

Proposed Residential Development
Castleton Sidings, Rochdale

KELLEN HOMES

Transport Assessment
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REPORT

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Contents

1	INTRODUCTION.....	1
1.1	Introduction	1
2	EXISTING CONDITIONS	3
2.1	Existing Site Information	3
2.2	Local Highway Network.....	3
3	DEVELOPMENT PROPOSALS	4
3.2	Proposed Development.....	4
3.3	Internal Layout.....	4
3.4	Refuse Vehicle Access	5
3.5	Pedestrian and Cycle Access	5
4	RELEVANT PLANNING POLICY	6
4.1	Introduction	6
4.2	National Planning Policy Framework (NPPF).....	6
4.3	National Planning Practice Guidance	12
4.4	Local Policy	15
4.5	Planning Policy Summary	16
5	ACCESSIBILITY BY NON-CAR MODES.....	17
5.1	Introduction	17
5.2	Access on Foot	17
5.3	Access by Cycle.....	23
5.4	Access by Bus	23
5.5	Accessibility by Rail	25
5.6	Accessibility Summary.....	25
6	PROMOTING SMARTER CHOICES VIA TRAVEL PLANS.....	27
6.1	Introduction	27
6.2	Travel Planning Guidance	27
7	TRAFFIC IMPACT ANALYSIS	28



7.1	Introduction	28
7.2	Assessment Criteria	28
7.3	Traffic Survey Data	28
7.4	Growthed Traffic Flows	29
7.5	Committed Development	29
7.6	Base Flows	30
7.7	Proposed Development	30
7.8	Trip Distribution	31
7.9	With Development Flows	31
7.10	Capacity Assessments	31
7.11	Link Capacities	35
7.12	Capacity Assessment Summary	37
8	ROAD SAFETY	38
9	CONCLUSIONS	40



Contents

PLANS

Plan 1	Site Location
Plan 2	Site Layout
Plan 3	Proposed Site Access
Plan 4	Swept Path Tracking
Plan 5	2km Pedestrian Catchment

FIGURES	1-13
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APPENDICES

Appendix 1	Travel Plan Framework
Appendix 2	TRICS Output
Appendix 3	CENSUS data
Appendix 4	PICADY Output: A664 Manchester Road/Heywood Road
Appendix 5	PICADY Output: A664 Manchester Road/Durban Street
Appendix 6	PICADY Output: A664 Manchester Road/Royal Barn Road/Partington Street

1 INTRODUCTION

1.1 Introduction

- 1.1.1 Eddisons have been instructed by Kellen Homes to advise on the traffic and transport issues relating to a Hybrid planning application comprising a full planning application for residential development, including access, car parking, landscaping, open space and associated engineering and infrastructure including an electric substation and foul water pump station and outline planning permission with all matters reserved for the principle of development to facilitate the East Lancashire Railway (ELR) extension, on land at the former Baggs Yard Railway Sidings in Castleton.
- 1.1.2 The report provides information on the traffic and transport planning aspects of the development proposals and assist the local planning authority in the positive determination of the forthcoming planning application.
- 1.1.3 The application site is located south-west of the centre of Castleton at the southern end of the Fairway. Its location is shown within **Plan 1**.
- 1.1.4 The site was previously occupied mostly by Baggs Yard Railway Sidings although it is now vacant. Further details pertaining to the site's existing use will be provided in Section 2 of this report.
- 1.1.5 Relevant planning policy pertaining to the proposed development site is discussed in Section 3 of the report.
- 1.1.6 The proposal anticipates the erection of 191 new residential dwellings with vehicular access taken from two extensions to the existing cul-de-sacs on Fairway. Further details pertaining to the proposed development will be provided within Section 4.



- 1.1.7 Section 5 provides an assessment of the existing accessibility of the site by non-car travel, before Section 6 discusses the Travel Plan Framework.
- 1.1.8 The traffic impact of the proposed development on the local highway network is considered at Section 7, whilst Section 8 presents an analysis of road safety in the vicinity of the site. Section 9 draws together the conclusions to this report.

2 EXISTING CONDITIONS

2.1 Existing Site Information

- 2.1.1 The site extends to approximately 10.89 hectares. The site is vacant and has been cleared of the former railway sidings and associated buildings with only hardstanding remaining.
- 2.1.2 Prior to this, the site was occupied by Baggs Yard Railway Sidings which was demolished and cleared some years ago. In summary, it is clear that the site has had previous industrial development on the land.

2.2 Local Highway Network

- 2.2.1 The site will be served by two extensions to the existing cul-de-sacs on Fairway. Fairway is around 5.5 metres wide with 2.0 metre wide footways on the existing cul-de-sacs, whilst it widens to around 6.5 metres on the looped section which in turn links to Heywood Road to the north of the site.
- 2.2.2 Heywood Road is around 6 metres wide with footways of around 2.0m on both sides of the carriageway. There are a series of existing traffic calming features which narrow the carriageway and protect areas of on-street parking.
- 2.2.3 The A664 Manchester Road is approximately 8-9.5 metres wide in the vicinity of the site with wide footways on both sides of the road.
- 2.2.4 Heywood Road and Fairway are both subject to a 20mph speed limit, whilst Manchester Road is subject to a 30mph speed limit.

3 DEVELOPMENT PROPOSALS

- 3.1.1 The following paragraphs will describe the development proposals and the proposed access arrangements.

3.2 Proposed Development

- 3.2.1 The development proposals consist of 191 residential dwellings with a range of 1, 2, 3 and 4 bedroom houses with associated landscaping and open space.
- 3.2.2 The proposed site layout is shown in **Plan 2**.
- 3.2.3 Vehicular access to the site is proposed in two locations, both from extensions to the existing cul-de-sacs on Fairway which in turn connect, at both ends, to Heywood Road to the north of the site.
- 3.2.4 The access connections into the site will each be at least 5.5 metres wide and will have footways on both sides of 2 metres.
- 3.2.5 The proposed vehicular access into the site from Fairway is shown in **Plan 3**.

3.3 Internal Layout

- 3.3.1 The internal layout has been designed with Manual for Streets in mind and to ensure safe and suitable passage for all pedestrians and road users. The two main vehicular access routes from Fairway will travel into the site. The western access will serve as the main spine road through the site with short cul-de-sacs on both sides. The eastern access will serve the eastern portion of the site and then connect to the western access route at the spine road junction.

- 3.3.2 The spine road and various cul-de-sacs will be offered for formal adoption and have turning heads at their ends. Spurs off these turning areas will also serve a number of short private drives accommodating no more than 5 units on each one.

3.4 Refuse Vehicle Access

- 3.4.1 Refuse vehicle access to the development will be via the new vehicle access points off Fairway. As shown in **Plan 4**, refuse vehicles can access all parts of the residential development and leave the site in forward gear; as will all emergency vehicles that are smaller than the refuse vehicle used in this exercise.

3.5 Pedestrian and Cycle Access

- 3.5.1 Pedestrian and cycle access will be available via the vehicular access points off Fairway, through the ELR land to Heywood Road and facilitate connection to the Bee Network.
- 3.5.2 These links provide pedestrian and cycle connectivity with the surrounding Castleton area. There is an extensive footway network in the vicinity of the site connecting the site to the remainder of the Castleton area and notably the 'day to day' amenities close by, such as, shops, schools, healthcare facilities and employment opportunities.
- 3.5.3 The internal layout of the site has been designed to provide a safe environment for pedestrians and cyclists with clearly defined walkways, crossing points and traffic calming features where appropriate.

4 RELEVANT PLANNING POLICY

4.1 Introduction

- 4.1.1 This section of the TA reviews the relevant national and local transport planning policy and guidance documents in the context of the proposed development.
- 4.1.2 It will focus on the National Planning Policy Framework (NPPF), the National Planning Practice Guidance.
- 4.1.3 Local planning policy is taken from the adopted Local Plan.

4.2 National Planning Policy Framework (NPPF)

- 4.2.1 The NPPF continues to provide guidance on the same key themes for Local Authorities when preparing Development Plans and associated Policies, with a presumption in favour of sustainable development unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the framework taken as a whole.
- 4.2.2 The three key objectives in the updated NPPF include:

- *to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;*
- *to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being;*
- *to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*

4.2.3 Local authorities are expected to grant permission, for proposals that accord with an up-to-date development plan without delay.

4.2.4 At the heart of NPPF is 'a presumption in favour of sustainable development' (Paragraph 11).

4.2.5 With regard to sustainable transport the NPPF states in paragraph 105 that:

'Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.'

4.2.6 The NPPF goes on to consider parking provision, stating in paragraph 108 'Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport.

4.2.7 In determining planning proposals, paragraph 110 of the NPPF states:

In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- b) safe and suitable access to the site can be achieved for all users;*
- c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and*
- d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.,*

4.2.8 The NPPF states in paragraph 34:

'Plans should set out the contributions expected from development. This should include setting out the levels and types of affordable housing provision required, along with other infrastructure (such as that needed for education, health, transport, flood and water management, green and digital infrastructure). Such policies should not undermine the deliverability of the plan.'

4.2.9 Paragraph 60 goes on to state:

'To support the Government's objective of significantly boosting the supply of homes, it is important that a sufficient amount and variety of land can come forward where it is needed, that the needs of groups with specific housing requirements are addressed and that land with permission is developed without unnecessary delay.'

4.2.10 Paragraph 111 states:

'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'

4.2.11 Developments are required to provide and promote pedestrian and cyclist movements as a priority, facilitate access to public transport services and maximise the catchment areas for bus and other public transport services.

4.2.12 It is demonstrated in the subsequent sections of this TA that the site is located close to good pedestrian links and public transport networks and is therefore ideally situated to encourage trips by sustainable modes of travel.

4.2.13 Therefore, developments should be located and designed where practical to;

- a) *give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- b) *address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*

- c) *create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- d) *allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- e) *be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.*

4.2.14 The location of the proposed development close to a number of local amenities (as described in Section 5.2 of this TA), in accordance with the guidance contained within paragraph 20, which states that:

'Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for:

- a) *housing (including affordable housing), employment, retail, leisure and other commercial development;*
- b) *infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);*
- c) *community facilities (such as health, education and cultural infrastructure); and*
- d) *conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation'.*



4.2.15 It is therefore concluded that as the development is located a short distance from a range of local amenities, is accessible by public transport and has been designed in accordance with the guidance contained within Manual for Streets, it is considered that the proposed development accords with the aims and objectives of the Framework.

4.2.16 Paragraph 113 of the NPPF states:

'All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed'.

4.2.17 In order to satisfy this policy requirement, this TA is accompanied by a Travel Plan Framework which provides commitment to produce a full Travel Plan upon completion of the development.

4.2.18 Furthermore, the report also demonstrates that the proposals will not have a material impact on the adjoining highway network.

4.2.19 It is therefore clear from the NPPF that development:

- Should be assessed with a presumption in favour of approval.
- Should be capable of being accessed satisfactorily with safe and suitable access provided for all.
- Should be sustainable, with preference given to accessibility by sustainable modes of transport.

4.3 National Planning Practice Guidance

4.3.1 The National Planning Practice Guidance (NPPG) web-based resource was published on 6th March 2014 by the Department for Communities and Local Government, now MHCLG.

4.3.2 This resource collates relevant planning practice guidance and provides links between the NPPF and relevant legislation and guidance.

4.3.3 In terms of transportation, the guidance on 'Travel Plans, Transport Assessments and Statements in Decision-Taking' is relevant to the proposals.

4.3.4 It essentially replaces the DFT's 'Guidance on Transport Assessment' (2007) and states in Paragraph 005 that:

'Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal. (They may consider those impacts net of any reductions likely to arise from the implementation of a Travel Plan, though producing a Travel Plan is not always required). The Transport Assessment or Transport Statement may propose mitigation measures where these are necessary to avoid unacceptable or "severe" impacts. Travel Plans can play an effective role in taking forward those mitigation measures which relate to on-going occupation and operation of the development.'

'Transport Assessments and Statements can be used to establish whether the residual transport impacts of a proposed development are likely to be "severe", which may be grounds for refusal, in accordance with the National Planning Policy Framework'.

4.3.5 Paragraph 014 provides guidance on establishing the need and scope of a Transport Assessment or Statements.

- 4.3.6 It states that *'The need for, scale, scope and level of detail required of a Transport Assessment or Statement should be established as early in the development management process as possible as this may positively influence the overall nature or the detailed design of the development.'*
- 4.3.7 Paragraph 014 goes on to state that the key issues to consider at the start of preparing a Transport Assessment are as follows:
- The planning context of the development proposal;
 - Appropriate study parameters (i.e. area, scope and duration of study);
 - Assessment of public transport capacity, walking / cycling capacity and road network capacity;
 - Road trip generation and trip distribution methodologies and/or assumptions about the development proposal;
 - Measures to promote sustainable travel;
 - Safety implications of development; and
 - Mitigation measures (where applicable) – including scope and implementation strategy.
- 4.3.8 Regarding treatment of cumulative impact of development, the NPPG also states in Paragraph 014 that *'It is important to give appropriate consideration to the cumulative impacts arising from other committed development (i.e. development that is consented or allocated where there is a reasonable degree of certainty will proceed within the next three years).'*

At the decision-taking stage this may require the developer to carry out an assessment of the impact of those adopted Local Plan allocations which have the potential to impact on the same sections of transport network as well as other relevant local sites benefitting from as yet unimplemented planning approval.'

4.3.9 The scope for preparing this TA is in line with current guidance and conforms to the principles outlined in the NPPG.

4.3.10 The Framework Travel Plan (FTP) accompanying this application (as a separate document) was prepared within the context of the relevant guidance contained in the NPPG and accords with the following principles:

'Travel Plans are long-term management strategies for integrating proposals for sustainable travel into the planning process. They are based on evidence of the anticipated transport impacts of development and set measures to promote and encourage sustainable travel (such as promoting walking and cycling)'. (Paragraph 003)

Travel Plans should where possible, be considered in parallel to development proposals and readily integrated into the design and occupation of the new site rather than retrofitted after occupation'. (Paragraph 003)

The primary purpose of a Travel Plan is to identify opportunities for the effective promotion and delivery of sustainable transport initiatives e.g. walking, cycling, public transport and telecommuting, in connection with both proposed and existing developments and through this to thereby reduce the demand for travel by less sustainable modes.' (paragraph 005).

4.3.11 On the basis of the above, the proposed Travel Plan Framework has been prepared in tandem with this TA and addresses the potential for modal shift from private car use to sustainable transport modes.

- 4.3.12 It contains measures to encourage walking, cycling and public transport, thereby meeting the principals set out above.
- 4.3.13 The site is allocated for around 125 homes within the emerging Places for Everyone Planning document. The principle of residential development is therefore established on this site.

4.4 Local Policy

Rochdale Local Plan

- 4.4.1 The Core Strategy Development Plan Document was adopted in October 2016 and sets out the policies for Rochdale's future development up to 2028 and the planning policies is the key document of the Local Plan.
- 4.4.2 Policy SD1 refers to 'Delivering Sustainable Development'. The policy confirms that the council will 'take a positive approach that reflects the presumption in favour of sustainable development'.
- 4.4.3 The policy continues to state that 'planning applications that accord with the policies in the Local Plan will be approved without delay'.
- 4.4.4 The policy goes on to state the following:

'Where there are no policies relevant to the application or relevant policies are out of date at the time of making the decision then the Council will grant permission unless material considerations indicate otherwise – taking into account whether:

- *Any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits, when assessed against the policies in the National Planning Policy Framework taken as a whole; or*

- *Specific policies in the National Planning Policy Framework indicate that development should be restricted’.*

Castleton Station Masterplan

- 4.4.5 RBC adopted the above document in March 2022. This is a material planning consideration. Within this document the site is identified for residential development.
- 4.4.6 The following sections of the TA will ensure that the proposals are acceptable and constitute sustainable development in transport terms.
- 4.4.7 It is therefore considered that the site satisfies the relevant policy requirements of the Rochdale Local Plan with regards to transport and highways issues.

4.5 Planning Policy Summary

- 4.5.1 The proposed development is in accordance with national and local policy for the following reasons:
- The proposed development will reduce the need to travel due to it being located in close proximity to a range of services such as schools, retail opportunities and health facilities, which are located within a short walk of the site. Further details on the accessibility of the proposed development by non-car modes is provided in Section 5 of this Transport Assessment;
 - The site is located in close proximity to a range of public transport opportunities, which will facilitate non-car travel to and from the proposed development;
- 4.5.2 The site promotes sustainable transport in accordance with the Framework (NPPF) as it facilitates sustainable development and contributes to wider sustainability and health objectives.

5 ACCESSIBILITY BY NON-CAR MODES

5.1 Introduction

- 5.1.1 In order to accord with the aspirations of the NPPF, any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.
- 5.1.2 New proposals should therefore attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.
- 5.1.3 The accessibility of the proposed site has been considered by the following modes of transport:
- accessibility on foot;
 - accessibility by cycle;
 - accessibility by bus;
 - accessibility by rail.

5.2 Access on Foot

- 5.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life. This philosophy clearly encourages the opportunity to walk whatever the journey purpose and also helps to create more active streets and a more vibrant neighbourhood.

- 5.2.2 Existing footways exist on both sides of Fairway and Heywood Road of around 2 metres in width. These footways provide links to a comprehensive network of routes within the local area, supplemented by a number of controlled crossing points on Manchester Road which facilitate access to the nearby day to day amenities within the area.
- 5.2.3 The DFT National Travel Survey of 2018 confirms that 80% of all trips less than a mile (1.6km) are carried out on foot.
- 5.2.4 The Institute of Highways and Transportation (IHT) document 'Guidelines for Providing for Journeys on Foot', provides information on acceptable walking distances. Table 3.2 suggests distances for desirable, acceptable and preferred maximum walks to 'town centres', 'commuting/schools' and 'elsewhere'. The 'preferred maximum' distances are shown below in **Table 5.1**.

Suggested Preferred Maximum Walk		
Town Centre	Commuting/School	Elsewhere
800m	2,000m	1,200m

Table 5.1 - IHT 'Providing for Journeys on Foot' Walk Distances

- 5.2.5 Manual for Streets (MfS) continues the theme of the acceptability of the 2,000-metre distance in paragraph 4.4.1. This states that '*walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPS13 states that walking offers the greatest potential to replace short car trips, particularly those under 2 km*'.
- 5.2.6 **Table 5.2** below summarises this guidance in tabular form.

'Comfortable' Walk	'Preferred Maximum' Walk
800m	2,000m

Table 5.2 - Manual for Streets Walk Distances

- 5.2.7 More specific guidance on the distances that children will walk to school is found in the July 2014 document published by the Department for Education (DfE) entitled 'Home to School Travel and Transport' statutory guidance document. This suggests that the maximum walking distance to schools is 2 miles (3.2 kilometres) for children under 8 and 3 miles (4.8 kilometres) for children over the age of 8. This is summarised below in **Table 5.3**.

Children under 8 Walk Distance	Children over 8 Walk Distance
3,200m	4,800m

Table 5.3 – DfE Walk Distances to Schools

- 5.2.8 Further evidence that people will walk further than the suggested 'preferred maximum' distances in the IHT 'Providing for Journeys on Foot' is contained in a WYG Report entitled 'Accessibility – How Far Do People Walk and Cycle'. This report refers to National Travel Survey (NTS) data for the UK as a whole, excluding London, and confirms the following 85th percentile walk distances:
- All journey purposes – 1,930-metres;
 - Commuting – 2,400-metres;
 - Shopping – 1,600-metres;

- Education – 3,200 or 4,800-metres;
- Personal business – 1,600-metres.

5.2.9 Overall, in Table 5.1, the document states that 1,950 metres is the 85th percentile distance for walking as the main mode of travel. **Table 5.4** below summarises the various 85th percentile walk distances suggested as guidelines in the WYG Study.

85 th Percentile Walk Distances					Overall Recommended Preferred Max
All Journeys	Commuting	Shopping	Education	Personal	
1,950m	2,100m	1,600m	3,200m/4,800m	1,600m	1,950m

Table 5.4 - WYG Report/NTS Data Walk Distances

5.2.10 In summary, the distance of 1,950-metres, or around 2-kilometres, represents an acceptable maximum walking distance for the majority of land uses although clearly the DfE guidance for walking to school is up to 3.2-kilometres.

5.2.11 Section 3.1 of the CIHT guidance 'Planning for Walking' mentioned earlier in this report provides a useful reminder of the health benefits of walking. This states that:

'A brisk 20 minute walk each day could be enough to reduce an individual's risk of an early death.'

5.2.12 A 20-minute walk equates to a walking distance of around 1,600-metres.



- 5.2.13 In light of the above review, a pedestrian catchment of 2-kilometres from the centre of the site, using all usable pedestrian routes, has been provided in **Plan 5** and provides an illustrative indication of the areas that can be reached based on a leisurely walk from the site.

- 5.2.14 In addition, to the pedestrian catchment plan, a review of the proximity of local facilities such as local shops/retail outlets and leisure facilities has been undertaken and the location of these is also shown in Plan 5.

- 5.2.15 The 2,000-metre pedestrian catchment illustrates that the majority of Castleton can be accessed, such as, New Bridge Chippy, Annies, Co-op Food, Castleton Primary School, St. Gabriel's RC Primary School, Castleton Post Office, St Edwards C of E Primary School, Premier – Castleton, Castleton Health & Leisure, Small World Nurseries and Well Castleton – Elizabeth Street.

- 5.2.16 **Table 5.5** below, shows the approximate walking distance from the centre of the site to several of the local key amenities in the immediate vicinity of the site. The table also confirms whether or not the particular amenity is within the 'preferred maximum' walk distances using the above guideline criteria.

Local Amenity	Distance	Guidance Criteria	Meets with Guidance?
New Bridge Chippy	590m	1,600m	YES
Castleton Post Office	590m	1,600m	YES
Annies	650m	1,600m	YES
St Edwards C of E Primary School	775m	3,200m	YES
Co-op Food	800m	1,600m	YES
Premier - Castleton	830m	1,600m	YES
Castleton Post Office	975m	1,600m	YES
Castleton Health & Leisure	975m	1,600m	YES
Small World Nurseries	1,030m	1,600m	YES
St Gabriel's RC Primary School	1,120m	3,200m	YES
Well Castleton – Elizabeth Street	1,225m	1,600m	YES

Table 5.5 - Approximate Distance from Site to Local Facilities

- 5.2.17 As can be seen in the above table, the site is located within proximity to a number of local amenities including primary services as well as leisure facilities.
- 5.2.18 All of the day to day amenities are well within the 'preferred maximum' walk distances described earlier in this section and indeed many, including the nearest food store and nearest primary school, are within the 800 metres 'comfortable walk' from the site as contained within MfS guidance.
- 5.2.19 It is therefore considered that the existing and proposed pedestrian infrastructure will facilitate safe and direct pedestrian linkages between the site and local destinations.

5.3 Access by Cycle

- 5.3.1 An alternative mode of travel to the site could be achieved by bicycle. A distance of 5 kilometres is generally accepted as a distance where cycling has the potential to replace short car journeys. This distance equates to a journey of around 25 minutes based on a leisurely cycle speed of 12 kilometres per hour and would encompass parts of Rochdale, Heywood and Middleton.
- 5.3.2 A new cycle link will be provided, connecting the site to Heywood Road, across the East Lancashire Railway-owned land..
- 5.3.3 National cycle route 66, starts north of Rochdale where it runs south into the city centre where it meets National Cycle Route 92. This route also starts north of Rochdale where it also runs ends in the centre of Rochdale. Both routes are both on and off-national cycle route, 66 is located approximately 380 metres from the site, whereas 92 is located 4.8 kilometres from the site.
- 5.3.4 The site can therefore be considered as being accessible by cycle.

5.4 Access by Bus

- 5.4.1 The nearest bus stops to the site are located approximately 800 metres to the east on Manchester Road, around a 10-minute walk from the site. Additional bus stops are located further along Queensway. All the nearest bus stops to the site are shown on **Plan 5**.
- 5.4.2 A summary of the services available from the nearest bus stops from the development site is provided in **Table 5.6** below.

Serv No	Route	Monday – Friday (per hour)				Sat	Sun
		AM Peak	Midday	PM Peak	Eve		
17	Manchester – Rochdale via Middleton	3	3	3	2	3	2

Table 5.6 - Existing Bus Services Operating Close to the Site

- 5.4.3 As can be seen from Table 5.6, the nearest bus stops to the site provides access to the number 17 service that operates throughout the day, weekday evenings and at weekends to destinations such as Rochdale, Middleton, Blackley and Manchester.
- 5.4.4 The above services operate from around 5:00am to around 23:30pm, making travel by public transport a real alternative to travelling by car for all journey purposes.
- 5.4.5 In order to demonstrate the level of accessibility, some example journey times by bus are presented below **Table 5.7** below.

Destination	Duration
Rochdale town centre	11 minutes
Middleton	16 minutes
Manchester	34 minutes

Table 5.7 - Example Bus Journey Times from the Site

- 5.4.6 The above table demonstrates that Rochdale town centre is an approximate 10-minute bus journey from the site and Middleton is a 16-minute bus journey.

5.4.7 It is therefore concluded that the site can be considered as highly accessible by bus.

5.5 Accessibility by Rail

5.5.1 Castleton station is the closest railway station to the site. It can be accessed via a short 8-9 minute walk as the station is 700 metres from the centre of the site. The station is managed by Northern and has 2 platforms, offering 3 services per hour to destinations such as Leeds and Manchester city centre.

5.5.2 This provides opportunities for travelling to and from the site by rail.

5.6 Accessibility Summary

5.6.1 The proposals have been considered in terms of accessibility by non-car modes for the proposed development.

5.6.2 The following conclusions can be drawn from this section of the report:

- The site is well located to cater for trips on foot and provides potential for a high degree of pedestrian trips between the development and the surrounding area;
- It has been demonstrated that the site is accessible by cycle;
- The services from the bus stops on Manchester Road which connect the site with retail, employment and leisure facilities in Rochdale, Middleton and Manchester. It can therefore be concluded that the proposed development is highly accessible by bus;
- The site has been demonstrated to be accessible by rail with Castleton railway station located within a 10 minute walk from the site.



- 5.6.3 In light of the above, it is considered that the site is highly accessible and caters for needs of the development's residents and visitors. As such, this will assist in promoting a choice of travel modes other than the private car, as set out in NPPF.

6 PROMOTING SMARTER CHOICES VIA TRAVEL PLANS

6.1 Introduction

6.1.1 In order to manage the travel by residents at the new development, the applicant wishes to offer a Travel Plan Framework to encourage travel to the site by non-car modes.

6.2 Travel Planning Guidance

6.2.1 A Framework Travel Plan is included at **Appendix 1**. The objective of the Travel Plan is the delivery of the objectives of National Planning Policy, i.e. to encourage residents to travel by non-car modes of travel. The Travel Plan outlines physical and management measures that are designed to achieve this objective.

6.2.2 The effectiveness of Travel Plans in assisting the use of non-car modes for journeys is intrinsically linked to the accessibility of a given site by means other than the private car.

6.2.3 The proposed development has been demonstrated to benefit from a high non-car accessibility and it should, therefore, be expected that the adoption of a Travel Plan would be particularly effective.

7 TRAFFIC IMPACT ANALYSIS

7.1 Introduction

7.1.1 Having established that the proposed development site is highly accessible by modes of travel other than the private car and would be in general accordance with transport policies, the following section considers the traffic impact of the development proposals on the local highway network.

7.2 Assessment Criteria

7.2.1 Given the proposed residential land use, it is assumed reasonable to consider the AM and PM weekday peak hours, as being those with the greatest impact on the local highway network.

7.3 Traffic Survey Data

7.3.1 The assessment will be based on a series of traffic counts that have been carried out at the following junctions on the local highway network:

- A664 Manchester Road/Heywood Road priority junction;
- A664 Manchester Road/Durban Street priority junction; and
- A664 Manchester Road/Royal Barn Road/Partington Street staggered priority junction.

7.3.2 These surveys were undertaken on Tuesday 4th June 2019, prior to the COVID pandemic.

- 7.3.3 The peak hours were identified as 0800 to 0900 hours and 1630 to 1730 hours, for the AM and PM peaks respectively. The surveyed flows for the AM and PM peak hours are shown in **Figures 1** and **2** respectively.

7.4 Growthed Traffic Flows

- 7.4.1 For the purpose of this TA, assessments have been undertaken for a design horizon of 2025, representing an estimated build out of circa 50-55 units per year up to a total of 191 units, with construction commencing in 2022.

- 7.4.2 In order to factor the surveyed traffic flows to the assumed future year assessment of 2025, a National Trip End Model (NTEM) adjusted National Road Traffic Model (NTM) growth factor was applied for the area (MSOA Rochdale 017).

- 2019 to 2025 AM Peak = 1.0704;
- 2019 to 2025 PM Peak = 1.0680;

- 7.4.3 The resultant growthed traffic flows are shown in **Figures 3** and **4** for the 2025 growthed traffic flows AM and PM peak periods respectively.

7.5 Committed Development

- 7.5.1 As part of this analysis, committed developments have been taken into account. The site below is understood to be the only committed development in the area that is likely to generate material traffic flows in the vicinity of the site.

- Trub Farm, Castleton (Appeal Ref: APP/P4225/A/12/2185947/NW).

- 7.5.2 The resultant committed development flows are shown in **Figures 5** and **6** for the AM and PM peak periods respectively.

7.6 Base Flows

- 7.6.1 The growthed traffic flows in Figures 3 and 4 have been added to the committed development traffic flows in Figures 5 and 6 to produce the 2025 Base Flows shown in **Figures 7 and 8** for the AM and PM peaks respectively.

7.7 Proposed Development

- 7.7.1 As previously stated, it is proposed to develop the site for 203 residential dwellings.
- 7.7.2 In order to calculate the number of trips which the proposed dwellings are forecast to generate, the TRICS 7.8.1 database was analysed. Trip rates were obtained in the field of "Residential – Houses Privately Owned" within the range 100 to 300 residential units with Greater London and Eire sites excluded.
- 7.7.3 Table 7.1 below, summarises the trip generations for the proposed residential units whilst the TRICS output is contained within **Appendix 2**.

Mode	Period	Trip Rate		Trips	
		Arr	Dep	Arr	Dep
Vehicle	AM Peak Hour	0.142	0.381	27	73
	PM Peak Hour	0.357	0.172	68	33

Table 7.1 - Proposed Development Trip Rates and Trips

- 7.7.4 As can be seen from the above table, the proposed development is predicted to result in 100 two-way trips during the weekday AM peak and 101 two-way trips during the weekday PM peak period.

7.8 Trip Distribution

- 7.8.1 In order to assign the proposed development trips shown in Table 7.1 to the local highway network, reference has been made to the Method of Travel to Work data available from the 2011 census.
- 7.8.2 The census data has been obtained for the relevant Middle Super Output Area, Rochdale 017, which encompasses the proposed site.
- 7.8.3 The census data identifies the destination of residents travelling by car and, by using route planning software, the likely routes residents would take when travelling to the various destinations has been determined.
- 7.8.4 The census data and route assumptions are included at **Appendix 3**.
- 7.8.5 The vehicle trips, shown in Table 7.1, have been assigned to the network based on the trip distribution shown in **Figure 9** and the resulting proposed development trips are shown in **Figures 10** and **11** for the weekday AM and PM peaks respectively.

7.9 With Development Flows

- 7.9.1 The forecast development traffic flows depicted in Figures 10 and 11 have been added to the 2025 Base Flows shown in Figures 7 and 8. The resultant 2025 With Development Flows are shown in **Figures 12** and **13** for the AM and PM peak periods.

7.10 Capacity Assessments

- 7.10.1 In order to assess the operation of the junctions on the local highway network, assessments were undertaken at the following junctions:
- A664 Manchester Road/Heywood Road priority junction;

- A664 Manchester Road/Durban Street priority junction; and
- A664 Manchester Road/Royal Barn Road/Partington Street staggered priority junction.

A664 Manchester Road/Heywood Road priority junction

- 7.10.2 The A664 Manchester Road/Heywood Road priority junction has been assessed using the PICADY module of the Junction 9 programme.
- 7.10.3 Assessments were undertaken using the 2025 'Base' and 'With Development' flows, the results of which are summarised in **Table 7.2** with the full results contained within **Appendix 4**.

Arm	2025 Base Flows				2025 With Development			
	Weekday AM		Weekday PM		Weekday AM		Weekday PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Heywood Road	0.00	0	0.00	0	0.00	0	0.00	0
A664 Manchester Road (S) Ahead/Right	0.16	0	0.13	0	0.16	0	0.14	0

Table 7.2 - Summary of PICADY Results for the A664 Manchester Road/Heywood Road priority junction – 2025 Assessments

- 7.10.4 As can be seen from Table 7.2, the A664 Manchester Road/Heywood Road priority junction is forecast to continue to operate well within its theoretical capacity in both the AM and PM peak scenarios.

- 7.10.5 The results also demonstrate that the impact of the proposed development on the junction is minimal.

A664 Manchester Road/Durban Street priority junction

- 7.10.6 The A664 Manchester Road/Durban Street priority junction has been assessed using the PICADY module of the Junction 9 programme.
- 7.10.7 The results for the 'Base' and 'With Development' flow scenarios for 2025 are summarised within Table 7.3 with the full results contained within **Appendix 5**.

Arm	2025 Base Flows				2025 With Development			
	Weekday AM		Weekday PM		Weekday AM		Weekday PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Durban Street	0.59	1	0.41	1	0.62	2	0.45	1
A664 Manchester Road (S) Ahead/Right	0.22	0	0.13	0	0.24	0	0.21	0

Table 7.3 - Summary of PICADY Results for the A664 Manchester Road/Durban Street priority junction – 2025 Assessments

- 7.10.8 As can be seen from the above table, the A664 Manchester Road/Durban Street priority junction is forecast to operate well within its theoretical capacity in all the assessment scenarios.
- 7.10.9 The results also demonstrate a minimal increase in the RFC and Queues, with the maximum increase in queuing being just 1 vehicle. The impact of the proposed development on the operation of this junction can, therefore, be considered minimal.

A664 Manchester Road/Royal Barn Road/Partington Street staggered priority junction

- 7.10.10 The A664 Manchester Road/Durban Street priority junction has been assessed using the PICADY module of the Junction 9 programme.
- 7.10.11 The results for the 'Base' and 'With Development' flow scenarios for 2025 are summarised within Table 7.4 with the full results contained within **Appendix 6**.

Arm	2025 Base Flows				2025 With Development			
	Weekday AM		Weekday PM		Weekday AM		Weekday PM	
	RFC	Max Q	RFC	Max Q	RFC	Max Q	RFC	Max Q
Partington Street	0.45	1	0.39	1	0.70	2	0.54	1
A664 Manchester Road (S) Ahead/Right	0.17	0	0.28	0	0.18	0	0.29	1
Royal Barn Road	0.30	0	0.50	1	0.31	0	0.52	1

Table 7.4 - Summary of PICADY Results for the A664 Manchester Road/Royal Barn Road/Partington Street – 2025 Assessments

- 7.10.12 As can be seen from the above table, the A664 Manchester Road/Royal Barn Road/Partington Street priority junction is forecast to operate well within its theoretical capacity in all the assessment scenarios.
- 7.10.13 The results also demonstrate a minimal increase in the RFC and Queues, with the maximum increase in queuing being just 1 vehicle. The impact of the proposed development on the operation of this junction can, therefore, be considered minimal.

7.11 Link Capacities

- 7.11.1 Consideration has been given to the link capacities along the main routes from the A664 Manchester Road to and from the site via Heywood Road and Heape Street/Fairway.
- 7.11.2 As of March 2020, the relevant DMRB document for Link Capacities, TA 79/99 Traffic Capacity of Urban Roads, has been withdrawn and there are currently no replacement standards in the revised DMRB.
- 7.11.3 Notwithstanding this, in order to fully inform Rochdale Council, an assessment has been undertaken using the now withdrawn standards as these are still considered to provide best practice guidance on link capacities.
- 7.11.4 DMRB Volume 5, Section 1, Part 3, TA 79/99 provides an estimated maximum hourly vehicle capacity for various types of urban roads. The relevance of this document is discussed below.
- 7.11.5 The types of urban roads and the features which affect their traffic capacity are detailed in Table 1 of TA 79/99. Table 2 of TA 79/99 gives the flow capacity for each road type based on carriageway width parameters. The road type which most closely matches Heywood Road, Heape Street and Fairway is a UAP₃ (variable standard road carrying mixed traffic with frontage access) classification.
- 7.11.6 As detailed in Table 2 of TA 79/99, based on a 6.1m two-way single carriageway, the UAP₃ road type can cater for up to 900 one-way hourly flows in each direction. The cul-de-sac sections of Fairway are slightly narrower (circa 5.5m) along some sections and, therefore, based on a downwards extrapolation of Table 2, it is felt appropriate that Fairway could accommodate around 690 one-way hourly flows in each direction.

- 7.11.7 The main sections of Fairway, Heape Street and Heywood Road have variable carriageway widths of around 6.0 to 7.0m and, therefore, 900 one-way hourly flows is considered an appropriate hourly capacity.
- 7.11.8 The traffic surveys and trip generation exercise has revealed that the main route from the A664 to the site has existing flows, base flows and post development flows as shown on Table 7.5 below.
- 7.11.9 The final column of the table lists the approximate link capacities of each of the routes based on the available carriageway width by reference to DMRB Volume 5, Section 1, Part 3, TA 79/99.

Link	2019 Survey Flows	2026 Base Flows	2026 With Dev Flows	One-Way Capacity
Heywood Road	112	119	154	900
Heape Street/Fairway Loop	132	141	210	900
Fairway Cul-de-sacs	-	-	101	690

Table 7.5 - Link Flows and Capacities

- 7.11.10 As can be seen in Table 7.5, the traffic impact analysis has revealed that each route is forecast to have a maximum one-way hourly flow which is well below its theoretical capacity of 690 one-way hourly flows.
- 7.11.11 As such, this demonstrates that the expected vehicular usage of these links falls well below what would be expected on a typical urban road with similar carriageway dimensions and features.

7.12 Capacity Assessment Summary

7.12.1 In summary, the capacity assessment undertaken as part of this traffic impact analysis have demonstrated the following:

- The proposed site access points will be a continuation of the existing Fairway cul-de-sacs. The access points have been designed to accord with highway design standards and are considered to have more than sufficient capacity to accommodate the proposed development traffic.
- The A664 Manchester Road/Heywood Road priority junction is forecast to operate well within capacity in all of the traffic flow scenarios.
- The A664 Manchester Road/Durban Street priority junction is forecast to operate well within capacity in all of the traffic flow scenarios and the impact of the proposals on the junction is considered minimal.
- The A664 Manchester Road/Royal Barn Road/Partington Street staggered priority junction is forecast to operate well within capacity in all of the traffic flow scenarios and the impact of the proposals on the junction is considered minimal.
- The link capacity assessment has demonstrated that Heywood Road, Heape Street and Fairway are operating well within their theoretical capacity and will continue to do so once the development has been completely occupied.

7.12.2 It is therefore concluded that the development proposals will result in a minimal impact on the local highway network.

8 ROAD SAFETY

8.1.1 In order to consider the potential impact of the development on road safety, a brief review of the Crashmap website (www.crashmap.co.uk) has been undertaken. The information provided on the website covered the five-year period 2016 to June 2020 in the vicinity of the development site.

8.1.2 According to the data provided there have been no recorded accidents on Heywood Road or on the Fairway, one accident occurred on Partington Road and only four accidents have occurred on Manchester Road between Queensway and Royal Barn Road, as identified in **Figure 8.1** below.

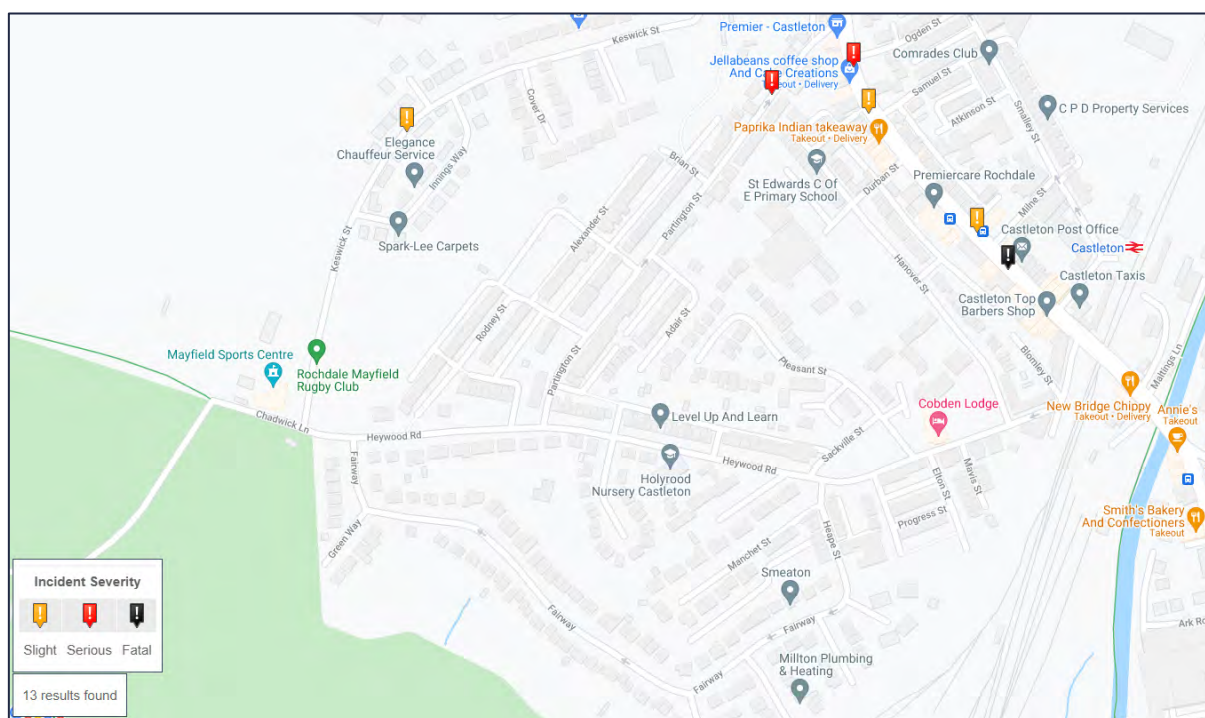


Figure 8.1 – Location of Accidents in the Vicinity of the Site



- 8.1.3 A review of the personal injury data along the A664 Manchester Road shows that there have been four accidents recorded in the five-year period. One of the accidents was fatal, one was serious, and the remaining two were slight.
- 8.1.4 The evidence shows that there are no particular engineering issues or problems with the road network or junction layouts.
- 8.1.5 The data reviewed has demonstrated that there are no particular road safety issues in the vicinity of the site.
- 8.1.6 It is not considered that the proposals will unduly change the characteristics or nature of the surrounding highway network and as such will not have a detrimental impact on overall road safety.

9 CONCLUSIONS

9.1.1 Croft Incorporating Eddisons have been instructed by Kellen Homes to advise on the traffic and transport issues relating to a planning application for a proposed residential development on land at the former Baggs Yard Railway Sidings in Castleton.

9.1.2 A number of conclusions can be drawn from the report, namely:

- The proposed development will be accessed by safe and efficient vehicular access arrangements.
- The report has demonstrated that the proposed development would be highly accessible by non-car travel modes of such as walking, cycling and public transport.
- The proposals will be supported by a Travel Plan to reduce the need to travel by the private car.
- The proposals will not have a severe impact on the local highway network; and
- There is no evidence to suggest that the proposals would have an adverse effect on road safety or the number of accidents in the vicinity.

9.1.3 It can therefore be concluded that the proposals are acceptable in transport and highway terms.

PLANS

PLAN 1



SITE LOCATION

CLIENT:

KELLEN HOMES

DRAWING TITLE:

**CASTLETON, CORUS RAILWAY SIDINGS
SITE LOCATION**

DRAWN:

LG

DATE:

15.04.21

CHECKED:

SM

DATE:

15.04.21

SCALES:

NTS @ A4

Croft Transport Planning & Design
340 Deansgate
Manchester
M3 4LY

Email: info@croftts.co.uk
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Web: www.eddisons.com/services/transport-planning

DRAWING NUMBER:

3334-01

REVISION:

-

Eddisons | Incorporating
Croft

PLAN 2

ELR
Land

Castleton North
Junction

MP 0.5

Pond

Ponds

Rev	Date	Amend	Initials

Development

CASTLETON SIDINGS

Location
ROCHDALE

Drawing Title

Colour Site Layout

Job Number
KH003

Revision

Drawn By
BP

Checked by
RC

Drawing Number
KH003-A-100

Scale
1:1000 - A1

Date
09.02.23

Date Checked

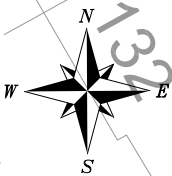
1st Floor, 103 Dalton Avenue, Birchwood Park,
Warrington WA3 6YE
T: 01925 363108 W: www.kellenhomes.com



KELLEN
HOMES



NORTH SOUTH ARIEL VIEW



NOTES

PLAN 3

THIS IS NOT A CONSTRUCTION DRAWING AND IS FOR INDICATIVE PURPOSES ONLY.
THE DRAWING WILL BE SUBJECT TO CHANGE FOLLOWING LOCAL AUTHORITY REVIEW AND CONFIRMATION OF PUBLIC HIGHWAY AND THIRD PARTY LAND BOUNDARIES.

- INDICATIVE SITE BOUNDARY
- DENOTES NEW KERBS

PLAN 3

REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT:

KELLEN HOMES

PROJECT:

CASTLETON RAILWAY SERVICES

DRAWING TITLE:

PROPOSED SITE ACCESS ARRANGEMENTS

SCALES:

1:250 @ A3

DRAWN:	GM	CHECKED:	LW	DATE:	FEB 23
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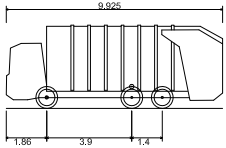
DRAWING NUMBER:	3334-F01	REVISION:	A
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PLAN 4

PLAN X

NOTES



Rochdale Refuse Vehicle
Overall Length 9.925m
Overall Width 2.450m
Overall Body Height 3.314m
Min Body Ground Clearance 0.368m
Track Width 2.450m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.500m



REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT:
KELLEN HOMES

PROJECT:
CASTLETON RAILWAY SIDINGS

DRAWING TITLE:
SWEPT PATH ANALYSIS

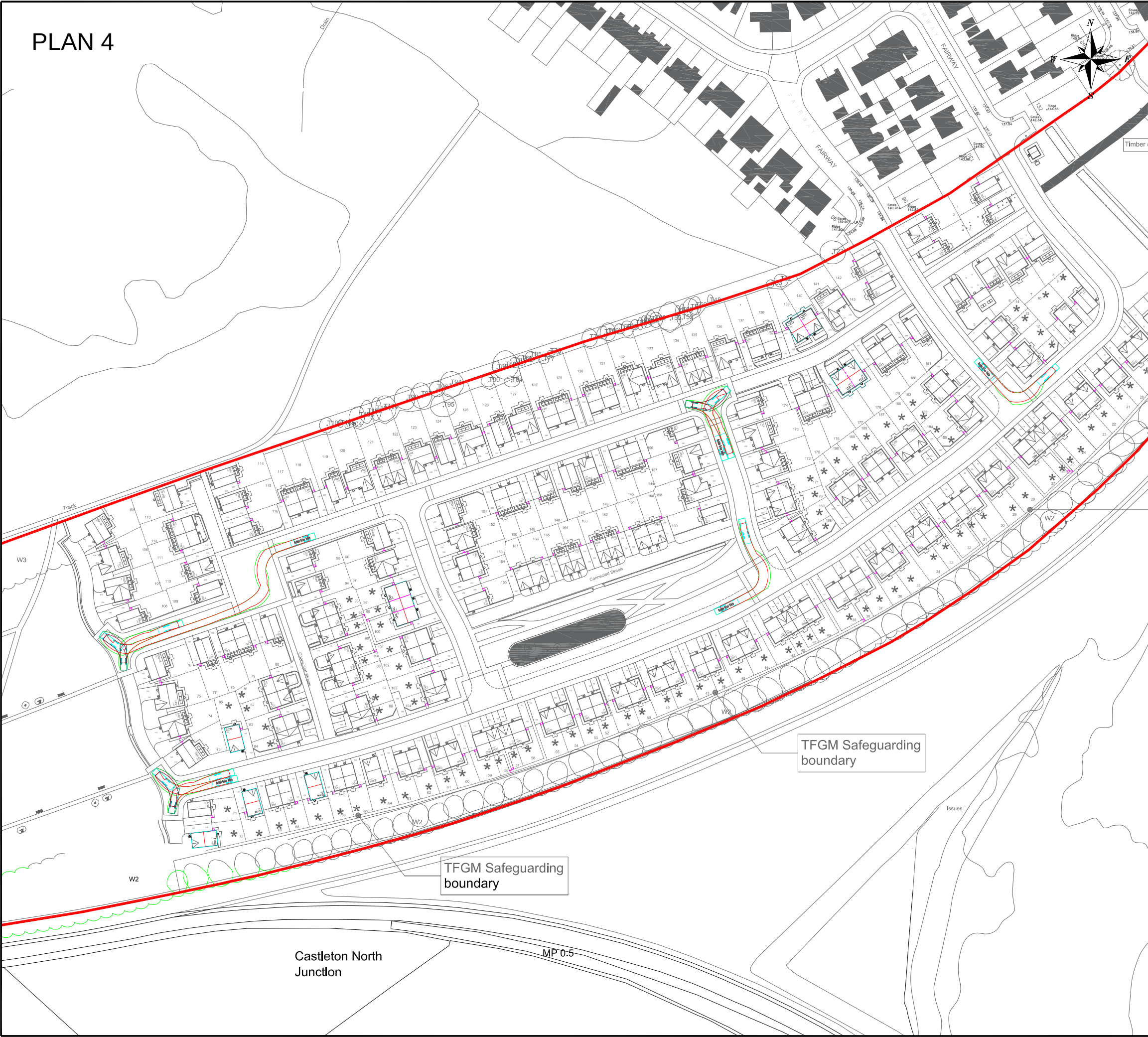
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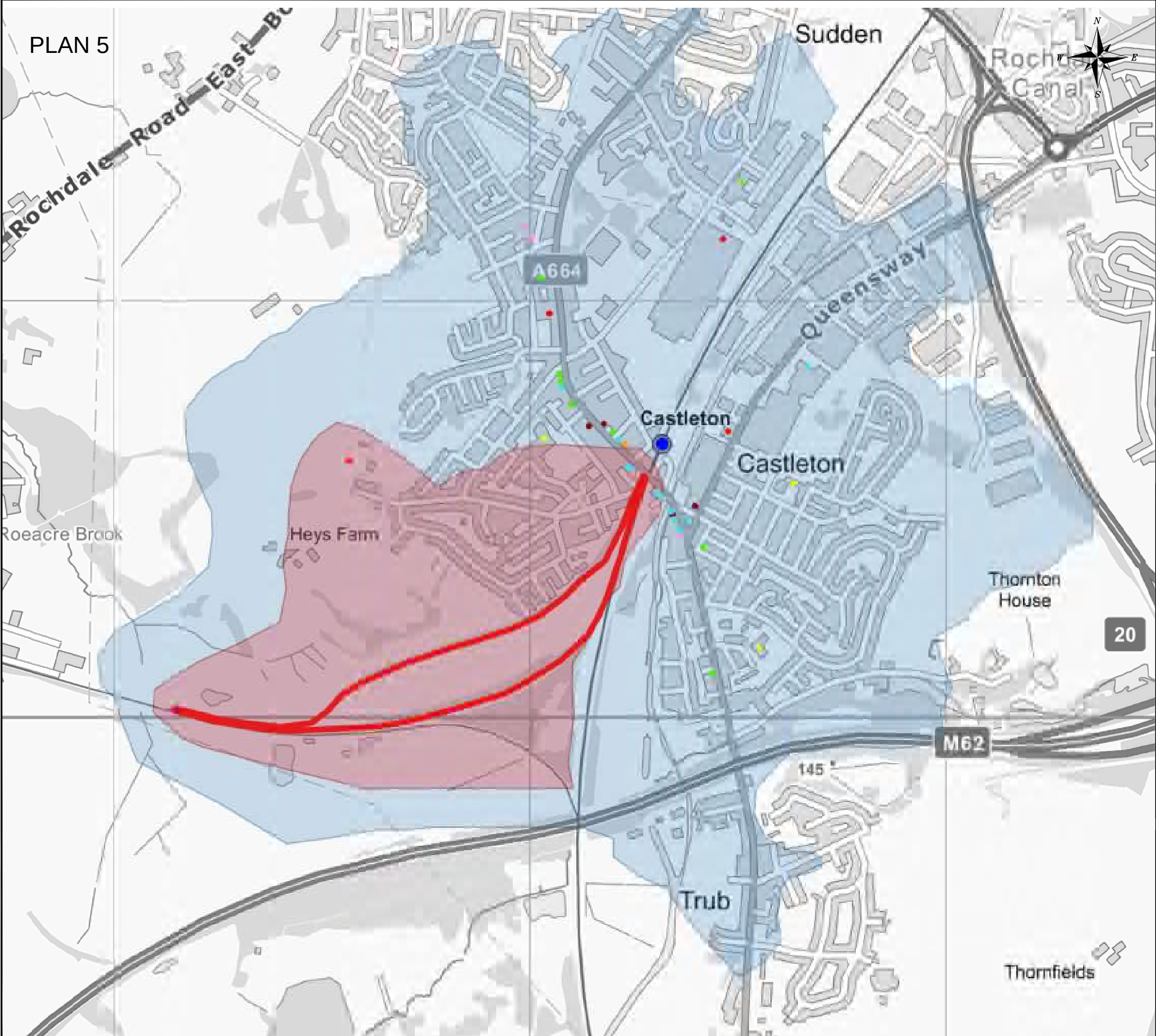
DRAWN: LG	CHECKED: LW	DATE: MAY 23
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DRAWING NUMBER: 3334-SP01	REVISION: E
-------------------------------------	-----------------------

Eddisons





PLAN 5

NOTES PLAN 5

- Site Location
- 800m Pedestrian Catchment
- 2km Pedestrian Catchment
- Nearest Bus Stops
- Train Station
- Cafe/Takeaway/Public House
- Education
- Healthcare/Medical
- Post Office
- Retail
- Sport/Leisure

REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT:
KELLEN HOMES

PROJECT:
CASTLETON, CORUS RAILWAY SIDINGS

DRAWING TITLE:
800M & 2KM PEDESTRIAN CATCHMENT WITH AMENITIES

SCALES:		
NTS @ A3		
DRAWN:	CHECKED:	DATE:
LG	SM	APR 21

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DRAWING NUMBER:	REVISION:
3334-03	-



FIGURES

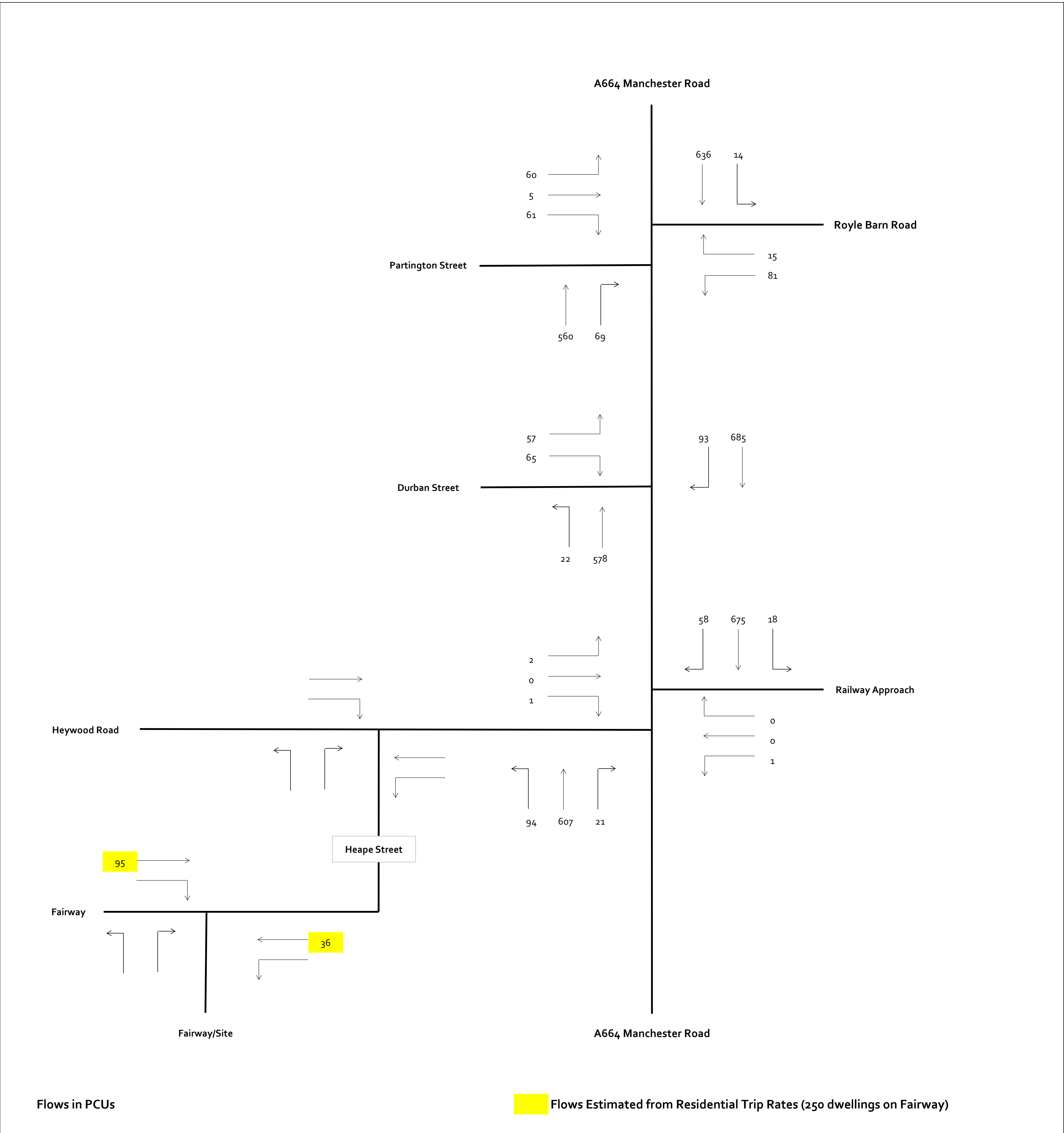


Figure 1 2019 Surveyed Flows - Weekday AM Peak (0800 - 0900)

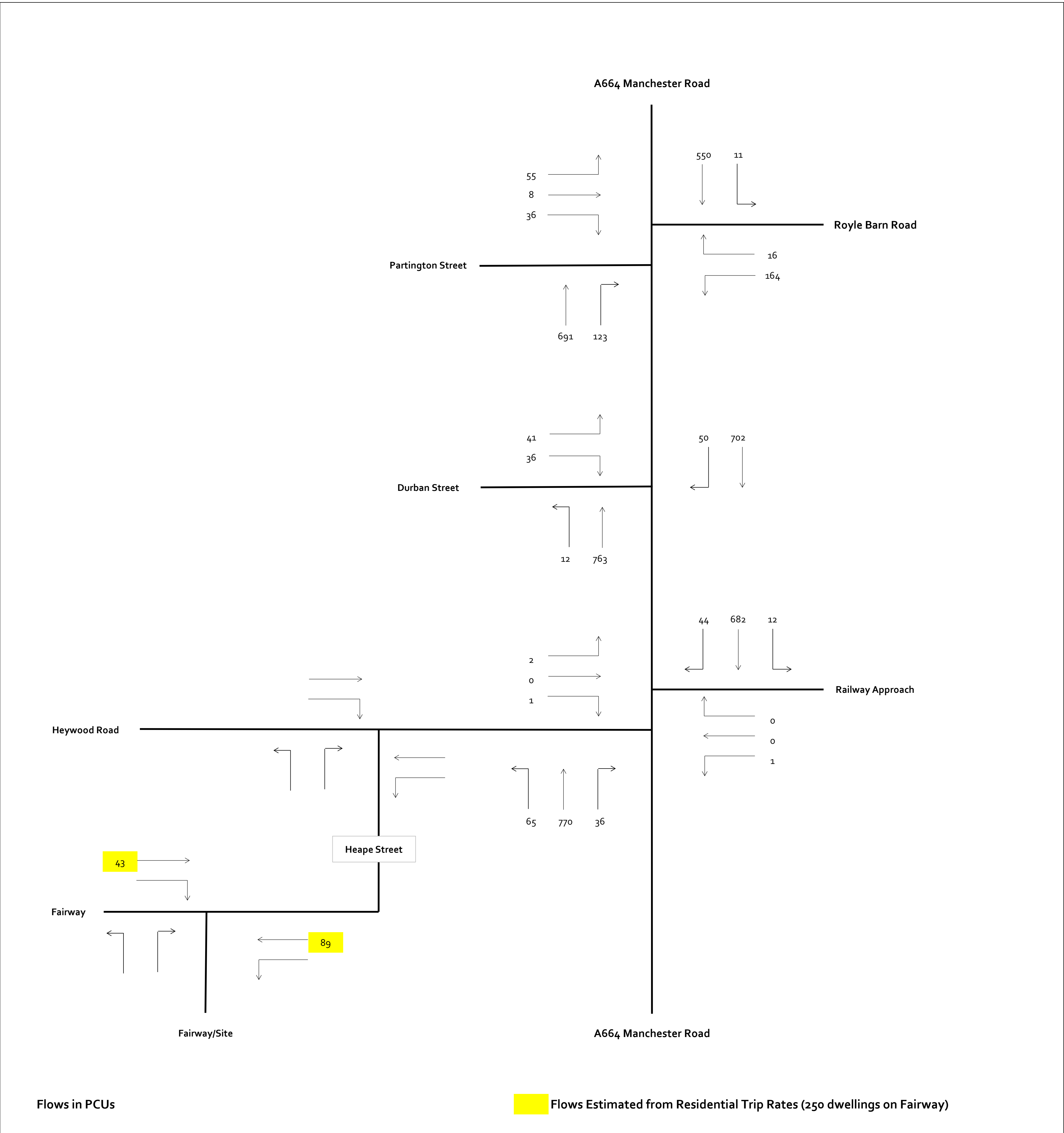


Figure 2 2019 Surveyed Flows - Weekday PM Peak (1700 - 1800)



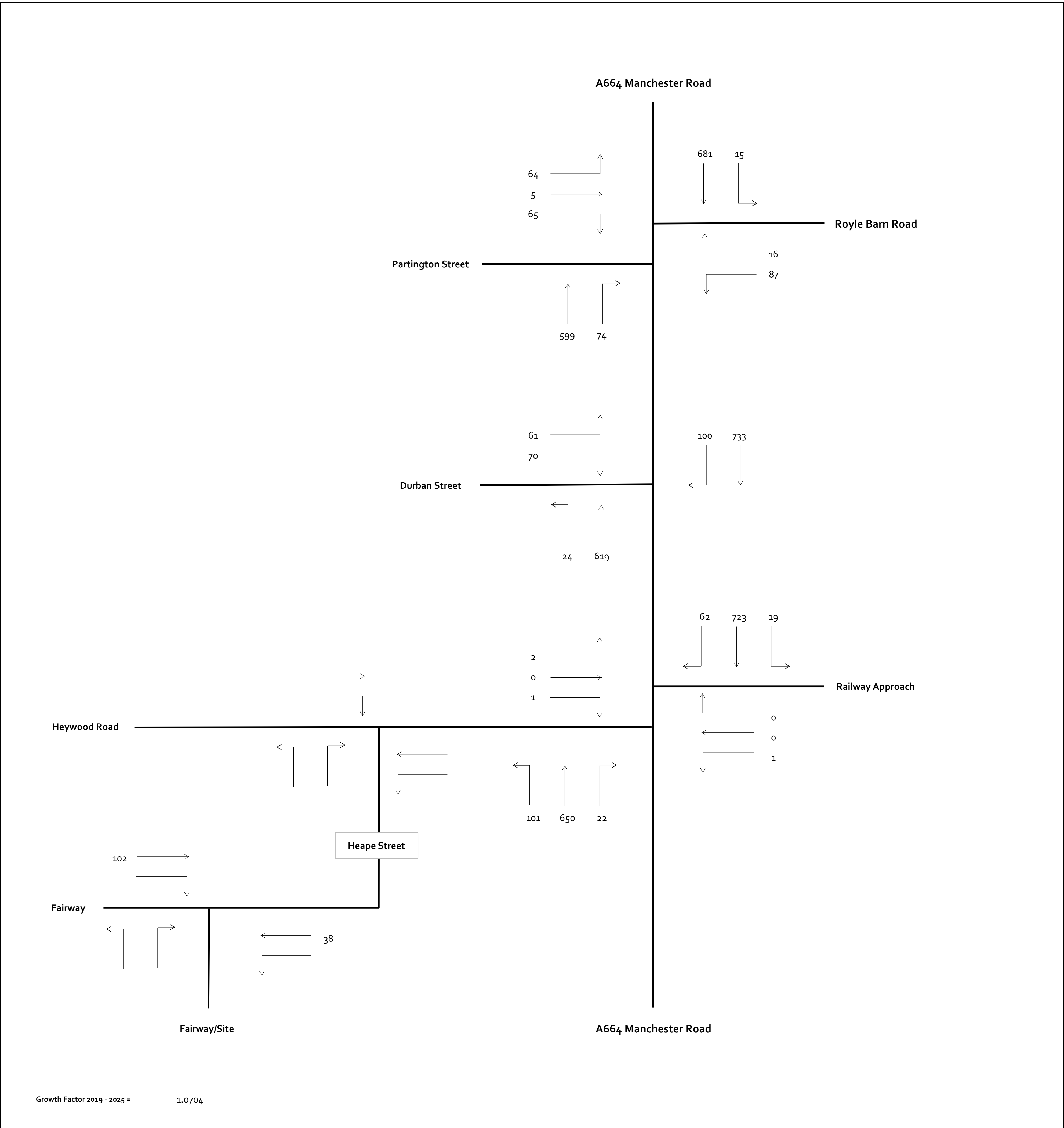


Figure 3 2025 Growthed Flows - Weekday AM Peak (0800 - 0900)



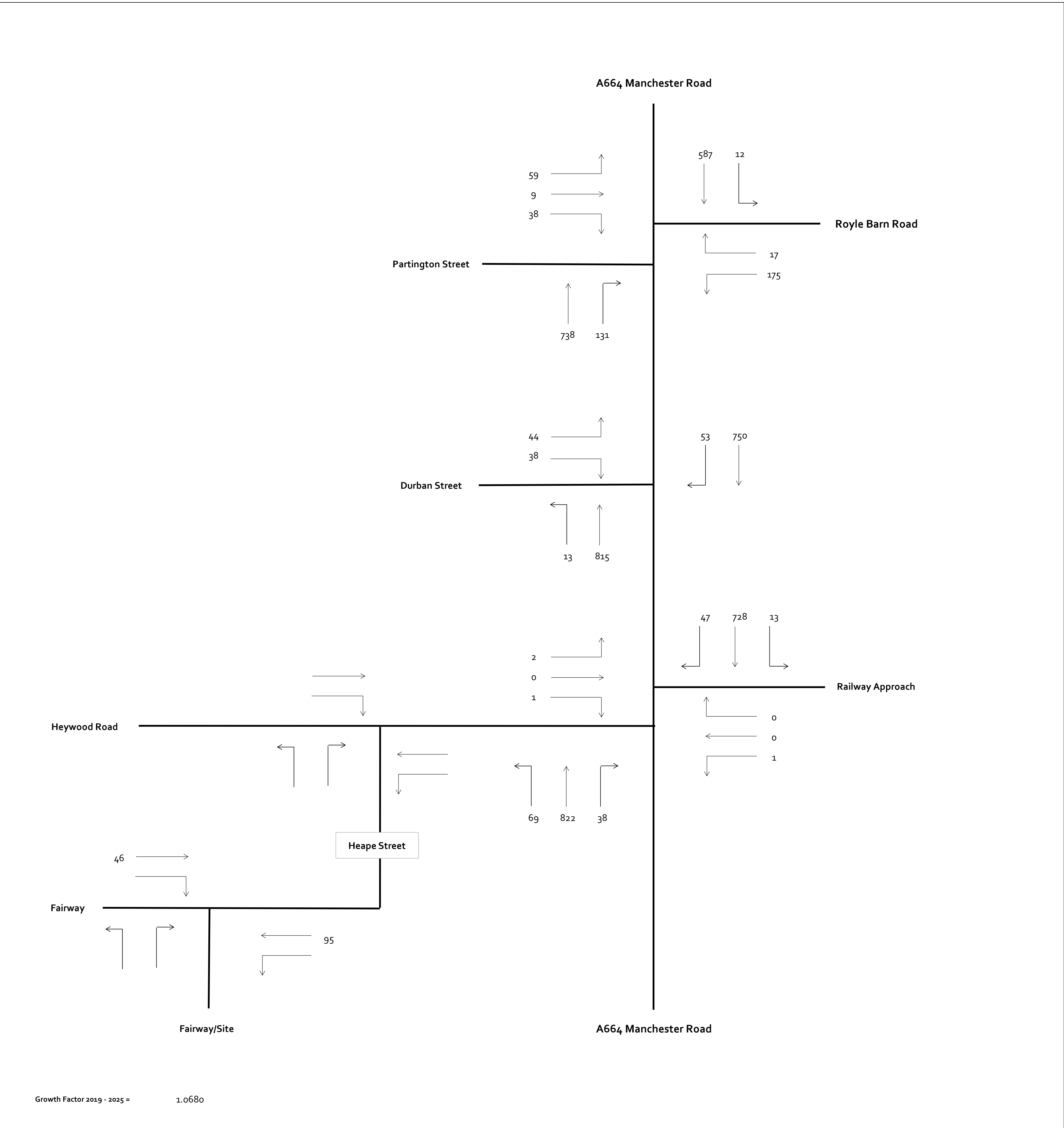


Figure 4 2025 Growthed Flows - Weekday PM Peak (1700 - 1800)



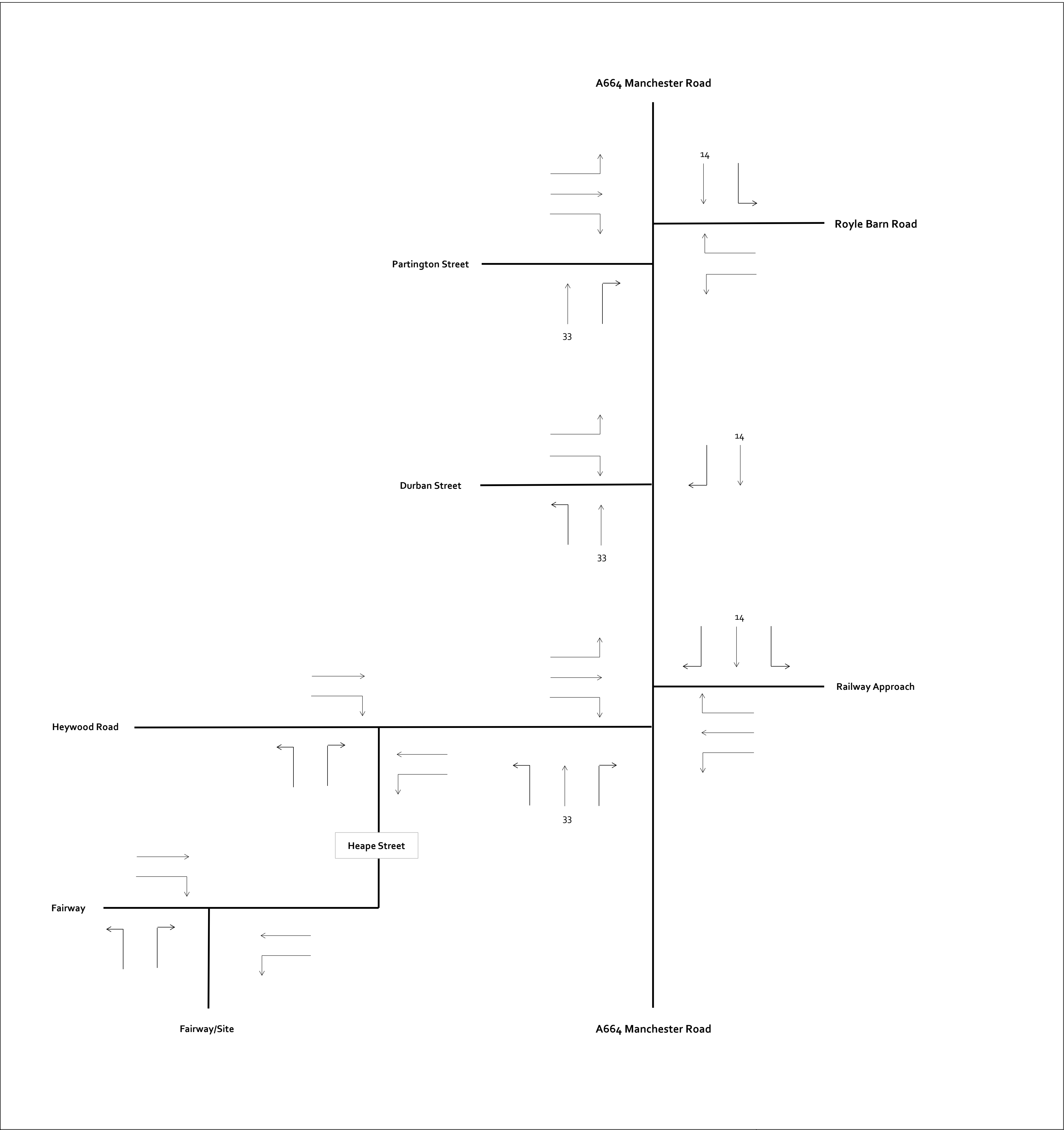


Figure 5 Committed Development Flows - Trub Farm Masterplan (App Ref:11/D54610) - Weekday AM Peak (0800 - 0900)



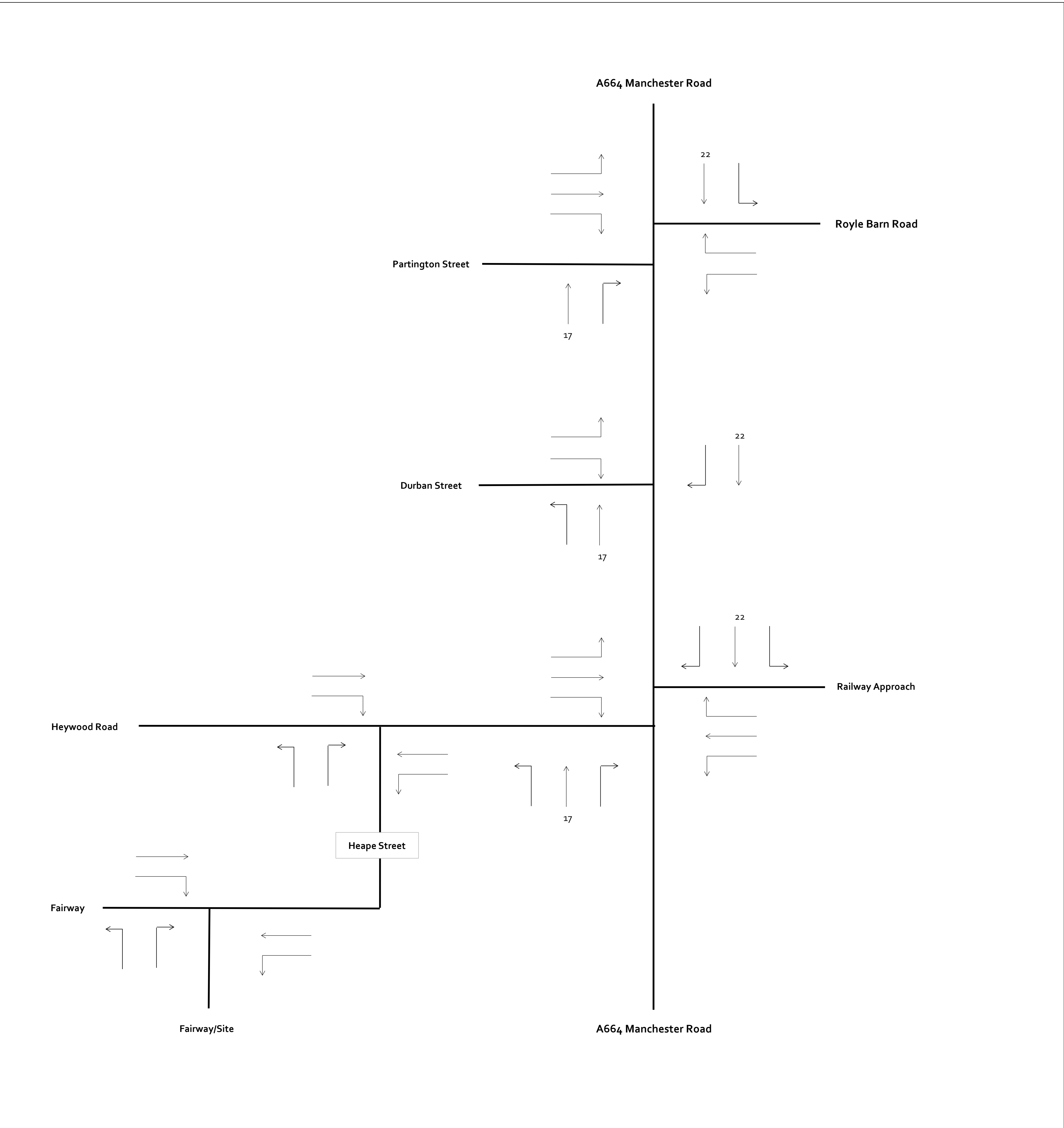


Figure 6 Committed Development Flows - Trub Farm Masterplan (App Ref:11/D54610) - Weekday PM Peak (1700 - 1800)

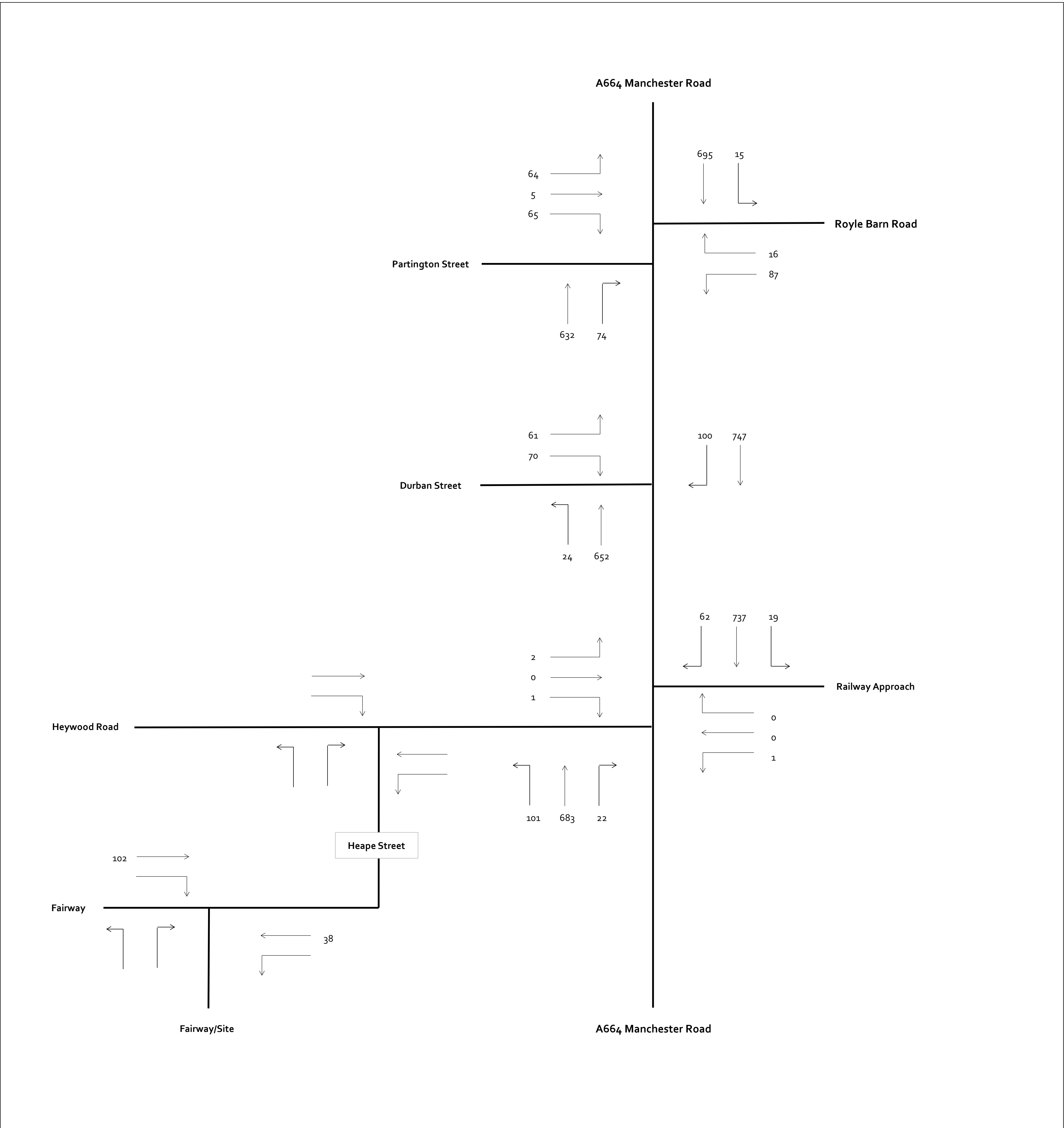


Figure 7 2025 Base Flows - Weekday AM Peak (0800 - 0900)



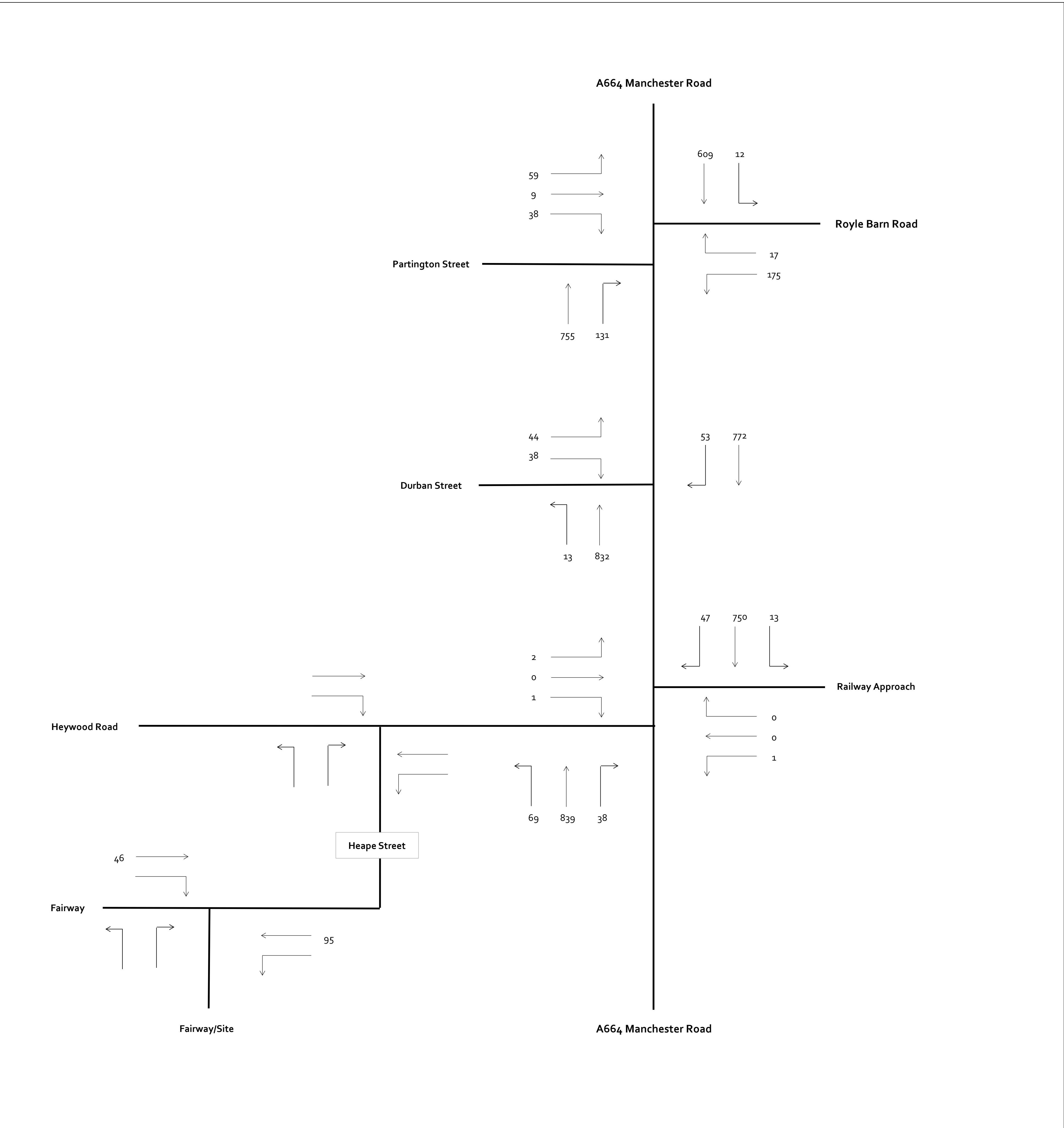


Figure 8 2025 Base Flows - Weekday PM Peak (1700 - 1800)





Figure 9 Proposed Residential Distribution



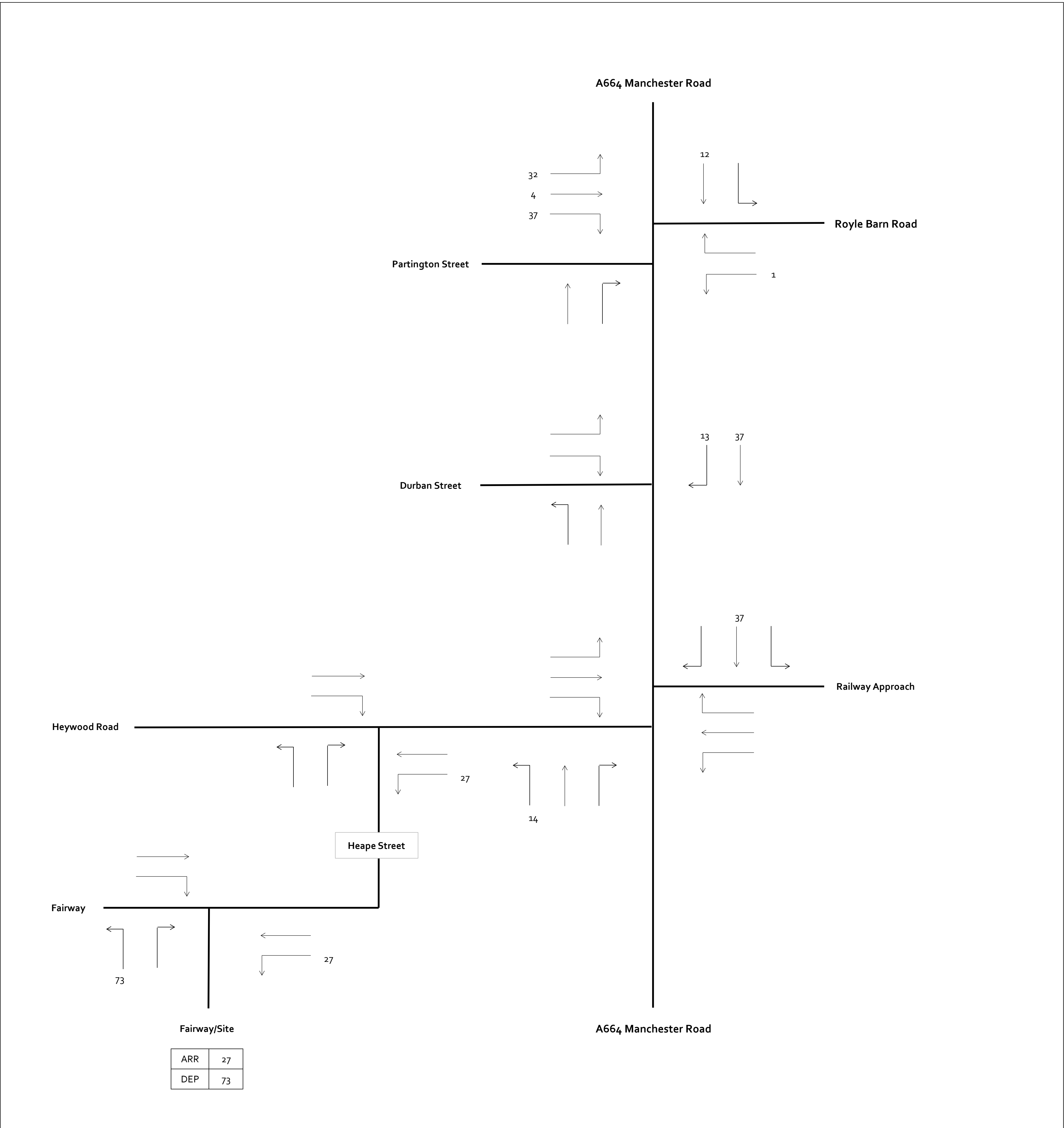


Figure 10 Proposed Development Flows - Weekday AM Peak (0800 - 0900)



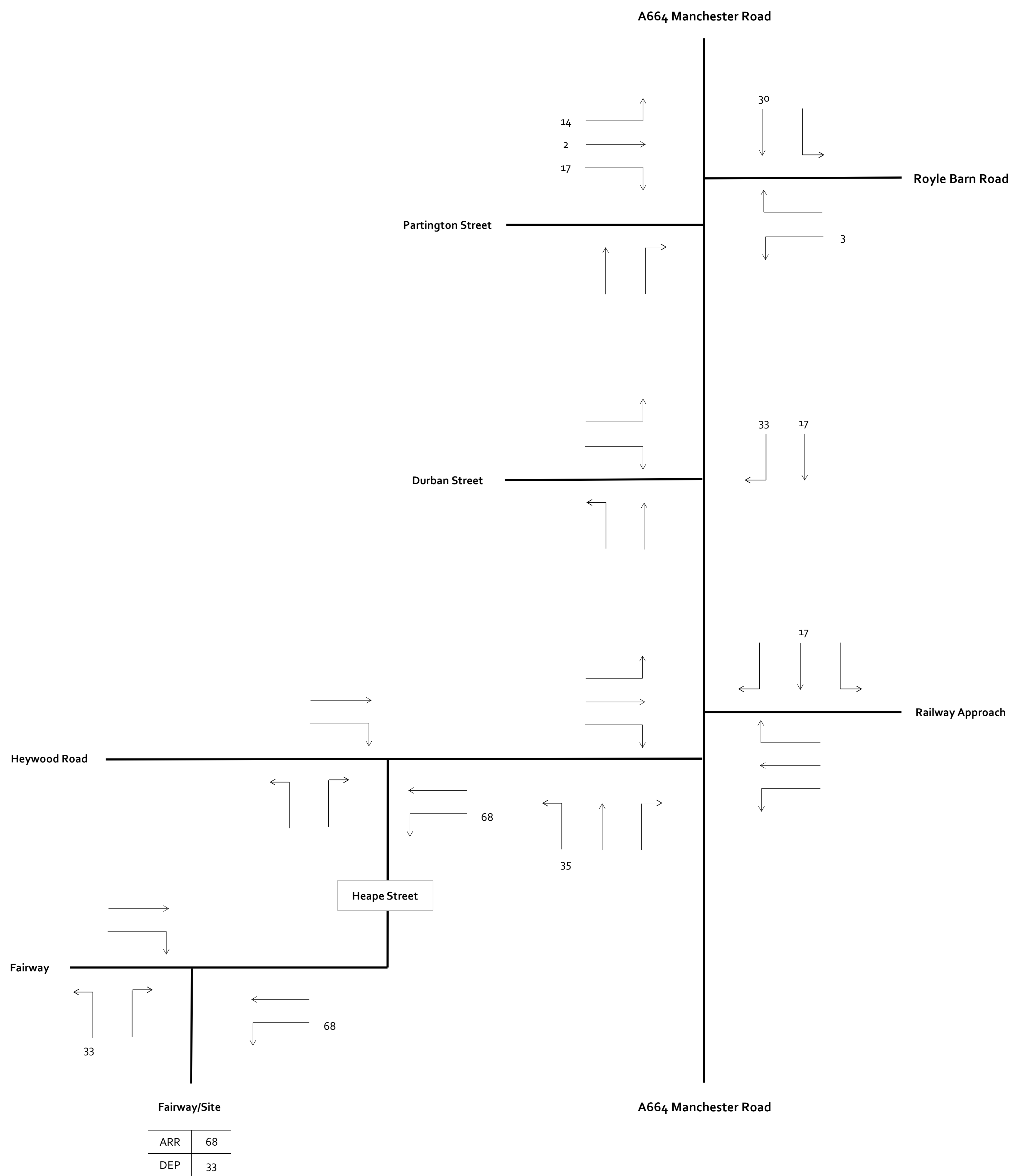


Figure 11 Proposed Development Flows - Weekday PM Peak (1700 - 1800)



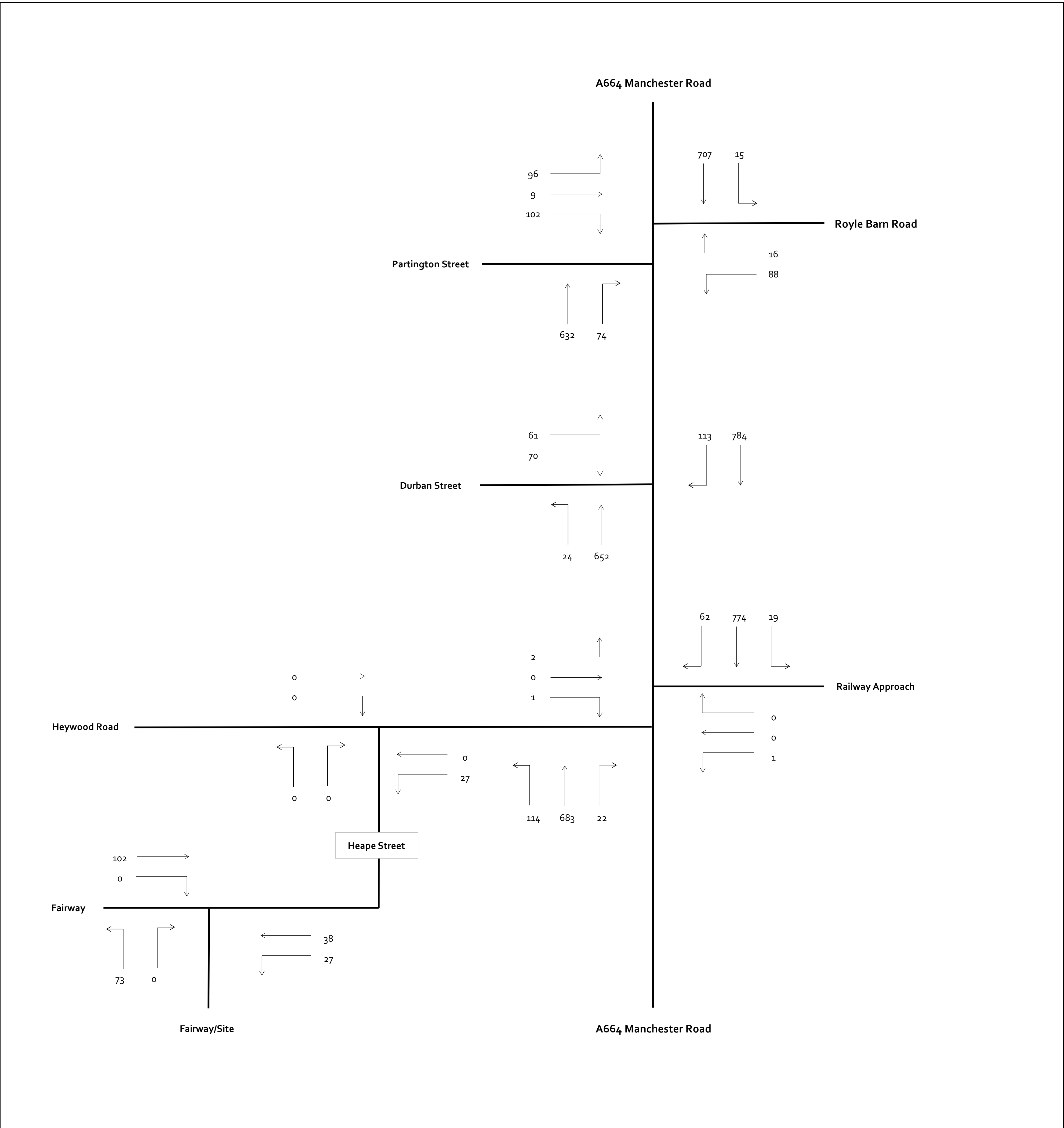


Figure 12 2025 With Development Flows - Weekday AM Peak (0800 - 0900)



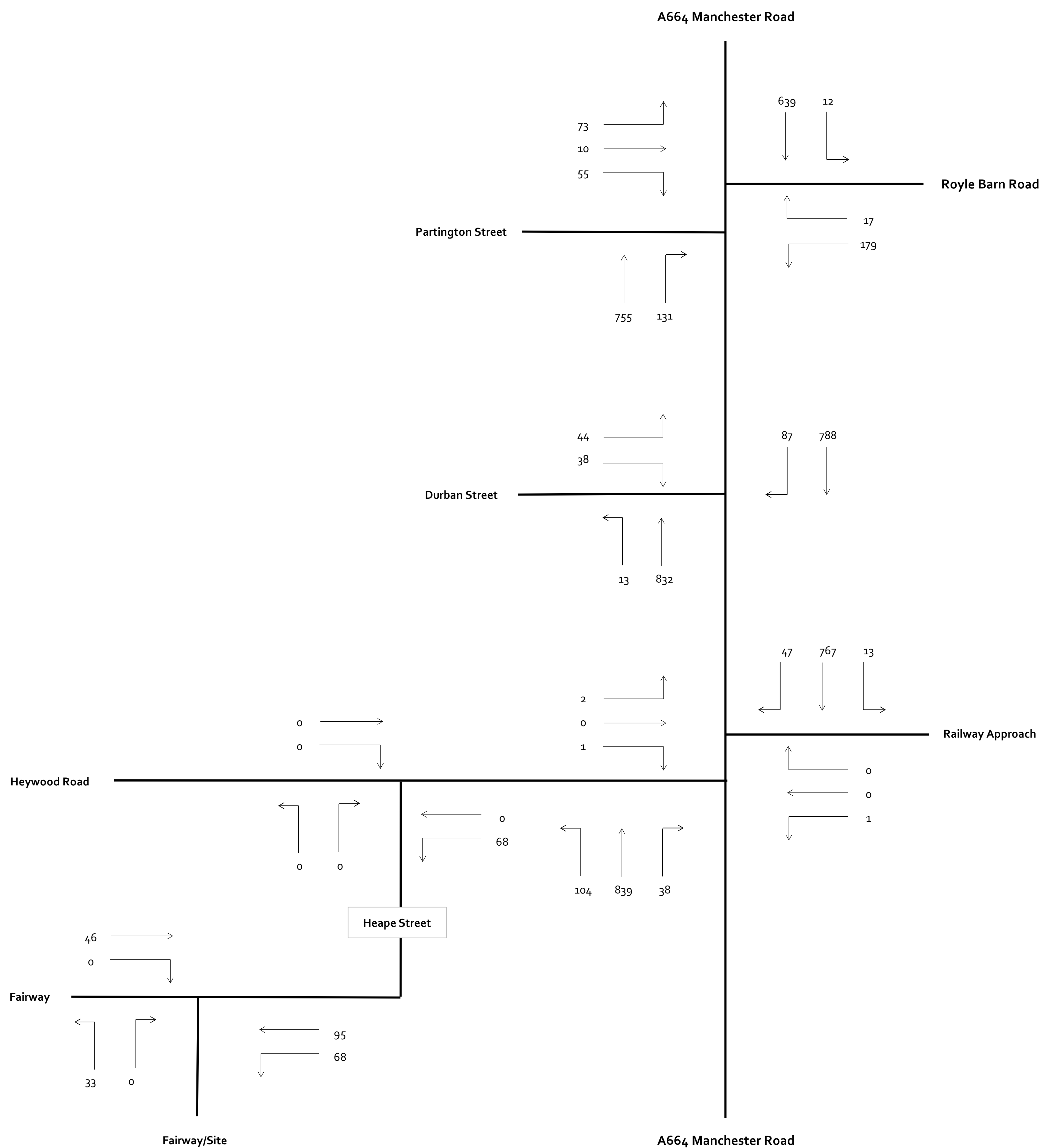


Figure 13 2025 With Development Flows - Weekday PM Peak (1700 - 1800)



APPENDICES

APPENDIX 1

Travel Plan Framework

Proposed Residential Development
Castleton Sidings, Rochdale

KELLEN HOMES

Residential Travel Plan Framework
February 2023



REPORT

Document: Residential Travel Plan Framework

Project:	Proposed Residential Development, Castleton Sidings, Rochdale
Client:	Kellen Homes
Job Number:	3334
File Origin:	Z:\projects\3334 Castleton, Corus Railway Sidings\Docs\Reports\3334TP.02.docx

Document Checking:

Primary Author	MTC	Initialled:
Contributor	SM	Initialled:
Review By	PJW	Initialled:

Issue	Date	Status	Checked for Issue
1	18-08-21	First Draft	
2	15-02-2023	Revised Draft	
3			
4			

Contents

1	INTRODUCTION.....	1
1.1	Introduction	1
1.2	Structure of the Travel Plan.....	1
1.3	Development Proposals	2
2	TRAVEL PLANNING POLICY AND GUIDANCE	3
2.1	Travel Planning Policy	3
2.2	Travel Planning Guidance	3
3	MANAGEMENT MEASURES	6
3.1	Introduction	6
3.2	Appointment of Travel Co-ordinator	6
3.3	Resident's Travel Pack.....	7
3.4	Travel Awareness and Information.....	9
3.5	Promotion of Lift Share Scheme	9
3.6	Encouraging Walking/Cycling	9
3.7	Encourage Home Working and Delivery Services	10
3.8	Encouraging Travel by Public Transport.....	10
3.9	Marketing and Promotion	11
5	TRAVEL PLAN TARGETS	22
5.1	Introduction	22
5.2	Potential Targets.....	22
5.3	Action Plan.....	23
6	PLAN MONITORING AND ASSESSMENT	25
7	CONCLUSIONS.....	27



Contents

PLANS

(See Transport Assessment)

1 INTRODUCTION

1.1 Introduction

1.1.1 Croft have been instructed by Kellen Homes to provide a Travel Plan Framework document relating to a planning application for a residential development on land at the former Baggs Yard Railway Sidings in Castleton.

1.1.2 This Travel Plan Framework will set out the principal strategies that will be put in place once the development is open and residents are occupying the dwellings, to encourage sustainable travel to the development.

1.1.3 The Department for Transport has issued two separate guides on the preparation of travel plans which are of relevance to this proposed development, these documents are as follows;

- Making Residential Travel Plans Work - Published in September 2005.
- Good Practice Guidelines: Delivering Travel Plans through the Planning Process - Published in April 2009.

1.2 Structure of the Travel Plan

1.2.1 Following this introduction, Section 2 details Travel Plan Policy and guidance and presents the 'Travel Plan Pyramid'. Section 3 sets out a series of management measures that will be implemented as part of the Travel Plan

1.2.2 Section 4 of the Travel Plan considers the accessibility of the site by non-car modes, including walking, cycling and public transport. Section 5 discusses targets for reducing trips by the private car while Section 6 details the monitoring of the Travel Plan.

- 1.2.3 Section 7 draws together the findings and conclusions.

1.3 Development Proposals

- 1.3.1 The development proposals consist of 191 residential dwellings with a range of 1, 2, 3 and 4 bedroom houses with associated landscaping and open space.
- 1.3.2 The proposed site layout is shown on **Plan 2** of the accompanying Transport Assessment.
- 1.3.3 Pedestrian and cycle access will be available via the vehicular access points off Fairway.
- 1.3.4 These links provide pedestrian and cycle connectivity with the surrounding Castleton area. There is an extensive footway network in the vicinity of the site connecting the site to the remainder of the Castleton area and notably the 'day to day' amenities close by, such as, shops, schools, healthcare facilities and employment opportunities.

1.4 The Travel Plan

- 1.4.1 The aim of the Travel Plan is as follows:
- To encourage residents and visitors to use alternatives to the private car;
 - To increase the awareness of the advantages and potential for travel by more environmentally friendly modes, and
 - To introduce a package of management measures that will facilitate travel by modes of transport other than the private car.

2 TRAVEL PLANNING POLICY AND GUIDANCE

2.1 Travel Planning Policy

- 2.1.1 The need to manage transport in new developments is included within national and local policy. The need to reduce car dependency, increase travel choices and encourage sustainable distribution is supported by the National Planning Policy Framework (NPPF) which states that all developments which generate significant amounts of movement should be required to provide a Travel Plan.
- 2.1.2 The NPPF further reinforces the importance of travel plans in the planning context and states *"Travel Plans should be considered in parallel to development proposals and readily integrated into the design and occupation of a new site"*.

2.2 Travel Planning Guidance

- 2.2.1 The preparation and adoption of a Travel Plan is an important element of managing the demand for travel to all modern developments.
- 2.2.2 The document, entitled *'Good Practice Guidelines: Delivering Travel Plans through the Planning Process'* sets out an overview of the process and delivery of Travel Plans and states that *"A Travel Plan is a long-term management strategy for an occupier or site that seeks to deliver sustainable transport objectives through positive action and is articulated in a document that is regularly reviewed."*

2.2.3 The DfT document entitled *"Making Residential Travel Plans Work"* states that *Travel Planning is one of a range of measures known as smarter choices which have been found to be effective on reducing traffic and improving accessibility in residential areas"* and goes on to say *"Travel Planning is one of a range of measures known as smarter choices which have been found to be effective on reducing traffic and improving accessibility in residential areas"*.

2.2.4 The DfT's *'Making Residential Travel Plans Work'* also introduces the concept of a 'Travel Plan Pyramid'. This helps demonstrate how successful plans are built on the firm foundations of a good location and site design. The pyramid is presented in **Figure 2.1** below;

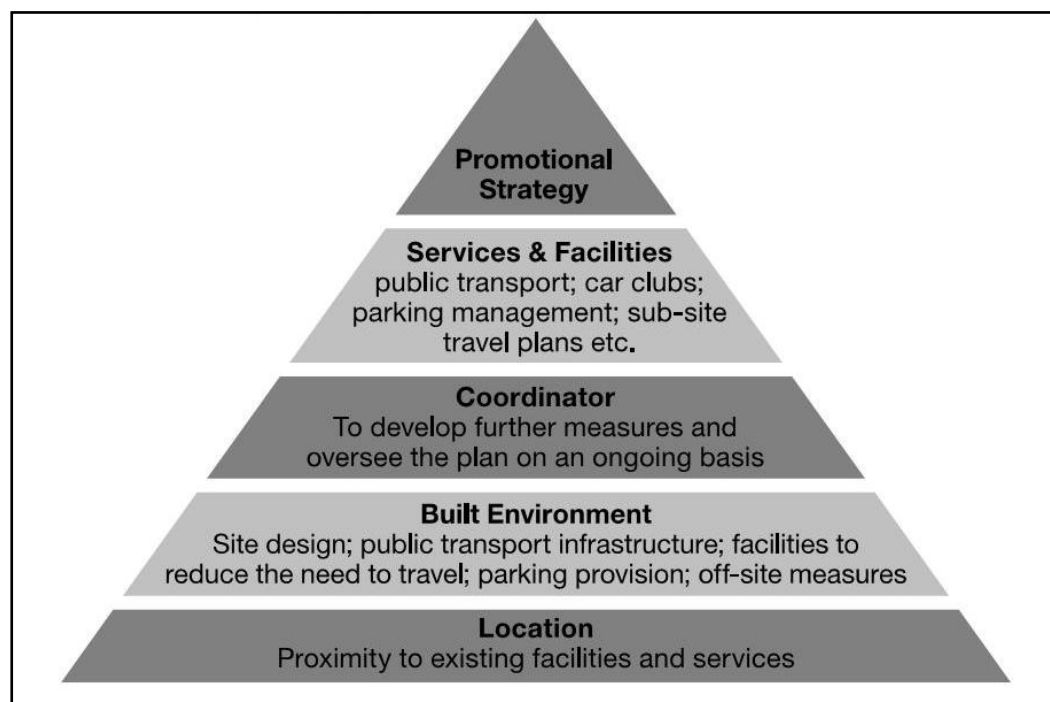


Figure 2.1 – The Travel Plan Pyramid

- 2.2.5 The hierarchy of 5 tiers of measures and criteria are well illustrated in pyramid form since the concept presented within that “good practice” is that each higher layer builds upon the more important foundations of the criteria and initiatives below it.
- 2.2.6 The most important layer of the pyramid is considered to be the base, this shows the key to making Travel Plans work is the actual location of the development and its proximity to local facilities and services essential to everyday life.
- 2.2.7 The second layer of the pyramid refers to how the layout of the site can assist in reducing the need to travel, which in this instance is again linked to the existing level of provision to facilitate sustainable travel.
- 2.2.8 As indicated in level 3 of the pyramid, the Travel Plan co-ordinator will be free to develop further measures to maximise the sustainability of the site.
- 2.2.9 The fourth layer of the pyramid looks at how parking management and public transport can influence travel choice, while the top layer of the pyramid relates to how the Travel Plan will be marketed and how the measures within are to be promoted.

3 MANAGEMENT MEASURES

3.1 Introduction

3.1.1 The following Travel Plan measures will be implemented:

- i) Appointment of Travel Plan Co-ordinator
- ii) Resident's Travel Pack
- iii) Travel Awareness and Information
- iv) Promotion of Lift Share Scheme
- v) Encouraging Walking/Cycling
- vi) Encourage Home Working and Delivery Services
- vii) Encouraging Travel by Public Transport
- viii) Marketing and Promotion

3.2 Appointment of Travel Co-ordinator

3.2.1 A Travel Plan Co-ordinator (TPC) is to be appointed prior to the properties being occupied.

3.2.2 The TPC will be responsible for all aspects of the Travel Plan.

3.2.3 Their primary functions will be as follows;

- Liaison with the local planning and highways authority.

- Provision of a Resident's Travel Pack containing information for residents.
- Promotion of the sustainable transport options available to residents, including public transport, cycle, walking and car sharing schemes.
- Maintenance of all necessary systems, data and paperwork.

3.2.4 The role of the TPC will also be to develop and manage the Travel Plan for the site.

3.2.5 The duties will include monitoring, reviewing targets and forming action plans to remedy areas where the Travel Plan is not performing. Annual progress reports will be prepared and submitted to Rochdale Council.

3.2.6 Details of the nominated TPC will be submitted to Rochdale Council and the appropriate local bus companies at least one month prior to first occupation at the site. Similarly, the TPC will be advised of appropriate contact personnel at the Council.

3.3 Resident's Travel Pack

3.3.1 It is an important and emerging principle in residential developments that where appropriate, the implementation of travel plan type measures can establish a pattern of travel behaviour favouring sustainable modes from the inception of the development.

3.3.2 The proposed development is very well placed for encouraging access on foot or by cycle to a wide range of facilities. Similarly, the existence of nearby public transport services will encourage choice of public transport as a primary means of travel for the development.

3.3.3 However, in order to build on these locational advantages, it is recommended that a Resident's Travel Pack is provided for the occupants of each new dwelling.

- 3.3.4 The contents of such a travel pack would include information relating to walking and cycling routes in the area and the provision of up to date bus and rail timetable information as well as identification of the location of nearby amenity facilities as part of the information supplied to prospective purchasers.
- 3.3.1 The contents of the packs will vary depending upon the information available on sources such as the internet or local bus stops.
- 3.3.2 However, the Travel Packs will include:
- Information about the local area, e.g. location, distance and directions to local shops, schools, Post Offices, Doctor Surgeries, Hospitals, Banks, Libraries, Parks, attractions and other local amenities.
 - Copies of the most recently published public transport information.
 - Details of web sites and other sources of information which can be accessed in the future such as:
 - o Public Transport - Links to timetable information e.g. www.traveline.org.uk and www.nationalrail.co.uk
 - o Car Sharing - Links to websites that co-ordinate car sharing such as www.carshare.com, www.liftshare.org.uk and www.nationalcarshare.co.uk to encourage car sharing.
 - o Cycling - Link to the UK's National Cyclists Organisation website www.ctc.org.uk and Sustrans www.sustrans.org.uk
 - o Local Amenities - local supermarkets offering internet shopping would reduce the need for car travel.

3.3.3 The adoption of such travel packs is recognised as being an important element in ensuring that access by non-car modes is promoted from the earliest occupation of a residential development. Within the Resident's Travel Pack, residents will be encouraged to consider ways in which to reduce their need to travel such as home delivery for shopping and working from home.

3.3.4 The first issue of the Resident's Travel Pack will be the responsibility of Kellen Homes.

3.4 Travel Awareness and Information

3.4.1 Residents will be made aware of the existence of the Travel Plan and its aims. As mentioned previously, Resident's Travel Packs will be issued for new residents moving into the development and prospective buyers will be made aware of the Travel Plan when viewing properties.

3.5 Promotion of Lift Share Scheme

3.5.1 The Travel Plan Co-ordinator will promote the use of car sharing via registering on the Liftshare website. It allows users to register their details, where they are travelling to, if they are offering a lift or need a lift to their destination.

3.5.2 The website can be found at the following location www.liftshare.com

3.6 Encouraging Walking/Cycling

3.6.1 Residents will be provided with information and advice concerning safe pedestrian and cycle routes to the site through the provision of the Resident's Travel Pack.

3.6.2 Local and National campaigns for walking and cycling will also be promoted by the Travel Plan Co-ordinator.

- 3.6.3 As part of these schemes the provision of walking/cycling signage will be investigated by the Travel Plan Co-ordinator, this signage could provide details on the routes and distances to and from local services and amenities in the area.

3.7 Encourage Home Working and Delivery Services

- 3.7.1 All new properties will have the ability to have broadband internet connection points, enabling the residents to obtain the internet. Therefore, encouraging home working and shopping, reducing the need to travel especially during peak times.
- 3.7.2 A number of telecommunication providers serve the area enabling residents to search for potential liftshare opportunities, as well as complete online shopping. Broadband will also enable residents to work from home thus, complying with goals highlighted within national and local policy.

3.8 Encouraging Travel by Public Transport

- 3.8.1 The TPC will liaise with the local bus operators to promote the use of public transport services and ensure that up to date timetable information is readily available to residents.
- 3.8.2 Travel by public transport will be promoted and residents will be encouraged to access the public transport information provided on relevant websites, as well as utilising the Journey Planning tools available.

3.9 Marketing and Promotion

- 3.9.1 To ensure that potential residents of the site are informed about the Travel Plan and its goals from the earliest stage, the Travel Plan will have a significant presence within the sales suite of the development which will include a display outlining the sustainable travel measures being implemented and details of access by sustainable travel modes.
- 3.9.2 The sales staff will be given training to promote the Travel Plan as an asset and selling point of the development and key concepts relating to accessibility included in marketing/sales particulars.

4 ACCESSIBILITY BY NON-CAR MODES

4.1 Introduction

4.1.1 In order to accord with the aspirations of the NPPF, any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.

4.1.2 New proposals should therefore attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.

4.1.3 The accessibility of the proposed site has been considered by the following modes of transport:

- accessibility on foot;
- accessibility by cycle;
- accessibility by bus;
- accessibility by rail.

4.2 Access on Foot

4.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life. This philosophy clearly encourages the opportunity to walk whatever the journey purpose and also helps to create more active streets and a more vibrant neighbourhood.

- 4.2.2 Existing footways exist on both sides of Fairway and Heywood Road of around 2 metres in width. These footways provide links to a comprehensive network of routes within the local area, supplemented by a number of controlled crossing points on Manchester Road which facilitate access to the nearby day to day amenities within the area.
- 4.2.3 The DFT National Travel Survey of 2018 confirms that 80% of all trips less than a mile (1.6km) are carried out on foot.
- 4.2.4 The Institute of Highways and Transportation (IHT) document 'Guidelines for Providing for Journeys on Foot', provides information on acceptable walking distances. Table 3.2 suggests distances for desirable, acceptable and preferred maximum walks to 'town centres', 'commuting/schools' and 'elsewhere'. The 'preferred maximum' distances are shown below in **Table 4.1**.

Suggested Preferred Maximum Walk		
Town Centre	Commuting/School	Elsewhere
800m	2,000m	1,200m

Table 4.1 - IHT 'Providing for Journeys on Foot' Walk Distances

- 4.2.5 Manual for Streets (MfS) continues the theme of the acceptability of the 2,000-metre distance in paragraph 4.4.1. This states that '*walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPS13 states that walking offers the greatest potential to replace short car trips, particularly those under 2 km*'.
- 4.2.6 **Table 4.2** below summarises this guidance in tabular form.

'Comfortable' Walk	'Preferred Maximum' Walk
800m	2,000m

Table 4.2 - Manual for Streets Walk Distances

- 4.2.7 More specific guidance on the distances that children will walk to school is found in the July 2014 document published by the Department for Education (DfE) entitled 'Home to School Travel and Transport' statutory guidance document. This suggests that the maximum walking distance to schools is 2 miles (3.2 kilometres) for children under 8 and 3 miles (4.8 kilometres) for children over the age of 8. This is summarised below in **Table 4.3**.

Children under 8 Walk Distance	Children over 8 Walk Distance
3,200m	4,800m

Table 4.3 – DfE Walk Distances to Schools

- 4.2.8 Further evidence that people will walk further than the suggested 'preferred maximum' distances in the IHT 'Providing for Journeys on Foot' is contained in a WYG Report entitled 'Accessibility – How Far Do People Walk and Cycle'. This report refers to National Travel Survey (NTS) data for the UK as a whole, excluding London, and confirms the following 85th percentile walk distances:
- All journey purposes – 1,930-metres;
 - Commuting – 2,400-metres;
 - Shopping – 1,600-metres;

- Education – 3,200 or 4,800-metres;
- Personal business – 1,600-metres.

4.2.9 Overall, in Table 5.1, the document states that 1,950 metres is the 85th percentile distance for walking as the main mode of travel. **Table 4.4** below summarises the various 85th percentile walk distances suggested as guidelines in the WYG Study.

85 th Percentile Walk Distances					Overall Recommended Preferred Max
All Journeys	Commuting	Shopping	Education	Personal	
1,950m	2,100m	1,600m	3,200m/4,800m	1,600m	1,950m

Table 4.4 - WYG Report/NTS Data Walk Distances

4.2.10 In summary, the distance of 1,950-metres, or around 2-kilometres, represents an acceptable maximum walking distance for the majority of land uses although clearly the DfE guidance for walking to school is up to 3.2-kilometres.

4.2.11 Section 3.1 of the CIHT guidance 'Planning for Walking' mentioned earlier in this report provides a useful reminder of the health benefits of walking. This states that:

'A brisk 20 minute walk each day could be enough to reduce an individual's risk of an early death.'

4.2.12 A 20-minute walk equates to a walking distance of around 1,600-metres.

- 4.2.13 In light of the above review, a pedestrian catchment of 2-kilometres from the centre of the site, using all usable pedestrian routes, has been provided in **Plan 5** of the accompanying Transport Assessment and provides an illustrative indication of the areas that can be reached based on a leisurely walk from the site.
- 4.2.14 In addition, to the pedestrian catchment plan, a review of the proximity of local facilities such as local shops/retail outlets and leisure facilities has been undertaken and the location of these is also shown in Plan 5.
- 4.2.15 The 2,000-metre pedestrian catchment illustrates that the majority of Castleton can be accessed, such as, New Bridge Chippy, Annies, Co-op Food, Castleton Primary School, St. Gabriel's RC Primary School, Castleton Post Office, St Edwards C of E Primary School, Premier – Castleton, Castleton Health & Leisure, Small World Nurseries and Well Castleton – Elizabeth Street.
- 4.2.16 **Table 4.5** below, shows the approximate walking distance from the centre of the site to several of the local key amenities in the immediate vicinity of the site. The table also confirms whether or not the particular amenity is within the 'preferred maximum' walk distances using the above guideline criteria.

Local Amenity	Distance	Guidance Criteria	Meets with Guidance?
New Bridge Chippy	590m	1,600m	YES
Castleton Post Office	590m	1,600m	YES
Annies	650m	1,600m	YES
St Edwards C of E Primary School	775m	3,200m	YES
Co-op Food	800m	1,600m	YES
Premier - Castleton	830m	1,600m	YES
Castleton Post Office	975m	1,600m	YES
Castleton Health & Leisure	975m	1,600m	YES
Small World Nurseries	1,030m	1,600m	YES
St Gabriel's RC Primary School	1,120m	3,200m	YES
Well Castleton – Elizabeth Street	1,225m	1,600m	YES

Table 4.5 - Approximate Distance from Site to Local Facilities

- 4.2.17 As can be seen in the above table, the site is located within proximity to a number of local amenities including primary services as well as leisure facilities.
- 4.2.18 All of the day to day amenities are well within the 'preferred maximum' walk distances described earlier in this section and indeed many, including the nearest food store and nearest primary school, are within the 800 metres 'comfortable walk' from the site as contained within MfS guidance.
- 4.2.19 It is therefore considered that the existing and proposed pedestrian infrastructure will facilitate safe and direct pedestrian linkages between the site and local destinations.

4.3 Access by Cycle

- 4.3.1 An alternative mode of travel to the site could be achieved by bicycle. A distance of 5 kilometres is generally accepted as a distance where cycling has the potential to replace short car journeys. This distance equates to a journey of around 25 minutes based on a leisurely cycle speed of 12 kilometres per hour and would encompass parts of Rochdale, Heywood and Middleton.
- 4.3.2 National cycle route 66, starts north of Rochdale where it runs south into the city centre where it meets National Cycle Route 92. This route also starts north of Rochdale where it also runs ends in the centre of Rochdale. Both routes are both on and off-national cycle route, 66 is located approximately 380 metres from the site, whereas 92 is located 4.8 kilometres from the site.
- 4.3.3 The site can therefore be considered as being accessible by cycle.

4.4 Access by Bus

- 4.4.1 The nearest bus stops to the site are located approximately 800 metres to the east on Manchester Road, around a 10 minute walk from the site. Additional bus stops are located further along Queensway. All the nearest bus stops to the site are shown on **Plan 5**.
- 4.4.2 A summary of the services available from the nearest bus stops from the development site is provided in **Table 4.6** below.

Serv No	Route	Monday – Friday (per hour)				Sat	Sun
		AM Peak	Midday	PM Peak	Eve		
17	Manchester – Rochdale via Middleton	3	3	3	2	3	2

Table 4.6 - Existing Bus Services Operating Close to the Site

- 4.4.3 As can be seen from Table 4.6, the nearest bus stops to the site provides access to the number 17 service that operates throughout the day, weekday evenings and at weekends to destinations such as Rochdale, Middleton, Blackley and Manchester.
- 4.4.4 The above services operate from around 5:00am to around 23:30pm, making travel by public transport a real alternative to travelling by car for all journey purposes.
- 4.4.5 In order to demonstrate the level of accessibility, some example journey times by bus are presented below **Table 4.7** below.

Destination	Duration
Rochdale town centre	11 minutes
Middleton	16 minutes
Manchester	34 minutes

Table 4.7 - Example Bus Journey Times from the Site

- 4.4.6 The above table demonstrates that Rochdale town centre is an approximate 10-minute bus journey from the site and Middleton is a 16-minute bus journey.

- 4.4.7 It is therefore concluded that the site can be considered as highly accessible by bus.

4.5 Accessibility by Rail

- 4.5.1 Castleton station is the closest railway station to the site. It can be accessed via a short 8-9 minute walk as the station is 700 metres from the centre of the site. The station is managed by Northern and has 2 platforms, offering 3 services per hour to destinations such as Leeds and Manchester city centre.

- 4.5.2 This provides opportunities for travelling to and from the site by rail.

4.6 Accessibility Summary

- 4.6.1 The proposals have been considered in terms of accessibility by non-car modes for the proposed development.

- 4.6.2 The following conclusions can be drawn from this section of the report:

- The site is well located to cater for trips on foot and provides potential for a high degree of pedestrian trips between the development and the surrounding area;
- It has been demonstrated that the site is accessible by cycle;
- The services from the bus stops on Manchester Road which connect the site with retail, employment and leisure facilities in Rochdale, Middleton and Manchester. It can therefore be concluded that the proposed development is highly accessible by bus;
- The site has been demonstrated to be accessible by rail with Castleton railway station located within a 10 minute walk from the site.



- 4.6.3 In light of the above, it is considered that the site is highly accessible and caters for needs of the development's residents and visitors. As such, this will assist in promoting a choice of travel modes other than the private car, as set out in NPPF.

5 TRAVEL PLAN TARGETS

5.1 Introduction

- 5.1.1 This section of the Travel Plan deals with the post development scenario i.e. once the development is complete, occupied and the Travel Plan has been implemented and relates to targets against which the success of the Plan in achieving its objectives will be measured.
- 5.1.2 The targets are designed to be quantifiable, be relevant to both measures and objectives identified in the Plan and to include timescale.
- 5.1.3 In order to set the targets, further information (e.g. through a travel survey) will have to be obtained in order to establish against which to set the targets. This information will be related to existing patterns of movement (i.e. the proportion of residents who travel to their workplace by non-car mode) and may be obtained from sources such as the National Travel Survey and the National Census.
- 5.1.4 More accurate information to establish the baseline targets will be obtained from a Resident's Travel Survey which will be undertaken within three months of the development being 75% occupied.

5.2 Potential Targets

- 5.2.1 The targets are designed to be quantifiable, be relevant to both measures and objectives identified in the Plan and to include timescale.
- 5.2.2 Targets which according to the DfT may potentially be included in the Travel Plan include the following:

- Car trips per household - targets set on the basis of predicted trip rates for the development.
- Uptake of alternatives - targets for bus patronage, registration and participation in the Liftshare car share scheme, cycle counts and pedestrian counts.
- Car ownership and mode of travel - trip based targets may be supplemented by targets related to car ownership, travel to work by mode and travel to school by mode.
- Travel Plan awareness targets - for example, a target can be established to ensure a significant percentage of residents are aware of the Travel Plan and its purpose.

5.3 Action Plan

5.3.1 **Table 5.1** below provides an Action Plan and timescales to assist the Travel Plan Co-ordinator (TPC) to implement the obligations of the Travel Plan;

Action	Target Date	Indicator/Measured by	Responsibility
Appointment of TPC	TPC appointed one month prior to first occupation of site	Appointment of TPC by target date	Kellen Homes
Production of Residents Travel Pack	Upon Occupation	Distribution of Residents Travel Pack	Kellen Homes
Undertake initial travel surveys	Within 3 months of reaching 75% occupation of development	Receipt of survey results	TPC
Agree Travel Plan Targets	3 months after initial travel survey undertaken	Receipt of Written agreements of target	TPC
Achieve target car driver travel to work mode split	5 years after initial travel survey	Resident travel surveys conducted in years 1, 3 and 5	TPC

Table 5.1 – Travel Plan Action Plan and Timescales

- 5.3.2 The table above sets out the key tasks that will need to be undertaken by the Travel Plan Co-ordinator as part of the Travel Plan including guidance as to timescales for the tasks to be undertaken.

6 PLAN MONITORING AND ASSESSMENT

6.1.1 DfT best practice guidelines state that monitoring of the Travel Plan should normally take place on the following basis:

- Early on in the occupation period of the site - for example, triggered by 75% occupancy to provide the information base for the review of the plan.
- Annually or at least every two years thereafter to provide on-going information on the impact of the plan.
- Monitoring should take place over a wide range of time periods to reflect the different pattern of journeys that can be generated by residential development.

6.1.2 The monitoring could include items such as:

- Full residential surveys to be completed in year 1, year 3 and year 5 and snap shot surveys to be completed every 6 to 12 months.
- Feedback from bus operators to establish demand for local bus services.

6.1.3 Consideration will then be given on how best to monitor and measure the success of the Travel Plan measures when preparing the final Travel Plan for the development. Appropriate monitoring arrangements will be discussed and agreed with Rochdale Council.

6.1.4 The monitoring and assessment of the Travel Plan will include the submission of annual progress reports detailing the results of the travel surveys with regards to targets, budgets, general effectiveness and current initiatives.



- 6.1.5 An annual report is to be submitted to the local authority no later than one month following the anniversary of the approval of the Travel Plan.
- 6.1.6 This will allow effective measures to be promoted and increased while ineffective measures can be revised and rectified. New initiatives for the coming year will also be contained within the report and submitted to officers at the Council.

7 CONCLUSIONS

- 7.1.1 This Travel Plan has detailed the proposals associated with the development site to promote sustainable modes of travel and reduce the dependency of the private car.
- 7.1.2 Additionally, the Travel Plan has presented a series of measures to be implemented to reduce the number of single car occupancy trips.
- 7.1.3 The information contained within the Travel Plan and details of sustainable modes of transport in the vicinity of the site will be accessible to residents and visitors to the development.
- 7.1.4 The aim of the Travel Plan is:
- to encourage residents to use sustainable modes of transport to access the site;
 - reduce the reliance on single car occupancy journeys; and
 - generally reduce traffic related pollution and noise.
- 7.1.5 A wide range of measures and actions will be used to encourage car sharing, public transport use, cycling and walking.
- 7.1.6 The Travel Plan Co-ordinator will ensure the Travel Plan is implemented and is operating effectively.
- 7.1.7 A detailed resident Travel Survey will be undertaken to establish travel modes of residents and following this, specific targets will be set and agreed with the Travel Plan team at Rochdale Council.
- 7.1.8 It can therefore be concluded that the proposals will provide a highly sustainable development which will be enhanced by the evolution of the Travel Plan.



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APPENDIX 2

TRICS Output

Calculation Reference: AUDIT-851401-210420-0423

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

02	SOUTH EAST	
	ES EAST SUSSEX	2 days
	HF HERTFORDSHIRE	1 days
	KC KENT	2 days
	SC SURREY	1 days
	WS WEST SUSSEX	3 days
03	SOUTH WEST	
	DV DEVON	1 days
04	EAST ANGLIA	
	NF NORFOLK	3 days
06	WEST MIDLANDS	
	ST STAFFORDSHIRE	1 days
11	SCOTLAND	
	FA FALKIRK	1 days

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

Primary Filtering selection:

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

Parameter: No of Dwellings
 Actual Range: 110 to 297 (units:)
 Range Selected by User: 100 to 300 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/13 to 08/10/20

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

Selected survey days:

Monday	4 days
Tuesday	1 days
Wednesday	3 days
Thursday	3 days
Friday	4 days

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

Selected survey types:

Manual count	13 days
Directional ATC Count	2 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	2
Edge of Town	13

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

Selected Location Sub Categories:

Residential Zone	14
Out of Town	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village,

Secondary Filtering selection:

Use Class:

C3 15 days

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

Population within 500m Range:

All Surveys Included

Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	2 days
5,001 to 10,000	4 days
10,001 to 15,000	5 days
15,001 to 20,000	1 days
20,001 to 25,000	2 days

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

Population within 5 miles:

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

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

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	10 days
1.6 to 2.0	2 days

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

Travel Plan:

Yes	8 days
No	7 days

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

PTAL Rating:

No PTAL Present 15 days

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

LIST OF SITES relevant to selection parameters

1	DV-03-A-02 MILLHEAD ROAD HONITON	HOUSES & BUNGALOWS	DEVON
	Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 116 Survey date: FRIDAY 25/09/15		Survey Type: MANUAL
2	ES-03-A-03 SHEPHAM LANE POLEGATE	MIXED HOUSES & FLATS	EAST SUSSEX
	Edge of Town Residential Zone Total No of Dwellings: 212 Survey date: MONDAY 11/07/16		Survey Type: MANUAL
3	ES-03-A-04 NEW LYDD ROAD CAMBER	MIXED HOUSES & FLATS	EAST SUSSEX
	Edge of Town Residential Zone Total No of Dwellings: 134 Survey date: FRIDAY 15/07/16		Survey Type: MANUAL
4	FA-03-A-02 ROSEBANK AVENUE & SPRINGFIELD DRIVE FALKIRK	MIXED HOUSES	FALKIRK
	Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 161 Survey date: WEDNESDAY 29/05/13		Survey Type: MANUAL
5	HF-03-A-03 HARE STREET ROAD BUNTINGFORD	MIXED HOUSES	HERTFORDSHIRE
	Edge of Town Residential Zone Total No of Dwellings: 160 Survey date: MONDAY 08/07/19		Survey Type: MANUAL
6	KC-03-A-04 KILN BARN ROAD AYLESFORD DITTON	SEMI-DETACHED & TERRACED	KENT
	Edge of Town Residential Zone Total No of Dwellings: 110 Survey date: FRIDAY 22/09/17		Survey Type: MANUAL
7	KC-03-A-07 RECVLVER ROAD HERNE BAY	MIXED HOUSES	KENT
	Edge of Town Residential Zone Total No of Dwellings: 288 Survey date: WEDNESDAY 27/09/17		Survey Type: MANUAL
8	NF-03-A-06 BEAUFORT WAY GREAT YARMOUTH BRADWELL	MIXED HOUSES	NORFOLK
	Edge of Town Residential Zone Total No of Dwellings: 275 Survey date: MONDAY 23/09/19		Survey Type: MANUAL
9	NF-03-A-07 SILFIELD ROAD WYMONDHAM	MIXED HOUSES & FLATS	NORFOLK
	Edge of Town Out of Town Total No of Dwellings: 297 Survey date: FRIDAY 20/09/19		Survey Type: DIRECTIONAL ATC COUNT

LIST OF SITES relevant to selection parameters (Cont.)

10	NF-03-A-16	MIXED HOUSES & FLATS	NORFOLK
	NORWICH COMMON		
	WYMONDHAM		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	138	
	Survey date: TUESDAY	20/10/15	Survey Type: DIRECTIONAL ATC COUNT
11	SC-03-A-05	MIXED HOUSES	SURREY
	REIGATE ROAD		
	HORLEY		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	207	
	Survey date: MONDAY	01/04/19	Survey Type: MANUAL
12	ST-03-A-07	DETACHED & SEMI-DETACHED	STAFFORDSHIRE
	BEACONSIDE		
	STAFFORD		
	MARSTON GATE		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	248	
	Survey date: WEDNESDAY	22/11/17	Survey Type: MANUAL
13	WS-03-A-04	MIXED HOUSES	WEST SUSSEX
	HILLS FARM LANE		
	HORSHAM		
	BROADBRIDGE HEATH		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	151	
	Survey date: THURSDAY	11/12/14	Survey Type: MANUAL
14	WS-03-A-08	MIXED HOUSES	WEST SUSSEX
	ROUNDSTONE LANE		
	ANGMERING		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	180	
	Survey date: THURSDAY	19/04/18	Survey Type: MANUAL
15	WS-03-A-09	MIXED HOUSES & FLATS	WEST SUSSEX
	LITTLEHAMPTON ROAD		
	WORTHING		
	WEST DURRINGTON		
	Edge of Town		
	Residential Zone		
	Total No of Dwellings:	197	
	Survey date: THURSDAY	05/07/18	Survey Type: MANUAL

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

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

TOTAL VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	15	192	0.098	15	192	0.307	15	192	0.405
08:00 - 09:00	15	192	0.142	15	192	0.381	15	192	0.523
09:00 - 10:00	15	192	0.154	15	192	0.184	15	192	0.338
10:00 - 11:00	15	192	0.133	15	192	0.163	15	192	0.296
11:00 - 12:00	15	192	0.129	15	192	0.151	15	192	0.280
12:00 - 13:00	15	192	0.167	15	192	0.156	15	192	0.323
13:00 - 14:00	15	192	0.172	15	192	0.162	15	192	0.334
14:00 - 15:00	15	192	0.170	15	192	0.207	15	192	0.377
15:00 - 16:00	15	192	0.284	15	192	0.175	15	192	0.459
16:00 - 17:00	15	192	0.295	15	192	0.181	15	192	0.476
17:00 - 18:00	15	192	0.357	15	192	0.172	15	192	0.529
18:00 - 19:00	15	192	0.303	15	192	0.190	15	192	0.493
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.404			2.429			4.833

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

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

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Parameter summary

Trip rate parameter range selected:	110 - 297 (units:)
Survey date range:	01/01/13 - 08/10/20
Number of weekdays (Monday-Friday):	19
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	3
Surveys manually removed from selection:	0

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

APPENDIX 3

Census Data

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

ONS Crown Copyright Reserved [from Nomis on 15 April 2021]

population All usual residents aged 16 and over in employment the week before the census
units Persons
date 2011
usual residence E02001148 : Rochdale 017 (2011 super output area - middle layer)

place of work	All categories: Method of travel to work (2001 specification)	Work mainly at or from home	Underground, metro, light rail or tram	Train	Bus, minibus or coach	Taxi	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot	Other method of travel to work
E02001141 : Rochdale	547	0	0	13	86	14	2	311	65	13	40	3
Oldham	352	0	0	6	33	1	3	263	37	4	4	1
E02001148 : Rochdale	519	0	0	11	20	18	4	215	33	12	206	0
Manchester	319	0	5	56	41	1	0	199	14	0	3	0
Bury	191	0	0	2	15	0	4	155	11	2	1	1
E02001146 : Rochdale	147	0	0	5	7	6	0	95	13	4	17	0
E02001151 : Rochdale	128	0	0	0	10	1	0	93	14	2	7	1
Salford	97	0	5	7	3	1	1	74	4	0	2	0
E02001149 : Rochdale	104	0	0	0	8	4	0	73	10	3	6	0
E02001155 : Rochdale	109	0	0	0	24	0	0	71	6	3	3	2
Trafford	82	0	1	2	5	0	0	70	3	0	1	0
E02001139 : Rochdale	97	0	0	2	11	2	0	65	14	1	2	0
E02001140 : Rochdale	80	0	0	1	8	1	1	55	9	1	2	2
E02001143 : Rochdale	79	0	0	0	13	2	1	51	7	1	4	0
E02001152 : Rochdale	84	0	0	1	17	1	0	48	8	4	5	0
E02001136 : Rochdale	72	0	0	0	9	3	2	45	9	2	2	0
E02001147 : Rochdale	53	0	0	2	1	3	0	44	1	0	2	0
Tameside	41	0	0	0	2	0	0	36	3	0	0	0
E02001150 : Rochdale	47	0	0	0	5	0	0	33	4	4	0	1
Rossendale	39	0	0	0	4	0	0	33	1	1	0	0
Stockport	34	0	0	2	1	0	0	30	1	0	0	0
E02001132 : Rochdale	41	0	0	3	0	0	2	26	9	0	1	0
E02001135 : Rochdale	30	0	0	0	5	0	0	23	2	0	0	0
E02001144 : Rochdale	32	0	0	0	1	0	2	23	5	1	0	0
Total	3,324	0	11	113	329	58	22	2,131	283	58	308	11

In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.

Notes

No Trips under 20

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

ONS Crown Copyright Reserved [from Nomis on 15 April 2021]

population All usual residents aged 16 and over in employment the week before the census
 units Persons
 date 2011
 usual residence E02001148 : Rochdale 017 (2011 super output area - middle layer)

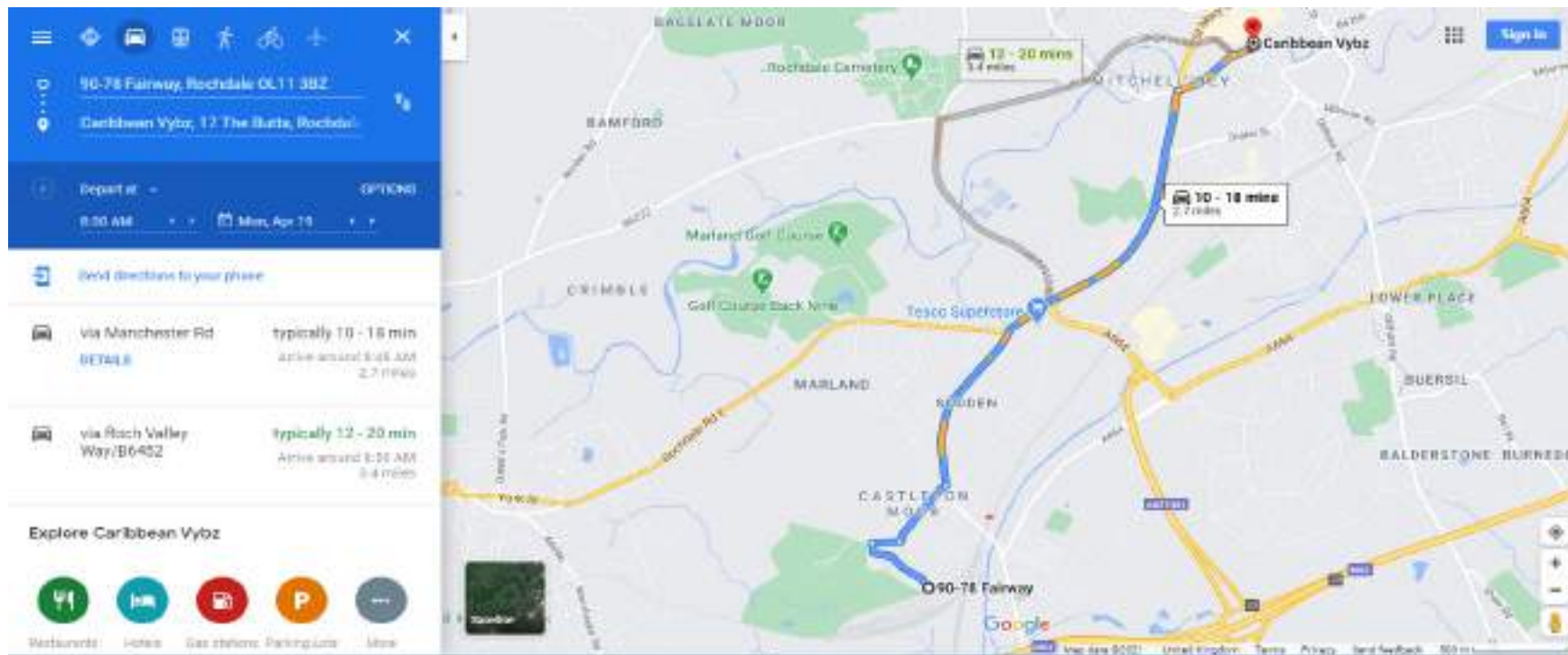
			External Highway Connection Point							
place of work	Centroid	Driving a car or van	A664 Manchester Road (North)	A664 Manchester Road (South)	Royal Barn Road	Queensway	A664 Manchester Road (North)	A664 Manchester Road (South)	Royal Barn Road	Queensway
E02001141 : Rochdale 010	Rochdale town centre	14.59%	100%				14.59%	0.00%	0.00%	0.00%
Oldham	Oldham town centre	12.34%		100%			0.00%	12.34%	0.00%	0.00%
E02001148 : Rochdale 017	Castleton Industrial Estate	10.09%			50%	50%	0.00%	0.00%	5.04%	5.04%
Manchester	Manchester City Centre	9.34%		50%		50%	0.00%	4.67%	0.00%	4.67%
Bury	Bury town centre	7.27%	100%				7.27%	0.00%	0.00%	0.00%
E02001146 : Rochdale 015	Deeplish	4.46%	50%			50%	2.23%	0.00%	0.00%	2.23%
E02001151 : Rochdale 020	Heywood	4.36%	100%				4.36%	0.00%	0.00%	0.00%
Salford	Salford City Centre	3.47%		50%		50%	0.00%	1.74%	0.00%	1.74%
E02001149 : Rochdale 018	Broadfield Industrial Park	3.43%	100%				3.43%	0.00%	0.00%	0.00%
E02001155 : Rochdale 024	Middleton	3.33%		100%			0.00%	3.33%	0.00%	0.00%
Trafford	Sale	3.28%				100%	0.00%	0.00%	0.00%	3.28%
E02001139 : Rochdale 008	Newbold	3.05%	50%			50%	1.53%	0.00%	0.00%	1.53%
E02001140 : Rochdale 009	Spotland	2.58%	100%				2.58%	0.00%	0.00%	0.00%
E02001143 : Rochdale 012	Globe Park	2.39%	50%			50%	1.20%	0.00%	0.00%	1.20%
E02001152 : Rochdale 021	Stakehill Industrial	2.25%		100%			0.00%	2.25%	0.00%	0.00%
E02001136 : Rochdale 005	Shawclough	2.11%	100%				2.11%	0.00%	0.00%	0.00%
E02001147 : Rochdale 016	Balderstone	2.06%				100%	0.00%	0.00%	0.00%	2.06%
Tameside	Ashton-under-Lyne	1.69%		100%			0.00%	1.69%	0.00%	0.00%
E02001150 : Rochdale 019	Heywood Distribution Park	1.55%	100%				1.55%	0.00%	0.00%	0.00%
Rossendale	Rawtenstall	1.55%	100%				1.55%	0.00%	0.00%	0.00%
Stockport	Stockport Town Centre	1.41%		100%			0.00%	1.41%	0.00%	0.00%
E02001132 : Rochdale 001	Littleborough	1.22%	50%			50%	0.61%	0.00%	0.00%	0.61%
E02001135 : Rochdale 004	Smallbridge	1.08%	50%			50%	0.54%	0.00%	0.00%	0.54%
E02001144 : Rochdale 013	Milnrow	1.08%	50%			50%	0.54%	0.00%	0.00%	0.54%
Total		100%					44.09%	27.43%	5.04%	23.44%

100%

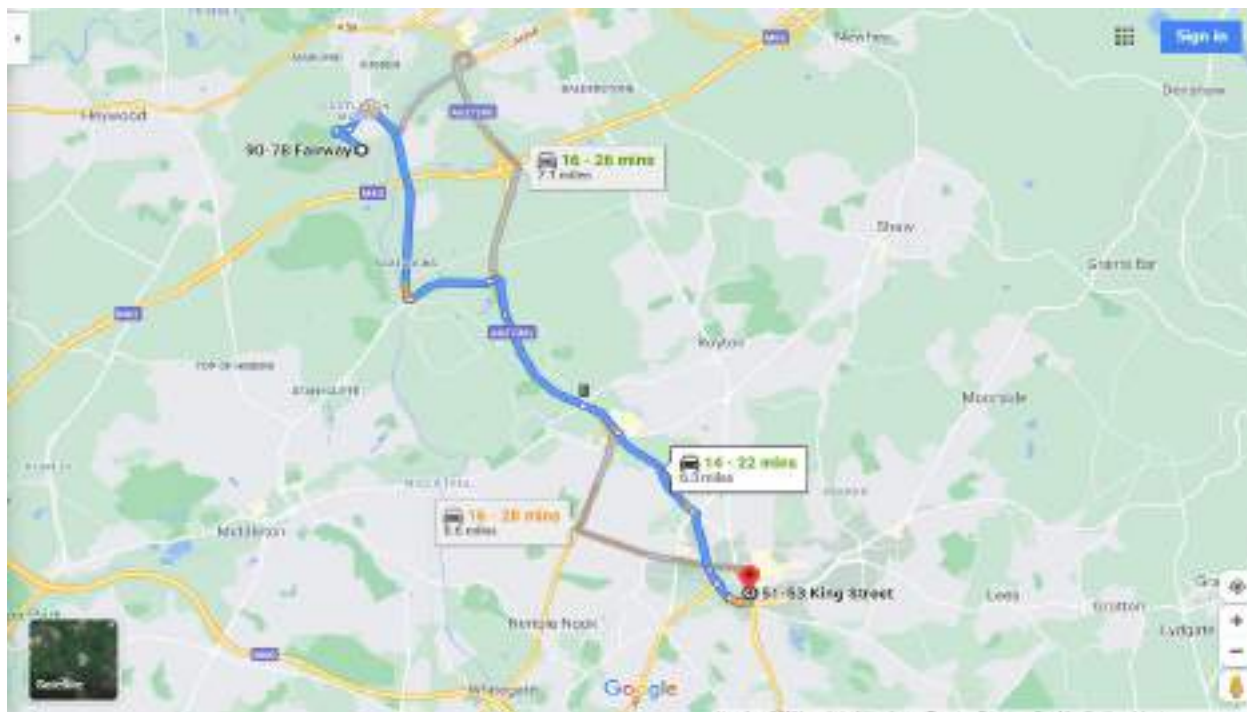
In order to protect against disclosure of personal information, records have been swapped between different geographic areas. Some counts will be affected, particularly small counts at the lowest geographies.

Notes

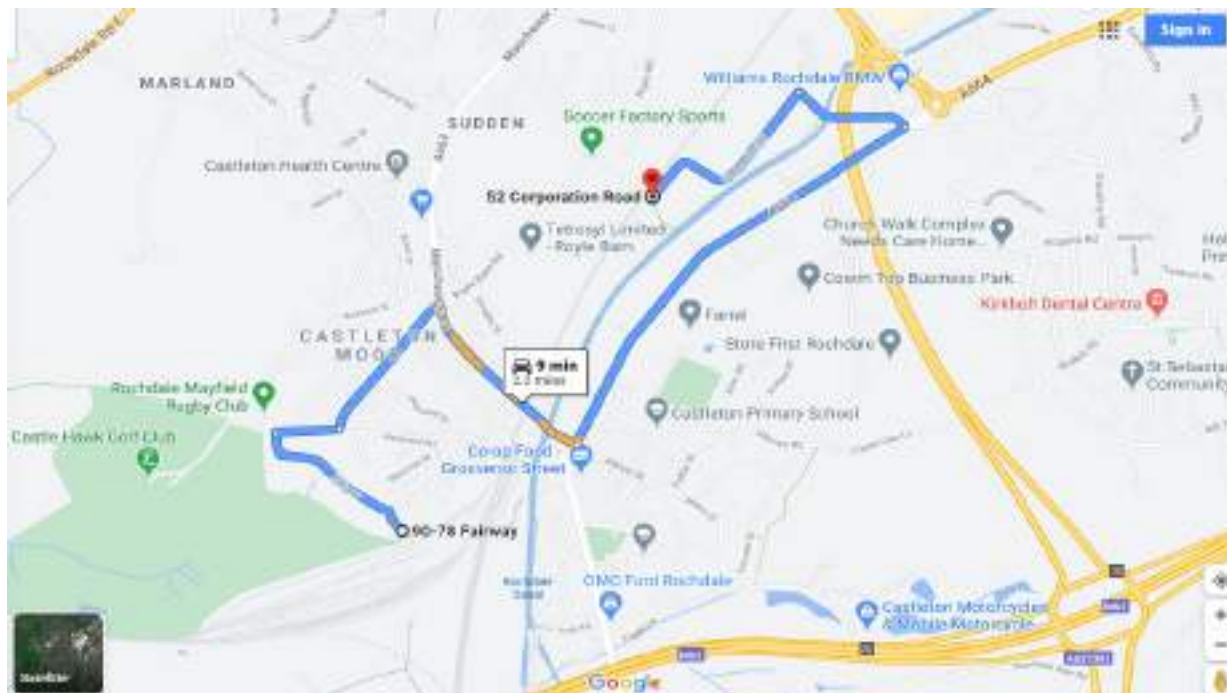
No Trips under 20



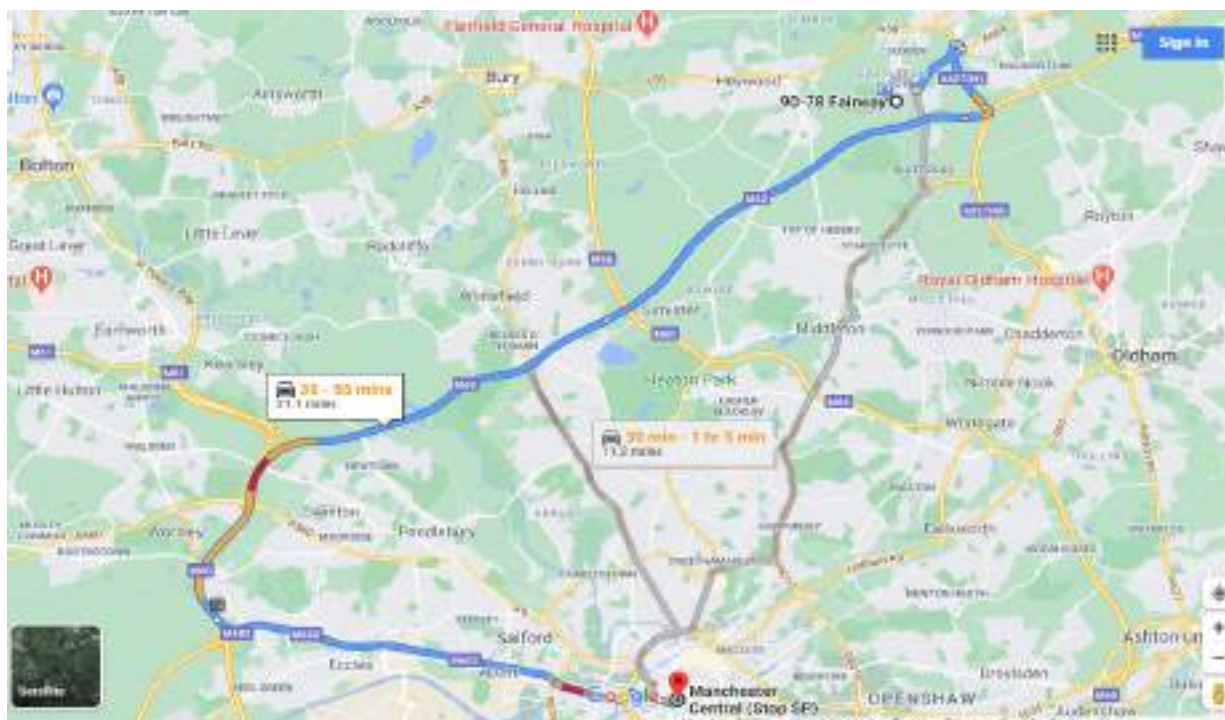
Rochdale 010 - Manchester Road (N)



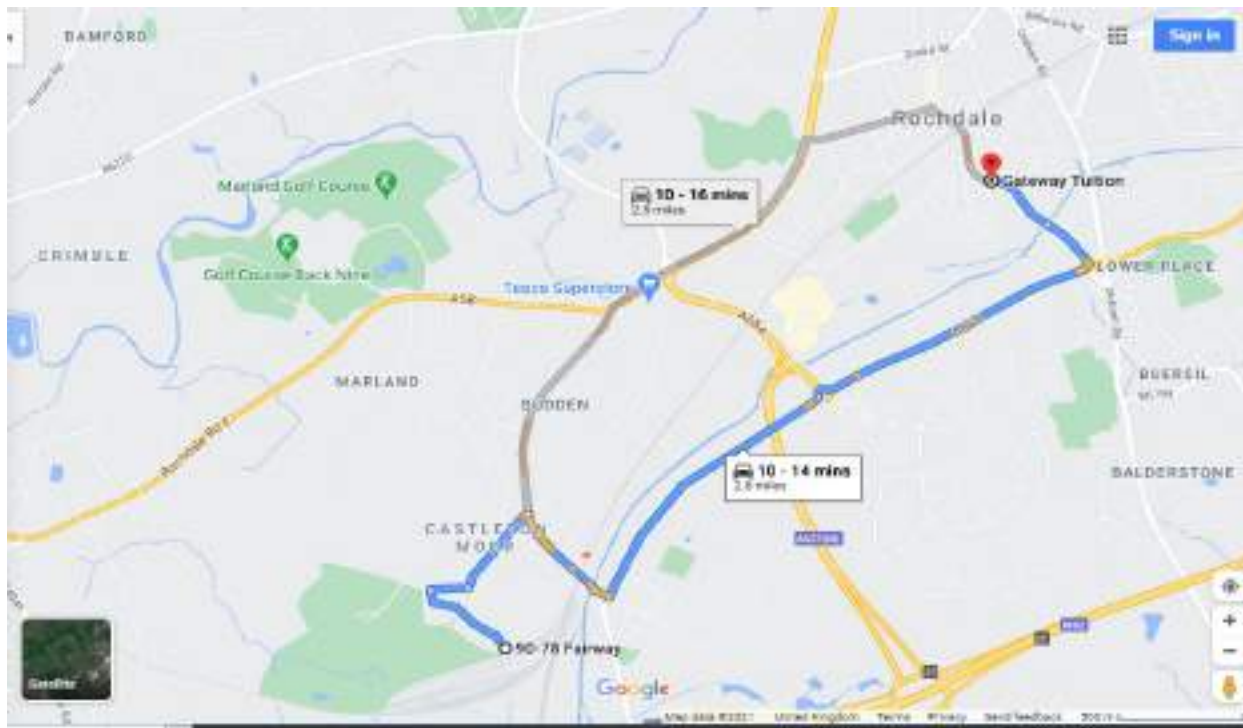
Oldham - Manchester Road (S)



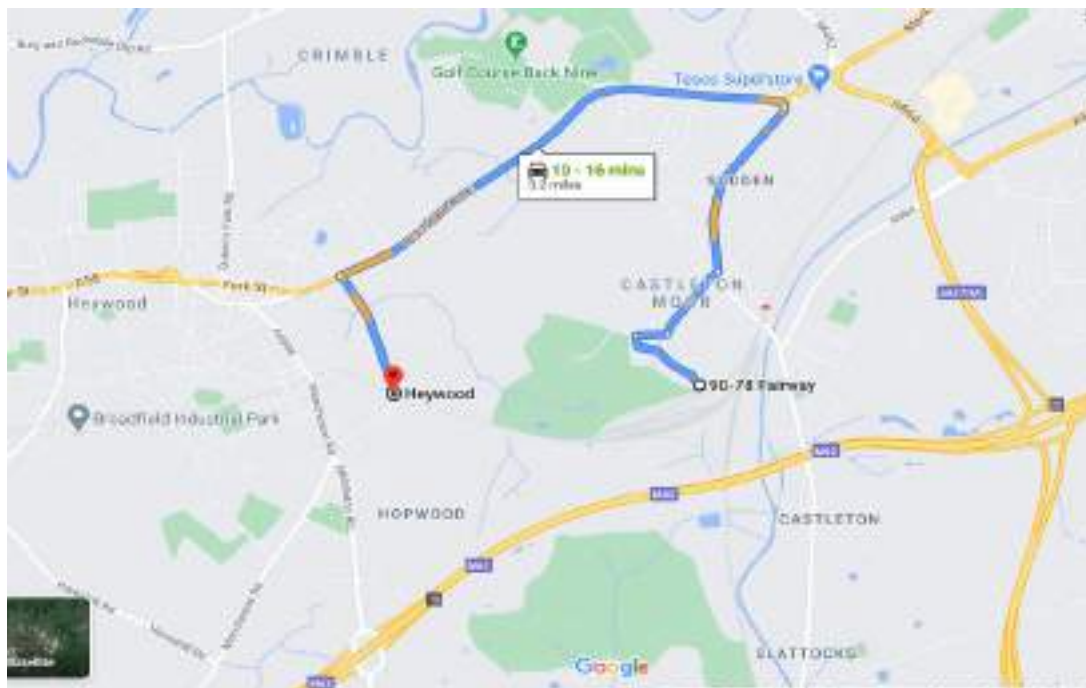
Rochdale 017 - Queensway/Royal Barn Road Industrial Estates



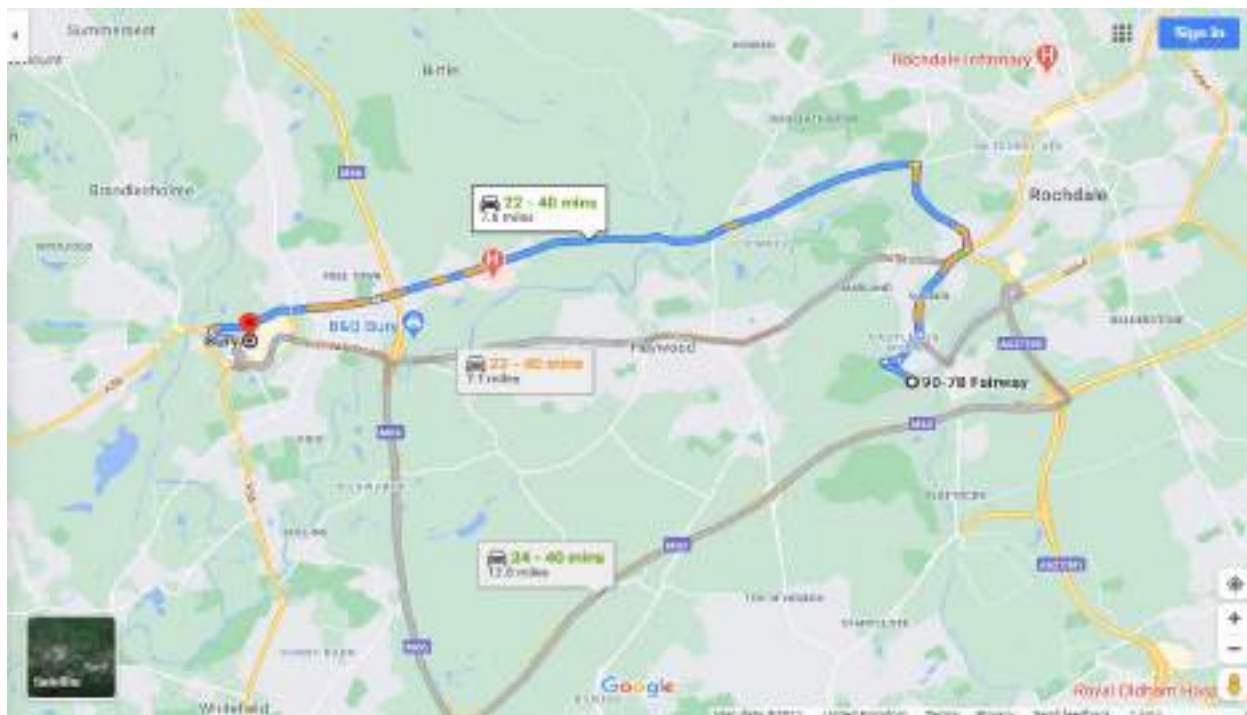
Manchester City Centre - Queensway/Manchester Road (S)



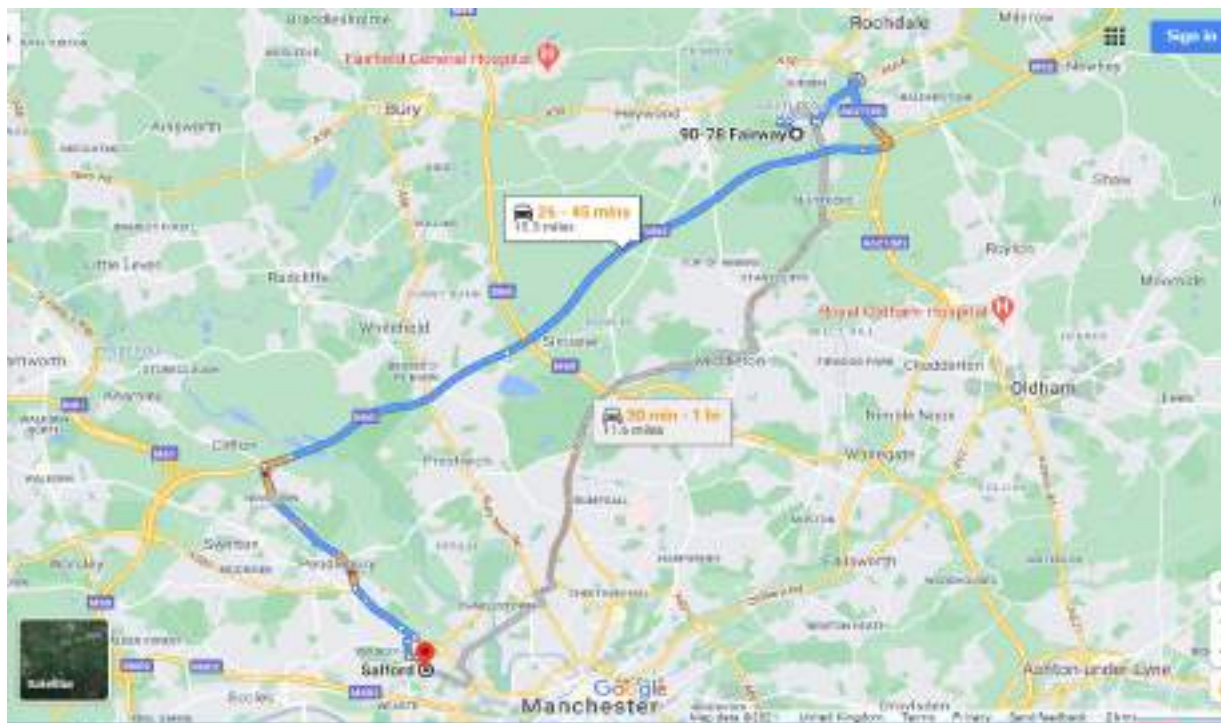
Rochdale 015 - Manchester Road (N)/Queensway



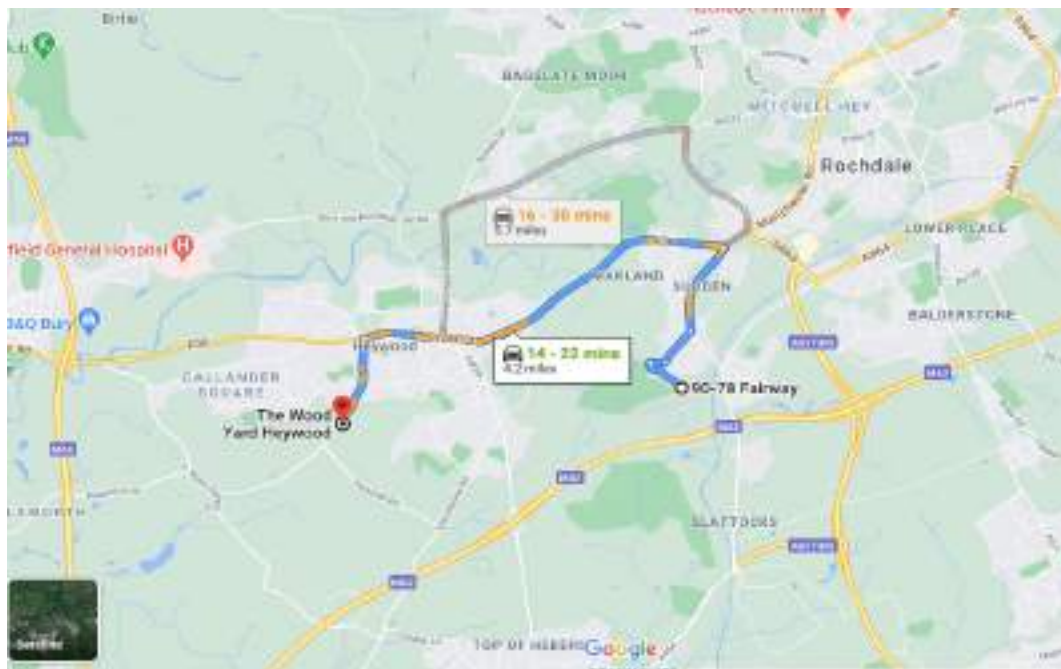
Rochdale 020 - Heywood



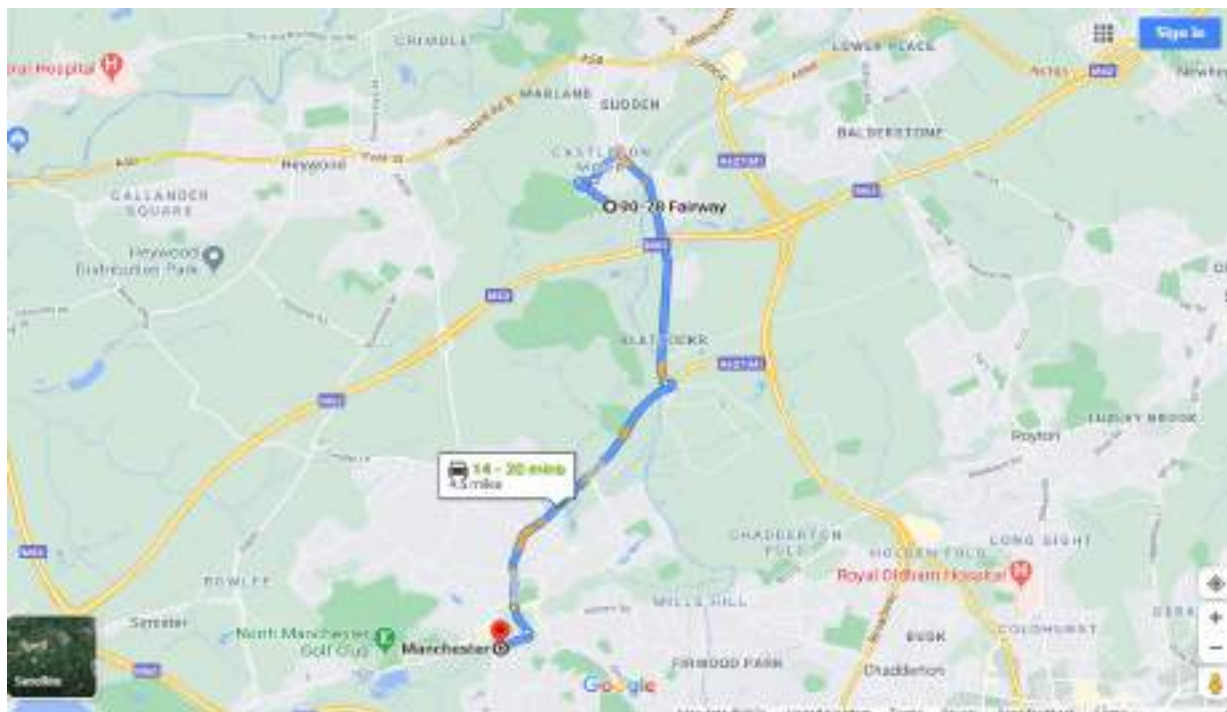
Bury - Manchester Road (N)



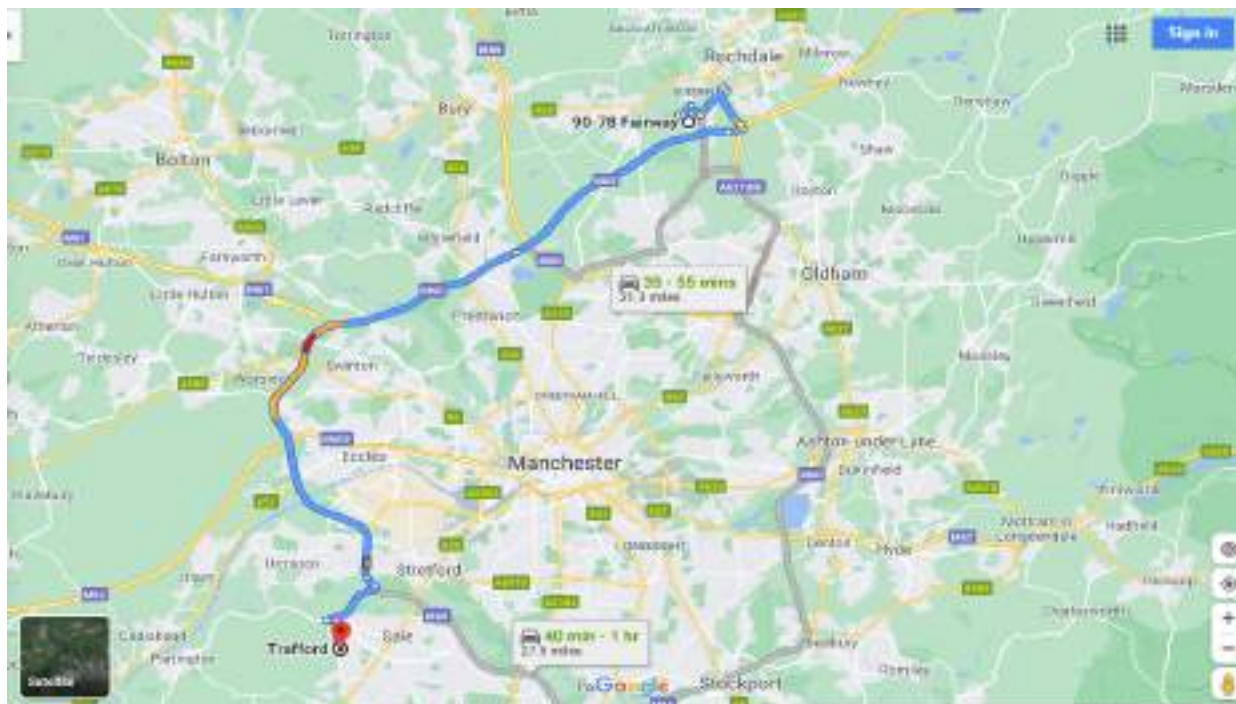
Salford - Manchester Road (S)/Queensway



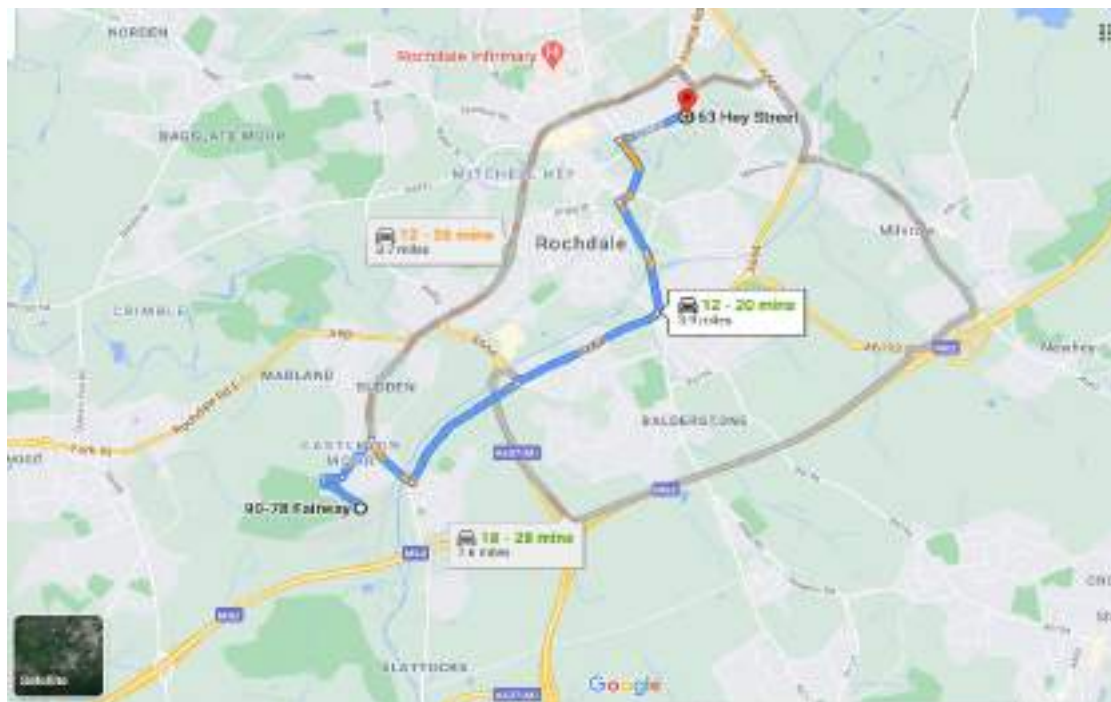
Rochdale 018 - Manchester Road (N)



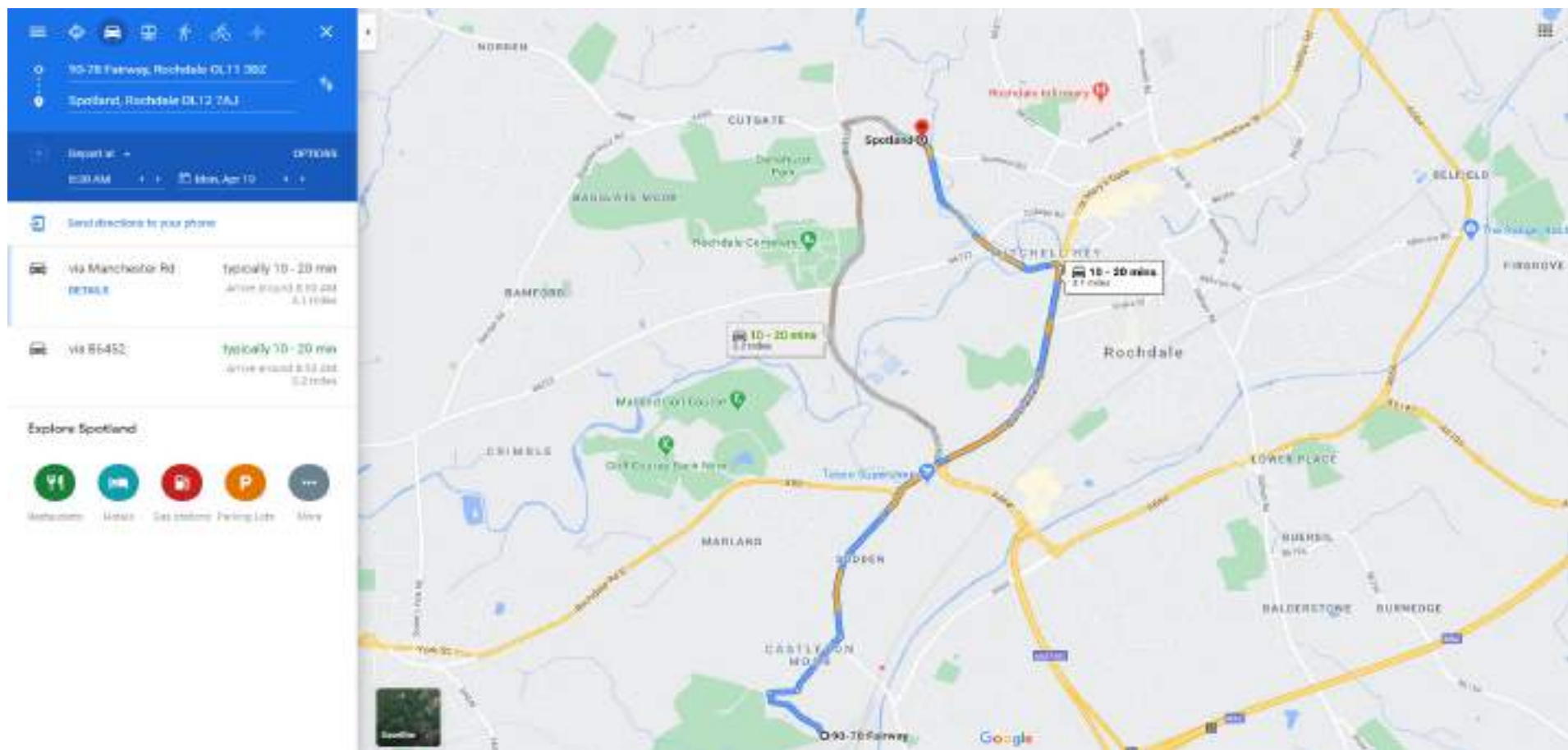
Rochdale 024 - Manchester Road (S)



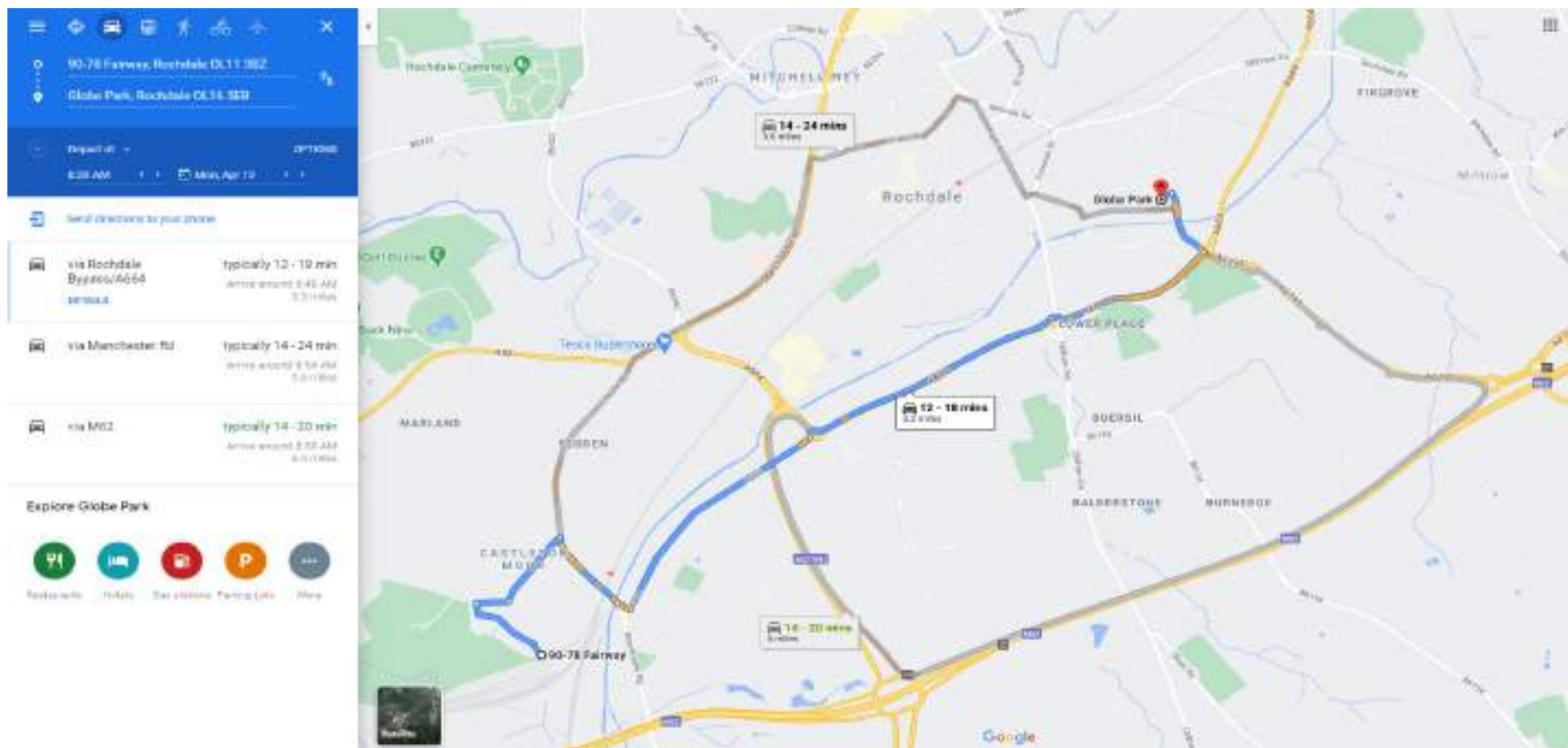
Trafford - Queensway



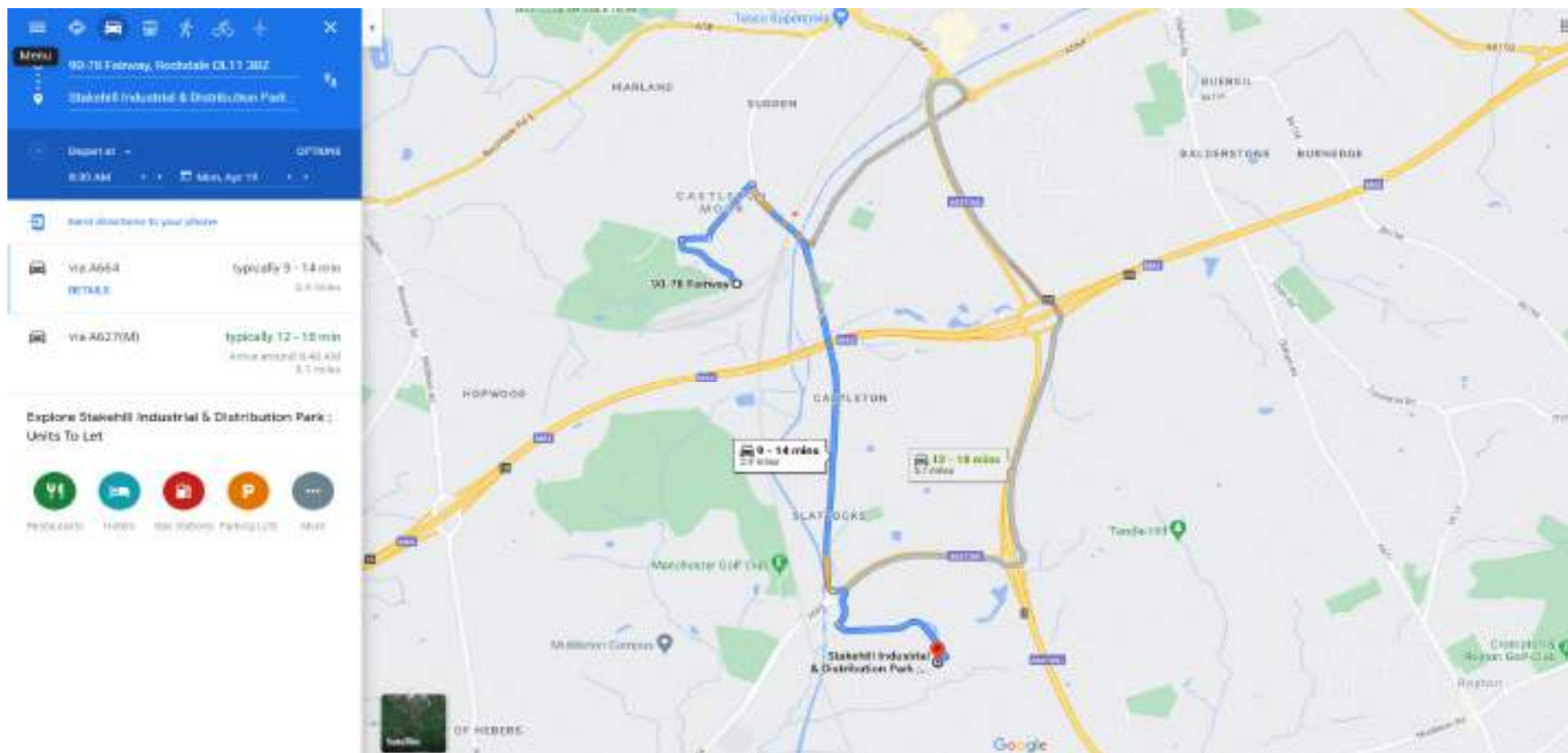
Rochdale 008 - Manchester Road (N)/Queensway



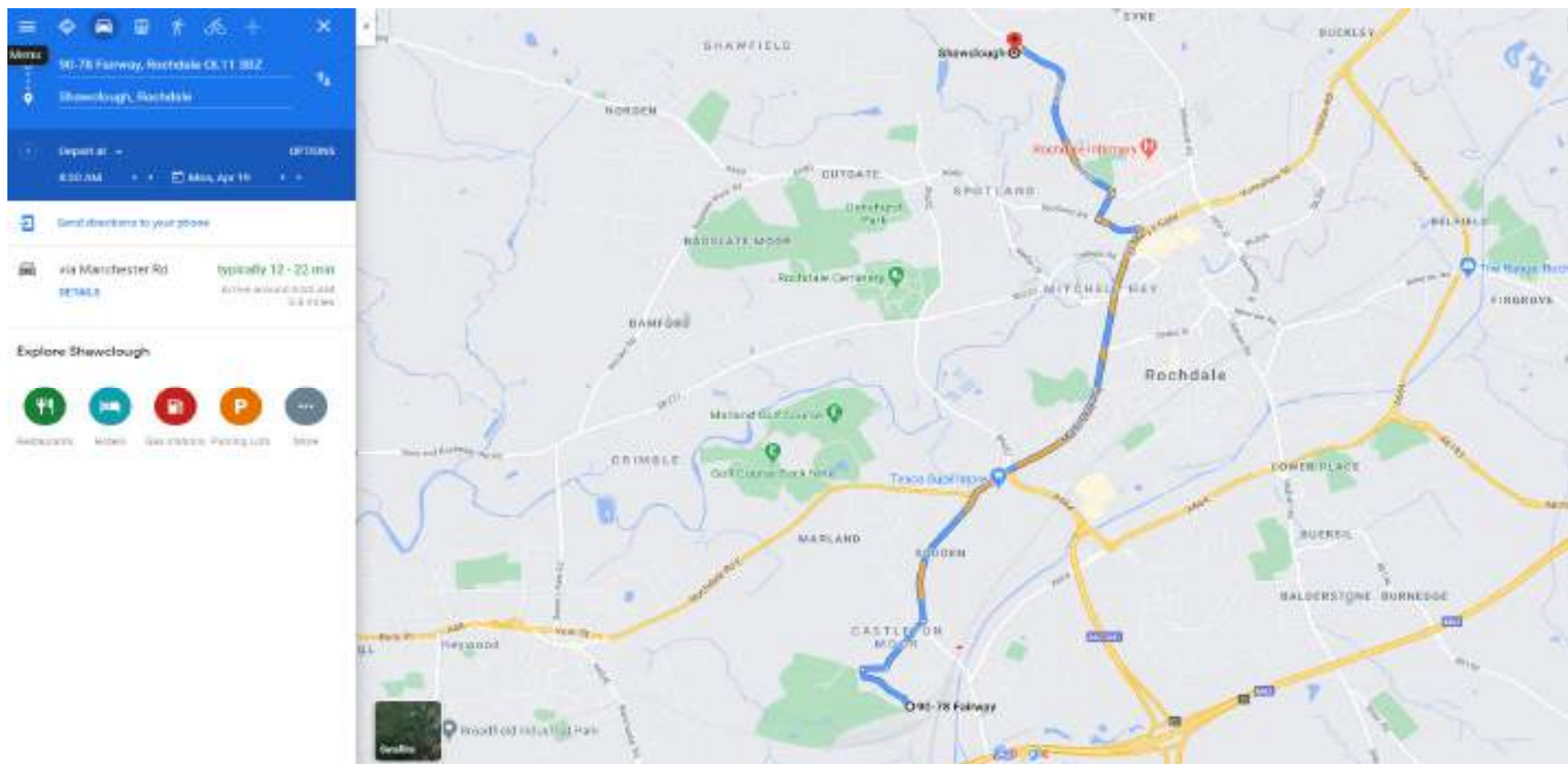
Rochdale 009 - Manchester Road (N)



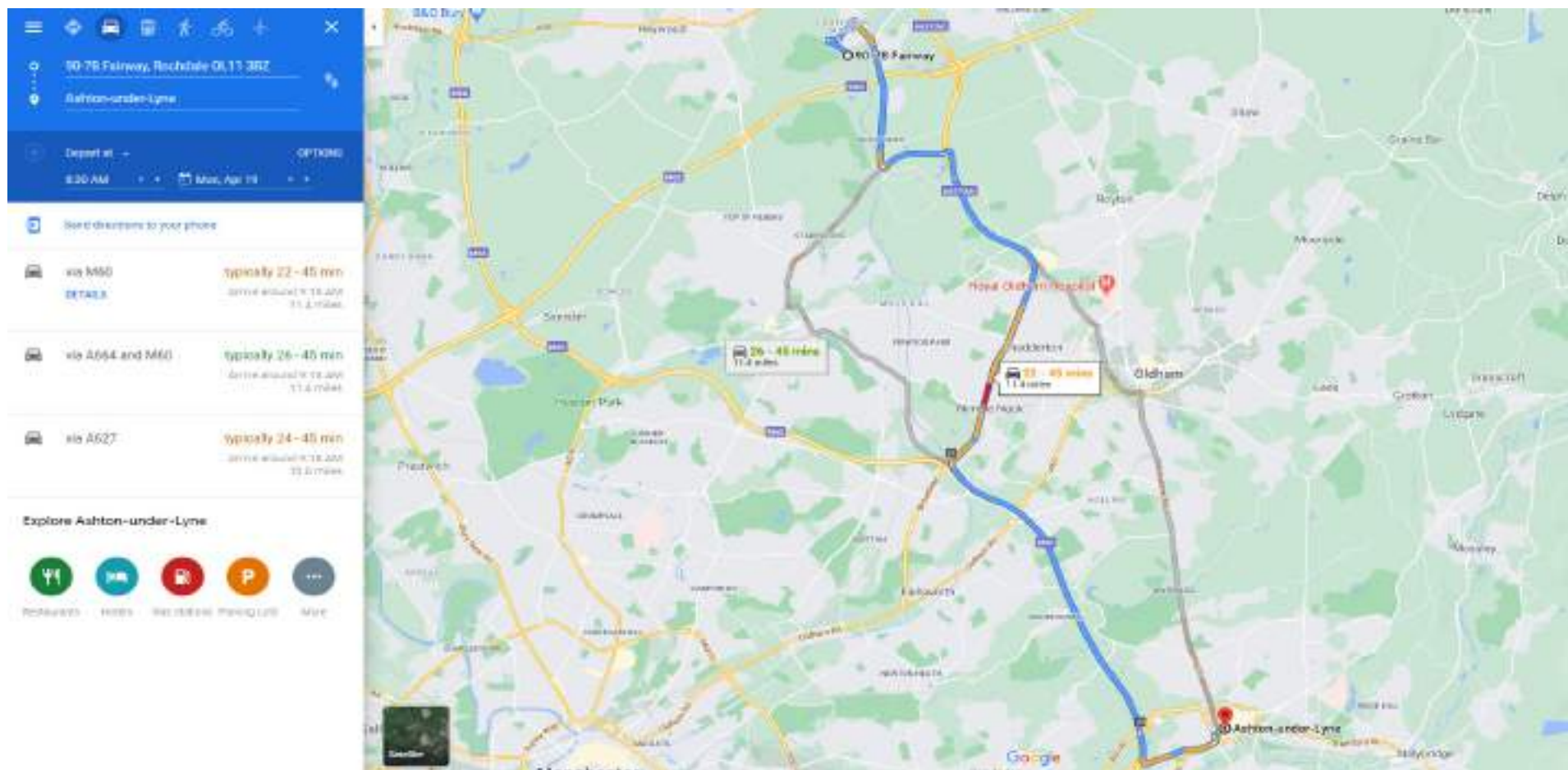
Rochdale 012 - Manchester Road (N) / Queensway



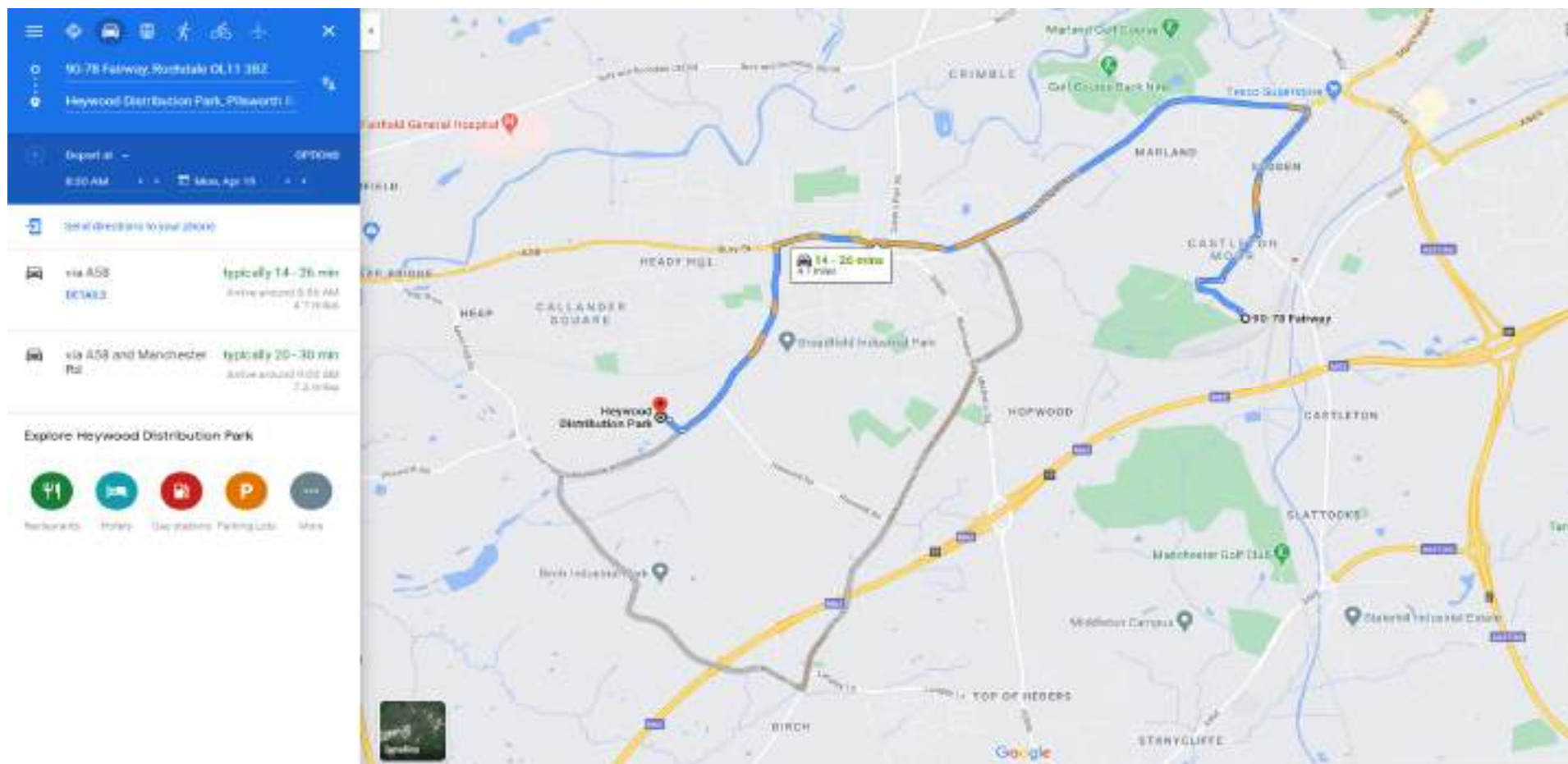
Rochdale 021- Manchester Road (S)



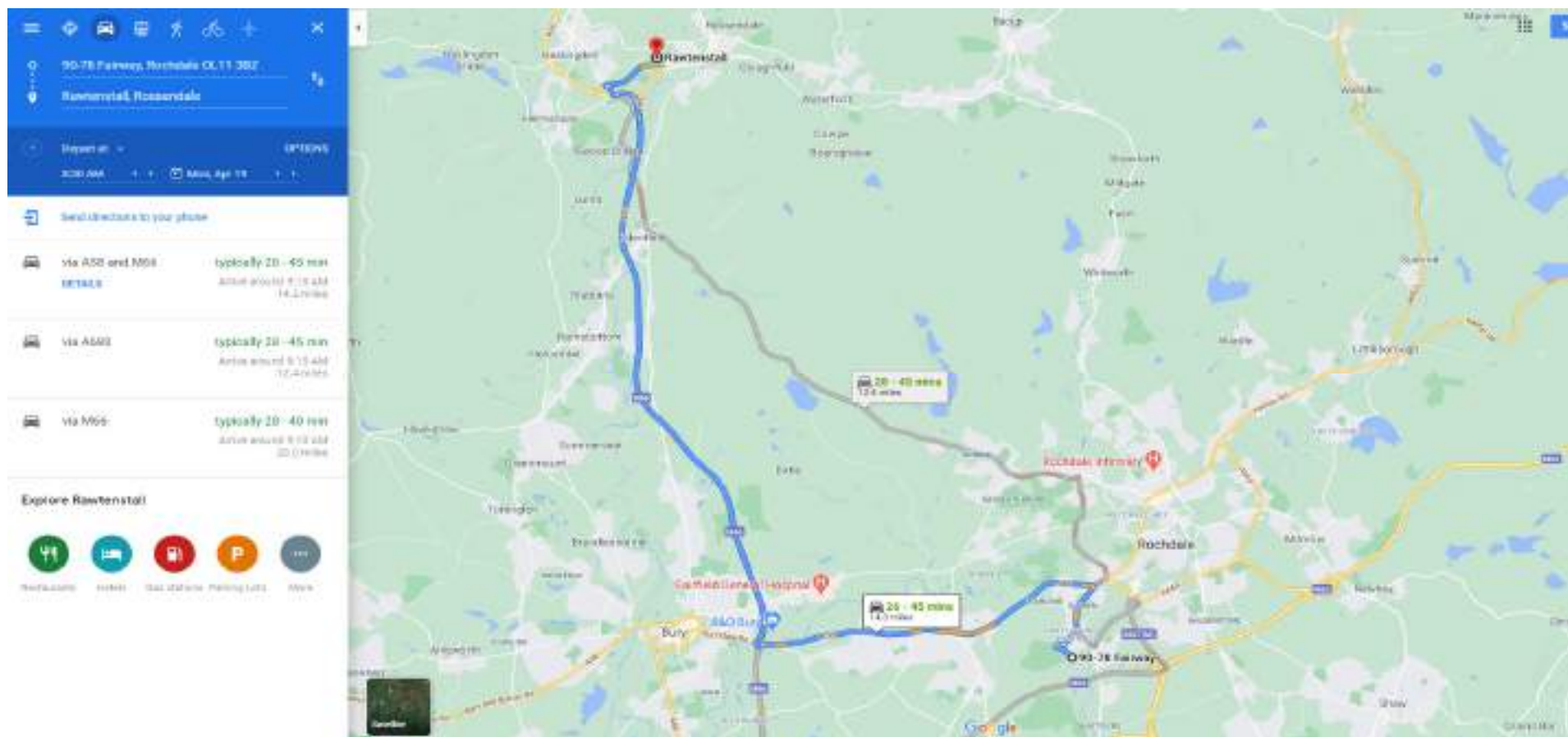
Rochdale 005- Manchester Road (N)



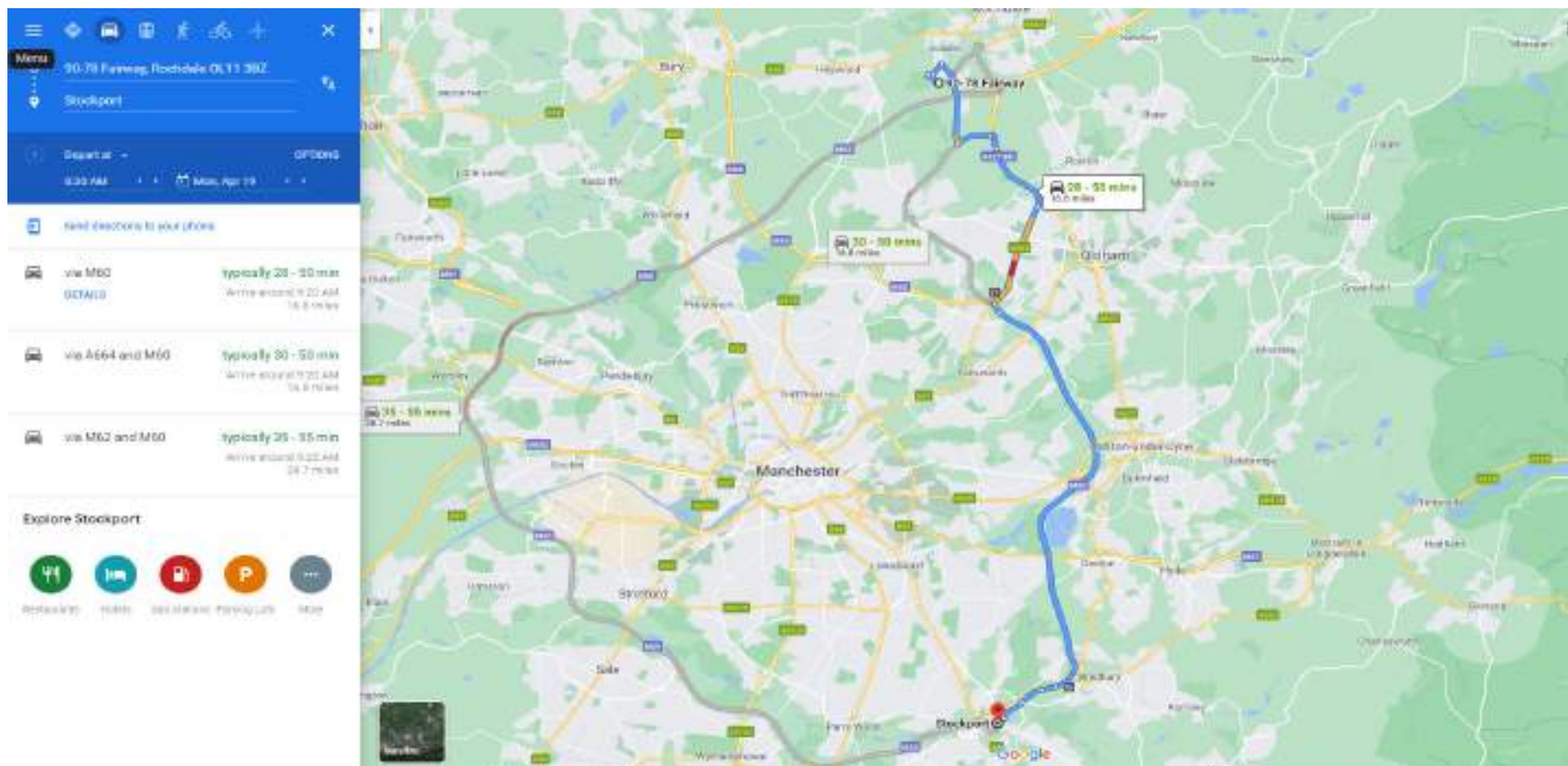
Tameside - Manchester Road (S)



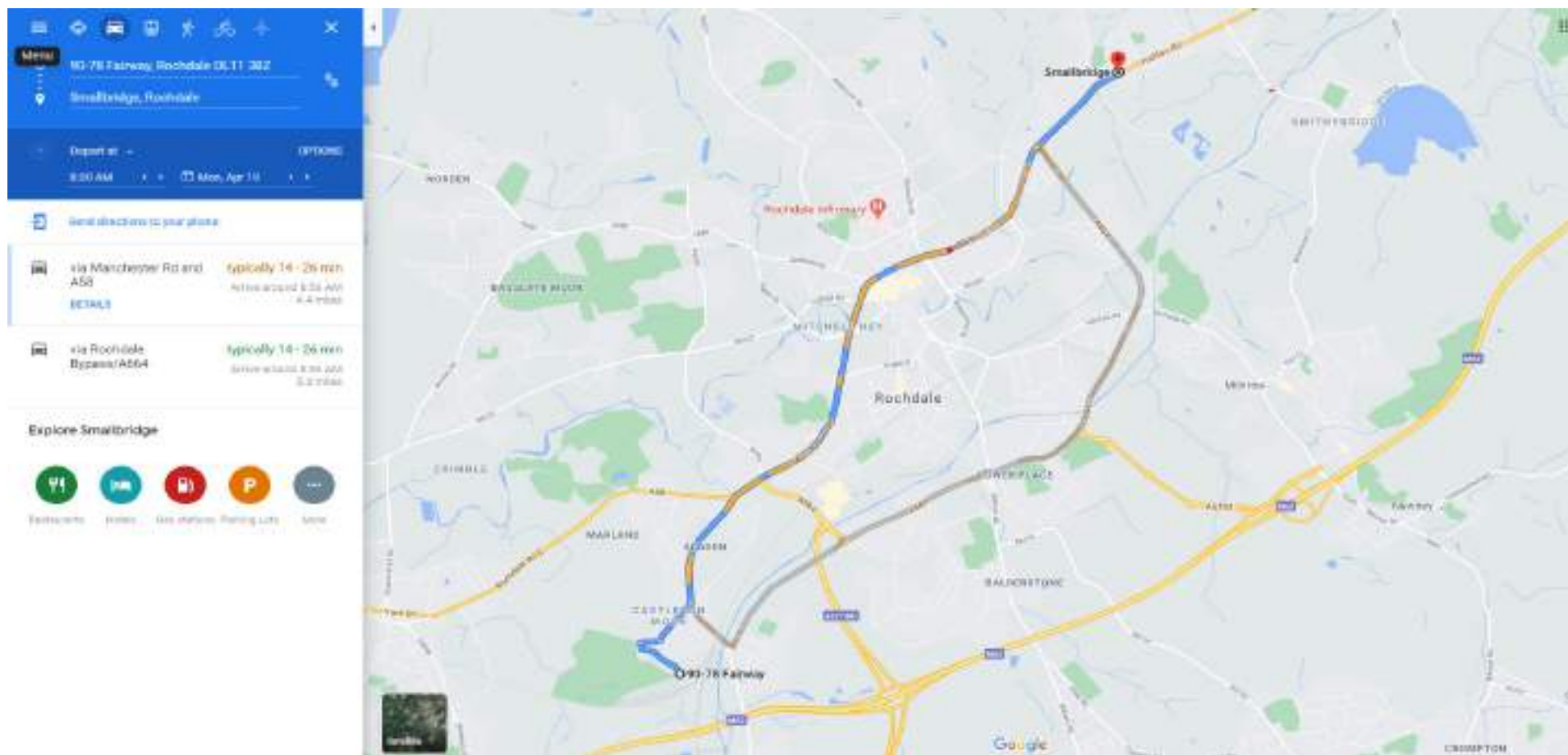
Rochdale 019 - Manchester Road (N)



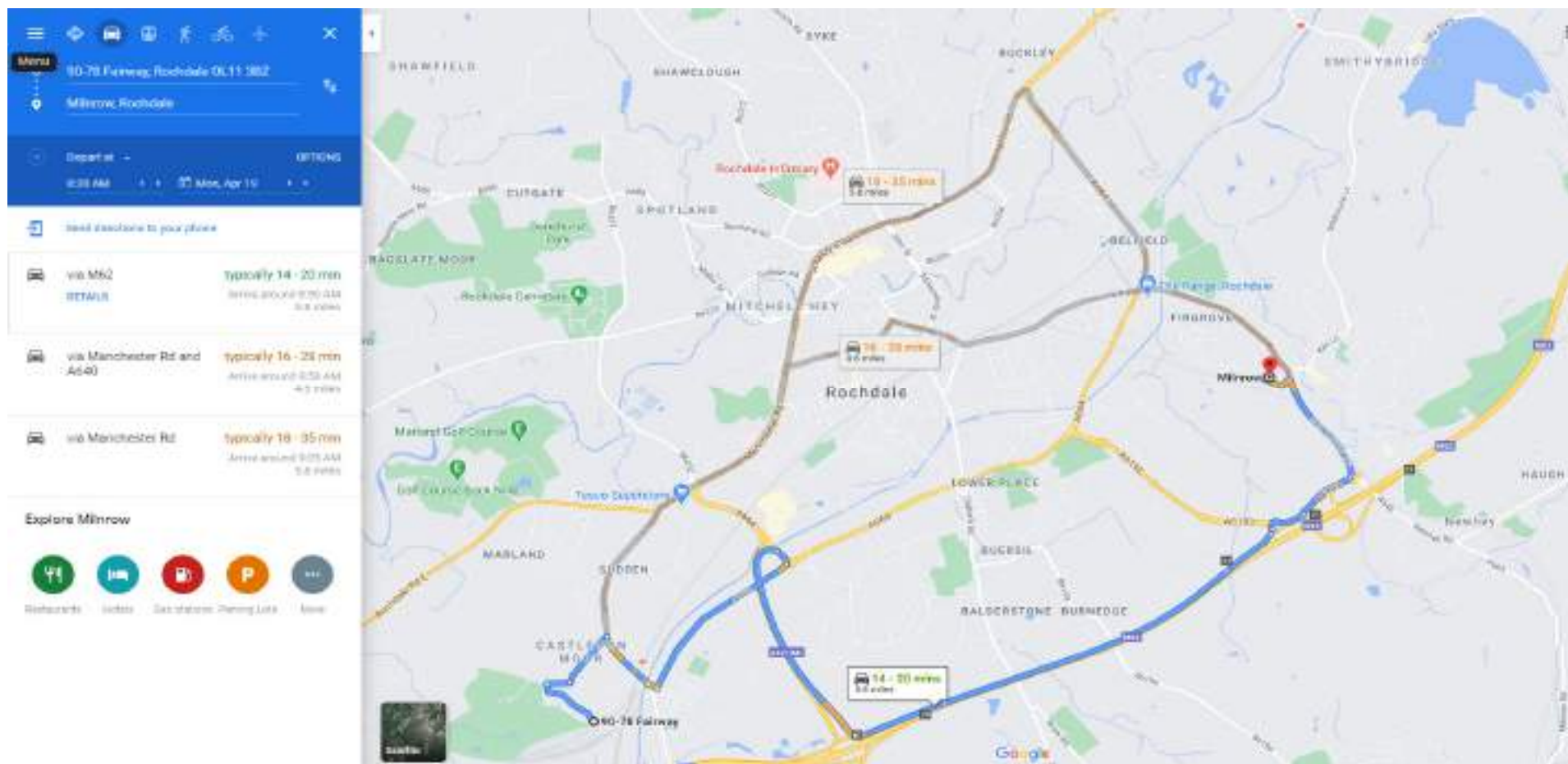
Rossendale - Manchester Road (N)



Stockport - Manchester Road (S)



Rochdale 004 - Manchester Road (N) / Queensway



Rochdale 013 - Manchester Road (N) / Queensway

APPENDIX 4

PICADY Output: A664 Manchester Road/Heywood Road

Junctions 9							
PICADY 9 - Priority Intersection Module							
Version: 9.5.2.1013 © Copyright TRL Limited, 2019							
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk							
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution							

Filename: Heywood Road_Manchester Road V3.j9
Path: Z:\projects\3334 Castleton, Corus Railway Sidings\Picady
Report generation date: 15/02/2023 11:23:10

»2019 Surveyed Flows, AM
 »2019 Surveyed Flows, PM
 »2025 Base Flows, AM
 »2025 Base Flows, PM
 »2025 With Dev Flows, AM
 »2025 With Dev Flows, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2019 Surveyed Flows								
Stream B-AC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-B	0.2	9.50	0.14	A	0.1	10.04	0.12	B
2025 Base Flows								
Stream B-AC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-B	0.2	10.23	0.16	B	0.2	10.74	0.13	B
2025 With Dev Flows								
Stream B-AC	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Stream C-B	0.2	10.33	0.16	B	0.2	11.06	0.14	B

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

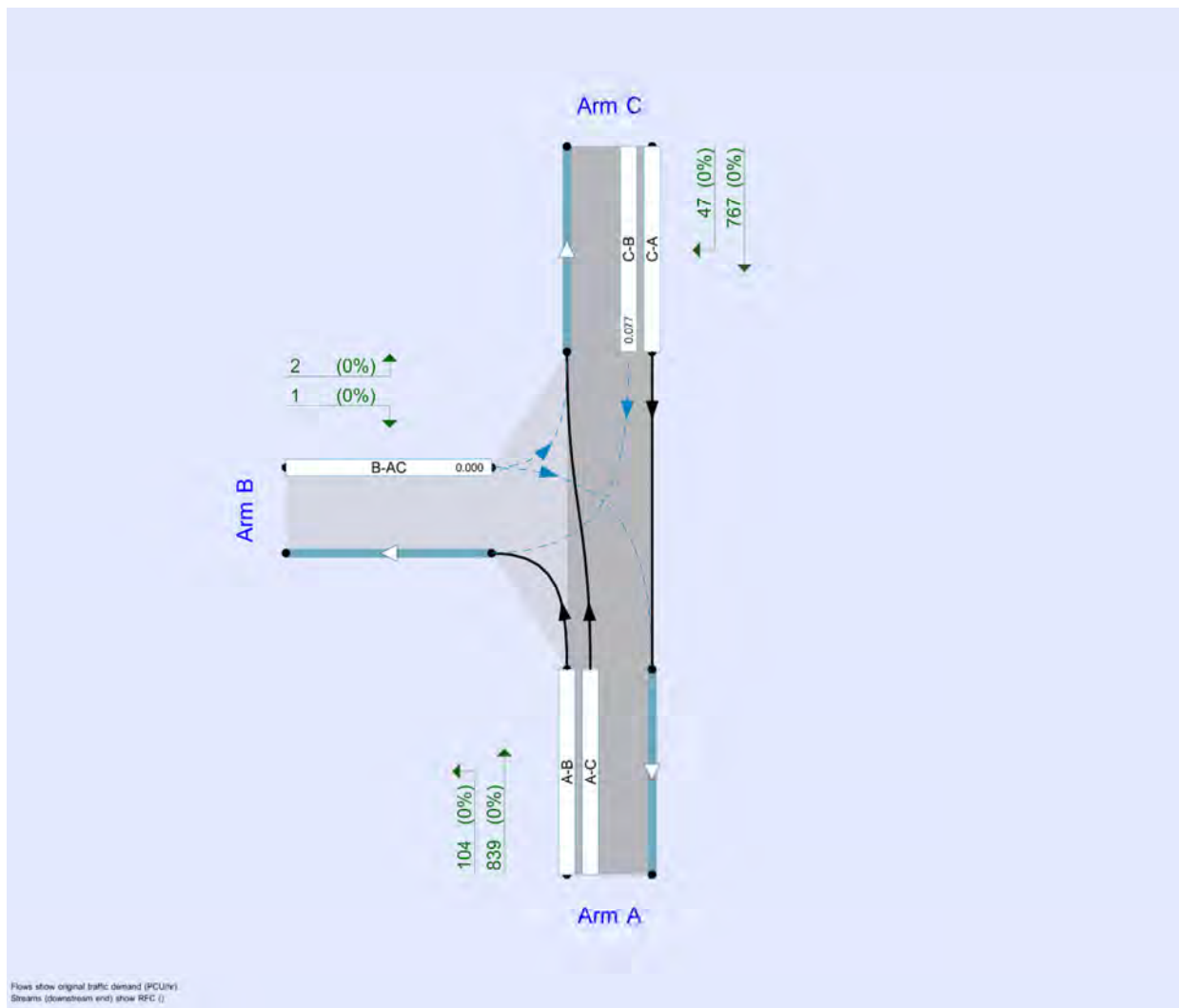
File summary

File Description

Title	Castleton Railway Sidings
Location	
Site number	3334
Date	15/04/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EDD\George.Monks
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Surveyed Flows	AM	ONE HOUR	08:00	09:30	15	✓
D2	2019 Surveyed Flows	PM	ONE HOUR	17:00	18:30	15	✓
D3	2025 Base Flows	AM	ONE HOUR	08:00	09:30	15	✓
D4	2025 Base Flows	PM	ONE HOUR	17:00	18:30	15	✓
D5	2025 With Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓
D6	2025 With Dev Flows	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

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

2019 Surveyed Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.38	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A664 Manchester Road (S)		Major
B	Heywood Road		Minor
C	A664 Manchester Road (M)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00		✓	2.20	100.0		-

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.10	14	11

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	492	0.090	0.227	0.143	0.324
B-C	637	0.098	0.247	-	-
C-B	632	0.245	0.245	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Surveyed Flows	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	701	100.000
B		ONE HOUR	✓	3	100.000

C		ONE HOUR	✓	733	100.000
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Origin-Destination Data

Demand (PCU/hr)

	To			
	A	B	C	
From	A	0	94	607
	B	1	0	2
	C	675	58	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	A	0	0
C-A					619	929
C-B	0.14	9.50	0.2	A	53	80
A-B					86	129
A-C					557	835

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	377	0.000	0	0.0	0.0	0.000	A
C-A	508	127			508				
C-B	44	11	503	0.087	43	0.0	0.1	7.830	A
A-B	71	18			71				
A-C	457	114			457				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	339	0.000	0	0.0	0.0	0.000	A
C-A	607	152			607				
C-B	52	13	478	0.109	52	0.1	0.1	8.457	A
A-B	85	21			85				
A-C	546	136			546				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	284	0.000	0	0.0	0.0	0.000	A
C-A	743	186			743				
C-B	64	16	443	0.144	64	0.1	0.2	9.489	A
A-B	103	26			103				
A-C	668	167			668				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

B-AC	0	0	284	0.000	0	0.0	0.0	0.000	A
C-A	743	186			743				
C-B	64	16	443	0.144	64	0.2	0.2	9.496	A
A-B	103	26			103				
A-C	668	167			668				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	339	0.000	0	0.0	0.0	0.000	A
C-A	607	152			607				
C-B	52	13	478	0.109	52	0.2	0.1	8.469	A
A-B	85	21			85				
A-C	546	136			546				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	376	0.000	0	0.0	0.0	0.000	A
C-A	508	127			508				
C-B	44	11	503	0.087	44	0.1	0.1	7.846	A
A-B	71	18			71				
A-C	457	114			457				

2019 Surveyed Flows , PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.28	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2019 Surveyed Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	835	100.000
B		ONE HOUR	✓	3	100.000
C		ONE HOUR	✓	726	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	65	770
	B	1	0	2
	C	682	44	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	A	0	0
C-A					626	939
C-B	0.12	10.04	0.1	B	40	61
A-B					60	89

A-C					707	1060
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Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	350	0.000	0	0.0	0.0	0.000	A
C-A	513	128			513				
C-B	33	8	478	0.069	33	0.0	0.1	8.082	A
A-B	49	12			49				
A-C	580	145			580				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	307	0.000	0	0.0	0.0	0.000	A
C-A	613	153			613				
C-B	40	10	448	0.088	39	0.1	0.1	8.807	A
A-B	58	15			58				
A-C	692	173			692				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	243	0.000	0	0.0	0.0	0.000	A
C-A	751	188			751				
C-B	48	12	407	0.119	48	0.1	0.1	10.037	B
A-B	72	18			72				
A-C	848	212			848				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	243	0.000	0	0.0	0.0	0.000	A
C-A	751	188			751				
C-B	48	12	407	0.119	48	0.1	0.1	10.045	B
A-B	72	18			72				
A-C	848	212			848				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	307	0.000	0	0.0	0.0	0.000	A
C-A	613	153			613				
C-B	40	10	448	0.088	40	0.1	0.1	8.817	A
A-B	58	15			58				
A-C	692	173			692				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	350	0.000	0	0.0	0.0	0.000	A
C-A	513	128			513				
C-B	33	8	478	0.069	33	0.1	0.1	8.097	A
A-B	49	12			49				
A-C	580	145			580				

2025 Base Flows , AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.40	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2025 Base Flows	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	784	100.000
B		ONE HOUR	✓	3	100.000
C		ONE HOUR	✓	799	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
From	A	0	101	683
	B	1	0	2
	C	737	62	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	A	0	0
C-A					676	1014
C-B	0.16	10.23	0.2	B	57	85
A-B					93	139
A-C					627	940

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	355	0.000	0	0.0	0.0	0.000	A
C-A	555	139			555				
C-B	47	12	487	0.096	46	0.0	0.1	8.162	A
A-B	76	19			76				
A-C	514	129			514				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	313	0.000	0	0.0	0.0	0.000	A
C-A	663	166			663				
C-B	56	14	459	0.121	56	0.1	0.1	8.923	A
A-B	91	23			91				
A-C	614	154			614				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	249	0.000	0	0.0	0.0	0.000	A
C-A	811	203			811				
C-B	68	17	421	0.162	68	0.1	0.2	10.216	B
A-B	111	28			111				
A-C	752	188			752				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	249	0.000	0	0.0	0.0	0.000	A
C-A	811	203			811				
C-B	68	17	421	0.162	68	0.2	0.2	10.228	B
A-B	111	28			111				
A-C	752	188			752				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	312	0.000	0	0.0	0.0	0.000	A
C-A	663	166			663				
C-B	56	14	459	0.121	56	0.2	0.1	8.939	A
A-B	91	23			91				
A-C	614	154			614				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	355	0.000	0	0.0	0.0	0.000	A
C-A	555	139			555				
C-B	47	12	487	0.096	47	0.1	0.1	8.181	A
A-B	76	19			76				
A-C	514	129			514				

2025 Base Flows , PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.30	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2025 Base Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	908	100.000
B		ONE HOUR	✓	3	100.000
C		ONE HOUR	✓	797	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
From	A	0	69	839
	B	1	0	2
	C	750	47	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	A	0	0
C-A					688	1032
C-B	0.13	10.74	0.2	B	43	65
A-B					63	95
A-C					770	1155

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	330	0.000	0	0.0	0.0	0.000	A
C-A	565	141			565				
C-B	35	9	465	0.076	35	0.0	0.1	8.385	A
A-B	52	13			52				
A-C	632	158			632				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	282	0.000	0	0.0	0.0	0.000	A
C-A	674	169			674				
C-B	42	11	432	0.098	42	0.1	0.1	9.241	A
A-B	62	16			62				
A-C	754	189			754				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	209	0.000	0	0.0	0.0	0.000	A
C-A	826	206			826				
C-B	52	13	387	0.134	52	0.1	0.2	10.734	B
A-B	76	19			76				
A-C	924	231			924				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	209	0.000	0	0.0	0.0	0.000	A
C-A	826	206			826				
C-B	52	13	387	0.134	52	0.2	0.2	10.744	B
A-B	76	19			76				
A-C	924	231			924				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	281	0.000	0	0.0	0.0	0.000	A
C-A	674	169			674				
C-B	42	11	432	0.098	42	0.2	0.1	9.253	A
A-B	62	16			62				
A-C	754	189			754				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	330	0.000	0	0.0	0.0	0.000	A
C-A	565	141			565				
C-B	35	9	465	0.076	35	0.1	0.1	8.401	A
A-B	52	13			52				
A-C	632	158			632				

2025 With Dev Flows , AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.39	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 With Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	797	100.000
B		ONE HOUR	✓	3	100.000
C		ONE HOUR	✓	836	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		A	B	C
	A	0	114	683
	B	1	0	2
	C	774	62	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	A	0	0
C-A					710	1065
C-B	0.16	10.33	0.2	B	57	85
A-B					105	157

A-C					627	940
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Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	351	0.000	0	0.0	0.0	0.000	A
C-A	583	146			583				
C-B	47	12	485	0.096	46	0.0	0.1	8.207	A
A-B	86	21			86				
A-C	514	129			514				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	307	0.000	0	0.0	0.0	0.000	A
C-A	696	174			696				
C-B	56	14	456	0.122	56	0.1	0.1	8.987	A
A-B	102	26			102				
A-C	614	154			614				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	242	0.000	0	0.0	0.0	0.000	A
C-A	852	213			852				
C-B	68	17	417	0.164	68	0.1	0.2	10.319	B
A-B	126	31			126				
A-C	752	188			752				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	242	0.000	0	0.0	0.0	0.000	A
C-A	852	213			852				
C-B	68	17	417	0.164	68	0.2	0.2	10.331	B
A-B	126	31			126				
A-C	752	188			752				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	307	0.000	0	0.0	0.0	0.000	A
C-A	696	174			696				
C-B	56	14	456	0.122	56	0.2	0.1	9.002	A
A-B	102	26			102				
A-C	614	154			614				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	351	0.000	0	0.0	0.0	0.000	A
C-A	583	146			583				
C-B	47	12	485	0.096	47	0.1	0.1	8.228	A
A-B	86	21			86				
A-C	514	129			514				

2025 With Dev Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.30	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 With Dev Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	943	100.000
B		ONE HOUR	✓	3	100.000
C		ONE HOUR	✓	814	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	104	839
	B	1	0	2
	C	767	47	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.00	0.00	0.0	A	0	0
C-A					704	1056
C-B	0.14	11.06	0.2	B	43	65
A-B					95	143

A-C					770	1155
-----	--	--	--	--	-----	------

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	326	0.000	0	0.0	0.0	0.000	A
C-A	577	144			577				
C-B	35	9	458	0.077	35	0.0	0.1	8.519	A
A-B	78	20			78				
A-C	632	158			632				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	276	0.000	0	0.0	0.0	0.000	A
C-A	690	172			690				
C-B	42	11	424	0.100	42	0.1	0.1	9.427	A
A-B	93	23			93				
A-C	754	189			754				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	202	0.000	0	0.0	0.0	0.000	A
C-A	844	211			844				
C-B	52	13	378	0.137	52	0.1	0.2	11.041	B
A-B	115	29			115				
A-C	924	231			924				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	202	0.000	0	0.0	0.0	0.000	A
C-A	844	211			844				
C-B	52	13	378	0.137	52	0.2	0.2	11.055	B
A-B	115	29			115				
A-C	924	231			924				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	276	0.000	0	0.0	0.0	0.000	A
C-A	690	172			690				
C-B	42	11	424	0.100	42	0.2	0.1	9.440	A
A-B	93	23			93				
A-C	754	189			754				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	0	326	0.000	0	0.0	0.0	0.000	A
C-A	577	144			577				
C-B	35	9	458	0.077	35	0.1	0.1	8.529	A
A-B	78	20			78				
A-C	632	158			632				

APPENDIX 5

PICADY Output: A664 Manchester Road/Durban Street

Junctions 9							
PICADY 9 - Priority Intersection Module							
Version: 9.5.2.1013 © Copyright TRL Limited, 2019							
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk							
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution							

Filename: Manchester Road_Durban Street V3.j9
Path: Z:\projects\3334 Castleton, Corus Railway Sidings\Picady
Report generation date: 15/02/2023 11:27:38

- »Existing Layout - 2019 Surveyed Flows, AM
- »Existing Layout - 2019 Surveyed Flows, PM
- »Existing Layout - 2025 Base Flows, AM
- »Existing Layout - 2025 Base Flows, PM
- »Existing Layout - 2025 With Dev Flows, AM
- »Existing Layout - 2025 With Dev Flows, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
Existing Layout - 2019 Surveyed Flows								
Stream B-AC	0.9	24.86	0.48	C	0.5	21.46	0.34	C
Stream C-AB	0.2	7.92	0.19	A	0.1	8.27	0.11	A
Existing Layout - 2025 Base Flows								
Stream B-AC	1.4	35.81	0.59	E	0.7	27.85	0.41	D
Stream C-AB	0.3	8.35	0.22	A	0.1	8.71	0.13	A
Existing Layout - 2025 With Dev Flows								
Stream B-AC	1.5	40.21	0.62	E	0.8	31.93	0.45	D
Stream C-AB	0.4	8.46	0.24	A	0.3	9.15	0.21	A

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

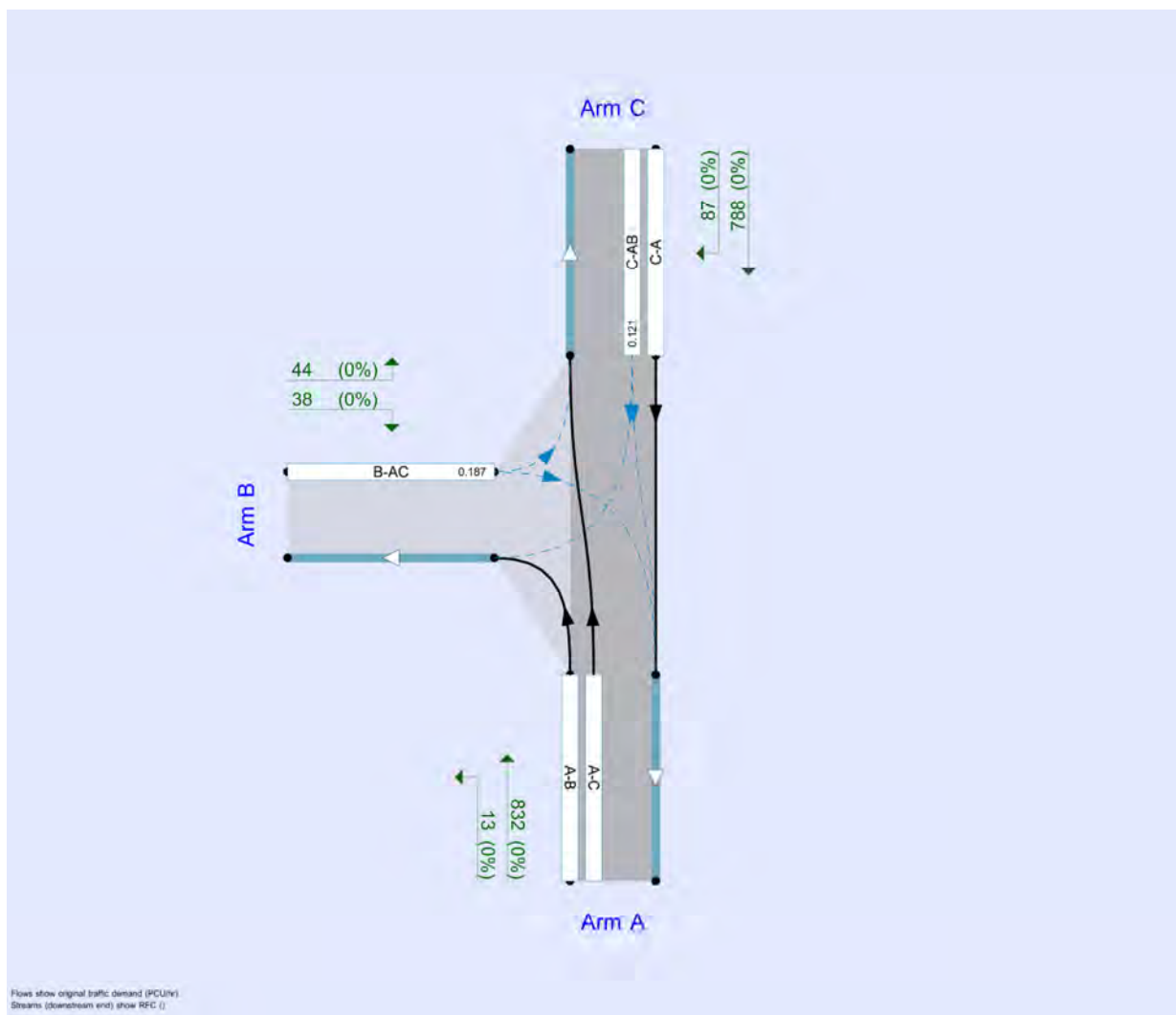
File summary

File Description

Title	Corus Railway Station, Castleton
Location	
Site number	3334
Date	16/04/2021
Version	
Status	TIA
Identifier	
Client	
Jobnumber	
Enumerator	EDD\George.Monks
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Surveyed Flows	AM	ONE HOUR	08:00	09:30	15	✓
D2	2019 Surveyed Flows	PM	ONE HOUR	17:00	18:30	15	✓
D3	2025 Base Flows	AM	ONE HOUR	08:00	09:30	15	✓
D4	2025 Base Flows	PM	ONE HOUR	17:00	18:30	15	✓
D5	2025 With Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓
D6	2025 With Dev Flows	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

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

Existing Layout - 2019 Surveyed Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		2.53	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Manchester Road (S)		Major
B	Durban Street		Minor
C	Manchester Road (N)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00		✓	2.20	250.0	✓	2.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.00	19	16

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	492	0.090	0.226	0.142	0.323
B-C	634	0.097	0.246	-	-
C-B	719	0.278	0.278	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Surveyed Flows	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	600	100.000
B		ONE HOUR	✓	122	100.000

C		ONE HOUR	✓	778	100.000
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Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
From	A	0	22	578
	B	65	0	57
	C	685	93	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.48	24.86	0.9	C	112	168
C-AB	0.19	7.92	0.2	A	88	132
C-A					626	939
A-B					20	30
A-C					530	796

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	23	372	0.247	91	0.0	0.3	12.758	B
C-AB	71	18	600	0.118	70	0.0	0.1	6.787	A
C-A	515	129			515				
A-B	17	4			17				
A-C	435	109			435				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	110	27	334	0.329	109	0.3	0.5	15.976	C
C-AB	86	21	582	0.147	85	0.1	0.2	7.250	A
C-A	614	153			614				
A-B	20	5			20				
A-C	520	130			520				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	134	34	279	0.482	133	0.5	0.9	24.350	C
C-AB	108	27	562	0.191	107	0.2	0.2	7.908	A
C-A	749	187			749				
A-B	24	6			24				
A-C	636	159			636				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service

B-AC	134	34	279	0.482	134	0.9	0.9	24.861	C
C-AB	108	27	562	0.191	108	0.2	0.2	7.917	A
C-A	749	187			749				
A-B	24	6			24				
A-C	636	159			636				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	110	27	334	0.329	111	0.9	0.5	16.304	C
C-AB	86	21	582	0.147	86	0.2	0.2	7.264	A
C-A	614	153			614				
A-B	20	5			20				
A-C	520	130			520				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	23	371	0.247	93	0.5	0.3	12.943	B
C-AB	71	18	600	0.118	71	0.2	0.1	6.805	A
C-A	515	129			515				
A-B	17	4			17				
A-C	435	109			435				

Existing Layout - 2019 Surveyed Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.29	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2019 Surveyed Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	775	100.000
B		ONE HOUR	✓	77	100.000
C		ONE HOUR	✓	752	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		A	B	C
	A	0	12	763
	B	36	0	41
	C	702	50	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.34	21.46	0.5	C	71	106
C-AB	0.11	8.27	0.1	A	46	70
C-A					644	965
A-B					11	17

A-C					700	1050
-----	--	--	--	--	-----	------

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	58	14	358	0.162	57	0.0	0.2	11.934	B
C-AB	38	9	559	0.068	38	0.0	0.1	6.905	A
C-A	528	132			528				
A-B	9	2			9				
A-C	574	144			574				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	69	17	315	0.219	69	0.2	0.3	14.584	B
C-AB	45	11	529	0.086	45	0.1	0.1	7.436	A
C-A	631	158			631				
A-B	11	3			11				
A-C	686	171			686				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	85	21	252	0.336	84	0.3	0.5	21.265	C
C-AB	56	14	491	0.114	56	0.1	0.1	8.270	A
C-A	772	193			772				
A-B	13	3			13				
A-C	840	210			840				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	85	21	252	0.336	85	0.5	0.5	21.465	C
C-AB	56	14	491	0.114	56	0.1	0.1	8.275	A
C-A	772	193			772				
A-B	13	3			13				
A-C	840	210			840				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	69	17	315	0.220	70	0.5	0.3	14.730	B
C-AB	45	11	529	0.086	45	0.1	0.1	7.444	A
C-A	631	158			631				
A-B	11	3			11				
A-C	686	171			686				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	58	14	358	0.162	58	0.3	0.2	12.026	B
C-AB	38	9	559	0.068	38	0.1	0.1	6.912	A
C-A	528	132			528				
A-B	9	2			9				
A-C	574	144			574				

Existing Layout - 2025 Base Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.36	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2025 Base Flows	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	676	100.000
B		ONE HOUR	✓	131	100.000
C		ONE HOUR	✓	847	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
From	A	0	24	652
	B	70	0	61
	C	747	100	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.59	35.81	1.4	E	120	180
C-AB	0.22	8.35	0.3	A	96	144
C-A					681	1022
A-B					22	33
A-C					598	897

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	99	25	350	0.282	97	0.0	0.4	14.148	B
C-AB	77	19	587	0.130	76	0.0	0.2	7.043	A
C-A	561	140			561				
A-B	18	5			18				
A-C	491	123			491				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	118	29	307	0.383	117	0.4	0.6	18.834	C
C-AB	93	23	567	0.164	93	0.2	0.2	7.580	A
C-A	669	167			669				
A-B	22	5			22				
A-C	586	147			586				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	144	36	244	0.591	141	0.6	1.3	34.115	D
C-AB	118	30	550	0.215	118	0.2	0.3	8.337	A
C-A	814	204			814				
A-B	26	7			26				
A-C	718	179			718				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	144	36	244	0.591	144	1.3	1.4	35.811	E
C-AB	118	30	550	0.215	118	0.3	0.3	8.351	A
C-A	814	204			814				
A-B	26	7			26				
A-C	718	179			718				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	118	29	307	0.384	121	1.4	0.6	19.614	C
C-AB	93	23	567	0.164	93	0.3	0.2	7.598	A
C-A	669	167			669				
A-B	22	5			22				
A-C	586	147			586				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	99	25	350	0.282	100	0.6	0.4	14.442	B
C-AB	77	19	587	0.130	77	0.2	0.2	7.065	A
C-A	561	140			561				
A-B	18	5			18				
A-C	491	123			491				

Existing Layout - 2025 Base Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.57	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2025 Base Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	845	100.000
B		ONE HOUR	✓	82	100.000
C		ONE HOUR	✓	825	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
From	A	0	13	832
	B	38	0	44
	C	772	53	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.41	27.85	0.7	D	75	113
C-AB	0.13	8.71	0.1	A	49	74
C-A					708	1061
A-B					12	18
A-C					763	1145

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	62	15	339	0.182	61	0.0	0.2	12.907	B
C-AB	40	10	545	0.074	40	0.0	0.1	7.125	A
C-A	581	145			581				
A-B	10	2			10				
A-C	626	157			626				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	74	18	291	0.253	73	0.2	0.3	16.489	C
C-AB	48	12	513	0.094	48	0.1	0.1	7.736	A
C-A	693	173			693				
A-B	12	3			12				
A-C	748	187			748				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	90	23	219	0.411	89	0.3	0.7	27.326	D
C-AB	60	15	473	0.127	60	0.1	0.1	8.701	A
C-A	848	212			848				
A-B	14	4			14				
A-C	916	229			916				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	90	23	219	0.412	90	0.7	0.7	27.851	D
C-AB	60	15	473	0.127	60	0.1	0.1	8.711	A
C-A	848	212			848				
A-B	14	4			14				
A-C	916	229			916				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	74	18	291	0.253	75	0.7	0.3	16.768	C
C-AB	48	12	513	0.094	48	0.1	0.1	7.747	A
C-A	693	173			693				
A-B	12	3			12				
A-C	748	187			748				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	62	15	339	0.182	62	0.3	0.2	13.036	B
C-AB	40	10	545	0.074	40	0.1	0.1	7.139	A
C-A	581	145			581				
A-B	10	2			10				
A-C	626	157			626				

Existing Layout - 2025 With Dev Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		3.69	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 With Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	676	100.000
B		ONE HOUR	✓	131	100.000
C		ONE HOUR	✓	897	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	24	652
	B	70	0	61
	C	784	113	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.62	40.21	1.5	E	120	180
C-AB	0.24	8.46	0.4	A	110	165
C-A					713	1070
A-B					22	33

A-C					598	897
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Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	99	25	344	0.287	97	0.0	0.4	14.500	B
C-AB	87	22	590	0.147	86	0.0	0.2	7.141	A
C-A	588	147			588				
A-B	18	5			18				
A-C	491	123			491				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	118	29	299	0.394	117	0.4	0.6	19.651	C
C-AB	106	27	574	0.185	106	0.2	0.2	7.693	A
C-A	700	175			700				
A-B	22	5			22				
A-C	586	147			586				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	144	36	233	0.619	141	0.6	1.5	37.820	E
C-AB	137	34	563	0.243	136	0.2	0.3	8.442	A
C-A	851	213			851				
A-B	26	7			26				
A-C	718	179			718				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	144	36	233	0.620	144	1.5	1.5	40.206	E
C-AB	137	34	563	0.243	137	0.3	0.4	8.461	A
C-A	851	213			851				
A-B	26	7			26				
A-C	718	179			718				

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	118	29	299	0.394	121	1.5	0.7	20.637	C
C-AB	106	27	574	0.185	106	0.4	0.2	7.716	A
C-A	700	175			700				
A-B	22	5			22				
A-C	586	147			586				

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	99	25	344	0.287	100	0.7	0.4	14.822	B
C-AB	87	22	590	0.147	87	0.2	0.2	7.168	A
C-A	588	147			588				
A-B	18	5			18				
A-C	491	123			491				

Existing Layout - 2025 With Dev Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.92	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 With Dev Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	845	100.000
B		ONE HOUR	✓	82	100.000
C		ONE HOUR	✓	875	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	B	C
	A	0	13	832
	B	38	0	44
	C	788	87	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.45	31.93	0.8	D	75	113
C-AB	0.21	9.15	0.3	A	84	125
C-A					719	1079
A-B					12	18

A-C					763	1145
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Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	62	15	331	0.187	61	0.0	0.2	13.305	B
C-AB	67	17	550	0.121	66	0.0	0.1	7.426	A
C-A	592	148			592				
A-B	10	2			10				
A-C	626	157			626				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	74	18	280	0.263	73	0.2	0.3	17.377	C
C-AB	81	20	524	0.154	81	0.1	0.2	8.119	A
C-A	706	176			706				
A-B	12	3			12				
A-C	748	187			748				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	90	23	203	0.445	89	0.3	0.8	31.100	D
C-AB	104	26	497	0.208	103	0.2	0.3	9.131	A
C-A	860	215			860				
A-B	14	4			14				
A-C	916	229			916				

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	90	23	203	0.445	90	0.8	0.8	31.930	D
C-AB	104	26	497	0.208	104	0.3	0.3	9.146	A
C-A	860	215			860				
A-B	14	4			14				
A-C	916	229			916				

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	74	18	280	0.263	75	0.8	0.4	17.750	C
C-AB	81	20	524	0.154	81	0.3	0.2	8.137	A
C-A	706	176			706				
A-B	12	3			12				
A-C	748	187			748				

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	62	15	330	0.187	62	0.4	0.2	13.458	B
C-AB	67	17	550	0.121	67	0.2	0.1	7.447	A
C-A	592	148			592				
A-B	10	2			10				
A-C	626	157			626				

APPENDIX 6

PICADY Output: A664 Manchester Road/Royal Barn
Road/Partington Street

Junctions 9							
PICADY 9 - Priority Intersection Module							
Version: 9.5.2.1013 © Copyright TRL Limited, 2019							
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk							
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution							

Filename: Manchester Road_Partington Road_Royle Barn Road V3.j9
 Path: Z:\projects\3334 Castleton, Corus Railway Sidings\Picady
 Report generation date: 15/02/2023 11:32:54

- »Existing Layout - 2019 Surveyed Flows, AM
- »Existing Layout - 2019 Surveyed Flows, PM
- »Existing Layout - 2025 Base Flows, AM
- »Existing Layout - 2025 Base Flows, PM
- »Existing Layout - 2025 With Dev Flows, AM
- »Existing Layout - 2025 With Dev Flows, PM

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
Existing Layout - 2019 Surveyed Flows								
Stream B-ACD	0.6	15.74	0.38	C	0.5	15.90	0.33	C
Stream AB-CD	0.2	7.60	0.15	A	0.4	7.74	0.25	A
Stream D-ABC	0.3	11.90	0.26	B	0.8	14.40	0.44	B
Stream CD-B	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Existing Layout - 2025 Base Flows								
Stream B-ACD	0.8	19.84	0.45	C	0.6	19.90	0.39	C
Stream AB-CD	0.2	7.94	0.17	A	0.4	8.05	0.28	A
Stream D-ABC	0.4	13.44	0.30	B	1.0	17.10	0.50	C
Stream CD-B	0.0	0.00	0.00	A	0.0	0.00	0.00	A
Existing Layout - 2025 With Dev Flows								
Stream B-ACD	2.2	36.69	0.70	E	1.2	28.23	0.54	D
Stream AB-CD	0.2	8.04	0.18	A	0.5	8.19	0.29	A
Stream D-ABC	0.4	13.91	0.31	B	1.1	18.40	0.52	C
Stream CD-B	0.0	0.00	0.00	A	0.0	0.00	0.00	A

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

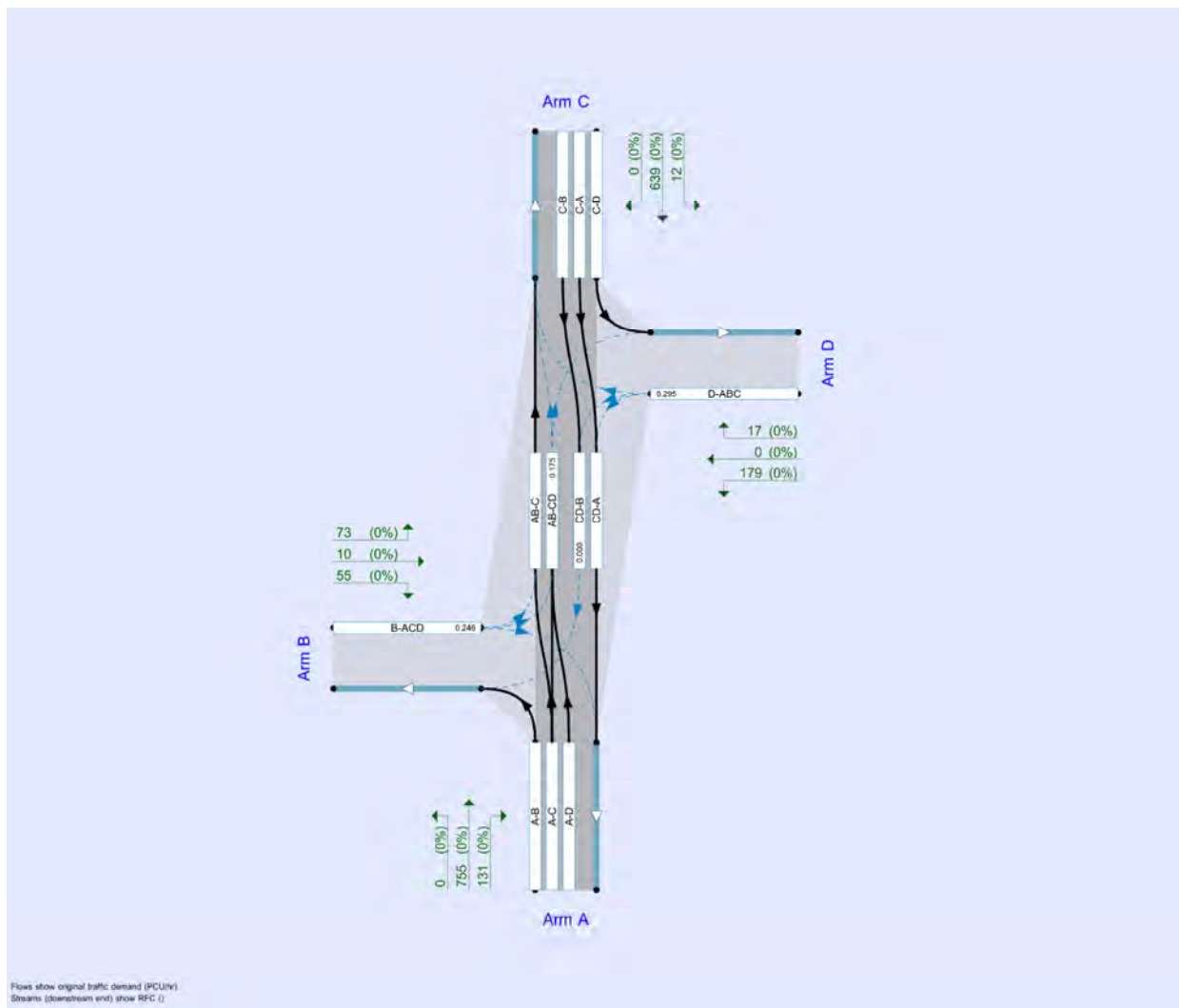
File summary

File Description

Title	Corus Railway Sidings, Castleton
Location	
Site number	3334
Date	16/04/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	EDD\George.Monks
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

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

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Surveyed Flows	AM	ONE HOUR	08:00	09:30	15	✓
D2	2019 Surveyed Flows	PM	ONE HOUR	17:00	18:30	15	✓
D3	2025 Base Flows	AM	ONE HOUR	08:00	09:30	15	✓
D4	2025 Base Flows	PM	ONE HOUR	17:00	18:30	15	✓
D5	2025 With Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓
D6	2025 With Dev Flows	PM	ONE HOUR	17:00	18:30	15	✓

Analysis Set Details

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

Existing Layout - 2019 Surveyed Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Left-Right Stagger	Two-way		1.27	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Manchester Road (S)		Major
B	Partington Street		Minor
C	Manchester Road (N)		Major
D	Royle Barn Road		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	6.00		✓	3.00	200.0	✓	2.00
C	6.00		✓	3.00	80.0		-

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	5.00	44	12
D	One lane	3.50	37	17

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B
AB-D	750	-	-	-	-	-	0.291	0.291	0.291	-	-
B-A	597	0.109	0.275	0.275	-	-	0.173	0.393	-	0.173	0.393
B-CD	758	0.116	0.294	0.294	-	-	-	-	-	-	-
CD-B	674	0.261	0.261	0.261	-	-	-	-	-	-	-
D-AB	666	-	-	-	-	-	0.258	0.258	0.102	-	-
D-C	523	-	0.151	0.344	0.151	0.344	0.241	0.241	0.095	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

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

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

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2019 Surveyed Flows	AM	ONE HOUR	08:00	09:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)

✓	✓	HV Percentages	2.00
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Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	629	100.000
B		ONE HOUR	✓	126	100.000
C		ONE HOUR	✓	650	100.000
D		ONE HOUR	✓	96	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		A	B	C	D
From	A	0	0	560	69
	B	61	0	60	5
	C	636	0	0	14
	D	81	0	15	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-ACD	0.38	15.74	0.6	C	116	173
A-B					0	0
A-C					514	771
A-D					63	95
AB-CD	0.15	7.60	0.2	A	69	104
AB-C					568	852
D-ABC	0.26	11.90	0.3	B	88	132
C-D					13	19
C-A					584	875
C-B					0	0
CD-A					658	987
CD-B	0.00	0.00	0.0	A	0	0

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	95	24	470	0.202	94	0.0	0.2	9.554	A
A-B	0	0			0				
A-C	422	105			422				
A-D	52	13			52				
AB-CD	56	14	612	0.092	56	0.0	0.1	6.471	A
AB-C	466	116			466				
D-ABC	72	18	488	0.148	72	0.0	0.2	8.640	A
C-D	11	3			11				
C-A	479	120			479				
C-B	0	0			0				

CD-A	539	135			539				
CD-B	0	0	551	0.000	0	0.0	0.0	0.000	A

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	113	28	428	0.265	113	0.2	0.4	11.416	B
A-B	0	0			0				
A-C	503	126			503				
A-D	62	16			62				
AB-CD	67	17	587	0.115	67	0.1	0.1	6.918	A
AB-C	556	139			556				
D-ABC	86	22	455	0.189	86	0.2	0.2	9.739	A
C-D	13	3			13				
C-A	572	143			572				
C-B	0	0			0				
CD-A	644	161			644				
CD-B	0	0	527	0.000	0	0.0	0.0	0.000	A

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	139	35	367	0.378	138	0.4	0.6	15.616	C
A-B	0	0			0				
A-C	617	154			617				
A-D	76	19			76				
AB-CD	84	21	557	0.150	84	0.1	0.2	7.599	A
AB-C	680	170			680				
D-ABC	106	26	408	0.259	105	0.2	0.3	11.865	B
C-D	15	4			15				
C-A	700	175			700				
C-B	0	0			0				
CD-A	789	197			789				
CD-B	0	0	493	0.000	0	0.0	0.0	0.000	A

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	139	35	367	0.378	139	0.6	0.6	15.742	C
A-B	0	0			0				
A-C	617	154			617				
A-D	76	19			76				
AB-CD	84	21	557	0.150	84	0.2	0.2	7.604	A
AB-C	680	170			680				
D-ABC	106	26	408	0.259	106	0.3	0.3	11.903	B
C-D	15	4			15				
C-A	700	175			700				
C-B	0	0			0				
CD-A	789	197			789				
CD-B	0	0	493	0.000	0	0.0	0.0	0.000	A

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	113	28	428	0.265	114	0.6	0.4	11.518	B
A-B	0	0			0				
A-C	503	126			503				
A-D	62	16			62				
AB-CD	67	17	587	0.115	68	0.2	0.1	6.927	A
AB-C	557	139			557				
D-ABC	86	22	455	0.190	87	0.3	0.2	9.778	A
C-D	13	3			13				
C-A	572	143			572				
C-B	0	0			0				
CD-A	645	161			645				
CD-B	0	0	527	0.000	0	0.0	0.0	0.000	A

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	95	24	470	0.202	95	0.4	0.3	9.630	A
A-B	0	0			0				

A-C	422	105			422				
A-D	52	13			52				
AB-CD	56	14	612	0.092	56	0.1	0.1	6.482	A
AB-C	467	117			467				
D-ABC	72	18	487	0.148	73	0.2	0.2	8.682	A
C-D	11	3			11				
C-A	479	120			479				
C-B	0	0			0				
CD-A	540	135			540				
CD-B	0	0	551	0.000	0	0.0	0.0	0.000	A

Existing Layout - 2019 Surveyed Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Left-Right Stagger	Two-way		1.61	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2019 Surveyed Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	814	100.000
B		ONE HOUR	✓	99	100.000
C		ONE HOUR	✓	561	100.000
D		ONE HOUR	✓	180	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		A	B	C	D
From	A	0	0	691	123
	B	36	0	55	8
	C	550	0	0	11
	D	164	0	16	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-ACD	0.33	15.90	0.5	C	91	136

A-B					0	0
A-C					634	951
A-D					113	169
AB-CD	0.25	7.74	0.4	A	127	191
AB-C					678	1016
D-ABC	0.44	14.40	0.8	B	165	248
C-D					10	15
C-A					505	757
C-B					0	0
CD-A					655	982
CD-B	0.00	0.00	0.0	A	0	0

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	75	19	458	0.163	74	0.0	0.2	9.353	A
A-B	0	0			0				
A-C	520	130			520				
A-D	93	23			93				
AB-CD	101	25	641	0.157	100	0.0	0.2	6.647	A
AB-C	559	140			559				
D-ABC	136	34	520	0.261	134	0.0	0.3	9.302	A
C-D	8	2			8				
C-A	414	104			414				
C-B	0	0			0				
CD-A	536	134			536				
CD-B	0	0	514	0.000	0	0.0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	89	22	408	0.218	89	0.2	0.3	11.248	B
A-B	0	0			0				
A-C	621	155			621				
A-D	111	28			111				
AB-CD	123	31	629	0.195	122	0.2	0.2	7.106	A
AB-C	665	166			665				
D-ABC	162	40	491	0.329	161	0.3	0.5	10.890	B
C-D	10	2			10				
C-A	494	124			494				
C-B	0	0			0				
CD-A	641	160			641				
CD-B	0	0	483	0.000	0	0.0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	109	27	335	0.325	108	0.3	0.5	15.788	C
A-B	0	0			0				
A-C	761	190			761				
A-D	135	34			135				
AB-CD	157	39	623	0.253	157	0.2	0.4	7.724	A
AB-C	808	202			808				
D-ABC	198	50	448	0.442	197	0.5	0.8	14.273	B
C-D	12	3			12				
C-A	606	151			606				
C-B	0	0			0				
CD-A	785	196			785				
CD-B	0	0	440	0.000	0	0.0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	109	27	335	0.325	109	0.5	0.5	15.902	C
A-B	0	0			0				
A-C	761	190			761				

A-D	135	34			135				
AB-CD	158	39	623	0.253	157	0.4	0.4	7.738	A
AB-C	808	202			808				
D-ABC	198	50	448	0.442	198	0.8	0.8	14.403	B
C-D	12	3			12				
C-A	606	151			606				
C-B	0	0			0				
CD-A	786	197			786				
CD-B	0	0	440	0.000	0	0.0	0.0	0.000	A

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	89	22	408	0.218	90	0.5	0.3	11.331	B
A-B	0	0			0				
A-C	621	155			621				
A-D	111	28			111				
AB-CD	123	31	629	0.195	123	0.4	0.3	7.128	A
AB-C	666	167			666				
D-ABC	162	40	491	0.329	163	0.8	0.5	11.007	B
C-D	10	2			10				
C-A	494	124			494				
C-B	0	0			0				
CD-A	643	161			643				
CD-B	0	0	483	0.000	0	0.0	0.0	0.000	A

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	75	19	458	0.163	75	0.3	0.2	9.414	A
A-B	0	0			0				
A-C	520	130			520				
A-D	93	23			93				
AB-CD	101	25	641	0.157	101	0.3	0.2	6.670	A
AB-C	560	140			560				
D-ABC	136	34	520	0.261	136	0.5	0.4	9.400	A
C-D	8	2			8				
C-A	414	104			414				
C-B	0	0			0				
CD-A	538	135			538				
CD-B	0	0	514	0.000	0	0.0	0.0	0.000	A

Existing Layout - 2025 Base Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Left-Right Stagger	Two-way		1.46	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2025 Base Flows	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	706	100.000
B		ONE HOUR	✓	134	100.000
C		ONE HOUR	✓	710	100.000
D		ONE HOUR	✓	103	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		A	B	C	D
From	A	0	0	632	74
	B	65	0	64	5
	C	695	0	0	15
	D	87	0	16	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-ACD	0.45	19.84	0.8	C	123	184
A-B					0	0

A-C					580	870
A-D					68	102
AB-CD	0.17	7.94	0.2	A	74	111
AB-C					637	955
D-ABC	0.30	13.44	0.4	B	95	142
C-D					14	21
C-A					638	957
C-B					0	0
CD-A					717	1076
CD-B	0.00	0.00	0.0	A	0	0

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	101	25	446	0.226	100	0.0	0.3	10.375	B
A-B	0	0			0				
A-C	476	119			476				
A-D	56	14			56				
AB-CD	60	15	600	0.100	60	0.0	0.1	6.657	A
AB-C	523	131			523				
D-ABC	78	19	472	0.164	77	0.0	0.2	9.088	A
C-D	11	3			11				
C-A	523	131			523				
C-B	0	0			0				
CD-A	588	147			588				
CD-B	0	0	535	0.000	0	0.0	0.0	0.000	A

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	120	30	398	0.303	120	0.3	0.4	12.916	B
A-B	0	0			0				
A-C	568	142			568				
A-D	67	17			67				
AB-CD	72	18	574	0.126	72	0.1	0.1	7.166	A
AB-C	624	156			624				
D-ABC	93	23	436	0.212	92	0.2	0.3	10.468	B
C-D	13	3			13				
C-A	625	156			625				
C-B	0	0			0				
CD-A	703	176			703				
CD-B	0	0	508	0.000	0	0.0	0.0	0.000	A

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	148	37	329	0.449	146	0.4	0.8	19.516	C
A-B	0	0			0				
A-C	696	174			696				
A-D	81	20			81				
AB-CD	90	23	544	0.166	90	0.1	0.2	7.932	A
AB-C	762	191			762				
D-ABC	113	28	381	0.297	113	0.3	0.4	13.377	B
C-D	17	4			17				
C-A	765	191			765				
C-B	0	0			0				
CD-A	860	215			860				
CD-B	0	0	471	0.000	0	0.0	0.0	0.000	A

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	148	37	329	0.449	147	0.8	0.8	19.842	C
A-B	0	0			0				
A-C	696	174			696				
A-D	81	20			81				

AB-CD	91	23	544	0.166	91	0.2	0.2	7.939	A
AB-C	763	191			763				
D-ABC	113	28	381	0.297	113	0.4	0.4	13.439	B
C-D	17	4			17				
C-A	765	191			765				
C-B	0	0			0				
CD-A	861	215			861				
CD-B	0	0	471	0.000	0	0.0	0.0	0.000	A

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	120	30	398	0.303	122	0.8	0.4	13.107	B
A-B	0	0			0				
A-C	568	142			568				
A-D	67	17			67				
AB-CD	72	18	574	0.126	73	0.2	0.1	7.180	A
AB-C	625	156			625				
D-ABC	93	23	436	0.212	93	0.4	0.3	10.526	B
C-D	13	3			13				
C-A	625	156			625				
C-B	0	0			0				
CD-A	703	176			703				
CD-B	0	0	508	0.000	0	0.0	0.0	0.000	A

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	101	25	445	0.226	101	0.4	0.3	10.484	B
A-B	0	0			0				
A-C	476	119			476				
A-D	56	14			56				
AB-CD	60	15	600	0.100	60	0.1	0.1	6.674	A
AB-C	524	131			524				
D-ABC	78	19	472	0.164	78	0.3	0.2	9.141	A
C-D	11	3			11				
C-A	523	131			523				
C-B	0	0			0				
CD-A	589	147			589				
CD-B	0	0	535	0.000	0	0.0	0.0	0.000	A

Existing Layout - 2025 Base Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Left-Right Stagger	Two-way		1.87	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2025 Base Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	886	100.000
B		ONE HOUR	✓	106	100.000
C		ONE HOUR	✓	621	100.000
D		ONE HOUR	✓	192	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		A	B	C	D
From	A	0	0	755	131
	B	38	0	59	9
	C	609	0	0	12
	D	175	0	17	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-ACD	0.39	19.90	0.6	C	97	146
A-B					0	0

A-C					693	1039
A-D					120	180
AB-CD	0.28	8.05	0.4	A	138	208
AB-C					737	1105
D-ABC	0.50	17.10	1.0	C	176	264
C-D					11	17
C-A					559	838
C-B					0	0
CD-A					719	1079
CD-B	0.00	0.00	0.0	A	0	0

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	80	20	436	0.183	79	0.0	0.2	10.045	B
A-B	0	0			0				
A-C	568	142			568				
A-D	99	25			99				
AB-CD	108	27	632	0.172	108	0.0	0.2	6.855	A
AB-C	609	152			609				
D-ABC	145	36	505	0.286	143	0.0	0.4	9.896	A
C-D	9	2			9				
C-A	458	115			458				
C-B	0	0			0				
CD-A	589	147			589				
CD-B	0	0	500	0.000	0	0.0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	95	24	381	0.250	95	0.2	0.3	12.557	B
A-B	0	0			0				
A-C	679	170			679				
A-D	118	29			118				
AB-CD	133	33	621	0.214	133	0.2	0.3	7.367	A
AB-C	724	181			724				
D-ABC	173	43	473	0.365	172	0.4	0.6	11.941	B
C-D	11	3			11				
C-A	547	137			547				
C-B	0	0			0				
CD-A	704	176			704				
CD-B	0	0	466	0.000	0	0.0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	117	29	298	0.392	116	0.3	0.6	19.634	C
A-B	0	0			0				
A-C	831	208			831				
A-D	144	36			144				
AB-CD	174	43	621	0.279	173	0.3	0.4	8.029	A
AB-C	876	219			876				
D-ABC	211	53	422	0.501	210	0.6	1.0	16.847	C
C-D	13	3			13				
C-A	671	168			671				
C-B	0	0			0				
CD-A	862	215			862				
CD-B	0	0	419	0.000	0	0.0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	117	29	297	0.392	117	0.6	0.6	19.901	C
A-B	0	0			0				
A-C	831	208			831				
A-D	144	36			144				

AB-CD	174	43	621	0.280	174	0.4	0.4	8.050	A
AB-C	877	219			877				
D-ABC	211	53	422	0.501	211	1.0	1.0	17.103	C
C-D	13	3			13				
C-A	671	168			671				
C-B	0	0			0				
CD-A	863	216			863				
CD-B	0	0	419	0.000	0	0.0	0.0	0.000	A

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	95	24	381	0.250	96	0.6	0.3	12.713	B
A-B	0	0			0				
A-C	679	170			679				
A-D	118	29			118				
AB-CD	133	33	621	0.214	134	0.4	0.3	7.396	A
AB-C	725	181			725				
D-ABC	173	43	473	0.365	174	1.0	0.6	12.129	B
C-D	11	3			11				
C-A	547	137			547				
C-B	0	0			0				
CD-A	706	177			706				
CD-B	0	0	466	0.000	0	0.0	0.0	0.000	A

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	80	20	436	0.183	80	0.3	0.2	10.128	B
A-B	0	0			0				
A-C	568	142			568				
A-D	99	25			99				
AB-CD	109	27	632	0.172	109	0.3	0.2	6.886	A
AB-C	610	152			610				
D-ABC	145	36	505	0.286	145	0.6	0.4	10.025	B
C-D	9	2			9				
C-A	458	115			458				
C-B	0	0			0				
CD-A	591	148			591				
CD-B	0	0	500	0.000	0	0.0	0.0	0.000	A

Existing Layout - 2025 With Dev Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Left-Right Stagger	Two-way		2.91	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2025 With Dev Flows	AM	ONE HOUR	08:00	09:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	706	100.000
B		ONE HOUR	✓	207	100.000
C		ONE HOUR	✓	722	100.000
D		ONE HOUR	✓	104	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	0	632	74
	B	102	0	96	9
	C	707	0	0	15
	D	88	0	16	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-ACD	0.70	36.69	2.2	E	190	285

A-B					0	0
A-C					580	870
A-D					68	102
AB-CD	0.18	8.04	0.2	A	78	117
AB-C					666	999
D-ABC	0.31	13.91	0.4	B	95	143
C-D					14	21
C-A					649	973
C-B					0	0
CD-A					729	1094
CD-B	0.00	0.00	0.0	A	0	0

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	156	39	442	0.352	154	0.0	0.5	12.382	B
A-B	0	0			0				
A-C	476	119			476				
A-D	56	14			56				
AB-CD	63	16	598	0.105	63	0.0	0.1	6.718	A
AB-C	546	137			546				
D-ABC	78	20	468	0.167	78	0.0	0.2	9.193	A
C-D	11	3			11				
C-A	532	133			532				
C-B	0	0			0				
CD-A	598	149			598				
CD-B	0	0	535	0.000	0	0.0	0.0	0.000	A

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	186	47	394	0.472	185	0.5	0.9	17.059	C
A-B	0	0			0				
A-C	568	142			568				
A-D	67	17			67				
AB-CD	76	19	573	0.133	76	0.1	0.2	7.243	A
AB-C	652	163			652				
D-ABC	93	23	431	0.217	93	0.2	0.3	10.652	B
C-D	13	3			13				
C-A	636	159			636				
C-B	0	0			0				
CD-A	714	179			714				
CD-B	0	0	508	0.000	0	0.0	0.0	0.000	A

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	228	57	324	0.702	223	0.9	2.1	33.923	D
A-B	0	0			0				
A-C	696	174			696				
A-D	81	20			81				
AB-CD	96	24	544	0.176	95	0.2	0.2	8.026	A
AB-C	795	199			795				
D-ABC	115	29	374	0.306	114	0.3	0.4	13.825	B
C-D	17	4			17				
C-A	778	195			778				
C-B	0	0			0				
CD-A	875	219			875				
CD-B	0	0	471	0.000	0	0.0	0.0	0.000	A

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	228	57	324	0.703	227	2.1	2.2	36.691	E
A-B	0	0			0				
A-C	696	174			696				

A-D	81	20			81				
AB-CD	96	24	544	0.176	96	0.2	0.2	8.036	A
AB-C	797	199			797				
D-ABC	115	29	373	0.307	114	0.4	0.4	13.908	B
C-D	17	4			17				
C-A	778	195			778				
C-B	0	0			0				
CD-A	875	219			875				
CD-B	0	0	471	0.000	0	0.0	0.0	0.000	A

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	186	47	394	0.472	191	2.2	0.9	18.148	C
A-B	0	0			0				
A-C	568	142			568				
A-D	67	17			67				
AB-CD	76	19	573	0.133	77	0.2	0.2	7.256	A
AB-C	655	164			655				
D-ABC	93	23	430	0.217	94	0.4	0.3	10.721	B
C-D	13	3			13				
C-A	636	159			636				
C-B	0	0			0				
CD-A	715	179			715				
CD-B	0	0	508	0.000	0	0.0	0.0	0.000	A

09:15 - 09:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	156	39	442	0.352	157	0.9	0.6	12.699	B
A-B	0	0			0				
A-C	476	119			476				
A-D	56	14			56				
AB-CD	63	16	598	0.106	63	0.2	0.1	6.736	A
AB-C	548	137			548				
D-ABC	78	20	468	0.167	79	0.3	0.2	9.250	A
C-D	11	3			11				
C-A	532	133			532				
C-B	0	0			0				
CD-A	599	150			599				
CD-B	0	0	535	0.000	0	0.0	0.0	0.000	A

Existing Layout - 2025 With Dev Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Left-Right Stagger	Two-way		2.39	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2025 With Dev Flows	PM	ONE HOUR	17:00	18:30	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	886	100.000
B		ONE HOUR	✓	138	100.000
C		ONE HOUR	✓	651	100.000
D		ONE HOUR	✓	196	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		A	B	C	D
From	A	0	0	755	131
	B	55	0	73	10
	C	639	0	0	12
	D	179	0	17	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-ACD	0.54	28.23	1.2	D	127	190

A-B					0	0
A-C					693	1039
A-D					120	180
AB-CD	0.29	8.19	0.5	A	140	210
AB-C					749	1123
D-ABC	0.52	18.40	1.1	C	180	270
C-D					11	17
C-A					586	880
C-B					0	0
CD-A					750	1126
CD-B	0.00	0.00	0.0	A	0	0

Main Results for each time segment

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	104	26	423	0.246	103	0.0	0.3	11.209	B
A-B	0	0			0				
A-C	568	142			568				
A-D	99	25			99				
AB-CD	109	27	626	0.175	109	0.0	0.2	6.939	A
AB-C	619	155			619				
D-ABC	148	37	499	0.295	146	0.0	0.4	10.138	B
C-D	9	2			9				
C-A	481	120			481				
C-B	0	0			0				
CD-A	614	154			614				
CD-B	0	0	500	0.000	0	0.0	0.0	0.000	A

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	124	31	365	0.340	123	0.3	0.5	14.825	B
A-B	0	0			0				
A-C	679	170			679				
A-D	118	29			118				
AB-CD	134	34	615	0.219	134	0.2	0.3	7.479	A
AB-C	736	184			736				
D-ABC	176	44	465	0.379	175	0.4	0.6	12.386	B
C-D	11	3			11				
C-A	574	144			574				
C-B	0	0			0				
CD-A	735	184			735				
CD-B	0	0	466	0.000	0	0.0	0.0	0.000	A

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	152	38	279	0.544	149	0.5	1.1	27.233	D
A-B	0	0			0				
A-C	831	208			831				
A-D	144	36			144				
AB-CD	176	44	616	0.286	176	0.3	0.4	8.170	A
AB-C	889	222			889				
D-ABC	216	54	411	0.525	214	0.6	1.1	18.116	C
C-D	13	3			13				
C-A	704	176			704				
C-B	0	0			0				
CD-A	899	225			899				
CD-B	0	0	419	0.000	0	0.0	0.0	0.000	A

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	152	38	279	0.545	152	1.1	1.2	28.229	D
A-B	0	0			0				
A-C	831	208			831				

A-D	144	36			144				
AB-CD	177	44	616	0.287	177	0.4	0.5	8.193	A
AB-C	890	223			890				
D-ABC	216	54	411	0.525	216	1.1	1.1	18.396	C
C-D	13	3			13				
C-A	704	176			704				
C-B	0	0			0				
CD-A	901	225			901				
CD-B	0	0	419	0.000	0	0.0	0.0	0.000	A

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	124	31	365	0.340	127	1.2	0.5	15.250	C
A-B	0	0			0				
A-C	679	170			679				
A-D	118	29			118				
AB-CD	135	34	616	0.219	135	0.5	0.3	7.507	A
AB-C	738	184			738				
D-ABC	176	44	465	0.379	178	1.1	0.6	12.620	B
C-D	11	3			11				
C-A	574	144			574				
C-B	0	0			0				
CD-A	737	184			737				
CD-B	0	0	466	0.000	0	0.0	0.0	0.000	A

18:15 - 18:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	104	26	422	0.246	105	0.5	0.3	11.364	B
A-B	0	0			0				
A-C	568	142			568				
A-D	99	25			99				
AB-CD	110	27	627	0.175	110	0.3	0.2	6.974	A
AB-C	620	155			620				
D-ABC	148	37	499	0.296	148	0.6	0.4	10.284	B
C-D	9	2			9				
C-A	481	120			481				
C-B	0	0			0				
CD-A	617	154			617				
CD-B	0	0	500	0.000	0	0.0	0.0	0.000	A



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