

Rochdale Station Square

Transport Statement

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1 Introduction

Arcadis has been appointed by Rochdale Borough Council (RBC) to produce this Transportation Statement (TS) in support of a planning application for Rochdale Station Square (Rochdale Station Square), which is the creation of a new public square immediately north of Rochdale railway station.

1.1 Background

Rochdale Station Square is a project that has arisen from the work undertaken by the Council to examine the potential of the rail station within the borough along the Calder Valley rail line between Manchester and Leeds as a focus for development. This includes how this approach could meet the challenges of climate change and decarbonisation; how it can contribute to the economic vitality and vibrancy of the borough; and the social benefits for existing and new residents.

1.1.1 Rochdale Rail Corridor Strategy

The strategy outlines an ambitious plan to create approximately 7,000 new homes and 250,000 square metres of employment space along the Calder Valley rail corridor. The document provides a high-level strategy, proposing major development that is centred around the railway stations of Rochdale, Castleton, Littleborough and Mills Hill, as well as to support plans for a new station at Slattocks. It also examines opportunities that could arise from TfGM's plans for a tram-train pathfinder scheme to connect Rochdale with Heywood via Castleton.



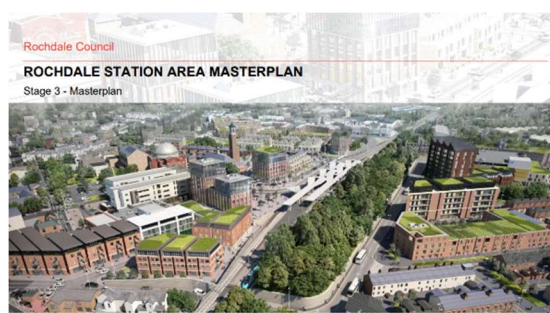
The plans prioritise the creation of new neighbourhoods on underused brownfield sites, which are close to local amenities and public transport links. The strategy is being delivered in collaboration with the newly formed Greater Manchester Station Alliance, a partnership of Network Rail; Northern Rail; the Greater Manchester Combined Authority; Transport for Greater Manchester; and regeneration specialists, London and Continental Railways (LCR).

1.1.2 Rochdale Station Area Masterplan

A masterplan was produced in February 2020 for an area of Rochdale centred on the Rochdale railway station. The masterplan takes advantage of the good rail connections to Manchester (Victoria Station) and beyond to create a new community that is built upon the principles of a Transit Orientated Communities (TOC). A vision, aims and objectives were established that shaped the 'big moves' for the masterplan. One such objective is to:

“Seek to remove the conflict between modes throughout the station area, including the removal general traffic outside the north entrance to the station to provide an improved gateway experience and to facilitate a new public square and events space.”

The masterplan identified that removing all traffic from outside of the northern station entrance this provides an opportunity to upgrade the public realm.



1.1.3 Rochdale Station Area SPD

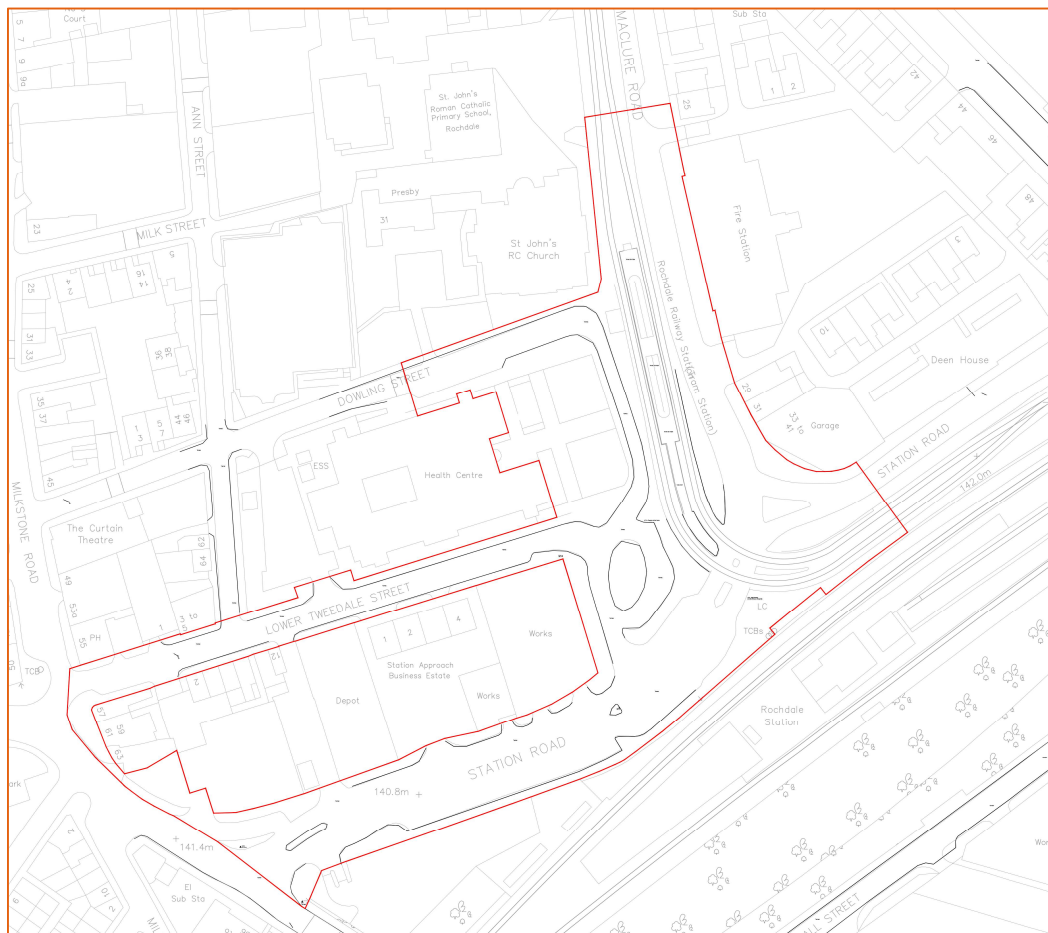
The contents and recommendations of Rochdale Station Area Masterplan have been taken forward by Rochdale Council and incorporated into a Supplementary Planning Document (SPD) which becomes part of the planning policy for the Borough. The Rochdale Station Area SPD (February 2021) identifies Rochdale Station Square has been identified as a core project within the SPD, including the removal of traffic from outside the northern entrance to the railway station.

1.2 Scope of Transport Statement

Rochdale Station Square

The transport statement covers the site outlined in Figure 1 which includes Lower Tweedale Street, Station Road, Maclure Road and Dowling Street.

Figure 1 – Application Site Boundary



1.3 Document Structure

The structure of this document is as follows:

- Section 2 provides a description of the **existing transportation infrastructure and conditions** within and around the application site.
- Section 3 provides an overview and description of the **proposed Rochdale Station Square development**.
- Section 4 provides a detailed summary of the **multi-modal access strategy** that supports the introduction of the Rochdale Station Square.
- Section 5 summarises the **assessment of impact** of Rochdale Station Square on the transportation and movement network within and immediately around the application site.
- Section 6 provides the **key conclusions** of the transportation and movement elements of the Rochdale Station Square development.

2 Existing Transportation Infrastructure & Conditions

2.1 Overall Environment

The overall environment across the application site is one that is dominated by transportation infrastructure, particularly highway and Metrolink, which requires an engineered approach to managing the interactions between users. This has resulted in the proliferation of street furniture relating to signage, traffic signals and safety measures such as guard rails across the whole application site, as shown in Figure 2.

Figure 2 – Pedestrian Safety and Comfort Assessment



The carriageways that pass through the proposed area for Rochdale Station Square are wide with footways on either side that are minimal in width, particularly in the areas where pedestrians congregate such as outside the railway station and at bus stops.

2.2 Active Travel

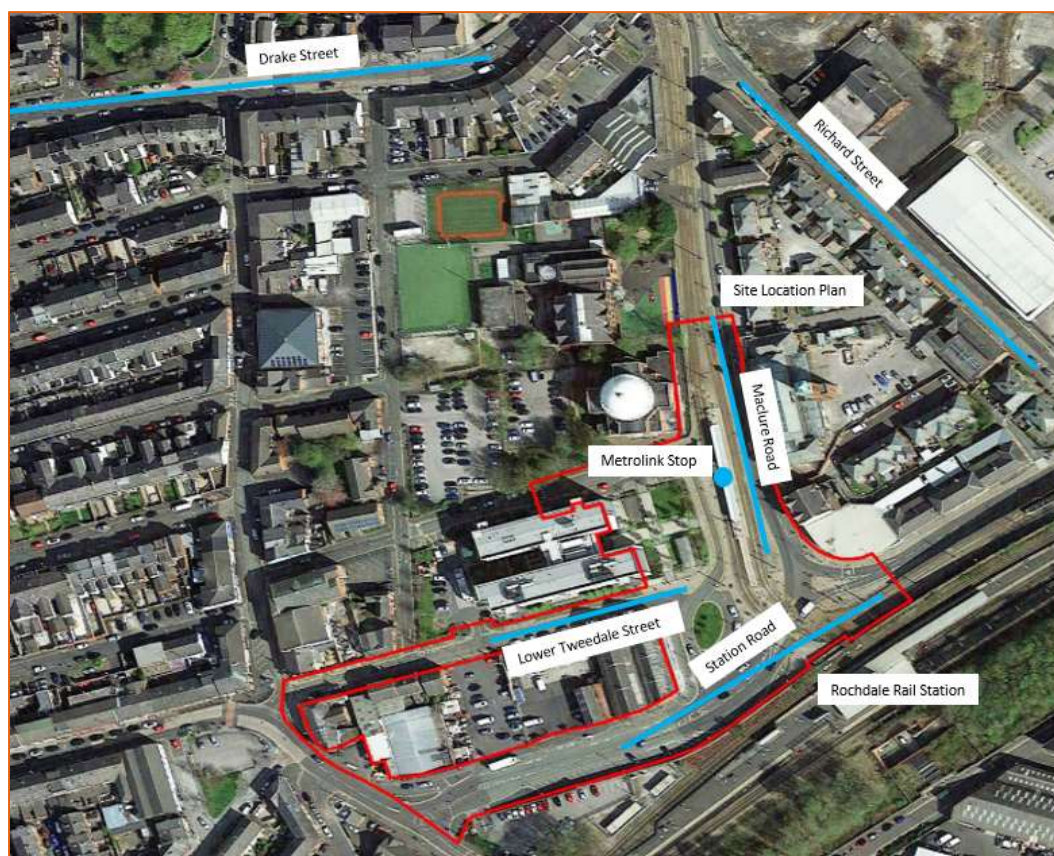
2.2.1 Pedestrians

Within the study area there are several uncontrolled pedestrian crossings mainly comprising of dropped kerbs at junctions and a signal-controlled facility at the Station Road/Maclure Road junction directly outside the station.

Observations were made during a site visit conducted on the 2nd of July 2022 which found there was no dominant route or direction that pedestrians were taking on approach from leaving the station. This is likely to be linked to the multiple pick up and drop off locations. The only noticeable patterns that were observed were that pedestrians on Maclure Road tended to use the western footway, including the tram platforms; and the majority of pedestrians used the controlled crossing outside the station although they did not observe the red or green man.

Pedestrian surveys were undertaken that quantified the number of pedestrians along 5 key routes within the study area, as shown in Figure 3.

Figure 3 – Surveyed Routes for Pedestrian Movements



The key findings were:

- There were distinct peaks in the morning and evening, with a steady flow throughout the rest of the day.
- The busiest movement was along Maclure Road with nearly 1,000 two-way movements during the study period, with 431 two-way movements utilising the Metrolink platform as a route north towards Drake Street.
- Station Road (east) was the second busiest with 640 two-way movements split nearly equal between the footways on either side of the road.
- Station Road (west) was the third busiest with 510 two-way movements, all of which used the southern footway.

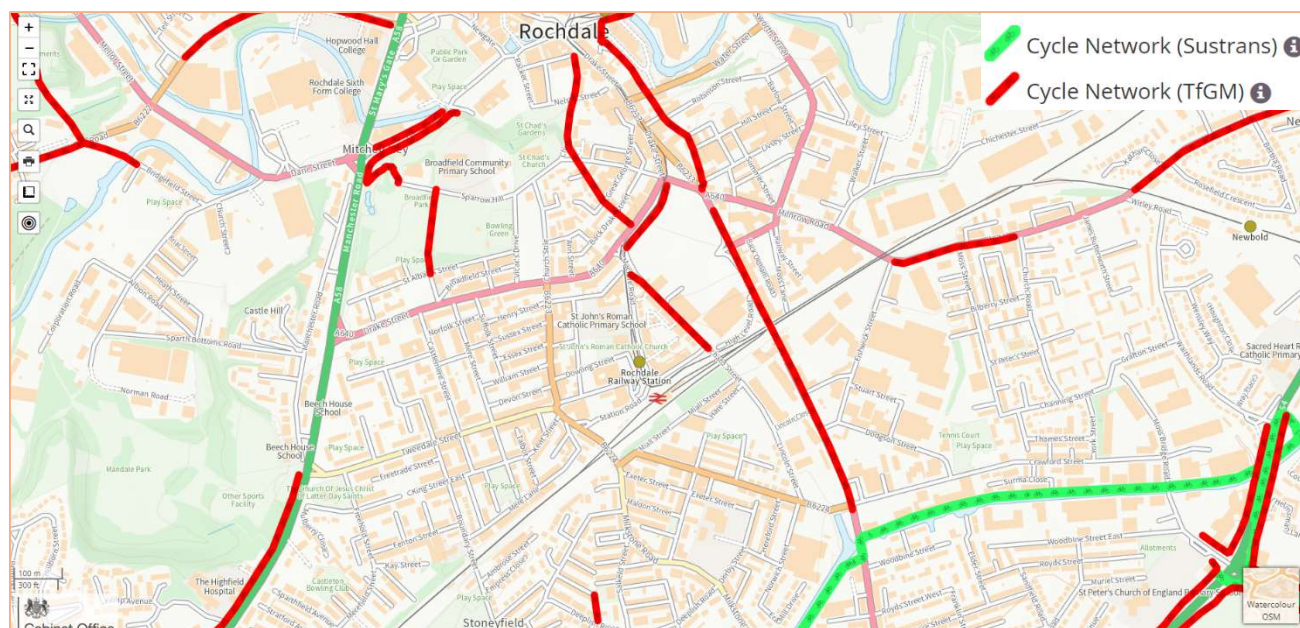
2.2.2 Cyclists

There is currently limited provision for cyclists. Cycle lanes are provided on Richard Street and Oldham Street between Durham Street and Drake Street (northbound) and Durham Street and Wood Street (southbound).

Five uncovered 'Sheffield' type stands are located along Maclure Road close to the Metrolink Station. The 'Sheffield' type stands are located along the footway running along the west of the platforms. The railway station provides 16 sheltered cycle spaces situated on platform 1.

Figure 4 shows the route of existing cycle routes within and in close proximity to the application site.

Figure 4 – Local Cycle Routes



2.3 Public Transport

2.3.1 Rail

Rochdale railway station provides direct links to Manchester and other major destinations including Leeds, Chester, Wigan and Blackburn with on average of nine trains per hour to these destinations.

Table 1 – Railway Services from Rochdale Station (per hour)

Destination	Fastest Journey time (mins)	Peak direct trains per hour	Weekend direct trains per hour
Manchester (Victoria Station)	14	6	6
Leeds	62	3	3
Blackburn	51	1	1
Bradford	39	2	2
Chester	74	1	1
Wigan	58	1	1

2.3.2 Metrolink

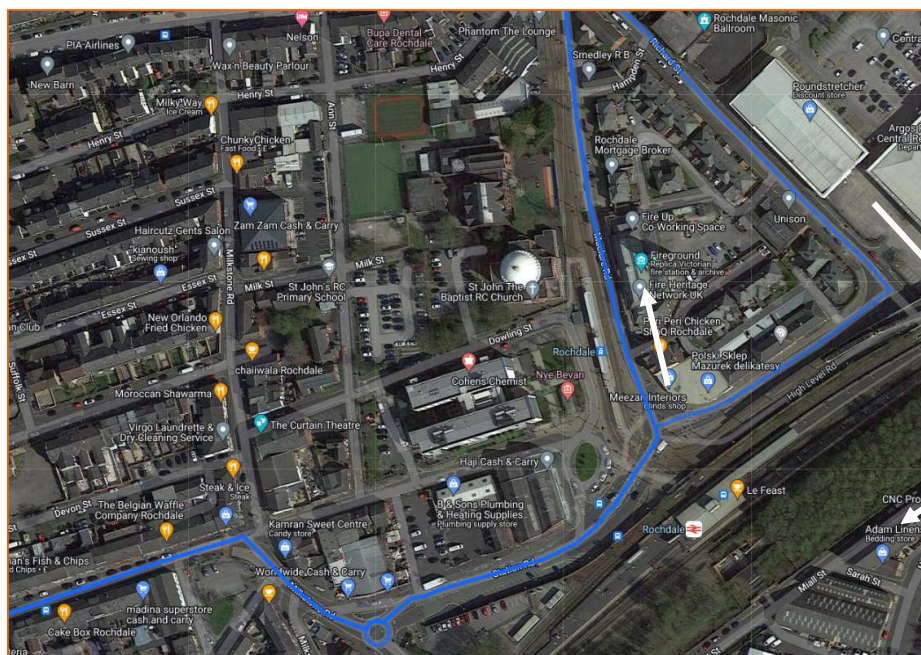
The Rochdale Station Tram Stop is situated approximately 65m north of Rochdale Railway Station along Maclure Road. The tram runs at 12-minute intervals between 05:47 and 00:30, depending upon direction of travel. On bank holidays and Sundays, the service starts 1 hour later at 06:58.

Pedestrians can reach the stops from the station by utilising the pedestrian crossings and track level pedestrian crossings. The stops also provide mobility impaired boarding points. The stop along the eastern side of Maclure Road provides direct access to the centre of Manchester, where cross county connections can be made to other destinations in the city such as Bury, Altrincham, The Trafford Centre and Manchester Airport. The Tram service is currently free for users between the station and town centre.

2.3.3 Buses

There are bus stops located directly outside the station entrance and are served by the No 471 Rochdale to Bolton via Heywood and Bury. The 471 runs from Rochdale to Bolton with services approximately every 12 minutes with services running from 05:12 to 23:53 Monday to Friday, 06:07 to 23:53 on Saturdays and every 30 minutes from 08:22 to 23:53 on Sundays and Bank Holidays.

Figure 5 – Route of 471 Through the Application Site



The stops located outside the railway station comprise of a shelter with a flag and pole with level-access kerbs.

2.4 Highways

2.4.1 Network & Limit of Adoption

The key roads and vehicular movements within the application site are shown in Figure 6.

Figure 6 – Key Road and Vehicular Movement within & around the Application Site

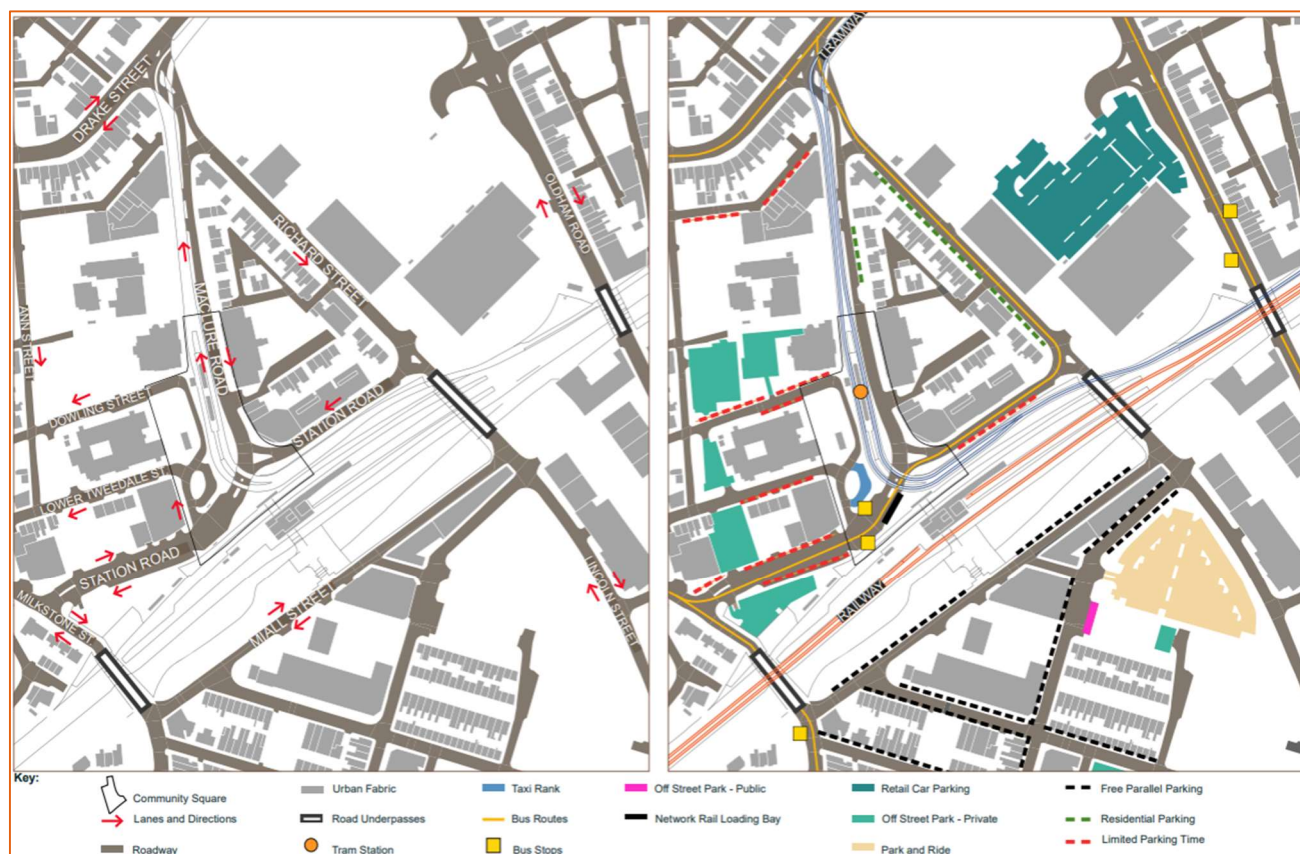


Figure 7 sets out the extent of the adopted public highway within the application site boundary.

Figure 7 – Extent of Adopted Highway



2.4.2 Traffic Flows

During the observations it was noted greater level of vehicular activity occurred immediately outside the northern (main) station entrance, at the junction of Station Road with Maclure Road. During the peak periods a significant number of the vehicles observed either dropping off or picking up and were taking illegal or inappropriate manoeuvres such as:

- Making U-turns in Station Road (west side)
- Private vehicles using the bus stop or Network Rail layby to drop off and pick up.
- Private vehicles using the taxi rank area to drop off and pick up.
- Drop off in Maclure Road taking place in the short section of southbound lane.
- At the western end of Station Road there is steady flow of vehicles accessing the Worldwide Foods unit and the small units in the grouping of buildings at the edge of the study area.

Traffic surveys were undertaken on 2nd July 2019, and the data shows that during the survey period (06:00-19:00) 3,997 vehicles pass through the junction of Station Road and Maclure Road directly outside the station entrance, 1,084 vehicles travelled through Dowling Street.

This was a mix of both taxis departing from the rank and visitors to the Nye Bevan House using the one-way system. 2,603 vehicles travel north along Maclure Road towards Drake Street to exit the study area.

2.4.3 Pick-up / Drop-off

Furthermore, during the survey period data was collected for the 6 pickup and drop-off zones within the study area. The locations of the zones are highlighted in Figure 8. Graphs showing the arrival and departure profiles for each of the zones are also provided in Figure 9.

Figure 8 – Pick-Up / Drop-Off Survey Zones

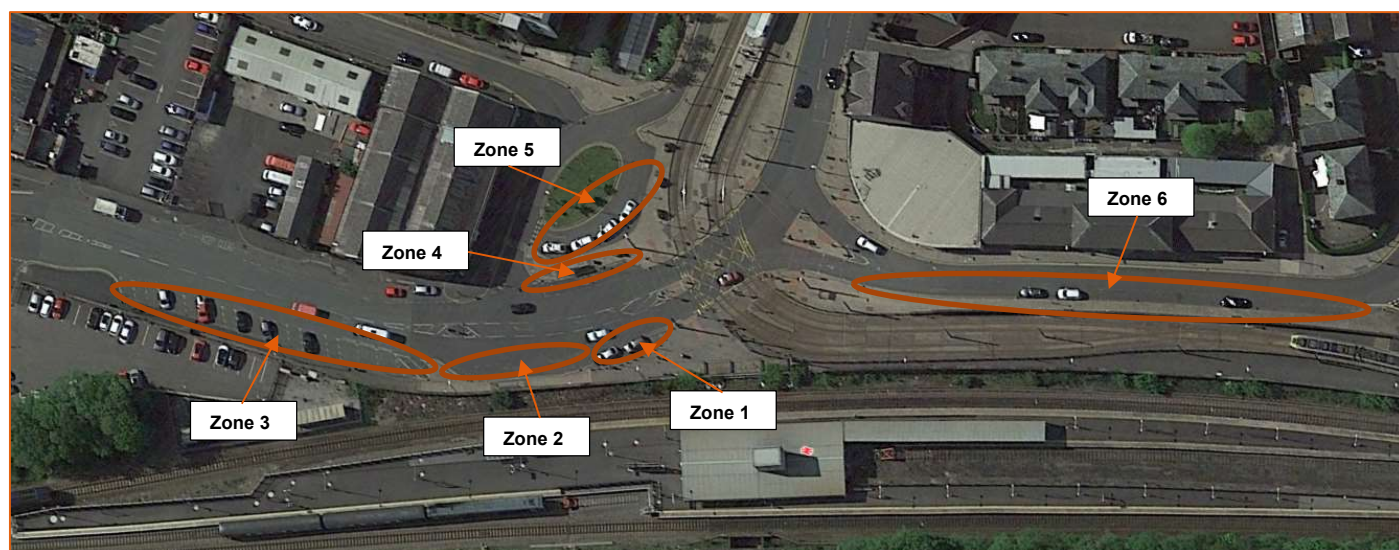
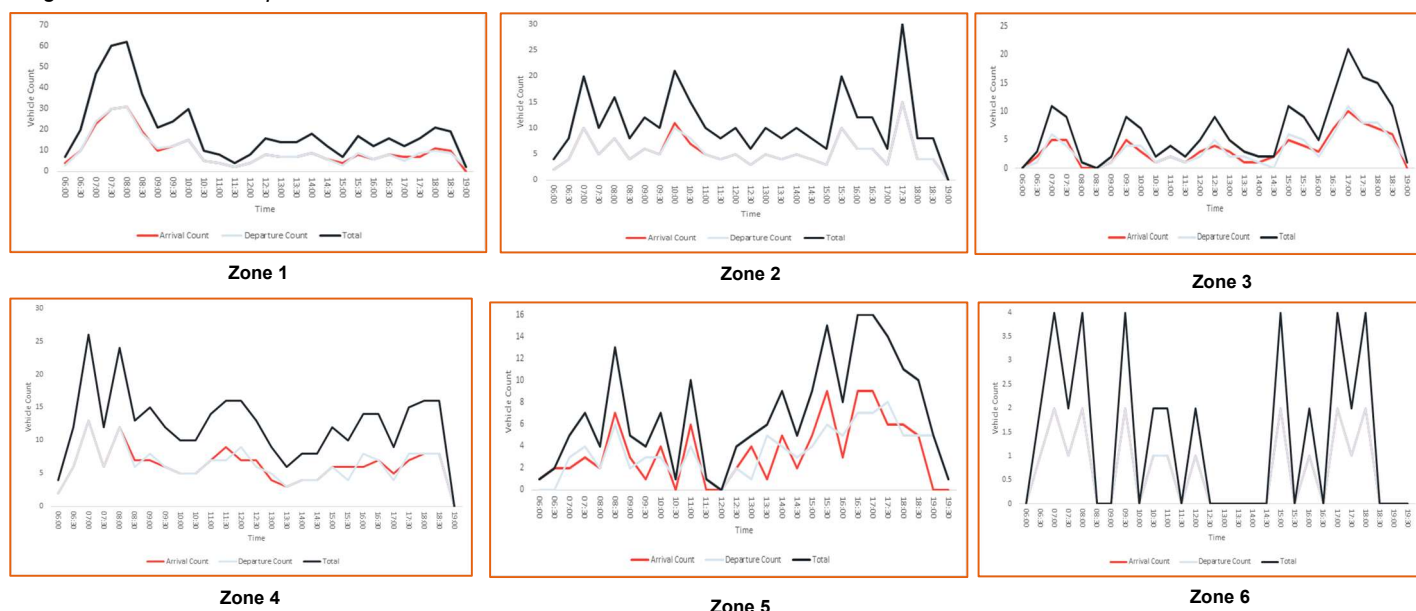


Figure 9 – Arrival & Departure Profiles



Key findings from the surveys were:

- **Zone 1 (Network Rail Layby):** was used primarily for drop-offs (199) with a smaller volume of pick-ups (64). There is a clear peak between 07:30 and 08:00 then a steady use throughout the day at a much lower level.
- **Zone 2 (Westbound Bus Stop):** used primarily for drop offs (109) with a similar number of pick-ups (30) and drop offs (28), which are related to the bus services that call there. There are 6 clear peaks in activity which relate correlate to the times of the fast rail service to Manchester.
- **Zone 3 (short stay parking – Station Road West):** used in equal measures for pick-up (47) and drop-off (41). There were 5 distinct peaks across the survey period, linked to the arrival/departure of fast rail services to Manchester, the largest of which were between 16:00 and 18:30.
- **Zone 4 (Eastbound Bus Stop):** used primarily for drop-offs (109) with a smaller number of pick-ups (30). There are 6 clear peaks in activity, which correlate to the times of the fast rail service to Manchester.
- **Zone 5 (Taxi Rank):** used for pick-ups (94) throughout the day. The departure profile in Figure 9 has numerous peaks that could correlate to the times of train arrivals/departures. The activity before 13:00 is limited, but after this point grows to a peak at 17:30.
- **Zone 6 (Short Stay Parking – Station Road East):** not used by many vehicles during the survey period (19 in total) and was mainly used for drop-off (16). The profile is made up of 10 peaks with almost no other activity

Rochdale Station Square

in between the peaks. These peaks are grouped into 3 activity periods (06:30-08:30/09:00-12:30/15:00-18:00).

2.4.4 Licensed Taxis

The existing taxi rank is currently situated across from the entrance of the station. The taxi rank is accessible for vehicles via Station Road. It currently operates in a one-way system whereby vehicles then exit via Lower Tweeddale Street or Dowling Street.

The current rank provides capacity for up to 5 vehicles, with space for an additional 4 vehicles on the holding rank located on Station Rd (east).

2.4.5 Collision Data

Figure 10 provides a screenshot of the available personal injury collision data taken from crashmap.co.uk over the five-year period covering January 2017 to December 2021.

Figure 10 – Location of 5 Years Collision Data

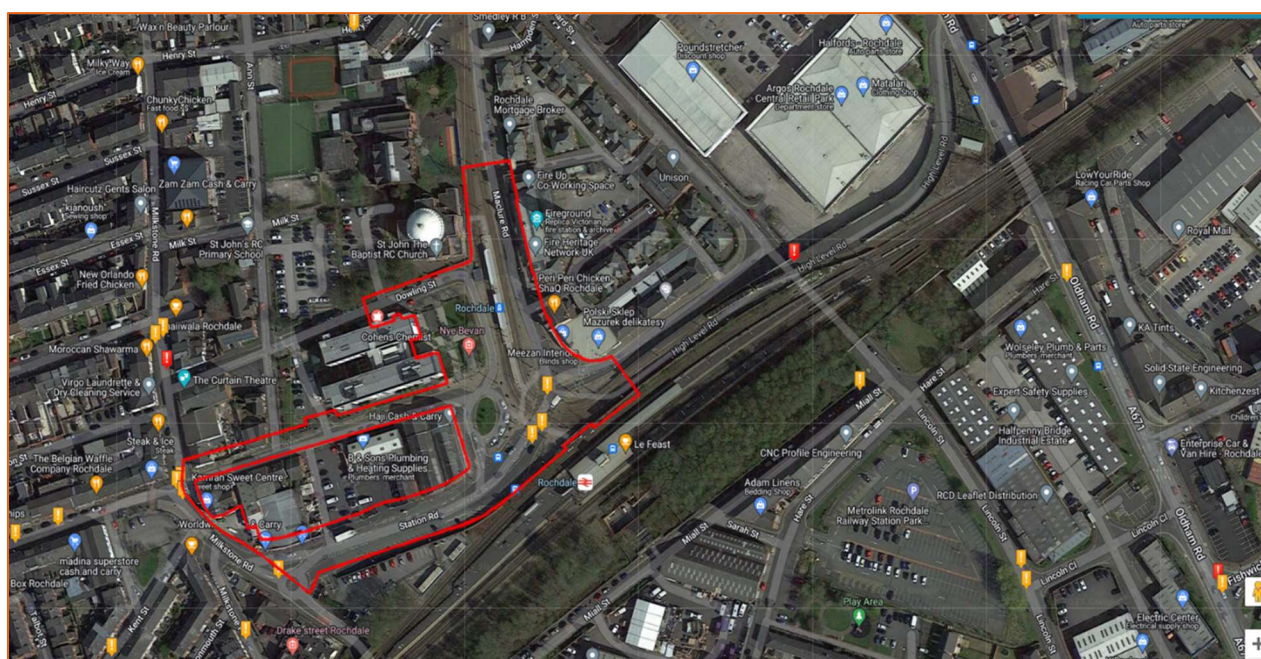


Table 2 – Summary of 5 Years Collision Data

Year	Slight	Serious	Fatal	Total
2017	6	1	0	7
2018	3	1	0	4
2019	2	0	0	2
2020	5	1	0	6
2021	4	0	0	4
Total	20	3	0	23

There are clusters of collisions just outside the station and on the junction of Milkstone Rd and Tweeddale St. There has been a total of 23 collisions across the 5-year period.

There were no fatal collisions recorded in this study period within or immediately adjacent to the application site.

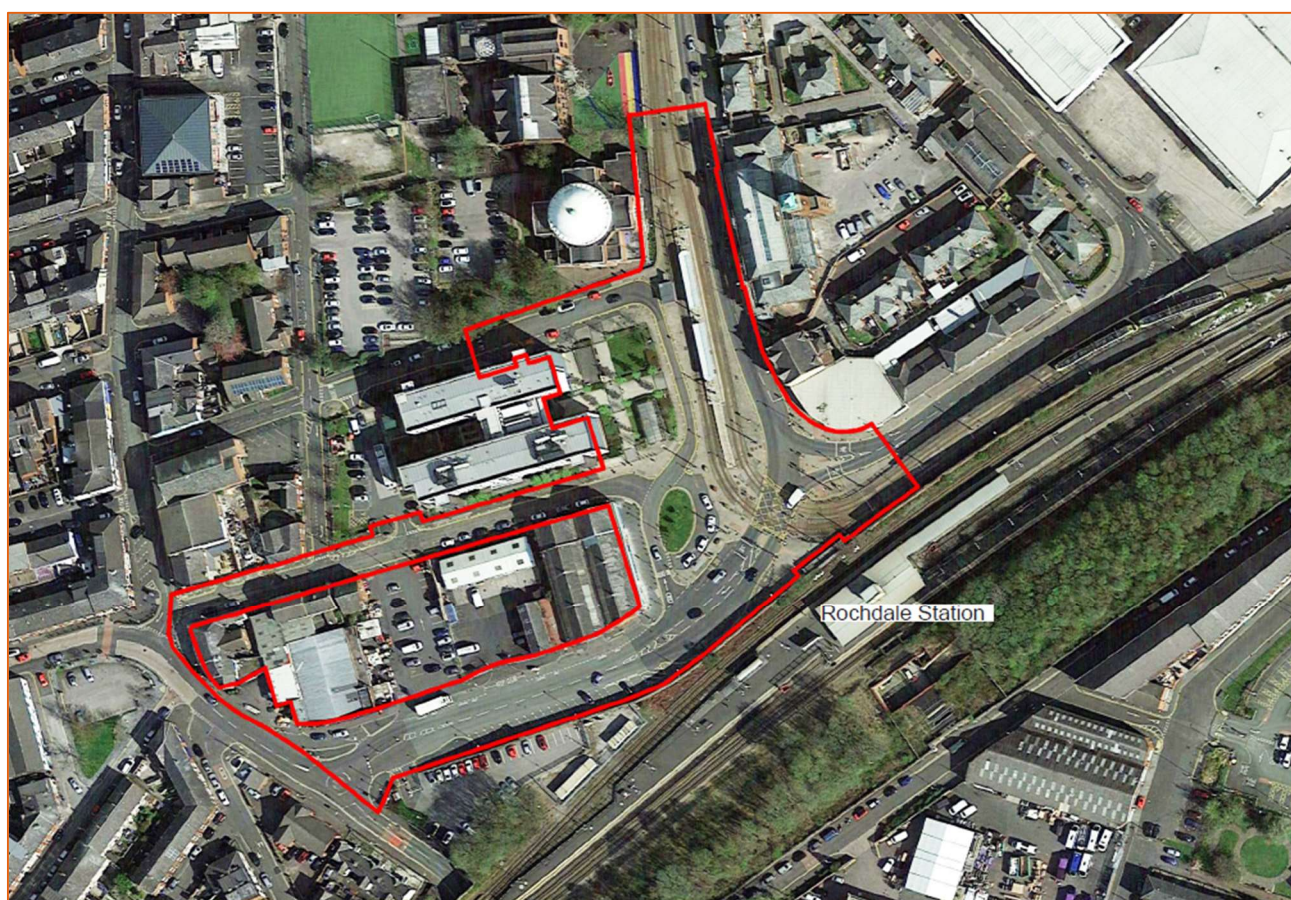
3 Proposed Rochdale Station Square Development

3.1 Application Site Boundary

The boundary for Rochdale Station Square, as shown in Figure 11, extends from the northern edge of Rochdale railway station / Calder Valley railway line taking in the space that is occupied by the current taxi rank, Nye Bevan House landscaped area, and the Metrolink stop and tracks.

The boundary then extends along Maclure Road to just beyond the Fireground Museum; Station Road and Lower Tweedale Street to Milkstone Road; Dowling Street to the entrance to the church car park; and a short section of Station Road (east).

Figure 11 – Boundary of Rochdale Station Square



3.2 Proposed Scheme

The scheme aims to provide a high-quality public realm with the square being used as a catalyst for growth within the Station/Milkstone areas. Provision will include a multi-use square and recreation space with physical and psychological links with shops and business in the community.

A visual focal point is provided through the square design and tree planting is proposed both formal and informal to the space. The proposal seeks to provide drop-off and pick-up spaces around the station alongside a walking friendly street design and improved and increased connectivity north, south, east and west.

The streets will be pedestrian prioritised, and traffic calmed with clearer navigation. Tree planting and integrated Sustainable Urban Drainage will create decluttered green corridors with clear movement routes and widened footways proposed. The taxi rank and bus stop are relocated to station road (east). A controlled access and bus route is incorporated along Maclure Road.

Figure 12 shows the proposed layout of Rochdale Station Square.

Rochdale Station Square

Figure 12 – Rochdale Station Square Layout



4 Multi-Modal Access Strategy

To support and to deliver the vision an access strategy has been developed for a wide range of users and properties within and around the study area. This section of the TS summarises the strategy and the features that have been designed into the scheme.

4.1 Active Travel & Mobility Impaired

4.1.1 Pedestrians

The creation of Rochdale Station Square significantly increases the available space for pedestrians to both move around and through the space with them having the priority over all other modes. The layout provides a more legible route towards the town centre along Maclure Road from the station entrance with a wide crossing point of the Metrolink tracks that directs them in the right direction.

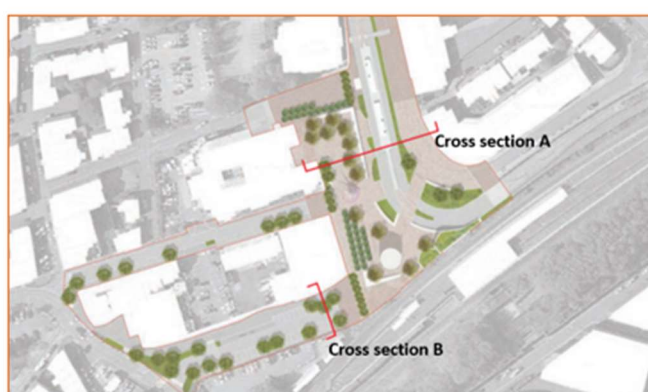
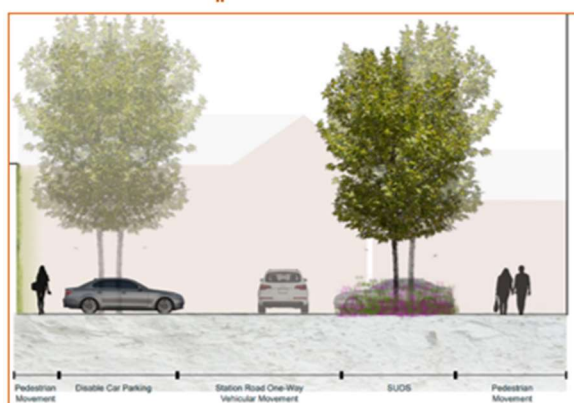
The layout increases the space for new arrivals to Rochdale by train to dwell outside the entrance in order to safely orientate themselves without the multitude railings, street furniture, and highway signage.

Figure 13 – Examples of Pedestrian Environment

Cross-Section-A



Cross-section-B



4.1.2 Mobility Impaired

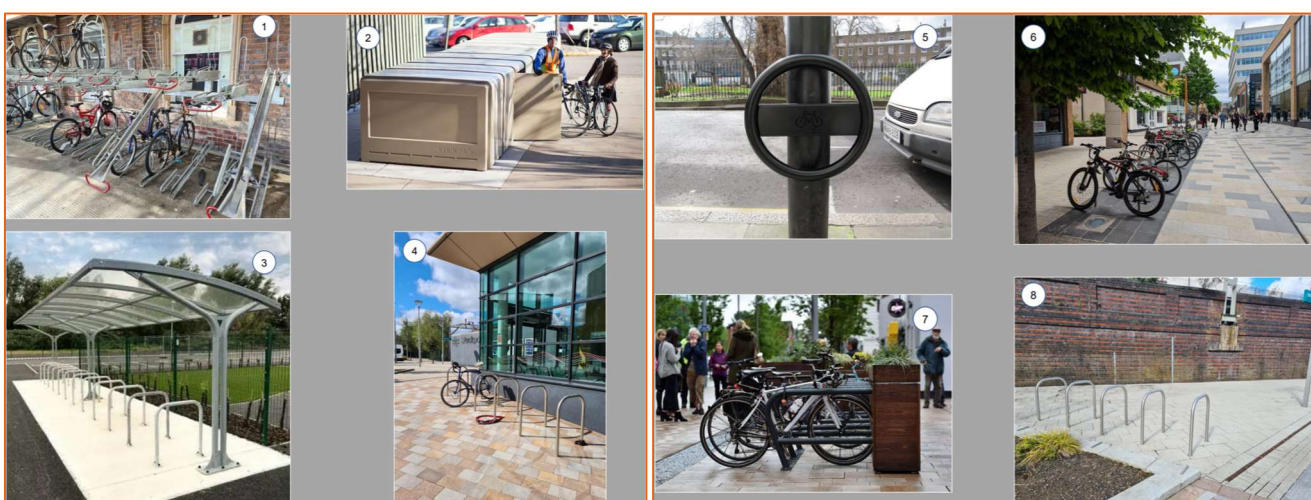
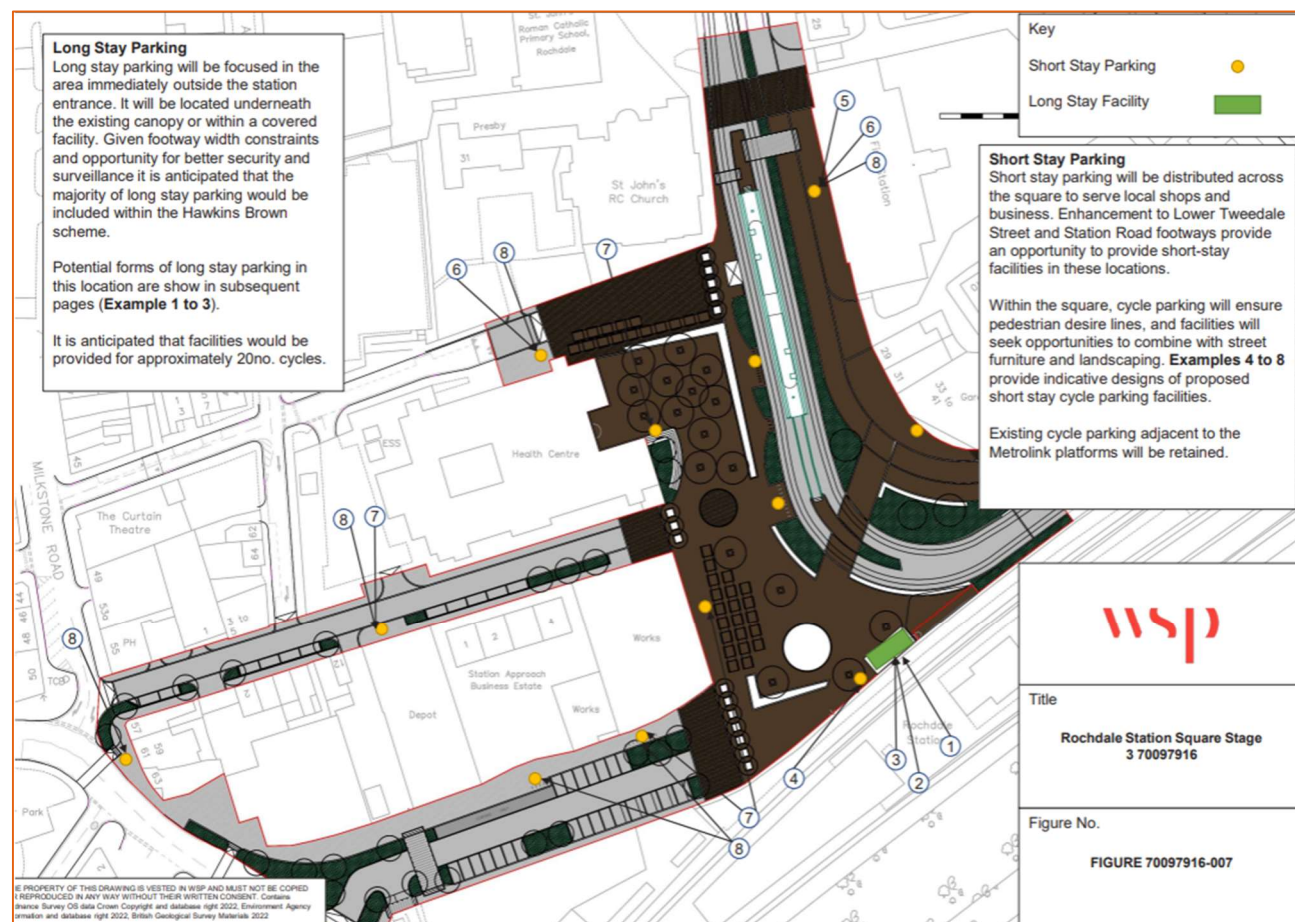
The requirements for those with mobility impairments has been taken account of in the layout of the design. The removal of traffic from outside the station entrance removes a challenging barrier to movement in the area, such as accessing the taxi rank and the Metrolink stop.

The creation of new landscape features will provide opportunities for rest and shelter whilst moving through the square. The majority of the space will be flush, except for where there is a need to alert those with mobility impairments to conflict points, such as crossing the Metrolink tracks and vehicular route along Maclure Road. The layout also retains on-street parking in Station Road (west) with spaces identified for Blue Badge holders.

4.1.3 Cyclists

The introduction of Rochdale Station Square will reduce the volume of traffic on the approach to the railway station providing a safer and more attractive environment for cyclists. This is complemented by the provision of short stay cycle parking facilities throughout the square and a long-stay parking facility at the northern entrance to the railway station. Figure 14 shows the potential locations and examples of the types of parking.

Figure 14 – Cycle Parking Locations & Examples



4.2 Vehicular Access Strategy

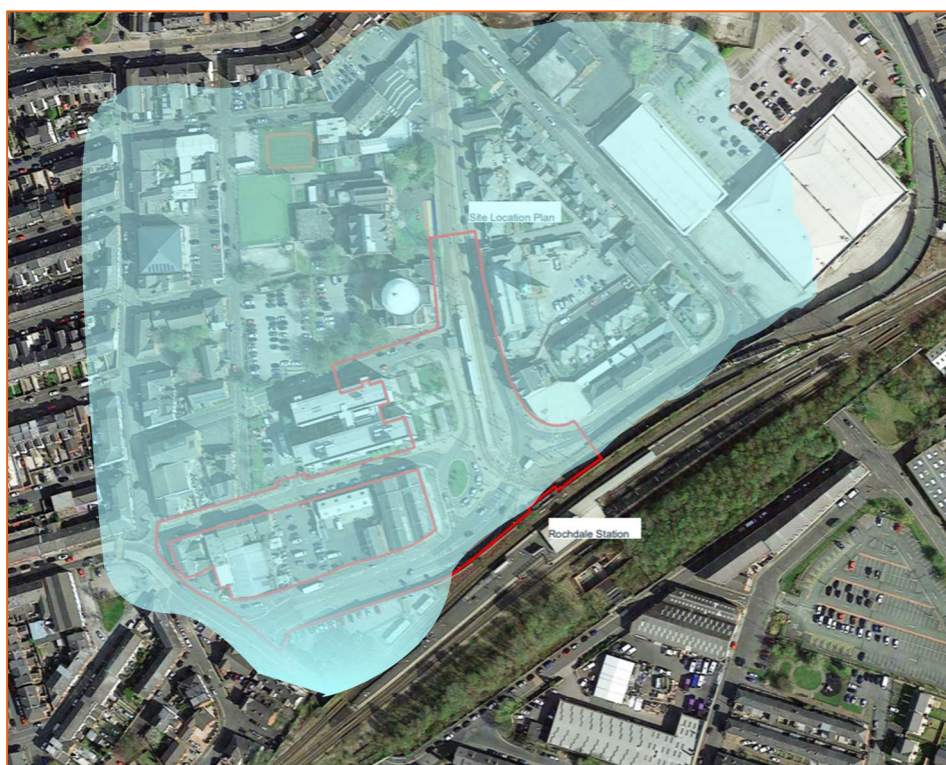
This section sets out the proposed vehicular access strategy for those properties and businesses that are both within and on the periphery of the application site. The strategy has been formulated by:

- Establish the area of influence of the closure of Station Road.
- Identify the servicing and access needs on a property-by-property basis within the area of influence.
- Identify key principles for access in terms of vehicle types and timings.
- Development of options and selection of preferred option.

4.2.1 Area of Influence

The creation of Station Square closes a section of Station Road from a point immediately west of the existing tank rank to Maclure Road and Dowling Street between Station Road and a point east of the access to the church car park. Figure 15 sets out the boundary where properties are directly impacted alongside an area where the closure may have an influence upon access which required further examination.

Figure 15 – Area of Influence of Closure of Station Road



4.2.2 Property-by-Property Servicing

The servicing and access needs within the main zone of impact was undertaken on a property-by-property basis identify the needs and the types of vehicles, in particular, that are likely to arriving and departing. This is summarised in Appendix A.

This analysis has led to the creation of a list of key principles that inform the developed of potential options for providing servicing and access for properties, whilst still achieving the overall vision for Rochdale Station Square.

4.2.3 Key Principles

The key findings of the analysis were:

- Central Retail Park delivery vehicles depart via Station Road and Maclure Road because Richard Street is one-way southbound and insufficient clearance under the railway.
- The residents of Station Yard only access (pedestrian and vehicles) is from Maclure Road.

- Vehicular access Station Yard is to be maintained all times for residents' vehicles and servicing.
- Maintain parking for houses on Maclure Road north of the Fire Station Museum as there is limited alternative to the rear of their homes.
- Manage the demand for pick-up and drop-off for the public and private hire vehicles.

These key principles are supplemented by the outcomes of on-going discussion with the Local Highway Authority, TfGM, Nye Bevan House, Fire Station Museum, representatives of Rochdale Hackney Carriage Association, and responses to the SPD public consultation. These additional principles are:

- Any vehicular crossing of the Metrolink tracks will require signalisation to manage interaction with trams.
- Bus services are to continue to stop at the railway station with 2 distinct bus stops.
- Patients attending appointments at Nye Bevan House need to be dropped off and picked up close to the main entrance.
- Ability for mobile screening unit to be moved to and from Nye Bevan House service yard once or twice a year typically during the night.
- St John the Baptist Church require vehicles be able to pull up outside the gates / main doors for funerals and weddings.
- A taxi rank is required to the north of the station with no loss of capacity with location to be visible from the station entrance.
- No provision of a route for service vehicles, even time restricted, through the square linking Station Road with Lower Tweeddale Street.

Consideration was also given to the potential requirements of future developments in and around Rochdale Station Square, such Central Retail Park Phase 2 and Worldwide Foods/Haji site. Key principles identified at this stage are:

- Vehicular access to Central Retail Park Phase 2 will be taken from Oldham Road.
- Servicing, including refuse collection, would take place primarily from Station Road (west), with potential for a small proportion of residential properties being served from Lower Tweeddale Street; however, this is subject to further design.

4.2.4 Option Development

Options were considered by the client and design team for a vehicular movement strategy that assists in delivering the overall visions of Rochdale Station Square whilst balancing the access requirements of the properties within and adjacent to the application site.

Options were considered and rejected as these were either unfeasible in terms of cost and delivery and did not provide for the servicing needs of the identified properties and users, including:

- Full and time limited closure of the entire Rochdale Station Square area for all users.
- Conversion of Richard Street to two-way operation and reconfiguration of the Maclure Road / Richard Street / Drake Street junction.
- Retention of restriction free and time limited alignment of Dowling Street through the Rochdale Station Square.
- Retention of a connection east/west through the Rochdale Station Square, restriction free, time limited or specific user exemptions.
- Provision of alternative vehicular access to Station Yard from Richard Street or Station Road (east).
- Conversion of Maclure Road north of Fire Station Museum to two-way with associated changes to the Maclure Road / Richard Street junction possibly integrate into the Maclure Road / Drake Street junction.

4.2.5 The Access Strategy

The access strategy balances the key principles alongside the Council's vision for Rochdale Station Square. The key elements of the strategy are summarised below and illustrated in Figure 16.

1. Station Road closed to traffic outside railway station.
2. Unrestricted vehicular access one way (clockwise) from Richard Street along Station Road (east) to Maclure Road operating a one-way route clockwise – Maclure Road Loop.
3. Bus services to route to and from the railway station via the Maclure Road Loop. Services will stop for passengers to board and alight at the station via 2 kerbside stops, with level access kerbs, dedicated for inbound and outbound services.
4. Station Road (west) provide for short stay parking, deliveries and servicing of existing businesses.
5. Provision of kerbside taxi-rank on Station Road (east) and ability to recirculate back to the rank via the Maclure Road Loop.
6. Dowling Street closed between Station Road and St John the Baptist RC Church – turning head type facility to be provided at east end.
7. Dowling Street to be converted to two-way operation east of Ann Street.
8. Lower Tweeddale Street to be converted to two-way operation east of Ann Street – turning head type facility to be provided at the east end.

Figure 16 – Rochdale Station Square Access Strategy



4.2.6 Swept Path Analysis

Having established the access strategy, vehicle swept path has been undertaken to ensure that the layout of the proposed Rochdale Station Square allows for all those anticipated vehicles to make the manoeuvres that are likely to be made.

Swept path analysis has been undertaken for the typical vehicles and manoeuvres that call to each property to ensure that the layout of R does not prevent this, now and in the future.

The swept path analysis is contained in Appendix B.

5 Assessment of Impact

5.1.1 Active Travel & Mobility Impaired

The introduction of Rochdale Station Square will provide a significant positive change for Active Travel modes. The largest benefit will be for pedestrians with the removal of traffic from the majority of the application site and the creation of space that is much more easily navigated.

Rochdale Station Square provides a positive change for cyclists travel to/from the station and the area with the reduction of traffic on Richard Street and Maclure Road along with the provision of an increased supply and quality of cycle parking.

5.1.2 Buses

As noted in Section 2.3.3 there is currently one bus service that calls at Rochdale station, the 471 Rochdale to Bolton and this routes along the section of Station Road (west) that is proposed to be closed. The proposed alternative routing of the service, via the Maclure Road Loop, maintains the ability for services (existing and potential new services) to stop at the station for boarding and alighting.

Two distinct kerbside stops, with level access kerbs and an enhanced passenger waiting environment, are proposed on the east side of Rochdale Station Square for inbound and outbound services.

Analysis of the potential implication upon the 471 service, namely relocating a short section of the route to Drake Street and use of the Maclure Road Loop, has been undertaken reflecting the following key factors:

- Access for passengers using Tweeddale Street stops to alternative stops.
- The proportion of boarding and alighting affected by the rerouting.
- Potential impact upon journey times.

The findings from this analysis are summarised in the following sub-sections.

Access to Alternative Stops

There are currently 2 sets of bus stops located on Drake Street between Maclure Road and Manchester Road and these provide a viable alternative for passengers currently boarding and alighting at the Tweeddale Road stops. Figure 17 shows the location of the current and alternative stops and their 400m catchment.

Figure 17 – Location of Current & Alternative Bus Stops with 400m Catchments



The analysis shows that the majority of the Milkstone community remain with 400m of a bus stop that is proposed to be served by the 471 service. It is recognised that whilst some passengers may have to walk further than they currently do, there will be those who would have a reduction in their walk distance to a stop.

The pedestrian routes to the alternative stops would be along similar residential streets with footways on either side and street lighting, with some being the current streets on which they passengers may live, work or visit.

Proportion of Passengers Impacted

Boarding and alighting surveys were undertaken by TfGM¹ at the stops on Tweedale Street and at the railway station. The key points from the survey data in terms of proportion of passengers impacted are summarised below with the detailed survey results contained in Appendix C.

- 60% of weekday boarding and alighting takes place at the stops outside the railway station.
- 78% of weekend boarding and alighting takes place at the stops outside the railway station.
- 73% of pensioners using the 471, who typically have limited mobility, do so at the stops outside the railway station.

The data shows that the majority of passengers using the 471 along the surveyed section will continue to do so as the service, outbound and inbound, will still call at the railway station.

Impact Upon Journey Time

The potential impact upon the journey time for the 471 using the Maclure Road Loop has been estimated based upon journey time survey data as follows:

- Collection of journey time data for the 471 and 17 between the same stops as above, with the data broken down to note delays along the route due to stopping for boarding / alighting, traffic signals, pedestrian crossings, and other stoppages such as obstructions.
- Examination of dwell times at stops collected as part of the TfGM surveys noted in the previous section.
- Comparing the timetable information for the 471 and 17 services between the stops on Drake Street and Manchester Road that both stop at before their routes diverge / merge.

The key points from the analysis are:

- Based upon the published timetable, the 471 would:
 - Have a reduction in the outbound journey time of 3 minutes.
 - No change to inbound journey times.
- Based on the journey time survey data, the introduction of the Maclure Road Loop is likely to have a:
 - Neutral / minor positive change for outbound buses.
 - Slight negative change for inbound buses, although the removal of the Maclure Road / Station Road / Metrolink junction and traffic volumes would mitigate this more towards a neutral impact.

In terms of supporting infrastructure for buses calling at the station, the scheme identifies space for 2 separate bus stops dedicated for inbound and outbound services. These are proposed to be located on Maclure Road and Station Road (east), either side of the crossing point of the Metrolink tracks. At detailed design stage consideration will be given to the best tool(s) to clearly direct passengers towards the appropriate stop.

The detailed surveys are contained within Appendix D.

5.1.3 Railway & Metrolink

Railway

On a day-to-day basis the Rochdale Station Square will have a neutral impact upon the operation of the railway station in Rochdale in itself, but the introduction of a new public space is a catalyst to further development around the station increasing passenger numbers. The Train Operating Company (TOC) currently uses Station Road to park rail replacement buses, and this can will be able to continue with the use of the kerbside space on Station Road (east).

Metrolink

As with the railway, the day-to-day operation of Metrolink will be unaffected other than the change in the nature of the interaction of trams with pedestrians crossing the track. As noted earlier in this report, there is a controlled

¹ Survey periods were Wednesday 07th September 2022 & Saturday 10th September 2022 07:00 to 19:00.

pedestrian crossing of the tracks integrated into the junction of Station Road with Maclure Road. This is to be removed and pedestrians and cyclists will cross the tracks via a dedicated crossing close the position of the current vehicular / pedestrian crossing.

5.1.4 Highways

The potential redistribution of traffic and changes in flows on the links within the model as a result of the closure of Station Road and Dowling Street has been examined using TfGM's Aimsun traffic model for Rochdale town centre for the forecast year of 2025 in both the AM (08:00 to 09:00) and PM (17:00 to 18:00) weekday peak hours. A summary of the results is provided below with a copy of the full report from TfGM provided in Appendix E.

Table 3 – Change in Flows (25 +/-) on Key Routes (2025)

Road / Street	Peak Period	Change in Flow Eastbound or Southbound	Change in Flow Westbound or Northbound
Maclure Road	AM	--	-27
	PM	--	-32
Station Road (west)	AM	-108	--
	PM	-45	--
Station Road (east)	AM	41	--
	PM	41	--
Richard Street	AM	-68	--
	PM	-46	--
Lincoln Street	AM	26	58
	PM	-	51
Milkstone Road (Commercial)	AM	124	--
	PM	53	--
Milkstone Road	AM	78	-43
	PM	32	
Lincoln Street ²	AM	58	26
	PM	51	--
Lincoln Close	AM	-36	-
	PM	39	-
Durham Street	AM	95	30
	PM	83	47
Miall Street	AM	96	-
	PM	85	49
Tweeddale Street	AM	-56	-50
	PM	-46	-
Oldham Road	AM	59	28
	PM	80	-33
Drake Street	AM	-56	-50

² The figures are for the section between Lincoln Close and Durham Street. There is a small reduction on the section between Lincoln Close and Hare Street.

Road / Street	Peak Period	Change in Flow	Change in Flow
		Eastbound or Southbound	Westbound or Northbound
Manchester Road (Tweedale Street to Drake Street)	PM	-	78
	AM	45	58
	PM	-	-

The results of the assessment suggest that:

- Local traffic (both residential, business and commuters) in and around the Milkstone area is diverting to other routes to enter the community via Milkstone Road and Durham Street.
- Through (rat-running) traffic is re-routing to Manchester Road, Drake Street and Oldham Road.
- Traffic flows on the Maclure Road Loop has decreased.

5.1.5 Taxis (Hackney Carriage)

Following discussions with local taxi companies, the relocation of the taxi rank from Dowling Street to Station Road will cause little to no impact as taxi vehicles are still able to utilise the Maclure Road Loop. Taxi drop-off and collection still remains along Miall Street with the potential for permanent relocation of the taxi rank. To the west of Station Road Taxi drop-off and collections will remain in place requiring U-turn in the car park area that is currently in place.

5.1.6 Station Pick-Up/Drop-Off

Pick-up and Drop-off at the railway station will continue for Station Road either side of Rochdale Station Square, as it in essence does today, with more vehicles u-turning in Station Road (west) rather than continuing on to Maclure Road. Although, drivers in the peak period will be encouraged to use Miall Street prior to the formalisation of this with the delivery of Station South.

6 Conclusions

This Transport Statement has been prepared by Arcadis to support the submission of a planning application for the creation of Rochdale Station Square, a new area of public realm that forms part of the wider Rochdale Station Area Masterplan SPD.

This Transport Statement has been prepared in support of the planning application for Rochdale Station Square and demonstrates that the impact upon the transportation network and its users' experiences are either enhanced or the impact is within acceptable limits. Specifically, this Transport Statement has demonstrated that Rochdale Station Square will:

- Positive change in the scale, quality and safety of the existing pedestrian environment, including those with mobility issues, around the northern entrance to Rochdale railway station through the removal of vehicular traffic from the majority of the space.
- Providing increased quantity and quality of cycling infrastructure, particularly short and long term parking.
- Incorporated the vehicular access and servicing requirements of the residents and businesses within and immediately around Rochdale Station Square.
- Minimal impact upon the current access to the bus network with the majority of passengers using the existing service still able to do so with the inclusion of the Maclure Road Loop and stops at the railway station.
- No impact upon the day-to-day operation of the national rail and Metrolink networks.
- Provision of a dedicated taxi rank with an increase in capacity and potential for passenger and driver waiting space.
- Dedicated pick-up and drop-off spaces along Station Road (east & west).

Appendix A

Schedule of Properties & Servicing

Table 1 – Current Access Requirements

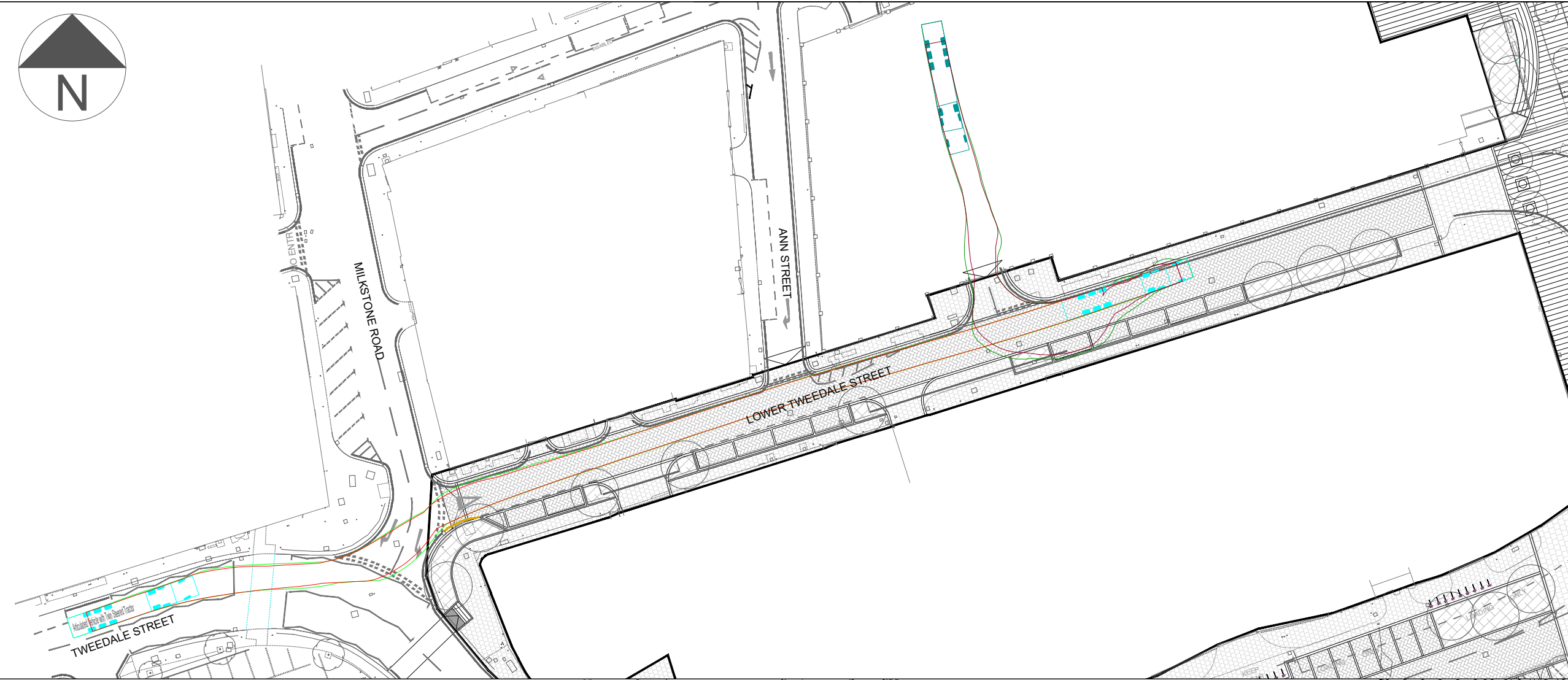
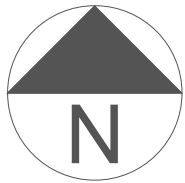
Map Ref	Business / Address	Land Use(s)	Access Requirements	Vehicle Type	Impact Y/N	Nature of Impact
1	Masonic Ballroom Richard Street	Private Functions	- Deliveries - Access for guest cars - Refuse collection	Large Vans Cars Refuse Truck	Yes	Refuse trucks are unable to pass under the railway bridges (Refuse Truck 4.5m ¹ – Bridges 3.8 Richard St / 3.7 Milkstone Rd). Richard Street one-way.
2	Statham House Richard Street	Residential	- Deliveries - Refuse collection	Large Van Refuse Truck	Yes	Refuse trucks are unable to pass under the railway bridges (Refuse Truck 4.5m – Bridges 3.8 Richard St / 3.7 Milkstone Rd). Richard Street one-way.
3	Central Retail Park (Service Yard)	Retail	- Deliveries - Refuse collection	HGV (Artic)	Yes	HGVs (articulated) must depart the area through Station Square due to: - Low railway bridge Richard Street - Richard Street one-way southbound
4	20 – 40 Richard St	Residential	- Deliveries - Access for residents parking - Refuse collection	Large Vans Cars Refuse Truck	Yes	Refuse trucks are unable to pass under the railway bridges (Refuse Truck 4.5m – Bridges 3.8 Richard St / 3.7 Milkstone Rd). Richard Street one-way.
5	44-46 Richard St	Offices	- Deliveries - Refuse collection	Large Van Refuse Truck	Yes	Refuse trucks are unable to pass under the railway bridges (Refuse Truck 4.5m – Bridges 3.8 Richard St / 3.7 Milkstone Rd). Richard Street one-way.
6	44-54 Richard St	Residential	- Deliveries - Refuse collection	Large Van Refuse Truck	Yes	Refuse trucks are unable to pass under the railway bridges (Refuse Truck 4.5m – Bridges 3.8 Richard St / 3.7 Milkstone Rd). Richard Street one-way.
7	Deen House Station Road	Offices / Community Centre	- Deliveries - Refuse collection	Large Van Refuse Truck	Yes	Refuse trucks are unable to pass under the railway bridges (Refuse Truck 4.5m – Bridges 3.8 Richard St / 3.7 Milkstone Rd). Richard Street one-way.
8a	37 Station Road (Corner Plot)	Grocery Store	- Deliveries - Refuse collection	HGV (rigid) Refuse Truck	Yes	Refuse trucks cannot pass along Maclure Road / Station Road. Refuse trucks & large HGV (Rigid) cannot pass along Maclure Road / Station Road.
8b		Café	- Deliveries - Refuse collection	Large Van Refuse Truck	Yes	Refuse trucks & large vans (delivery) cannot pass along Maclure Road / Station Road.
8c		Furniture Shop	- Deliveries - Refuse collection	Large Van Refuse Truck	Yes	Refuse trucks & large vans (delivery) cannot pass along Maclure Road / Station Road.
9a	29 Maclure Rd	Food & Beverage	- Deliveries - Refuse collection	Large Van Refuse Truck	Yes	Refuse trucks & large vans (delivery) cannot pass along Maclure Road / Station Road.
9b	29A Maclure Rd	Residential	- Deliveries - Access for residents parking - Refuse collection	Vans Refuse Truck	Yes	Refuse trucks & vans (delivery) cannot pass along Maclure Road / Station Road.
10	Fire Station Yard	Residential	- Deliveries - Access for residents parking - Refuse collection	Vans Cars Refuse Truck	Yes	Vehicular access to Station Yard is only from Maclure Road and is required to be 'open' all the time.
11a	Fireground	Museum / Café	- Deliveries - Displays - Refuse Collection - Visitors	Large Vans Fire Engines Cars Coaches Refuse Truck	Yes	Servicing of the museum takes place from the service yard to the rear of the building, accessed from Richard Street. Visitors can be dropped off on Richard Street and access via the service yard or Station Square. Fire truck exhibitions require to depart and arrive via Maclure Rd.
11b		Flexible Offices	- Deliveries - Visitors - Refuse Collection	Large Vans Cars Refuse Truck	No	Servicing of the offices takes place from the Fireground service yard located to the rear of the building and accessed from Richard Street.
12	15 – 25 Maclure Rd	Residential	- Deliveries - Visitors - Refuse Collection	Large Vans Cars Refuse Truck	Yes	Refuse trucks, vans (delivery) and residents / visitors cannot pass along Maclure Road / Station Road as it is one-way northbound.
13	3 Maclure Road	Office	- Deliveries - Visitors - Refuse Collection	Vans Cars Refuse Truck	Yes	Refuse trucks, vans (delivery) and residents / visitors cannot pass along Maclure Road / Station Road as it is one-way northbound.
14	2 & 4 Hampden St	Residential	- Deliveries - Visitors - Refuse Collection	Large Vans Cars Refuse Truck	Yes	Refuse trucks are unable to pass under the railway bridges (Refuse Truck 4.5m – Bridges 3.8 Richard St / 3.7 Milkstone Rd). Richard Street one-way. Refuse trucks, vans (delivery) and residents / visitors cannot pass along Maclure Road / Station Road as it is one-way northbound.
15	6 Maclure Rd	Café	- Deliveries - Visitors - Refuse Collection	Large Vans Cars Refuse Truck	No	Vehicular access to the property for deliveries is from Henry Street.
16	8 Maclure Rd	Car Wash	- Deliveries - Visitors - Refuse Collection	Large Vans Cars Refuse Truck	No	Vehicular access to the property for deliveries is from Henry Street.
17	10 Maclure Rd	Car Parts Shop	- Deliveries - Visitors - Refuse Collection	Large Vans Cars Refuse Truck	Yes	Refuse trucks, vans (delivery) and customers cannot pass along Maclure Road / Station Road as it is one-way northbound.

¹ Based upon dimensions in “Recycling and Refuse Collection Services – A Design Guide for Developers” (RMBC) [Developer Waste Collection Policy \(rochdale.gov.uk\)](https://www.rochdale.gov.uk/development/development-control/development-policy/developer-waste-collection-policy)

Map Ref	Business / Address	Land Use(s)	Access Requirements	Vehicle Type	Impact Y/N	Nature of Impact
18	St John's RC School	School	- Deliveries - Visitors / Staff / Pupils - Refuse Collection	Large Vans Cars Refuse Truck Buses	No	Access to the school is from Ann Street.
19	St John the Baptist RC Church Dowling St	Church	- Congregation - Weddings / Funerals - Refuse Collection? - Deliveries?	Cars Limousine Hurse	Yes	Access to car park maintained but Lower Tweedale St is one-way westbound. The pedestrian access via gates to the church are within pedestrian areas and are required for weddings and funerals.
20a	Nye Bevan House Dowling St	NHS Ambulatory Care	- Patients - Deliveries - Refuse Collection	HGV (Artic) Ambulance Patient Transport Large Vans Refuse Truck	Yes	Dowling St westbound restricts the ability for patient transport being able to get close to the entrance. Access for the Mobile MRI Scanner (HGV Articulated) could be hampered. Patient access to vehicle is on passenger side and needs to park facing south.
20b		Retail (Pharmacy)	- Deliveries - Customers - Refuse Collection	Large Vans Refuse Truck	Yes	Dowling St westbound restricts vehicles from getting close to the entrance to the pharmacy.
21	Haji Station Rd/Dowling St	Grocery Cash & Carry	- Deliveries - Customers - Refuse Collection	HGV (all) Large Vans Cars Refuse Truck	Yes	Dowling St closed to traffic and Station Rd narrowed constrains delivery and refuse collection.
22	Station Rd Business Estate	Retail (Building Suppliers)	- Deliveries - Customers - Refuse Collection	Large Vans Cars Refuse Truck	Yes	Station Rd narrowed constrains delivery and refuse collection.
23	Worldwide Foods Station Road & Lower Tweedale St	Grocery Cash & Carry	- Deliveries - Customers - Refuse Collection	HGV (all) Large Vans Cars Refuse Truck	Yes	Dowling St and Maclure Rd closed, and Station Rd narrowed may constrain delivery and refuse collection from alternative routes.
24	Rochdale Railway Station	Transport Hub	- Deliveries - Visitors - Refuse Collection - Maintenance - Rail Replacement Buses	Van Large Van Cars Buses	Yes	Loss of a dedicated service / parking layby for Network Rail vehicles. Bus replacement services typically have been for Station North.
25	6 – 12 Lower Tweedale St	Residential	- Deliveries - Visitors - Refuse Collection	Large Van Cars Refuse Truck	No	These properties are not impacted by Station Square. This is subject to further consultation.
26	8 Lower Tweedale St	Retail	- Deliveries - Visitors - Refuse Collection	Large Van Cars Refuse Truck	No	This business is not impacted by Station Square. This is subject to further consultation.
27	Coronation Inn Milkstone Rd	Public House	- Deliveries - Refuse Collection	HGV (Rigid) Refuse Truck	Yes	Deliveries are made by HGV (Rigid) and would have to re-route via Ann Street. The geometry of Ann St is tight and may impinge upon safe turning movements.
28a	42, 36 – 38, 57, 59 Milkstone Rd	Takeaway	- Deliveries - Visitors - Refuse Collection	Large Van Cars Refuse Truck	No	These properties / businesses are not impacted by Station Square. This is subject to further consultation.
28b		Residential	- Deliveries - Visitors - Refuse Collection	Large Van Cars Refuse Truck	No	
29	Taxi Rank	Transport Hub	- Taxis Pick-Up - Taxis Drop-Off	Cars	Yes	The vision of the masterplan is to relocate the transport hub functions of the station to the southern entrance. The environment south of the station is not appropriate to relocate currently.
30	Buses	Transport Hub	- Bus Pick-Up - Bus Drop-Off - Interchange Metro - Interchange Rail	Double Deck Buses	Yes	The vision of the masterplan is to relocate the transport hub functions of the station to the southern entrance. The current bus route uses double deck buses which are unable to pass underneath the railway as there is insufficient clearance.
31	Rail Pick-up / Drop-off	Transport Hub	- Car Drop-Off - Car Pick Up	Cars	Yes	The vision of the masterplan is to relocate the transport hub functions of the station to the southern entrance. There is currently limited space and the environment south of the station is not appropriate to relocate currently.
32	Local Permeability	Highway Network	- General Vehicle Movement & Circulation	All vehicles	Yes	Reduction in vehicular permeability through the Station and Milkstone area.

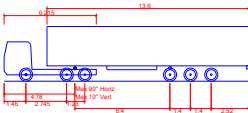
Appendix B

Swept Path Analysis



NOTES:

1. ALL DIMENSIONS ARE IN METRES
UNLESS OTHERWISE STATED.



Articulated Vehicle with Twin Steered Tractor
Overall Length 15.500m
Overall Width 2.550m
Overall Body Height 3.691m
Min Body Ground Clearance 0.428m
Max Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 6.987m

Rev	Date	Description	DRN	CHK	REV	APP
P01	21/04/23	Swept Path Analysis	HR	HN	HN	RT



PROJECT:
ROCHDALE STATION SQUARE

Site: Rochdale Station Square, Rochdale, OL11 1DR
Client: Rochdale Borough Council



Registered Office:
80 Fen,
Fenchurch Street,
London,
EC3M 4BY

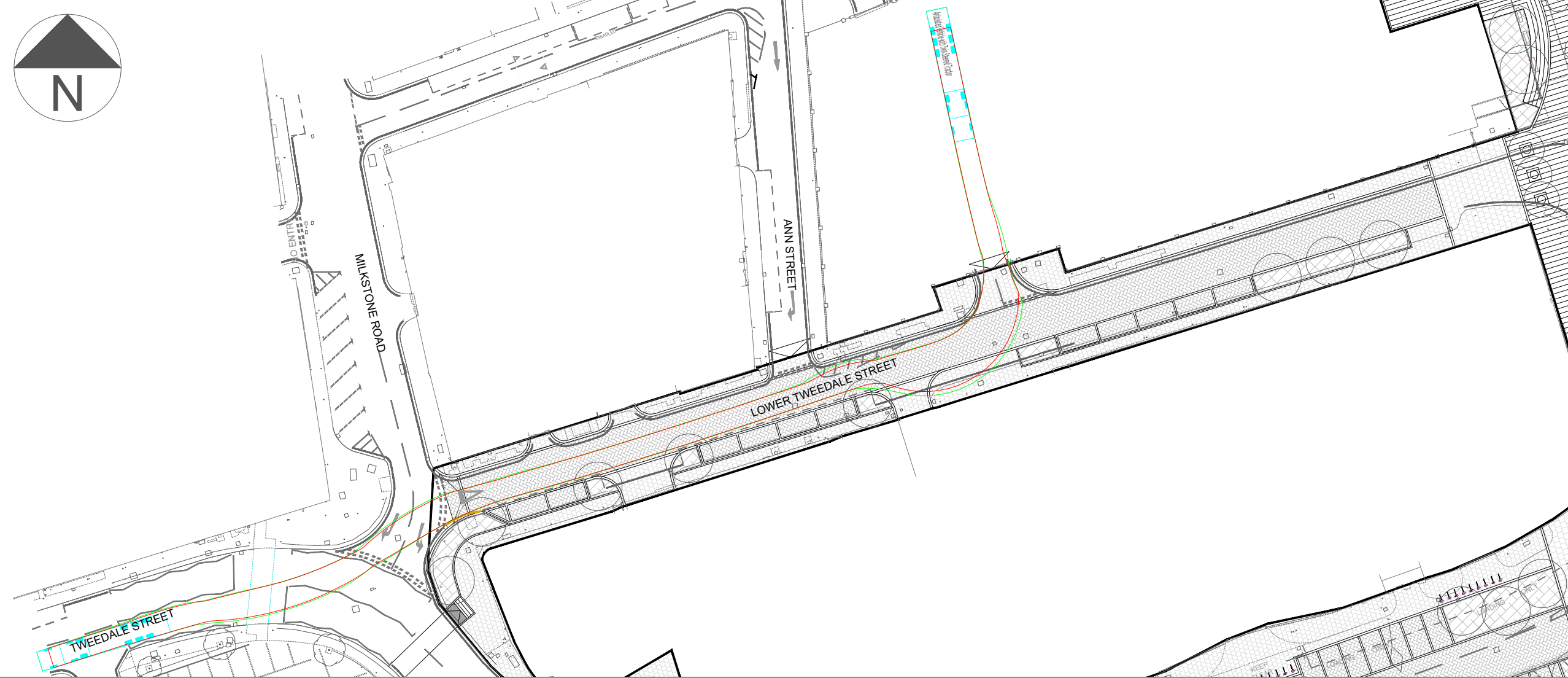
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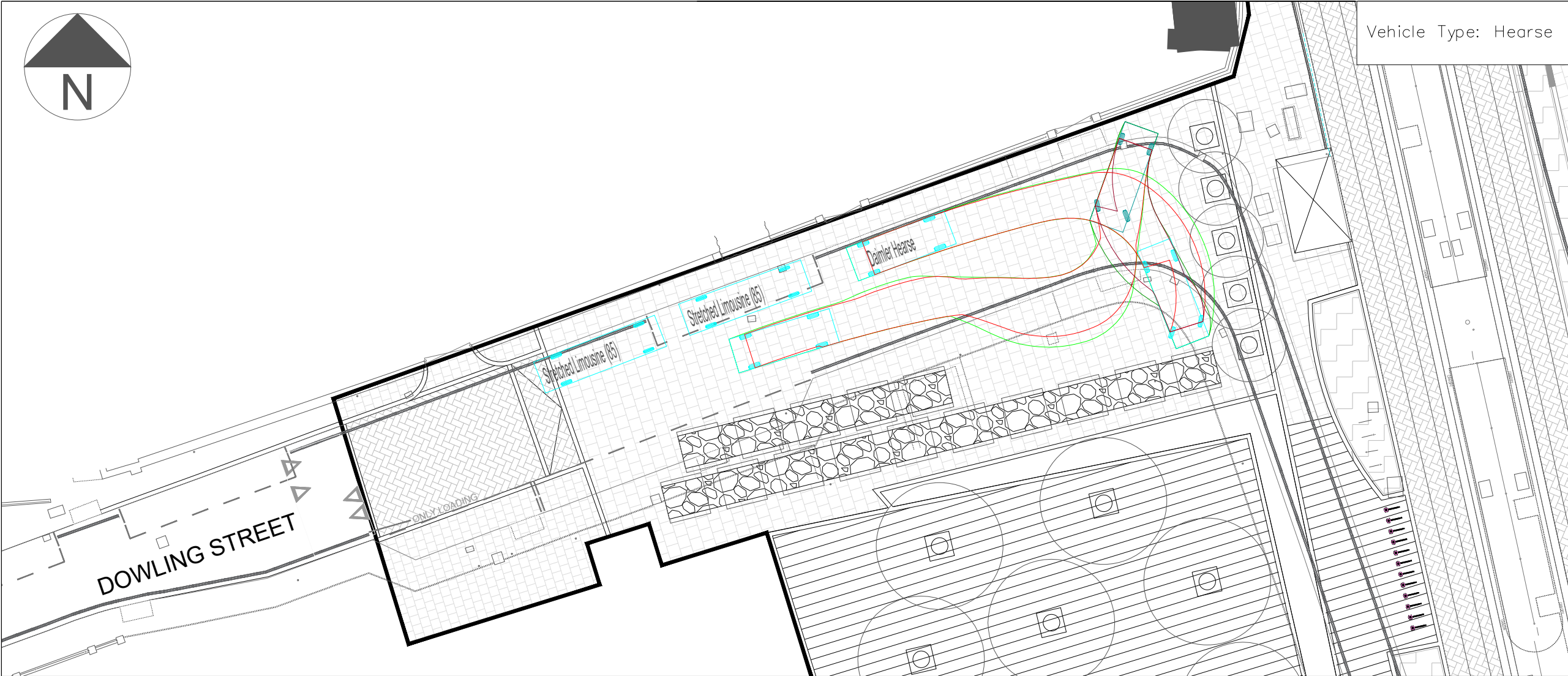
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ROCHDALE SQUARE - SWEEP PATH
ANALYSIS - NYE BEVAN HOUSE -
MOBILE TESTING UNIT - 1 OF 2

Designed	H.ROY	Signed	H.ROY	Date	26 APR 23
Drawn	H.ROY	Signed	H.ROY	Date	26 APR 23
Checked	H. NICHOLAS	Signed		Date	26 APR 23
Reviewed	H. NICHOLAS	Signed		Date	26 APR 23
Approved	R. TAMS	Signed		Date	26 APR 23
Scale:	2.3:1	Datum:			AOD
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Suitability Description: WIP

Drawing Number: 10051627-ARC-DR-TP-00001 Revision: P01

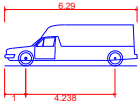




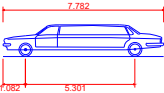
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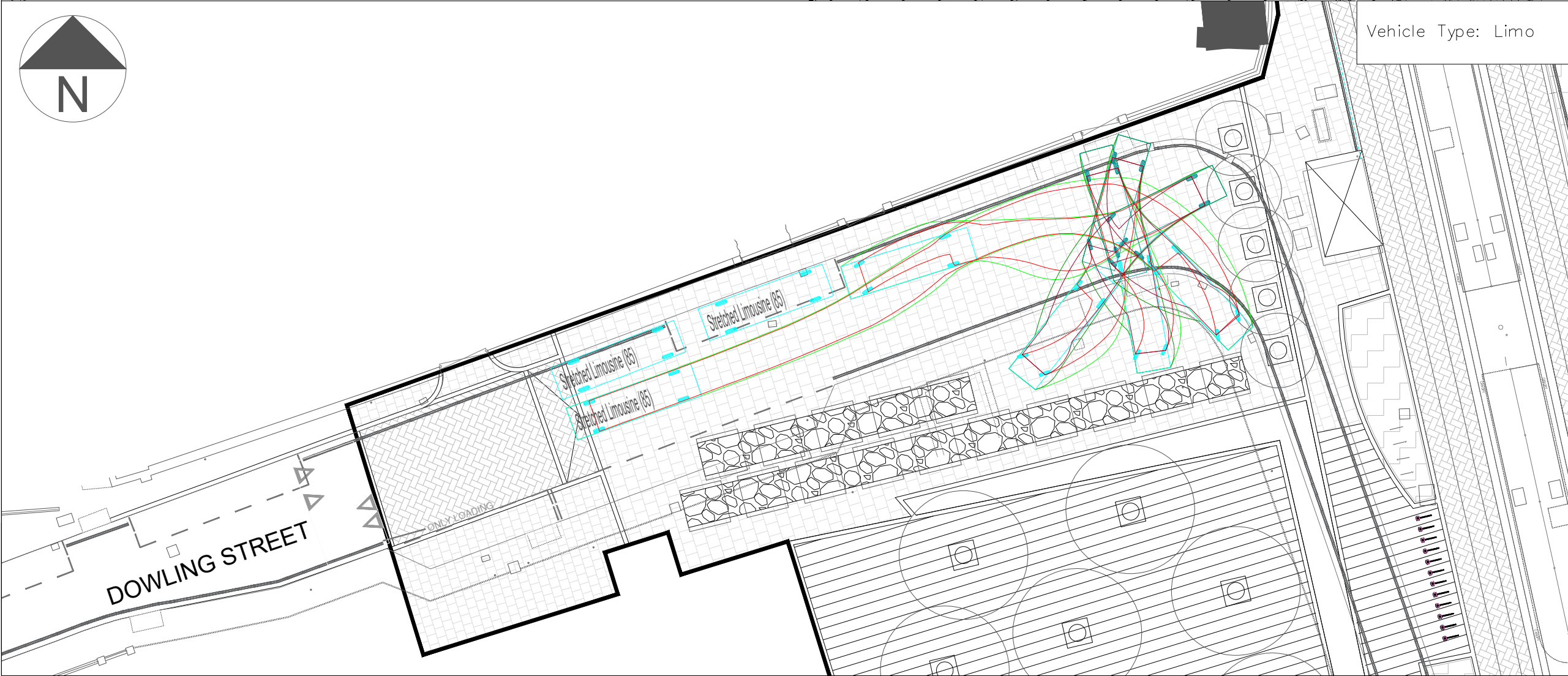
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Daimler Hearse
Overall Length 6.290m
Overall Width 2.108m
Overall Body Height 1.950m
Min Body Ground Clearance 0.251m
Track Width 2.100m
Lock to lock time 6.00s
Wall to Wall Turning Radius 7.450m



Stretched Limousine (85)
Overall Length 7.782m
Overall Width 1.994m
Overall Body Height 1.532m
Min Body Ground Clearance 0.317m
Max Track Width 1.899m
Lock to lock time 4.00s
Max Steering Angle (Virtual) 34.60°



Vehicle Type: Limo

PROJECT:
ROCHDALE STATION SQUARE

Site: Rochdale Station Square,
Rochdale, OL11 1DR

Client: Rochdale Borough Council



Registered Office:
80 Fen,
Fenchurch Street,
London,
EC3M 4BY

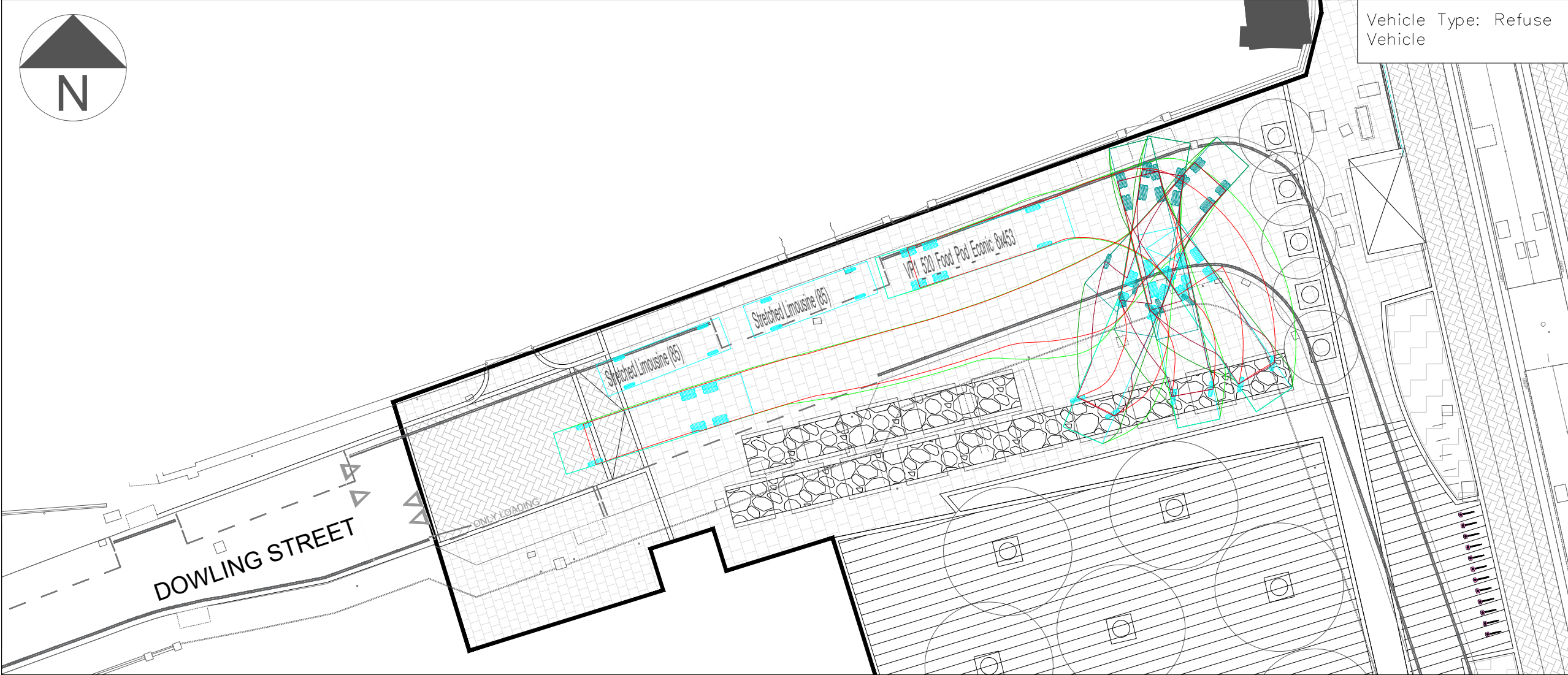
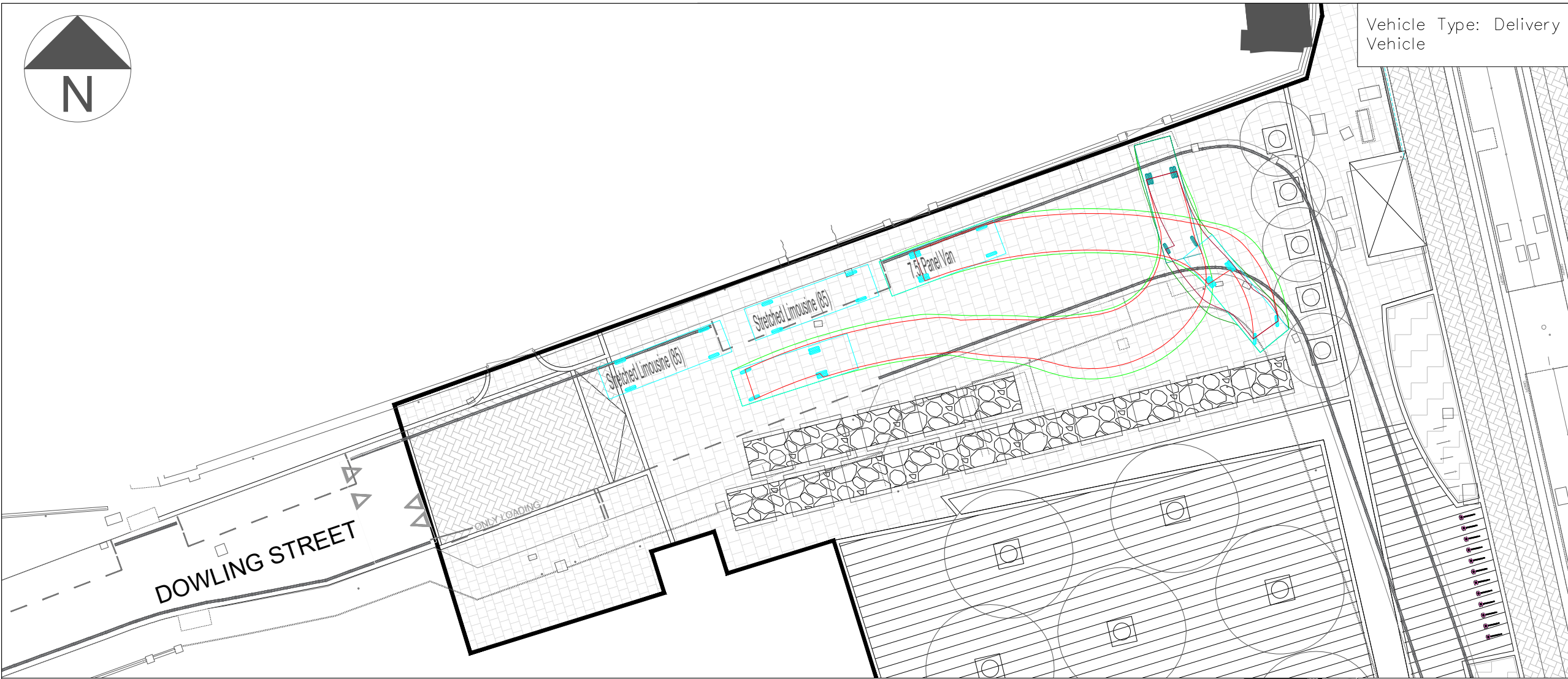
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TITLE:
ROCHDALE SQUARE - SWEEP PATH
ANALYSIS - ST JOHN THE BAPTIST -
HEARSE & MOURNER LIMO

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Drawn	H.ROY	Signed	H.ROY	Date	26 APR 23
Checked	H. NICHOLAS	Signed		Date	26 APR 23
Reviewed	H. NICHOLAS	Signed		Date	26 APR 23
Approved	R. TAMS	Signed		Date	26 APR 23
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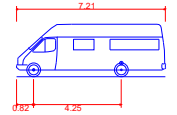
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Revision: P01

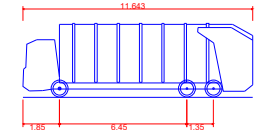


NOTES:

1. ALL DIMENSIONS ARE IN METRES
UNLESS OTHERWISE STATED.



7.5t Panel Van
Overall Length 7.210m
Overall Width 2.192m
Overall Body Height 2.544m
Min Body Ground Clearance 0.316m
Track Width 1.865m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 7.400m



VP1_520_Food_Pod_Econic_8x453
Overall Length 11.643m
Overall Width 2.530m
Overall Body Height 3.751m
Min Body Ground Clearance 0.304m
Track Width 2.500m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 11.250m

P01	21/04/23	Swept Path Analysis	HR	HN	HN	RT
Rev	Date	Description	DRN	CHK	REV	APP



PROJECT:
ROCHDALE STATION SQUARE

Site: Rochdale Station Square, Rochdale, OL11 1DR
Client: Rochdale Borough Council



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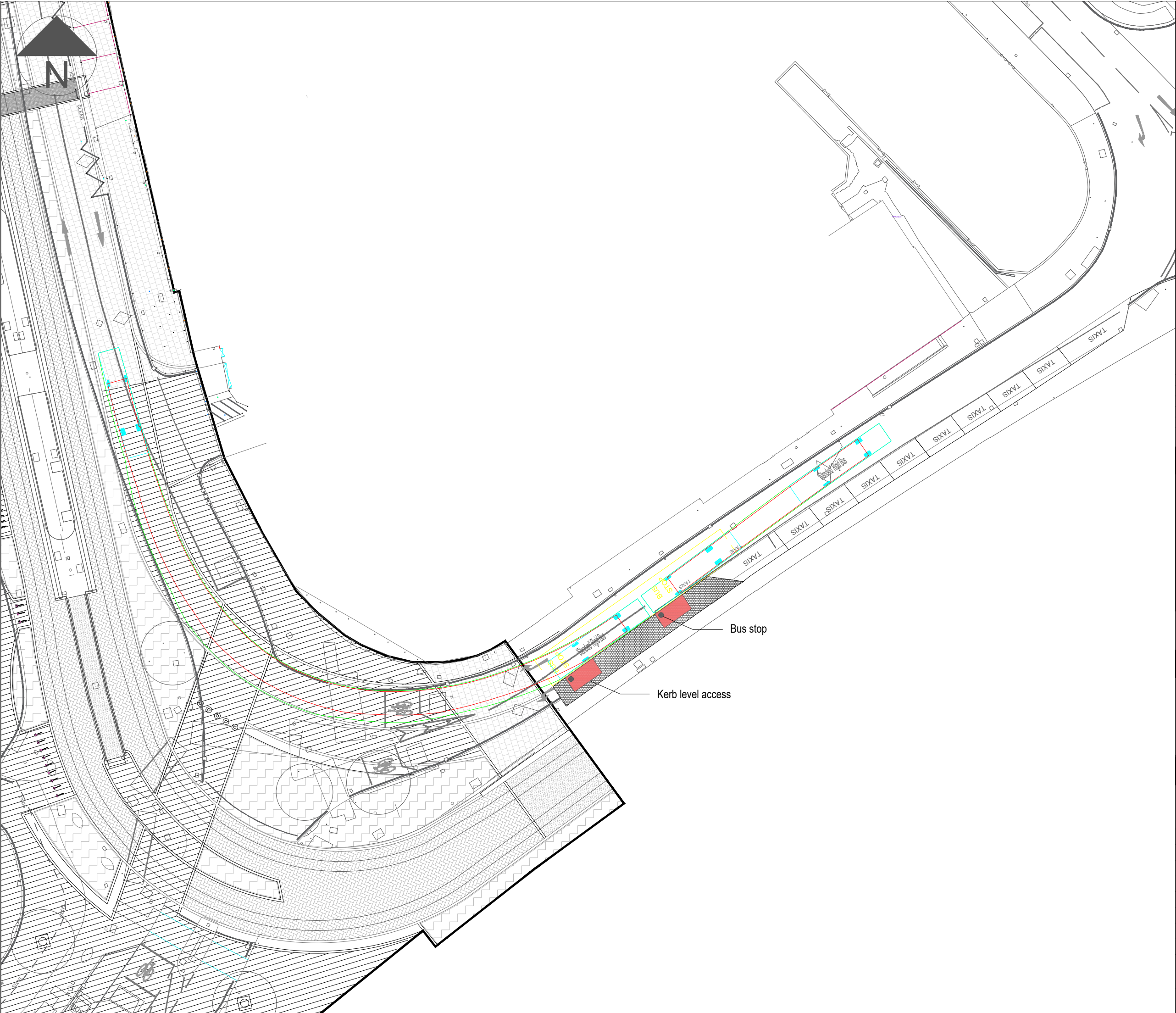
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TITLE:
ROCHDALE SQUARE - SWEEP PATH
ANALYSIS - ST JOHN THE BAPTIST -
DELIVERY & REFUSE VEHICLE

Designed	H.ROY	Signed	H.ROY	Date	26 APR 23
Drawn	H.ROY	Signed	H.ROY	Date	26 APR 23
Checked	H. NICHOLAS	Signed		Date	26 APR 23
Reviewed	H. NICHOLAS	Signed		Date	26 APR 23
Approved	R. TAMS	Signed		Date	26 APR 23
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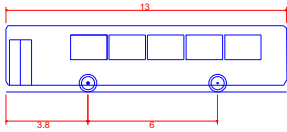
Suitability Description:
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Drawing Number: 10051627-ARC-DR-TP-00004
Revision: P01



NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.



'Standard' Rigid Bus	13.000m
Overall Length	2.550m
Overall Width	3.069m
Overall Body Height	0.309m
Min Body Ground Clearance	2.350m
Track Width	4.00s
Lock to lock time	10.771m
Wall to Wall Turning Radius	

P01	21/04/23	Swept Path Analysis	HR	HN	HN	RT
Rev	Date	Description	DRN	CHK	REV	APP



PROJECT:
ROCHDALE STATION SQUARE

Site	Client
Rochdale Station Square, Rochdale, OL11 1DR	Rochdale Borough Council



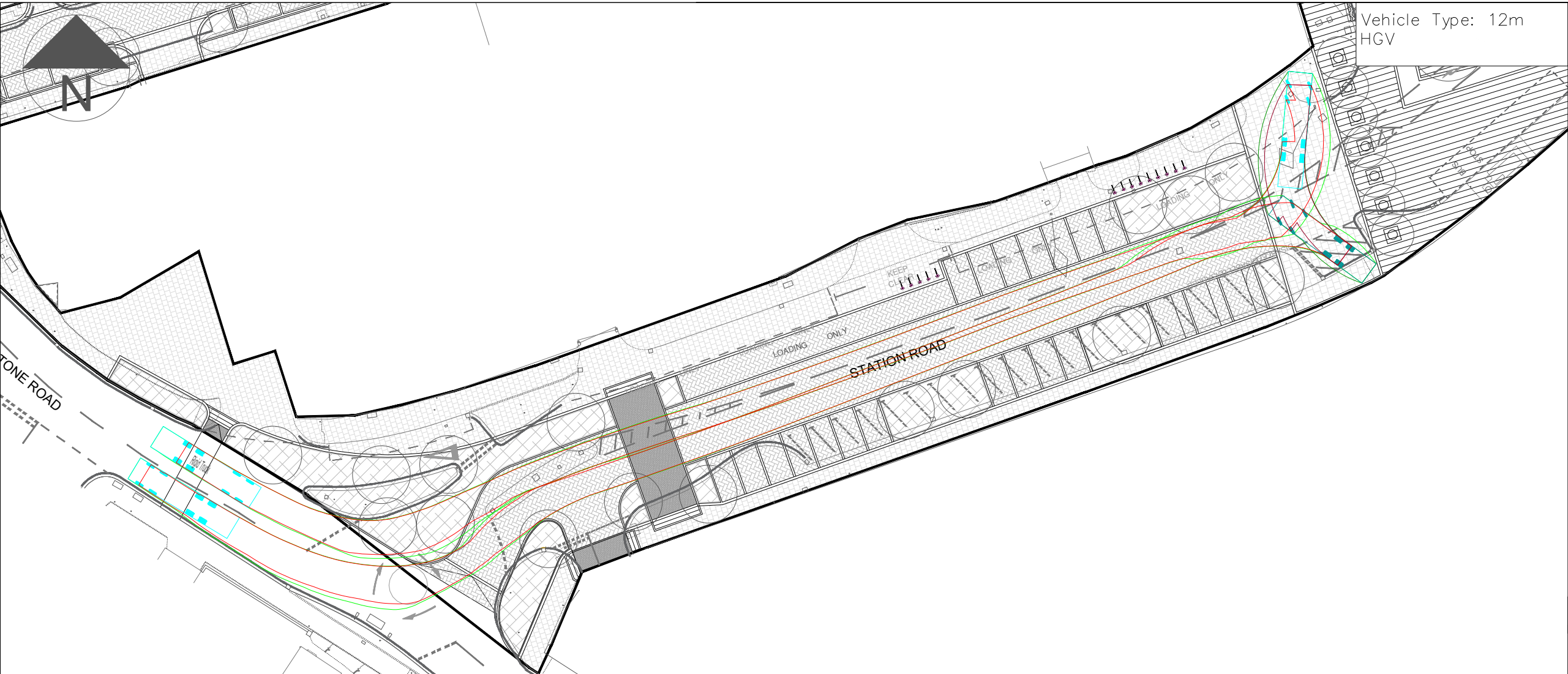
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TITLE:
ROCHDALE SQUARE - SWEEP PATH
ANALYSIS - RSS PROPOSED BUS
ROUTE ARRANGEMENT

Designed	H.ROY	Signed	H.ROY	Date	05 MAY 23
Drawn	H.ROY	Signed	H.ROY	Date	05 MAY 23
Checked	H. NICHOLAS	Signed		Date	05 MAY 23
Reviewed	H. NICHOLAS	Signed		Date	05 MAY 23
Approved	R. TAMS	Signed		Date	05 MAY 23
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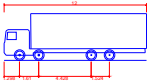
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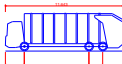
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NOTES:

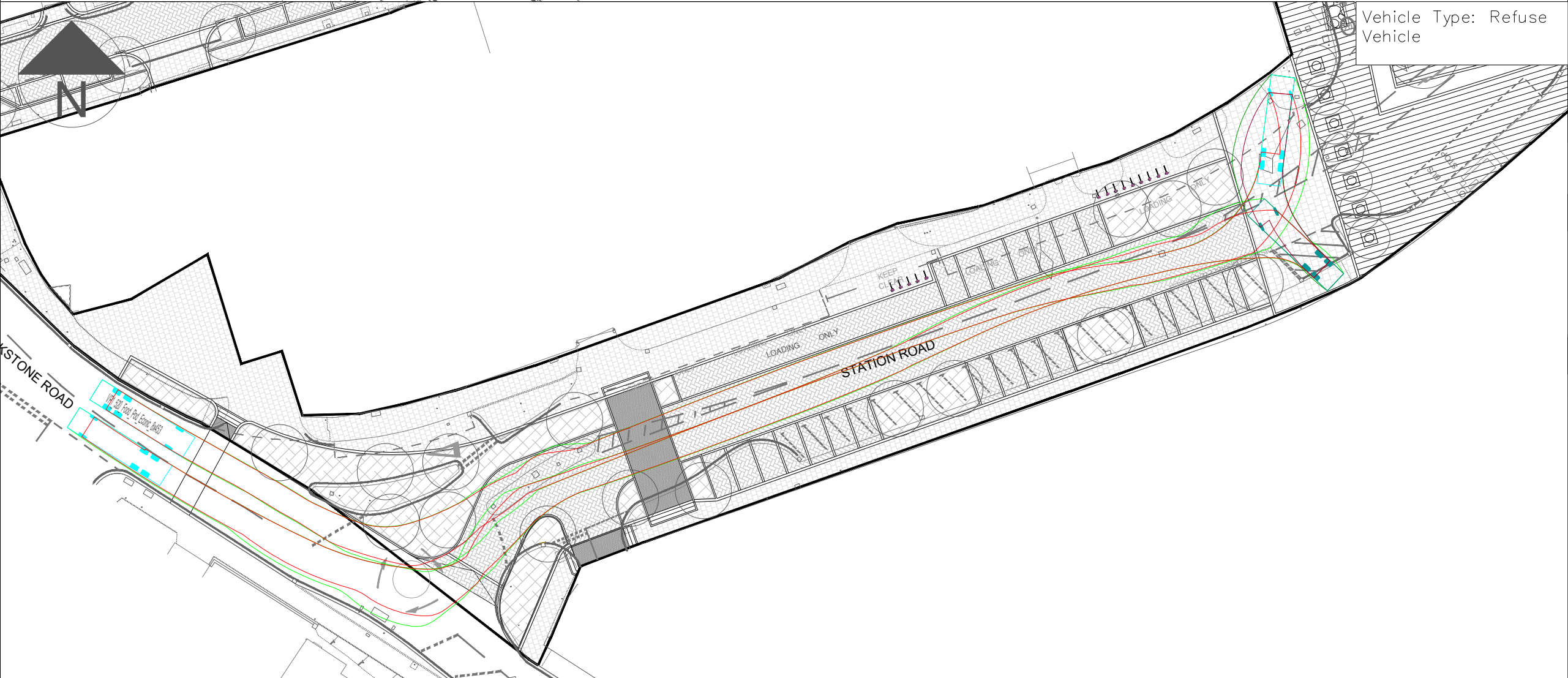
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.



Rigid Truck
Overall Length 12.000m
Overall Width 2.550m
Overall Body Height 3.928m
Min Body Ground Clearance 0.412m
Track Width 2.471m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 11.900m



Refuse Vehicle
Overall Length 11.643m
Overall Width 2.550m
Overall Body Height 3.750m
Min Body Ground Clearance 0.300m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 11.250m



Vehicle Type: Refuse Vehicle



PROJECT:
ROCHDALE STATION SQUARE

Site: Rochdale Station Square, Rochdale, OL11 1DR
Client: Rochdale Borough Council



Registered Office:
80 Fen,
Fenchurch Street,
London,
EC3M 4BY

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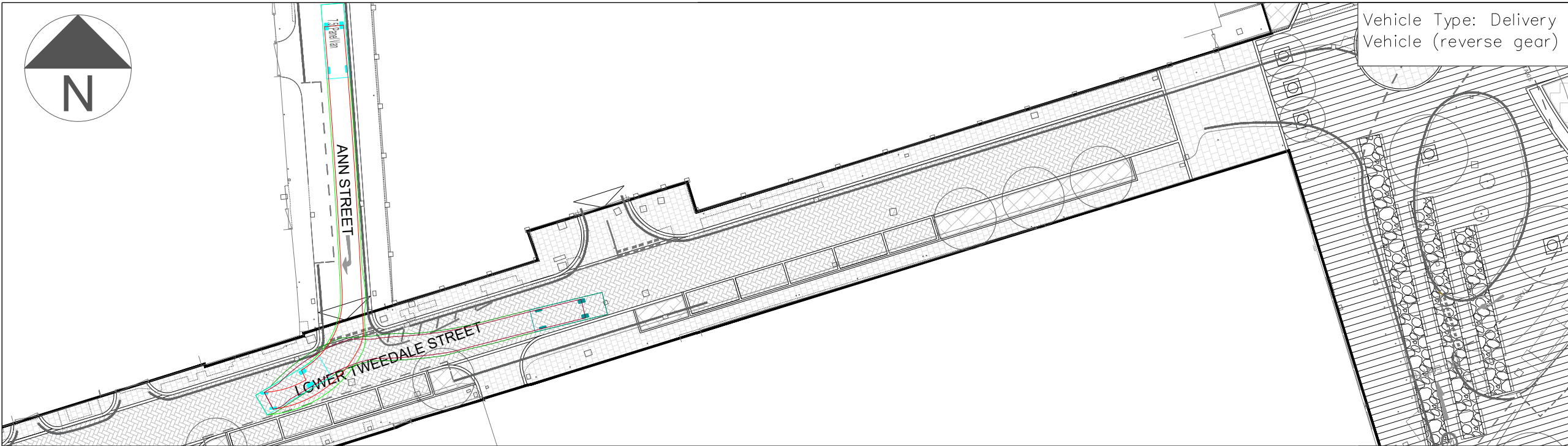
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TITLE:
ROCHDALE SQUARE - SWEEP PATH ANALYSIS - WWF + HAJI (STATION ROAD) - 12m HGV & REFUSE VEHICLE

Designed	H.ROY	Signed	H.ROY	Date	26 APR 23
Drawn	H.ROY	Signed	H.ROY	Date	26 APR 23
Checked	H. NICHOLAS	Signed		Date	26 APR 23
Reviewed	H. NICHOLAS	Signed		Date	26 APR 23
Approved	R. TAMS	Signed		Date	26 APR 23
Scale:	Custom	Datum:			AOD
Original Size:	A3	Grid:			OS
Suitability Code:	S0	Project Number:			10051627

Suitability Description:
WIP

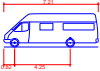
Drawing Number: 10051627-ARC-DR-TP-00006
Revision: P01



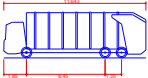
Vehicle Type: Delivery
Vehicle (reverse gear)

NOTES:

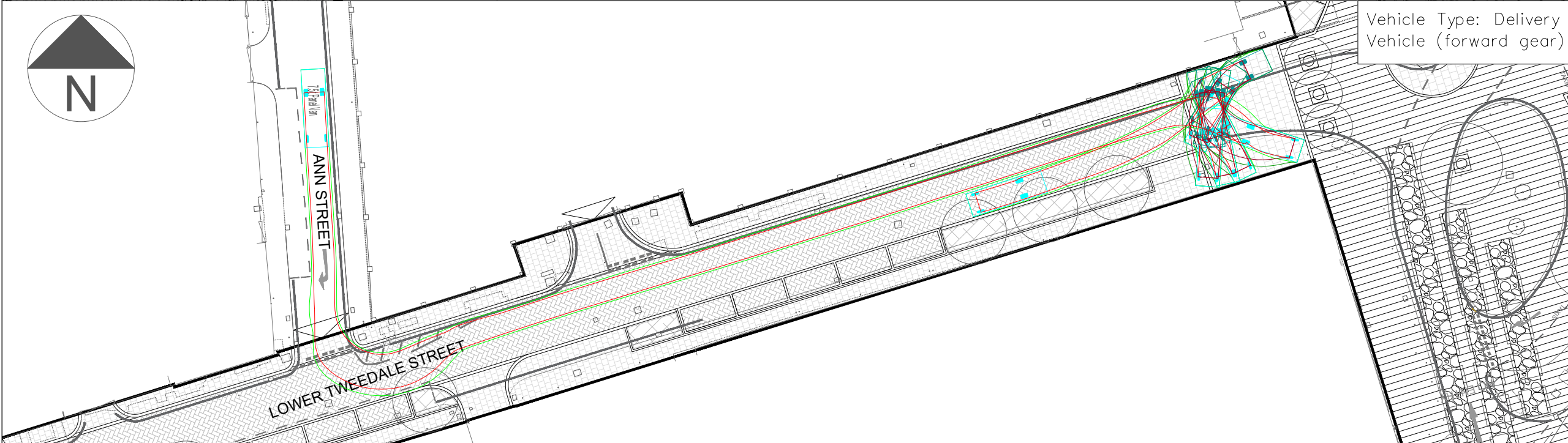
1. ALL DIMENSIONS ARE IN METRES
UNLESS OTHERWISE STATED.



7.5t Panel Van
Overall Length 7.210m
Overall Width 2.190m
Overall Body Height 2.540m
Min Body Ground Clearance 0.316m
Track Width 1.860m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 7.400m



VP1_520_Food_Pod_Econic_Bx453
Overall Length 11.543m
Overall Width 2.550m
Overall Body Height 2.950m
Min Body Ground Clearance 0.304m
Track Width 2.500m
Lock to lock time 4.15s
Kerb to Kerb Turning Radius 11.250m



Vehicle Type: Delivery
Vehicle (forward gear)

P01	21/04/23	Swept Path Analysis	HR	HN	HN	RT	
Rev	Date	Description	DRN	CHK	REV	APP	



ROCHDALE
BOROUGH COUNCIL

PROJECT:
ROCHDALE STATION SQUARE

Site Client
Rochdale Station Square, Rochdale, OL11 1DR Rochdale Borough Council



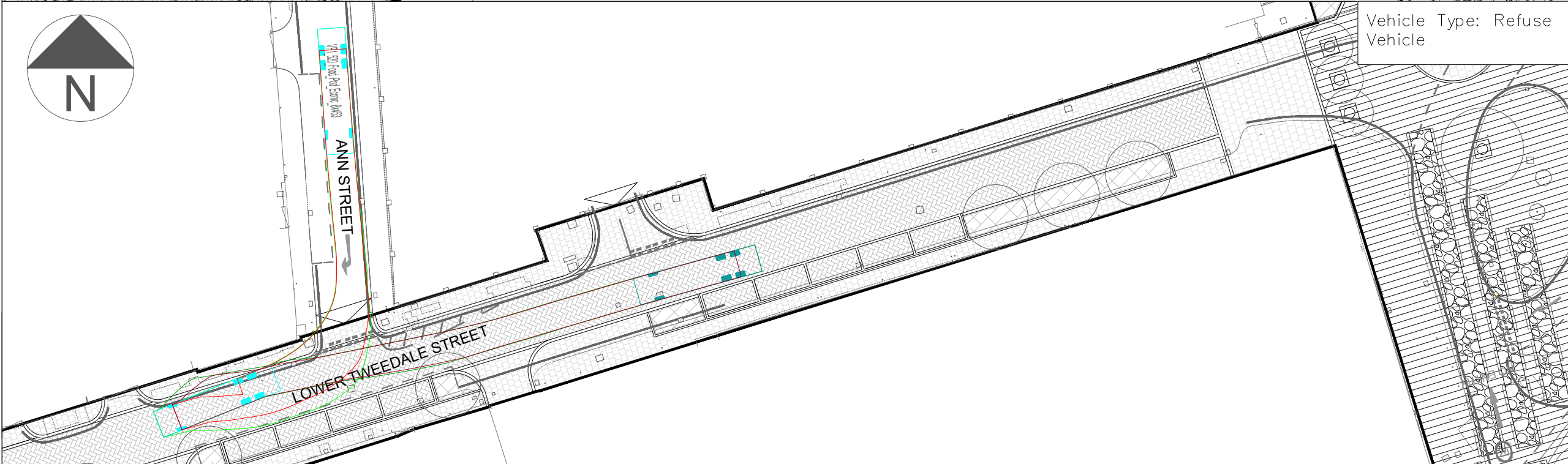
Registered Office:
80 Fen,
Fenchurch Street,
London,
EC3M 4BY
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TITLE:
ROCHDALE SQUARE - SWEEP PATH
ANALYSIS - WWF + HAJI (LOWER
TWEEDALE STREET) - DELIVERY &
REFUSE VEHICLE

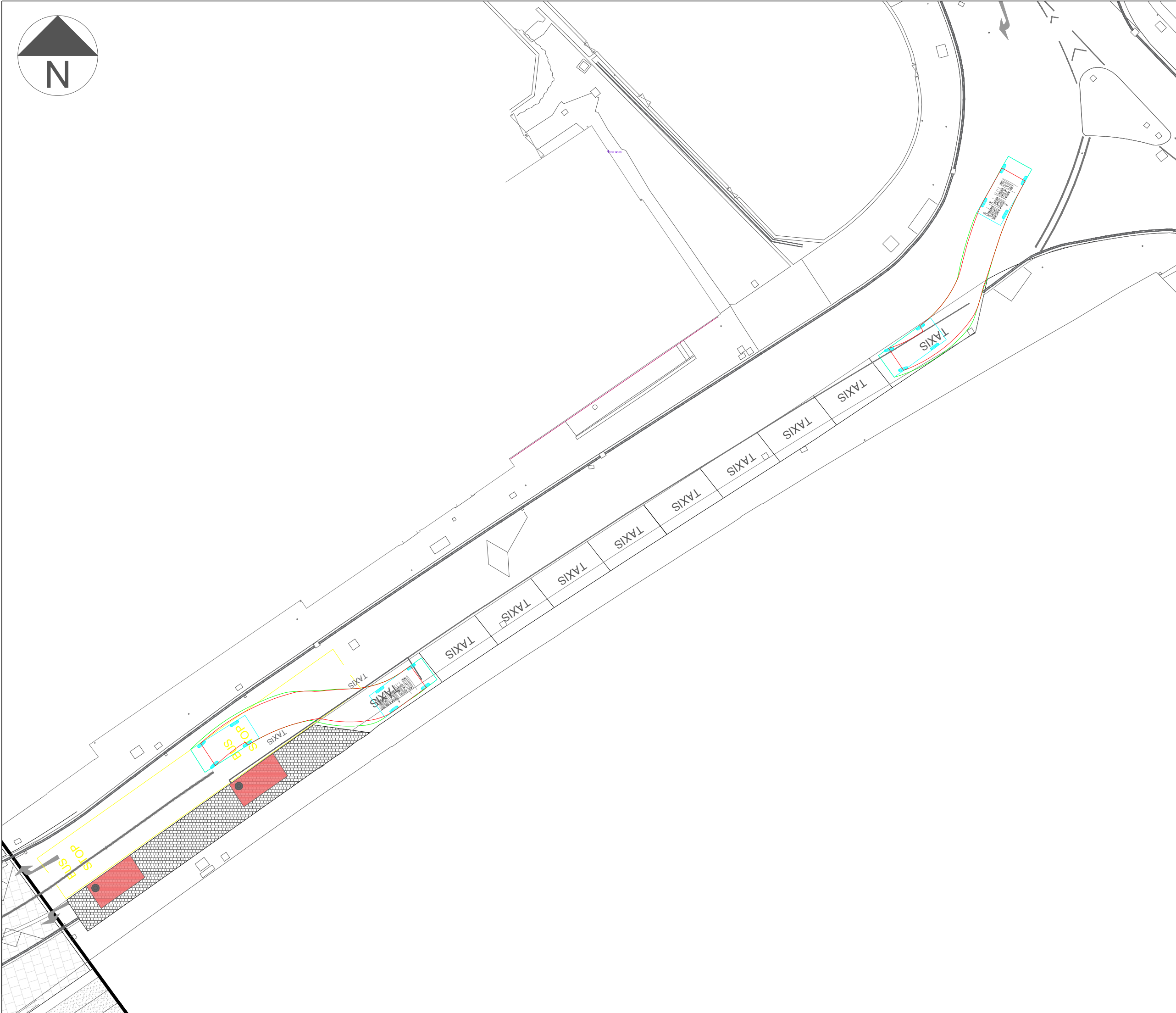
Designed	H.ROY	Signed	H.ROY	Date	26 APR 23
Drawn	H.ROY	Signed	H.ROY	Date	26 APR 23
Checked	H. NICHOLAS	Signed		Date	26 APR 23
Reviewed	H. NICHOLAS	Signed		Date	26 APR 23
Approved	R. TAMS	Signed		Date	26 APR 23
Scale:	Custom	Datum:			AOD
Original Size:	A3	Grid:			OS
Suitability Code:	S0	Project Number:			10051627

Suitability Description:
WIP

Drawing Number: 10051627-ARC-DR-TP-00007 Revision: P01

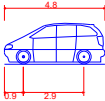


Vehicle Type: Refuse
Vehicle



NOTES:

1. ALL DIMENSIONS ARE IN METRES
UNLESS OTHERWISE STATED.



Standard Design Vehicle (SDV)		
Overall Length	4.800m	
Overall Width	2.000m	
Overall Body Height	1.950m	
Min Body Ground Clearance	0.100m	
Track Width	2.000m	
Lock to lock time	4.00s	
Wall to Wall Turning Radius	6.000m	

P01	21/04/23	Swept Path Analysis	HR	HN	HN	RT
Rev	Date	Description	DRN	CHK	REV	APP



PROJECT:
ROCHDALE STATION SQUARE

Site	Client
Rochdale Station Square, Rochdale, OL11 1DR	Rochdale Borough Council



Registered Office:
80 Fen,
Fenchurch Street,
London,
EC3M 4BY

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TITLE:
ROCHDALE SQUARE - SWEPT PATH
ANALYSIS - RSS PROPOSED TAXI
ARRANGEMENT

Designed	H.ROY	Signed	H.ROY	Date	05 MAY 23
Drawn	H.ROY	Signed	H.ROY	Date	05 MAY 23
Checked	H. NICHOLAS	Signed		Date	05 MAY 23
Reviewed	H. NICHOLAS	Signed		Date	05 MAY 23
Approved	R. TAMS	Signed		Date	05 MAY 23
Scale:	Custom	Datum:		AOD	
Original Size:	A3	Grid:		OS	
Suitability Code:	S0	Project Number:		10051627	

Suitability Description:
WIP

Drawing Number:	10051627-ARC-DR-TP-00009	Revision:	P01
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Appendix C

Boarding & Alighting Survey Data (TfGM)

Boarding & Alighting Survey

Surveyed 07/09/22 at NE1716 Tweedale St/Manchester Rd 07:00 - 19:00

Service	Arrival	Boarding			Alighting			Departure	Comments
		Adult	Pensioner	Child	Adult	Pensioner	Child		
Totals		4	3	7	49	1	12		
471	07:09	0	0	0	0	0	0	07:09	
471	07:21	0	0	0	0	0	0	07:21	
471	07:38	1	0	1	0	0	0	07:38	
881	07:41	0	0	4	0	0	0	07:42	
471	07:52	0	0	0	0	0	0	07:52	
471	08:20	0	0	0	11	0	0	08:21	
929	08:23	0	0	1	0	0	0	08:23	REG WV20WTE
471	08:26	0	0	0	3	0	0	08:26	
471	08:56	0	0	0	0	0	0	08:56	
471	08:58	0	0	0	6	0	0	08:58	
471	09:24	1	0	1	0	0	0	09:24	
471	09:26	0	0	0	3	0	0	09:26	
471	09:34	0	0	0	0	0	0	09:34	
471	09:37	0	0	0	1	0	0	09:37	
471	09:49	0	0	0	0	0	0	09:49	
471	10:02	0	0	0	2	0	0	10:02	
471	10:18	0	0	0	0	0	0	10:18	
471	10:22	0	0	0	0	0	0	10:22	
471	10:39	0	0	0	2	0	0	10:39	
471	10:50	0	0	0	0	0	0	10:50	
471	11:03	0	0	0	2	0	0	11:04	
471	11:13	0	0	0	2	0	0	11:13	
471	11:25	0	0	0	1	0	0	11:26	
471	11:39	0	0	0	0	0	0	11:39	
471	11:54	0	0	0	0	0	0	11:54	
471	11:59	0	0	0	0	0	0	11:59	
471	12:18	0	0	0	0	0	0	12:18	
471	12:24	0	0	0	0	0	0	12:24	
471	12:44	0	1	0	0	0	0	12:44	
471	12:50	0	0	0	2	0	0	12:50	
471	13:03	0	0	0	0	0	0	13:03	
471	13:12	0	0	0	0	0	0	13:12	
471	13:24	0	1	0	1	1	0	13:24	
471	13:37	0	0	0	0	0	0	13:37	
471	13:53	0	1	0	1	0	0	13:54	
471	13:55	0	0	0	0	0	0	13:55	
471	14:13	1	0	0	0	0	0	14:14	
471	14:24	0	0	0	1	0	0	14:24	
471	14:32	0	0	0	0	0	0	14:32	
471	14:44	0	0	0	1	0	0	14:44	
471	14:53	0	0	0	0	0	0	14:53	
471	15:12	1	0	0	0	0	0	15:12	
471	15:16	0	0	0	0	0	0	15:16	
471	15:38	0	0	0	1	0	3	15:39	
471	15:40	0	0	0	1	0	5	15:41	
471	15:59	0	0	0	2	0	4	15:59	
471	16:06	0	0	0	0	0	0	16:06	
471	16:18	0	0	0	0	0	0	16:18	
471	16:30	0	0	0	0	0	0	16:30	
471	16:44	0	0	0	0	0	0	16:44	
471	16:55	0	0	0	1	0	0	16:55	
471	17:06	0	0	0	0	0	0	17:06	
471	17:23	0	0	0	1	0	0	17:23	
471	17:45	0	0	0	0	0	0	17:45	
471	17:59	0	0	0	1	0	0	17:59	
471	18:10	0	0	0	3	0	0	18:10	
471	18:21	0	0	0	0	0	0	18:21	
471	18:30	0	0	0	0	0	0	18:30	
Totals		4	3	7	49	1	12		

Summary by Timeband						
Arrival Timeband	Boarding			Alighting		
	Adult	Pensioner	Child	Adult	Pensioner	Child
0700-0800	1	0	5	0	0	0
0800-0900	0	0	1	20	0	0
0900-1000	1	0	1	4	0	0
1000-1100	0	0	0	4	0	0
1100-1200	0	0	0	5	0	0
1200-1300	0	1	0	2	0	0
1300-1400	0	2	0	2	1	0
1400-1500	1	0	0	2	0	0
1500-1600	1	0	0	4	0	12
1600-1700	0	0	0	1	0	0
1700-1800	0	0	0	2	0	0
1800-1900	0	0	0	3	0	0
Totals	4	3	7	49	1	12

Boarding & Alighting Survey									
Surveyed 07/09/22 at NE0001 Rochdale Rail Station/Tweedale St 07:00 - 19:00									

Service	Arrival	Boarding			Alighting			Departure	Comments
		Adult	Pensioner	Child	Adult	Pensioner	Child		
Totals		126	28	6	25	16	5		
471	07:02	9	0	0	0	0	0	07:04	
471	07:15	2	0	0	0	0	0	07:16	
471	07:27	6	0	0	0	0	0	07:29	
471	07:38	3	0	0	0	0	0	07:39	
471	07:52	8	0	2	0	0	0	07:54	
471	08:04	3	0	1	0	0	0	08:05	
471	08:17	8	0	0	1	0	0	08:18	
471	08:34	2	0	0	2	0	1	08:34	
471	08:46	3	0	0	0	0	0	08:47	
471	09:13	6	0	1	1	0	0	09:14	
471	09:28	2	0	0	0	0	0	09:28	
471	09:36	0	1	0	0	0	0	09:36	
471	09:49	1	0	0	2	0	0	09:49	
471	09:59	2	2	0	0	0	0	10:00	
471	10:10	0	1	0	0	0	0	10:10	
471	10:19	1	0	0	2	0	0	10:19	
471	10:30	0	0	0	1	4	0	10:31	
471	10:41	0	0	0	1	0	0	10:42	
471	10:49	0	0	0	0	0	0	10:49	
471	10:59	1	0	0	0	1	0	10:59	
471	11:10	1	1	0	1	2	0	11:11	
471	11:20	0	0	0	0	0	0	11:20	
471	11:25	0	0	0	1	1	0	11:25	
471	11:39	2	2	1	1	0	0	11:40	
471	11:49	0	0	0	1	0	0	11:49	
471	12:07	0	2	0	0	1	0	12:07	
471	12:15	2	0	0	0	0	0	12:15	
471	12:32	4	2	0	0	0	0	12:33	
471	12:37	0	0	0	0	1	0	12:37	
471	12:58	4	0	0	0	0	0	12:59	
471	13:01	0	0	0	0	1	0	13:01	
471	13:17	1	0	0	1	0	0	13:18	
471	13:28	0	0	0	0	0	0	13:28	
471	13:37	0	0	0	1	0	0	13:38	
471	13:49	1	0	0	1	1	0	13:49	
471	14:03	3	0	0	1	0	0	14:03	
471	14:11	2	0	0	0	0	0	14:12	
471	14:25	4	1	0	0	0	0	14:26	
471	14:38	1	0	0	0	0	0	14:38	
471	14:49	0	4	0	1	0	1	14:50	
471	15:03	6	3	0	0	0	0	15:04	
471	15:13	1	0	0	0	0	0	15:13	
471	15:27	0	0	0	0	0	0	15:27	
881	15:36	0	0	0	0	0	3	15:36	School Bus
471	15:38	0	0	1	3	0	0	15:38	
471	15:55	4	2	0	0	0	0	15:55	
471	16:02	2	0	0	0	0	0	16:02	
471	16:14	3	1	0	0	0	0	16:15	
471	16:27	3	0	0	1	2	0	16:29	
471	16:36	0	0	0	0	1	0	16:37	
471	16:49	4	2	0	0	0	0	16:50	
471	17:03	2	1	0	0	0	0	17:04	
471	17:14	2	1	0	0	0	0	17:15	
471	17:29	1	2	0	0	1	0	17:30	
471	17:43	1	0	0	1	0	0	17:43	
471	18:06	5	0	0	0	0	0	18:07	
471	18:18	4	0	0	0	0	0	18:19	
471	18:31	0	0	0	0	0	0	18:31	
471	18:33	1	0	0	1	0	0	18:33	
471	18:47	5	0	0	0	0	0	18:48	
Totals		126	28	6	25	16	5		

Summary by Timeband								
Arrival Timeband	Boarding			Alighting				
	Adult	Pensioner	Child	Adult	Pensioner	Child		
0700-0800	28	0	2	0	0	0	30	0
0800-0900	16	0	1	3	0	1	17	4
0900-1000	11	3	1	3	0	0	15	3
1000-1100	2	1	0	4	5	0	3	9
1100-1200	3	3	1	4	3	0	7	7
1200-1300	10	4	0	0	2	0	14	2
1300-1400	2	0	0	3	2	0	2	5
1400-1500	10	5	0	2	0	1	15	3
1500-1600	11	5	1	3	0	3	17	6
1600-1700	12	3	0	1	3	0	15	4
1700-1800	6	4	0	1	1	0	10	2
1800-1900	15	0	0	1	0	0	15	1
Totals	126	28	6	25	16	5	160	46

Boarding & Alighting Survey									
Surveyed 07/09/22 at NE0052 Rochdale Rail Station/Milkstones 07:00 - 19:00									
Service	Arrival	Boarding			Alighting			Departure	Comments
		Adult	Pensioner	Child	Adult	Pensioner	Child		
Totals		10	5	5	123	15	0		
471	07:11	0	0	0	5	0	0	07:11	
471	07:23	0	0	0	5	0	0	07:23	
471	07:39	0	0	0	5	0	0	07:40	
881	07:45	0	0	5	0	0	0	07:46	SCHOOL BUS
471	07:54	2	0	0	4	0	0	07:54	
471	08:22	0	0	0	2	0	0	08:22	
471	08:28	0	0	0	3	0	0	08:28	
471	08:57	0	0	0	1	0	0	08:57	
471	09:00	1	0	0	3	0	0	09:01	
471	09:26	0	0	0	2	0	0	09:27	
471	09:28	1	1	0	4	1	0	09:29	
471	09:35	0	0	0	0	1	0	09:35	
471	09:39	0	0	0	0	1	0	09:39	
471	09:51	0	0	0	1	0	0	09:51	
471	10:04	0	0	0	4	0	0	10:04	
471	10:21	0	0	0	1	0	0	10:21	
471	10:24	0	0	0	0	0	0	10:24	
471	10:41	2	0	0	2	0	0	10:42	
471	10:52	1	1	0	0	0	0	10:52	
471	11:06	1	0	0	2	0	0	11:06	
471	11:15	0	2	0	1	0	0	11:15	
471	11:27	0	0	0	3	0	0	11:27	
471	11:41	0	0	0	2	1	0	11:41	
471	11:56	0	0	0	4	0	0	11:56	
471	12:01	0	0	0	1	0	0	12:01	
471	12:20	0	1	0	2	2	0	12:21	
471	12:26	0	0	0	2	0	0	12:26	
471	12:46	0	0	0	5	2	0	12:47	
471	12:52	0	0	0	0	0	0	12:52	
471	13:05	0	0	0	2	1	0	13:05	
471	13:14	0	0	0	2	0	0	13:14	
471	13:14	0	0	0	0	0	0	13:14	
471	13:26	0	0	0	3	0	0	13:27	
471	13:39	0	0	0	0	0	0	13:39	
471	13:55	0	0	0	0	2	0	13:55	
471	13:57	0	0	0	1	0	0	13:57	
471	14:15	0	0	0	3	0	0	14:16	
471	14:26	0	0	0	2	0	0	14:26	
471	14:34	0	0	0	0	0	0	14:34	
471	14:54	0	0	0	1	0	0	14:55	
471	15:14	0	0	0	0	0	0	15:14	
471	15:18	0	0	0	1	0	0	15:18	
471	15:40	0	0	0	1	0	0	15:41	
471	16:01	0	0	0	3	0	0	16:01	
471	16:08	0	0	0	1	0	0	16:09	
471	16:19	0	0	0	3	0	0	16:20	
471	16:33	0	0	0	2	0	0	16:33	
471	16:46	0	0	0	3	1	0	16:46	
471	16:57	0	0	0	3	0	0	16:58	
471	17:25	0	0	0	3	0	0	17:25	
471	17:47	0	0	0	10	2	0	17:48	
471	18:01	0	0	0	4	1	0	18:01	
471	18:12	2	0	0	5	0	0	18:12	
471	18:22	0	0	0	3	0	0	18:23	
471	18:32	0	0	0	3	0	0	18:33	
Totals		10	5	5	123	15	0		

Summary by Timeband								
Arrival Timeband	Boarding			Alighting				
	Adult	Pensioner	Child	Adult	Pensioner	Child		
0700-0800	2	0	5	19	0	0	7	19
0800-0900	0	0	0	6	0	0	0	6
0900-1000	2	1	0	10	3	0	3	13
1000-1100	3	1	0	7	0	0	4	7
1100-1200	1	2	0	12	1	0	3	13
1200-1300	0	1	0	10	4	0	1	14
1300-1400	0	0	0	8	3	0	0	11
1400-1500	0	0	0	6	0	0	0	6
1500-1600	0	0	0	2	0	0	0	2
1600-1700	0	0	0	15	1	0	0	16
1700-1800	0	0	0	13	2	0	0	15
1800-1900	2	0	0	15	1	0	2	16
Totals	10	5	5	123	15	0	20	138

Boarding & Alighting Survey									
Surveyed 07/09/22 at NE1718 Tweedale St/Boundary St 07:00 - 19:00									

Service	Arrival	Boarding			Alighting			Departure	Comments
		Adult	Pensioner	Child	Adult	Pensioner	Child		
Totals		6	3	5	23	8	24		
471	07:10	0	0	0	0	0	1	07:10	
471	07:22	0	0	0	0	0	0	07:22	
471	07:38	0	0	1	0	0	0	07:38	
881	07:42	0	0	4	0	0	0	07:44	School Bus
471	07:53	0	0	0	0	0	0	07:53	
471	08:21	0	0	0	0	0	0	08:21	
471	08:27	0	0	0	0	0	0	08:27	
471	08:56	0	0	0	0	0	0	08:56	
471	08:58	0	0	0	1	0	0	08:59	
471	09:25	1	0	0	0	0	0	09:25	
471	09:26	0	0	0	1	0	0	09:27	
471	09:34	0	0	0	0	0	0	09:34	
471	09:49	0	0	0	1	0	0	09:49	
471	10:02	1	0	0	1	0	0	10:03	
471	10:19	0	1	0	0	0	0	10:19	
471	10:22	0	0	0	0	1	0	10:23	
471	10:40	0	0	0	0	0	0	10:40	
471	10:51	0	0	0	0	0	0	10:51	
471	11:04	1	0	0	0	0	0	11:04	
471	11:13	0	0	0	0	0	0	11:13	
471	11:26	0	0	0	0	0	0	11:26	
471	11:39	0	0	0	0	1	0	11:40	
471	11:55	1	0	0	0	0	0	11:55	
471	12:00	0	0	0	0	0	0	12:00	
471	12:19	0	0	0	3	0	0	12:19	
471	12:24	0	0	0	0	0	0	12:24	
471	12:44	0	0	0	0	0	0	12:44	
471	12:51	0	0	0	0	0	0	12:51	
471	13:03	0	1	0	0	3	0	13:03	
471	13:13	0	0	0	0	0	0	13:13	
471	13:25	0	0	0	1	0	0	13:25	
471	13:37	0	0	0	1	0	0	13:37	
471	13:54	0	0	0	0	0	0	13:54	
471	13:56	0	0	0	2	0	0	13:56	
471	14:14	0	1	0	0	0	0	14:14	
471	14:24	0	0	0	1	0	0	14:25	
471	14:32	0	0	0	1	0	0	14:33	
471	14:45	0	0	0	0	1	0	14:45	
471	14:54	0	0	0	0	0	0	14:54	
471	15:13	0	0	0	0	0	0	15:13	
471	15:16	0	0	0	0	0	1	15:17	
471	15:39	0	0	0	2	0	2	15:39	
471	15:42	0	0	0	1	0	16	15:42	
471	15:59	0	0	0	0	0	1	16:00	
471	16:07	0	0	0	0	0	3	16:07	
471	16:18	0	0	0	0	0	0	16:18	
471	16:31	1	0	0	0	0	0	16:31	
471	16:44	0	0	0	2	1	0	16:45	
471	16:56	0	0	0	0	0	0	16:56	
471	17:07	0	0	0	1	0	0	17:07	
471	17:23	0	0	0	0	0	0	17:23	
471	17:46	1	0	0	1	0	0	17:46	
471	17:59	0	0	0	3	0	0	18:00	
471	18:11	0	0	0	0	1	0	18:11	
471	18:21	0	0	0	0	0	0	18:21	
471	18:30	0	0	0	0	0	0	18:30	
Totals		6	3	5	23	8	24		

Summary by Timeband						
Arrival Timeband	Boarding			Alighting		
	Adult	Pensioner	Child	Adult	Pensioner	Child
0700-0800	0	0	5	0	0	1
0800-0900	0	0	0	1	0	0
0900-1000	1	0	0	2	0	0
1000-1100	1	1	0	1	1	0
1100-1200	2	0	0	0	1	0
1200-1300	0	0	0	3	0	0
1300-1400	0	1	0	4	3	0
1400-1500	0	1	0	2	1	0
1500-1600	0	0	0	3	0	20
1600-1700	1	0	0	2	1	3
1700-1800	1	0	0	5	0	0
1800-1900	0	0	0	0	1	0
Totals	6	3	5	23	8	24

Boarding & Alighting Survey									
Surveyed 07/09/22 at NE1719 Tweedale St/Mere St 07:00 - 19:00									

Service	Arrival	Boarding			Alighting			Departure	Comments
		Adult	Pensioner	Child	Adult	Pensioner	Child		
Totals		18	0	13	14	4	3		
471	07:04	0	0	0	0	0	0	07:04	
471	07:16	0	0	0	0	0	0	07:16	
471	07:29	0	0	0	0	0	0	07:29	
471	07:39	0	0	1	0	0	0	07:40	
471	07:54	0	0	0	0	0	0	07:54	
471	08:05	0	0	2	0	0	0	08:06	
471	08:19	1	0	6	0	0	0	08:22	
471	08:35	0	0	0	0	0	0	08:35	
471	08:47	0	0	0	0	0	0	08:47	
471	09:14	3	0	0	0	0	0	09:15	
471	09:29	2	0	0	0	0	0	09:29	
471	09:37	1	0	1	0	0	0	09:38	
471	09:50	0	0	0	0	0	0	09:50	
471	10:00	1	0	1	0	0	0	10:01	
471	10:11	0	0	0	0	0	0	10:11	
471	10:20	0	0	0	0	0	0	10:20	
471	10:32	0	0	0	0	0	0	10:32	
471	10:42	0	0	0	0	0	0	10:42	
471	10:50	0	0	0	0	0	0	10:50	
471	11:00	0	0	0	4	0	0	11:01	
471	11:12	1	0	0	0	0	0	11:12	
471	11:21	0	0	0	0	0	0	11:21	
471	11:26	0	0	0	0	0	0	11:26	
471	11:28	0	0	0	0	0	0	11:29	
471	11:41	0	0	0	0	0	0	11:41	
471	11:50	0	0	0	0	0	0	11:50	
471	12:08	2	0	1	0	2	0	12:09	
471	12:16	0	0	0	0	0	0	12:16	
471	12:33	0	0	0	0	0	0	12:34	
471	12:38	0	0	0	0	0	0	12:38	
471	13:00	0	0	0	2	0	0	13:00	
471	13:02	0	0	0	0	0	0	13:02	
471	13:18	0	0	0	0	0	0	13:18	
471	13:29	0	0	0	0	0	0	13:29	
471	13:39	0	0	0	0	0	0	13:39	
471	13:50	0	0	0	0	0	0	13:50	
471	14:04	0	0	0	1	0	0	14:05	
471	14:13	0	0	0	1	0	0	14:13	
471	14:27	4	0	1	1	0	0	14:28	
471	14:39	0	0	0	1	1	0	14:40	
471	14:51	0	0	0	1	0	0	14:51	
471	15:05	0	0	0	0	0	0	15:05	
471	15:14	0	0	0	0	0	0	15:14	
471	15:28	0	0	0	0	0	0	15:28	
471	15:39	0	0	0	0	0	0	15:39	
471	15:56	2	0	0	2	1	2	15:57	
471	16:03	0	0	0	0	0	0	16:03	
471	16:16	0	0	0	0	0	0	16:16	
471	16:30	0	0	0	0	0	0	16:30	
471	16:37	0	0	0	0	0	0	16:38	
471	16:51	1	0	0	1	0	0	16:51	
471	17:05	0	0	0	0	0	1	17:06	
471	17:16	0	0	0	0	0	0	17:16	
471	17:31	0	0	0	0	0	0	17:31	
471	17:44	0	0	0	0	0	0	17:44	
471	18:08	0	0	0	0	0	0	18:08	
471	18:20	0	0	0	0	0	0	18:20	
Out Of Service	18:32	0	0	0	0	0	0	18:32	
471	18:34	0	0	0	0	0	0	18:34	
471	18:49	0	0	0	0	0	0	18:49	
Totals		18	0	13	14	4	3		

Summary by Timeband						
Arrival Timeband	Boarding			Alighting		
	Adult	Pensioner	Child	Adult	Pensioner	Child
0700-0800	0	0	1	0	0	0
0800-0900	1	0	8	0	0	0
0900-1000	6	0	1	0	0	0
1000-1100	1	0	1	0	0	0
1100-1200	1	0	0	4	0	0
1200-1300	2	0	1	0	2	0
1300-1400	0	0	0	2	0	0
1400-1500	4	0	1	5	1	0
1500-1600	2	0	0	2	1	2
1600-1700	1	0	0	1	0	0
1700-1800	0	0	0	0	0	1
1800-1900	0	0	0	0	0	0
Totals	18	0	13	14	4	3

Boarding & Alighting Survey

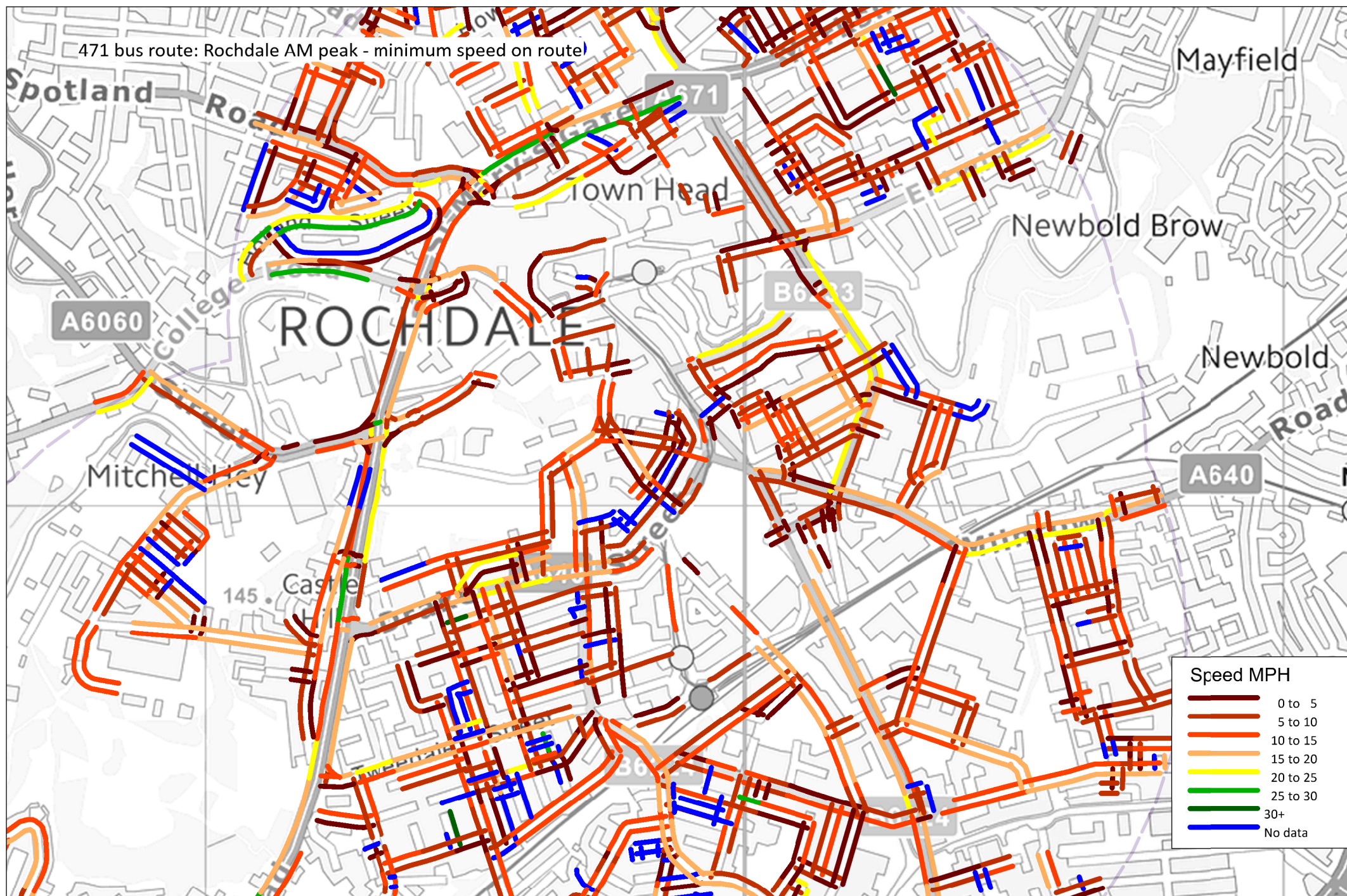
Surveyed 07/09/22 at NE1717 Tweedale St/Boundary St 07:00 - 19:00

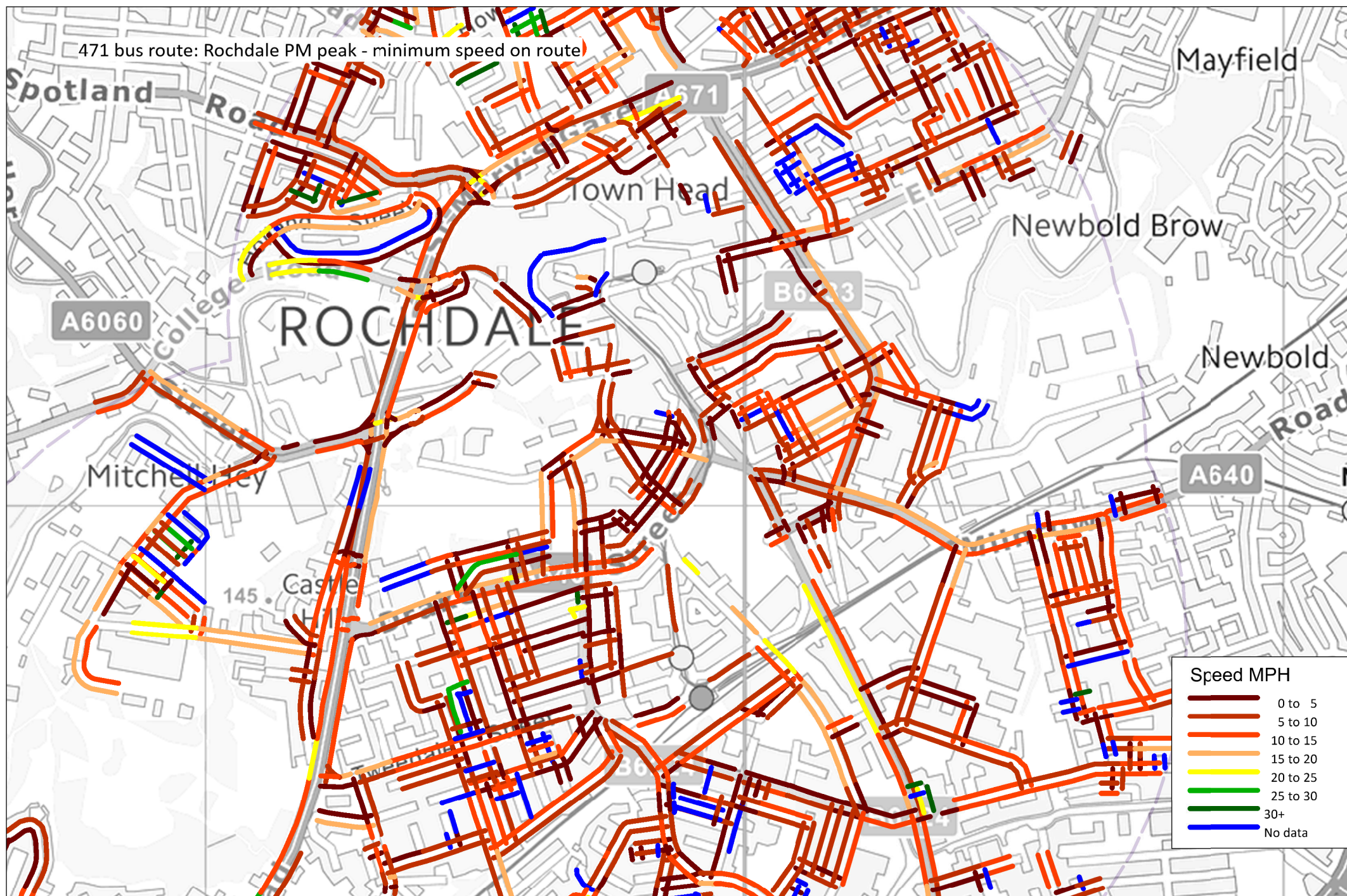
Service	Arrival	Boarding			Alighting			Departure	Comments
		Adult	Pensioner	Child	Adult	Pensioner	Child		
Totals		26	3	19	11	2	5		
471	07:05	0	0	0	0	0	0	07:05	
471	07:17	2	0	0	0	0	0	07:17	
471	07:30	0	0	0	0	0	0	07:30	
471	07:41	4	0	1	1	0	0	07:42	
471	07:55	1	0	9	0	0	0	07:57	
471	08:07	1	0	5	0	0	0	08:08	
471	08:23	0	0	0	0	0	0	08:23	
471	08:36	1	0	0	0	0	0	08:36	
471	08:48	0	0	0	0	0	0	08:48	
471	09:16	1	0	0	0	0	0	09:16	
471	09:30	1	0	0	0	0	0	09:30	
471	09:38	0	0	0	0	0	0	09:38	
471	09:50	0	0	0	0	0	0	09:50	
471	10:01	0	0	0	0	0	0	10:01	
471	10:12	0	0	0	0	0	0	10:12	
471	10:20	0	0	0	0	0	0	10:20	
471	10:33	2	0	0	0	0	0	10:33	
471	10:44	0	0	0	1	0	0	10:44	
471	10:51	0	0	0	0	0	0	10:51	
471	11:01	1	0	0	0	0	0	11:01	
471	11:13	0	0	0	0	0	0	11:13	
471	11:22	0	0	0	1	0	0	11:22	
471	11:26	0	0	0	0	0	0	11:26	
471	11:41	1	1	0	0	1	0	11:42	
471	11:51	0	0	0	0	0	0	11:51	
471	12:09	0	0	0	0	0	0	12:09	
471	12:17	0	0	0	0	0	0	12:17	
471	12:34	2	0	1	0	0	0	12:35	
471	12:39	0	0	0	0	0	0	12:39	
471	13:01	0	2	0	0	0	0	13:01	
471	13:06	0	0	0	0	0	0	13:06	
471	13:18	1	0	0	0	0	0	13:19	
471	13:30	1	0	0	1	0	0	13:30	
471	13:40	1	0	2	1	0	0	13:41	
471	13:52	0	0	0	0	0	0	13:52	
471	14:04	1	0	0	1	0	0	14:04	
471	14:15	0	0	0	0	0	0	14:15	
471	14:29	0	0	0	0	0	0	14:29	
471	14:40	1	0	0	0	0	0	14:40	
471	14:51	1	0	0	0	0	0	14:52	
471	15:05	0	0	0	0	0	0	15:05	
471	15:14	0	0	0	0	0	0	15:14	
471	15:28	0	0	0	0	0	0	15:28	
881	15:37	0	0	0	0	0	3	15:37	SCHOOL BUS
471	15:40	1	0	1	0	0	1	15:40	
471	15:57	0	0	0	0	0	0	15:57	
471	16:03	1	0	0	1	0	0	16:04	
471	16:16	0	0	0	0	0	0	16:16	
471	16:30	0	0	0	2	0	1	16:31	
471	16:38	0	0	0	0	0	0	16:39	
471	16:52	0	0	0	1	0	0	16:52	
471	17:06	0	0	0	0	0	0	17:06	
471	17:16	1	0	0	1	1	0	17:17	
471	17:31	0	0	0	0	0	0	17:31	
471	17:45	0	0	0	0	0	0	17:45	
471	18:08	0	0	0	0	0	0	18:08	
471	18:20	0	0	0	0	0	0	18:20	
471	18:35	0	0	0	0	0	0	18:35	
471	18:50	0	0	0	0	0	0	18:50	
Totals		26	3	19	11	2	5		

Summary by Timeband						
Arrival Timeband	Boarding			Alighting		
	Adult	Pensioner	Child	Adult	Pensioner	Child
0700-0800	7	0	10	1	0	0
0800-0900	2	0	5	0	0	0
0900-1000	2	0	0	0	0	0
1000-1100	2	0	0	1	0	0
1100-1200	2	1	0	1	1	0
1200-1300	2	0	1	0	0	0
1300-1400	3	2	2	2	0	0
1400-1500	3	0	0	1	0	0
1500-1600	1	0	1	0	0	4
1600-1700	1	0	0	4	0	1
1700-1800	1	0	0	1	1	0
1800-1900	0	0	0	0	0	0
Totals	26	3	19	11	2	5

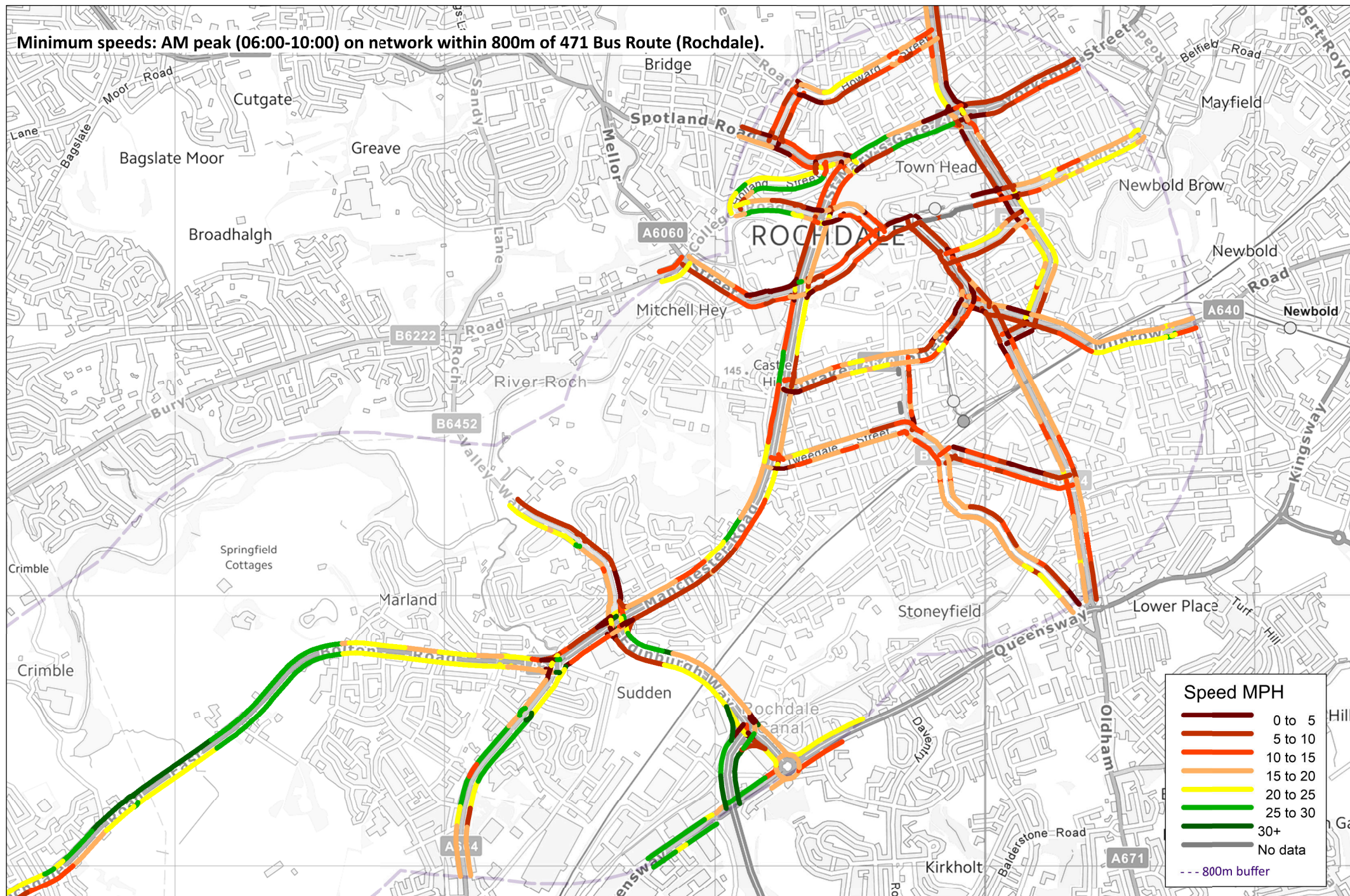
Appendix D

Bus Journey Time Data (Arcadis)

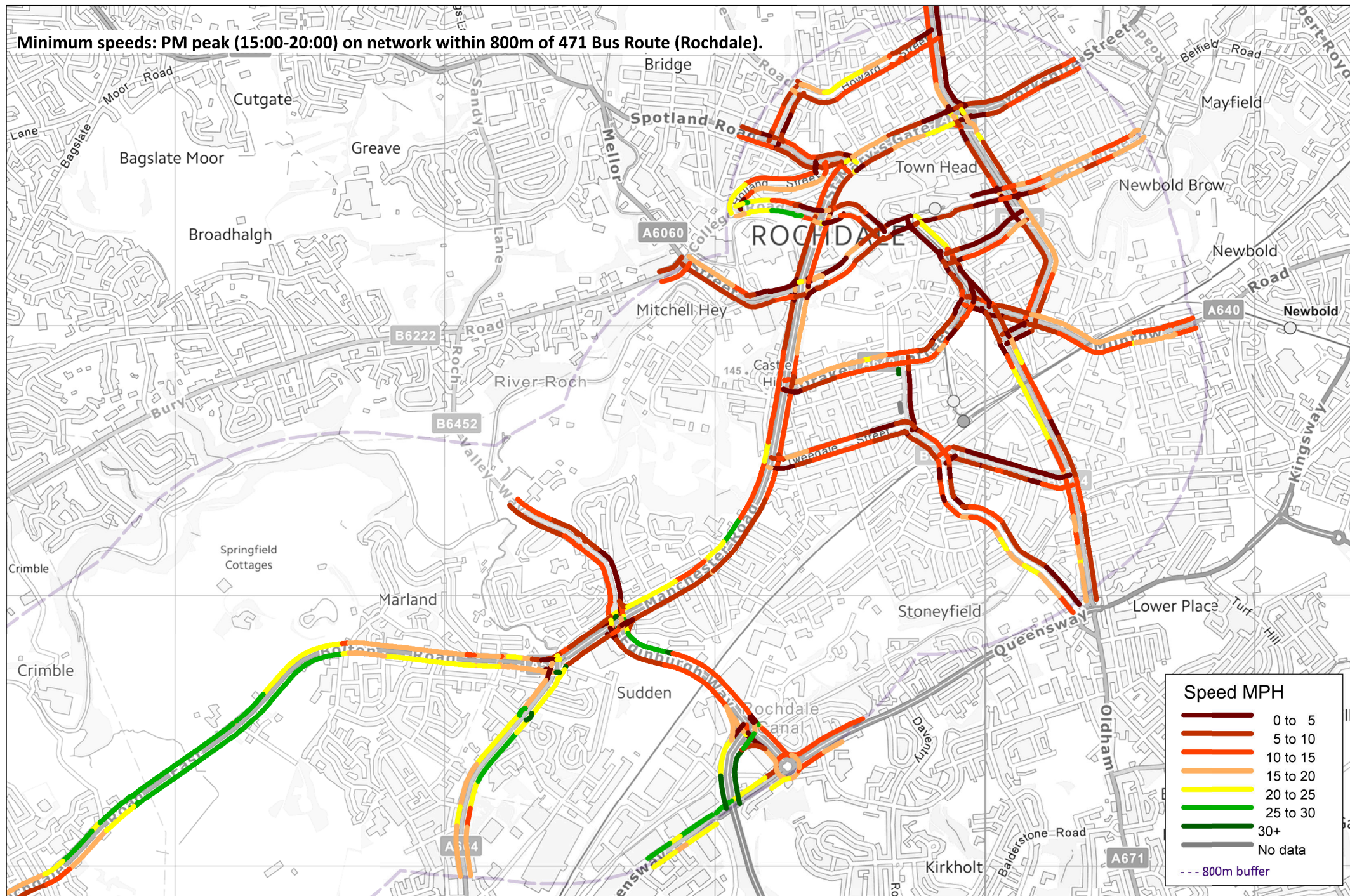




Minimum speeds: AM peak (06:00-10:00) on network within 800m of 471 Bus Route (Rochdale).



Minimum speeds: PM peak (15:00-20:00) on network within 800m of 471 Bus Route (Rochdale).



Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time 07:37	Delay 20 sec	Delay 0 sec	Arrival Time 07:39	Delay 0 sec	Delay 0 sec	Arrival Time 07:40	Delay 0 sec	Arrival Time 07:41	Delay 0 sec	Arrival Time 07:44	Delay 0 sec	Arrival Time 07:45	
	Depart Time 07:37			Depart Time 07:40			Depart Time 07:41		Depart Time 07:43		Depart Time 07:44			
	Arrival Time 08:03	Delay 18 sec	Delay 13 sec	Arrival Time 08:05	Delay 5 sec	Delay 7 sec	Arrival Time 08:07	Delay 0 sec	Arrival Time 08:09	Delay 03:52 mins	Arrival Time 08:12	Delay 46 sec	Arrival Time 08:15	
	Depart Time 08:04			Depart Time 08:05			Depart Time 08:07		Depart Time 08:09		Depart Time 08:13			
	Arrival Time 08:44	Delay 0 sec	Delay 0 sec	Arrival Time 08:45	Delay 6 sec	Delay 0 sec	Arrival Time 08:47	Delay 0 sec	Arrival Time 08:49	Delay 3:14 mins	Arrival Time 08:51	Delay 10 sec	Arrival Time 08:52	
	Depart Time 08:44			Depart Time 08:46			Depart Time 08:46		Depart Time 08:49		Depart Time 08:52			
	Arrival Time 11:06	Delay 0 sec	Delay 0 sec	Arrival Time 11:08	Delay 0 sec	Delay 0 sec	Arrival Time 11:10	Delay 0 sec	Arrival Time 11:10	Delay 31 sec	Arrival Time 11:11	Delay 0 sec	Arrival Time 11:11	
	Depart Time 11:06			Depart Time 11:09			Depart Time 11:10		Depart Time 11:10		Depart Time 11:11			
	Arrival Time 11:59	Delay 0 sec	Delay 8 sec	Arrival Time 12:01	Delay 0 sec	Delay 0 sec	Arrival Time 12:02	Delay 0 sec	Arrival Time 12:02	Delay 0 sec	Arrival Time 12:03	Delay 0 sec	Arrival Time 12:04	
	Depart Time 11:59			Depart Time 12:01			Depart Time 12:02		Depart Time 12:02		Depart Time 12:03			
	Arrival Time 12:24	Delay 35 sec	Delay 0 sec	Arrival Time 12:26	Delay 0 sec	Delay 0 sec	Arrival Time 12:27	Delay 0 sec	Arrival Time 12:28	Delay 24 sec	Arrival Time 12:29	Delay 0 sec	Arrival Time 12:29	
	Depart Time 12:25			Depart Time 12:26			Depart Time 12:27		Depart Time 12:28		Depart Time 12:29			
	Arrival Time	Delay	Delay	Arrival Time	Delay	Delay	Arrival Time	Delay	Arrival Time	Delay	Arrival Time	Delay	Arrival Time	
	Depart Time			Depart Time			Depart Time		Depart Time		Depart Time			

Arrival Time	Delay	Delay	Arrival Time	Delay	Delay	Arrival Time	Delay	Arrival Time	Delay	Arrival Time	Delay	Arrival Time
Depart Time			Depart Time			Depart Time		Depart Time		Depart Time		
Arrival Time	Delay	Delay	Arrival Time	Delay	Delay	Arrival Time	Delay	Arrival Time	Delay	Arrival Time	Delay	Arrival Time
Depart Time			Depart Time			Depart Time		Depart Time		Depart Time		

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time 07:53	Delay 25 sec	Arrival Time 07:54	Arrival Time 07:55	Delay 0 sec	Delay 0 sec	Delay 0 sec	Arrival Time 07:57	Delay 0 sec	Delay 18 sec	Arrival Time 07:58	
	Depart Time 07:53		Depart Time 07:55	Depart Time 07:55				Depart Time 07:57				
	Arrival Time 08:27	Delay 30 sec	Arrival Time 08:29	Arrival Time 08:29	Delay 8 sec	Delay 0 sec	Delay 0 sec	Arrival Time 08:31	Delay 3 sec	Delay 59 sec	Arrival Time 08:38	
	Depart Time 08:27		Depart Time 08:29	Depart Time 08:30				Depart Time 08:31				
	Arrival Time 09:02	Delay 1:26 mins	Arrival Time 09:04	Arrival Time 09:05	Delay 0 sec	Delay 0 sec	Delay 9 sec	Arrival Time 09:06	Delay 0 sec	Delay 50 sec	Arrival Time 09:08	
	Depart Time 09:02		Depart Time 09:04	Depart Time 09:05				Depart Time 09:06				
	Arrival Time 11:47	Delay 0 sec	Arrival Time 11:48	Arrival Time 11:48	Delay 0 sec	Delay 0 sec	Delay 0 sec	Arrival Time 11:49	Delay 0 sec	Delay 10 sec	Arrival Time 11:32	
	Depart Time 11:47		Depart Time 11:48	Depart Time 11:48				Depart Time 11:30				
	Arrival Time 12:15	Delay 13 sec	Arrival Time 12:16	Arrival Time 12:17	Delay 0 sec	Delay 0 sec	Delay 0 sec	Arrival Time 12:18	Delay 0 sec	Delay 7 sec	Arrival Time 12:20	
	Depart Time 12:15		Depart Time 12:16	Depart Time 12:17				Depart Time 12:18				
	Arrival Time	Delay	Arrival Time	Arrival Time	Delay	Delay	Delay	Arrival Time	Delay	Delay	Arrival Time	

12:38 Depart Time 12:38	1:11 mins	12:40 Depart Time 12:40	12:41 Depart Time 12:41	0 sec	0 sec	0 sec	12:42 Depart Time 12:42	6 sec	14 sec	12:44
Arrival Time	Delay	Arrival Time	Arrival Time	Delay	Delay	Delay	Arrival Time	Delay	Delay	Arrival Time
Depart Time		Depart Time	Depart Time				Depart Time			
Arrival Time	Delay	Arrival Time	Arrival Time	Delay	Delay	Delay	Arrival Time	Delay	Delay	Arrival Time
Depart Time		Depart Time	Depart Time				Depart Time			
Arrival Time	Delay	Arrival Time	Arrival Time	Delay	Delay	Delay	Arrival Time	Delay	Delay	Arrival Time
Depart Time		Depart Time	Depart Time				Depart Time			

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 07:38	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 07:40	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 07:41	Delay Min/Sec 0	Arrival Time clock 07:42	Delay Min/Sec 1.24	Arrival Time clock 07:45	Delay Min/Sec 0	Arrival Time clock 07:46	
	Depart Time clock 07:38			Depart Time clock 07:40			Depart Time clock 07:41		Depart Time clock 07:44		Depart Time clock 07:46			

comments lots of school kids boarded at tweeddale 2

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 08:32	Delay Min / Sec 0.3	Arrival Time clock 08:34	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 08:37	Delay Min/Sec 0	Delay Min/Sec 0.33	Arrival Time clock 08:38	
	Depart Time clock 08:33		Depart Time clock 08:35	Depart Time clock N/A				Depart Time clock 08:37				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweedale St Stop 1	Tweedale St PELICAN 2	Tweedale St Stop 2	Tweedale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 08:50	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 08:51	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 08:54	Delay Min/Sec 0	Arrival Time clock 08:55	Delay Min/Sec 0.16	Arrival Time clock 08:57	
	Depart Time clock 08:50			Depart Time clock 08:53			Depart Time clock N/A		Depart Time clock 08:55		Depart Time clock 08:56			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 09:22	Delay Min / Sec 0	Arrival Time clock 09:23	Arrival Time clock 09:24	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 09:25	Delay Min/Sec 0	Delay Min/Sec 0.15	Arrival Time clock 09:26	
	Depart Time clock 09:23		Depart Time clock 09:23	Depart Time clock 09:24				Depart Time clock 09:25				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 11:21	Delay Min / Sec 0	Delay Min/Sec 0.34	Arrival Time clock 11:23	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:25	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0.36	Arrival Time clock 11:27	Delay Min/Sec 0	Arrival Time clock 11:27	
	Depart Time clock 11:22			Depart Time clock 11:24			Depart Time clock 11:25		Depart Time clock N/A		Depart Time clock 11:27			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 11:46	Delay Min / Sec 2.36	Arrival Time clock N/A	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:50	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:51	
	Depart Time clock 11:46		Depart Time clock N/A	Depart Time clock N/A				Depart Time clock 11:51				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweedale St Stop 1	Tweedale St PELICAN 2	Tweedale St Stop 2	Tweedale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 12:00	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 12:01	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 12:03	Delay Min/Sec 0.14	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 12:05	
	Depart Time clock 12:00			Depart Time clock 12:02			Depart Time clock N/A		Depart Time clock 12:03		Depart Time clock N/A			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 12:13	Delay Min / Sec 1.45	Arrival Time clock 12:15	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 12:17	Delay Min/Sec 0	Delay Min/Sec 0.06	Arrival Time clock 12:19	
	Depart Time clock 12:13		Depart Time clock 12:16	Depart Time clock N/A				Depart Time clock 12:17				

START

END

START

											END
MCR RD Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
Arrival Time clock	Delay Min / Sec	Arrival Time clock	Arrival Time clock	Delay Min/Sec	Delay Min/Sec	Delay Min/Sec	Arrival Time clock	Delay Min/Sec	Delay Min/Sec	Arrival Time clock	
16:29	1.26	16:31	16:32	0	0	0	16:34	0.14	0.35	16:36	
Depart Time clock		Depart Time clock	Depart Time clock				Depart Time clock				
16:29		16:31	16:32				16:34				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweedale St Stop 1	Tweedale St PELICAN 2	Tweedale St Stop 2	Tweedale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	16:47													
	Arrival Time clock 16:47	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 16:49	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 16:51	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 2.04	Arrival Time clock 16:54	Delay Min/Sec 0	Arrival Time clock 16:55	
	Depart Time clock 16:48			Depart Time clock 16:50			Depart Time clock 16:51		Depart Time clock N/A		Depart Time clock 16:54			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 17:16	Delay Min / Sec 2.15	Arrival Time clock N/A	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 17:20	Delay Min/Sec 1.21	Delay Min/Sec 0.25	Arrival Time clock 17:23	
	Depart Time clock 17:16		Depart Time clock N/A	Depart Time clock N/A				Depart Time clock 17:20				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 07:26	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 07:27	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock NA	Delay Min/Sec 0	Arrival Time clock 07:30	Delay Min/Sec 1.25	Arrival Time clock 07:32	Delay Min/Sec 0	Arrival Time clock 07:33	
	Depart Time clock 07:27			Depart Time clock 07:29			Depart Time clock NA		Depart Time clock 07:30		Depart Time clock 07:32			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 08:09	Delay Min / Sec 1.23	Arrival Time clock 08:12	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 08:14	Delay Min/Sec 0.35	Delay Min/Sec 0	Arrival Time clock 08:16	
	Depart Time clock 08:10		Depart Time clock 08:12	Depart Time clock N/A				Depart Time clock 08:14				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweedale St Stop 1	Tweedale St PELICAN 2	Tweedale St Stop 2	Tweedale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 08:30	Delay Min / Sec 26	Delay Min/Sec 0	Arrival Time clock 08:33	Delay Min/Sec 0.03	Delay Min/Sec 0	Arrival Time clock 08:34	Delay Min/Sec 0	Arrival Time clock 08:35	Delay Min/Sec 1.27	Arrival Time clock 08:38	Delay Min/Sec 3.1	Arrival Time clock 08:42	
	Depart Time clock 08:32			Depart Time clock 08:33			Depart Time clock 08:34		Depart Time clock 08:36		Depart Time clock 08:39			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 09:07	Delay Min / Sec 0.24	Arrival Time clock 09:08	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 09:10	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 09:12	
	Depart Time clock 09:07		Depart Time clock 09:09	Depart Time clock N/A				Depart Time clock 09:11				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweedale St Stop 1	Tweedale St PELICAN 2	Tweedale St Stop 2	Tweedale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 10:58	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 11:00	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 11:01	Delay Min/Sec 1.57	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 11:05	
	Depart Time clock 10:59			Depart Time clock 11:00			Depart Time clock N/A		Depart Time clock 11:02		Depart Time clock N/A			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 11:47	Delay Min / Sec 1.45	Arrival Time clock 11:49	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:51	Delay Min/Sec 0.18	Delay Min/Sec 0.16	Arrival Time clock 11:53	
	Depart Time clock 11:47		Depart Time clock 11:50	Depart Time clock N/A				Depart Time clock 11:52				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweedale St Stop 1	Tweedale St PELICAN 2	Tweedale St Stop 2	Tweedale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 11:59	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 12:01	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 12:03	Delay Min/Sec 34	Arrival Time clock N/A	Delay Min/Sec	Arrival Time clock	
	Depart Time clock 12:00			Depart Time clock 12:02			Depart Time clock N/A		Depart Time clock 12:04		Depart Time clock N/A			

Inbound

START												END
	MCR Rd Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 12:18	Delay Min / Sec 0.06	Arrival Time clock N/A	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0.05	Arrival Time clock 12:20	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 12:22	
	Depart Time clock 12:19		Depart Time clock N/A	Depart Time clock N/A				Depart Time clock 12:21				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweedale St Stop 1	Tweedale St PELICAN 2	Tweedale St Stop 2	Tweedale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 12:28	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 12:30	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 12:31	Delay Min/Sec 0.2	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 12:33	
	Depart Time clock 12:29			Depart Time clock 12:31			Depart Time clock N/A		Depart Time clock 12:32		Depart Time clock N/A			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweedale St Junction	Tweedale St Stop 3	Tweedale St Stop 4	Tweedale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 12:51	Delay Min / Sec 0.37	Arrival Time clock 12:53	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 12:55	Delay Min/Sec 0	Delay Min/Sec 1.12	Arrival Time clock 12:57	
	Depart Time clock 12:52		Depart Time clock 12:53	Depart Time clock N/A				Depart Time clock 12:55				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 10:56	Delay Min/Sec 0	Delay Min/Sec 7 sec	Arrival Time clock 10:58	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 13 sec	Arrival Time clock 11:01	Delay Min/Sec 18 sec	Arrival Time clock 11:03	
	Depart Time clock 10:57			Depart Time clock 10:59			Depart Time clock N/A		Depart Time clock N/A		Depart Time clock 11:01			

Comment: Bus cannot get to the left turn if a few cars are queing in right turn lane

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 11:13	Delay Min / Sec 0	Arrival Time clock N/A	Arrival Time clock 11:14	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:15	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:17	
	Depart Time clock 11:13		Depart Time clock N/A	Depart Time clock 11:14				Depart Time clock 11:16				

Outbound

START

												
Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2
Arrival Time clock 11:37	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:39	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:41	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 11:43
Depart Time clock 11:38			Depart Time clock 11:40			Depart Time clock 11:41		Depart Time clock N/A		Depart Time clock N/A		

END

Inbound

START

										
MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop
Arrival Time clock 11:56	Delay Min / Sec 9 sec	Arrival Time clock N/A	Arrival Time clock 11:57	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:58	Delay Min/Sec 0	Delay Min/Sec 21 sec	Arrival Time clock 12:00
Depart Time clock 11:56		Depart Time clock N/A	Depart Time clock 11:57				Depart Time clock 11:59			

END

Comment: Van Parked blocking road between pelican crossings - 5 sec delay

Outbound

START

												
Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2
Arrival Time clock 12:15	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 12:16	Delay Min/Sec 4 sec	Delay Min/Sec 0	Arrival Time clock 12:17	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 1 Min 8 sec	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 12:19
Depart Time clock 12:15			Depart Time clock 12:16			Depart Time clock 12:17		Depart Time clock N/A		Depart Time clock N/A		

END

Inbound

START

										
MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop
Arrival Time clock 12:50	Delay Min / Sec 1 Min 27 sec	Arrival Time clock 12:53	Arrival Time clock 12:53	Delay Min/Sec 0	Delay Min/Sec 15 sec	Delay Min/Sec 0	Arrival Time clock 12:55	Delay Min/Sec 0	Delay Min/Sec 21 sec	Arrival Time clock 12:57
Depart Time clock 12:50		Depart Time clock 12:53	Depart Time clock 12:54				Depart Time clock 12:56			

END

Outbound

START

												
Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2
Arrival Time clock 16:01	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 16:02	Delay Min/Sec 45 sec	Delay Min/Sec 0	Arrival Time clock 16:03	Delay Min/Sec 1.53	Arrival Time clock N/A	Delay Min/Sec 1.45	Arrival Time clock N/A	Delay Min/Sec 10 sec	Arrival Time clock 16:09
Depart Time clock 16:01			Depart Time clock 16:02			Depart Time clock 16:03		Depart Time clock N/A		Depart Time clock N/A		

END

Inbound

START

										
MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop
Arrival Time clock 16:28	Delay Min / Sec 1.38	Arrival Time clock 16:30	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 6 sec	Delay Min/Sec 0	Arrival Time clock 16:32	Delay Min/Sec 0	Delay Min/Sec 21 sec	Arrival Time clock 16:35
Depart Time clock 16:28		Depart Time clock 16:31	Depart Time clock N/A				Depart Time clock 16:33			

END

Outbound														
START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 17:25	Delay Min/Sec 8sec	Delay Min/Sec 0	Arrival Time clock 17:27	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 45 sec	Arrival Time clock 17:30	Delay Min/Sec 1.15	Arrival Time clock 17:32	Delay Min/Sec 0	Arrival Time clock 17:34	
	Depart Time clock 17:25			Depart Time clock 17:28			Depart Time clock N/A		Depart Time clock 17:31		Depart Time clock 17:33			

Inbound													
START												END	
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop		
	Arrival Time clock 17:57	Delay Min / Sec 2.11	Arrival Time clock 18:00	Arrival Time clock 18:01	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 18:03	Delay Min/Sec 0	Delay Min/Sec 32 sec	Arrival Time clock 18:06		Comment: Extremely busy and waiting at the bus stop for over 20 mins
	Depart Time clock 17:57		Depart Time clock 18:01	Depart Time clock 18:02				Depart Time clock 18:05					

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 07:37	Delay Min / Sec 10 sec	Delay Min/Sec 0	Arrival Time clock 07:39	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 07:40	Delay Min/Sec 0	Arrival Time clock 07:41	Delay Min/Sec 24 sec	Arrival Time clock 07:44	Delay Min/Sec 0	Arrival Time clock 07:46	
	Depart Time clock 07:38			Depart Time clock 07:40			Depart Time clock 07:41		Depart Time clock 07:43		Depart Time clock 07:44			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 07:50	Delay Min / Sec 0	Arrival Time clock N/A	Arrival Time clock 07:52	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 07:53	Delay Min/Sec 0	Delay Min/Sec 40 sec	Arrival Time clock 07:55	
	Depart Time clock 07:51		Depart Time clock N/A	Depart Time clock 07:52				Depart Time clock 07:53				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 08:29	Delay Min / Sec 23 sec	Delay Min/Sec 0	Arrival Time clock 08:31	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 8 sec	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 08:34	
	Depart Time clock 08:30			Depart Time clock 08:31			Depart Time clock N/A		Depart Time clock N/A		Depart Time clock N/A			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 08:44	Delay Min / Sec 38 sec	Arrival Time clock 08:46	Arrival Time clock 08:46	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 08:48	Delay Min/Sec 0	Delay Min/Sec 10 sec	Arrival Time clock 08:49	
	Depart Time clock 08:45		Depart Time clock 08:46	Depart Time clock 08:47				Depart Time clock 08:48				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 08:57	Delay Min / Sec 24 sec	Delay Min/Sec 25 sec	Arrival Time clock 09:00	Delay Min/Sec 6 sec	Delay Min/Sec 0	Arrival Time clock 09:02	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 16 sec	Arrival Time clock 09:04	
	Depart Time clock 08:58			Depart Time clock 09:01			Depart Time clock 09:02		Depart Time clock N/A		Depart Time clock N/A			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 09:08	Delay Min / Sec 50 sec	Arrival Time clock 09:10	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 09:12	Delay Min/Sec 14 sec	Delay Min/Sec 6 sec	Arrival Time clock 09:13	
	Depart Time clock 09:09		Depart Time clock 09:11	Depart Time clock N/A				Depart Time clock 09:12				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 11:22	Delay Min / Sec 7 sec	Delay Min/Sec 14 sec	Arrival Time clock 11:24	Delay Min/Sec 6 sec	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 11:27	Delay Min/Sec 0	Arrival Time clock 11:29	
	Depart Time clock 11:23			Depart Time clock 11:25			Depart Time clock N/A		Depart Time clock N/A		Depart Time clock 11:28			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 11:34	Delay Min / Sec 48 sec	Arrival Time clock N/A	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 11:37	Delay Min/Sec 0	Delay Min/Sec 8 sec	Arrival Time clock 11:38	
	Depart Time clock 11:34		Depart Time clock N/A	Depart Time clock N/A				Depart Time clock 11:37				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 11:44	Delay Min / Sec 0	Delay Min/Sec 5 sec	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 5 sec	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 3 sec	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 11:48	
	Depart Time clock 11:45			Depart Time clock N/A			Depart Time clock N/A		Depart Time clock N/A		Depart Time clock N/A			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 12:10	Delay Min / Sec 8 sec	Arrival Time clock N/A	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 12:12	Delay Min/Sec 0	Delay Min/Sec 30 sec	Arrival Time clock 12:14	
	Depart Time clock 12:10		Depart Time clock N/A	Depart Time clock N/A				Depart Time clock 12:13				

Outbound

START													
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2
	Arrival Time clock 12:15	Delay Min / Sec 23 sec	Delay Min/Sec 0	Arrival Time clock 12:17	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 12:19	Delay Min/Sec 28 sec	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 12:22
	Depart Time clock 12:16			Depart Time clock 12:18			Depart Time clock N/A		Depart Time clock 12:20		Depart Time clock N/A		

Comment: Multiple times lorrys and cars were parked on tweeddale road can sometimes cause a slight delay

END

Inbound

START											
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop
	Arrival Time clock 12:43	Delay Min / Sec 6 sec	Arrival Time clock 12:44	Arrival Time clock 12:45	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 12:46	Delay Min/Sec 0	Delay Min/Sec 27 sec	Arrival Time clock 12:48
	Depart Time clock 12:43		Depart Time clock 12:45	Depart Time clock 12:45				Depart Time clock 12:47			

END

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 16:13	Delay Min / Sec 0	Delay Min/Sec 0	Arrival Time clock 16:14	Delay Min/Sec 0	Delay Min/Sec 20 sec	Arrival Time clock 16:16	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 55 sec	Arrival Time clock 16:19	Delay Min/Sec 13 sec	Arrival Time clock 16:20	
	Depart Time clock 16:13			Depart Time clock 16:14			Depart Time clock 16:16		Depart Time clock N/A		Depart Time clock 16:19			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 16:32	Delay Min / Sec 1 min	Arrival Time clock N/A	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 3 sec	Delay Min/Sec 0	Arrival Time clock 16:35	Delay Min/Sec 0	Delay Min/Sec 26 sec	Arrival Time clock 16:37	
	Depart Time clock 16:32		Depart Time clock N/A	Depart Time clock N/A				Depart Time clock 16:36				

Outbound

START														END
	Drake St Stop	Drake St / Richard St Junction	Station Rd / Maclure Rd Junction	Station Stop	Station Rd / Milkstone Rd Junction	Milkstone Rd PELICAN 1	Tweeddale St Stop 1	Tweeddale St PELICAN 2	Tweeddale St Stop 2	Tweeddale St / MCR Rd Junction	MCR Rd Stop 1	MCR Rd / Dunstar Rd Junction	MCR Rd Stop 2	
	Arrival Time clock 17:00	Delay Min / Sec 0	Delay Min/Sec 25 sec	Arrival Time clock 17:01	Delay Min/Sec 3 sec	Delay Min/Sec 11 sec	Arrival Time clock 17:04	Delay Min/Sec 0	Arrival Time clock N/A	Delay Min/Sec 1 min 30 sec	Arrival Time clock N/A	Delay Min/Sec 0	Arrival Time clock 17:08	
	Depart Time clock 17:00			Depart Time clock 17:03			Depart Time clock 17:04		Depart Time clock N/A		Depart Time clock N/A			

Inbound

START												END
	MCR RD Stop 1	MCR Rd / Tweeddale St Junction	Tweeddale St Stop 3	Tweeddale St Stop 4	Tweeddale St PELICAN 2	Milkstone Rd PELICAN 1	Station Rd / Milkstone Rd Junction	Station Stop	Station Rd / Maclure Rd Junction	Maclure Rd / Drake St Junction	Drake St Stop	
	Arrival Time clock 17:19	Delay Min / Sec 0	Arrival Time clock N/A	Arrival Time clock N/A	Delay Min/Sec 0	Delay Min/Sec 0	Delay Min/Sec 0	Arrival Time clock 17:22	Delay Min/Sec 0	Delay Min/Sec 6 sec	Arrival Time clock 17:24	
	Depart Time clock 17:19		Depart Time clock N/A	Depart Time clock N/A				Depart Time clock 17:23				

Appendix E

TfGM Rochdale Town Centre Aimsun Report – Closure Station Road

Client **Rochdale Council**
Report **TfGM HFAS Report 2158**
Project **Rochdale Station Square**
Subject **Rochdale Station Square Testing**

This note sets out the foundations for the testing of the impact of the proposed Rochdale Station Square and summarises the results of the scheme testing.

This Note **Rep-2158_Rochdale-Station-square_v1.pdf**

Originator Alba Vila Salgado

Version Comments

1.0

	Check /
Date	Approve
08/12/2022	Ed Atkinson

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Dec 2022 Rochdale Council

FAO

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1 Introduction

This note summarises the results from testing the traffic impacts of the Rochdale Station Square scheme. Rochdale Council provided a scheme plan that shows the routes that are severed by the construction of the public square and is shown below in Figure 1.

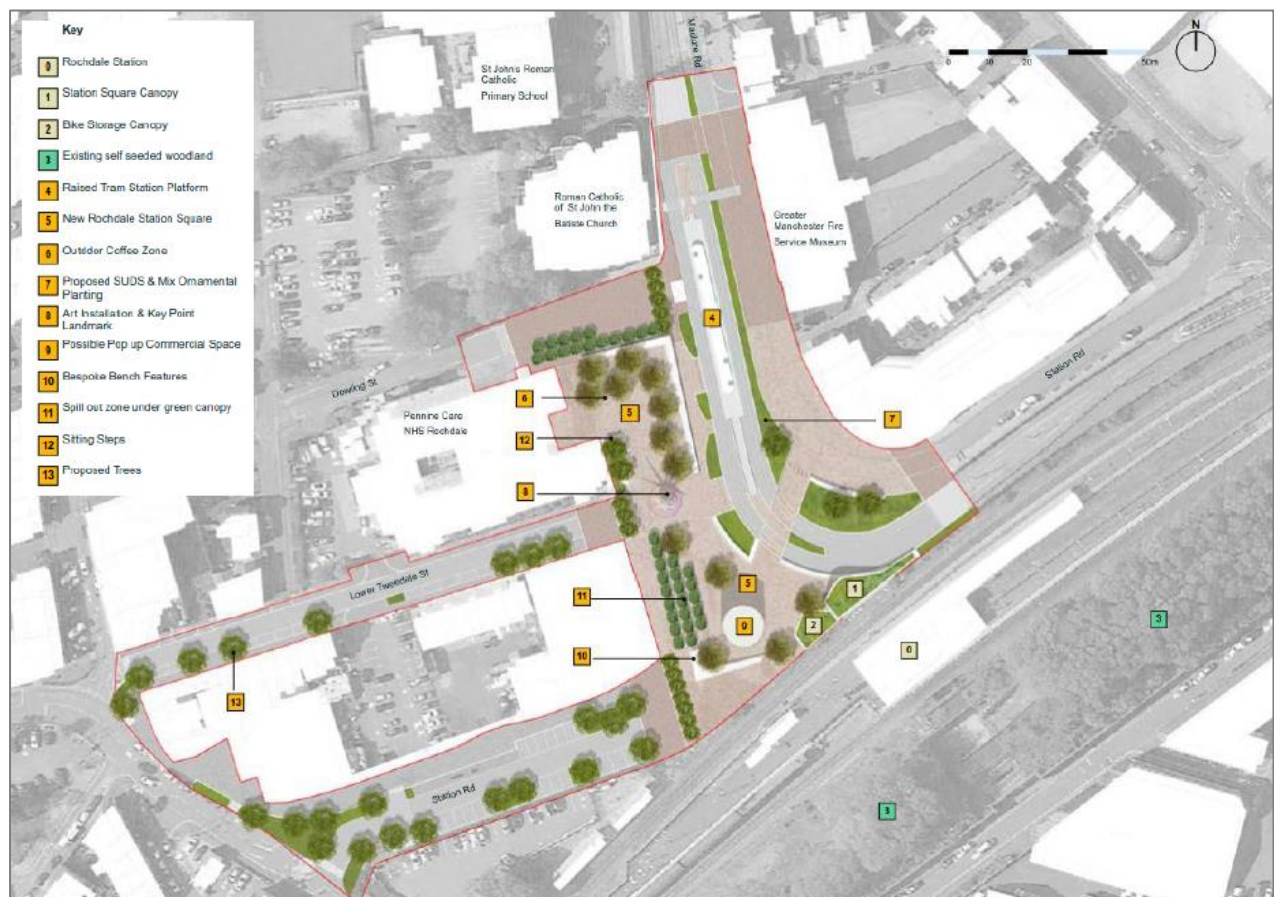


Figure 1 - Location of the proposed Rochdale Station public square

The streets severed by the scheme are as follows:

- Dowling St
- Lower Tweeddale St
- Station Rd

2 Methodology

For scheme testing, an Aimsun base model of the Rochdale TC was used. This model was developed for the morning (08:00-09:00) and the evening (17:00-18:00) peak hours to test the impact of other schemes. It was validated to a 2019 pre-Covid base year in accordance with TAG (Transport Analysis Guidance) for link counts, turn counts and journey times.

Given the simplified network in the existing model, an extra link representing Dowling St was added to allow an alternative entrance for the residential area close to Rochdale Station. This was done in advance of the inclusion of the scheme in order to allow a like for like comparison. The original base model and the

modified base model that includes the new link are shown below and is included in both the without-scheme (Do Nothing) and with-scheme (Do Something) scenarios.



Figure 2 - Original Base model

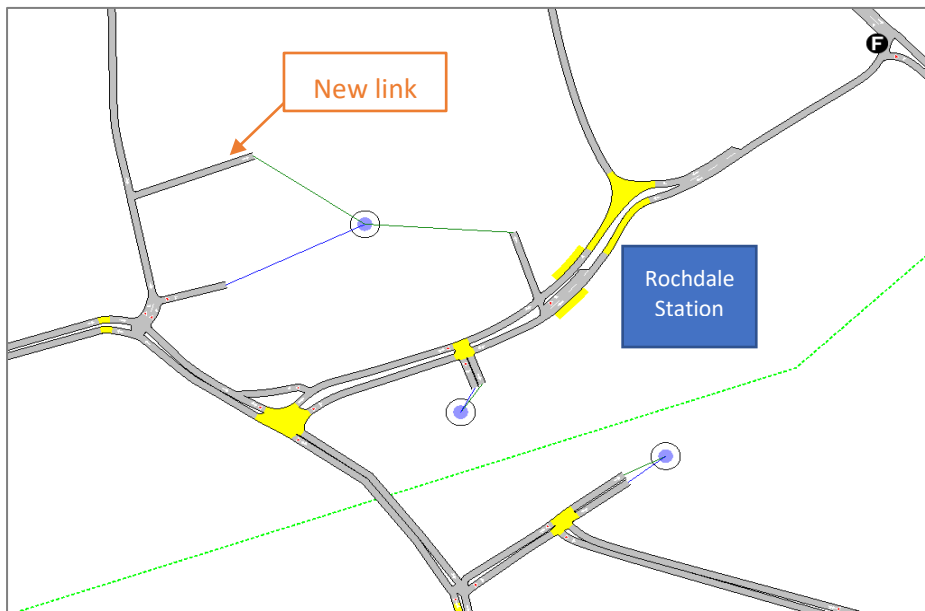


Figure 3 - Modified Base model or Do Nothing

Therefore, both the scenarios used for comparison, Do Nothing (DN) and Do Something (DM), include Dowling St in the modelled networks.

A 2025 forecast year was used for comparison. The demand for 2025 was calculated by applying growth factors - from TEMPro 7.2c - to the 2019 Base Demand and these can be seen in the table below.

Table 1 - TEMPro 7.2c Growth Factors

Period	Factor 2019 to 2025
AM	1.066
PM	1.064

3 Modelling Results

This section outlines the modelling results under the following headings:

- Traffic flow changes on links between the DN and the DS.
- Journey time changes along key routes between the DN and the DS.

3.1 Traffic Flow Changes

Figure 4 and Figure 6 show the change in traffic flow (in vehicles) between the DN and DS across the modelled hour in the morning and evening peaks respectively. Figure 5 and Figure 7 show a close-up view of Figures 4 and 6, respectively.

The flow changes are shown as bandwidths (which are proportional to the change in traffic) where green bands represent an increase and red bands represents a decrease in traffic flow on a link. Specific quantities are included on the diagrams for changes of greater than +/-25 vehicles/hr.

It should be noted that, due to the geometry changes, no bandwidth is shown in the direct area in which the scheme is applied, although this can be inferred from the entering and exiting link changes.

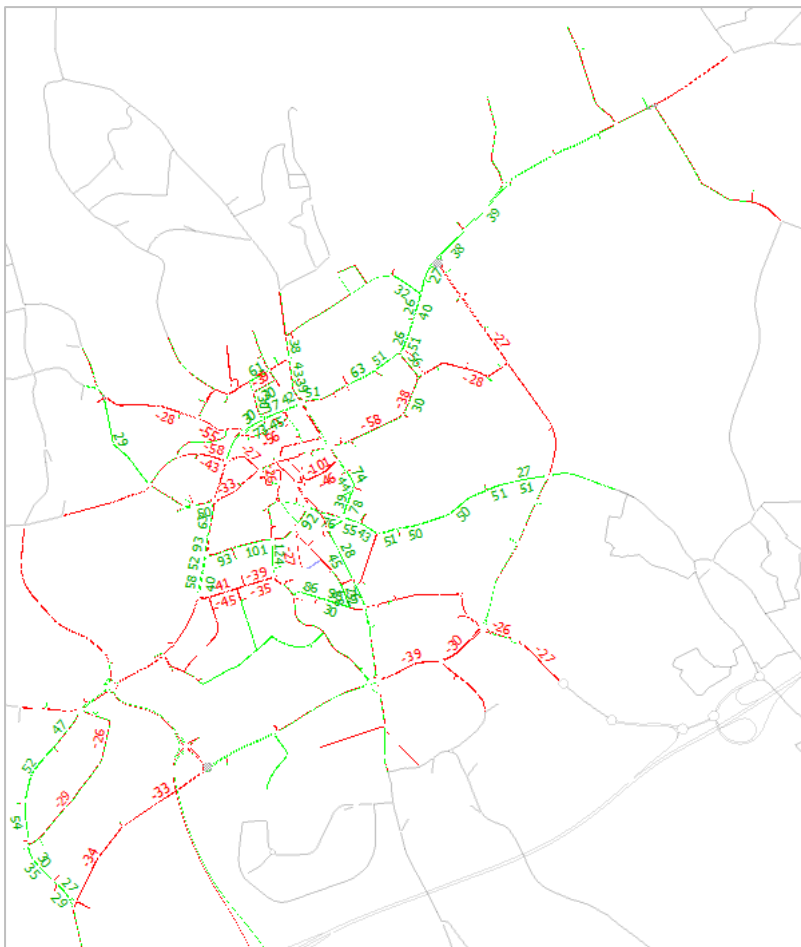


Figure 4 - Traffic flow comparison between the DN and DS scenarios – AM



Figure 5 - Traffic flow comparison between the DN and DS scenarios – AM – Detail

In the morning peak, Figure 4 and Figure 5 suggests – as expected – that the severance of Station Rd by the public square would result in rerouting of traffic in first place around Manchester Rd and Oldham Road and subsequently in the rest of the network. The main impacts are:

- Increase of traffic in both directions on Manchester Rd between Tweeddale St and Drake St.
- Increase of traffic going northbound and southbound on Oldham Rd.
- Increase of traffic southbound on Milkstone Rd.
- Increase of traffic on Durham St in both directions.
- Increase of traffic going westbound on Drake St.
- Decrease of traffic generally in both direction on Richard St.
- Increase of traffic on Lincoln St in both directions.
- Decrease of traffic on Maclure Rd.

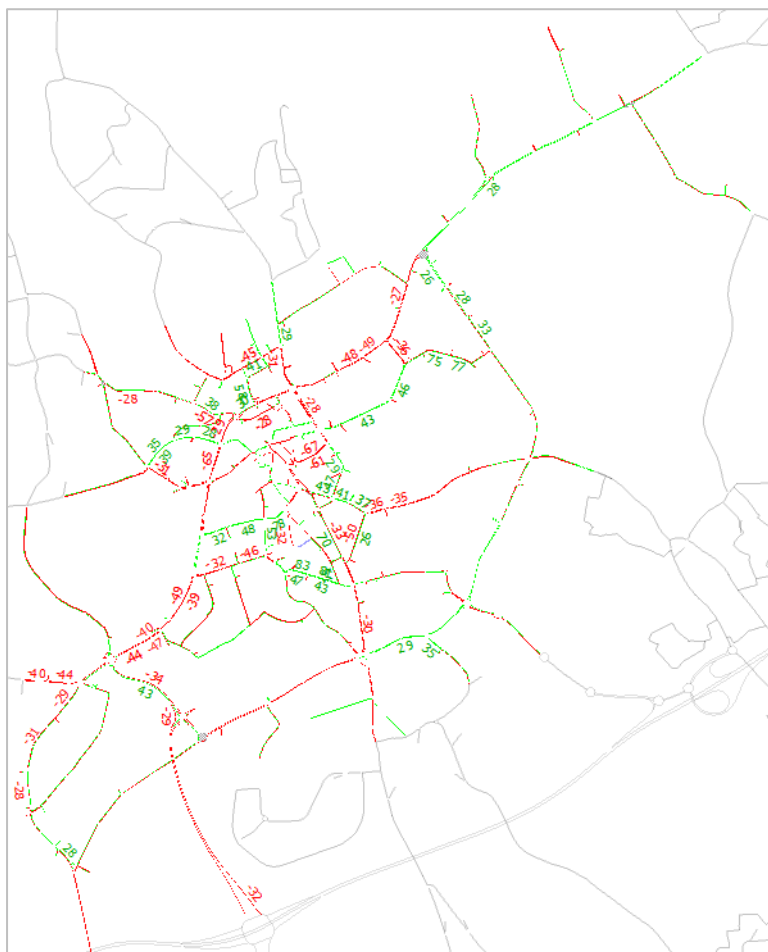


Figure 6 - Traffic flow comparison between the DN and DS scenarios – PM



Figure 7 - Traffic flow comparison between the DN and DS scenarios – PM - Detail

In the evening peak, Figure 6 and Figure 7 show a general increase of traffic in the northern part of the town centre and a general decrease in the southern part as a result of the rerouting caused by the inclusion of the public square. The main changes in traffic flow in the area are as follows:

- Decrease of traffic on Maclure Rd and Richard St.
- Increase of traffic in both directions on Manchester Rd between Tweedale St and Drake St.
- Decrease of traffic going southbound on Oldham Rd.
- Increase of traffic going northbound on Oldham Rd between Fishwick St and Milnrow Rd.
- Increase of traffic on Durham St in both directions.

Appendix A includes detailed diagrams showing the traffic flow and traffic flow changes in the AM and PM peaks in both DN and DS scenarios for the following junctions and roads:

- Richard Street
- Station Road (east)
- Maclure Road
- Drake St
- Milkstone Road
- Lincoln Close
- Tweedale Street
- Drake St / Maclure Rd
- Lincoln Close / Oldham Rd
- Tweedale St / Manchester Road
- Drake St / Manchester Road

3.2 Journey Time Changes

The travel time for key routes in the area was compared between the DN and DS. The routes are shown in Figure 8 and the comparisons are shown in

Table 2 and Table 3 respectively.

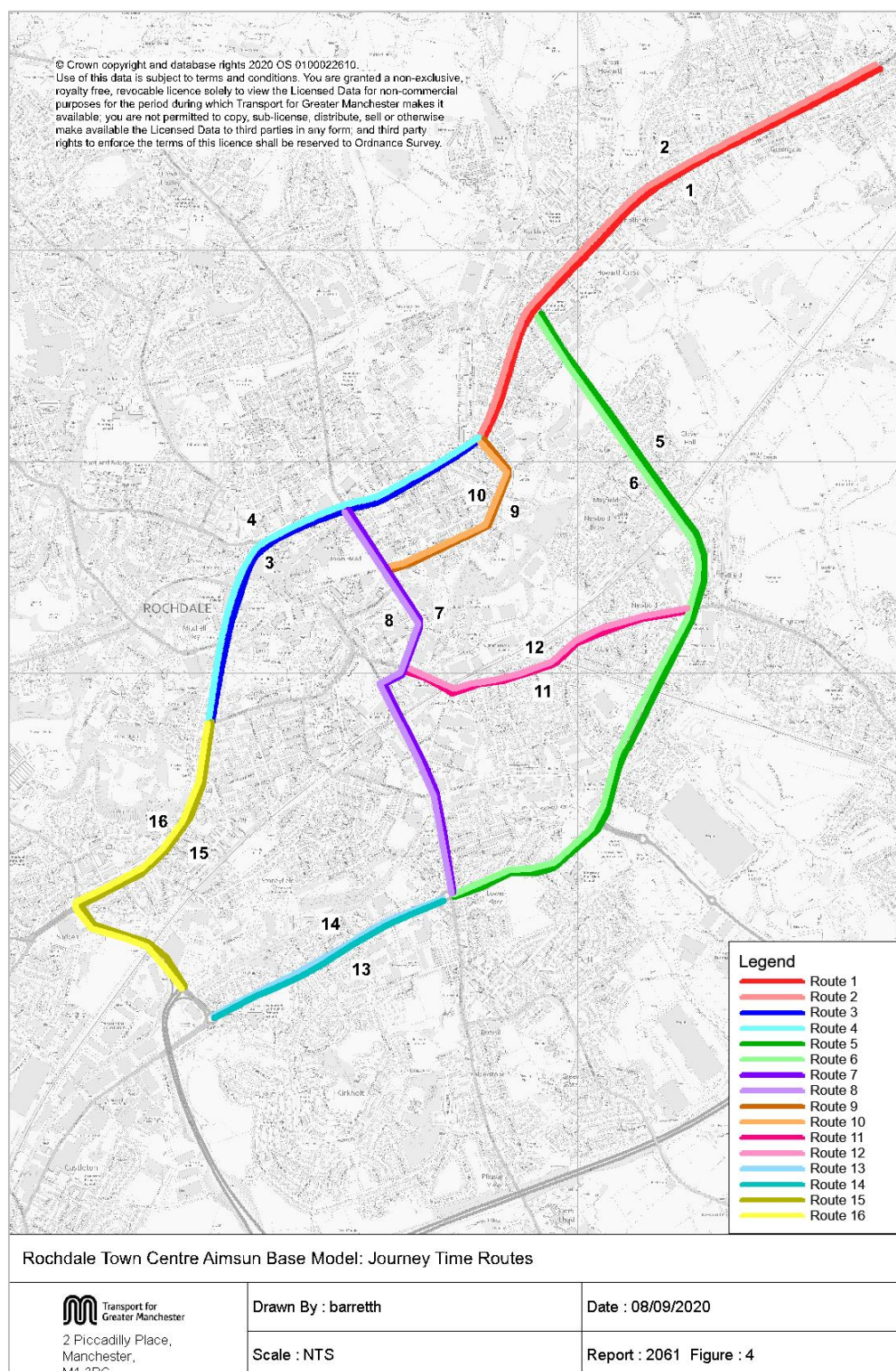


Figure 8 - Journey Time routes used in comparison between the DN and DS.

Table 2 – Journey Time comparison – AM

2025 AM		Journey Time (s)		Difference	
		DN	DS	Abs (s)	%
Route 1	A58 Halifax Road SW Bound	333	402	69	21%
Route 2	A58 Halifax Road NE Bound	341	332	-9	-3%
Route 3	A58 Yorkshire St/St Mary's Gate SW bound	410	382	-28	-7%
Route 4	A58 Yorkshire St/St Mary's Gate NE bound	427	455	28	7%
Route 5	Albert Royds/ Kingsway S Bound	608	561	-47	-8%
Route 6	Albert Royds/ Kingsway N Bound	555	528	-26	-5%
Route 7	John St/Oldham Rd SB	309	366	58	19%
Route 8	John St/Oldham Rd NB	370	415	45	12%
Route 9	Entwistle St SW Bound	133	137	4	3%
Route 10	Entwistle St NE Bound	382	254	-129	-34%
Route 11	Milnrow Road WB	158	152	-6	-4%
Route 12	Milnrow Road EB	272	237	-35	-13%
Route 13	Queensway SW Bound	111	112	1	1%
Route 14	Queensway NE Bound	125	127	2	2%
Route 15	Manchester Road SW bound + Edinburgh Way SB	300	291	-9	-3%
Route 16	Manchester Road NE bound + Edinburgh Way NB	298	319	21	7%

Table 2 shows that the main differences in journey times in the Town Centre after the inclusion of the proposed public square are located on:

- Route 1 with an increase of 21% (69s).
- Route 7 with an increase of 19% (58s).
- Route 10 with a decrease of 34% (129s).

Table 3 - Journey Time comparison - PM

2025 PM		Journey Time (s)		Difference	
		DN	DS	Abs (s)	%
Route 1	A58 Halifax Road SW Bound	276	288	13	5%
Route 2	A58 Halifax Road NE Bound	403	413	11	3%
Route 3	A58 Yorkshire St/St Mary's Gate SW bound	342	340	-2	-1%
Route 4	A58 Yorkshire St/St Mary's Gate NE bound	415	467	51	12%
Route 5	Albert Royds/ Kingsway S Bound	509	514	5	1%
Route 6	Albert Royds/ Kingsway N Bound	594	505	-89	-15%
Route 7	John St/Oldham Rd SB	372	352	-20	-5%
Route 8	John St/Oldham Rd NB	352	380	28	8%
Route 9	Entwistle St SW Bound	120	130	11	9%
Route 10	Entwistle St NE Bound	662	358	-304	-46%
Route 11	Milnrow Road WB	144	163	19	13%
Route 12	Milnrow Road EB	360	319	-41	-11%
Route 13	Queensway SW Bound	101	101	0	0%
Route 14	Queensway NE Bound	121	123	1	1%
Route 15	Manchester Road SW bound + Edinburgh Way SB	249	315	66	26%
Route 16	Manchester Road NE bound + Edinburgh Way NB	224	231	7	3%

In the evening peak, Table 3 shows that Route 10 stands out as in the AM:

- Route 6 shows a decrease of 15% (89s).
- Route 10 experiences a high decrease in journey time of 46% (304s).
- The travel time in Route 15 shows an increase of 26% (66s) in relation to the DN scenario.

4 Conclusions

The comparison of journey times and flows between the DN and DS have shown that the proposed Rochdale Station Square scheme would result in the rerouting of some traffic in the area and subsequently (due to changes in the distribution of traffic) in the wider network.

The main impact of the construction of the public square is seen on the Manchester Rd, Oldham Rd and Durham St.

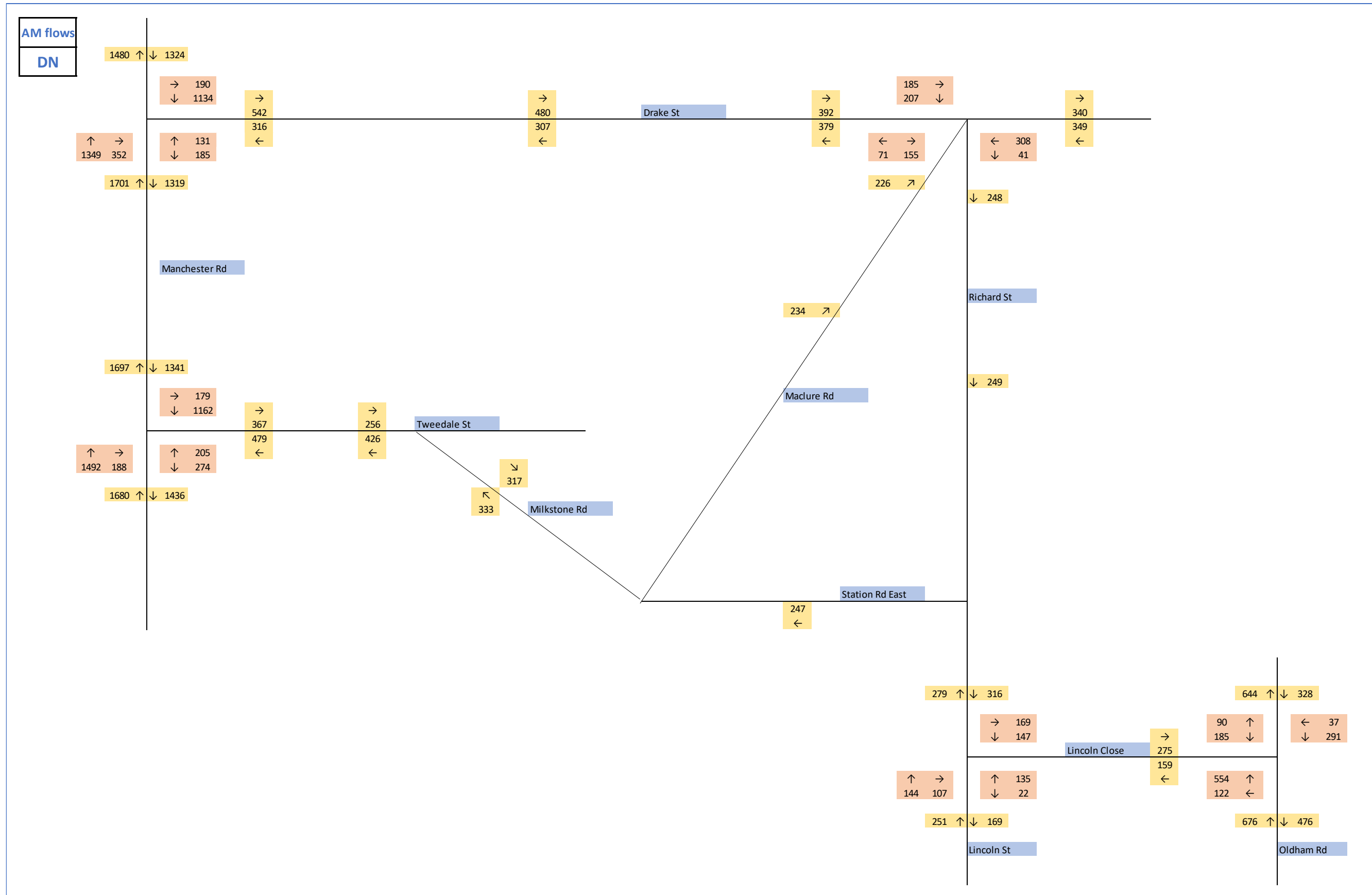
The key points to take away from the scenario comparisons in the 2025 forecast year are:

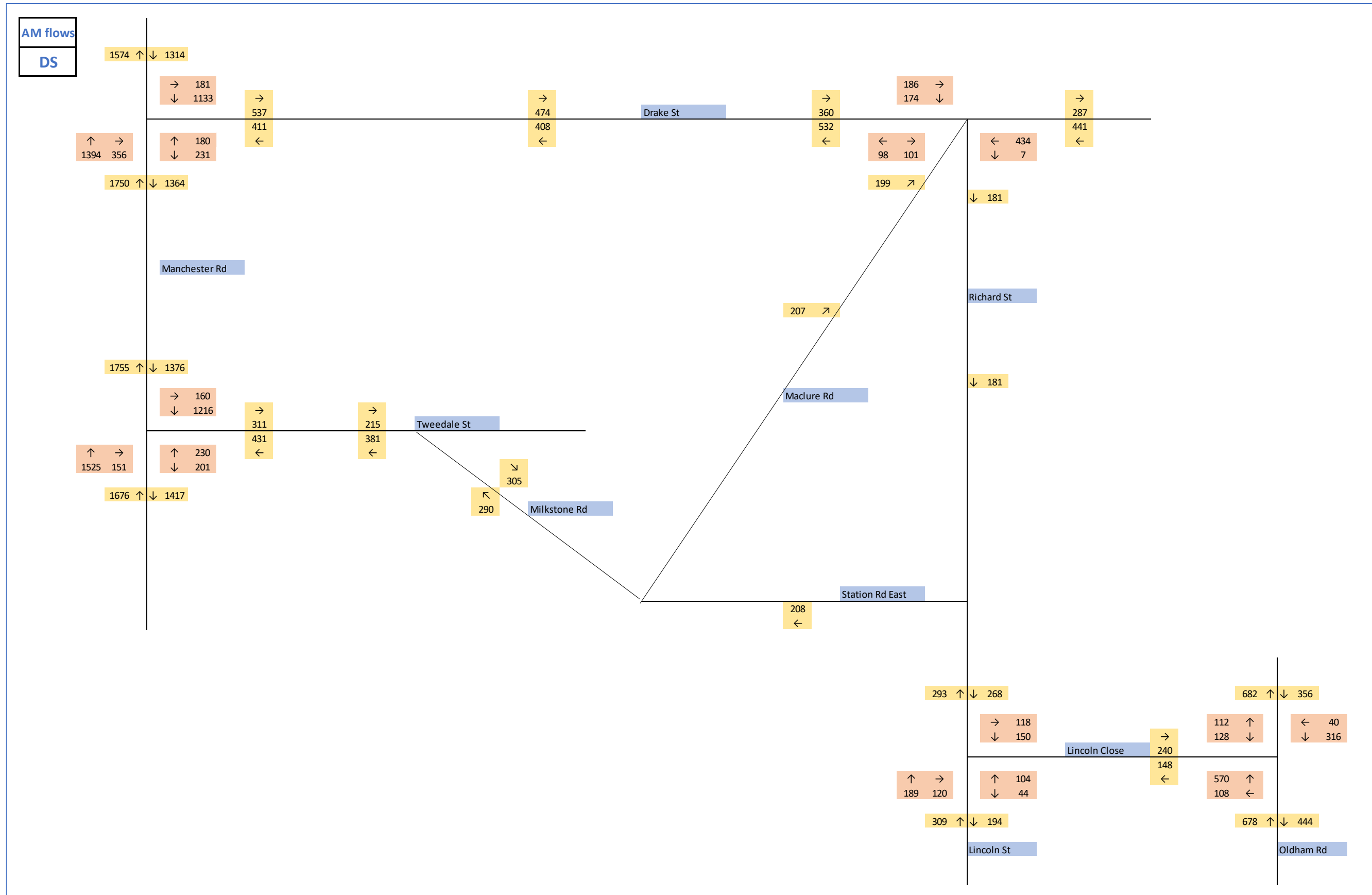
- Around 30 vehicles are diverted from Maclure Rd in both peak hours.
- The traffic diverted from Richard St is around 70 and 40 vehicles in the morning and evening peaks respectively.

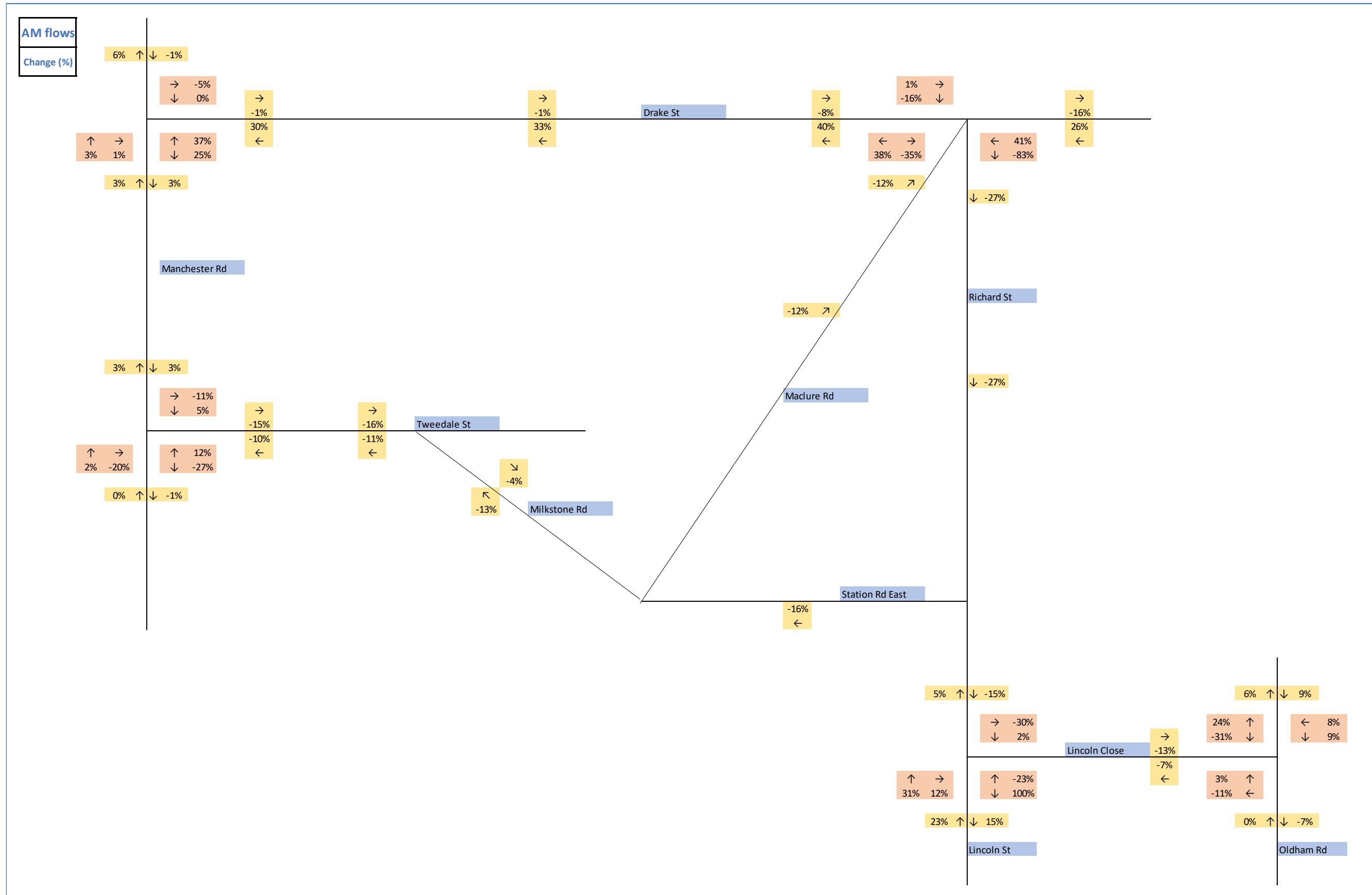
- Around 40 and 15 vehicles are diverted from Station Rd East in the morning and evening peaks respectively.
- There is an increase of over 100 vehicles using Drake St westbound in the morning peak and over 50 in the evening peak.
- Manchester Rd shows an increase of around 50 vehicles northbound and 40 vehicles southbound in the morning peak. In the evening peak, the increase in traffic is less than 20 vehicles and less than 10 vehicles northbound and southbound respectively.

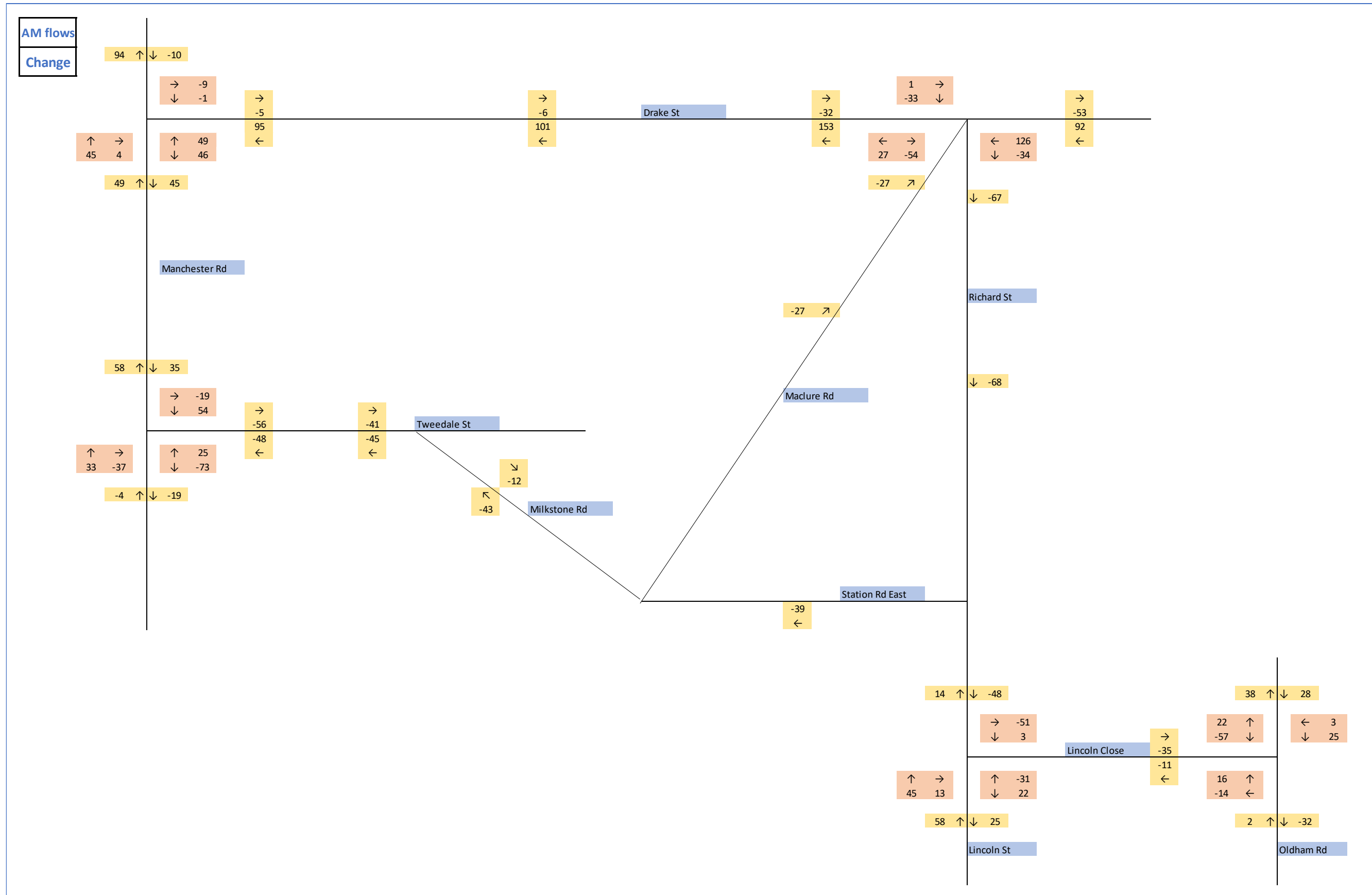
In summary, the impact of the proposed public square has a positive impact on congestion in the area. The changes of traffic from some routes to others result in travel time increases and decreases at different points of the network. However, the comparison shows that overall travel time in the network is virtually the same in the AM and lower in the PM with a reduction of 4 sec/km.

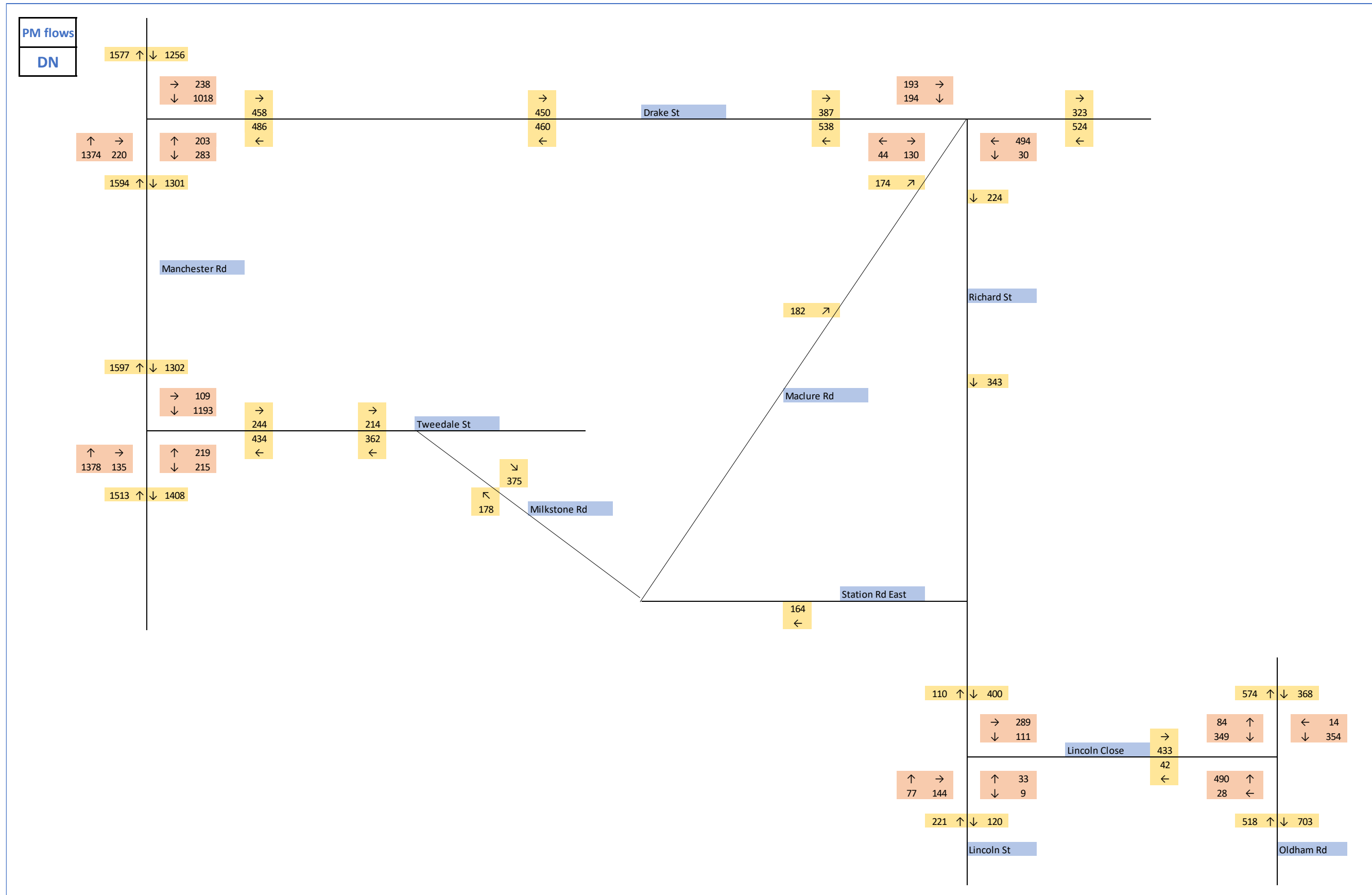
Appendix A – Flow Diagrams

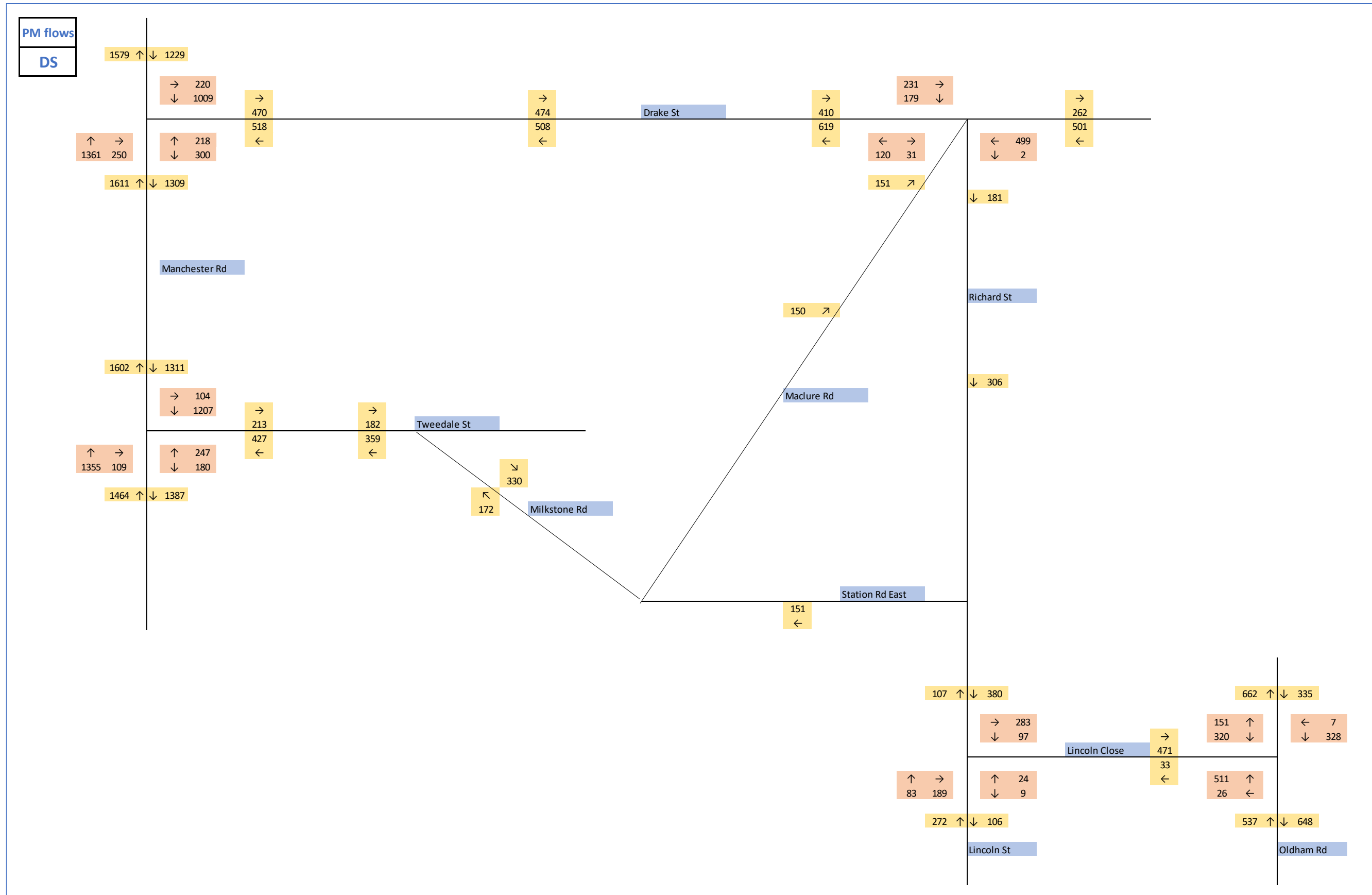




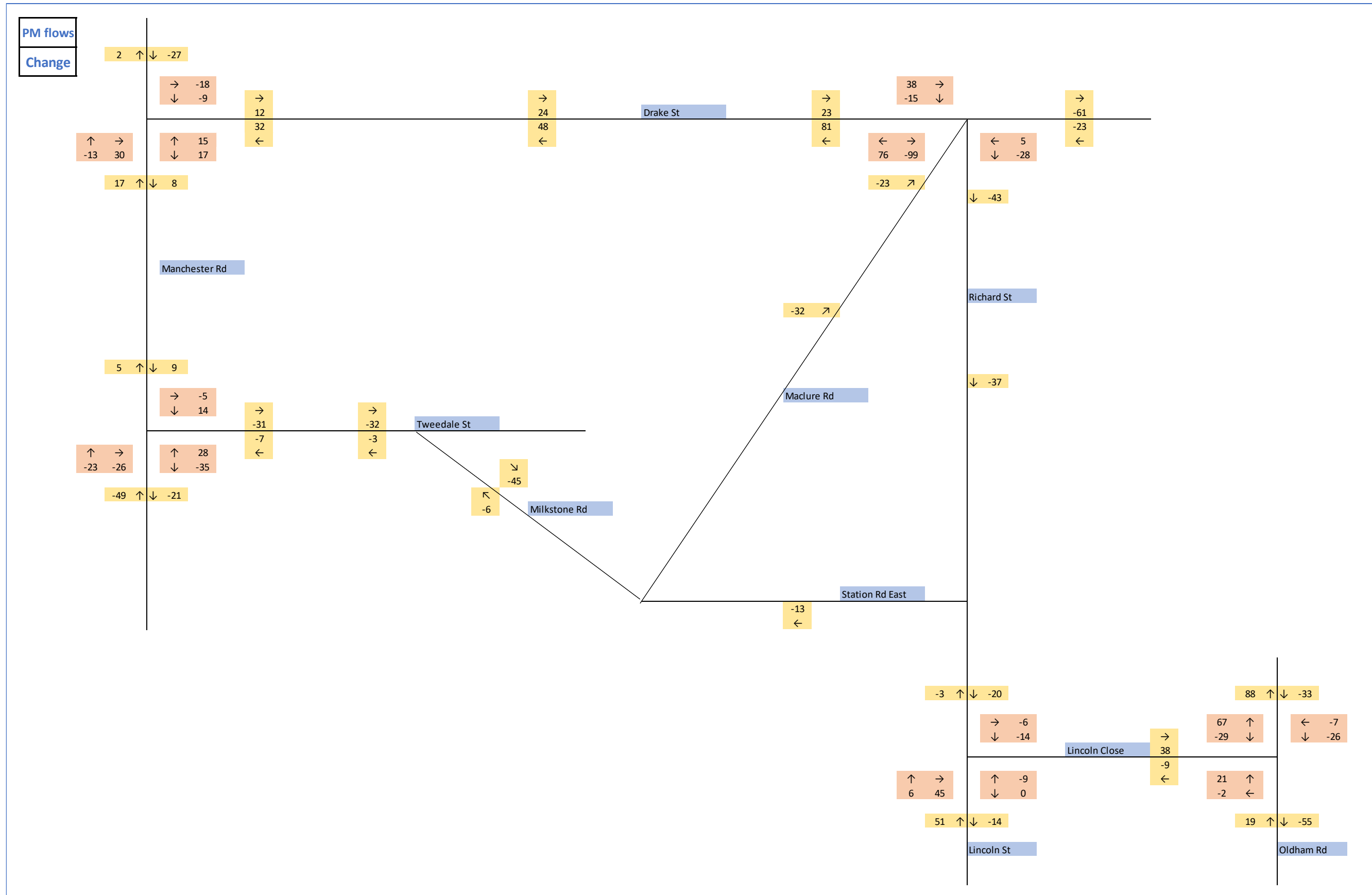












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