arrangement has been discussed in detail and agreed with the Council's Highway Services as part of the pre-application discussions.

- With the exception of the B6088 Manchester Road / A6102 Manchester Road / A6102 Vaughton Hill signalised junction, it was demonstrated that all other junctions considered as part of the study highway network will continue to operate within capacity both with and without the development in place.

- It was demonstrated that the B6088 Manchester Road / A6102 Manchester Road / A6102 Vaughton Hill signalised junction is currently operating close to operational capacity and that the junction was predicted to exceed capacity for a future year 2022, without the proposed development in place. It was also demonstrated that the committed developments have a much greater impact on the traffic flows at the junction than the proposed development.

- Notwithstanding this, a series of meetings and discussions had been held with the Council's Highway Services and Traffic Signal Team to identify suitable improvement measures at the junction which could be brought forward as part of the proposed development. These are:

    - The provision of additional detectors on Manchester Road and Carr Road to detect when there is queuing on Manchester Road and queuing on Carr Road. Essentially, this allows queue lengths along Carr Road to be detected as part of the recognised queues along the B6088 Manchester Road arm, which in turn re-optimises the green time given to this arm as part of the signal control. In practice, the effect of the improvement will be to increase the green time given to vehicles approaching the junction from both the B6088 Manchester Road and Carr Road.

    - Additional inputs to be configured into the MOVA system to provide bus priority for buses on all approaches to the junction including Carr Road.

- Through discussion with the Council's Highway Services and Traffic Signal Team, the measures outlined above were considered to be appropriate in scale and context with the proposed development's impact at the signalised junction and it was envisaged that a suitable planning condition would be attached to any approval in order to ensure that the above improvement measures are implemented as part of the development proposals.

- The development is unlikely to materially affect the road safety record on the study highway network.

2.5 Overall, the residual cumulative impacts of the proposed development were certainly not considered to be severe within the context of the NPPF (CD4.1) and it was concluded that, in terms of highways, the development proposal is acceptable.

2.6 Following submission of the planning application, a telephone call was held between Fore and the Council's Highway Services on 16 February 2018 during which the Council's Highway Services confirmed that they were satisfied with the findings of the Transport Assessment (CD1.23).

2.7 On 12 April 2018, formal highways comments were sent by email to the appellant's planning consultants DLP Consultants (DLP) from SCC's Principal Planning Officer, Bob Turner (SCC Planning). Responses to each of the points raised were provided by Fore and issued back to SCC Planning by DLP on 9 May 2018. The email correspondence on the matters raised confirmed that:

- The predicted mode share for the site was based on the Census data for the area in which the site is located. Walking distances to the nearby bus stops and bus service frequencies were confirmed.

- The Council's Highway Services confirmed that the predicted increase in trips on Carr Road is consistent with what would be expected by a development of this nature and requested more commitment to encourage use of alternative methods of transport. It was confirmed that development of a Final Travel Plan would be subject to a planning condition.

- The Council's Highway Services advised that the proposed site access is on a stretch of road widely used by parents picking up and dropping off children attending the local schools and confirmed the need for a pedestrian crossing point. The predicted levels of development traffic at the start and end of the school day were quantified and it was confirmed that a new uncontrolled pedestrian crossing across Carr Road would be provided in the vicinity of the proposed site access junction. This is shown on the access plan included at Appendix A.

- The Council's Highway Services noted that the Fox Valley and Bloor Homes developments were to provide a contribution towards the installation of MOVA software at the Manchester Road/Vaughton Hill junction to improve its efficiency. The Council's Highway Services requested that a condition be imposed on the development proposal to secure provision by the developer of MOVA sensors across Carr Road so that Carr Road can be incorporated into the junction software. It was confirmed that the developer would commit to providing the additional MOVA sensors and that it had been agreed that this would improve the operation of the junction.

Officer's Report

2.8 The Officer's Report dated 14 July 2020 (CD1.7) provides a summary of the highways and transportation points raised as part of representations and public consultation. The report also summarises comments from the Council's Highway Services.

2.9 The highways and transportation comments received from interested parties as part of representations and through public consultation can be broadly summarised as follows:

- Proximity of the proposed site access in relation to Royd Nursery Infant School and impact of the development on parking adjacent to the school.
- Increase in traffic along Carr Road as a result of the development proposal would have a detrimental effect on road safety.
- Perceived recent increase in peak period traffic at the Carr Road / Manchester Road junction and perceived increase in large articulated HGVs passing the school visiting the nearby forest land.
- Existing capacity constraints at the Carr Road / Manchester Road / Vaughton Hill junction.
- Junction capacity assessments of the Carr Road / Manchester Road / Vaughton Hill junction considered to be out of date.
- Excessive traffic speeds on Carr Road.
- Walking distances and topography from the development site to local facilities.
- Perceived poor public transport connections.

In addition I have reviewed the key third party representations that have been made on highways issues in respect of this planning appeal.

2.10 The Officer's Report (CD1.7) highways and transportation comments provided by the Council's Highway Services can be broadly summarised as follows:

- Acknowledges that the Transport Assessment (CD1.23) identifies that the Manchester Road / Vaughton Hill junction is operating close to capacity and advises that the installation of MOVA software will increase the junction capacity.
- Advises that the increase in traffic as a result of the development, when taken on its own and cumulatively with other developments, is expected to be less than the

expected increase in capacity at the Manchester Road / Vaughton Hill junction as a result of installing MOVA and so the development's impact is considered acceptable.

- Advises that the Council's Highway Services have no objection to either the siting or design of the proposed access onto Carr Road.

- Advises that the site itself is not considered to generate additional traffic from school trips due to the proximity of the school, so the potential for disruption to Royd Nursery Infant School is solely from the displaced parking as a result of the siting of the access. It is noted that there is the potential for parents to use the new access road for parking during pick up and drop off and that it is not considered that this would significantly worsen the free and safe flow of traffic on Carr Road and no objections are raised to this aspect.

- Advises that the proposed site access is predicted to operate well within the junction's operational capacity and that the nearby junctions along Carr Road (excluding the Manchester Road / Vaughton Hill junction) are also predicted to operate within capacity with minimal queues during peak periods.

- Recognises that there have been no recorded road traffic accidents within the vicinity of the proposed site access within the last five years.

- Advises that the predominant mode share for trips to the development will be by car.

- Advises that there are bus stops within the vicinity of the site on Royd Lane, St Margaret Avenue, Wood Royd and Carr Road. The walk to the bus stops on Royd Lane and from the bus stops on St Margaret Avenue to the site along Carr Road are up slight but not significant inclines but advises that the walk from Wood Royd Road includes walking up a steeper part of Carr Road to the site.

- Considers that there are limited facilities within a desirable walking distance to the site, although acknowledges that there are some local shops at Carr Road / Wood Royd Road / Armitage Road within 900m and these provide general groceries / off licence, tanning shop, newsagent, hairdressers and a takeaway.

- Recognises that the applicant has taken steps to encourage sustainable access to the site through a commitment to provide bus shelters and through implementation of a Travel Plan (CD1.24) that includes a range of sustainable travel measures, including providing new residents with information on sustainable travel opportunities to the site and subsidised travel passes for the first year, and electric vehicle charging points for each dwelling.

Scope of Evidence

2.11 The scope of this evidence addresses those highways issues raised by interested parties. The following sections of this Statement deal with each of the principal points in turn, and where appropriate the assessments that were undertaken in 2017 have been updated.

2.12 In addition I am aware of the recent submission of the revised illustrative masterplan (April 2021) and associated parameter plans. I understand that this may potentially result in a small reduction in the number of dwellings (a total of 83 dwellings) compared to those assessed (a total of 85 dwellings), which would further reduce the development's traffic impact. The access arrangements onto Carr Road are unaffected and based on the small potential reduction in development quantum, I do not consider that it is appropriate to undertake further assessments beyond those already presented.

3 Issue 1: Vehicular access arrangement and relationship with parking and drop off at Royd Nursery Infant School

3.1 In this section of my evidence I consider the design and siting of the proposed vehicular access.

3.2 The proposed vehicular access serving the development would be located off Carr Road between the properties at Glenview and no. 94 Carr Road. The application site's frontage between these properties is approximately 107m with the proposed access to be sited approximately 35m north of the property at Glenview.

3.3 The location of the access is in excess of the minimum requirement of 20m junction spacing to the junction of Coultas Avenue, as set out in the South Yorkshire Residential Design Guide, as the proposed junction is to be located 51m from Coultas Avenue. A Traffic Regulation Order will be sought to provide parking restrictions in the form of double yellow lines at the site frontage along the required extent of the visibility splays.

3.4 Visibility splays were determined through the measurement of the 85th percentile vehicle speeds, undertaken through an Automatic Traffic Count tube counter located at the site access point and comprising one week of data. Visibility splays were set to match the recorded 85th percentile speed. The proposed access would have a 6.0m carriageway width, 2.0m wide footways which will connect to the existing provision along Carr Road, and visibility splays of 2.4m by 52m (north) and 44m (south).

3.5 There is currently no footway provision along the majority of the application site's frontage onto Carr Road. However, a short section of footway is present along the western side of Carr Road which primarily serves the cluster of residential properties to the south of the proposed site access. The footway resumes at the northern most extent of the site's frontage along Carr Road and continues on approach to and beyond Royd Nursery Infant School.

3.6 Approximately 100m north of the proposed site access on Carr Road there is an uncontrolled pedestrian crossing point with 'school keep clear' road markings and kerb buildouts which leads directly to the pedestrian access serving Royd Nursery Infant School.

3.7 In the course of preparing the Transport Assessment (CD1.23) and reviewing evidence in preparation for this inquiry, I have visited the site on numerous occasions and observed the local road network in the morning period for school arrivals, and in the afternoon for school departure times. For a period of approximately 30 minutes, parents park up on Carr Road and Coultas Avenue, to drop-off and collect children in the vicinity of the school. Parking duration is typically a few minutes. Parents tend to park as close to the school as possible, and mainly around the junction of Coultas Avenue, however I have seen cars park further to the south in the vicinity of the proposed site access.

3.8 I consider that, as a result of the formation of the site access together with the associated Traffic Regulation Order to provide parking restrictions in the form of double yellow lines at the site frontage along the required extent of the visibility splays, that a small number of parking opportunities along Carr Road will be displaced. However, there is plenty of other on-street parking that is available on Carr Road, Coultas Avenue and St Margaret Avenue where cars can park for the short-term drop-off and collection of pupils. In addition to this the proposed new residential access road in the vicinity of the proposed new site access would afford for further parking opportunities which would not increase congestion, nor cause any highway safety issues.

3.9 The on-street parking opportunities in the immediate area of the site with the proposed development in place are shown on Figure 1. It should be noted that Figure 1 is likely to be an underestimate of the opportunities for on-street parking since it discounts parking at junction radii. As I have observed, vehicles do park along the junction radii at the school drop off and pick up times.

3.10 Future residents of the site who wish to access Royd Nursery Infant School will likely do so on foot. As such, pedestrian accessibility between the site and Royd Nursery Infant School will be accommodated by the provision of a new footway, which will connect the site to the existing footway provision on approach to Royd Nursery Infant School.

3.11 A new uncontrolled pedestrian crossing across Carr Road is proposed as part of the site access arrangement (and shown on the access plan included at Appendix A, which is for approval). The crossing will be located to the south of the site access and will improve pedestrian connectivity across Carr Road.

3.12 Section 4 of my Evidence confirms that, based on the agreed trip rates, the proposed development is predicted to generate 54 and 44 two-way vehicle trips during the Weekday AM and PM peak hours respectively. It should be stressed that these figures are robust since they represent the highest generating peak hours of the development traffic, namely 0800-0900 hours and 1700-1800 hours. In particular, it is noted that the PM peak of the development does not correspond to the finishing time of the nursery, which is typically around 1500 hours, where traffic associated with the development will be lower. Nonetheless, the highest generating peak hours of the development equates to approximately one new vehicle passing the nursery along Carr Road approximately every one to two minutes.

3.13 Section 6 of my Evidence confirms that based on the most recent five-year accident data there have been no recorded road traffic accidents within the vicinity of the proposed site access or within the vicinity of the existing uncontrolled pedestrian crossing serving Royd Nursery Infant School.

Conclusion

3.14 As reflected in the Officer's report (CD1.7) and agreed with the Council's Highway Services in the SoCG Highways (CD6.10), the proposed access layout represents an appropriate solution in highway design terms (including visibility) and safety for all users. The provision of the extended footway on the western side of Carr Road, together with the additional uncontrolled pedestrian crossing, will represent an improvement in facilities for pedestrians.

3.15 As agreed with the Council's Highway Services in the SoCG Highways (CD6.10), there have been no recorded accidents within the vicinity of the proposed site access or Royd Nursery Infant School within the latest five-year period and there is no evidence of a pattern of accidents on the study network which indicate a specific site-related issue that would need to be addressed to safely accommodate the (relatively small) increase in traffic associated with development.

3.16 The proposed access will displace a small number of parking opportunities for cars from Carr Road at school arrival and departure times. However these can be accommodated elsewhere on Carr Road, Coultas Avenue, St Margaret's Avenue or the new residential site access road where cars can park for short term drop-off or collection of pupils.

4 Issue 2: Projected increase in traffic as a result of the development and peak period impact at the Carr Road / Manchester Road junction

4.1 In this section of my evidence I provide an updated assessment of the predicted traffic generations associated with the proposed development and peak period impact of the development at the Carr Road / Manchester Road junction. The updated assessments draw on the agreed methodology employed in the Transport Assessment (CD1.23) submitted with the planning application.

4.2 Given the lapse in time between the submission of the planning application and this Appeal, I consider it appropriate to update the existing position for 2021 and future year assessment for 2026, as a sensitivity analysis for robustness.

Development Traffic Generation

4.3 The traffic generation analysis undertaken in the accompanying Transport Assessment (CD1.23) assumed a development of up to 93 privately owned houses at the site. The scale of the proposed development has since reduced to up to 85 privately owned houses. Consequently the predicted peak hour traffic generations associated with the proposed development have reduced.

4.4 Table 1 provides an updated assessment of the predicted peak hour traffic generations. It should be noted that the trip rates per dwelling have been retained as those previously agreed and accepted as being suitable for the proposed development by the Council's Highway Services. Updated TRICS assessments for Edge of Town/Suburban privately owned houses suggests marginally lower trip generations. Therefore using the previously accepted trip rates is a robust approach and likely marginally overestimates vehicular flows from the proposed development.

Table 1: Predicted Vehicular Generations

Land Use	Unit	Vehicular Trip Generations (Vehicles)			
		AM Peak (0800-0900)		PM Peak (1700-1800)	
		Arrivals	Departures	Arrivals	Departures
Residential	85 Dwellings	12	42	30	14
Residential	93 Dwellings (as assessed in the Transport Assessment)	13	46	33	16

4.5 It can be seen that the development is predicted to generate a total of 54 (12 arrivals and 42 departures) and 44 (30 arrivals and 14 departures) two-way vehicle trips during the identified Weekday AM and PM peak hours. This compares to 59 and 49 two-way vehicle trips that were previously assessed in the Transport Assessment (CD1.23).

4.6 In practice it is considered that the trip generation from the development proposal will be relatively insignificant in the context of existing traffic flows on the local network. At key locations this would be considered as lying within the range of daily variation for peak hour traffic flows.

Development Traffic Distribution

4.7 The vehicle trip distribution associated with the development proposal was determined based on the dataset, 'Location of usual residence and place of work by method of travel to work' (MSOA level), as taken from the 2011 Census, this being the most recent census data available.

4.8 The destination of travel to work for people who live in the Sheffield 001 and 002 Middle Layer Super Output Area (MSOA) has been considered, these being the MSOAs covering the built-up areas of Deepcar and Stocksbridge.

4.9 Destinations were broken down into MSOAs for the districts of Sheffield, Barnsley, High Peak and Kirklees; for other destinations, the local authority district has been used.

4.10 The following modes of travel were considered: 'Driving a car or van'; 'Taxi; and, 'Motorcycle, scooter or moped'.

4.11 The number of vehicle trips to each MSOA / local authority district was expressed as a percentage of the total and then assigned to routes on the highway network to give the vehicle trip distribution to and from the proposed development site.

4.12 This Census dataset is a suitable basis for understanding the current distribution of trips for residents of the existing adjacent settlements, and therefore for estimating the likely travel behaviour of future residents at the site. The approach to calculating the trip distribution was described in the Transport Assessment (CD1.23) and was accepted by the Council's Highway Services.

4.13 The resulting vehicle trip distribution for the development traffic is replicated from the Transport Assessment (CD1.23) in Table 2 and is illustrated on Figure 2.

Table 2: Vehicle Trip Distribution – Development Traffic

Ref.	Route	Vehicle Trip Distribution
1	A616 (East)	31.8%
2	Soughley Lane	0.0%
3	Manchester Road (West)	13.0%
4	Manchester Road (South)	41.7%
5	Cockshot Lane	5.6%
6	Sheffield 001 / 002 (MSOA)	7.8%
7	A616 (West)	0.0%
8	Royd Lane	0.0%
9	Coal Pit Lane	0.0%
Total		100.0%

4.14 The predicted Weekday AM and Weekday PM peak hour development traffic flows are shown on Figures 3 and 4.

Baseline Traffic Data

4.15 The Transport Assessment (CD1.23) utilised fully classified junction turning counts undertaken in June 2016 at the B6088 Manchester Road / A6102 Manchester Road / A6102 Vaughton Hill three-arm signalised junction, including the priority junction with Carr Road. These were uplifted to the then Existing Year 2017 using background traffic growth factors taken from TEMPRO for principal urban roads in the Sheffield 002 Middle Layer Super Output Area (MSOA).

4.16 Due to the effects on travel behaviour of the ongoing Covid pandemic, in preparing my evidence it has not been possible to undertake any representative new traffic surveys. However, having reviewed the baseline data and trends since 2016 I am confident that the outcome of the traffic generation and impact analysis remains robust. Indeed, I consider that it underestimates the capacity available at the key junctions. A review of information submitted as part of a more recent planning application REF: 19/00054/FUL for the erection of 428 dwellings with associated infrastructure (the Bloor Homes site), which was approved by SCC, has determined that more recent turning counts were undertaken at the junction (excluding movements to / from Carr Road) in November 2018. This base traffic data was accepted by the Council's Highway Services in their review of this planning application.

4.17 Table 3 compares the identified peak hour traffic flows at the junction between the Existing Year 2017 used in the Transport Assessment (CD1.23) and the 2018 surveys used as part of the Bloor Homes planning application 19/00054/FUL.

Table 3: Entry Flow Comparison

Entry Arm	Weekday AM Peak Hour			Weekday PM Peak Hour		
	Existing 2017 (Fore Transport Assessment)	2018 Surveys (Bloor Homes Planning Application 19/00054/FUL)	Diff.	Existing 2017 (Fore Transport Assessment)	2018 Surveys (Bloor Homes Planning Application 19/00054/FUL)	Diff.
A6102 Vaughton Hill	331	271	60 (22.1%)	502	420	82 (19.5%)
A6102 Manchester Road (s)	324	276	48 (17.4%)	603	490	113 (23.1%)
B6088 Manchester Road (w)	750	653	97 (14.9%)	449	372	77 (20.7%)
TOTAL	**1,405**	**1,200**	**205 (17.1%)**	**1,554**	**1,282**	**272 (21.2%)**

4.18 Table 3 shows that the traffic flows assessed in the Transport Assessment (CD1.23) for the Existing 2017 scenario are robust since the total traffic flows at the junction are predicted to be higher by 205 (17.1%) in the Weekday AM peak hour and 272 (21.2%) in the Weekday PM peak hour than those actually surveyed in 2018 as part of the Bloor Homes planning application 19/00054/FUL.

4.19 As a further sensitivity check, the most recent data that is available has been obtained from a DfT permanent traffic count site that is located on A6102 Manchester Road (see Figure 5). This data is shown at Appendix B and covers the period up to 2019. It demonstrates that the peak hour traffic flows on this part of the local network have reduced from the date of the survey that was undertaken in 2016 to the most recent 2019 data. Traffic flows recorded at the DfT site in 2019 were lower in both the AM peak and the PM peak than those recorded for the equivalent time periods in 2016. That is, the DfT data shows that there has been no growth in peak period traffic levels between 2016 and 2019, all of which was prior to the current pandemic.

4.20 This provides further evidence that leads me to conclude that the 2016 turning count surveys at the junction provide a robust and valid baseline on which to assess the capacity of the junction. Given this, I consider that the capacity of the junction is more likely to be greater than shown in the TA. On this basis, an alternative sensitivity assessment of the junction's capacity is presented in Technical Note 1 at Appendix C which utilises the 2018 baseline survey used as part of the Bloor Homes planning application 19/00054/FUL and assumes zero background traffic growth. Technical Note 1 demonstrates that accounting for the application of the alternative testing parameters outlined above, all arms of the

junction are predicted to operate within operational capacity during both peak hours, with the proposed development in place.

4.21 Notwithstanding the alternative sensitivity assessment of the junction's capacity presented in Appendix C, my Evidence is based on the robust updated analysis provided below which utilises the higher 2016 baseline traffic survey and assumes year on year background traffic growth, in accordance with the methodology undertaken in the Transport Assessment (CD1.23).

Existing 2021 Traffic Flows

4.22 As per the agreed methodology undertaken as part of the Transport Assessment (CD1.23), background traffic growth factors have been taken from TEMPro for principal urban roads in the Sheffield 002 Middle Layer Super Output Area (MSOA). The growth factors have been applied to the 2016 traffic flows up to the Existing Year 2021. The applied growth factors are summarised in Table 4.

Table 4: Local Traffic Growth Factors

Peak Period	Local Traffic Growth 2016 to 2021
Weekday AM Peak Period (0700-0959)	1.0839
Weekday PM Peak Period (1600-1859)	1.0822

4.23 Utilising TEMPro, Weekday AM peak period base traffic flows are predicted to have grown at 8.39% between 2016 and 2021, and Weekday PM peak period base traffic flows are predicted to have grown at 8.22% between 2016 and 2021. It is noted that the local TEMPro factors potentially include traffic growth from the local committed developments, therefore adding further robustness (i.e. overestimation of traffic flows) to the assessments.

4.24 The Existing 2021 Weekday AM and PM peak hour traffic flows are shown on Figures 6 and 7.

Committed Development

4.25 An updated review of the committed developments to be accounted for as part of the updated junction capacity assessments has been undertaken in conjunction with the appointed planning consultants DLP Planning Limited.

4.26 The predicted traffic flows associated with the following committed developments have been accounted for as part of the updated assessments:

- Application Reference (08/02703/FUL): Mixed use development including retail (Use Class A1), food and drink (Use Class A3), Leisure (Use Class D2), offices (Use Class B1), health centre (Use Class D1) and associated highway works, ground works, car parking accommodation, public open space and landscaping works (as amended 21.7.08, 24.7.08, 22.10.08).

- Application Reference 11/00384/FUL): Residential development of 114 dwelling houses (Application to approve details in relation to appearance, landscaping, layout and scale - matters reserved by 11/00384/FUL) as amended 11.07.14, 18.08.14, 16.01.15, 28.01.15, 08.02.15, 17.02.15 and 19.02.15.

- Application Reference (19/00054/FUL): Erection of 428 dwellings with associated infrastructure including means of access, all-purpose bridge, drainage, open space and landscaping works.

- Application Reference (19/03221/REM): Erection of 284 dwellings (Use Class C3) with means of site access and associated landscaping and infrastructure works (Application to approve layout, scale, appearance and landscaping as reserved under planning permission no. 18/04258/OUT).

4.27 The total committed development traffic flows are shown on Figures 8 and 9.

Future Assessment Year 2026

4.28 For robustness, the assessments have been updated to account for a Future Year of 2026 (five years after the Appeal date).

4.29 TEMPro growth factors have been applied to the Existing Year 2021 traffic flows up to the Future Year 2026. The applied growth factors are summarised in Table 5.

Table 5: Local Traffic Growth Factors

Peak Period	Local Traffic Growth 2021 to 2026
Weekday AM Peak Period (0700-0959)	1.0807
Weekday PM Peak Period (1600-1859)	1.0810

4.30 Weekday AM peak period base traffic flows are predicted to grow at 8.07% between 2021 and 2026, and Weekday PM peak period base traffic flows are predicted to grow at 8.10% between 2021 and 2026. Again, it is noted that the local TEMPro factors potentially include traffic growth from the local committed developments, therefore adding further robustness to the assessments.

4.31 The Base 2026 (without development) traffic flows are shown on Figures 10 and 11. To provide a further robustness to the assessments, these traffic flows include both the predicted growth in baseline traffic and the predicted traffic flows associated with the committed developments. This is considered to be a particularly robust approach given that the historical DfT traffic count data (see paragraph 4.19) shows that peak period traffic flows within the vicinity of the junction have generally reduced year on year.

4.32 The development traffic has been added to the Base 2026 (without development) to provide Total 2026 (with development) traffic flows, which are shown on Figures 12 and 13.

4.33 As noted above, I consider this analysis to be robust, likely overestimating actual flows and underestimating available junction capacity.

Junction Capacity Assessments

4.34 The junction capacity assessments at the B6088 Manchester Road / A6102 Manchester Road / A6102 Vaughton Hill three-arm signalised junction (including the priority junction with Carr Road) have been re-run to account for the updated baseline and future year parameters outlined in the preceding sub-sections of my Evidence.

4.35 The Council's Highway Services has confirmed that the traffic signal specification data remains as supplied in 2016 and the junction has been modelled using the LinSig computer programme.

4.36 In understanding the data presented, the normally accepted maximum degree of saturation threshold is 90%. Above this level of saturation, a junction arm is considered to be approaching operational capacity whereby the arm could experience problems associated with queuing and delay. It does not mean that being above the threshold equates to unacceptability, rather, the operation of the junction needs to be considered more carefully, together with any impacts arising from the proposed development.

Existing 2021

4.37 The Existing 2021 results from the LinSig model are summarised in Table 6 and are presented in full at Appendix D.

4.38 It should be noted that the queue length model outputs have been calibrated by reviewing the traffic survey videos using the video data from the 2016 surveys and it is considered that the model outputs satisfactorily and reasonably reflect the queueing levels observed at the junction.

4.39 The minor differences in queuing output mainly occur on the B6088 Manchester Road arm and a review of the video surveys shows that the differences are likely to be as a consequence of the way that the junction operates in terms of a 'stop-start' queuing effect as drivers approaching the junction from the B6088 Manchester Road arm let vehicles exit from Carr Road in courtesy gaps. Nevertheless, the sum total of the recorded vehicles queuing along the B6088 Manchester Road and Carr Road arms are consistent with the model output. As set out in Section 2, the calibration of the junction modelling had been discussed and accepted by Sheffield City Council's Highways and Traffic Signal Team as part of the 2016 pre-application discussions.

Table 6: A6102 Manchester Road /A6102 Vaughton Hill / B6088 Manchester Road Junction - Existing 2021

Arm	Existing 2021			
	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Deg.Sat (%)	MMQ (PCU)	Deg.Sat (%)	MMQ (PCU)
A6102 Vaughton Hill (AH/R)	79.5	5.9	93.7	15.3
A6102 Manchester Road (s) (L/AH)	76.4	5.8	93.7	17.5
B6088 Manchester Road (w) (L/R)	80.4	15.9	92.1	15.5
Carr Road	70.2	1.9	37.0	0.3
PRC (%)	**12.0**		**-4.1**	
Cycletime (Seconds)	**75**		**84**	

4.40 The Table above shows that the outcome of the model is that all three arms of the junction are operating above 90% degree of saturation during the Existing 2021 Weekday PM peak hour with an overall PRC of -4.1%. I would reiterate that this is based upon the robust analysis of the TA and applying yearly growth. In reality, I would expect the junction to operate with lower degrees of saturation and increased capacity.

Base 2026 (Without Development)

4.41 The Base 2026 (Without Development) results from the LinSig model are summarised in Table 7 and are presented in full at Appendix D.

Table 7: A6102 Manchester Road / A6102 Vaughton Hill / B6088 Manchester Road Junction – Base 2026

Arm	Base 2026			
	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Deg.Sat (%)	MMQ (PCU)	Deg.Sat (%)	MMQ (PCU)
A6102 Vaughton Hill (AH/R)	87.7	7.8	114.7	60.0
A6102 Manchester Road (s) (L/AH)	91.3	10.5	113.2	71.6
B6088 Manchester Road (w) (L/R)	95.8	26.3	114.9	60.3
Carr Road	82.6	4.3	43.6	0.4
PRC (%)	-6.4		-27.7	
Cycletime (Seconds)	75		84	

4.42 Accounting for the robust assumption to growth in background traffic up to the future assessment year of 2026 along with the traffic flows associated with the committed developments, it can be seen that two of the three arms of the junction are predicted to be above the 90% degree of saturation level during the Weekday AM peak with an overall PRC of -6.4%. During the Weekday PM peak all three arms are predicted to be above 100% degree of saturation hour with an overall PRC of -27.7%.

Total 2026 (With Development)

4.43 The Total 2026 (With Development) results from the LinSig model are summarised in Table 8 and are presented in full at Appendix D.

Table 8: A6102 Manchester Road / A6102 Vaughton Hill / B6088 Manchester Road Junction – Total 2026

Arm	Total 2026			
	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Deg.Sat (%)	MMQ (PCU)	Deg.Sat (%)	MMQ (PCU)
A6102 Vaughton Hill (AH/R)	98.2	12.3	117.0	66.4
A6102 Manchester Road (s) (L/AH)	92.8	11.3	115.4	79.9
B6088 Manchester Road (w) (L/R)	96.3	27.4	116.8	65.5
Carr Road	90.1	8.9	45.9	0.4
PRC (%)	-9.1		-29.9	
Cycletime (Seconds)	75		84	

4.44 Accounting for the proposed development traffic, the operation of the junction is slightly worsened. However, in order to put the proposed development's impact at the junction

into context, Tables 9 and 10 below provide a summary comparison between the traffic flows of the committed developments with those of the proposed development during the identified peak hours.

Table 9: Entry Flow Comparison – Weekday AM Peak Hour (PCUS)

Entry Arm	Weekday AM Peak Hour		
	Base 2026 (no committed development)	Committed Development* - PCU (% increase)	Proposed Development* - PCU (% increase)
A6102 Vaughton Hill (AH/R)	380	43 (11.3%)	4 (1.1%)
A6102 Manchester Road (s) (L/AH)	371	146 (39.4%)	5 (1.3%)
B6088 Manchester Road (w) (L/R)	864	39 (4.5%)	30 (3.5%)
TOTAL	**1,615**	**228 (14.1%)**	**2.4%)**

*Traffic flow increase (in PCUs)

Table 10: Entry Flow Comparison – Weekday PM Peak Hour (PCUS)

Entry Arm	Weekday PM Peak Hour		
	Base 2026 (no committed development)	Committed Development* - PCU (% increase)	Proposed Development* - PCU (% increase)
A6102 Vaughton Hill (AH/R)	577	70 (12.1%)	9 (1.6%)
A6102 Manchester Road (s) (L/AH)	695	126 (18.1%)	12 (1.7%)
B6088 Manchester Road (w) (L/R)	516	106 (20.5%)	11 (2.1%)
TOTAL	**1,788**	**302 (16.9%)**	**32 (1.8%)**

*Traffic flow increase (in PCUs)

4.45 It can be seen that the committed developments have a much greater impact on the traffic flows at the junction than the traffic generated by the proposed development.

4.46 During the Weekday AM peak hour, the committed development flows are higher on all arms than those generated by the proposed development. Overall, the committed development flows represent an increase of 14.1% of the total traffic approaching the junction whilst the proposed development represents an increase of 2.4%.

4.47 Similarly, during the Weekday PM peak hour (which is the worst-case peak hour in terms of the operation of the junction) the committed development flows are significantly higher on all arms. Overall, during the Weekday PM peak hour the committed development flows represent an increase of 16.9% of the total traffic approaching the junction whilst the proposed development represents an increase of 1.8%.

Proposed Improvement Measures

4.48 The Council's Highway Services has advised that the junction was updated in May 2019 to operate under Microprocessor Optimised Vehicle Actuation (MOVA) as part of a planning condition associated with the committed Bloor Homes / Outo Kumpo developments.

4.49 MOVA is a recognised traffic signal strategy which provides an improved control and operating efficiency of traffic signals at isolated junctions. The Council's Highway Services has advised, and I would agree, that the improvements will improve the operation of the junction and thus the reported model outputs within the preceding sections (which include the robust assumptions to background traffic growth) are likely to have underestimated the junction's current operational performance.

4.50 Notwithstanding the above, it is appreciated that the proposed development will have a limited additional impact on the operation of the junction, particularly along the Carr Road approach arm during the Weekday AM peak hour (although it should be noted that even during this peak period, the proposed development is predicted to generate only approximately one new vehicle every two minutes along Carr Road on approach to the signalised junction).

4.51 Nevertheless, with the above in mind the Transport Assessment (CD1.23) concluded that, as discussed and agreed with the Council's Highway Services and Traffic Signal Team, the development's impact at this junction can be suitably offset through provision of the following measures:

- The provision of additional detectors on Manchester Road and Carr Road to detect when there is a queuing on Manchester Road and queuing on Carr Road. Essentially, this allows queue lengths along Carr Road to be detected as part of the recognised queues along the B6088 Manchester Road arm, which in turn re-optimises the green time given to this arm as part of the signal control. In effect this increases the green time given to vehicles approaching the junction from both the B6088 Manchester Road and Carr Road, which will have the effect of reducing queuing and delay on these two arms.

- Additional inputs to be configured into the MOVA system to provide bus priority for buses on all approaches to the junction including Carr Road.

Conclusion

4.52 I consider that the updated capacity assessments undertaken as part of my evidence provide a very robust analysis of the future operation of the B6088 Manchester Road / A6102 Manchester Road / A6102 Vaughton Hill three-arm signalised junction (including the priority junction with Carr Road) for the reasons presented at paragraphs 4.15 to 4.33 relating to the application of robust baseline traffic flows and assumptions relating to background traffic growth.

4.53 The findings of the updated assessments do not alter the fundamental conclusion made as part of the Transport Assessment (CD1.23). That is, as agreed and accepted by the Council's Highway Services and Traffic Signal Team, the improvement measures outlined in this section are considered to be in scale and context with the proposed development and will more than offset the development's limited impact at the junction which is agreed in the SoCG Highways (CD6.10).

4.54 To put this into further context, the proposed development is predicted to generate 39 and 32 vehicle trips through the junction during the Weekday AM and PM peak hours respectively i.e. one trip every 92 to 113 seconds. That is, the proposed development will add approximately one additional vehicle through the junction every one to two cycles of the traffic signals which I do not consider to be significant (being within the scope of daily traffic flows). Certainly, I do not consider it can be deemed to be a severe impact within the context of paragraph 109 of the NPPF (CD4.1) and this is agreed with the Council's Highway Services in the SoCG Highways (CD6.10).

4.55 The developer will provide a s106 contribution for the installation of additional MOVA sensors across Manchester Road and Carr Road, so that Carr Road can be incorporated into the Manchester Road/Vaughton Hill junction software and additional inputs to be configured into the MOVA system to provide bus priority for buses on all approaches to the junction including Carr Road.

4.56 It is the case that the improvements gained through the new signal control strategy will more than offset the limited impact of the development traffic through this junction and this is agreed with the Council's Highway Services in the SoCG Highways (CD6.10). The assessments undertaken have used a combination of robust assumptions that in combination mean that this conclusion is sound, and the impacts of the development traffic are acceptable.

5 Issue 3: Sustainable Accessibility and Public Transport

5.1 In this section of my evidence I consider the opportunities available to future residents to access local amenities by sustainable modes of travel including walking, cycling and public transport.

5.2 In considering the availability of sustainable travel modes, it is important to recognise that the site is located adjacent to the established residential areas that are immediately east and north of the site. Therefore the transport characteristics of the site will be very similar to the adjacent existing residential areas and this is agreed with the Council's Highway Services in the SoCG Highways (CD6.10).

5.3 The site will connect to the existing footway network from a new section of footway to be provided along Carr Road, formed as part of the proposed access arrangement. Dropped kerbs and tactile paving will be provided across the access mouth and a new uncontrolled pedestrian crossing will be provided to the south of the access.

5.4 A new section of footway will also be provided adjacent to the pedestrian link / emergency access onto Carr Road, a short distance to the north of Hollin Busk Lane. The footway will tie into the existing provision on the northern side of Hollin Busk Lane.

5.5 It is envisaged that the majority of pedestrian movements to / from the site will be via the proposed new access onto Carr Road, however the footway improvements between Hollin Busk Lane and the southern extent of Carr Road will provide an improved route for future residents wishing to access the bus stops located along Royd Lane.

5.6 The internal layout of the site will ensure that an attractive pedestrian environment is provided within the site, in order to encourage journeys to be made on foot.

5.7 A Residential Travel Plan (CD1.24) will be implemented at the site which will encourage future residents of the site to travel by means other than single occupancy vehicle trips. The Residential Travel Plan (CD1.24) will implement a range of sustainable travel measures, including providing future residents with information on sustainable travel opportunities to the site.

5.8 In order to represent the likely travel characteristics of the site, the accompanying Transport Assessment (CD1.23) utilised the most recent 2011 'Method of Travel to Work Census data for the output area in which the site is located (Sheffield 002A) to derive the baseline mode share shown in Table 11, noting that this remains the most recent Census data.

Table 11: Baseline Mode Share

Mode	Baseline Mode Share (% of journeys by mode)
Underground, metro, light rail, tram	1.8%
Train	0.8%
Bus, minibus or coach	11.3%
Taxi or minicab	0.2%
Motorcycle, scooter or moped	1.2%
Driving a car or van	69.8%
Passenger in a car or van	4.4%
Bicycle	1.1%
On foot	9.4%
Total	**100.0%**

Pedestrian Access

5.9 It is important to recognise that there is no national or local planning policy which sets out either acceptable journey lengths for sustainable transport methods or the requirement for new development to be located within a certain walking or cycling distances of services and amenities. A number of guidance documents, however, have considered these topics and suggest 'acceptable' walking and cycling distances for different journey purposes, including to public transport services. Furthermore, recent research studies have attempted to identify acceptable walking and cycling distances by examining journey length data.

5.10 In this section of my evidence I provide a review of the main guidance documents and draw conclusions in respect of their relevance to the site, the proposed development and the Appeal.

Guidelines for Providing Journeys on Foot (Institution of Highways and Transportation, 2000)

5.11 "Guidelines for Providing for Journeys on Foot" (CD7.15) is a technical document which advises on planning for and providing for pedestrians, maintaining the pedestrian infrastructure and promoting walking.

5.12 Paragraph 1.10 clarifies that they are guidelines, not standards, and explains that:

"The Guidelines attempt to set out best practice. It is fully recognised that it will not always be possible to achieve ideal results in all situations due to site constraints, costs or

other practicalities. Compromises must sometimes, rightly, be made. The Guidelines therefore try to indicate the desirable provision and lower standards that may prove satisfactory in certain circumstances. They also suggest alternative approaches to tackling problems. It is the task of the professional planner or engineer to decide if a lower standard is acceptable in given circumstances or if another approach would be more beneficial."

5.13 The Guidelines contains a section entitled "Acceptable walking distances". This explains that approximately 80% of walk journeys and walk stages in urban areas are less than one mile (1.6km). The average length of a walk journey is one kilometre (0.6 miles). This differs little by age or sex and has remained constant since 1975/76. However, this varies according to location with average walking distances being longest in Inner London. The main factors that influence both walking distance and walking time in a city or town centre appear to be the size of the city or town itself, the shape and quality of the pedestrianised area, the type of shops and number of activities carried out. An average walking speed of approximately 1.4 metres per second can be assumed, which equates to approximately 400m in five minutes or three miles per hour.

5.14 Paragraph 3.31 of the Guidelines states that "acceptable" walking distances will obviously vary between individuals and circumstances. Acceptable walking distances will depend on various factors, including:

- An individual's fitness and physical ability.
- Encumbrances, e.g. shopping and pushchair.
- Availability, cost and convenience of alternative transport modes.
- Time savings.
- Journey purpose.
- Personal motivation.
- General deterrents to walking.

5.15 Table 12 (reproduced from Table 3.2 of the Guidelines) contains "suggested acceptable walking distances" for pedestrians without a mobility impairment for some common facilities. It is stated that these may be used as a guideline for planning and evaluation purposes.

Table 12: Suggested Acceptable Walking Distances

	Town centres (m)	Commuting/School/ Sight-seeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred maximum	800	2,000	1,200

Guidelines for Planning for Public Transport in Developments (Institution of Highways and Transportation, 1999)

5.16 "Guidelines for Planning for Public Transport in Developments" is a set of guidelines to assist those seeking to promote the use of public transport through the physical location and design of developments.

5.17 Paragraph 1.6 of the Guidelines sets out the approach recommended, which emphasises first the need to locate new developments where they can be well served by public transport (whether existing, extended or new services). Second, the development should be laid out so that, as well as creating a place with character and a quality environment, it can be served well by public transport with services that will be attractive to passengers, including those who have the option to use a car, and efficient and economic for its operator.

5.18 Paragraph 5.11 of the Guidelines sets out that there are two aspects to identifying public transport accessibility:

- Access to public transport - which measures how far a location is from the public transport network and the level of service on that network.
- Access by public transport - which takes account of where the services go and identifies the public transport catchment areas.

5.19 The Guidelines contains a section entitled "Access to public transport". This explains that new developments should be located so that public transport trips involve a walking distance of less than 400m from the nearest bus stop or 800m from the nearest railway station. In city centres, the walking distance from a bus stop should be less than 200m. However, Paragraph 5.18 of the Guidelines emphasises that these standards should be treated as guidance, to be achieved where possible by services that operate at regular frequencies and along direct routes:

"It is more important to provide services that are easy for passengers to understand and attractive to use than achieve slavish adherence to some arbitrary criteria for walking distance."

Home to School Travel and Transport Guidance (Department for Education, 2014)

5.20 The "Home to School Travel and Transport Guidance" covers local authority duties and powers relating to sustainable school travel, and the provision of school travel arrangements for children and young people.

5.21 The "statutory walking distances" are used to determine if a pupil qualifies for free school transport, or if they are considered to live close enough to walk to school. The distance is calculated as the shortest route along which the pupil – accompanied if necessary – can walk with reasonable safety, so it includes pedestrian footpaths as well as footways. The distance is calculated from the child's permanent home address to school.

5.22 For children below the age of 8, the statutory walking distance is 2 miles (3.2km). For children aged between 8 and 16, the statutory walking distance is 3 miles (4.8km).

Local Transport Note 1/04 - Policy, Planning and Design for Walking and Cycling (Department for Transport, 2004)

5.23 Paragraph 3.10.3 of "Local Transport Note 1/04" explains that there are limits to the distances generally considered acceptable for utility walking and cycling. The mean average length of walking journeys is approximately 1km (0.6 miles) and for cycling it is 4km (2.4m miles), although journeys up to three times these distances are not uncommon for regular commuters. The distances people are prepared to walk or cycle depends on their fitness, physical ability, journey purpose, settlement size, and walking/cycling conditions.

Walking Distances to Local Services and Facilities

5.24 There are a range of local services and amenities within the walking catchment of the site, which are shown on Figure 14 and summarised in Table 13.

Table 13: Summary of Walking Distances to Local Services

Category	Facility	Approximate Walking Distance (m) *From Centre of Development*	Preferred Maximum Walking Distance (m) *From IHT Guidelines*
Retail and Leisure	Stocksbridge Golf Club	470m	1,200m
	Public Houses (The Pen Nook, The King and Miller, Royal Oak and Red Grouse)	850m, 1,300m, 1,300m and 1,500m respectively	1,200m
	Convenience Store (Majeed Stores)	1,100m	1,200m
	Newsagent (Barkers News)	1,100m	1,200m
	Flames and Ni Hao Chinese (Hot Food Takeaways)	1,100m	1,200m
	The Hair Shop (Unisex Salon)	1,100m	1,200m
	McColl's	1,300m	1,200m
	Stocksbridge Cricket Club	1,300m	1,200m
	Spar and bakery	1,600m	1,200m
	Lidl	1,800m	1,200m
	Fox Valley Sheffield Retail and Leisure Park (incl. a wide range of high street retail facilities, fitness centre, bars/restaurants/takeaways)	1,800m	1,200m
	Multi-use sports pitch	1,900m	1,200m
Healthcare	Deepcar Medical Centre and Pharmacy	1,200m	1,200m
	Deepcar Dental Care	1,400m	1,200m
Education	Royd Nursery Infant School	310m	2,000m
	Deepcar St John's Church of England Junior School	550m	2,000m
	Stocksbridge Junior School	1,600m	2,000m
	St Ann's Catholic Primary School and Stocksbridge High School	1,700m	2,000m
	Stocksbridge Nursery Infant School	2,000m	2,000m

5.25 In summary, it is considered that there are a range of local services and amenities that lie within guideline walking distance of the development site. In particular, a convenience store, a newsagent, several schools and leisure facilities lie within the preferred maximum walking distance of the development site as identified by IHT. The proximity of the various schools is a benefit of the site location, and this will allow future residents to have the opportunity to walk their children to school.

5.26 Whilst is acknowledged that some sections of the walking routes between the site and some of the local amenities have varying degrees of gradients, it is considered that future residents at the site will benefit from similar levels of pedestrian accessibility as those residents of the adjacent areas of housing, which I consider to be acceptable. Overall, and as agreed with the Council's Highway Services in the SoCG Highways (CD6.10), the site is accessible to a range of facilities on foot.

Cycle Access

5.27 The cycle isochrone for a 8.0km distance from the centre of the development site is illustrated on Figure 15. Opportunities exist for future residents to cycle to Stocksbridge as well as to a wider range of settlements and towns, such as Wharncliffe Side and Oughtibridge.

5.28 With reference to the Sheffield Cycle Map North, several of the roads within close proximity of the site are designated as "suggested cycle routes". While it is recognised that traffic volumes may vary according to the time of day, the suggested routes provide convenient cycling access to a range of amenities and facilities, as well as connecting to additional cycle routes to the north and south of the site.

5.29 It is acknowledged that the propensity of future residents to cycle will be influenced by the gradients of the local topography, but I consider cycle access remains an available and practical option.

5.30 Further details of the local and national cycle routes within proximity of the site are contained in the Transport Assessment (CD1.23).

Public Transport

Bus Services

5.31 Guidelines for walking distances to bus stops and services have been published in a range of documents. A summary of these documents is listed below:

- The Institute of Highways and Transportation (IHT) 'Guidelines for Public Transport in Developments (1999)' states that the maximum walking distance to a bus stop should not exceed 400m and preferably no more than 300m, that direct and simple bus routes are more important than walking distances a little more than 400m for a few passengers and destinations.

- 'Guidelines for Providing Journeys On Foot (2000) (CD7.15)' published by the Institute for Highways and Transportation suggests, for planning and evaluation purposes, desirable walking distances to some common facilities of 500m for commuting/school (1000m acceptable with 2000m being the preferred maximum), and 400m elsewhere (800m acceptable with a preferred maximum of 1200m). The IHT guidelines also note that the quality of the route is also a factor in encouraging walking.

- 'Buses in Urban Developments' (Jan 2018) notes that custom and practice for many years suggest a maximum walking distance of 400m from a bus stop however various factors demand a more rigorous approach. For single high-frequency routes (every 12 minutes or better) the document recommends a maximum walking distance of 400m and 300m for less frequent routes.

- The Department of Transport's Manual for Streets (2007) advises that walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes (up to 800m) walking distance but this is not an upper limit and walking can replace short car trips, particularly under 2km.

- The South Yorkshire Residential Design Guide (SYRDG) (2011), designated as best practice guide in Sheffield, sets out design guidelines for levels of accessibility for smaller towns as a 5 minute walk to local services, 5-10 minute walk to bus/tram stops depending on destination, and a 20 minute walk/30 minute journey to primary health/education. The SYRDG suggests as a general rule of thumb a 5 minute walk equates to a distance of 400m for non-disabled people and account must be taken of topography.

- The Core Strategy in relation to the efficient use of housing land and accessibility (Policy CS26) defines 'near to' as within easy walking distance, being 400m to a high frequency bus route or 800m to a Supertram stop taking into account barriers.

5.32 The closest bus stops in relation to the site are located on either side of Royd Lane and are accessible on foot within approximately 290m of the site (as measured from an indicative central point). The bus stops provide access to the Number 23 and 23a bus services. The bus stops will be accessible to future residents of the site via the proposed new section of footway along the western side of Carr Road and the footways on both the northern and southern side of Royd Lane.

5.33 Further provision is also located on both the northern and southern side of St. Margaret Avenue to the north of the site, both of which are accessible within approximately 380m walking distance of the site (as measured from an indicative central point). The bus stops provide access to the Number 57 service. The westbound stop is also served by the SL1 service on a Sunday and a limited number of SL1 services in the evening, Monday to Saturday. The eastbound bus stop is served by the SL1A service on a Sunday. The bus stops will be accessible to future residents of the site via the proposed new footway along the site frontage, crossing at the school patrol crossing and continuing along the footway along the eastern side of Carr Road leading to St. Margaret Avenue.

5.34 Further bus stop provision is available on both the eastern and western side of Wood Royd Road, approximately 600m walking distance (as measured from an indicative central point). The bus stops provide access to the Number 23, 23A, 57 and SL1/SL1a bus services. The bus stops are accessible via a continuous footway on the western side of Carr Road and a footway on both the eastern and western side of Wood Royd Road.

5.35 Table 14 provides a summary of the bus services available within proximity of the site, including the bus stops served, respective frequencies and destinations served. The bus services and bus stops described above are illustrated on Figures 16 to 20.

Table 14: Bus Services, Destinations and Frequencies

Service	Bus Stops Served	Operator	Destinations Served	Approx. Daily Frequency		
				Mon-Fri.	Saturday	Sunday
SL1/ SL1a	St Margaret Avenue and Wood Royd Road	Stagecoach Yorkshire	Middlewood P&R - Wharncliffe Side - Deepcar - Stocksbridge (Circular)	5 services per hour (Circular)	5 services per hour (Circular)	3 services per hour (Circular)
57	St Margaret Avenue and Wood Royd Road	Stagecoach Yorkshire (Sunday services and some AM Mon-Sat services operated by First South Yorkshire	Sheffield Centre - Oughtibridge - Deepcar - Stocksbridge	Every 60 minutes (Both Directions)	Every 60 minutes (Both Directions)	1 AM service to Stocksbridge & 3 AM services to Sheffield
23	Royd Lane and Wood Royd Road	Stagecoach Yorkshire	Stocksbridge - Deepcar - Thurgoland - Penistone - Millhouse Green	2/3* daily services to Stocksbridge & 3 daily services to Millhouse Green	3 daily services to Stocksbridge & 3 daily services to Millhouse Green	No Service
23a	Royd Lane and Wood Royd Road	Stagecoach Yorkshire	Deepcar - Stocksbridge - Wortley - Thurgoland - Barnsley Interchange	1 daily service to Deepcar & 2 daily services to Barnsley Interchange	1 daily service to Deepcar & 2 daily services to Barnsley Interchange	No Service

Note: Bus services correct as of 17 May 2021. Operators may be operating a reduced timetable / routes may have been temporarily withdrawn following the outbreak of Coronavirus.
** 3 daily services to Stocksbridge during school holidays (Service 23, Monday to Friday).*

5.36 The Number 23 bus service provides a service between Stocksbridge and Millhouse Green, in both directions, via Deepcar, Thurgoland and Penistone. There are currently between two/three services daily in each direction, Monday to Saturday. There are currently no services on Sundays.

5.37 The Number 23a bus service provides a service between Deepcar and Barnsley Interchange via Stocksbridge, Wortley, Thurgoland and Gilroyd. There are currently between one/two services daily in each direction, Monday to Saturday. There are currently no services on Sundays.

5.38 The Number 57 bus service provides a service between Sheffield and Stocksbridge, in both directions, via Oughtibridge and Deepcar. The service currently runs approximately every

60 minutes, Monday to Saturday. On a Sunday, one AM service travels toward Stocksbridge and three AM services travel toward Sheffield Centre.

5.39 The SL1/SL1a (SuperTram Link) service provides a frequent circular service between Middlewood Park and Ride (Tram Station) and Stocksbridge. Approximately 5 services run per hour, Monday to Saturday and approximately 3 services run per hour on a Sunday.

5.40 It can be seen that future residents of the site will be able to access a number of bus stops and services that are located within the walking distances recommended by the various guideline documents outlined above. The walk between the site and the bus stops on Royd Lane and St Margaret Avenue have slight but not significant gradients. The walk from bus stops on Wood Royd Road includes the need to walk up a steeper part of Carr Road to the site. Overall, and as agreed with the Council's Highway Services in the SoCG Highways (CD6.10), the site has acceptable access to public transport services that are sufficiently frequent and attractive in terms of timetable and destination.

5.41 None of the existing bus stops have shelters and the applicant has committed to provide a s106 contribution towards upgrading the bus stops to improve the facilities for public transport users.

Rail Services

5.42 There are a number of rail services which are also accessible for future residents of the site to use.

5.43 The nearest main railway station to the site is located in Penistone, approximately 6.4km to the northwest of the site (direct measurement). The station can be accessed via the Number 23 bus service, which stops approximately 225m to the west of the railway station.

5.44 Penistone Railway Station serves the Penistone Line, which connects Huddersfield with Sheffield, via Barnsley, with an hourly train in each direction. Table 15 provides a summary of the rail services available from Penistone Railway Station.

Table 15: Rail Services, Destinations and Frequencies

Operator	Destinations Served	Monday to Saturday Frequency		Sunday Frequency
		Daytime	Late Evening	
Northern	Huddersfield – Denby Dale – Barnsley – Sheffield	Every 60 minutes	Every 60 minutes	Every 60 minutes

*** Last Sunday service at approximately 0700 hours.**

Note: Rail services correct as of 17 May 2021.

5.45 Middlewood Tram Station is located approximately 8.0km to the southeast of the site. The tram station provides access onto the Yellow Route of the Sheffield 'SuperTram' system, which provides a 12 minute service in both directions between Middlewood and Meadowhall via Sheffield City Centre, Monday to Saturday daytime. During weekday peak hours tram services run every 10 minutes in both directions. Services runs every 20 minutes in both directions on a Sunday. Middlewood Tram Station is accessible via the SL bus service.

Conclusion

5.46 In summary, it is considered that there are a range of local services and amenities that lie within guideline walking distance and convenient cycling distance of the development site. A convenience store, a newsagent, several schools and leisure facilities all lie within the preferred maximum walking distance of the development site as identified by IHT. In particular it is considered that the proximity of the various schools is highly beneficial and it is clear that future residents will have the opportunity to walk their children to school.

5.47 In addition taking into account the frequency of the existing bus services connecting directly to local areas as well as an important regional destination (Sheffield city centre) along with the availability of rail services, it is clear that future residents will also have the option of using public transport for journeys.

5.48 It is concluded that future residents will be able to use sustainable modes of transport for a range of key journey purposes. In considering the availability of sustainable travel modes, it is important to recognise that the site is located adjacent to the established residential areas that are in the immediate vicinity of the site. Therefore, as agreed with the Council's Highway Services in the SoCG (CD6.10), the transport characteristics of the site will be very similar to the adjacent existing residential areas. Overall, and as agreed with the Council's Highway Services in the SoCG Highways (CD6.10), it is considered that the site is accessible to a range of facilities on foot and has acceptable access to public transport services that are sufficiently frequent and attractive in terms of timetable and destination.

6 Issue 4: Road Safety

6.1 This section of my evidence considers road safety within the vicinity of the proposed development. It provides an updated summary (to that which was presented in the Transport Assessment (CD1.23)) of the latest five-year personal injury accident data at, or within close proximity to, the junctions that represent the study area for the site. The section also considers traffic speeds along Carr Road within the vicinity of the proposed site access and the number of large articulated HGVs passing Royd Nursery Infant School.

Personal Injury Accidents

6.2 This section identifies all road traffic accidents that have been recorded during the latest five-year period at the time of writing, as supplied by the Council's Highway Services with the email correspondence and accident data included at Appendix E.

6.3 The accident data has been re-examined in order to determine whether there are any 'cluster spots' that could indicate a particular issue at a location and if so, to determine the potential cause (s) of these accidents through analysis of the dataset provided.

6.4 A summary of the information is set out in Table 16.

Table 16: Road Traffic Accident Summary

Location	Accident Severity		
	Slight	Serious	Fatal
Carr Road (link between Hollin Busk Lane and Wood Royd Road)	0	0	0
Carr Road (link between junctions with Wood Royd Road and Manchester Road)	2	1	0
Carr Road / Cockshot Lane / Royd Lane / Hollin Busk Lane Junction	0	0	0
Broomfield Lane / Coal Pit Lane / Hollin Busk Lane Junction	0	0	0
Nanny Hill / Bocking Hill Junction	0	0	0
A6102 Manchester Road / A6102 Vaughton Hill / B6088 Manchester Road Junction (including the priority junction with Carr Road)	3	1	0
Total	**3**	**1**	**0**

6.5 The road safety record can be summarised as follows:

- There have been no recorded accidents along Carr Road between its junctions with Hollin Busk Lane and Wood Royd Road (including within the vicinity of the proposed site access junction) during the latest five-year period.

- A total of three accidents have been recorded along Carr Road between its junctions with Wood Royd Road and Manchester Road during the latest five-year period. Two of the accidents were classified as being of slight severity and one as serious. A summary of the accidents is provided below:

    - Accident Reference 17232932: An accident of slight severity occurred along Carr Road at the junction with Wood Royd Road. The accident occurred when a car turning right into Wood Royd Road collided with a car travelling ahead towards Manchester Road before colliding 'lightly' with a third car. "Failed to judge other person's path or speed" was recorded as the contributory factor to the accident.

    - Accident Reference 1687694: An accident of serious severity occurred along Carr Road. The accident occurred when a car collided with a parked vehicle (other). "Dazzling sun" was recorded as the contributory factor to the accident.

    - Accident Reference 1639096: An accident of slight severity occurred along Carr Road near Carr Grove. The accident occurred when a car collided with a parked car. "Careless, reckless or in a hurry" was recorded as the contributory factor to the accident.

- There have been no recorded accidents within the vicinity of the Carr Road / Cockshot Lane / Royd Lane / Hollin Busk Lane Junction during the latest five-year period.

- There have been no recorded accidents within the vicinity of the Broomfield Lane / Coal Pit Lane / Hollin Busk Lane Junction during the latest five-year period.

- There have been no recorded accidents within the vicinity of the Bocking Hill / Nanny Hill Junction, during the latest five-year period.

- A total of four accidents have been recorded at the A6102 Manchester Road / A6102 Vaughton Hill / B6088 Manchester Road Junction (including the priority junction with Carr Road) during the latest five-year period. Three of the accidents were classified as being of slight severity and one as serious. A summary of the accidents is provided below:

- Accident Reference 16140089: An accident of serious severity occurred on the B6088 Manchester Road arm of the junction in the vicinity of the priority junction with Carr Road. The accident occurred when a vehicle failed to indicate when turning right into Carr Road before colliding with a motorcycle. The vehicle type of the right-turning vehicle in not shown in the information provided. "Poor turn or manoeuvre", "failed to look properly" and "failed to signal or misleading signal" were recorded as contributory factors to the accident.

- Accident Reference 17254225: An accident of slight severity occurred on the zebra crossing on the B6088 Manchester Road arm of the junction. The accident occurred when a car approached the zebra crossing, before hitting a pedestrian who had stepped out onto the crossing. "Failed to look properly" was recorded as a contributory factor to the accident.

- Accident Reference 1650195: An accident of slight severity occurred on the B6088 Manchester Road arm of the junction. The accident occurred when two cars and a goods vehicle were waiting in stationary traffic at the junction and were hit from behind by an approaching car. "Failed to look properly" and "failed to judge other person's path or speed" were recorded as contributory factors to the accident.

- Accident Reference 16104464: An accident of slight severity occurred on Carr Road at the bus stop approximately 50m to the south of the stop line at the priority junction with the B6088 Manchester Road. The accident resulted in a pedestrian injury and occurred when the passenger was alighting from the bus. No contributory factors were recorded.

Traffic Speeds and HGVs along Carr Road

6.6 As reported in the Transport Assessment (CD1.23), in order to determine the required visibility splays for the proposed site access junction from Carr Road, a speed survey was undertaken by an independent survey company.

6.7 As discussed at paragraph 3.4, the visibility splays at the site access are to be provided in line with the recorded 85th percentile speeds.

6.8 The ATC also recorded the volume of traffic along Carr Road by vehicle type. For the continuous one-week period between 26 May 2016 and 2 June 2016 a total of 1,686 vehicles were recorded travelling along Carr Road of which 40 were recorded as HGVs, equating to 2.4% of the total volume of traffic. During the operational phase of the residential development, traffic movements to the site will be predominantly car based and it is not envisaged that the development will add any new HGV traffic to the local highway network. Furthermore there is no evidence of any road safety issues associated

with HGV traffic and no accidents have occurred within the vicinity of the proposed access.

Conclusion

6.9 Overall, the number of accidents occurring on the study highway network over the latest five-year period is low. A total of seven accidents have been recorded over the latest five - year period at the junctions/extent of highway considered to be the study area for the site. Five of the accidents were classified as being of slight severity and two as serious. There were no fatal accidents. Of the accidents, two involved a pedestrian and there were no recorded accidents involving cyclists. The most notable trend in the data provided by the Council's Highway Services, is that the accidents were recorded as being a result of driver/pedestrian error, with "failed to look properly", "failed to signal or misleading signal", "poor turn of manoeuvre", "dazzling sun", "careless, reckless or in a hurry" and "failed to judge other person's path or speed" being recorded as contributory factors. No contributory factors were recorded for accident reference 16104464.

6.10 As agreed with the Council's Highway Services in the SoCG Highways (CD6.10), there have been no recorded accidents along Carr Road within vicinity of the proposed site access or within the vicinity of Royd Nursery Infant School and there is no evidence of a pattern of accidents on the study network which indicate a specific site-related issue that would need to be addressed to safely accommodate the (relatively small) increase in traffic associated with development.

6.11 Visibility splays at the site access will be provided in accordance with the 85th percentile vehicle speeds along Carr Road, as identified by an ATC. The ATC also determined that HGV traffic equated to 2.4% of the total volume of traffic along Carr Road. I note that the proposed development is not envisaged to generate any HGV movements during the operational phase. Further, there have been no recorded accidents involving HGVs along Carr Road.

6.12 On this basis, no specific mitigation in terms of road safety is considered to be necessary as part of the development proposals.

7 Summary

7.1 As agreed with the Council's Highway Services in the SoCG Highways (CD6.10), the proposed access layout is considered to represent an appropriate solution in highway design terms (including visibility) and safety for all users. The provision of the extended footway on the western side of Carr Road, together with the additional uncontrolled pedestrian crossing, will represent an improvement in facilities for pedestrians.

7.2 As agreed with the Council's Highway Services in the SoCG Highways (CD6.10), there have been no recorded accidents within the vicinity of the proposed site access or Royd Nursery Infant School within the latest five-year period and there is no evidence of a pattern of accidents on the study network which indicate a specific site-related issue that would need to be addressed to safely accommodate the (relatively small) increase in traffic associated with the development.

7.3 The proposed access will displace a small number of parking opportunities for cars from Carr Road at school arrival and departure times. However these can be safely accommodated without increasing congestion elsewhere on Carr Road, Coultas Avenue, St Margaret's Avenue or the new residential site access road where cars can park for short term drop-off or collection of pupils.

7.4 Visibility splays at the site access will be provided in accordance with the 85th percentile vehicle speeds along Carr Road, as identified by an ATC. The ATC also determined that HGV traffic equated to 2.4% of the total volume of traffic along Carr Road. I note that the proposed development is not envisaged to generate any HGV movements during the operational phase. Further, there have been no recorded accidents involving HGVs along Carr Road. On this basis, no specific mitigation in terms of road safety is considered to be necessary as part of the development proposals.

7.5 The Council's Highway Services have no objection to the proposed site access and the Officer's Report (CD1.7) concludes that the siting and design of the proposed site access is acceptable and this is reflected in the SoCG Highways (CD6.10).

7.6 The impacts of the development traffic have been assessed at the Carr Road / Manchester Road junction. The proposed development is predicted to generate 39 and 32 vehicle trips through the junction during the Weekday AM and PM peak hours respectively i.e. one trip every 92 to 113 seconds. That is, the proposed development will add approximately one additional vehicle through the junction every one to two cycles of the traffic signals.

7.7 Having reviewed the changes to the baseline data in the local area I conclude that the 2016 turning count surveys at the junction provide a robust and valid baseline on which to assess the capacity of the junction. Given this, I consider that the capacity of the junction

is more likely to be greater than shown in the Transport Assessment (CD1.23). The findings of the updated assessments do not alter the conclusion that was drawn.

7.8 I do not consider this level of impact to be significant (being within the scope of daily variation to traffic flows), and I do not consider it can be deemed to be a severe impact within the context of paragraph 109 of the NPPF (CD4.1).

7.9 The developer will provide a s106 contribution for the installation of additional MOVA sensors across Manchester Road and Carr Road, so that Carr Road can be incorporated into the Manchester Road/Vaughton Hill junction software and additional inputs to be configured into the MOVA system to provide bus priority for buses on all approaches to the junction including Carr Road.

7.10 As agreed with the Council's Highway Services in the SoCG Highways (CD6.10), it is the case that the improvements gained through the new signal control strategy will more than offset the limited impact of the development traffic through this junction. The assessments undertaken have used a combination of robust assumptions that mean that this conclusion is sound, and the impacts of the development traffic are acceptable.

7.11 As agreed and accepted by the Council's Highway and Traffic Signal Team, the improvement measures are considered to be in scale and context with the proposed development, will more than offset the development's limited impact at the junction (as agreed with the Council's Highway Services in the SoCG Highways (CD6.10)), and will provide material benefit to the capacity of the local network.

7.12 It is considered that there are a range of local services and amenities that lie within guideline walking distance and convenient cycling distance of the development site. A convenience store, a newsagent, several schools and leisure facilities all lie within the preferred maximum walking distance of the development site as identified by IHT. In particular it is considered that the proximity of the various schools is highly beneficial and it is clear that future residents will have the opportunity to walk their children to school.

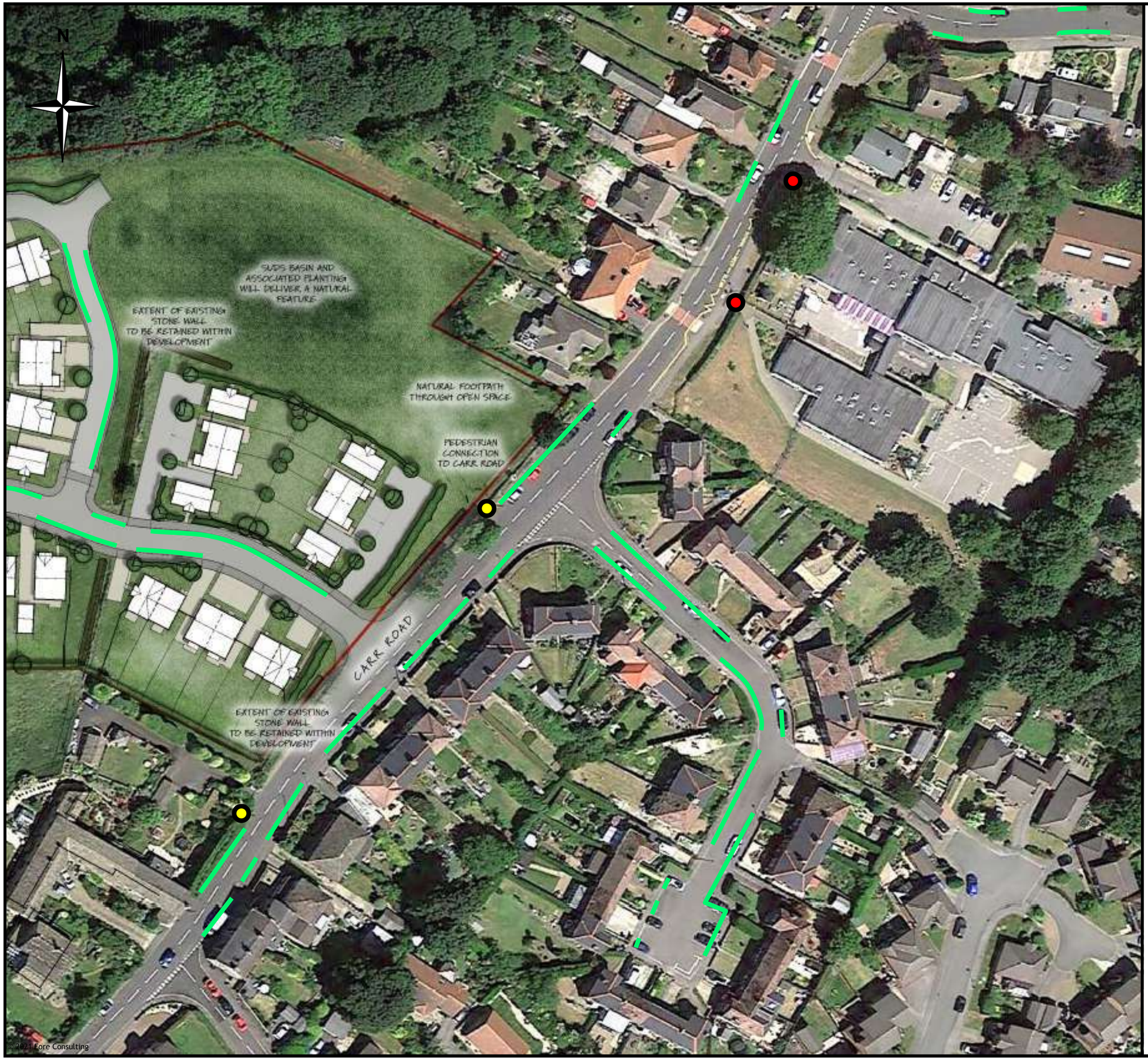
7.13 In addition taking into account the frequency of the existing bus services connecting directly to local areas as well as an important regional destination (Sheffield city centre) along with the availability of rail services, it is clear that future residents will also have the option of using public transport for journeys.

7.14 I conclude that future residents will be able to use sustainable modes of transport for a range of key journey purposes. In considering the availability of sustainable travel modes, it is important to recognise that the site is located adjacent to the established residential areas that are in the immediate vicinity of the site. Therefore the transport characteristics of the site will be very similar to the adjacent existing residential areas which is agreed with the Council's Highway Services in the SoCG Highways (CD6.10). It is further agreed with the Council's Highway Services in the SoCG Highways (CD6.10) that the site is

appropriately accessible to a range of facilities on foot and has acceptable access to public transport services that are sufficiently frequent and attractive in terms of timetable and destination.

7.15 I conclude that the delivery of the appeal development will not result in unacceptable highway safety impacts or result in a severe impact within the context of Paragraph 109 of the NPPF (CD4.1). This conclusion is as drawn by the Officer's Report (CD1.7) and agreed with the Council's Highway Services in the SoCG Highways (CD6.10). I respectfully ask that the Appeal be allowed.

Figures



Key:

- Approximate Extent of Site Access Visibility Splay
- On-Street Parking Opportunities (Excludes Junction Radii, Driveway Accesses and Parking Restrictions)
- Royd Nursery Infant School Pedestrian Accesses

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Project:
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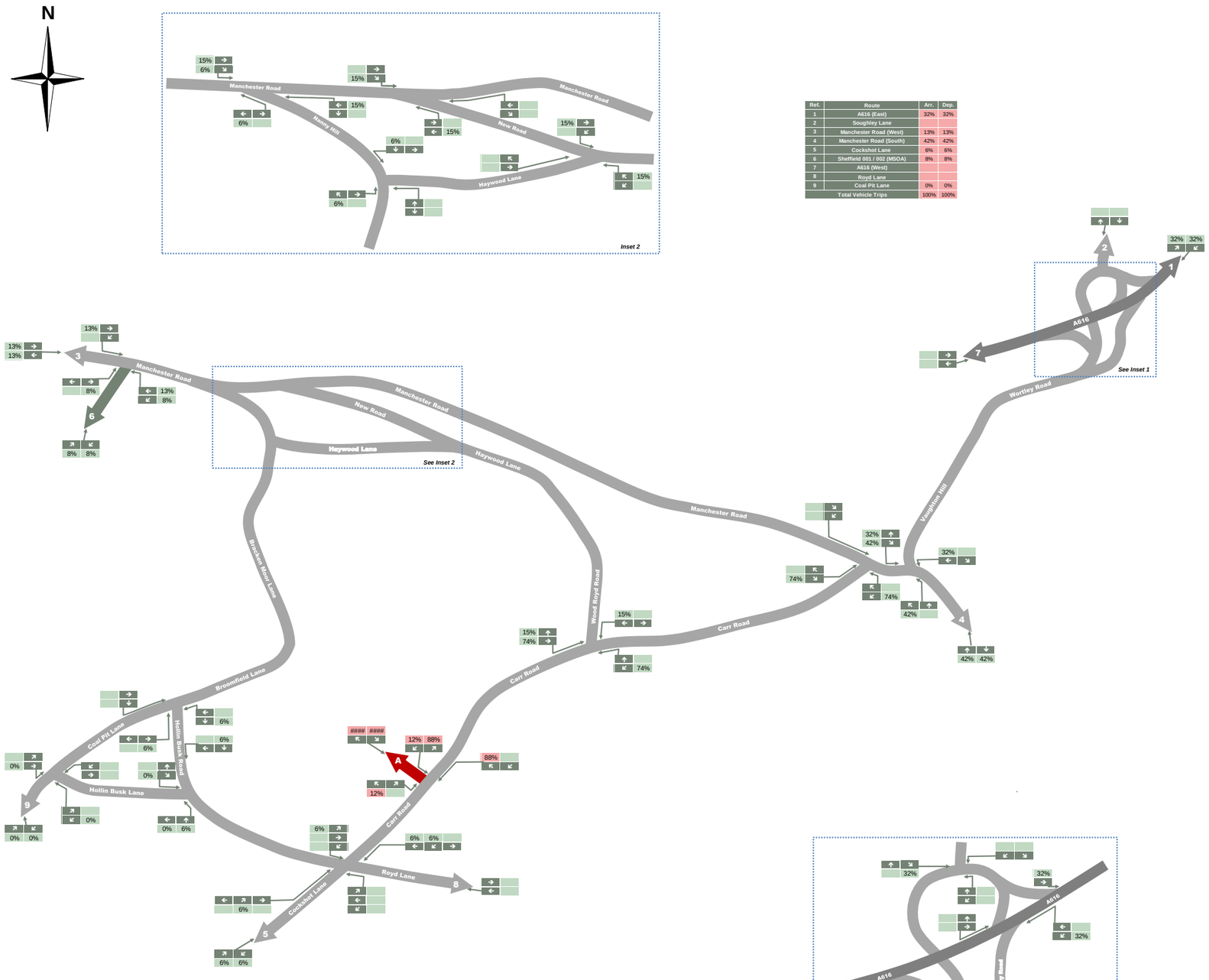
Figure Title:
On-Street Parking Opportunities for Royd Nursery Infant School

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 1



Ref.	Route	Arr.	Dep.
1	A616 (East)	32%	32%
2	Soughley Lane		
3	Manchester Road (West)	13%	13%
4	Manchester Road (South)	42%	42%
5	Cockshot Lane	6%	6%
6	Sheffield 001 / 002 (MSOA)	8%	8%
7	A616 (West)		
8	Royd Lane		
9	Coal Pit Lane	0%	0%
	Total Vehicle Trips	100%	100%

Key:

- 1 Primary Road
- 1 Secondary Road
- Proposed Site Access
- 1 Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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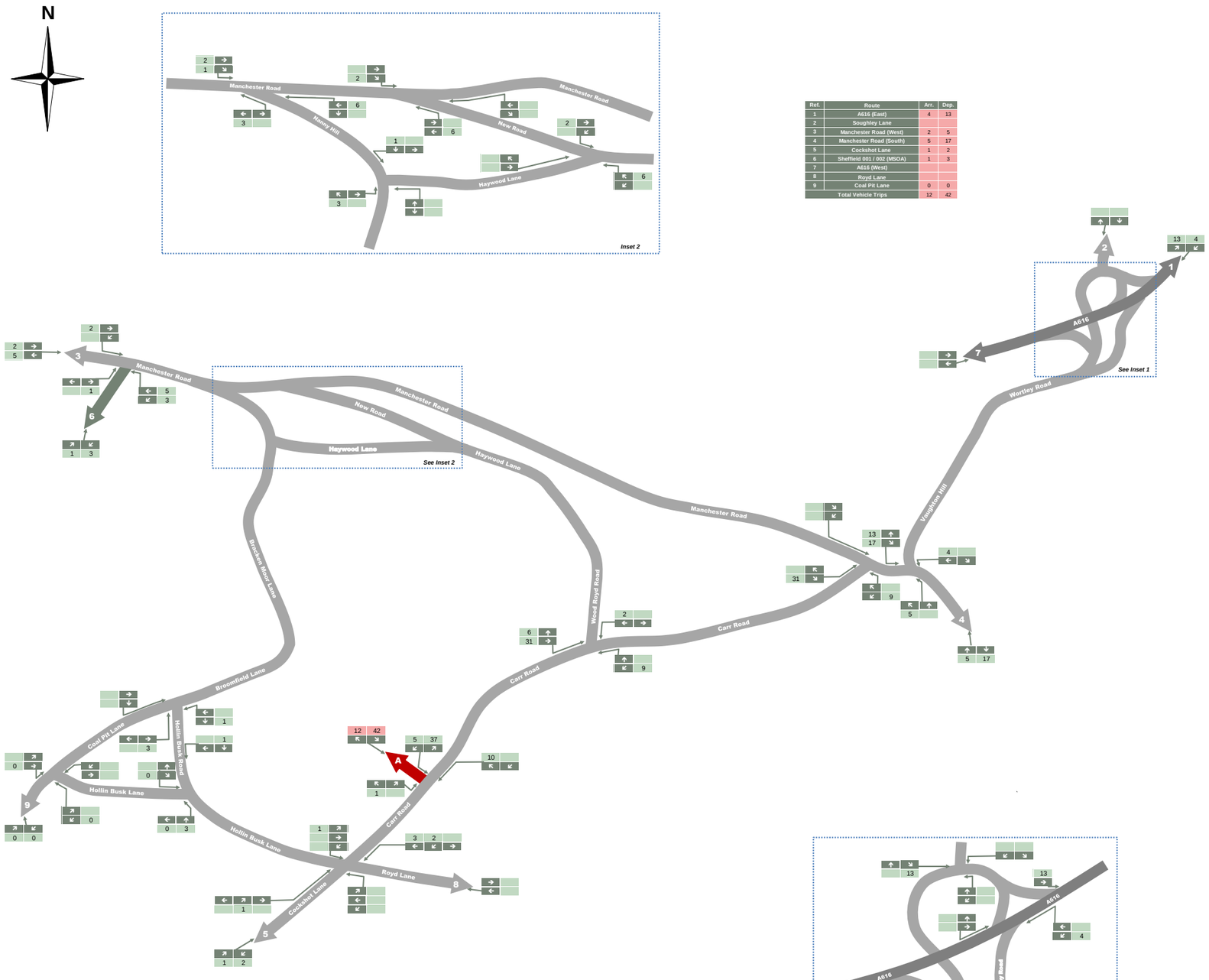
Figure Title:
Vehicle Trip Distribution

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 2



Ref.	Route	Arr.	Dep.
1	A616 (East)	4	13
2	Soughley Lane		
3	Manchester Road (West)	2	5
4	Manchester Road (South)	5	17
5	Cockshot Lane	1	2
6	Sheffield 001 / 002 (MSOA)	1	3
7	A616 (West)		
8	Royd Lane		
9	Coal Pit Lane	0	0
	Total Vehicle Trips	12	42

Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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Client:
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Project:
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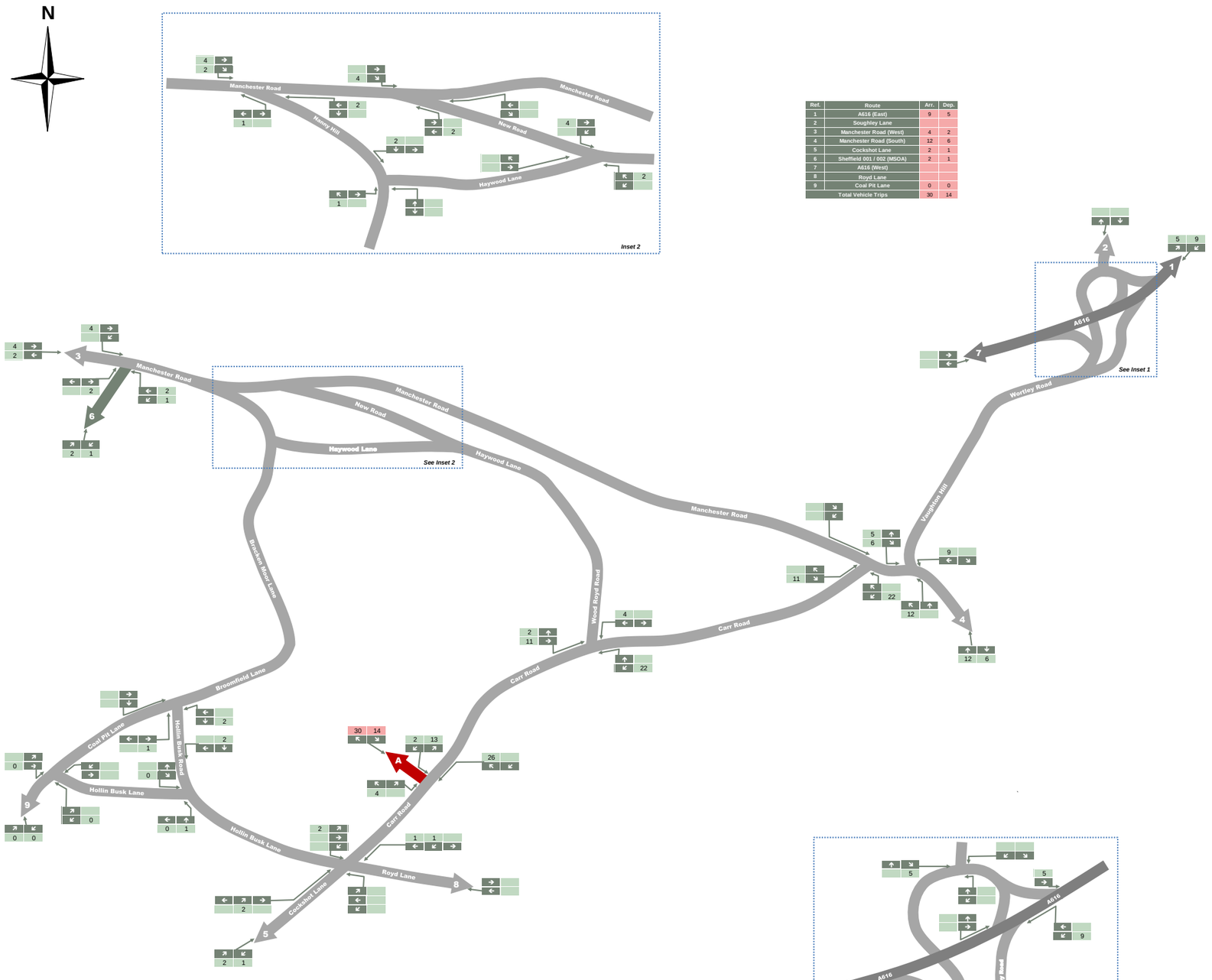
Figure Title:
Development Traffic Flows - Weekday AM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 3



Ref.	Route	Arr.	Dep.
1	A616 (East)	9	5
2	Soughley Lane		
3	Manchester Road (West)	4	2
4	Manchester Road (South)	12	6
5	Cockshot Lane	2	1
6	Sheffield 001 / 002 (MSOA)	2	1
7	A616 (West)		
8	Royd Lane		
9	Coal Pit Lane	0	0
	Total Vehicle Trips	30	14

Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

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Client:
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Project:
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Figure Title:
Development Traffic Flows - Weekday PM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 4

N

Department for Transport

Road traffic statistics

Home Summary About Data Contact

Manual count point 949710

View count point profile

Region: Yorkshire and The Humber

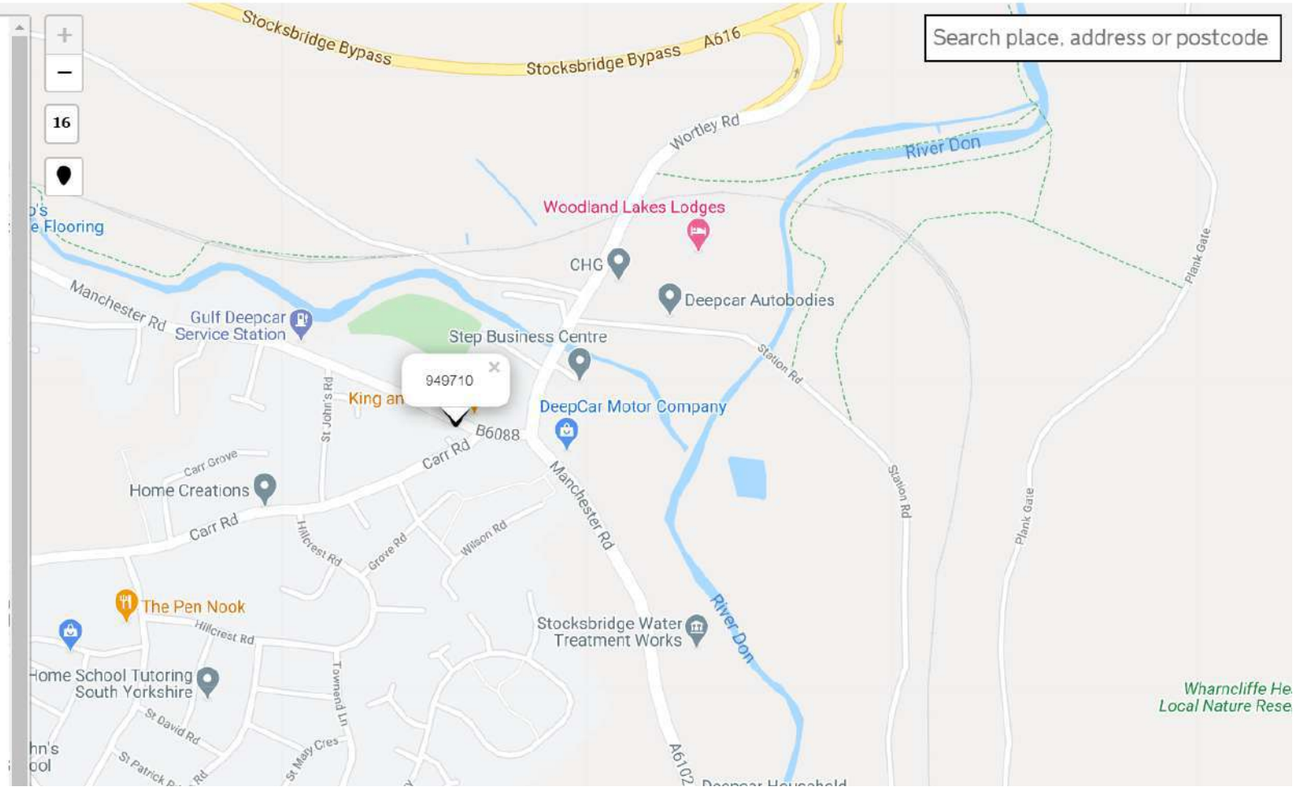
Local authority: Sheffield

Road classification: 'B' road

Road: B6088

About this data

All data used to make this map is available for



Key:

Note: Screenshot from https://roadtraffic.dft.gov.uk/

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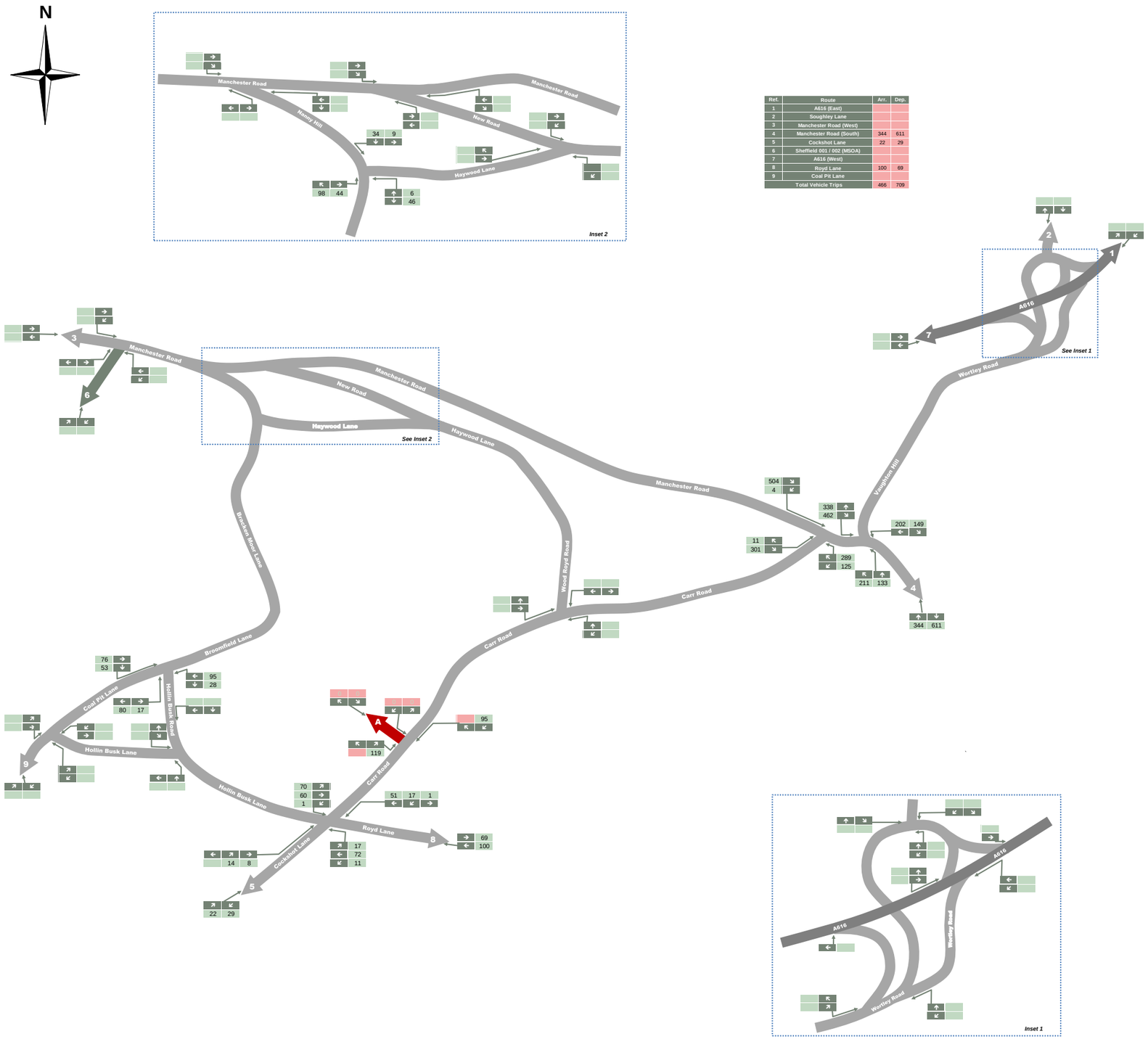
Figure Title:
DfT Datapoint 949710 – B6088 Manchester Road

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 5



Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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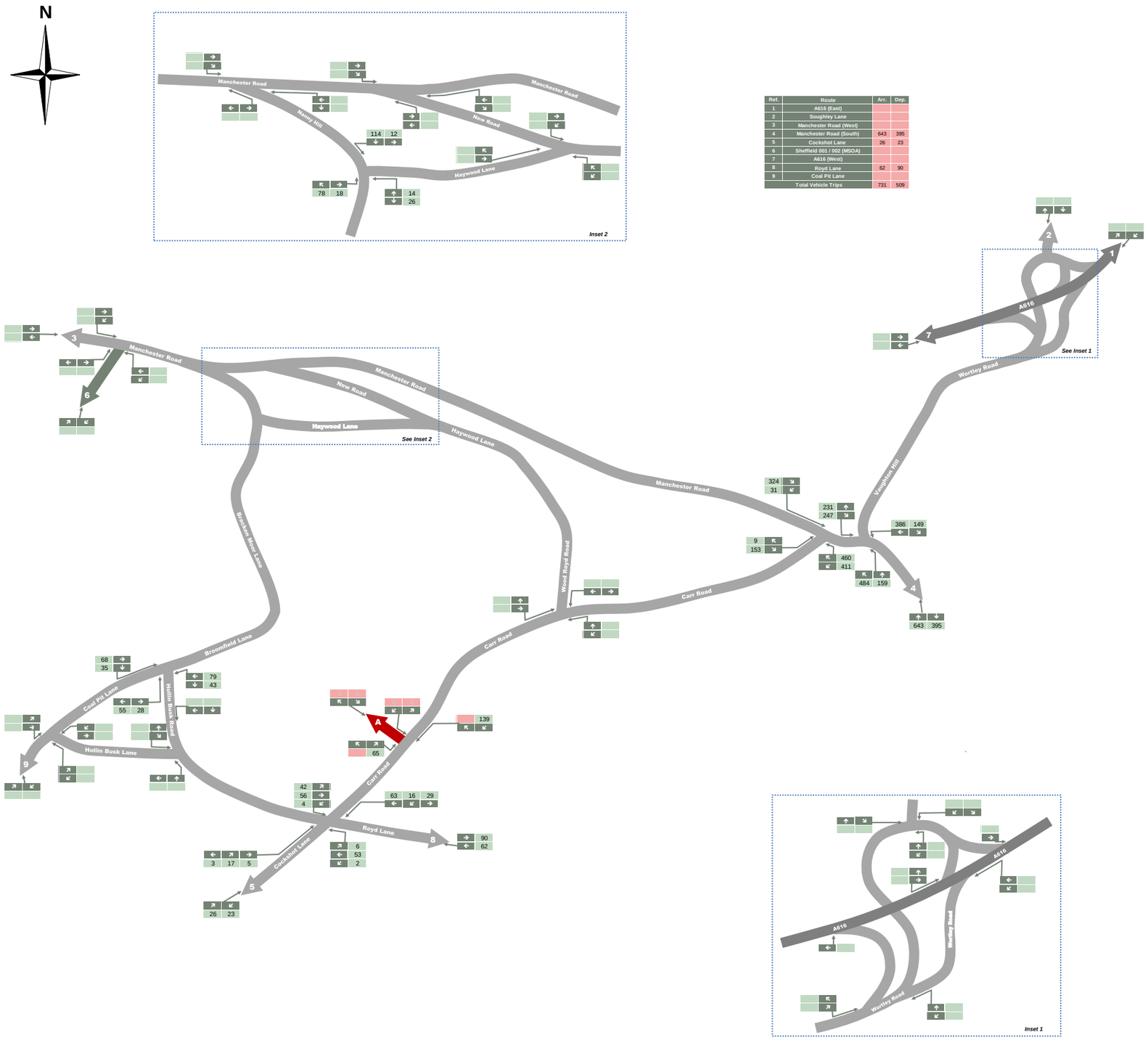
Figure Title:
Existing 2021 Traffic Flows - Weekday AM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 6



Key:

1 Primary Road

1 Secondary Road

Proposed Site Access

1 Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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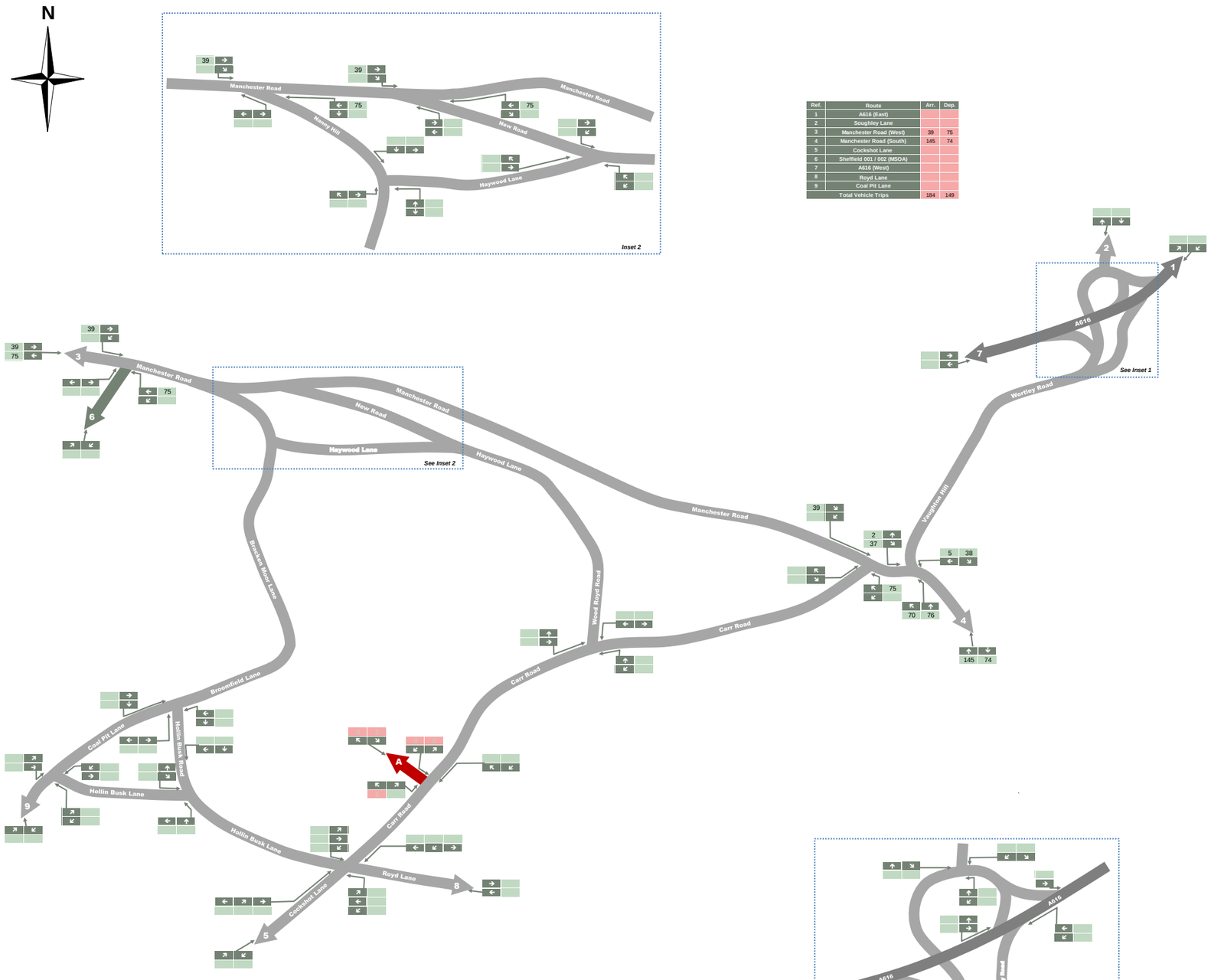
Figure Title:
Existing 2021 Traffic Flows - Weekday PM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 7



Ref.	Route	Arr.	Dep.
1	A616 (East)		
2	Soughley Lane		
3	Manchester Road (West)	39	75
4	Manchester Road (South)	145	74
5	Cockshot Lane		
6	Sheffield 001 / 002 (MSOA)		
7	A616 (West)		
8	Royd Lane		
9	Coal Pit Lane		
	Total Vehicle Trips	184	149

Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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Project:
Proposed Residential Development at Land at Deepcar, Stocksbridge

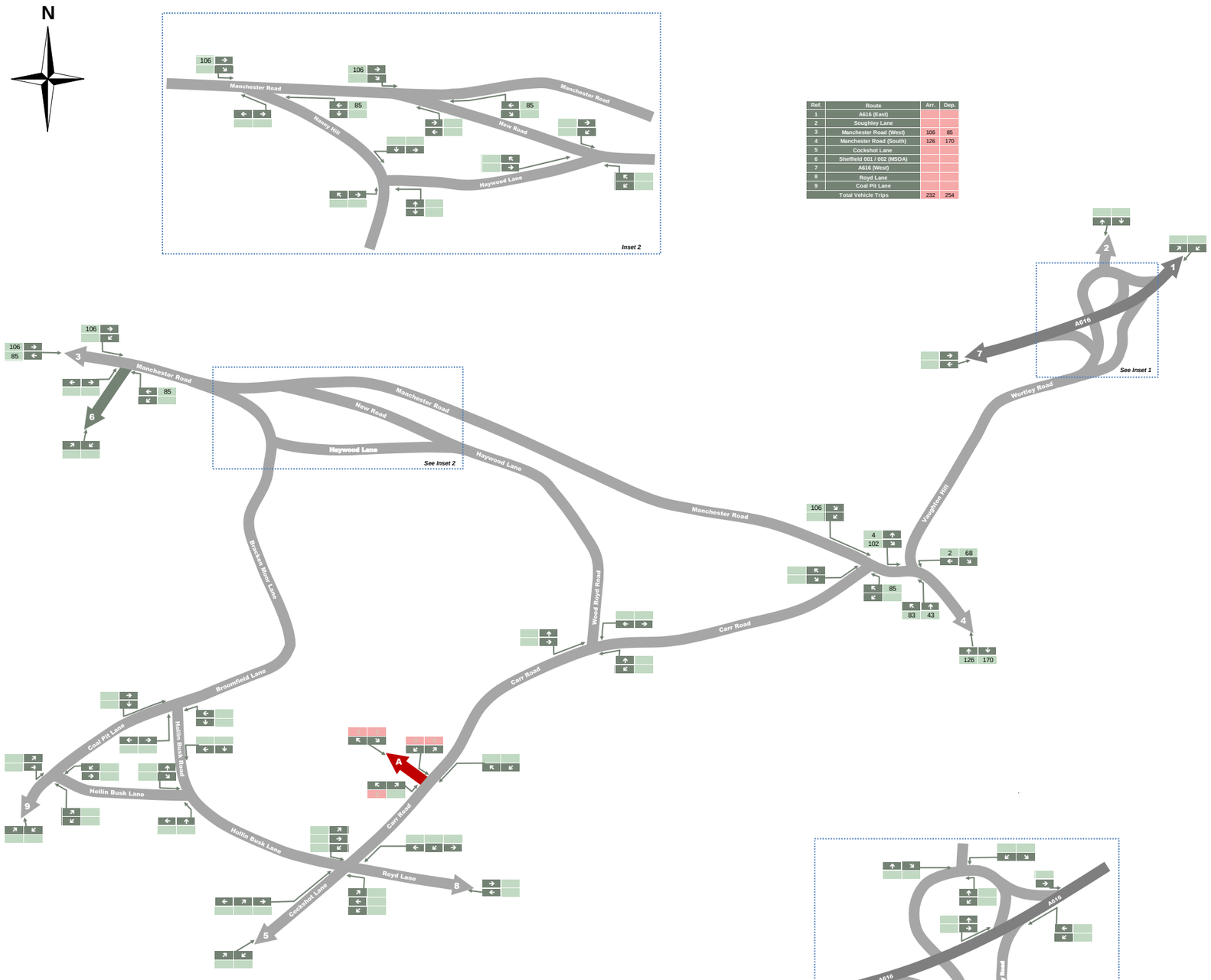
Figure Title:
Committed Development Traffic Flows - Weekday AM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 8



Ref.	Route	Arr.	Dep.
1	A616 (East)		
2	Soughley Lane		
3	Manchester Road (West)	106	85
4	Manchester Road (South)	126	170
5	Cockshot Lane		
6	Sheffield 001 / 002 (MSOA)		
7	A616 (West)		
8	Royd Lane		
9	Coal Pit Lane		
Total Vehicle Trips		232	254

Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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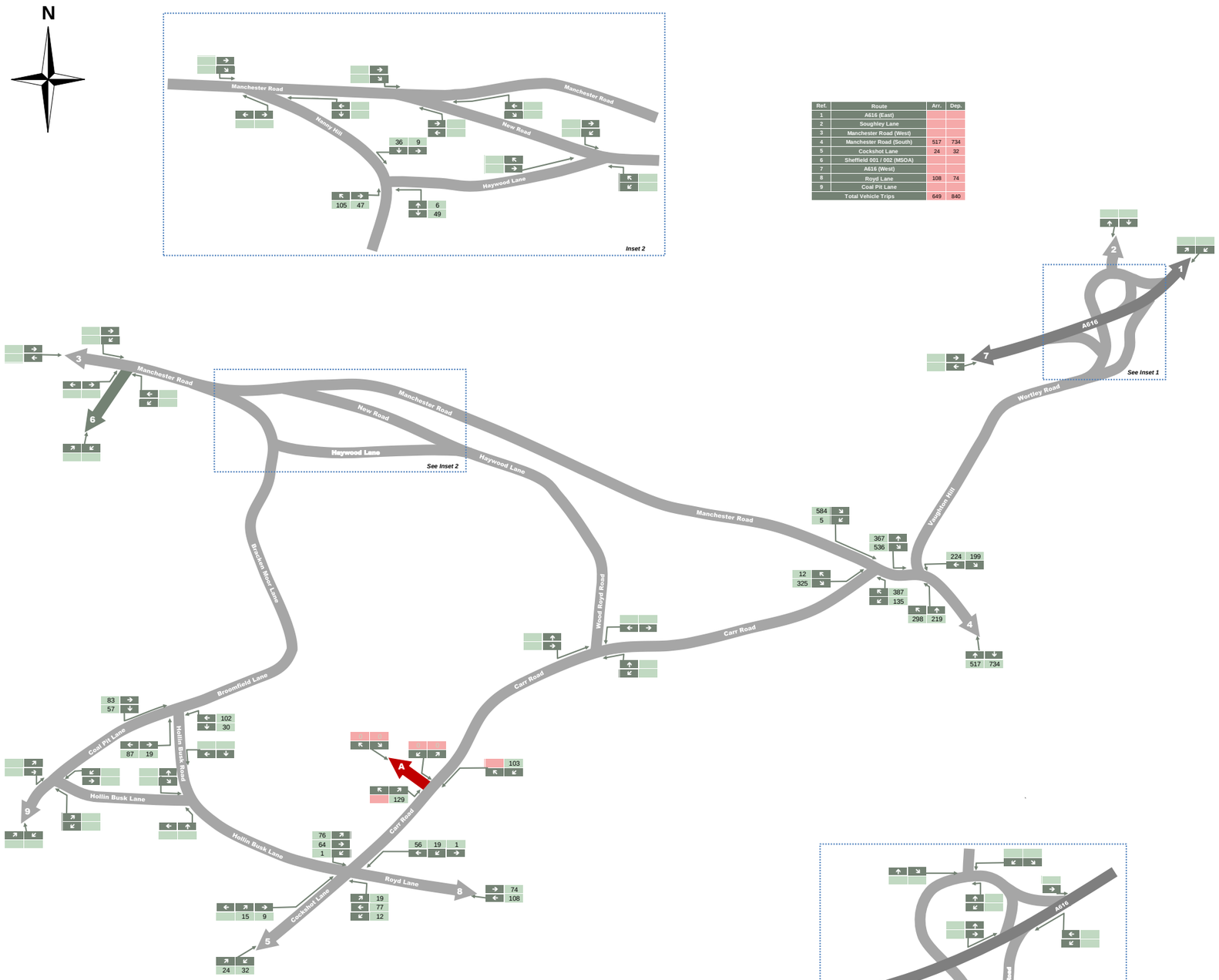
Figure Title:
Committed Development Traffic Flows - Weekday PM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 9



Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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Client:
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Project:
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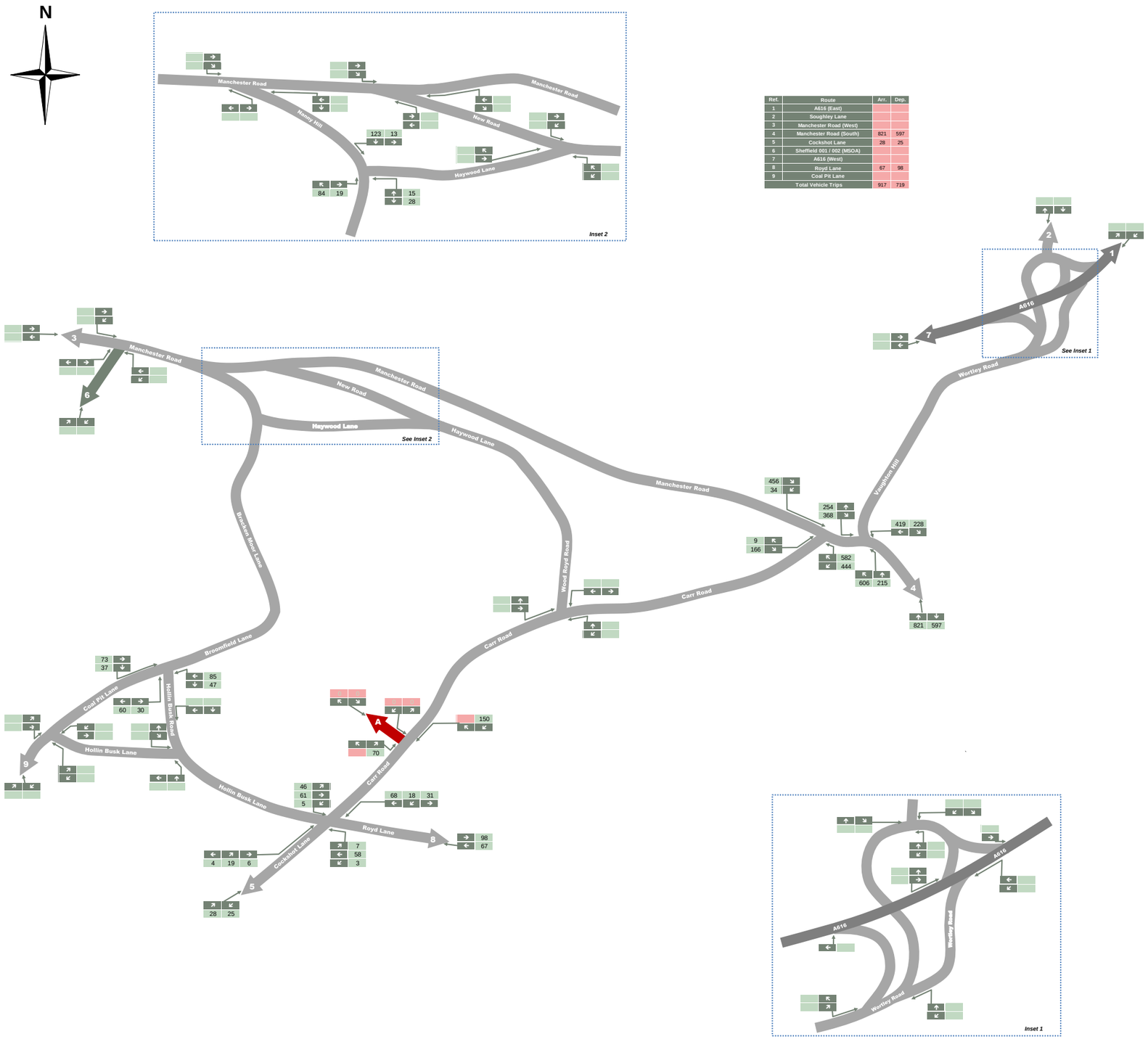
Figure Title:
Base 2026 (Without Development) Traffic Flows - Weekday AM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 10



Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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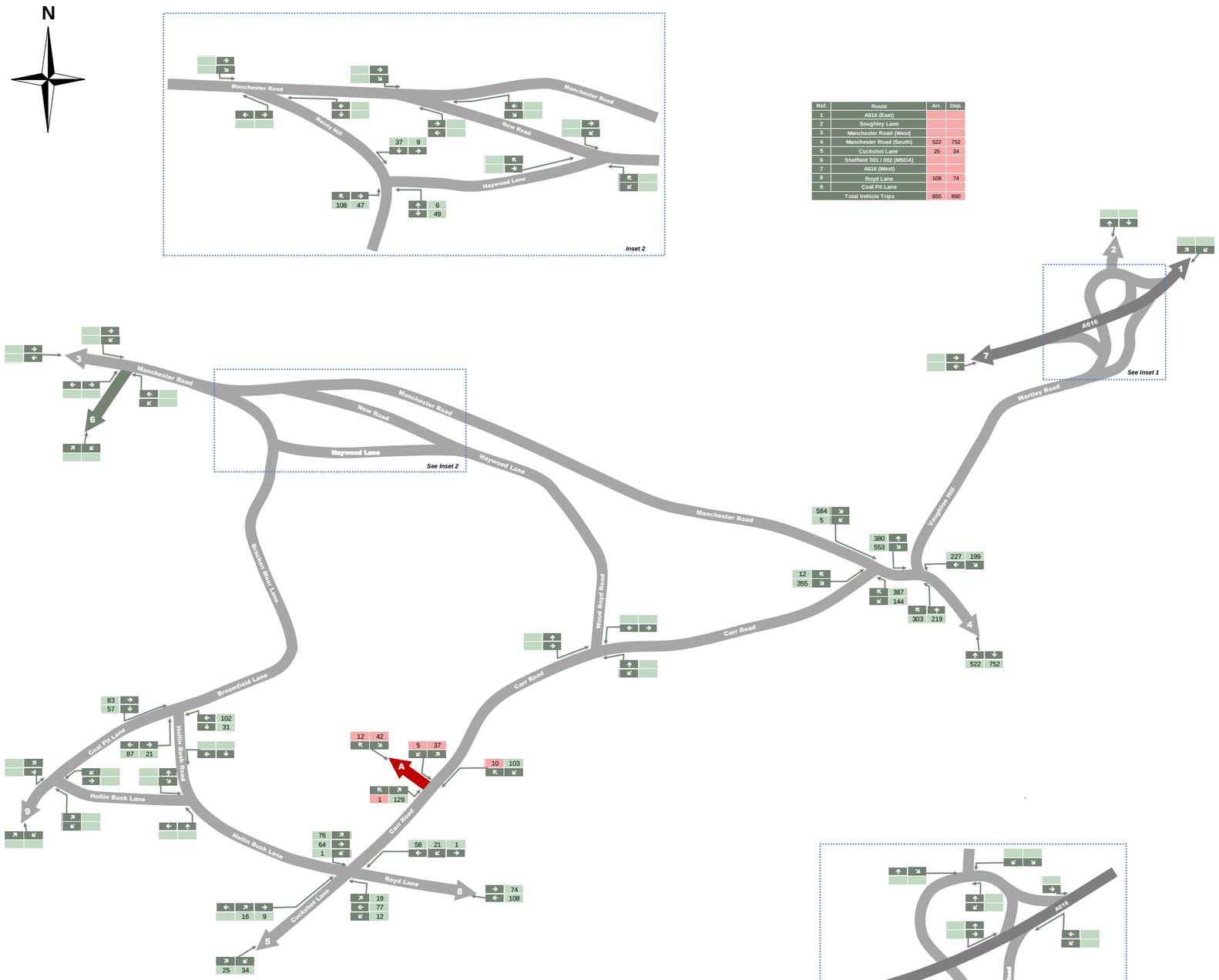
Figure Title:
Base 2026 (Without Development) Traffic FLows - Weekday PM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 11



Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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Client:
Hallam Land Management

Project:
Proposed Residential Development at Land at Deepcar, Stocksbridge

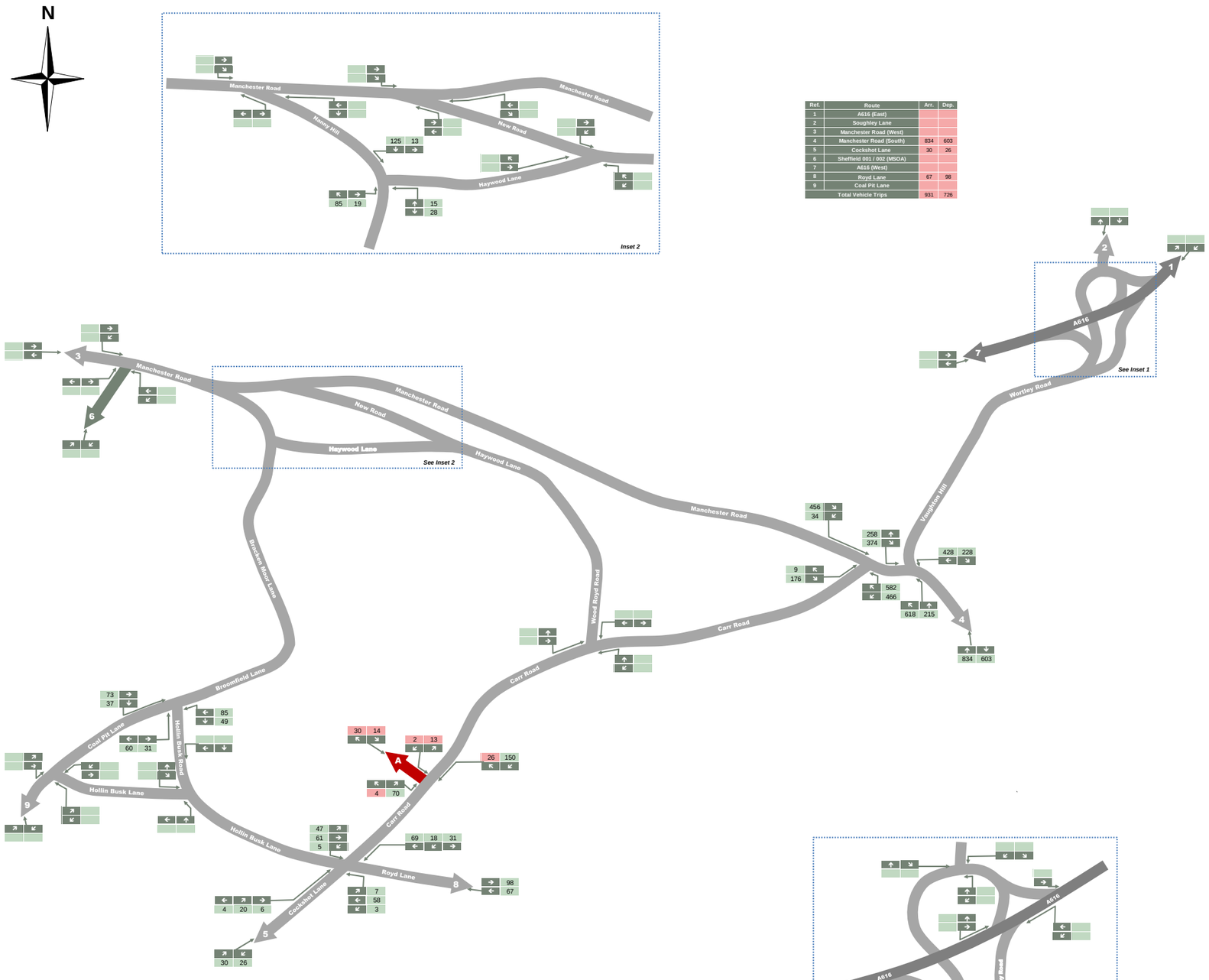
Figure Title:
Total 2026 (With Development) Traffic Flows - Weekday AM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 12



Key:

- Primary Road
- Secondary Road
- Proposed Site Access
- Additional traffic movements not explicitly represented in the network diagram (eg minor and/or accessroads)

Note: The number in each arrowhead relates to the route reference used in the Vehicle Trip Distribution.

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Project:
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Figure Title:
Total 2026 (With Development) Traffic Flows - Weekday PM Peak Hour

Scale:
Not to scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 13

Key:

- Site Location
- 2.0km Walking Distance Isochrone

Note: Isochrone measured from indicative central point within site

- Public Right of Way (Footpath)
- Public Right of Way (Bridleway / Byway)

Facilities

1: Majeed Stores, Bakers News, Flames Takeaway, Ni Hao Takeaway, The Hair Shop.
2: McColl's
3: Lidl
4: Spar and bakery
5: Fox Valley Sheffield Retail and Leisure Park
6: The Pen Nook
7: The King and Miller
8: Royal Oak
9: Red Grouse
10: Stocksbridge Golf Club
11: Stocksbridge Cricket Club
12: Multi-use sports pitch
13: Deepcar Medical Centre and Pharmacy
14: Deepcar Dental Care
15: Royd Nursery Infant School
16: Deepcar St John's C of E Junior School
17: Stocksbridge Junior School
18: St. Ann's Catholic Primary School
19: Stocksbridge High School
20: Stocksbridge Nursery Infant School

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Project:
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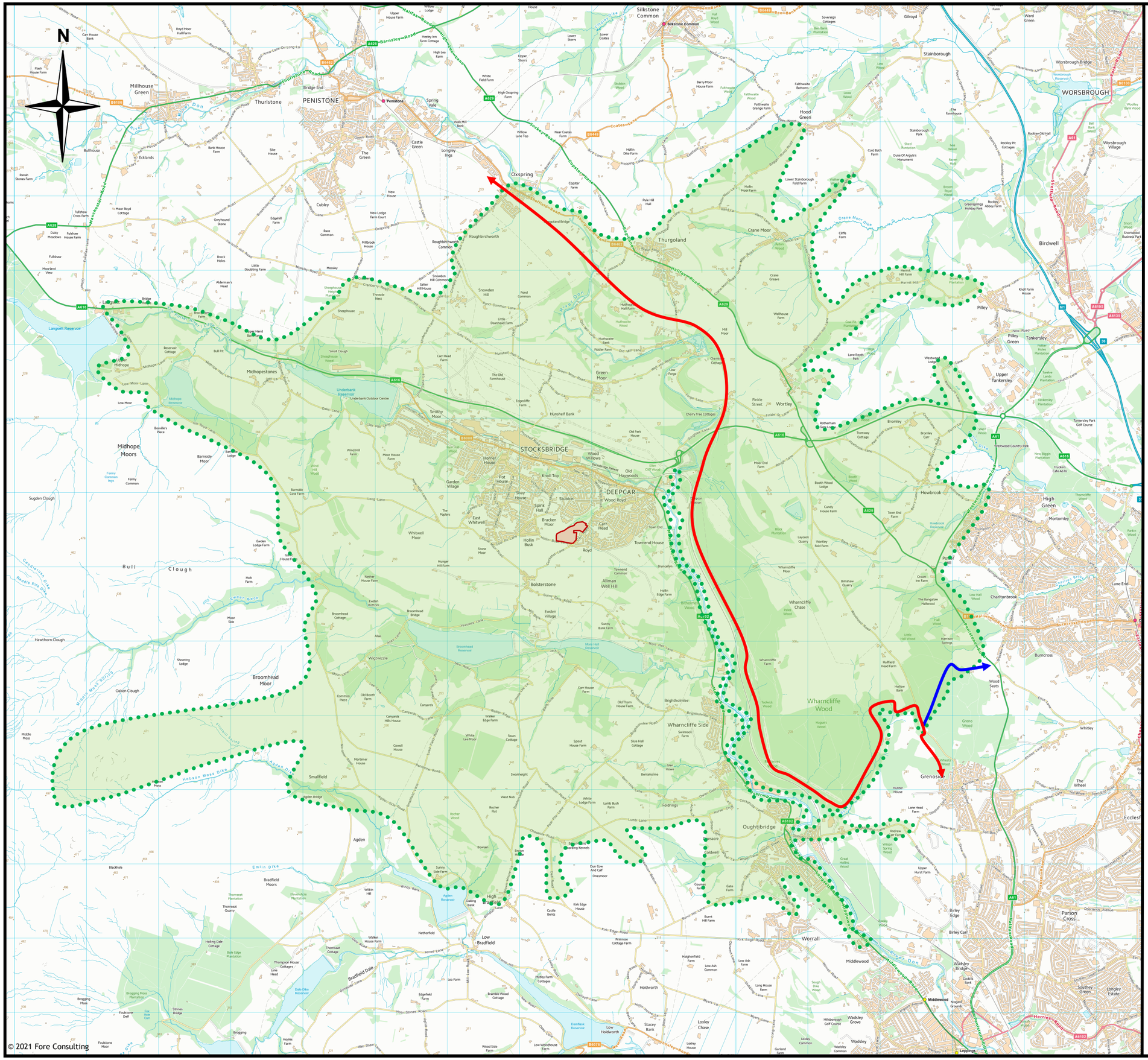
Figure Title:
Pedestrian Catchment and Local Amenities

Scale:	Figure Status:
Not to Scale	Issue
Job Number:	Figure Number:
3421	Figure 14



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Key:

- Site Location
- 8km Cycling Distance Isochrone

Note: Isochrone measured from indicative central point within the site

- National Cycle Route 627
- National Cycle Route 67

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Figure Title:
Cycle Catchment

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 15

Key:

- Site Location
- 23/23a Service
- 23 Only
- 23a Only
- 57 Service
- SL1/SL1a Core Service, Monday to Saturday
- SL1/SL1a Limited Evening Service, Monday to Saturday, and Sunday Service
- Bus Stop (Nearest to Site at Royd Lane, St Margaret Avenue, Wood Royd Road and Carr Road)

Bus Services

Bus Service 23: Stocksbridge – Deepcar - Thurgoland - Penistone - Millhouse Green

Bus Service 23A: Deepcar - Stocksbridge - Wortley - Thurgoland - Barnsley Interchange

Bus Service 57: Sheffield Centre – Oughtibridge – Deepcar – Stocksbridge

Bus Service SL1/SL1a (SuperTram Link): Middlewood P&R – Wharncliffe Side – Deepcar – Stocksbridge

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Client:
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Project:
Proposed Residential Development at Land at Deepcar, Stocksbridge

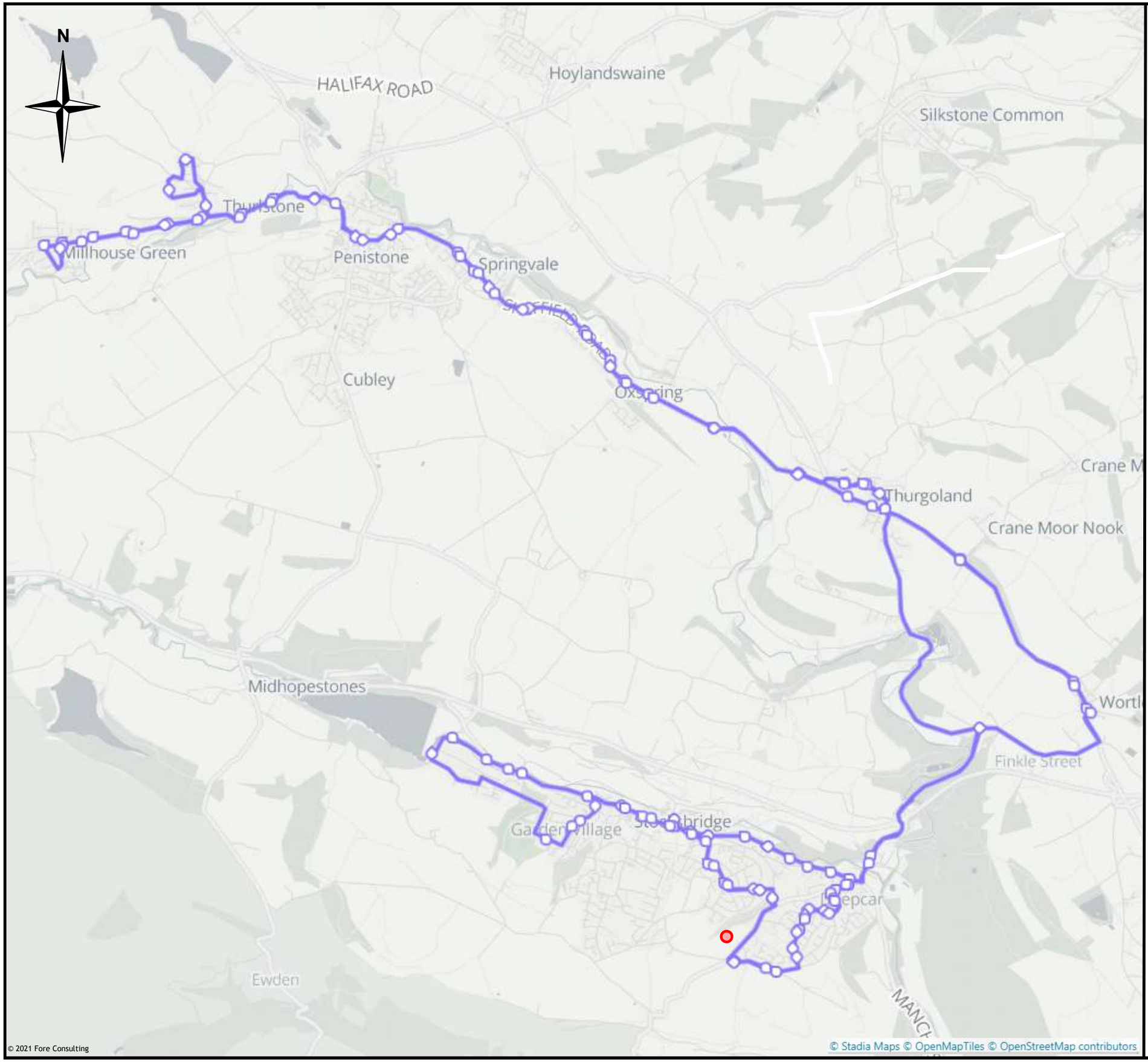
Figure Title:
Bus Services

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 16



Key:

- Site Location
- Bus Service 23 (Bus Route as per https://bustimes.org/)

Bus Route

Bus Service 23: Stocksbridge - Deepcar - Thurgoland - Penistone - Millhouse Green

Note: Screenshot from https://bustimes.org/

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Client:
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Project:
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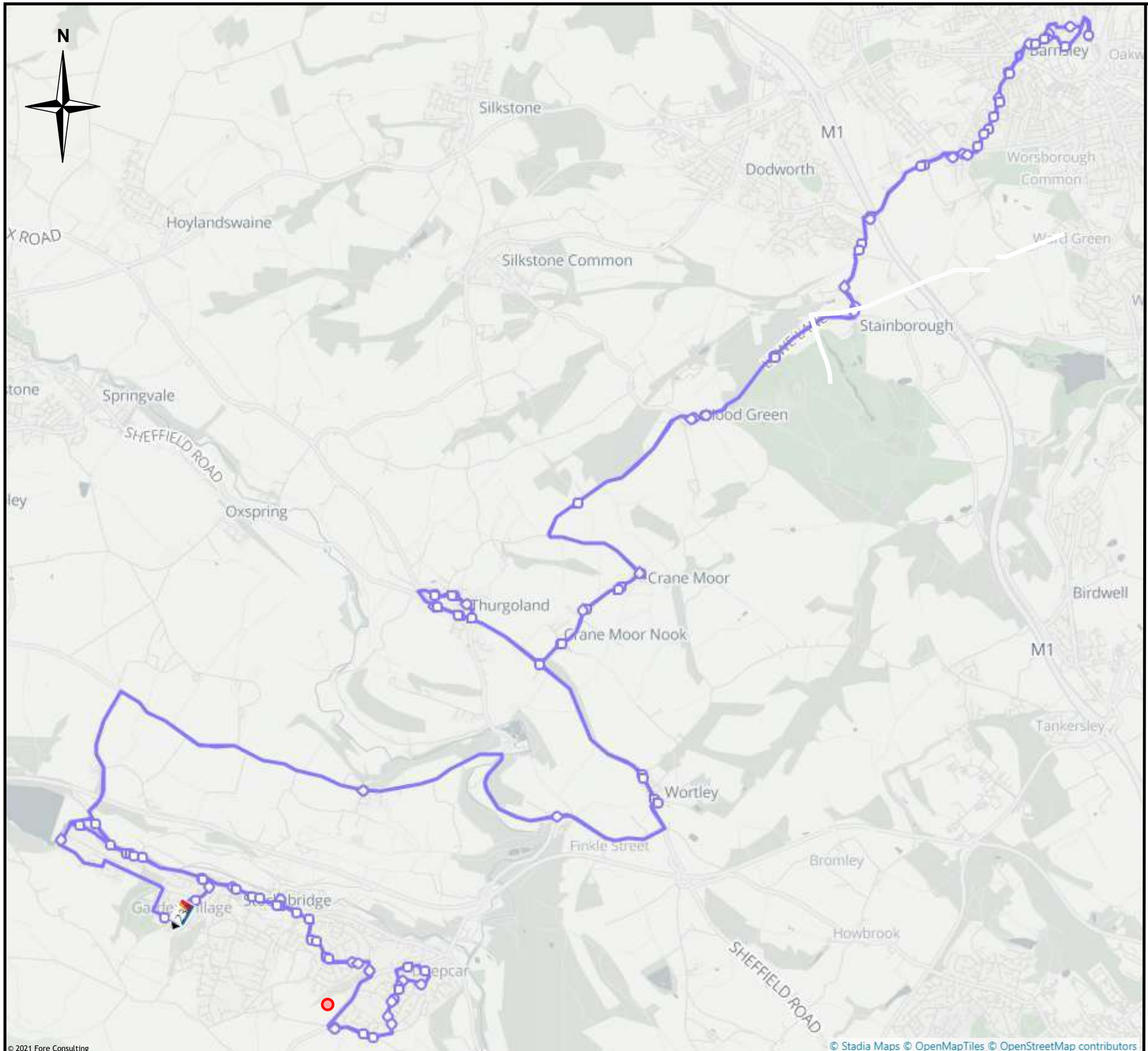
Figure Title:
Bus Service 23 Route

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 17



Key:

- Site Location
- Bus Service 23a (Bus Route as per https://bustimes.org/)

Bus Route

Bus Service 23a: Deepcar - Stocksbridge - Wortley - Thurgoland - Barnsley Interchange

Note: Screenshot from https://bustimes.org/

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Project:
Proposed Residential Development at Land at Deepcar, Stocksbridge

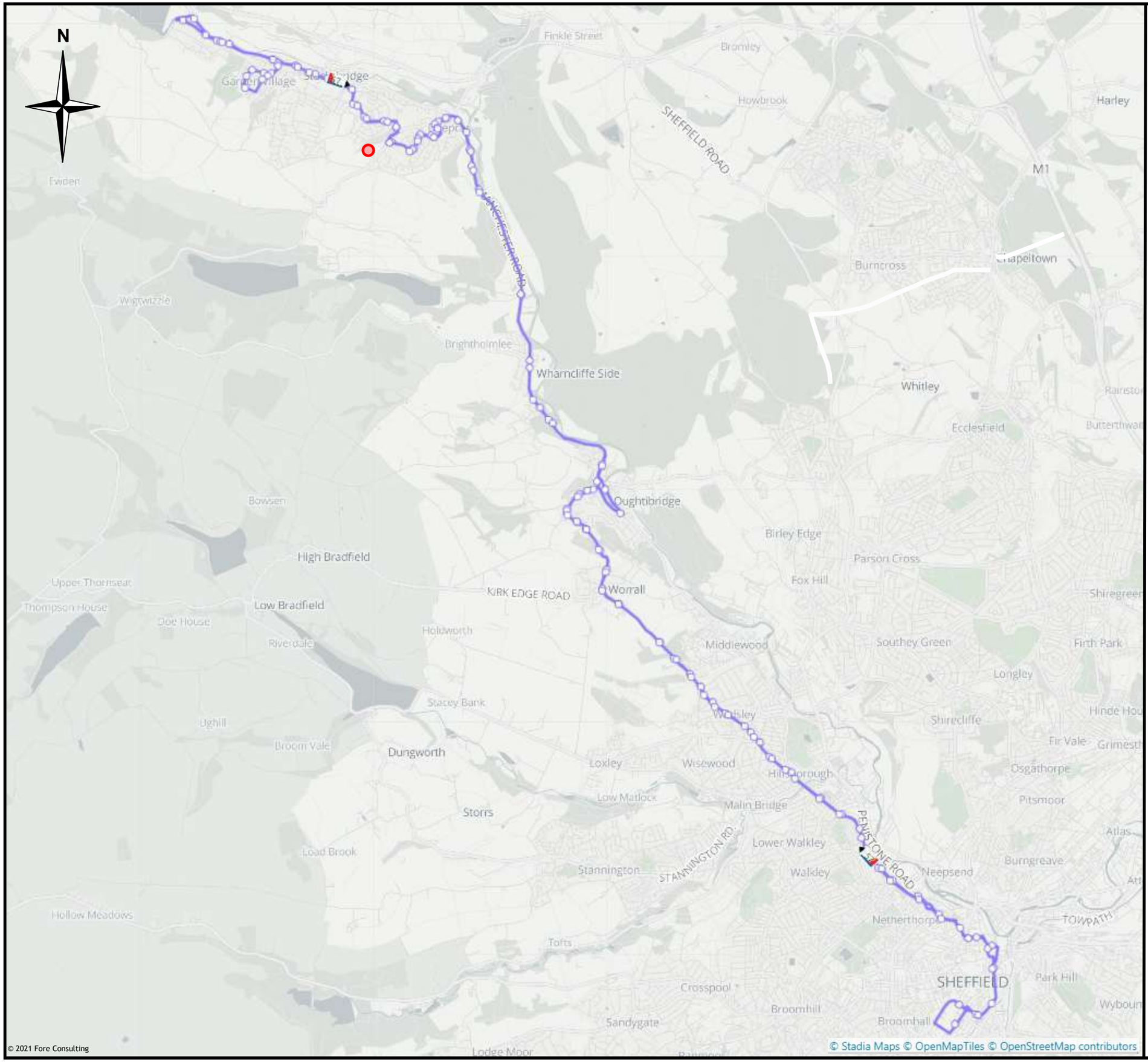
Figure Title:
Bus Service 23a Route

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 18



Key:

- Site Location
- Bus Service 57 (Bus Route as per https://bustimes.org/)

Bus Route

Bus Service 57: Sheffield Centre - Oughtibridge - Deepcar - Stocksbridge

Note: Screenshot from https://bustimes.org/

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Client:
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Project:
Proposed Residential Development at Land at Deepcar, Stocksbridge

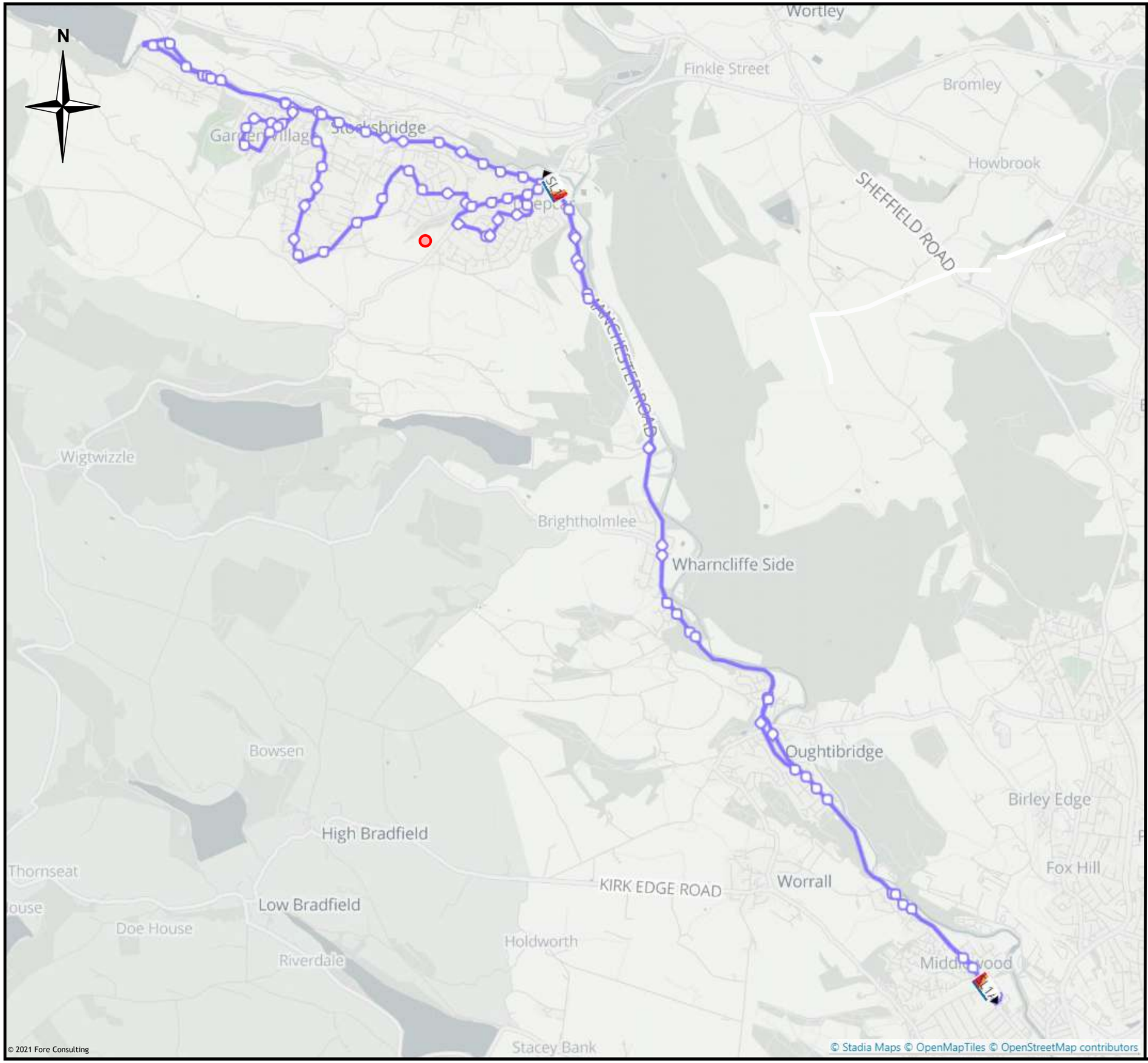
Figure Title:
Bus Service 57 Route

Scale:
Not to Scale

Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 19



Key:

- Site Location
- Bus Service SL1/SL1a (Bus Route as per https://bustimes.org/)

Bus Route

Bus Service SL1/SL1a (SuperTram Link): Middlewood P&R – Wharncliffe Side – Deepcar – Stocksbridge

Note: Screenshot from https://bustimes.org/

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Client:
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Project:
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Figure Title:
Bus Service SL1/SL1a Route

Scale:
Not to Scale

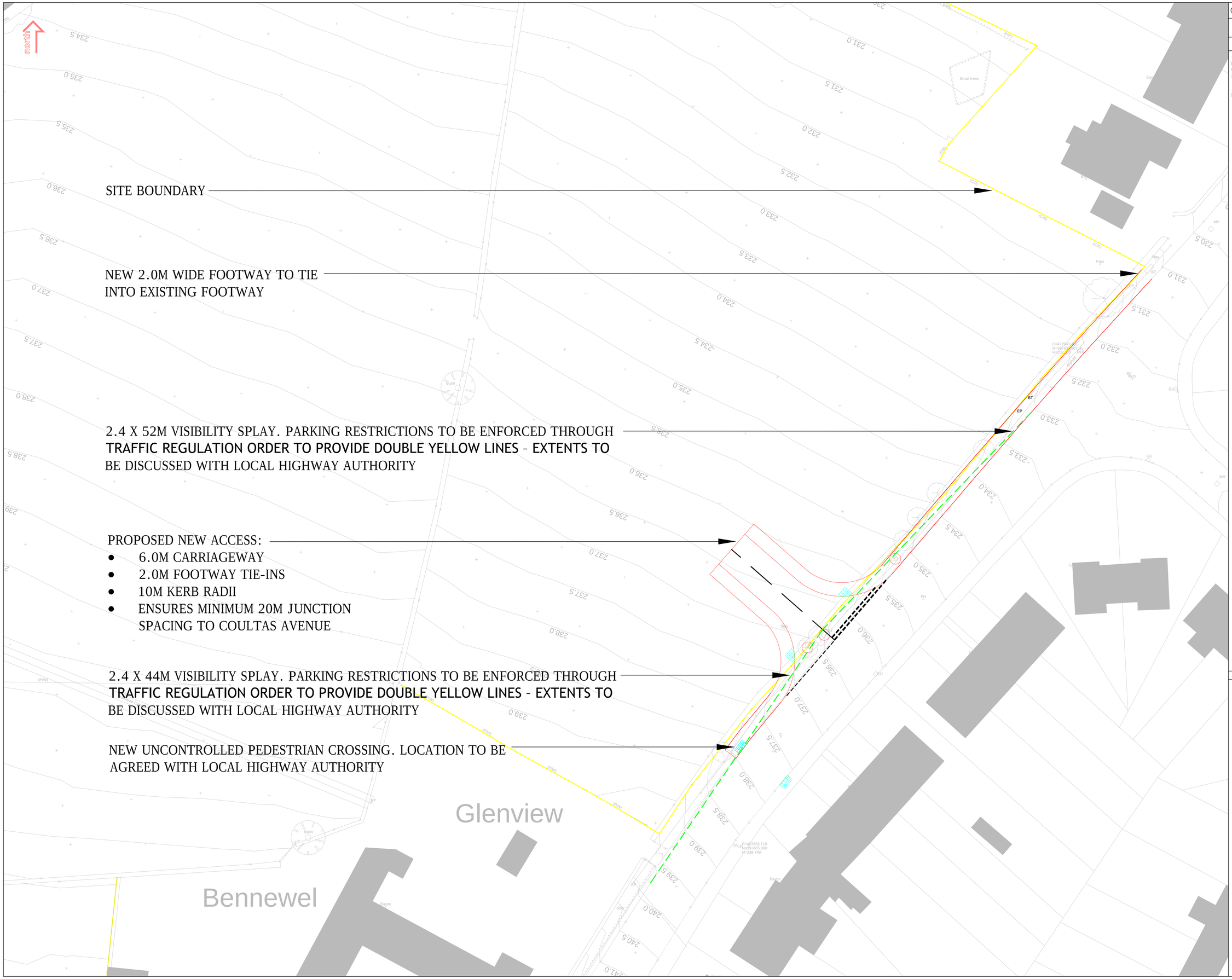
Figure Status:
Issue

Job Number:
3421

Figure Number:
Figure 20

Appendix A

Access Layout



DO NOT SCALE

N O T E S

1. PRELIMINARY LAYOUT SUBJECT TO FULL TOPOGRAPHICAL SURVEY & DETAILED DESIGN INCLUDING CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH, DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND AVAILABILITY AND LOCAL AUTHORITY APPROVAL.

2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS & SPECIALISTS DRAWINGS AND SPECIFICATIONS.

REV	DESCRIPTION	DATE	BY

CLIENT:
HALLAM LAND MANAGEMENT

PROJECT
PROPOSED RESIDENTIAL DEVELOPMENT AT LAND AT DEEPCAR, STOCKSBRIDGE

DRAWING TITLE
PROPOSED ACCESS ARRANGEMENT ONTO CARR ROAD

PRELIMINARY

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Drawn by	Checked by	Date	Scale	Format
HS	GM	2017	1:250	A1

Job Number	Drawing Number	Revision
3421	3421 SK001 004	B

Appendix B

Summary of Peak Period DfT Traffic Count Data

DfT Datapoint 949710 – Summary of AM Peak Hour Year on Year Growth (All Vehicles)

Year	Hour							
	7				8			
	East	West	Two-Way	Year on Year Change (%)	East	West	Two-Way	Year on Year Change (%)
2008	574	128	702	-	506	217	723	-
2009	NA	NA	NA	NA	NA	NA	NA	NA
2010	517	133	650	NA	524	289	813	NA
2011	505	183	688	5.8	480	244	724	-10.9
2012	400	144	544	-20.9	368	224	592	-18.2
2013	473	141	614	12.9	404	263	667	12.7
2014	596	191	787	28.2	397	260	657	-1.5
2015	535	153	688	-12.6	395	250	645	-1.8
2016	475	132	607	-11.8	366	199	565	-12.4
2017	420	118	538	-11.4	327	227	554	-1.9
2018	465	109	574	6.7	324	185	509	-8.1
2019	379	131	510	-11.1	362	197	559	9.8

1) **Average year on year change 2011 to 2019: -1.6% (Hour 7) -3.6% (Hour 8).**
2) **Change 2016 to 2019: -15.9% (Hour 7) -1.1% (Hour 8).**

DfT Datapoint 949710 – Summary of PM Peak Hour Year on Year Growth (All Vehicles)

Year	Hour							
	16				17			
	East	West	Two-Way	Year on Year Change (%)	East	West	Two-Way	Year on Year Change (%)
2008	318	357	675	-	322	435	757	-
2009	NA	NA	NA	NA	NA	NA	NA	NA
2010	329	422	751	NA	335	413	748	NA
2011	378	410	788	4.9	359	417	776	3.7
2012	310	398	708	-10.2	310	424	734	-5.4
2013	270	402	672	-5.1	277	405	682	-7.1
2014	356	394	750	11.6	181	408	589	-13.6
2015	331	351	682	-9.1	256	398	654	11.0
2016	265	309	574	-15.8	322	347	669	2.3
2017	290	313	603	5.1	286	363	649	-3.0
2018	240	244	484	-19.7	258	314	572	-11.9
2019	287	278	565	16.7	215	347	562	-1.7

1) **Average year on year change 2011 to 2019: -2.4% (Hour 16); -2.9% (Hour 17).**
2) **Change 2016 to 2019: -1.6% (Hour 16); -16.0% (Hour 17).**

Appendix C

Technical Note 1

Hallam Land Management
Proposed Residential Development at Land at Deepcar, Stocksbridge

Technical Note 1

6 April 2021
Version1.0
Issue

1 Capacity Assessments Using Alternative Testing Parameters

Capacity assessments using alternative testing parameters have been undertaken at the B6088 Manchester Road / A6102 Manchester Road / A6102 Vaughton Hill three-arm signalised junction (including the priority junction with Carr Road) to account for the following:

- Use of the most recent turning counts at the junction, undertaken in November 2018 which were included as part of the Transport Assessment submitted as part of the planning application for the Bloor Homes development, 19/00054/FUL (for the erection of 428 dwellings with associated infrastructure). It should be noted that the 2018 traffic surveys did not include turning movements to / from Carr Road. Therefore, the 2018 surveyed entry and exit traffic flows along Manchester Road (w) have been assigned as turning to and from Carr Road using the same proportionate split as the 2016 surveys.

- No application of TEMPro growth factors, recognising that the DfT traffic count datapoint 949710 located at a point along Manchester Road to the immediate west of Carr Road provided at Appendix C of my Evidence shows that the peak hour traffic flows on this part of the local network have, in the main, reduced from the date of the survey that was undertaken in 2016.

- Inclusion of committed development traffic as part of the Base and Total future year assessment scenarios. It should be noted that, as per the Transport Assessment submitted with planning application 19/00054/FUL, traffic associated with planning application 11/00384/FUL (Residential development of 114 dwelling houses at Outo Kumpo / Tata) has been excluded since the development was considered to be operational at the time of the 2018 turning count surveys.

- Inclusion of the proposed development traffic as part of the Total future year assessment scenarios.

1.1 Alternative Assessments Base 2026 (Without Development)

The Alternative Assessments Base 2026 (Without Development) results from the LinSig model are summarised in Table 1 and presented in full at the rear of this Note.

Table 1: A6102 Manchester Road / A6102 Vaughton Hill / B6088 Manchester Road Junction - Alternative Assessments Base 2026 (Without Development)

Arm	Base 2026			
	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Deg.Sat (%)	MMQ (PCU)	Deg.Sat (%)	MMQ (PCU)
A6102 Vaughton Hill (AH/R)	68.3	4.7	75.0	7.7
A6102 Manchester Road (s) (L/AH)	69.7	5.0	76.4	9.2
B6088 Manchester Road (w) (L/R)	68.1	11.6	73.9	9.8
Carr Road	53.6	0.6	27.0	0.2
PRC (%)	29.2		17.8	
Cycletime (Seconds)	75		84	

It can be seen that accounting for the application of the alternative testing parameters, all arms of the junction are predicted to operate within operational capacity during both peak hours. The overall PRC of the junction is 29.2% and 17.8% during the Weekday AM and PM peak hours respectively.

1.2 Alternative Assessments Total 2026 (With Development)

The Alternative Assessments Total 2026 (With Development) results from the LinSig model are summarised in Table 2 and presented in full at the rear of this Note.

Table 2: A6102 Manchester Road / A6102 Vaughton Hill / B6088 Manchester Road Junction – Alternative Assessments Total 2026 (With Development)

Arm	Total 2026			
	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Deg.Sat (%)	MMQ (PCU)	Deg.Sat (%)	MMQ (PCU)
A6102 Vaughton Hill (AH/R)	68.3	4.7	77.0	8.3
A6102 Manchester Road (s) (L/AH)	71.3	5.2	78.8	9.7
B6088 Manchester Road (w) (L/R)	71.2	12.4	75.9	10.3
Carr Road	60.1	1.1	29.4	0.2
PRC (%)	**26.2**		**14.3**	
Cycletime (Seconds)	**75**		**84**	

It can be seen that accounting for the application of the alternative testing parameters and the addition of the development traffic, all arms of the junction are predicted to continue to operate within operational capacity during both peak hours. The overall PRC of the junction is 26.2% and 14.3% during the Weekday AM and PM peak hours respectively.

LinSig V1 style report

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd.lsg3x
Author:	
Company:	
Address:	

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Pedestrian		5	5
E	Traffic		7	7
F	Pedestrian		6	6

Phase Intergreens Matrix

		Starting Phase					
		A	B	C	D	E	F
Terminating Phase	A		5	-	-	4	-
	B	5		-	-	5	-
	C	-	-		4	-	-
	D	-	-	7		-	-
	E	8	6	-	-		5
	F	-	-	-	-	8	

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
2	3	B	Losing	3	3

Prohibited Stage Change

		To Stage		
		1	2	3
From Stage	1		5	8
	2	5		8
	3	8	7	

Phases in Stage

Stage No.	Phases in Stage
1	A C F
2	B C F
3	D E

Give-Way Lane Input Data

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
8/1 (Carr Road)	3/1 (Right)	600	0	6/1	0.22	To 11/1 (Ahead)	-	-	-	-	-
				10/1	0.19	All					
	11/1 (Left)	715	0	6/1	0.22	To 11/1 (Ahead)					
10/1 (B6088 Manchester Road ENTRY)	9/1 (Right)	850	0	6/1	0.35	All	-	-	-	-	-

Lane Input Data

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A6102 Vaughton Hill)	U	E	2	3	6.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	40.00
1/2 (A6102 Vaughton Hill)	U	E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Right	15.00
2/1 (A6102 Manchester Road)	U	A	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 6 Left	40.00
2/2 (A6102 Manchester Road)	U	A	2	3	9.0	Geom	-	3.40	0.00	Y	Arm 4 Ahead	40.00
3/1 (B6088 Manchester Road)	U	B	2	3	60.0	Geom	-	3.70	0.00	N	Arm 4 Left Arm 5 Right	20.00 20.00
4/1 (A6102 Vaughton Hill)	U	C	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 7 Ahead	Inf
5/1 (A6102 Manchester Road EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (B6088 Manchester Road EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A6102 Vaughton Hill EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Carr Road)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 3 Right Arm 11 Left	10.00 6.00
9/1 (Carr Road EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (B6088 Manchester Road ENTRY)	O		2	3	60.0	Geom	-	3.70	0.00	N	Arm 3 Ahead Arm 9 Right	Inf 6.00
11/1 (B6088 Manchester Road (w) EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-

Lane Saturation Flows

Scenario 1: 'AM - Base 2026 (sensitivity)' (FG1: 'AM - Base 2026 (sensitivity)', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	37.0 %	1977	1977
				Arm 5 Right	20.00	63.0 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	96.0 %	1703	1703
				Arm 11 Left	6.00	4.0 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	99.1 %	2120	2120
				Arm 9 Right	6.00	0.9 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'AM - Total 2026 (sensitivity)' (FG2: 'AM - Total 2026 (sensitivity)', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	37.3 %	1977	1977
				Arm 5 Right	20.00	62.7 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	96.5 %	1703	1703
				Arm 11 Left	6.00	3.5 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	99.1 %	2120	2120
				Arm 9 Right	6.00	0.9 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 3: 'PM - Base 2026 (sensitivity)' (FG3: 'PM - Base 2026 (sensitivity)', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	40.0 %	1977	1977
				Arm 5 Right	20.00	60.0 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	93.7 %	1699	1699
				Arm 11 Left	6.00	6.3 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	90.6 %	2076	2076
				Arm 9 Right	6.00	9.4 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 4: 'PM - Total 2026 (sensitivity)' (FG4: 'PM - Total 2026 (sensitivity)', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	40.1 %	1977	1977
				Arm 5 Right	20.00	59.9 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	94.2 %	1700	1700
				Arm 11 Left	6.00	5.8 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	90.6 %	2076	2076
				Arm 9 Right	6.00	9.4 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM - Base 2026 (sensitivity)'	07:45	08:45	01:00	
2: 'AM - Total 2026 (sensitivity)'	07:45	08:45	01:00	
3: 'PM - Base 2026 (sensitivity)'	16:45	17:45	01:00	
4: 'PM - Total 2026 (sensitivity)'	16:45	17:45	01:00	

Traffic Flows, Desired

FG1: 'AM - Base 2026 (sensitivity)'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	185	94	35	314
	B	169	0	153	57	379
	C	156	266	0	4	426
	D	90	152	10	0	252
	Tot.	415	603	257	96	1371

FG2: 'AM - Total 2026 (sensitivity)'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	185	94	39	318
	B	169	0	153	62	384
	C	156	266	0	4	426
	D	103	169	10	0	282
	Tot.	428	620	257	105	1410

FG3: 'PM - Base 2026 (sensitivity)'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	190	162	138	490
	B	183	0	196	167	546
	C	112	169	0	29	310
	D	48	71	8	0	127
	Tot.	343	430	366	334	1473

FG4: 'PM - Total 2026 (sensitivity)'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	190	162	147	499
	B	183	0	196	179	558
	C	112	169	0	29	310
	D	53	77	8	0	138
	Tot.	348	436	366	355	1505

Stage Timings

Scenario 1: 'AM - Base 2026 (sensitivity)' (FG1: 'AM - Base 2026 (sensitivity)', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	11	33	10
Change Point	0	19	57

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**69.7%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**69.7%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	10	-	314	1741:1846	189+271	68.3 : 68.3%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	11	-	379	1884:1884	301+289	69.7 : 58.5%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	36	-	664	1977	975	68.1%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	50	-	415	2015	1370	30.3%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	603	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	339	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	415	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	252	1703	470	53.6%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	96	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	426	2120	2078	20.5%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**256**	**0**	**0**	**8.6**	**3.9**	**0.0**	**12.6**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**256**	**0**	**0**	**8.6**	**3.9**	**0.0**	**12.6**	**-**	**-**	**-**	**-**
1/2+1/1	314	314	-	-	-	2.6	1.1	-	3.7	42.2	3.6	1.1	4.7
2/1+2/2	379	379	-	-	-	3.1	0.9	-	4.0	37.9	4.1	0.9	5.0
3/1	664	664	-	-	-	2.7	1.1	-	3.7	20.2	10.5	1.1	11.6
4/1	415	415	-	-	-	0.2	0.2	-	0.5	3.9	1.0	0.2	1.2
5/1	603	603	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	339	339	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	415	415	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	252	252	252	0	0	0.0	0.6	-	0.6	8.2	0.0	0.6	0.6
9/1	96	96	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	426	426	4	0	0	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
11/1	257	257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 29.2 Total Delay for Signalled Lanes (pcuHr): 11.86 Cycle Time (s): 75
PRC Over All Lanes (%): 29.2 Total Delay Over All Lanes(pcuHr): 12.56

Stage Timings

Scenario 2: 'AM - Total 2026 (sensitivity)' (FG2: 'AM - Total 2026 (sensitivity)', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	11	33	10
Change Point	0	19	57

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**71.3%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**71.3%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	10	-	318	1741:1846	195+271	68.3 : 68.3%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	11	-	384	1884:1884	301+275	71.3 : 61.4%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	36	-	694	1977	975	71.2%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	50	-	428	2015	1370	31.2%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	620	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	348	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	428	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	282	1703	469	60.1%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	105	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	426	2120	2077	20.5%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	257	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**286**	**0**	**0**	**8.9**	**4.4**	**0.0**	**13.3**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**286**	**0**	**0**	**8.9**	**4.4**	**0.0**	**13.3**	**-**	**-**	**-**	**-**
1/2+1/1	318	318	-	-	-	2.7	1.1	-	3.7	42.1	3.6	1.1	4.7
2/1+2/2	384	384	-	-	-	3.1	1.0	-	4.1	38.8	4.2	1.0	5.2
3/1	694	694	-	-	-	2.9	1.2	-	4.1	21.2	11.2	1.2	12.4
4/1	428	428	-	-	-	0.3	0.2	-	0.5	4.1	1.1	0.2	1.3
5/1	620	620	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	348	348	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	428	428	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	282	282	282	0	0	0.0	0.7	-	0.7	9.5	0.3	0.7	1.1
9/1	105	105	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	426	426	4	0	0	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
11/1	257	257	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 26.2 Total Delay for Signalled Lanes (pcuHr): 12.42 Cycle Time (s): 75
PRC Over All Lanes (%): 26.2 Total Delay Over All Lanes(pcuHr): 13.29

Stage Timings

Scenario 3: 'PM - Base 2026 (sensitivity)' (FG3: 'PM - Base 2026 (sensitivity)', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	22	19	22
Change Point	0	30	54

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.4%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**76.4%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	22	-	490	1741:1846	400+253	75.0 : 75.0%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	22	-	546	1884:1884	475+240	76.4 : 76.4%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	22	-	400	1977	541	73.9%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	47	-	343	2015	1151	29.8%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	430	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	663	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	343	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	127	1699	470	27.0%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	334	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	310	2076	1637	18.9%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	366	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**156**	**0**	**0**	**11.3**	**5.0**	**0.0**	**16.3**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**156**	**0**	**0**	**11.3**	**5.0**	**0.0**	**16.3**	**-**	**-**	**-**	**-**
1/2+1/1	490	490	-	-	-	3.5	1.5	-	5.0	36.8	6.3	1.5	7.7
2/1+2/2	546	546	-	-	-	4.0	1.6	-	5.6	36.9	7.6	1.6	9.2
3/1	400	400	-	-	-	3.1	1.4	-	4.5	40.3	8.4	1.4	9.8
4/1	343	343	-	-	-	0.7	0.2	-	0.9	9.1	1.7	0.2	1.9
5/1	430	430	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	663	663	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	343	343	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	127	127	127	0	0	0.0	0.2	-	0.2	5.2	0.0	0.2	0.2
9/1	334	334	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	310	310	29	0	0	0.0	0.1	-	0.1	1.4	0.0	0.1	0.1
11/1	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 17.8 Total Delay for Signalled Lanes (pcuHr): 15.95 Cycle Time (s): 84
PRC Over All Lanes (%): 17.8 Total Delay Over All Lanes(pcuHr): 16.25

Stage Timings

Scenario 4: 'PM - Total 2026 (sensitivity)' (FG4: 'PM - Total 2026 (sensitivity)', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	22	19	22
Change Point	0	30	54

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.8%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**78.8%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	22	-	499	1741:1846	401+247	77.0 : 77.0%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	22	-	558	1884:1884	476+232	78.8 : 78.8%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	22	-	411	1977	541	75.9%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	47	-	348	2015	1151	30.2%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	684	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	348	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	138	1700	470	29.4%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	355	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	310	2076	1628	19.0%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	366	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**167**	**0**	**0**	**11.6**	**5.5**	**0.0**	**17.2**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**167**	**0**	**0**	**11.6**	**5.5**	**0.0**	**17.2**	**-**	**-**	**-**	**-**
1/2+1/1	499	499	-	-	-	3.6	1.6	-	5.3	37.9	6.7	1.6	8.3
2/1+2/2	558	558	-	-	-	4.1	1.8	-	5.9	38.3	7.9	1.8	9.7
3/1	411	411	-	-	-	3.2	1.5	-	4.7	41.5	8.8	1.5	10.3
4/1	348	348	-	-	-	0.7	0.2	-	0.9	9.4	1.8	0.2	2.0
5/1	436	436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	684	684	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	348	348	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	138	138	138	0	0	0.0	0.2	-	0.2	5.4	0.0	0.2	0.2
9/1	355	355	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	310	310	29	0	0	0.0	0.1	-	0.1	1.4	0.0	0.1	0.1
11/1	366	366	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 14.3 Total Delay for Signalled Lanes (pcuHr): 16.84 Cycle Time (s): 84
PRC Over All Lanes (%): 14.3 Total Delay Over All Lanes(pcuHr): 17.16

Appendix D

LinSig Outputs

LinSig V1 style report

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd.lsg3x
Author:	
Company:	
Address:	

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Pedestrian		5	5
E	Traffic		7	7
F	Pedestrian		6	6

Phase Intergreens Matrix

		Starting Phase					
		A	B	C	D	E	F
Terminating Phase	A		5	-	-	4	-
	B	5		-	-	5	-
	C	-	-		4	-	-
	D	-	-	7		-	-
	E	8	6	-	-		5
	F	-	-	-	-	8	

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
2	3	B	Losing	3	3

Prohibited Stage Change

		To Stage		
		1	2	3
From Stage	1		5	8
	2	5		8
	3	8	7	

Phases in Stage

Stage No.	Phases in Stage
1	A C F
2	B C F
3	D E

Give-Way Lane Input Data

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
8/1 (Carr Road)	3/1 (Right)	600	0	6/1	0.22	To 11/1 (Ahead)	-	-	-	-	-
				10/1	0.19	All					
	11/1 (Left)	715	0	6/1	0.22	To 11/1 (Ahead)					
10/1 (B6088 Manchester Road ENTRY)	9/1 (Right)	850	0	6/1	0.35	All	-	-	-	-	-

Lane Input Data

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A6102 Vaughton Hill)	U	E	2	3	6.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	40.00
1/2 (A6102 Vaughton Hill)	U	E	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 6 Right	15.00
2/1 (A6102 Manchester Road)	U	A	2	3	60.0	Geom	-	3.40	0.00	Y	Arm 6 Left	40.00
2/2 (A6102 Manchester Road)	U	A	2	3	9.0	Geom	-	3.40	0.00	Y	Arm 4 Ahead	40.00
3/1 (B6088 Manchester Road)	U	B	2	3	60.0	Geom	-	3.70	0.00	N	Arm 4 Left Arm 5 Right	20.00 20.00
4/1 (A6102 Vaughton Hill)	U	C	2	3	60.0	Geom	-	4.00	0.00	Y	Arm 7 Ahead	Inf
5/1 (A6102 Manchester Road EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (B6088 Manchester Road EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (A6102 Vaughton Hill EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Carr Road)	O		2	3	60.0	Geom	-	3.50	0.00	Y	Arm 3 Right Arm 11 Left	10.00 6.00
9/1 (Carr Road EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-
10/1 (B6088 Manchester Road ENTRY)	O		2	3	60.0	Geom	-	3.70	0.00	N	Arm 3 Ahead Arm 9 Right	Inf 6.00
11/1 (B6088 Manchester Road (w) EXIT)	U		2	3	60.0	Inf	-	-	-	-	-	-

Lane Saturation Flows

Scenario 1: 'AM - Existing 2021' (FG1: 'AM - Existing 2021', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	42.0 %	1977	1977
				Arm 5 Right	20.00	58.0 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	96.5 %	1703	1703
				Arm 11 Left	6.00	3.5 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	99.2 %	2121	2121
				Arm 9 Right	6.00	0.8 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 2: 'AM - Base 2026' (FG2: 'AM - Base 2026', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	40.9 %	1977	1977
				Arm 5 Right	20.00	59.1 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	96.4 %	1703	1703
				Arm 11 Left	6.00	3.6 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	99.2 %	2120	2120
				Arm 9 Right	6.00	0.8 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 3: 'AM - Total 2026' (FG3: 'AM - Total 2026', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	41.0 %	1977	1977
				Arm 5 Right	20.00	59.0 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	96.7 %	1704	1704
				Arm 11 Left	6.00	3.3 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	99.2 %	2120	2120
				Arm 9 Right	6.00	0.8 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 4: 'PM - Existing 2021' (FG4: 'PM - Existing 2021', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	48.0 %	1977	1977
				Arm 5 Right	20.00	52.0 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	94.4 %	1700	1700
				Arm 11 Left	6.00	5.6 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	91.3 %	2080	2080
				Arm 9 Right	6.00	8.7 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 5: 'PM - Base 2026' (FG5: 'PM - Base 2026', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	41.0 %	1977	1977
				Arm 5 Right	20.00	59.0 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	94.9 %	1701	1701
				Arm 11 Left	6.00	5.1 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	93.1 %	2089	2089
				Arm 9 Right	6.00	6.9 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 6: 'PM - Total 2026' (FG6: 'PM - Total 2026', Plan 1: 'Network Control Plan 1')

Junction: A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 5 Ahead	40.00	100.0 %	1846	1846
1/2 (A6102 Vaughton Hill)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (A6102 Manchester Road)	3.40	0.00	Y	Arm 6 Left	40.00	100.0 %	1884	1884
2/2 (A6102 Manchester Road)	3.40	0.00	Y	Arm 4 Ahead	40.00	100.0 %	1884	1884
3/1 (B6088 Manchester Road)	3.70	0.00	N	Arm 4 Left	20.00	41.0 %	1977	1977
				Arm 5 Right	20.00	59.0 %		
4/1 (A6102 Vaughton Hill)	4.00	0.00	Y	Arm 7 Ahead	Inf	100.0 %	2015	2015
5/1 (A6102 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (B6088 Manchester Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (A6102 Vaughton Hill EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
8/1 (Carr Road)	3.50	0.00	Y	Arm 3 Right	10.00	95.1 %	1701	1701
				Arm 11 Left	6.00	4.9 %		
9/1 (Carr Road EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf
10/1 (B6088 Manchester Road ENTRY)	3.70	0.00	N	Arm 3 Ahead	Inf	93.1 %	2089	2089
				Arm 9 Right	6.00	6.9 %		
11/1 (B6088 Manchester Road (w) EXIT Lane 1)	Infinite Saturation Flow						Inf	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'AM - Existing 2021'	07:45	08:45	01:00	
2: 'AM - Base 2026'	07:45	08:45	01:00	
3: 'AM - Total 2026'	07:45	08:45	01:00	
4: 'PM - Existing 2021'	16:45	17:45	01:00	
5: 'PM - Base 2026'	16:45	17:45	01:00	
6: 'PM - Total 2026'	16:45	17:45	01:00	

Traffic Flows, Desired

FG1: 'AM - Existing 2021'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	149	142	61	352
	B	133	0	147	64	344
	C	212	292	0	4	508
	D	126	175	11	0	312
	Tot.	471	616	300	129	1516

FG2: 'AM - Base 2026'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	199	166	58	423
	B	219	0	221	77	517
	C	239	345	0	5	589
	D	133	192	12	0	337
	Tot.	591	736	399	140	1866

FG3: 'AM - Total 2026'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	199	166	62	427
	B	219	0	221	82	522
	C	239	345	0	5	589
	D	146	209	12	0	367
	Tot.	604	753	399	149	1905

FG4: 'PM - Existing 2021'

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	149	202	181	532
	B	159	0	258	230	647
	C	156	168	0	31	355
	D	73	80	9	0	162
	Tot.	388	397	469	442	1696

FG5: 'PM - Base 2026'
Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	228	239	182	649
	B	215	0	343	262	820
	C	187	269	0	34	490
	D	68	98	9	0	175
	Tot.	470	595	591	478	2134

FG6: 'PM - Total 2026'
Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	228	239	191	658
	B	215	0	343	275	833
	C	187	269	0	34	490
	D	72	104	9	0	185
	Tot.	474	601	591	500	2166

Stage Timings

Scenario 1: 'AM - Existing 2021' (FG1: 'AM - Existing 2021', Plan 1: 'Network Control Plan 1')

Stage	**1**	**2**	**3**
Duration	10	34	10
Change Point	0	18	57

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.4%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.4%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	10	-	352	1741:1846	255+187	79.5 : 79.5%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	10	-	344	1884:1884	276+174	76.4 : 76.4%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	37	-	805	1977	1002	80.4%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	50	-	471	2015	1370	34.4%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	616	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	414	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	471	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	312	1703	445	70.2%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	129	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	508	2121	2082	24.4%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	300	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**316**	**0**	**0**	**9.7**	**7.0**	**0.0**	**16.7**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**316**	**0**	**0**	**9.7**	**7.0**	**0.0**	**16.7**	**-**	**-**	**-**	**-**
1/2+1/1	352	352	-	-	-	3.0	1.9	-	4.8	49.5	4.1	1.9	5.9
2/1+2/2	344	344	-	-	-	2.9	1.6	-	4.5	46.6	4.2	1.6	5.8
3/1	805	805	-	-	-	3.4	2.0	-	5.4	24.3	13.9	2.0	15.9
4/1	471	471	-	-	-	0.4	0.3	-	0.6	4.9	1.5	0.3	1.8
5/1	616	616	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	414	414	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	471	471	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	312	312	312	0	0	0.0	1.2	-	1.2	13.4	0.8	1.2	1.9
9/1	129	129	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	508	508	4	0	0	0.0	0.2	-	0.2	1.1	0.0	0.2	0.2
11/1	300	300	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 12.0 Total Delay for Signalled Lanes (pcuHr): 15.38 Cycle Time (s): 75
PRC Over All Lanes (%): 12.0 Total Delay Over All Lanes(pcuHr): 16.70

Stage Timings

Scenario 2: 'AM - Base 2026' (FG2: 'AM - Base 2026', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	12	32	10
Change Point	0	20	57

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.8%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**95.8%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	10	-	423	1741:1846	255+227	87.7 : 87.7%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	12	-	517	1884:1884	327+240	91.3 : 91.3%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	35	-	909	1977	949	95.8%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	50	-	591	2015	1370	43.1%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	736	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	522	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	591	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	337	1703	408	82.6%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	140	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	589	2120	2071	28.4%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%

LinSig V1 style report

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**342**	**0**	**0**	**13.4**	**18.6**	**0.0**	**32.0**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**342**	**0**	**0**	**13.4**	**18.6**	**0.0**	**32.0**	**-**	**-**	**-**	**-**
1/2+1/1	423	423	-	-	-	3.6	3.2	-	6.9	58.4	4.5	3.2	7.8
2/1+2/2	517	517	-	-	-	4.3	4.4	-	8.7	60.7	6.0	4.4	10.5
3/1	909	909	-	-	-	4.7	8.1	-	12.8	50.6	18.2	8.1	26.3
4/1	591	591	-	-	-	0.7	0.4	-	1.1	6.8	2.8	0.4	3.1
5/1	736	736	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	522	522	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	591	591	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	337	337	337	0	0	0.1	2.2	-	2.3	24.6	2.1	2.2	4.3
9/1	140	140	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	589	589	5	0	0	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
11/1	399	399	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -6.4 Total Delay for Signalled Lanes (pcuHr): 29.46 Cycle Time (s): 75
PRC Over All Lanes (%): -6.4 Total Delay Over All Lanes(pcuHr): 31.96

Stage Timings

Scenario 3: 'AM - Total 2026' (FG3: 'AM - Total 2026', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	12	33	9
Change Point	0	20	58

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.2%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**98.2%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	9	-	427	1741:1846	232+208	98.2 : 95.7%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	12	-	522	1884:1884	327+236	92.8 : 92.8%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	36	-	939	1977	975	96.3%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	51	-	604	2015	1397	43.2%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	753	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	531	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	604	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	367	1704	407	90.1%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	149	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	589	2120	2070	28.5%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%

LinSig V1 style report

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**372**	**0**	**0**	**13.7**	**25.8**	**0.0**	**39.5**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**372**	**0**	**0**	**13.7**	**25.8**	**0.0**	**39.5**	**-**	**-**	**-**	**-**
1/2+1/1	427	427	-	-	-	3.8	7.6	-	11.4	96.0	4.7	7.6	12.3
2/1+2/2	522	522	-	-	-	4.3	5.1	-	9.5	65.3	6.1	5.1	11.3
3/1	939	939	-	-	-	4.7	8.7	-	13.4	51.3	18.7	8.7	27.4
4/1	604	604	-	-	-	0.7	0.4	-	1.1	6.4	2.8	0.4	3.2
5/1	753	753	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	531	531	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	604	604	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	367	367	367	0	0	0.2	3.8	-	4.0	39.3	5.1	3.8	8.9
9/1	149	149	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	589	589	5	0	0	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2
11/1	399	399	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -9.1 Total Delay for Signalled Lanes (pcuHr): 35.32 Cycle Time (s): 75
PRC Over All Lanes (%): -9.1 Total Delay Over All Lanes(pcuHr): 39.53

Stage Timings

Scenario 4: 'PM - Existing 2021' (FG4: 'PM - Existing 2021', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	24	18	21
Change Point	0	32	55

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.7%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**93.7%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	21	-	532	1741:1846	409+159	93.7 : 93.7%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	24	-	647	1884:1884	521+170	93.7 : 93.7%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	21	-	477	1977	518	92.1%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	48	-	388	2015	1175	33.0%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	397	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	871	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	162	1700	438	37.0%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	442	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	355	2080	1585	22.4%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	469	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**193**	**0**	**0**	**14.3**	**16.9**	**0.0**	**31.2**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**193**	**0**	**0**	**14.3**	**16.9**	**0.0**	**31.2**	**-**	**-**	**-**	**-**
1/2+1/1	532	532	-	-	-	4.3	5.6	-	9.9	67.0	9.6	5.6	15.3
2/1+2/2	647	647	-	-	-	4.8	5.8	-	10.7	59.4	11.6	5.8	17.5
3/1	477	477	-	-	-	4.0	4.7	-	8.7	66.0	10.7	4.7	15.5
4/1	388	388	-	-	-	1.2	0.2	-	1.4	13.2	3.2	0.2	3.4
5/1	397	397	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	871	871	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	162	162	162	0	0	0.0	0.3	-	0.3	6.5	0.0	0.3	0.3
9/1	442	442	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	355	355	31	0	0	0.0	0.1	-	0.1	1.5	0.0	0.1	0.1
11/1	469	469	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -4.1 Total Delay for Signalled Lanes (pcuHr): 30.73 Cycle Time (s): 84
PRC Over All Lanes (%): -4.1 Total Delay Over All Lanes(pcuHr): 31.17

Stage Timings

Scenario 5: 'PM - Base 2026' (FG5: 'PM - Base 2026', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	25	19	19
Change Point	0	33	57

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.9%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**114.9%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	19	-	649	1741:1846	367+199	114.7 : 114.7%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	25	-	820	1884:1884	535+190	113.2 : 113.2%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	22	-	622	1977	541	114.9%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	50	-	470	2015	1223	33.7%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	595	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	1026	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	470	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	175	1701	401	43.6%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	478	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	490	2089	1659	29.5%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	591	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**209**	**0**	**0**	**28.1**	**141.7**	**0.0**	**169.7**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**209**	**0**	**0**	**28.1**	**141.7**	**0.0**	**169.7**	**-**	**-**	**-**	**-**
1/2+1/1	649	566	-	-	-	9.0	45.3	-	54.3	301.4	14.7	45.3	60.0
2/1+2/2	820	725	-	-	-	10.1	51.6	-	61.7	271.0	20.0	51.6	71.6
3/1	622	541	-	-	-	7.9	43.9	-	51.8	299.7	16.4	43.9	60.3
4/1	412	412	-	-	-	1.0	0.3	-	1.3	11.4	3.1	0.3	3.3
5/1	518	518	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	902	902	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	175	175	175	0	0	0.0	0.4	-	0.4	7.9	0.0	0.4	0.4
9/1	424	424	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	490	490	34	0	0	0.0	0.2	-	0.2	1.5	0.0	0.2	0.2
11/1	520	520	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -27.7 Total Delay for Signalled Lanes (pcuHr): 169.14 Cycle Time (s): 84
PRC Over All Lanes (%): -27.7 Total Delay Over All Lanes(pcuHr): 169.73

Stage Timings

Scenario 6: 'PM - Total 2026' (FG6: 'PM - Total 2026', Plan 1: 'Network Control Plan 1')

Stage	1	2	3
Duration	25	19	19
Change Point	0	33	57

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.0%**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	-	-	**N/A**	-	-		-	-	-	-	-	-	**117.0%**
1/2+1/1	A6102 Vaughton Hill Ahead Right	U	N/A	N/A	E		1	19	-	658	1741:1846	368+195	117.0 : 117.0%
2/1+2/2	A6102 Manchester Road Ahead Left	U	N/A	N/A	A		1	25	-	833	1884:1884	535+186	115.4 : 115.4%
3/1	B6088 Manchester Road Left Right	U	N/A	N/A	B		1	22	-	632	1977	541	116.8%
4/1	A6102 Vaughton Hill Ahead	U	N/A	N/A	C		1	50	-	474	2015	1223	33.4%
5/1	A6102 Manchester Road EXIT	U	N/A	N/A	-		-	-	-	601	Inf	Inf	0.0%
6/1	B6088 Manchester Road EXIT Left Ahead	U	N/A	N/A	-		-	-	-	1048	Inf	Inf	0.0%
7/1	A6102 Vaughton Hill EXIT	U	N/A	N/A	-		-	-	-	474	Inf	Inf	0.0%
8/1	Carr Road Right Left	O	N/A	N/A	-		-	-	-	185	1701	403	45.9%
9/1	Carr Road EXIT	U	N/A	N/A	-		-	-	-	500	Inf	Inf	0.0%
10/1	B6088 Manchester Road ENTRY Ahead Right	O	N/A	N/A	-		-	-	-	490	2089	1658	29.5%
11/1	B6088 Manchester Road (w) EXIT	U	N/A	N/A	-		-	-	-	591	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**219**	**0**	**0**	**29.9**	**159.5**	**0.0**	**189.4**	**-**	**-**	**-**	**-**
A6102 Manchester Rd-A6102 Vaughton Hill-B6088 Manchester Rd	**-**	**-**	**219**	**0**	**0**	**29.9**	**159.5**	**0.0**	**189.4**	**-**	**-**	**-**	**-**
1/2+1/1	658	563	-	-	-	9.7	50.9	-	60.6	331.6	15.5	50.9	66.4
2/1+2/2	833	722	-	-	-	10.8	59.1	-	70.0	302.4	20.8	59.1	79.9
3/1	632	541	-	-	-	8.3	48.6	-	56.9	324.1	16.9	48.6	65.5
4/1	408	408	-	-	-	1.0	0.3	-	1.3	11.5	3.1	0.3	3.3
5/1	514	514	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	903	903	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	408	408	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1	185	185	185	0	0	0.0	0.4	-	0.4	8.2	0.0	0.4	0.4
9/1	436	436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10/1	490	490	34	0	0	0.0	0.2	-	0.2	1.5	0.0	0.2	0.2
11/1	511	511	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -29.9 Total Delay for Signalled Lanes (pcuHr): 188.79 Cycle Time (s): 84
PRC Over All Lanes (%): -29.9 Total Delay Over All Lanes(pcuHr): 189.42

Appendix E

Latest Five Year Accident Data

Graeme Matthews

From: Sproson Heather <Heather.Sproson@sheffield.gov.uk> on behalf of Sproson Heather
Sent: 20 April 2021 14:54
To: Graeme Matthews
Subject: RE: PIA Data Enquiry - Deepcar, Stocksbridge

Hi Graeme,

It really isn't worth you including any 2021 data as it is far too provisional at the moment. I have just checked your search area for everything we hold so far for 2021, which takes us up to early April, and we have no record of any injury accidents occurring on the roads that you are interested in during that time. However, there can be delays in the Police adding accidents to the system so you can't assume that there won't have been any during that time.

Regards,

Heather

From: Graeme Matthews <graeme.matthews@foreconsulting.co.uk>
Sent: 20 April 2021 08:20
To: Sproson Heather <Heather.Sproson@sheffield.gov.uk>
Cc: Paul Irwin <paul.irwin@foreconsulting.co.uk>
Subject: RE: PIA Data Enquiry - Deepcar, Stocksbridge

Hi Heather

If we were to re-order the latest five year accident data would it extend up to the end of March 2021 and how long do you think it would take to send it to us please?

I assume the charge would remain at £200 + vat?

Regards
Graeme

From: Sproson Heather <Heather.Sproson@sheffield.gov.uk>
Sent: 26 January 2021 15:10
To: 'Graeme Matthews' <graeme.matthews@foreconsulting.co.uk>
Subject: RE: PIA Data Enquiry - Deepcar, Stocksbridge

Hi Graeme,

Thanks for letting me know.

I've attached accident details and a location plot for your area of interest. I've also attached a contributory factor de-coder sheet for information.

Kind regards,

Heather

From: Graeme Matthews <graeme.matthews@foreconsulting.co.uk>
Sent: 26 January 2021 13:42

To: Sproson Heather <Heather.Sproson@sheffield.gov.uk>
Cc: Heather Sproson <heathersproson38@gmail.com>; Robert Jackson <robert.jackson@foreconsulting.co.uk>
Subject: RE: PIA Data Enquiry - Deepcar, Stocksbridge

Hi Heather

We've now been instructed to purchase the accident data and I attach our payment receipt.

I'd be grateful if you could send the accident data at your earliest convenience.

Let me know if you need anything further.

Regards
Graeme

From: Sproson Heather <Heather.Sproson@sheffield.gov.uk>
Sent: 08 January 2021 16:42
To: 'Graeme Matthews' <graeme.matthews@foreconsulting.co.uk>
Subject: RE: PIA Data Enquiry - Deepcar, Stocksbridge

HI Graeme,

The fee has gone up a bit since 2016 I'm afraid and is now £200 + VAT. Method of payment has also changed as well, largely due to Covid-19 and new ways of working. Most staff now work from home so payments can only be made online. If you want to go ahead with purchasing the data please click on this link ACCIDENT DATA You will need to quote business unit 001-20769-22192/4080-000 in the message box as well as a brief description of the location that the accident data is required for. Once you've paid for the data, if you wouldn't mind forwarding your receipt to me (unfortunately I'm not automatically notified), I will get on with providing your data as quickly as I can. One benefit of working from home is that I can do a few hours each day rather than concentrating it all over 2 days so I generally turn data around quite quickly. The downside is that sometimes IT problems caused by so many staff working from home can scupper me. This is the first time I've been able to access my work emails in 3 days due to such problems. Hopefully it's just a new year blip!

Kind regards,

Heather

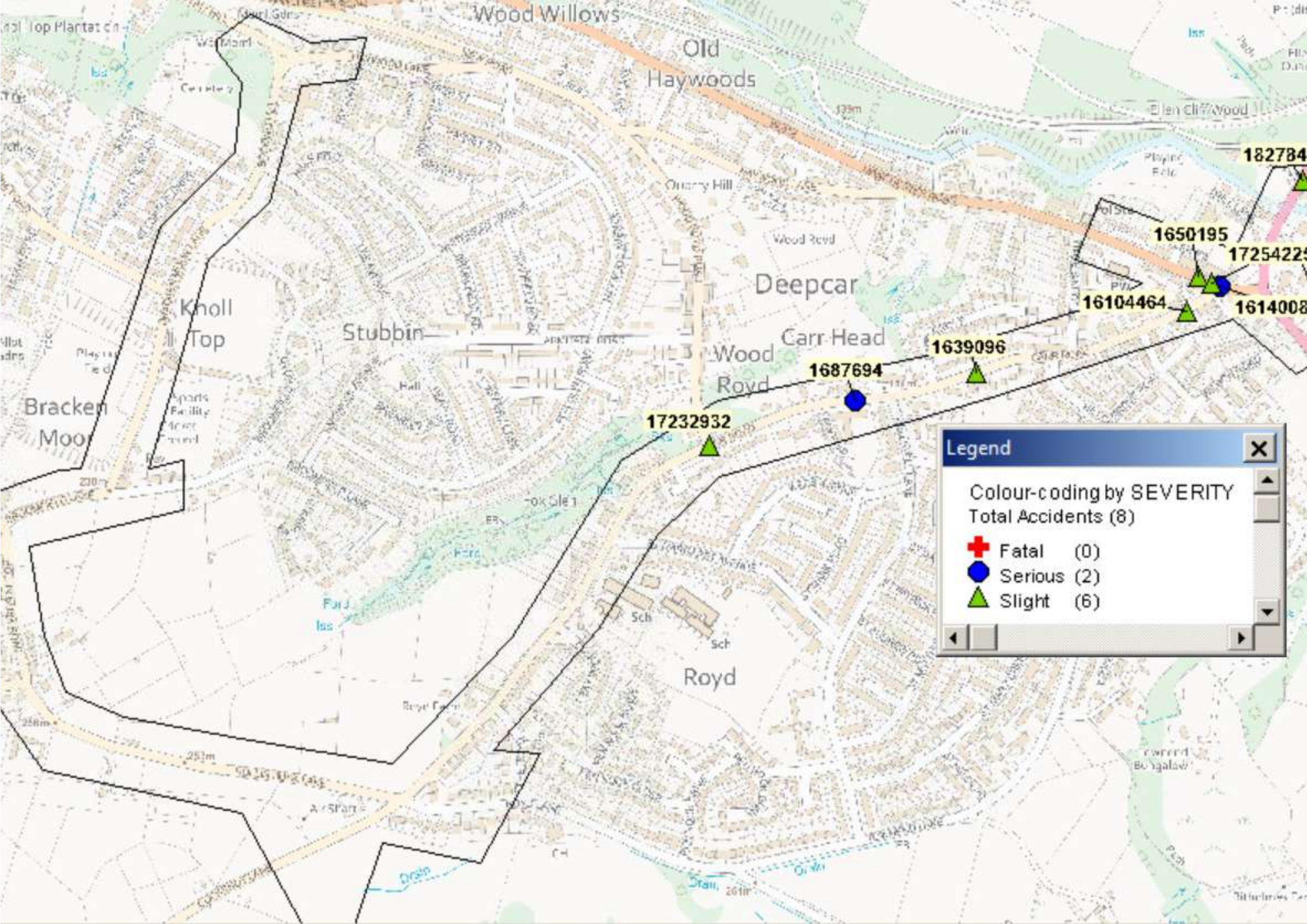
From: Graeme Matthews <graeme.matthews@foreconsulting.co.uk>
Sent: 06 January 2021 11:59
To: Sproson Heather <Heather.Sproson@sheffield.gov.uk>
Cc: Paul Irwin <paul.irwin@foreconsulting.co.uk>; Robert Jackson <robert.jackson@foreconsulting.co.uk>
Subject: PIA Data Enquiry - Deepcar, Stocksbridge

Hi Heather

In 2016 you kindly supplied us with the latest five year accident data for the area shown on the attached plan. The fee was £160 + vat.

Can I ask would the fee be the same for you to supply the current latest five year data and would you be able to send it to us within a few days of the request?

Regards
Graeme


Wood Willows
Old
Haywoods
Deepcar
Knoll
Top
Stubbin
Carr Head
Wood
Royd
Bracken
Moo
Royd
182784
1650195
16104464
1639096
1687694
17232932
Legend
Colour-coding by SEVERITY
Total Accidents (8)
Fatal (0)
Serious (2)
Slight (6)

Road Environment Contributed		101	102	103	104	105	106	107	108	109	
		Poor or defective road surface	Deposits on Road (e.g. oil, mud, chippings)	Slippery Road (due to weather)	Inadequate or masked signs/markings	Defective traffic signals	Traffic claming (e.g. humps, cushions)	Temporary road layout	Road layout (e.g. bend, hill)	Animal or object in carriageway	
Vehicle Defects		201	202	203	204	205	206				
		Tyres illegal defective or under inflated	Defect lights or indicators	Defective brakes	Defective steering or suspension	Defective or missing mirror	Overloaded or poorly loaded vehicle or trailer				
Driver/rider only (includes pedal cyclist and horse rider)	Injudicious Actions	301	302	303	304	305	306	307	308	309	310
		Disobeyed automatic traffic signal	Disobeyed 'Give Way' or 'Stop' sign/marking	Disobeyed double white lines	Disobeyed pedestrian crossing facility	Illegal turn or direction of travel	Exceeding speed limit	Travelling too fast for conditions	Following too close	Vehicle travelling along pavement	Cyclist entering road from pavement
	Driver/Rider Error or Reaction	401	402	403	404	405	406	407	408	409	410
		Junction overshoot	Junction restart (moving off at junction)	Poor turn or manoeuvre	Failed to signal or misleading signal	Failed to look properly	Failed to judge other person's path or speed	Passing too close to cyclist, horse or pedestrian	Sudden braking	Swerved	Loss of control
	Impairment or Distraction	501	502	503	504	505	506	507	508	509	510
		Impaired by alcohol	Impaired by drugs (illicit or medicinal)	Fatigue	Uncorrected defective eyesight	Illness or disability, mental or physical	Not displaying lights at night or in poor visibility	Cyclist wearing dark clothing at night	Driver using mobile phone	Distraction in vehicle	Distraction outside vehicle
	Behaviour or Inexperience	601	602	603	604	605	606	607			
		Aggressive driving	Careless, reckless or in a hurry	Nervous, uncertain or panic	Driving too slow for conditions or using slow vehicle	Learner or inexperienced driver/rider	Inexperience of driving on the left	Unfamiliar with model of vehicle			
	Vision Affected by:	701	702	703	704	705	706	707	708	709	710
		Stationary or parked vehicles	Vegetation	Road layout (e.g. bend, winding road)	Buildings, road signs, street furniture	Dazzling headlights	Dazzling sun	Rain, sleet or fog	Spray from other vehicle	Visor or windscreen dirty or scratched	Vehicle blind spot
Pedestrian only (Casualty or Uninjured		801	802	803	804	805	806	807	808	809	810
		Crossing road masked by stationary or parked vehicle	Failed to look properly	Failed to judge vehicle path or speed	Wrong use of pedestrian crossing facility	Dangerous action in carriageway (e.g. playing)	Impaired by alcohol	Impaired by drug (illicit or medicinal)	Careless, reckless or in a hurry	Pedestrian wearing dark clothing at night	Disability or illness mental or physical
Special Codes		901	902	903	904						999
		Stolen vehicle	Vehicle in course of crime	Emergency vehicle on a call	Vehicle door opened or closed negligently						Other

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

1639096 12/01/2016 Tuesday Time: 2005 Vehicles 2 Casualties 1 Slight
Easting: 428,489 Northing: 397,861
Fine without high winds Road Surface: Wet/Damp Darkness: street lights present and lit
Road Type: Single carriageway Speed Limit: 30

Location: CARR ROAD SHEFFIELD NEAR CARR GROVE
Description: V1 HAS BEEN DRIVING DOWN CARR ROAD AND HAS COLLIED WITH V2 WHICH WAS UNOCCUPIED AND PARKED UP.

Vehicle Reference: 1 Car Going ahead
First point of impact: Front
Vehicle direction: W to E Journey: Other
Age of Driver : 25 Breath test: Negative

Contributory Factors : 602

Casualty Reference: 1 Age: 25 Male Driver/rider Severity: Slight
Ped Dir: Ped Movement :
Ped Location:

Vehicle Reference: 2 Car Parked
First point of impact: Back
Vehicle direction: Parked to Parked Journey: Not known
Age of Driver : Breath test: Driver not contacted

Contributory Factors : 602

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

1650195 01/03/2016 Tuesday Time: 1030 Vehicles 4 Casualties 3 Slight
Easting: 428,779 Northing: 397,986
Fine without high winds Road Surface: Dry Daylight
Road Type: Single carriageway Speed Limit: 30

Location: MANCHESTER ROAD (B6088) NEAR CARR ROAD, SHEFFIELD
Description: V2, 3 & 4 IN STATIONARY TRAFFIC HIT FROM BEHIND BY V1

Vehicle Reference: 1 Car Slowing or Stopping
First point of impact: Front
Vehicle direction: W to E Journey: Other
Age of Driver : 59 Breath test: Not requested

Contributory Factors : 405 406

Vehicle Reference: 2 Car Waiting to go ahead but held up
First point of impact: Front
Vehicle direction: W to E Journey: Other
Age of Driver : 31 Breath test: Not provided (medical)

Contributory Factors : 405 406

Casualty Reference: 1 Age: 31 Female Driver/rider Severity: Slight
Ped Dir: Ped Movement :
Ped Location:

Casualty Reference: 3 Age: 0 Male Passenger Severity: Slight
Ped Dir: Ped Movement :
Ped Location:

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

Vehicle Reference: 3 Car Waiting to go ahead but held up
First point of impact: Front
Vehicle direction: W to E Journey: Other
Age of Driver : 36 Breath test: Not requested

Contributory Factors : 405 406

Casualty Reference: 2 Age: 36 Male Driver/rider Severity: Slight

Ped Dir: Ped Movement :
Ped Location:

Vehicle Reference: 4 Goods vehicle - unknown Waiting to go ahead but held up
First point of impact: Back
Vehicle direction: W to E Journey: Journey as part of work
Age of Driver : 32 Breath test: Not requested

Contributory Factors : 405 406

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

1687694 14/07/2016 Thursday Time: 0641 Vehicles 2 Casualties 1 Serious
Easting: 428,332 Northing: 397,825
Fine without high winds Road Surface: Dry Daylight
Road Type: Single carriageway Speed Limit: 30

Location: CARR ROAD SHEFFIELD
Description: INJURY RTC. V1 COLLIDED WITH REAR OF V2

Vehicle Reference: 1 Car Going ahead
First point of impact: Front
Vehicle direction: W to E Journey: Journey as part of work
Age of Driver : 54 Breath test: Not requested

Contributory Factors : 706

Casualty Reference: 1 Age: 54 Male Driver/rider Severity: Serious
Ped Dir: Ped Movement :
Ped Location:

Vehicle Reference: 2 Other Vehicle Parked
First point of impact: Front
Vehicle direction: Parked to Parked Journey: Other
Age of Driver : Breath test: Driver not contacted

Contributory Factors : 706

Accidents between dates **04/12/2015** **and** **03/12/2020** **(60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

16104464 31/08/2016 Wednesda Time: 1607 Vehicles 1 Casualties 1 Slight
Easting: 428,765 Northing: 397,941
Fine without high winds Road Surface: Dry Daylight
Road Type: Single carriageway Speed Limit: 30

Location: CARR ROAD SHEFFIELD
Description: PLATFORM ACCIDENT AS PASSENGER ALIGHTING FROM THE BUS. INJURY TO PASSENGER, AMBULANCE WAS CALLED

Vehicle Reference: 1 Bus or coach Parked
First point of impact: Did not impact
Vehicle direction: Parked to Parked Journey: Commuting to/from work
Age of Driver : 56 Breath test: Driver not contacted

Contributory Factors :

Casualty Reference: 1 Age: 77 Male Passenger Severity: Slight

Ped Dir: Ped Movement :
Ped Location:

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

16140089 20/12/2016 Tuesday Time: 1410 Vehicles 2 Casualties 1 Serious
Easting: 428,807 Northing: 397,974
Fine without high winds Road Surface: Dry Daylight
Road Type: Single carriageway Speed Limit: 30

Location: MANCHESTER ROAD (B6088) SHEFFIELD AT OR WITHIN 20 MTS OF CARR ROAD
Description: V2 FAILED TO INDICATE RIGHT TURNING INTO CARR ROAD. V1 PROCEEDS DOWN LINE OF TRAFFIC. V2 TURNS AND COLL WITH V1.

Vehicle Reference: 1 Motorcycle over 500cc Overtaking stationary vehicle on its offside
First point of impact: Nearside
Vehicle direction: NW to SW Journey: Commuting to/from work
Age of Driver : 45 Breath test: Not provided (medical)

Contributory Factors : 403 405 404

Casualty Reference: 1 Age: 45 Male Driver/rider Severity: Serious
Ped Dir: Ped Movement :
Ped Location:

Vehicle Reference: 2 Turning right
First point of impact: Offside
Vehicle direction: NW to SW Journey: Not known
Age of Driver : Breath test: Driver not contacted

Contributory Factors : 403 405 404

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

17232932 14/10/2017 Saturday Time: 1035 Vehicles 3 Casualties 2 Slight
Easting: 428,142 Northing: 397,766
Fine without high winds Road Surface: Wet/Damp Daylight
Road Type: Single carriageway Speed Limit: 30

Location: CARR ROAD SHEFFIELD AT OR NR JN WITH WOOD ROYD ROAD
Description: V1 TV UP CARR RD TURNING RIGHT ONTO WOOD ROYD RD. V2 TV DOWN CARR RD TW MANCHESTER RD. D1 FAILED TO SEE V2 AND TURNED ACROSS ITS PATH COLLIDING INTO FRONT END OF V2. AS VEHS CAME TO REST THEY COLLIDED LIGHTLY WITH V3.

Vehicle Reference: 1 Car Turning right
First point of impact: Front
Vehicle direction: E to N Journey: Not known
Age of Driver : 60 Breath test: Negative

Contributory Factors : 406

Vehicle Reference: 2 Car Waiting to go ahead but held up
First point of impact: Front
Vehicle direction: W to E Journey: Not known
Age of Driver : 25 Breath test: Negative

Contributory Factors : 406

Casualty Reference: 1 Age: 25 Female Driver/rider Severity: Slight
Ped Dir: Ped Movement :
Ped Location:

Casualty Reference: 2 Age: 25 Female Passenger Severity: Slight
Ped Dir: Ped Movement :
Ped Location:

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

Vehicle Reference: 3 Car Slowing or Stopping
First point of impact: Front
Vehicle direction: N to S Journey: Not known
Age of Driver : 53 Breath test: Not requested

Contributory Factors : 406

17254225 07/12/2017 Thursday Time: 1925 Vehicles 1 Casualties 1 Slight
Easting: 428,796 Northing: 397,979
Raining with high winds Road Surface: Wet/Damp Darkness: street lights present and lit
Road Type: Single carriageway Speed Limit: 30

Location: MANCHESTER ROAD (B6088) SHEFFIELD AT OR NR JN WITH CARR ROAD
Description: V1 APPROACHED ZEBRA CROSSING. PED STEPPED OUT ONTO CROSSING BUT D1 DIDNT SEE HIM. PED WAS TOSSED ONTO BONNET OF V1 BEFORE FALLING ONTO GROUND

Vehicle Reference: 1 Car Going ahead
First point of impact: Front
Vehicle direction: W to E Journey: Other
Age of Driver : 50 Breath test: Not requested

Contributory Factors : 405 802

Casualty Reference: 1 Age: 18 Male Pedestrian Severity: Slight
Ped Dir: 9 Ped Movement : Movement U/K
Ped Location: On Ped Crossing

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**
Selection: **Notes:**
Selected using Manual Selection **Deepcar - Stocksbridge**

18278439 17/03/2018 Saturday Time: 2000 Vehicles 2 Casualties 1 Slight
Easting: 428,915 Northing: 398,112
Snowing without high winds Road Surface: Snow Darkness: street lights present and lit
Road Type: Single carriageway Speed Limit: 30

Location: WORTLEY ROAD (A6102) SHEFFIELD AT OR NR JN WITH STATION ROAD
Description: V1 TV WORTLEY RD AT DEEPCAR TW VAUGHTON HILL. V2 TV IN OPP DIRC TW WORTLEY RD. V2 PASSES NARROW BRIDGE POSSIBLY DRIVING AT SPEED, LOSES CONTROL DUE TO SNOW AND ROAD CONDITIONS. V2 COLLIDES INTO FRONT OF V1 AND REFUSES EXCHANGE OF DETAILS.

Vehicle Reference: 1 Car Going ahead
First point of impact: Front
Vehicle direction: NE to SW Journey: Not known
Age of Driver : 53 Breath test: Driver not contacted

Contributory Factors : 602

Casualty Reference: 1 Age: 53 Male Driver/rider Severity: Slight
Ped Dir: Ped Movement :
Ped Location:

Vehicle Reference: 2 Car Going ahead
First point of impact: Front
Vehicle direction: SW to NE Journey: Not known
Age of Driver : 34 Breath test: Driver not contacted

Contributory Factors : 602

Accidents between dates **04/12/2015 and 03/12/2020 (60) months**

Selection:

Selected using Manual Selection

Notes:

Deepcar - Stocksbridge

Accidents involving:

	Fatal	Serious	Slight	Total
Motor vehicles only excluding 2-wheels	0	1	6	7
2-wheeled motor vehicles	0	1	0	1
Pedal cycles	0	0	0	0
Horses & other	0	1	0	1
Total	0	2	6	8

Casualties:

	Fatal	Serious	Slight	Total
Vehicle driver	0	1	5	6
Passenger	0	0	3	3
Motorcycle rider	0	1	0	1
Cyclist	0	0	0	0
Pedestrian	0	0	1	1
Other	0	0	0	0
Total	0	2	9	11

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