

Banners Gate

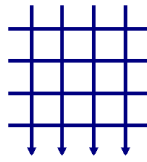
Highways & Transportation

Residential development on land east of Broad Lane (Plot W of Kingsway Business Park), Rochdale

Transport Assessment (December 2023)



The transport implications of a residential development of 57 properties



BANNERS GATE
HIGHWAYS AND TRANSPORTATION

Residential development
on land east of Broad Lane, (Plot W,
Kingsway Business Park), Rochdale
Transport Assessment

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Job P1432	Revision	Prepared and checked by	Date
	1 st issue (70 units)	Nigel Vening BSc CEng MICE MCIHT	8 January 2020
	2 nd issue (64 units)	Nigel Vening BSc CEng MICE MCIHT	5 July 2022
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NEW HOUSING AT BROAD LANE, ROCHDALE

TRANSPORT ASSESSMENT

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NEW HOUSING AT BROAD LANE, ROCHDALE TRANSPORT ASSESSMENT

APPENDICES

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References

Rochdale Borough Council Core Strategy
Rochdale Borough Council Unitary Development Plan
Greater Manchester Transport Strategy 2040
Guidelines and Standards for Residential Development, Rochdale Borough Council (SPD)
Residential Design Guide, Rochdale Borough Council (SPD)
National Planning Policy Framework (September 2023)
Manual for Streets (2007)
Manual for Streets2 (2010)
Guidelines for Providing for Journeys on Foot (CIHT)
Transport Statement prepared by BWB Consulting (application 14/00542/OUT).
TRICS database (version 7.9.1)

TRANSPORT ASSESSMENT

1 INTRODUCTION

- 1.1 BannersGate Transportation Limited has been instructed by David Wilson Homes to consider transport and highway engineering issues in support of a planning application for residential development on land on the east side of Broad Lane and to the south of Rochdale town centre. A location plan is included at [Appendix A](#).
- 1.2 The site forms the western edge of an area of land known as Kingsway Business Park. This business park has outline planning permission focussing on employment but a selection of other land-uses, such as residential, hotel and leisure projects are considered to be acceptable. A parcel of land, considered in this report, is labelled as Plot W and is considered suitable for residential development. The site is located within the jurisdiction of Rochdale Borough Council.



1.3 National Planning Policy Framework (paragraph 113) states

113. 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.

1.4 Therefore, this *Transport Assessment* considers the traffic and transport implications of the project. The current development promotes a layout of 57 dwellings. This report includes reference to the outline planning permission plus the benefit of data from traffic surveys on Broad Lane and New Broad Lane. This report studies the following topics:

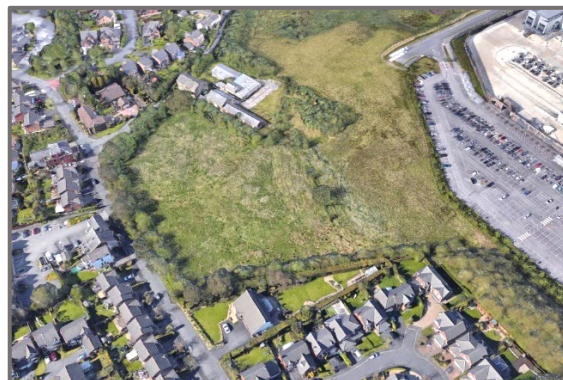
- Details of the local road network
- Consideration of highway safety
- Details of Kingsway Business Park and outline planning permission
- Consideration of existing traffic flows and speeds on New Broad Lane
- Potential traffic generation of the development
- Study of expected trip distribution from the development
- Design of the site access onto Broad Lane and junction visibility
- Study of the operation of the junction of Broad Lane and New Broad Lane
- Design of the site layout, servicing and parking provision
- Overview of the potential traffic impact of the development
- Discussion of the sustainability credentials of the site and local public transport
- Reference to a Travel Plan (separate document)

1.5 These topics are studied in this report. A Travel Plan and Travel Pack has been prepared as a separate document.

2 EXISTING CONDITIONS

2.1 The existing site

- 2.1.1 The site consists of some underutilised land on the south side of Rochdale. The land forms part of the Kingsway Business Park which has secured outline planning permission. Access is provided through adjoining land to the east.



2.2 Highway network

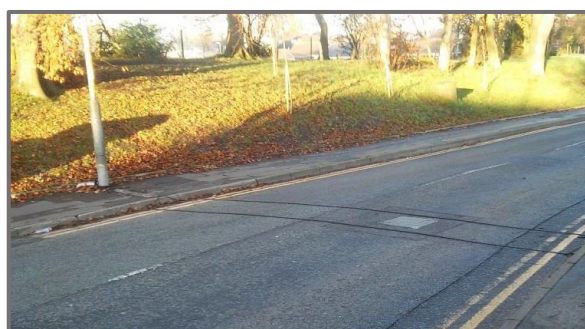
- 2.2.1 The characteristics of the area are changing as various projects forming part of the Kingsway Business Park are implemented. This scheme has brought about the closure of Lower Lane which provided a vehicular route from Broad Lane to the land currently being developed as part of the business park. Consequently, Lower Lane now forms a pedestrian and cycling route to the business park but also acts as an emergency access. The road alterations have created a cul-de-sac of residential roads formed from Broad Lane and its junction with New Broad Lane. It is estimated that 174 properties are served by the cul-de-sac which includes several secondary cul-de-sacs such as Wrenbury Drive and Verdant Way. In addition, Broad Lane also provides access to the Spring Inn Public House.
- 2.2.2 Traffic calming, in the form of speed cushions are provided in selected areas. A speed limit of 20mph applies to the route of Wrenbury Drive. In addition, some properties do not benefit from off-street parking and therefore some on-street parking is prevalent in some areas of the cul-de-sac. This parking reduces the effective width of the carriageway and therefore reduces average speeds. Generally, the roads have a minimum width of 5.5 metres. Footways are not always provided to both sides of the carriageway but at least one footway is available within the main residential area where frontage access is provided.
- 2.2.3 New Broad Lane is a local distributor road, classified as the B6194, which connects Crompton and Turf Hill to the south with Rochdale to the north. The route is a single carriageway with street lighting and a speed limit of 30mph. There is a notable downhill gradient northbound on parts of the route. Dragon's teeth road markings are provided on the southbound carriageway to provide a warning to drivers of an area of traffic calming which applies over a distance of 480 metres. Parking restrictions are imposed on certain parts of the route such as junctions.



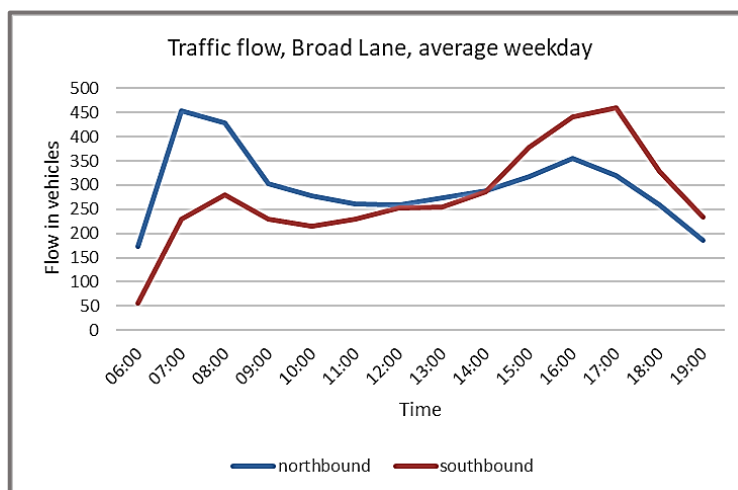
2.2.4 The connection of New Broad Lane with Broad Lane consists of a priority junction including a right turning lane. The road layout includes a notable turn in the alignment of Broad Lane close to the junction but adequate width is provided for vehicles. A refuge is included within the junction layout which divides the traffic flows. A pedestrian crossing facility is included with dropped kerbs although tactile paving is not provided.



2.2.5 Traffic from the proposed development would connect onto the route of New Broad Lane. Traffic flows are available from an automatic traffic count completed from Tuesday 12 November to Monday 18 November 2019. The equipment was bolted to a street light a short distance to the north of the junction of Broad Lane with New Broad Lane. The survey provides details of directional flows, hour by hour, for a continuous period of 7 days. Flows are recorded as 8,939 vehicles on an average weekday. The location of the survey was designed to obtain the speed of traffic in the vicinity of the junction of Broad Lane and



New Broad Lane. The survey provides details of directional flows, hour by hour, for a continuous period of 7 days. Flows are recorded as 8,939 vehicles on an average weekday. The location of the survey was designed to obtain the speed of traffic in the vicinity of the junction of Broad Lane and



This junction would be used by development traffic and it is important to learn about speeds and visibility provision at the junction. Speeds are typical for an urban route with a speed limit of 30mph. Average northbound speeds are 31mph. Average southbound speeds are 27.9mph. The 85th percentile speeds, which are exceeded by 15% of traffic, have been recorded as 35.6mph and 32.5mph for northbound and southbound directions respectively.

2.2.6 Traffic flows may change slightly over time in four years since November 2019. Nevertheless, the flows are considered representative for an assessment of the proposed housing project. Comment on visibility at the Broad Lane junction is included at Section 6.

New Broad Lane (Nov 2019)	Northbound	Southbound	Total
Weekday AM (0800 to 0900)	429	279	708
Weekday PM (1700 to 1800)	320	460	780
Weekday 24 hours	4,598	4,341	8,939

- 2.2.7 The results show a directional traffic flow at peak times. There is a notably higher flow northbound in the morning peak as local traffic and vehicles from the communities to the south of the M62 travel northbound towards Rochdale. Flows northbound in the morning peak make up 61% of flows. There is a corresponding increase in flows southbound, calculated as 59%, in the evening peak. The flows are not considered to be high for a typical urban single carriageway and junctions operate satisfactorily without excessive delays. The results of the traffic survey are included in full at [Appendix B](#). Speed information is included at [Appendix C](#). The safety of the road network is studied below.

2.3 Highway safety on the road network

- 2.3.1 In terms of the operation and safety of the road network records are kept of *personal injury accidents*. A guide to the local accident pattern can be viewed at www.crashmap.co.uk. This web site uses data published by the Department for Transport which is based on records submitted to them by police forces. The records relate only to personal injury accidents on public roads that are reported to the police, and subsequently recorded, using the STATS19 accident reporting form. Information is updated annually and therefore the data can be a few months out of date. Verified data up to the end of 2022 is included. Typically, good practice recommends research on accidents over the most recent five-year period.
- 2.3.2 The results show that there have been no accidents within the residential area of Broad Lane and no accidents at the junction of Broad Lane and New Broad Lane in the last five years. Looking further afield there has been one accident, involving a slight injury, at the nearby junction serving Springhill Hospice on New Broad Lane. The incident involved a typical shunt accident brought about by a vehicle waiting to turn right to the hospice. It appears that the driver of the following car was inattentive.

Date	Location	Injury?
1 May 2019 (1225 hours)	Shunt accident involving two cars at the junction serving Springhill Hospice on New Broad Lane	Slight

- 2.3.3 There are risks on local roads and incidents can occur but this does not preclude development. Importantly, the junction of Broad Lane with New Broad Lane has an excellent safety record and therefore, there is no reason why the route cannot accommodate additional traffic from a residential development.

3 PLANNING POLICY AND OUTLINE PLANNING PERMISSION

3.1 Core Strategy and Outline Planning Permission

- 3.1.1 Rochdale Borough Council has published and adopted the Core Strategy for the region. The document sets out the long-term spatial strategy for future development of Rochdale Borough and was adopted in October 2016. The document sets out a vision and objectives for the growth of the borough towards 2028. The Council seeks to create a prosperous borough, to grow the local economy and develop places through cooperation and partnership, improving the lives of local people.
- 3.1.2 The Core Strategy is based in part, upon the Unitary Development Plan. This document outlined planning objectives for the region from 2001 to 2016. Some policies in the Core Strategy have been 'saved' from the Unitary Development Plan. The policies contained therein set out how the Council responds to local priorities in order to meet the social, economic and environmental challenges and opportunities that face the region. It is important to give due consideration to local plan policies and the general objective of effective land-use planning in providing new housing in sustainable locations.
- 3.1.3 Of key interest is the policies applicable to Kingsway Business Park. This site has an area of approximately 100 hectares and is allocated for a mix of employment uses including offices, manufacturing and distribution. The description for Kingsway Business Park as included in the Unitary Development Plan is repeated below.

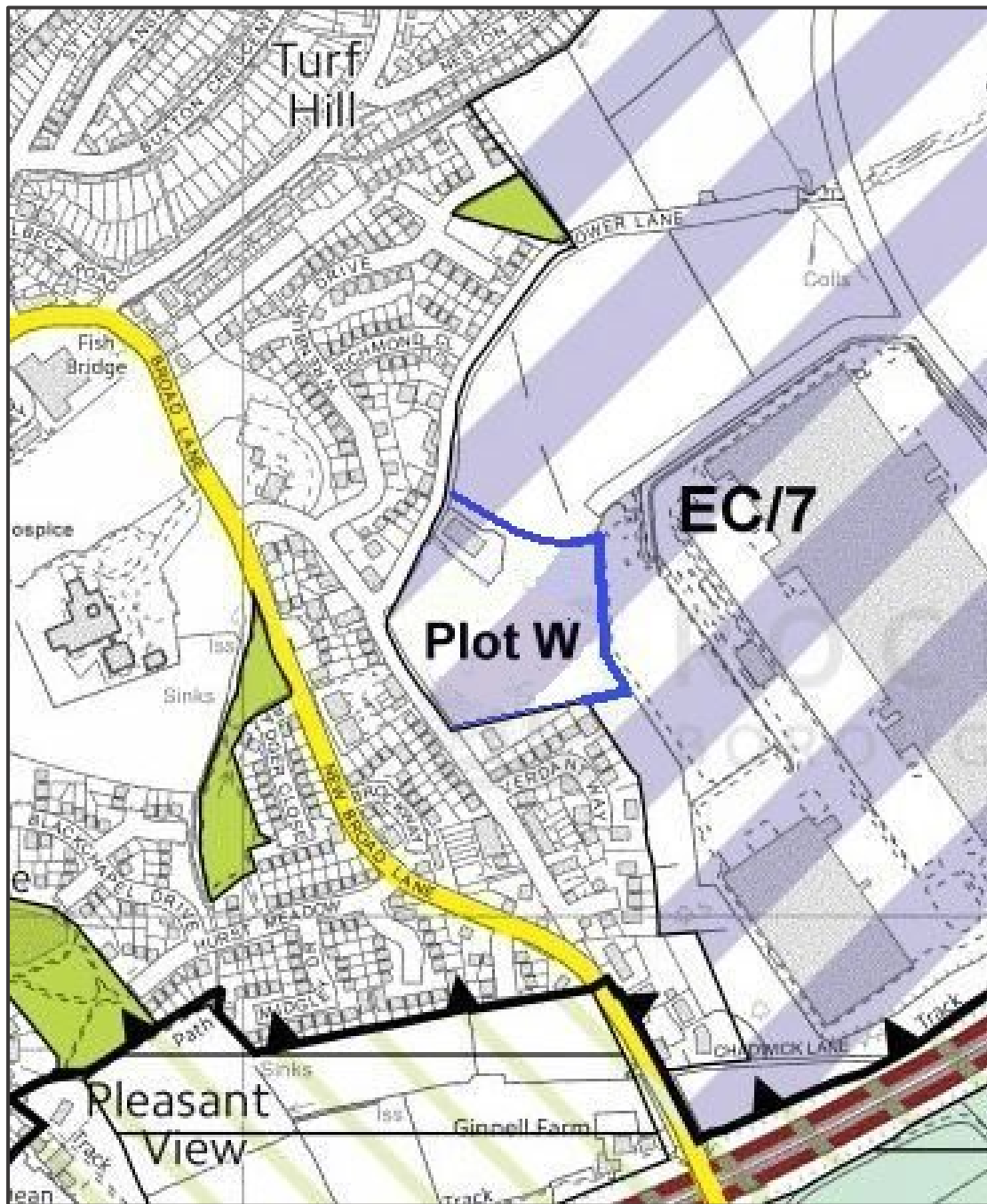
Land, between the A664 Kingsway, M62 Motorway, B6194 Broad Lane and the Rochdale–Oldham railway line, is allocated and has outline planning permission for high quality general and light industry, offices, distribution and storage, research and development, and associated and complementary uses.

- 3.1.4 The policy refers to a number of strict criteria which apply to the policy. For example, the development shall include a high standard of extensive landscaping with the creation of public open space. The site would be served by a main distributor road linking the A664 and Junction 21. Some development has been constructed and completed notably a large distribution depot operated by Asda. Additionally, the Metro line has been extended and the Kingsway Business Park stop has been constructed and completed.



- 3.1.5 The criteria for the site, item o), stated “*Limited residential development may be acceptable provided it is appropriate in scale, location, access and design*”. This report accompanies a planning application for residential development on Plot W of Kingsway Business Park.

The development has an area of 2.3 hectares. The location of Plot W within the context of the overall allocated site is illustrated below.



3.1.6 Fundamentally, the site has outline planning permission for employment uses under the terms of application 14/00542/OUT. This planning application updated a previous application in 2009. Transport planning work was completed by BWB Consulting. A *Transport Statement* (dating from 2014) referred to a schedule of land-uses in the planning application dating from 2009 as follows:

2009 application (104.08 hectares)			
B1 office	27,497m ²	Local services	1,197m ²
B1/b2	115,816m ²	A1 retail	1,500m ²
B8	150,113m ²	A3 retail	850m ²
Hotels	9,754m ²	Residential	300 units
Leisure	8,502m ²		

- 3.1.7 Ongoing planning for the project, combined with market changes, brought about a new mix of land-uses for the allocated site. The *Transport Statement* prepared by BWB referred to a schedule of land-uses for the 2014 planning application as follows:

2014 application (75 hectares)			
B1 office	56,118m ²	Leisure	4,970m ²
B1/B2	51,457m ²	Local services	6,107m ²
B8	110,507m ²	Car showrooms	4,645m ²
Hotels	10,927m ²	Residential	133 units

- 3.1.8 The report also included details of expected traffic generation. The peak hour traffic figures for the proposed land-uses (2014) outlined above, as calculated by BWB Consulting, are repeated below.

AM Peak Hour		PM Peak hour	
In	Out	In	Out
3286	1298	1695	2898

- 3.1.9 The decision to grant planning permission means that the impact of this additional traffic is acceptable to the Highway Authority. A notable amount of new infrastructure and highway improvements is justified by this amount of traffic. It is noted that the consultant has used 85th percentile trip rates, as requested by Highways England, in order to provide a robust assessment of the impact of the project. Traffic distribution included an emphasis on traffic travelling to and from junction 21 of the M62 motorway. Therefore, the impact of traffic from the residential development has been considered as part of the outline application and found to be acceptable.
- 3.1.10 The expected traffic from Kingsway Business Park focussed on the new infrastructure but a cul-de-sac residential development on Broad Lane provides the opportunity to direct some

traffic to New Broad Lane. The residential development forms 2.3 hectares of the overall project of 75 hectares. Alternative routes allow traffic to be rapidly dissipated across the network and therefore an additional connection to a part of the site would generally be welcomed by the Highway Authority. By definition, less traffic is directed at other junctions close to the site. Of course, it is important to study the infrastructure that would be used by the development traffic to ensure it is fit for purpose. Topics such as road widths, footways for pedestrians, road safety and junction capacity (Broad Lane / New Broad Lane) need to be considered. These topics are discussed in Section 6.

3.2 Transport Strategy 2040

- 3.2.1 There is the need to consider the objectives of the Transport Strategy published by the Greater Manchester Combined Authority. This document sets out ambitions and policies referring to inclusive growth, improving the road network and public transport, embracing technology to create a resilient infrastructure.
- 3.2.2 Policies direct housing development towards sustainable sites where residents have real choices in travel apart from the use of the private car. Public transport should be available and walking or cycling to local services should be plausible and realistic. Policies for the region are repeated below.

Greater Manchester-wide policies

In addition to our priorities for each of the spatial themes, there are a number of policies that we need to apply consistently across the whole transport system to make sure that our Greater Manchester-wide principles and priorities, outlined on pages 10–12, are at the heart of everything we do. These policies are as follows:

Integrated

- | | |
|----|---|
| 01 | We will work with partners to ensure that supporting modes of transport, including taxis, private hire, demand responsive services, car clubs and cycle hire, are available and fully integrated into the Greater Manchester transport network. |
| 02 | Working with partners, we will seek to deliver integrated pricing and payment systems, including integrated fares and smart ticketing for public transport, to support the development of 'Mobility as a Service'. |
| 03 | We will maintain a conurbation-wide programme of travel choices interventions, supported by journey planning tools and information, to encourage travel behaviour change and mode shift, in order to make the most efficient use of available capacity, particularly during peak periods. |
| 04 | TfGM will continue to work with planning authorities and developers to ensure the accessibility of new development by sustainable modes and to reduce the impact on the highway network. |

- 3.2.3 Clearly there is a sensitive balance between the need for growth and increased demand for high quality homes whilst suppressing the inevitable need to travel and improving safety on the road network. The site off Broad Lane has outline planning permission and therefore is considered sustainable and suitable for development. The site is located close to existing schools, retail areas, employment sites as well as bus services. The site adheres to the objectives of sustainable residential development. Similar objectives of sustainable land-use planning are provided in the National Planning Policy Framework (NPPF) which was recently updated in September 2023. This document is discussed below.

3.3 National Planning Policy Framework

- 3.3.1 The principle of sustainable development is reiterated in National Planning Policy Framework (NPPF). The guidance provides a presumption in favour of sustainable development and projects should adhere to local plan policy.

105. The planning system should actively manage patterns of growth in support of these objectives. 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.

106. Planning policies should:

- a) support an appropriate mix of uses across an area, and within larger scale sites, to minimise the number and length of journeys needed for employment, shopping, leisure, education and other activities;

- 3.3.2 Within the context of these policies it is important to demonstrate that the site at Broad Lane is suitable for development. Outline planning permission has been secured. The evidence contained in this report demonstrates that the project is sustainable. The access can be designed safely to published standards.

3.4 Sustainability credentials of the site

- 3.4.1 Modes of travel apart from the use of the private car are becoming increasingly important. Development projects must make provision to avoid actively promoting the use of the private car and in many ways, this is dependent on the location of the site. Local Plan Policies seek to reduce the reliance on the private car and alternatives within a residential development project include encouraging walking and cycling as well as the use of public transport.

- 3.4.2 **Walking** Recommendations on walking distances are provided in The Institution of Highways and Transportation publication entitled *Guidelines for Providing for Journeys on Foot* as repeated below:

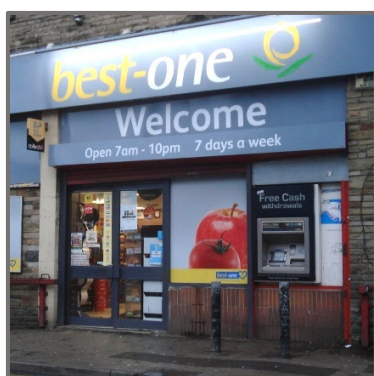
Table 3.2: Suggested Acceptable Walking Distance.

	Town centres (m)	Commuting/School Sight-seeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred maximum	800	2000	1200

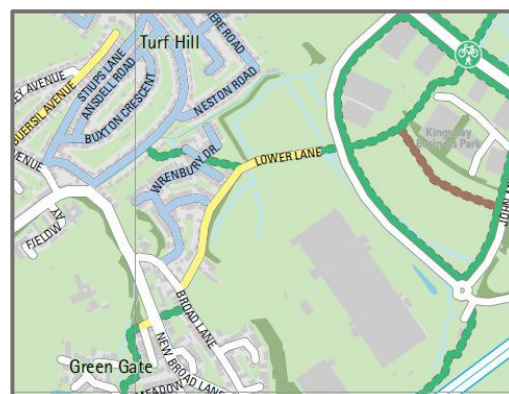
3.4.3 Generally, walking speed is estimated to be 5km/hour or fractionally over 3 miles per hour. The site's excellent sustainability credentials are described below.

3.4.4 The site is located on the south side of the suburban area of Lower Place. Numerous shops and services are provided along the route of Oldham Road which is approximately 1km from the site. The area includes a convenience store, pharmacy and two primary schools. Kingsway Park High School is accessible with a similar walking distance.

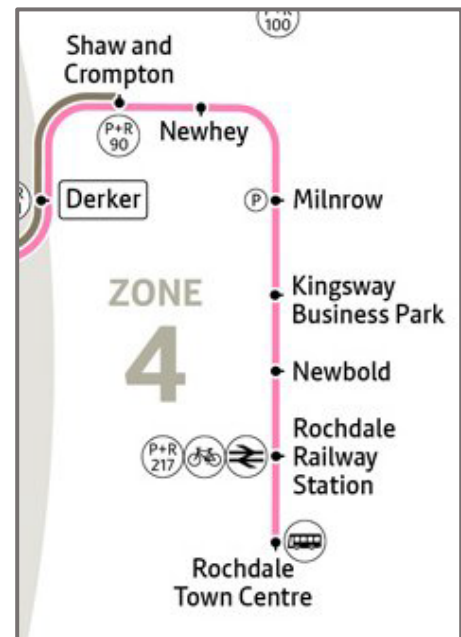
3.4.5 **Bus travel** Bus routes 891, R9 and R10. Regular buses connect the area with Rochdale town centre. Bus stops, with lay-bys are accessible by means of a pedestrian right of way that connects Broad Lane and New Broad Lane. Therefore, the walking distance from the site to the bus stops is no more than 250 metres. Buses are provided from 0630 to 1900 hours.



3.4.6 **Cycling** Cycling is a realistic mode of transport for short journeys of the order of 5-10 kilometres. The entire urban area of Rochdale is considered to be within cycling distance. The route of Lower Lane has been incorporated within the local cycle route network and signing is provided on New Broad Lane. Cycle routes are provided at the business park and several quiet residential streets are available. Cycling to and from the residential project is highly plausible.



- 3.4.7 **Metro**–The Metro Pink Line connects Rochdale with Manchester City Centre. A station has been constructed for Kingsway Business Park. Trams are available every 12 minutes. The station is readily accessible via the route of Lower Lane and the network of footways provided within the business park. The station is approximately 2km from the residential site but nevertheless the trams provide a transport alternative due to the frequency of services.
- 3.4.8 Outline planning permission has been secured. It is clear that the land is considered to be sustainable and suitable for development.



4 DEVELOPMENT PROPOSALS

4.1 Site layout

4.1.1 The current layout promotes a project of 57 new properties as follows:

- A new cul-de-sac of 53 dwellings connecting onto Broad Lane. New 2, 3 and 4 bedroom dwellings would be constructed using a new circular road. This design feature minimises the need for reversing by service vehicles (e.g., refuse wagons) and therefore conventional turning areas are not required.
- A private driveway of four dwellings connecting onto Lower Lane. This part of the project includes two new houses, a barn conversion and reconstruction of an existing dwelling on a part of the site which includes derelict buildings.

4.1.2 The planning layout (57 dwellings) and proposed site plan (showing details of 4 dwellings) is included at [Appendix D](#). The layout is based on the Residential Design Guide (Supplementary Planning Document) published by Rochdale Borough Council as well as *Manual for Streets*. The proposals seek to create a sense of place. The proposed schedule of accommodation is summarised below.

Total of 57 dwellings		
Broad Lane, main access road for 53 dwellings		
Private Housing	Number	Parking
2 bed houses	23	2 spaces each
3 bed houses	2	2 spaces each
4 bed houses	28	2 spaces each
Lower Lane, private driveway serving 4 dwellings		
Plot 54, new house	4 bedrooms. garage plus 2 parking spaces	
Plot 55, new house	4 bedrooms. garage plus 2 parking spaces	
Plot 56, house (rebuild)	5 bedrooms. garage plus 2 parking spaces	
Plot 57, barn conversion	4 bedrooms. garage plus 2 parking spaces	

4.1.3 The layout has been prepared with due consideration to local constraints and good practice. Other access options are possible but on balance an access via the route of Broad Lane creates an inclusive layout on roads that are known to have an excellent safety record and no congestion. Additional commentary on the reasoning for a connection onto Broad Lane is included at Section 6. The details of the proposals are described below

- The new infrastructure includes roads with a width of 5.5 metres with footways of at least 1.8 metres to each side of the carriageway. The roads would be constructed to standards and specification to secure adoption by the Local Highway Authority

- The layout allows for a sewer easement along the eastern boundary of the site
- A 15-metre landscaping buffer is provided along the northern boundary and an acoustic fence (height 1.8m) is provided on the eastern site boundary. The existing trees, generally along the western and southern boundary of the site, would be retained.
- There are no rights of way affected by the project. There would be no connection, either pedestrian or vehicular, between the development and the remainder of Kingsway Business Park.

4.1.4 The design of the junction onto Broad Lane with reference to visibility is included at Section 6. Traffic generation of the development and the potential impact of this additional traffic is discussed in Section 5 & 6.

4.2 Car parking provision

4.2.1 The parking standards for Rochdale Borough Council are published in Appendix 5 of the Core Strategy. Two parking spaces for dwellings with 2 or more bedrooms are required.

Development Type	Maximum Standard for Car Parking Provision	Minimum Standard for Cycle Space Provision
C3:RESIDENTIAL DWELLING		
2+ Bedroomed Houses outside Town Centres	2 spaces per dwelling, (not including a garage)	No Standard

4.2.2 The parking for the project is summarised as follows:

- All plots have two parking spaces each. All plots have two parking spaces which excludes garages within the exception of plots 1 and 14 where a large garage is provided as a parking space.
- The layout has 10 properties with integral garages (*Broad Lane* - plots 17, 18, 21, 22, 9 & 50, plus *Lower Lane* 54, 55, 56 & 57)
- The layout includes 23 properties with free standing garages

4.2.3 Visitor parking can be accommodated on street. The parking provision is considered suitable and appropriate.

4.3 Cycle storage

4.3.1 It is expected that garages would be used for the storage of bicycles. A total of 33 properties have garages. Where garages are not provided, then properties would be provided with a bike shed. A typical example of bike shed is illustrated opposite



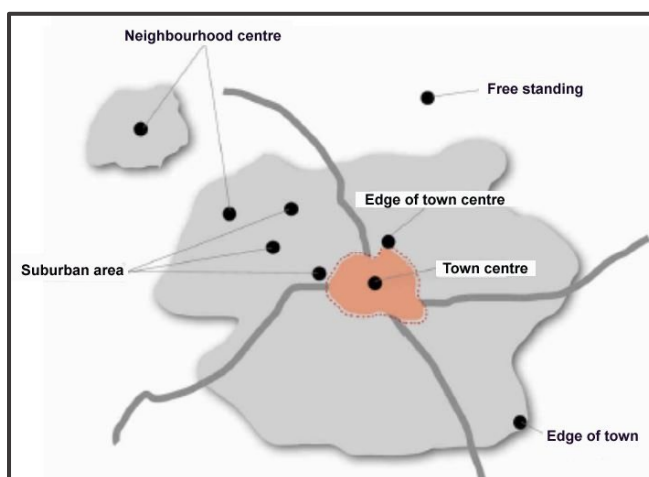
5 THE DEVELOPMENT SITE AND TRAFFIC GENERATION

5.1 Traffic generation of the residential development

5.1.1 Traffic flows to the residential development can be predicted using the TRICS database. This database offers a choice of trip rates for residential development depending on a possible mix of apartments or perhaps non-private housing with a higher density. In this instance, the development would consist of a mix of private and affordable houses.

5.1.2 Trip rates can, of course, vary depending on the provision of local shops, schools and public transport. The TRICS data in this report has been updated using version 7.10.3 of the software. Data from the category of '*Residential / Houses Privately Owned*'[#] that is considered to give a reliable indication of traffic generation from the site.

5.1.3 The sample below includes a mix of 18 sites in a '*suburban area*' or '*edge of town*' within England only and excludes sites in Greater London. The sample excludes sites operating a Travel Plan. The sample also excludes sites that are located within 5 miles of a population of more than 250,000. Rochdale has a population of around 212,000 (2011 census). The sample also excludes sites where there is a notable proportion of flats. The sample is considered to be appropriate for the land at Broad Lane.



5.1.4 There are subtle changes in the trip rates compared to earlier versions of this report (i.e., 64 dwellings). The departure trip rate in the morning has increased from 0.374 to 0.381 but the number of dwellings has decreased to 57 dwellings creating a slight reduction in expected traffic flows. The TRICS extracts for *Residential / Houses Privately Owned*[#] are included at [Appendix E](#).

TRICS version 7.10.3	AM (0800 to 0900)		PM (1700 to 1800)		7am to 7pm
House Privately Owned	Arrivals	Departures	Arrivals	Departures	Two-way
Trip Rate (per property)	0.140	0.381	0.353	0.128	4.465
Trips for 57 properties	8	22	20	7	255

Table 1

[#] *Houses Privately Owned (GDO use class C3)* Housing developments where at least 75% of units are privately owned. Of the total number of units, 75% must also be houses (sum of "non-split" terraced, detached, semi-detached, bungalows, etc), with no more than 25% of the total units being flats. Includes properties that are privately owned and then privately rented.

- 5.1.5 The evidence from the database shows that a development of 57 dwellings would generate approximately 30 trips (two-way) in a peak hour. The traffic generation over the course of 12 hours may be 255 trips.

5.2 Pedestrian and cycling movements created by the residential project

- 5.2.1 The TRICS database also provides information on expected pedestrian activity and bus users. This information is summarised below.

TRICS version 7.10.3 House Privately Owned	7am to 7pm	
	Trip rate	For 57 houses
Pedestrians	0.905	52
Public transport / bus users	0.282	16
Cycling	0.111	6

Table 2

- 5.2.2 The development may generate around 70 walking trips per day meaning 35 departures and 35 arrivals. The database suggests the site would generate activity of 6-10 pedestrian trips per hour. It is expected that most trips would walk towards the local centre of Lower Place at Oldham Road where there are two primary schools and local shops. A continuous and well-connected footway is provided along the route of Broad Lane and New Broad Lane. A reasonable width and walking surface are available which can accommodate this extra pedestrian activity. Additional comment is provided in Section 6.

5.3 Traffic distribution

- 5.3.1 Traffic from the residential project has the option to travel either north or south on New Broad Lane. A traffic count has been completed at the junction of Broad Lane and New Broad Lane. It is reasonable to assume that the additional traffic from the development would follow the turning patterns of existing traffic at the junction. There are slight variations in distribution between the morning and evening peak but patterns involve an emphasis in traveling towards Lower Place. The vehicle trip distribution is summarised below.

Trip distribution	
70% to north and Lower Place	30% to south and High Crompton

- 5.3.2 Traffic distribution is an inexact science and traffic flows vary. The existing traffic patterns provide an excellent guide to traffic movements of the development. The impact of development traffic is discussed in the remaining sections.

5.4 Junction assessments and traffic surveys

- 5.4.1 There is some minor congestion on local roads on the south side of Rochdale. For example, it is known that there is slow moving traffic on the route of the A664 on the south side of Rochdale at peak times. Local traffic patterns are changing with the expansion of the Kingsway Business Park. The work completed by BWB Consulting predicted flows in excess of 4,000 vehicles (arrivals and departures) in a typical peak hour although it is noted that the majority of this traffic would focus on the M62 at junction 21. However, the increase in traffic on local roads is deemed to be acceptable by virtue of securing planning permission. The proposal to utilise the access offered by Broad Lane changes trip distribution, for example, in traffic that may use the gyratory junction of the A664 at Oldham Road. However, the traffic created by the residential development is only 30 trips (two-way) in a peak hour and some trips travel south on New Broad Lane. Consideration of the impact on the wider road network from a project of 57 dwellings has therefore already been considered. Therefore, it is not necessary to assess the road network beyond the junction of New Broad Lane and Broad Lane.
- 5.4.2 A survey of turning movements at the junction of New Broad Lane and Broad Lane was completed in November 2019. Generally, when referring to paragraph 4.18 of *Guidance for Transport Assessment* (now withdrawn) traffic data no more than three years old is suitable for analysis and assessment. Of course, the COVID pandemic has affected traffic patterns which has been accompanied by a reduction in the use of public transport. Fuel prices are also affecting travel choices. On balance, considering that there is minimal queuing at the Broad Lane junction with New Broad Lane it is concluded that the survey information from November 2019 remains valid and can be used in the capacity assessment of the junction. Data is included at [Appendix F](#).
- 5.4.3 The assessment of the junction considers the safety and capacity to accommodate an increase in traffic. Commentary is provided below with details of traffic surveys and calculations of traffic growth.

5.5 Design year and traffic growth

5.5.1 The design year considers the traffic impact of the project when fully occupied and makes a comparison with the operation of the road network without the development. Additional planning work plus construction make take 2-3 years. The Rochdale Borough Council Core Strategy sets out policies, objectives and targets for improving transport in the region to the year 2028. Therefore, this report considers the traffic implications of the project in a design year of 2028. Background traffic growth to a design year can be considered using factors modelled by TEMPRO dataset 7.2 using Origin and Destination data. Output is provided below.

Origin and destination

Rochdale

Base year: **2019**
Future year: **2028**
Transport mode: **Car drivers**
Area type: **Urban**
Road Type: **All**
Time: **Average weekday**

The screenshot shows the 'NTM Traffic Growth Calculations' window for the period 'Growth 2019 to 2028'. It includes five main configuration sections: 1. Select NTM Dataset (a table with columns 'From' and 'To'), 2. Select Areas to make up the geographic region (a list box with 'Rochdale' selected), 3. Select area type (radio buttons for Urban, Rural, All), 4. Select road type (radio buttons for Motorway, Trunk, Principal, Minor, All), and 5. Select which area it serves (radio buttons for Region, England). A 'Calculate the adjusted local growth figure' button is present. Below these sections is a 'Results' table.

1: Select NTM Dataset:		From	To
NTM Dataset Description			
NTM AF15 Dataset		2010	2040
NTM AF09 Dataset		2003	2035
NTM AF08 Dataset		2003	2025

2: Select Areas to make up the geographic region:	
☒ Rochdale	

3. Select area type:
☒ Urban
☐ Rural
☐ All

4. Select road type:
☐ Motorway
☐ Trunk
☐ Principal
☐ Minor
☒ All

5. Select which area it serves:
☒ Region
☐ England

Results		
Level	Area	Local Growth Figure
Authority	Rochdale	1.0895

5.5.2 The factors provided by TEMPRO suggest average weekday traffic growth of 8.95%. Of course, there will be significant traffic growth over many years on local roads as various projects on Kingsway Business Park are implemented. The growth of local roads could vary significantly. The route of New Broad Lane is expected to experience some growth and therefore, in order to provide a robust assessment, growth of 15% is considered in this report. Forecast traffic matrices for the junction are included at [Appendix G](#). The impact of the residential project is described in Section 6.

6 TRANSPORT PLANNING TOPICS

6.1 Consideration of access and traffic impact

6.1.1 The development of up to 57 dwellings would increase traffic flows on local roads. Therefore, this section considers the decision to provide a vehicular connection to Broad Lane. Thereafter, there is the need to consider the details of the design of the access onto Broad Lane. Considerations include geometry, visibility and the pedestrian environment.

6.1.2 In addition, consideration is given to the capacity of the priority junction of Broad Lane and New Broad Lane. The traffic assessment studies how the existing priority junction can accommodate the increase in traffic with the effect of traffic growth to an assessment year of 2028. The analysis uses Transport Research Laboratory software JUNCTIONS9, (PICADY and ARCADY). The programs assess queues, congestion and delays using empirical formula based on traffic flows and geometric parameters. Therefore, it is possible to establish whether or not improvements are justified by the congestion caused by additional traffic.

6.2 Access options to the site

6.2.1 Planning residential development includes the consideration of many topics and various access options to the site are possible. Many planning topics are described in the Residential Design Guide (Supplementary Planning Document) published by Rochdale Borough Council. The guide states (page 34) that *“Developers will be expected to create a hierarchy of different street types for residential development that works with the overall design approach to character. Each development is different, so this guide cannot set out prescriptive details of how a hierarchy of streets should be designed”*. There is a need to create positive features to distinguish the development from other places. Guidance and recommendations are provided. References to the document are quoted:

6.2.2 Paragraph 2.1 *“Good quality development is sensitive to its site and the surrounding area. This does not mean that it tries to replicate what is around it. Rather, it means that the design responds thoughtfully to a careful, thorough understanding of its context. Such an approach tends to result in development that has a sense of ‘belonging’ to the area, and avoids the blandness of ‘standard’ approaches that could be anywhere in the country”*. Plot W is located adjacent to Broad Lane. This residential street forms the surrounding area and thereby should be included in the context of the project.

6.2.3 Paragraph 4.3 *“The principle of creating a hierarchy of different road types is a good one, as it helps to create distinctive places. However, the traditional highway approach to street hierarchy is based on design speeds, road widths, and the number of units that may be served off each road type. It does not consider the character of the streets that are being created”*. There is an option to use the proposed infrastructure of Kingsway

Business Park. These roads would accommodate the traffic flows but create a layout of poor character. In effect, the residential area would be included within an employment and industrial area. *“The character of a place is influenced not only by what buildings look like, but also the way in which buildings and spaces work together to create townscape”* (page 35). Therefore, the use of the infrastructure of Kingsway Business Park would not create a place of character.

- 6.2.4 The planning of new housing should not *“turn its back on the surrounding area”* (page 10). Therefore, there are notable advantages in including the development within the distinctive character of Broad Lane.
- 6.2.5 When considering routes and destinations guidance states (Page 13) *“Understanding the context is not just about character: it is also about understanding the relationship of the site to the local facilities that residents will need in their day-to-day lives. Also “An analysis of routes and destinations should form part of the analysis of the context of all sites”*. There is no doubt that the relationship of the site to local facilities is best served by a vehicular access to Broad Lane. Schools, bus services and shops are readily accessible from Broad Lane.
- 6.2.6 Additionally, in transport planning terms it is preferable to distribute traffic across the road network. Removing a proportion of traffic from the business park infrastructure to Broad Lane helps to dissipate the impact of traffic generation. Fundamentally, Broad Lane is safe, there is no congestion and the route can safely accommodate additional traffic. The development would add 57 dwellings to the cul-de-sac of Broad Lane. An increase of approximately $\frac{1}{3}$ in the number of dwellings has a corresponding increase in the amount of traffic. There is a minimal impact on the function and amenity of Broad Lane.
- 6.2.7 Therefore, when considering planning topics in the round, it is concluded that access via Broad Lane provides the best solution.

6.3 Design of the site access onto Broad Lane

- 6.3.1 Two publications are provided by Rochdale Borough Council. Architectural advice is provided in *Guidelines and Standards for Residential Development* whilst the *Residential Design Guide* provides greater emphasis on highway design. For example., page 35 states:

- A 5.5m carriageway allows for all vehicles to pass one another. This will normally be the maximum width needed for a residential road.
- A 4.8m carriageway allows a car to pass a large service lorry (such as a pantechnicon), but will not allow two large vehicles to pass one

- 6.3.2 The proposed access road for the development would have a width of 5.5 metres. In addition, the narrowest section of Broad Lane, between the site access and the junction of New Broad Lane is also 5.5 metres. Therefore, the existing route of Broad Lane can

accommodate the additional traffic from 57 dwellings. Of course, it is important to provide a layout that adheres to recognised standards to maintain safety on the highway network.

- 6.3.3 There is no specific advice on the location of new junctions in the documentation provided by Rochdale Council. This is because there are numerous layout options and constraints which means that specific standards cannot readily be applied. Some useful commentary is provided in Section 9.2 of Manual for Streets2 which is repeated below

9.2.2 The need for and provision of junctions on new highways, and additional junctions on existing routes should be assessed in the round, considering a wide range of factors, such as the need for access at particular locations, the impact on the size of development blocks, the potential for interaction between junctions and the consequential effect on user delays and road safety.

- 6.3.4 In this instance,

- Traffic calming is provided on Broad Lane
- There is a small retaining wall and no footway along the eastern side of Broad Lane adjacent to the site. There is no footway adjacent to the eastern side on Broad Lane to the south of the site. However, pedestrian movements are expected to walk to the north.
- Trees along the boundary of the site should be retained where possible.



- 6.3.5 On balance, it is concluded that the best position for the access is at the approximate position of the existing road hump close to the property of 211 Broad Lane. At this location, a junction with visibility of 33 metres to each direction is available. The visibility distance is commensurate with speeds of 25mph and is considered appropriate for a traffic calmed routes within a cul-de-sac. The location has a reduced impact on trees compared to other locations. A footway would be included, with a dropped kerb crossing, to provide connectivity to the footway on the west side of the carriageway. The proposals would include alterations to traffic calming. The proposal balances the constraints and is considered to the appropriate and fit for purpose.

6.4 Listed buildings

- 6.4.1 Part of the site includes historic buildings as pictured. These buildings have access onto the route of Lower Lane. These buildings can be brought into active use by conversion to residential dwellings. The setting of the properties would be improved by the construction of two new dwellings to the north to create a private driveway of 4 properties. There are no concerns regarding usage of the existing access onto the lightly trafficked route of Lower Lane.



6.5 Pedestrian movements

- 6.5.1 It is expected that the development project would create 70-80 pedestrian trips per day.

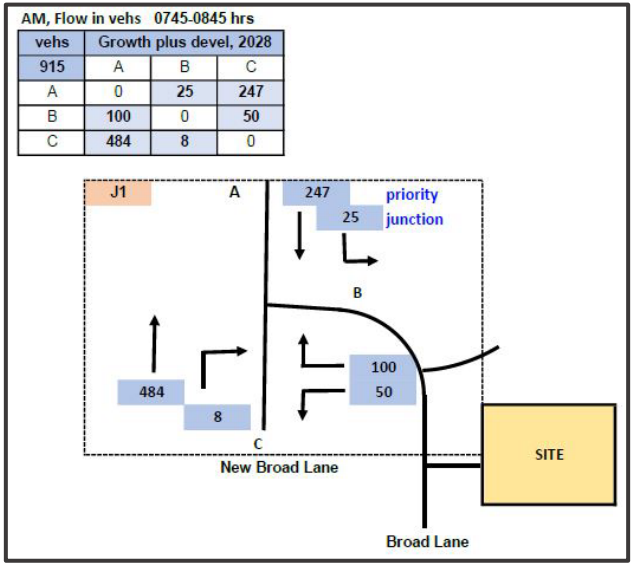
Footways are provided on the desire line from the site to local services in Lower Place. The pedestrian crossing at the junction of Broad Lane and New Broad Lane is pictured. In addition, the footway alongside Broad Lane is pictured. The crossing



point does not include tactile paving and the keep-left arrow is poorly positioned between the two refuges and consequently slightly restricts pedestrian movement particularly for the less able. Similarly, dropped kerbs are omitted in certain locations which can cause problems for those using a wheelchair. There are minor issues with the footway environment but these are not sufficient to warrant major alterations or an objection to the planning application.

6.6 Operation of the Broad Lane / New Broad Lane priority junction

6.6.1 All traffic from the development would pass through the priority junction of New Broad Lane as pictured. A right turning lane is provided and the route is subject to a speed limit of 30mph. Areas of New Broad Lane to the south have traffic calming and this has a moderate effect in reducing northbound speeds through the junction. Existing traffic patterns show 70% turn right from Broad Lane towards the urban areas to the north. Therefore, the development creates only a slight increase in the number of vehicles turning right to Broad Lane from New Broad Lane. The presence of the right turning lane significantly reduces the risk of a shunt accident on the downhill section of New Broad Lane. Traffic flows are higher in the evening peak due to additional traffic generated by the Spring Inn Public House but observations reveal that there is no congestion at the junction. An extract of the traffic data for the morning peak hour is provided above.



6.6.2 The analysis of the junction uses Transport Research Laboratory software PICADY and the results are summarised below and included in full at [Appendix H](#).

Summary Results Broad Lane										
Show Columns										
	AM					PM				
	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
Broad Lane - 2028										
Stream B-AC	0.5	13.16	0.34	B	62 %	0.2	11.86	0.18	B	78 %
Stream C-B	0.0	6.26	0.01	A	[Stream B-AC]	0.1	7.84	0.08	A	[Stream B-AC]
Broad Lane - 2028 plus development										
Stream B-AC	0.7	14.51	0.40	B	48 %	0.3	12.37	0.20	B	70 %
Stream C-B	0.0	6.30	0.02	A	[Stream B-AC]	0.1	8.03	0.09	A	[Stream B-AC]

6.6.3 The results demonstrate that the junction has a great deal of space capacity and congestion is not expected. There is a slight increase in delays on the Broad Lane approach to the junction in both the morning and evening peak hour but a great deal of spare capacity is available. There are no concerns related to the operation of the junction and improvements are not justified.

6.6.4 It may be perceived that visibility looking right from Broad Lane to southbound traffic on New Broad Lane is restricted by the alignment of the road. Surveys reveal that the 85th percentile speeds of southbound vehicles in the vicinity of the bend in the road to the north of the junction are 33 mph. The requisite visibility splay can be derived from Table 7.1 of Manual for Streets as illustrated below

Speed	Kilometres per hour	16	20	24	25	30	32	40	45	48	50	60
	Miles per hour	10	12	15	16	19	20	25	28	30	31	37
SSD (metres)		9	12	15	16	20	22	31	36	40	43	56
SSD adjusted for bonnet length. See 7.6.4		11	14	17	18	23	25	33	39	43	45	59

6.6.5 The visibility requirement is 49 metres. Measurements reveal that approximately 60 metres visibility is provided to the nearside kerb and the uphill gradient for southbound vehicles reduces stopping distances. Therefore, there are no concerns regarding visibility at the junction. Additionally, parking is prohibited at all times, by means of double yellow lines, on the east side of New Broad Lane to the north of the junction. This means that parked cars are not likely to restrict visibility. The junction has an excellent safety record and therefore alterations are not required.

6.7 Overall traffic impact of the project

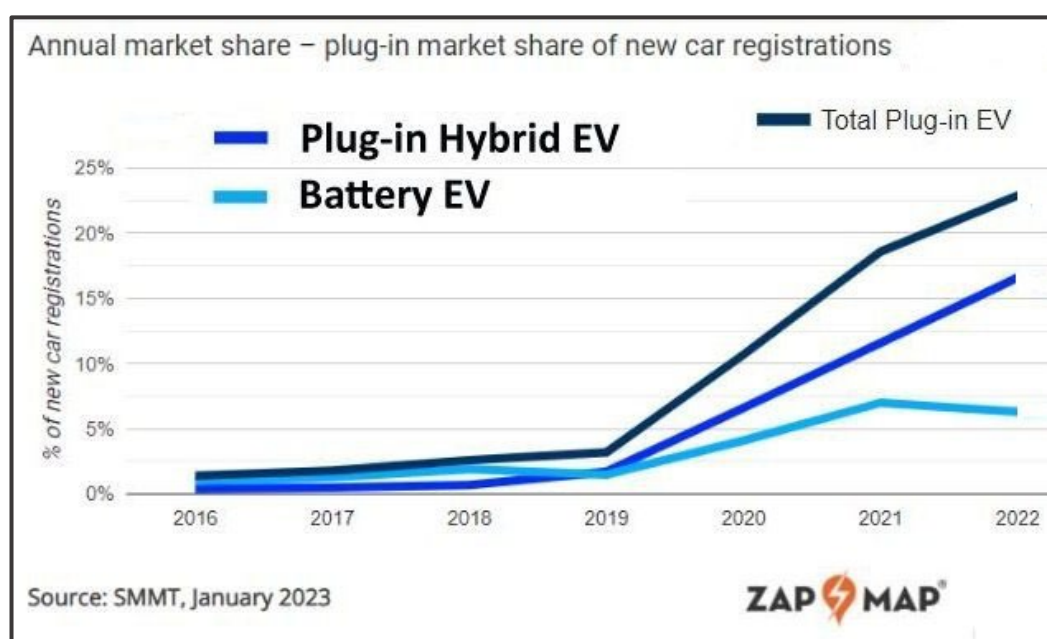
- 6.7.1 The route of Broad Lane has sufficient width to accommodate additional traffic flows. An emergency access is available if required and the junction of New Broad Lane has spare capacity to accommodate traffic growth. The work completed by BWB Consulting predict flows in excess of 4,000 vehicles (arrivals and departures) in a typical peak hour in the event that the Kingsway Business Park is fully occupied. This quantity of traffic, with the construction of mitigation measures is acceptable to the Highway Authority. Conversely the residential development may generate 30 trips in a peak hour. This equates to an additional vehicle every two minutes or thereabouts. Therefore, it is considered that there would not be a severe impact if this traffic utilises the cul-de-sac route of Broad Lane rather than the infrastructure of the business park.
- 6.7.2 The impact of substantial traffic flows from Kingsway Business Park on the wider road network has been assessed. Redistributing a small portion of this traffic via the route of New Broad Lane would not affect the previous conclusions and therefore it is concluded that an objection to the updated residential project at Kingsway Business Park is not justified.

7 SUSTAINABILITY AND OTHER TRANSPORT PLANNING TOPICS

7.1 Promoting a Travel Plan and Travel Pack

7.1.1 The need to travel and the choice of mode of transport by residents of a household is changing. There are three key reasons:

- The production of fossil fuel cars is being phased out. The current target date for ending production of petrol and diesel cars is 2035. Driving using as a single occupant in a fossil fuel car will reduce over time. A guide to the sales of electric vehicles is pictured below (source www.zap-map.com).



- The COVID pandemic highlighted the option to work from home. Individuals can be contacted anywhere via email and phone and therefore businesses have adapted and working from home is now commonplace
- At the time of writing, the cost of fuel is around £1.60 per litre. The cost of filling up a family car is having an effect on travel choices within the household.

7.1.2 By definition, travel as a single occupant in a diesel or petrol car is decreasing. The alternative travel choice, using an electric car, is increasing and this is considered to be sustainable travel. Therefore, the reasoning behind promoting Travel Plans has diminished substantially. Residents are free to travel as they choose but importantly travel will become more sustainable over time regardless of the implementation of a Travel Plan. However, better information on travel choices can help residents. Therefore, the applicant would provide a Travel Pack to all households. This pack would include information on the benefits of transport alternatives to the private car with information on public transport, walking and cycling. An example Travel Pack is provided as a separate document.

7.2 Construction traffic

- 7.2.1 The inherent nature of construction activities would create some noise and nuisance to the surrounding area. Construction traffic is often an emotive topic which can be controlled to some extent by the introduction of planning conditions related to working hours and routes for heavy goods vehicles. The site was originally planned as part of the Kingsway Business Park and therefore access for construction traffic can be obtained using the new road network as pictured. Therefore, it is not necessary for construction vehicles to use the route of Broad Lane and the impact on the local residential area can be minimised. Typically planning conditions can be drafted to control working hours (week and weekend) plus a requirement to use designated vehicular routes.



- 7.2.2 Planning conditions can be imposed to control the construction operations and associated impact on the surrounding area and planning conditions can specify the preparation of a Construction Management Plan.

7.3 Emergency access

- 7.3.1 There can be concerns if there are a large number of properties accessed via a cul-de-sac with one point of access only. The concerns are related to risks of a blockage on the vehicular route to the site and then there is perhaps a medical emergency or fire at a property on the cul-de-sac. The risks are greater for very large residential developments depending on traffic flows, speeds and safety of the junction serving the site. The scale of the project, consisting of 57 new dwellings, combined with the existing properties on Broad Lane does not cause concerns. The existing housing provision is summarised as follows (source: www.royalmail.com)

Verdant Way, 16 dwellings	Farlands Rise, 8 dwellings
Broadview Court, 10 dwellings	Wrenbury Drive, 39 dwellings
Furzegate, 7 dwellings	Mallowcroft, 9 dwellings
Richmond Close, 19 dwellings	Burnet Close 7 dwellings
Bishopsgate Walk, 9 dwellings	Broad Lane, 50 dwellings

- 7.3.2 There are approximately 174 dwellings on the cul-de-sac of Broad Lane.

- 7.3.3 The development would add 57 units to create a cul-de-sac of 231 dwellings. The risks are very low but nevertheless an emergency access is currently provided. The layout at the termination of Lower Lane allows for the usage of emergency vehicles if required. Therefore, there are no concerns related to increasing the number of dwellings on the cul-de-sac of Broad Lane.



7.4 Suggested planning conditions

- 7.4.1 The evidence contained within this report demonstrates that traffic generated by the development would not have a severe impact on the surrounding road network. Whilst the site does increase traffic on the road network flows remain modest within the context of existing flows and significant investment in infrastructure improvements is not justified. Possible planning conditions, referring to transport planning topics should refer to:

Condition Preparation of a construction management plan wheel washing, access for construction vehicles, parking for construction staff etc.

Condition Construction of a new access onto Broad Lane plus footway improvements on the route of Broad Lane.

Condition Alterations to traffic calming measures on Broad Lane in the light of the proximity of the access to existing road humps

Condition Preparation and circulation of a Residential Travel Pack

- 7.4.2 Details of planning conditions would be discussed directly between David Wilson Homes and Rochdale Borough Council during the consultation process for the planning application.

7.5 Commentary on Section 106 contributions

- 7.5.1 It is possible that the planning permission may be secured by means of a Section 106 Agreement. For example, financial contributions may be required related to education contributions and affordable housing. Contributions need to be justified by means of the tests provided in paragraph 57 of NPPF.

57. Planning obligations must only be sought where they meet all of the following tests²⁶:

- a) necessary to make the development acceptable in planning terms;
- b) directly related to the development; and
- c) fairly and reasonably related in scale and kind to the development.

- 7.5.2 Contributions would be negotiated between representatives of David Wilson Homes and Rochdale Borough Council.

7.6 Summary with reference to Local Plan Policy and NPPF

- 7.6.1 Outline planning permission for a wide range of land-uses has been secured under the terms of application 14/00542/OUT. There are no concerns related to the use of the infrastructure of Broad Lane for a residential development of 57 dwellings. By definition the area must be considered sustainable and suitable for development.

- 7.6.2 Planning applications for development are determined by National Planning Policy Framework (NPPF) and Local Plan Policy. Paragraph 111 of NPPF (September 2023) states:

111. 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.

- 7.6.3 The residential development is plausible, sustainable and the residual cumulative impacts cannot be described as severe. Therefore, planning permission should be granted.

8 CONCLUSIONS

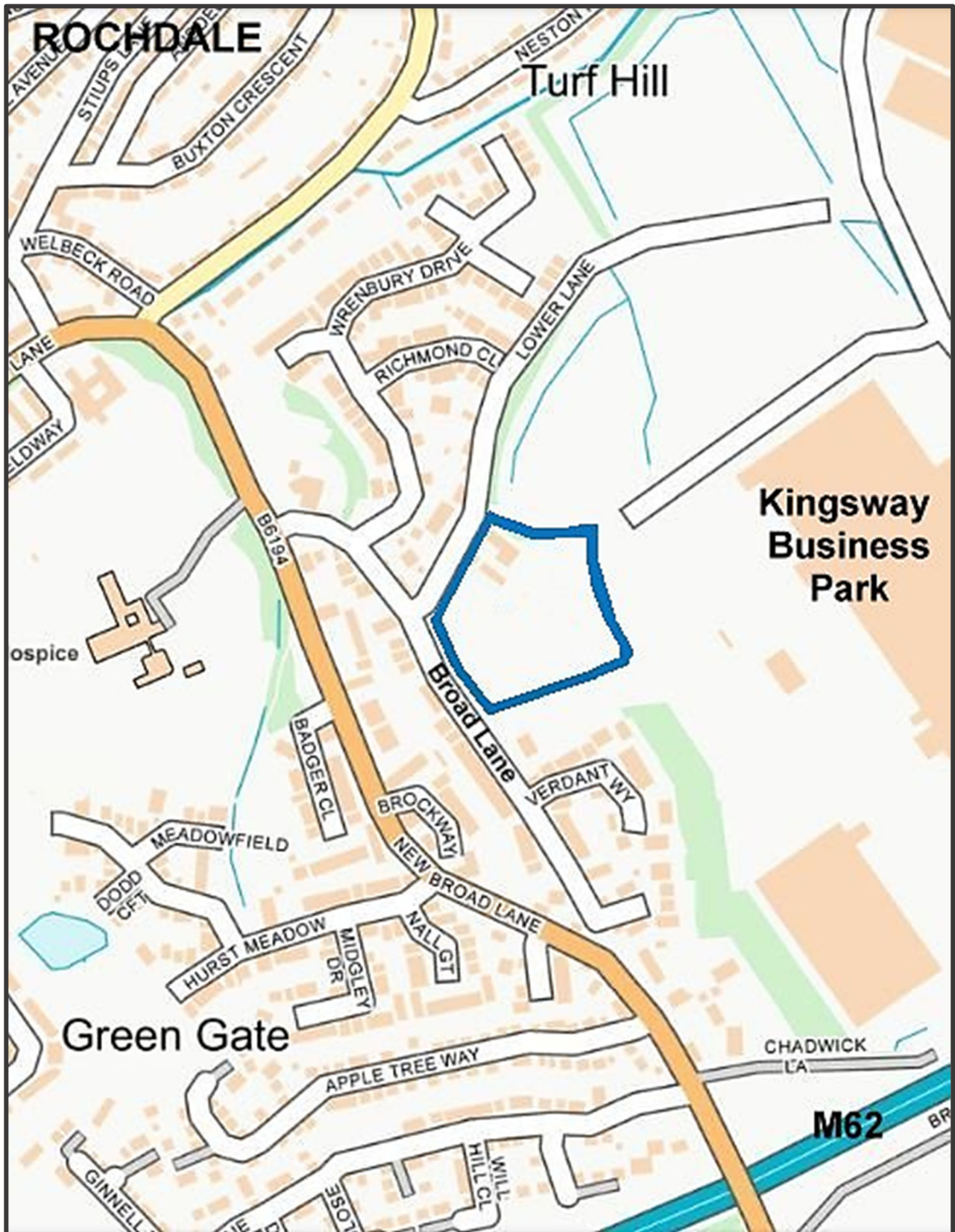
8.1 BannersGate Transportation Limited has been instructed to consider transport planning issues in support of a planning application for a residential development on the east side of Broad Lane. Key transport issues are as follows:

- The site is known as Plot W within the proposals for Kingsway Business Park. This project, with a selection of land-uses including residential development, secured outline planning permission under the terms of application 14/00542/OUT. Some business units have been constructed and are now occupied.
- Updated proposals seek to promote a development of 57 dwellings. The access to the site would not use the infrastructure of the business park but alternatively would use the existing cul-de-sac of Broad Lane.
- The residential layout consists of 2, 3, 4 & 5 bedroom dwellings. The parking provision adheres to Highway Authority standards. The site layout would include a network of roads with a width of 5.5 metres plus footways and street lighting. The access roads would be constructed to adoptable standards and advice provided by Rochdale Borough Council. A satisfactory layout for the access onto Broad Lane can be designed
- By virtue of securing outline planning permission, the traffic impact of Kingsway Business Park, (including residential development) is acceptable subject to the construction of new infrastructure. Traffic generation for the entire project exceeds 4,000 vehicles per hour at peak times. Proposals for new housing, creating 30 trips at peak times, using the alternative route offered by Broad Lane is considered to be appropriate and the scale of the project would not create a severe impact.
- A study reveals that the Broad Lane can accommodate a slight increase in traffic. Analysis reveals that the junction with New Broad Lane has spare capacity to accommodate traffic growth. Traffic would be distributed across routes north and south on New Broad Lane
- Evidence from personal injury accident statistics demonstrates that there are no concerns regarding safety on Broad Lane or New Broad Lane.
- The development site is located within a short distance from local facilities such as shops, schools and public transport in Lower Place. Sustainable travel would be promoted by the circulation of a Travel Pack to all households.

8.2 The findings of this report establish that the project would not have an adverse effect on the safety and operation of the highway network and therefore planning permission should be granted for the residential development on land off Broad Lane, Lower Place.

Appendix A

Location Plan



**Residential development at Broad Lane, Rochdale
Plot W, Kingsway Business Park**

Location Plan

Appendix A

Appendix B

Traffic data, New Broad Lane (November 2019)

24767	ROCHDALE			Site No: 24767001		Location		Site 1, B6194 New Broad Lane, Rochdale (LC 17)	
Channel: Northbound									
	Tue	Wed	Thu	Fri	Sat	Sun	Mon	5-Day	7-Day
TIME PERIOD	12/11/19	13/11/19	14/11/19	15/11/19	16/11/19	17/11/19	18/11/19	Av	Av
Week Begin: 12-Nov-19									
00:00	32	40	46	45	44	77	50	43	48
01:00	14	13	11	13	29	27	11	12	17
02:00	2	1	1	4	5	16	7	3	5
03:00	10	10	10	9	14	11	9	10	10
04:00	16	11	13	5	8	12	12	11	11
05:00	62	57	54	63	32	30	55	58	50
06:00	174	177	172	161	49	30	188	174	136
07:00	441	478	467	440	119	61	441	453	350
08:00	453	423	435	414	224	80	422	429	350
09:00	294	325	278	349	292	182	268	303	284
10:00	268	267	273	312	311	280	268	278	283
11:00	236	272	270	265	357	292	266	262	280
12:00	232	250	264	300	364	297	252	260	280
13:00	278	253	266	290	346	336	285	274	293
14:00	266	284	257	332	314	283	308	289	292
15:00	297	310	308	346	298	251	324	317	305
16:00	340	365	354	375	280	237	341	355	327
17:00	324	327	313	297	212	193	341	320	287
18:00	262	239	260	266	200	171	261	258	237
19:00	196	195	183	203	191	126	147	185	177
20:00	132	123	114	130	120	110	100	120	118
21:00	86	73	89	101	83	54	74	85	80
22:00	41	66	56	82	75	55	45	58	60
23:00	33	37	37	61	63	35	35	41	43
12H,7-19	3691	3793	3745	3986	3317	2663	3777	3798	3567
16H,6-22	4279	4361	4303	4581	3760	2983	4286	4362	4079
18H,6-24	4353	4464	4396	4724	3898	3073	4366	4461	4182
24H,0-24	4489	4596	4531	4863	4030	3246	4510	4598	4324
Am	08:00	07:00	07:00	07:00	11:00	11:00	07:00		
Peak	453	478	467	440	357	292	441		
Pm	16:00	16:00	16:00	16:00	12:00	13:00	17:00		
Peak	340	365	354	375	364	336	341		

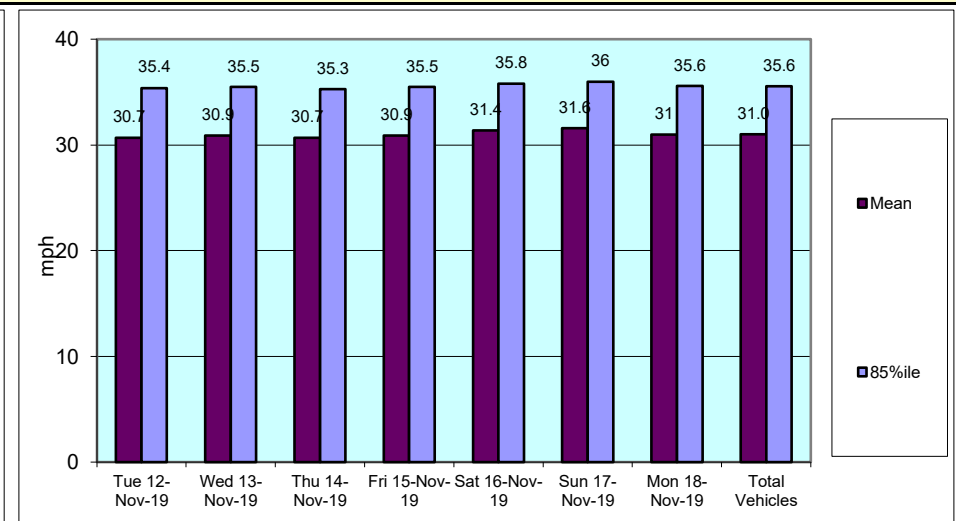
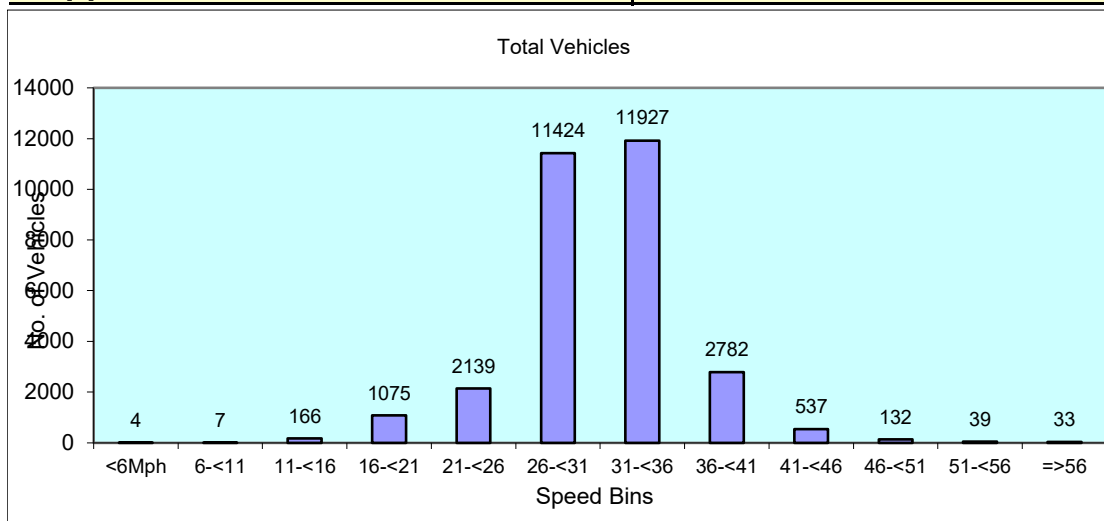
24767	ROCHDALE				Site No: 24767001	Location	Site 1, B6194 New Broad Lane, Rochdale (LC 17)		
	Channel: Southbound								
TIME PERIOD	Tue 12/11/19	Wed 13/11/19	Thu 14/11/19	Fri 15/11/19	Sat 16/11/19	Sun 17/11/19	Mon 18/11/19	5-Day Av	7-Day Av
Week Begin: 12-Nov-19									
00:00	23	22	24	32	33	60	22	25	31
01:00	6	5	13	5	28	32	4	7	13
02:00	2	2	7	4	16	12	4	4	7
03:00	10	5	4	7	12	8	4	6	7
04:00	8	8	8	6	7	10	13	9	9
05:00	30	27	27	27	15	23	27	28	25
06:00	50	53	52	66	19	31	60	56	47
07:00	218	235	240	236	107	71	218	229	189
08:00	263	304	271	303	135	48	253	279	225
09:00	243	200	212	251	186	125	237	229	208
10:00	216	209	205	247	247	176	199	215	214
11:00	229	219	213	253	304	232	232	229	240
12:00	243	270	238	256	364	275	255	252	272
13:00	241	256	231	307	322	345	239	255	277
14:00	278	273	269	323	329	303	290	287	295
15:00	377	374	339	441	328	339	359	378	365
16:00	453	436	448	459	326	260	412	442	399
17:00	490	453	460	421	262	211	476	460	396
18:00	306	350	338	340	227	158	311	329	290
19:00	228	222	247	248	166	140	219	233	210
20:00	142	170	153	155	126	124	162	156	147
21:00	116	111	113	122	74	67	89	110	99
22:00	56	68	80	90	84	45	54	70	68
23:00	49	49	67	56	91	54	55	55	60
12H,7-19	3557	3579	3464	3837	3137	2543	3481	3584	3371
16H,6-22	4093	4135	4029	4428	3522	2905	4011	4139	3875
18H,6-24	4198	4252	4176	4574	3697	3004	4120	4264	4003
24H,0-24	4277	4321	4259	4655	3808	3149	4194	4341	4095
Am	08:00	08:00	08:00	08:00	11:00	11:00	08:00		
Peak	263	304	271	303	304	232	253		
Pm	17:00	17:00	17:00	16:00	12:00	13:00	17:00		
Peak	490	453	460	459	364	345	476		

Appendix C

Speed data, New Broad Lane (November 2019)

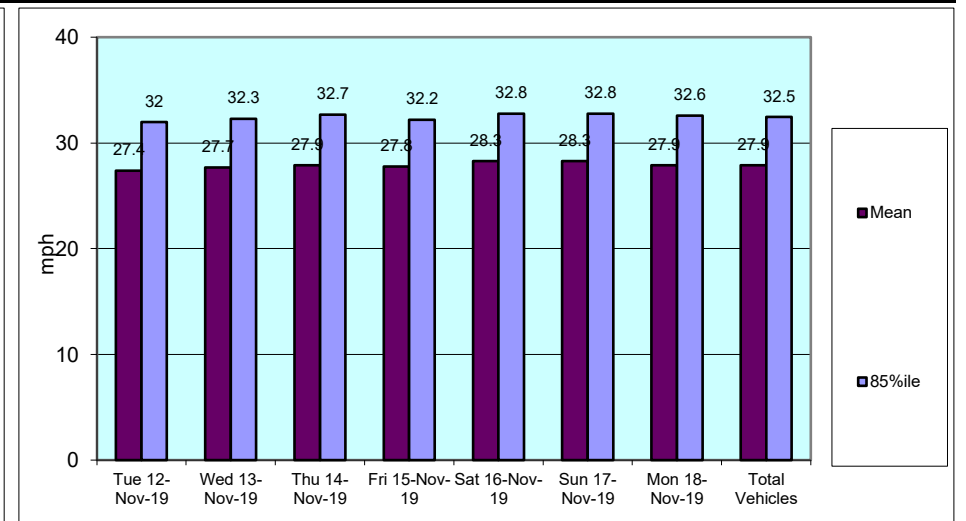
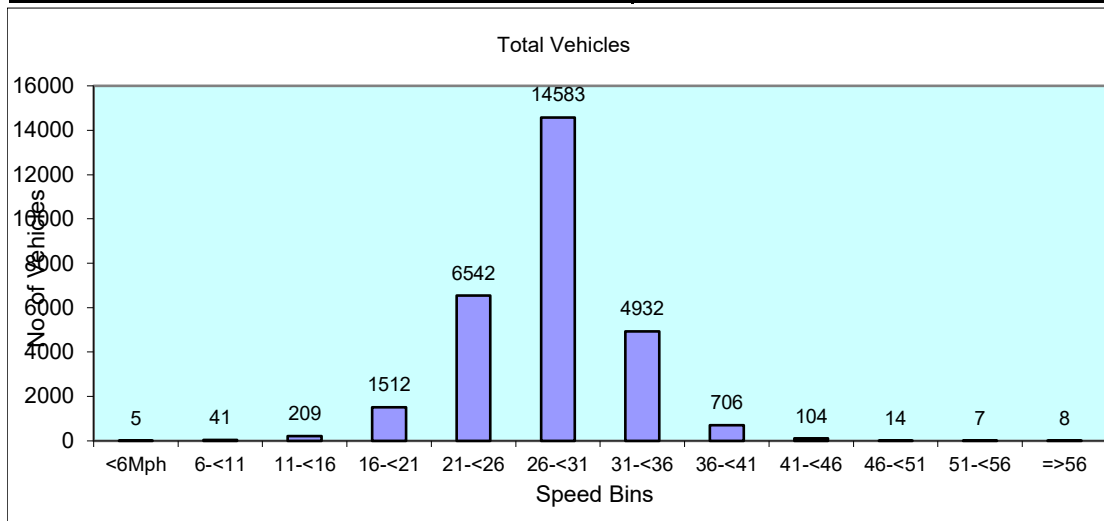
24767 ROCHDALE Site No: 24767001 Location Site 1, B6194 New Broad Lane, Rochdale (LC 17)
 Tue 12-Nov-19 to Mon 18-Nov-19 Channel: Northbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Daily Totals																
Tue 12-Nov-19	4489	35.4	30.7	5.5	1	3	26	204	354	1722	1702	371	87	11	1	7
Wed 13-Nov-19	4596	35.5	30.9	5.4	1	0	26	184	319	1721	1821	421	75	18	10	0
Thu 14-Nov-19	4531	35.3	30.7	5.3	0	1	29	156	385	1738	1780	363	57	12	7	3
Fri 15-Nov-19	4863	35.5	30.9	5.3	2	1	26	162	344	1875	1921	430	71	19	7	5
Sat 16-Nov-19	4030	35.8	31.4	5.4	0	1	21	91	266	1506	1592	420	95	27	4	7
Sun 17-Nov-19	3246	36	31.6	5.3	0	0	8	85	188	1192	1292	377	68	28	5	3
Mon 18-Nov-19	4510	35.6	31	5.5	0	1	30	193	283	1670	1819	400	84	17	5	8
Total Vehicles																
[--]	30265	35.6	31.0	5.4	4	7	166	1075	2139	11424	11927	2782	537	132	39	33



24767 ROCHDALE Site No: 24767001 Location Site 1, B6194 New Broad Lane, Rochdale (LC 17)
 Tue 12-Nov-19 to Mon 18-Nov-19 Channel: Southbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Daily Totals																
Tue 12-Nov-19	4277	32	27.4	5.1	2	15	41	315	1043	2079	674	90	14	2	0	2
Wed 13-Nov-19	4321	32.3	27.7	4.9	1	6	36	266	1030	2149	713	101	15	2	2	0
Thu 14-Nov-19	4259	32.7	27.9	4.8	0	5	34	225	981	2121	764	112	15	1	0	1
Fri 15-Nov-19	4655	32.2	27.8	4.7	1	5	32	230	1085	2413	767	102	12	4	2	2
Sat 16-Nov-19	3808	32.8	28.3	4.6	1	0	20	146	793	2018	712	96	17	2	1	2
Sun 17-Nov-19	3149	32.8	28.3	4.5	0	2	8	106	682	1671	579	82	16	2	1	0
Mon 18-Nov-19	4194	32.6	27.9	4.9	0	8	38	224	928	2132	723	123	15	1	1	1
Total Vehicles																
[--]	28663	32.5	27.9	4.8	5	41	209	1512	6542	14583	4932	706	104	14	7	8



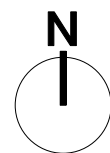
Appendix D

Planning layout (57 dwellings) &
Proposed site plan (details of 4 dwellings)

[illegible]



PROPOSED SITE PLAN
1:200 SCALE



L	24/11/2023	Revised following further LPA comments.
K	21/09/23	Alterations to House 02 and landscape changes.
J	25/01/23	Landscape plan amended.
I	13/06/2022	Landscape materials amended.
H	17/05/22	Landscape and boundary plan amended.
G	17/05/2022	LA dwellings.
F	27/01/22	MB Site Plan updated.
E	26/01/22	MB Garages Separated.
D	25/01/22	MB Option to have 1x house 1x bungalow.
C	17/01/22	MB Alternative site layout. 2No bungalows and house had barn retained as individual houses.
B	22/12/21	MB Layout amended for new bungalow.
A	30/11/21	MB Boundary treatment indicated.

Revision
Project
Proposed Redevelopment
Address
**Silver Hill Farm
Rochdale**
Client
**Barratt & David Wilson Homes
North West**
Drawing
Proposed Site Plan

Appendix E

TRICS database – Residential / Houses Privately Owned

Calculation Reference: AUDIT-429201-231207-1222

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

<u>Selected regions and areas:</u>		
02	SOUTH EAST	
	KC KENT	2 days
03	SOUTH WEST	
	DV DEVON	2 days
	SD SWINDON	1 days
	SM SOMERSET	1 days
	TB TORBAY	1 days
04	EAST ANGLIA	
	NF NORFOLK	2 days
	PB PETERBOROUGH	1 days
	SF SUFFOLK	1 days
05	EAST MIDLANDS	
	DY DERBY	1 days
	NT NOTTINGHAMSHIRE	1 days
06	WEST MIDLANDS	
	ST STAFFORDSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	NY NORTH YORKSHIRE	2 days
09	NORTH	
	DH DURHAM	2 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: 10 to 371 (units:)
 Range Selected by User: 6 to 1817 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/15 to 29/06/23

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	3 days
Tuesday	3 days
Wednesday	7 days
Thursday	2 days
Friday	3 days

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

Selected survey types:

Manual count	18 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	8
Edge of Town	10

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	18
------------------	----

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	26 days - Selected
Servicing vehicles Excluded	57 days - Selected

Secondary Filtering selection:

Use Class:

C3	18 days
----	---------

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

Population within 500m Range:

All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

5,001 to 10,000	3 days
10,001 to 15,000	9 days
15,001 to 20,000	2 days
20,001 to 25,000	2 days
25,001 to 50,000	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	1 days
50,001 to 75,000	4 days
75,001 to 100,000	2 days
125,001 to 250,000	8 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	9 days
1.1 to 1.5	9 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:

No	18 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	18 days
-----------------	---------

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

LIST OF SITES relevant to selection parameters

1	DH-03-A-01 GREENFIELDS ROAD BISHOP AUCLAND	SEMI DETACHED	DURHAM
	Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 50 Survey date: TUESDAY 28/03/17 Survey Type: MANUAL		
2	DH-03-A-03 PILGRIMS WAY DURHAM	SEMI-DETACHED & TERRACED	DURHAM
	Edge of Town Residential Zone Total No of Dwellings: 57 Survey date: FRIDAY 19/10/18 Survey Type: MANUAL		
3	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		
4	DV-03-A-03 LOWER BRAND LANE HONITON	TERRACED & SEMI DETACHED	DEVON
	Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 70 Survey date: MONDAY 28/09/15 Survey Type: MANUAL		
5	DY-03-A-01 RADBOURNE LANE DERBY	MIXED HOUSES	DERBY
	Edge of Town Residential Zone Total No of Dwellings: 371 Survey date: TUESDAY 10/07/18 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-03 HALING WAY THETFORD	DETACHED HOUSES	NORFOLK
	Edge of Town Residential Zone Total No of Dwellings: 10 Survey date: WEDNESDAY 16/09/15 Survey Type: MANUAL		

LIST OF SITES relevant to selection parameters (Cont.)

9	NF-03-A-51	SEMI-DETACHED		NORFOLK
	CITY ROAD			
	NORWICH			
	LAKENHAM			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total No of Dwellings:	34		
	Survey date: TUESDAY	13/09/22		Survey Type: MANUAL
10	NT-03-A-08	DETACHED HOUSES		NOTTINGHAMSHIRE
	WIGHAY ROAD			
	HUCKNALL			
	Edge of Town			
	Residential Zone			
	Total No of Dwellings:	36		
	Survey date: MONDAY	18/10/21		Survey Type: MANUAL
11	NY-03-A-13	TERRACED HOUSES		NORTH YORKSHIRE
	CATTERICK ROAD			
	CATTERICK GARRISON			
	OLD HOSPITAL COMPOUND			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total No of Dwellings:	10		
	Survey date: WEDNESDAY	10/05/17		Survey Type: MANUAL
12	NY-03-A-14	DETACHED & BUNGALOWS		NORTH YORKSHIRE
	PALACE ROAD			
	RIPON			
	Edge of Town			
	Residential Zone			
	Total No of Dwellings:	45		
	Survey date: WEDNESDAY	18/05/22		Survey Type: MANUAL
13	PB-03-A-04	DETACHED HOUSES		PETERBOROUGH
	EASTFIELD ROAD			
	PETERBOROUGH			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total No of Dwellings:	28		
	Survey date: MONDAY	17/10/16		Survey Type: MANUAL
14	SD-03-A-01	SEMI DETACHED		SWINDON
	HEADLANDS GROVE			
	SWINDON			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total No of Dwellings:	27		
	Survey date: THURSDAY	22/09/16		Survey Type: MANUAL
15	SF-03-A-05	DETACHED HOUSES		SUFFOLK
	VALE LANE			
	BURY ST EDMUNDS			
	Edge of Town			
	Residential Zone			
	Total No of Dwellings:	18		
	Survey date: WEDNESDAY	09/09/15		Survey Type: MANUAL
16	SM-03-A-01	DETACHED & SEMI		SOMERSET
	WEMBDON ROAD			
	BRIDGWATER			
	NORTHFIELD			
	Edge of Town			
	Residential Zone			
	Total No of Dwellings:	33		
	Survey date: THURSDAY	24/09/15		Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

17	ST-03-A-07 BEACONSIDE STAFFORD MARSTON GATE Edge of Town Residential Zone Total No of Dwellings: 248 Survey date: WEDNESDAY 22/11/17	DETACHED & SEMI-DETACHED	STAFFORDSHIRE	Survey Type: MANUAL
18	TB-03-A-01 BRONSHILL ROAD TORQUAY Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 37 Survey date: WEDNESDAY 30/09/15	TERRACED HOUSES	TORBAY	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.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
ES-03-A-03	high proportion of flats
ES-03-A-05	high proportion of flats
KC-03-A-03	high proportion of flats
KC-03-A-06	high proportion of flats
NF-03-A-25	high proportion of flats
SF-03-A-10	survey completed during COVID

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period
 Total People to Total Vehicles ratio (all time periods and directions): 1.84

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	18	88	0.084	18	88	0.317	18	88	0.401
08:00 - 09:00	18	88	0.140	18	88	0.381	18	88	0.521
09:00 - 10:00	18	88	0.136	18	88	0.166	18	88	0.302
10:00 - 11:00	18	88	0.132	18	88	0.149	18	88	0.281
11:00 - 12:00	18	88	0.127	18	88	0.140	18	88	0.267
12:00 - 13:00	18	88	0.157	18	88	0.150	18	88	0.307
13:00 - 14:00	18	88	0.156	18	88	0.147	18	88	0.303
14:00 - 15:00	18	88	0.169	18	88	0.162	18	88	0.331
15:00 - 16:00	18	88	0.255	18	88	0.174	18	88	0.429
16:00 - 17:00	18	88	0.266	18	88	0.171	18	88	0.437
17:00 - 18:00	18	88	0.353	18	88	0.128	18	88	0.481
18:00 - 19:00	18	88	0.261	18	88	0.144	18	88	0.405
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.236			2.229			4.465

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:	10 - 371 (units:)
Survey date date range:	01/01/15 - 29/06/23
Number of weekdays (Monday-Friday):	18
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	6

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 show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL CYCLISTS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	88	0.008	18	88	0.006	18	88	0.014
08:00 - 09:00	18	88	0.009	18	88	0.007	18	88	0.016
09:00 - 10:00	18	88	0.002	18	88	0.002	18	88	0.004
10:00 - 11:00	18	88	0.003	18	88	0.001	18	88	0.004
11:00 - 12:00	18	88	0.002	18	88	0.007	18	88	0.009
12:00 - 13:00	18	88	0.004	18	88	0.004	18	88	0.008
13:00 - 14:00	18	88	0.003	18	88	0.001	18	88	0.004
14:00 - 15:00	18	88	0.001	18	88	0.003	18	88	0.004
15:00 - 16:00	18	88	0.004	18	88	0.008	18	88	0.012
16:00 - 17:00	18	88	0.005	18	88	0.004	18	88	0.009
17:00 - 18:00	18	88	0.009	18	88	0.006	18	88	0.015
18:00 - 19:00	18	88	0.006	18	88	0.006	18	88	0.012
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.056			0.055			0.111

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL PEDESTRIANS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	88	0.011	18	88	0.034	18	88	0.045
08:00 - 09:00	18	88	0.039	18	88	0.100	18	88	0.139
09:00 - 10:00	18	88	0.044	18	88	0.042	18	88	0.086
10:00 - 11:00	18	88	0.029	18	88	0.039	18	88	0.068
11:00 - 12:00	18	88	0.031	18	88	0.031	18	88	0.062
12:00 - 13:00	18	88	0.028	18	88	0.020	18	88	0.048
13:00 - 14:00	18	88	0.018	18	88	0.027	18	88	0.045
14:00 - 15:00	18	88	0.025	18	88	0.035	18	88	0.060
15:00 - 16:00	18	88	0.089	18	88	0.050	18	88	0.139
16:00 - 17:00	18	88	0.052	18	88	0.026	18	88	0.078
17:00 - 18:00	18	88	0.048	18	88	0.014	18	88	0.062
18:00 - 19:00	18	88	0.030	18	88	0.043	18	88	0.073
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.444			0.461			0.905

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

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

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
 MULTI-MODAL PUBLIC TRANSPORT USERS
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

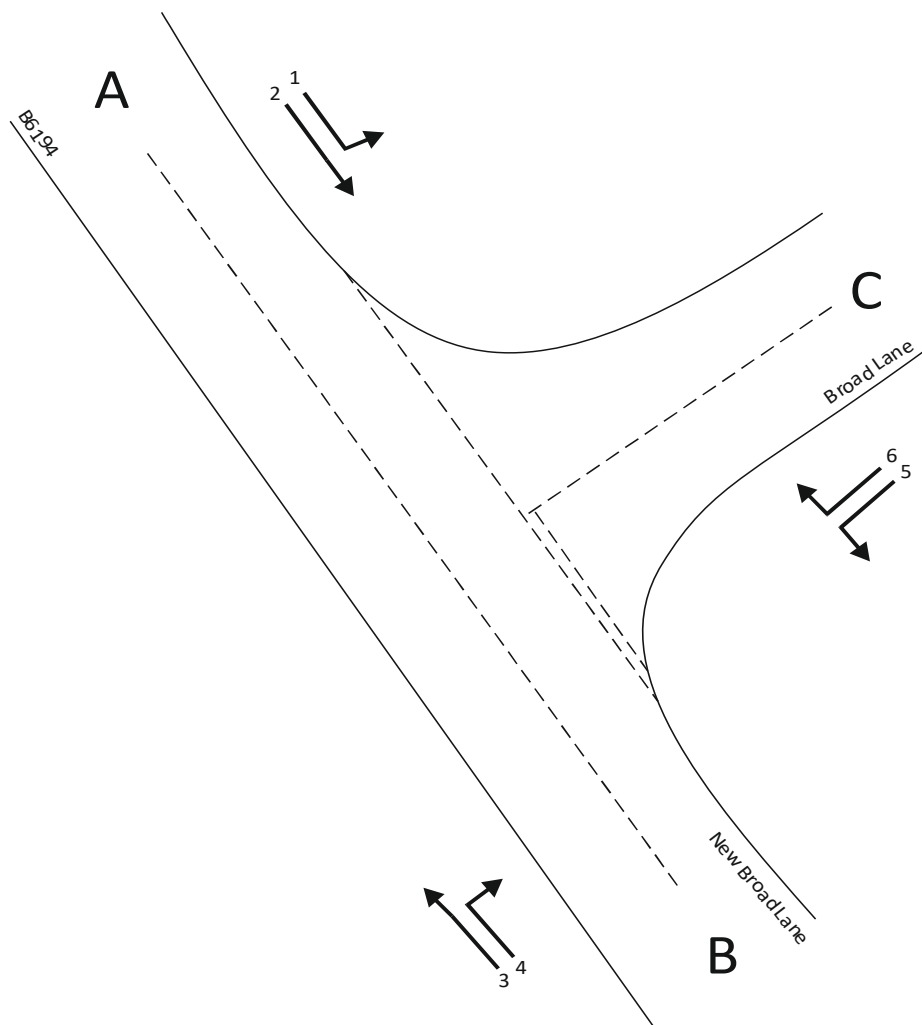
Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	88	0.003	18	88	0.023	18	88	0.026
08:00 - 09:00	18	88	0.001	18	88	0.043	18	88	0.044
09:00 - 10:00	18	88	0.003	18	88	0.012	18	88	0.015
10:00 - 11:00	18	88	0.009	18	88	0.006	18	88	0.015
11:00 - 12:00	18	88	0.006	18	88	0.008	18	88	0.014
12:00 - 13:00	18	88	0.006	18	88	0.008	18	88	0.014
13:00 - 14:00	18	88	0.004	18	88	0.004	18	88	0.008
14:00 - 15:00	18	88	0.007	18	88	0.007	18	88	0.014
15:00 - 16:00	18	88	0.025	18	88	0.012	18	88	0.037
16:00 - 17:00	18	88	0.023	18	88	0.007	18	88	0.030
17:00 - 18:00	18	88	0.016	18	88	0.006	18	88	0.022
18:00 - 19:00	18	88	0.035	18	88	0.008	18	88	0.043
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.138			0.144			0.282

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

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

Appendix F

Classified turning count at Broad Lane / New Broad Lane junction



For and on behalf of:



ROCHDALE

Tuesday 12th November 2019

0730 - 0930
1630 - 1830

Drawing N°: 24767- 01

Site: 1

Location: B6194 / New Broad Lane /
Broad Lane

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	MOVEMENT 1 FROM B6194 TO BROAD LANE			MOVEMENT 2 FROM B6194 TO NEW BROAD LANE			MOVEMENT 3 FROM NEW BROAD LANE TO B6194		
	LV	HV	TOT	LV	HV	TOT	LV	HV	TOT
07:30	1	0	1	51	0	51	98	4	102
07:45	2	1	3	42	5	47	123	1	124
HH/TOT	3	1	4	93	5	98	221	5	226
08:00	3	0	3	53	2	55	104	7	111
08:15	4	1	5	51	2	53	85	1	86
08:30	4	2	6	56	4	60	97	3	100
08:45	10	0	10	54	2	56	79	5	84
H/TOT	21	3	24	214	10	224	365	16	381
09:00	12	0	12	58	3	61	72	5	77
09:15	8	1	9	31	1	32	52	2	54
HH/TOT	20	1	21	89	4	93	124	7	131
P/TOT	44	5	49	396	19	415	710	28	738

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	MOVEMENT 4 FROM NEW BROAD LANE TO BROAD LANE			MOVEMENT 5 FROM BROAD LANE TO NEW BROAD LANE			MOVEMENT 6 FROM BROAD LANE TO B6194		
	LV	HV	TOT	LV	HV	TOT	LV	HV	TOT
07:30	2	0	2	9	0	9	17	0	17
07:45	1	0	1	14	0	14	23	0	23
HH/TOT	3	0	3	23	0	23	40	0	40
08:00	2	0	2	9	1	10	19	0	19
08:15	1	0	1	9	0	9	15	0	15
08:30	1	0	1	5	0	5	17	0	17
08:45	2	0	2	4	2	6	11	0	11
H/TOT	6	0	6	27	3	30	62	0	62
09:00	3	0	3	4	0	4	13	0	13
09:15	1	0	1	3	0	3	6	0	6
HH/TOT	4	0	4	7	0	7	19	0	19
P/TOT	13	0	13	57	3	60	121	0	121

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	MOVEMENT 1 FROM B6194 TO BROAD LANE			MOVEMENT 2 FROM B6194 TO NEW BROAD LANE			MOVEMENT 3 FROM NEW BROAD LANE TO B6194		
	LV	HV	TOT	LV	HV	TOT	LV	HV	TOT
16:30	18	0	18	94	2	96	59	1	60
16:45	16	1	17	98	0	98	67	2	69
HH/TOT	34	1	35	192	2	194	126	3	129
17:00	28	0	28	101	0	101	70	0	70
17:15	42	0	42	102	2	104	66	0	66
17:30	16	0	16	90	4	94	57	1	58
17:45	19	0	19	76	0	76	52	1	53
H/TOT	105	0	105	369	6	375	245	2	247
18:00	18	0	18	80	3	83	47	0	47
18:15	9	0	9	71	2	73	49	1	50
HH/TOT	27	0	27	151	5	156	96	1	97
P/TOT	166	1	167	712	13	725	467	6	473

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	MOVEMENT 4 FROM NEW BROAD LANE TO BROAD LANE			MOVEMENT 5 FROM BROAD LANE TO NEW BROAD LANE			MOVEMENT 6 FROM BROAD LANE TO B6194		
	LV	HV	TOT	LV	HV	TOT	LV	HV	TOT
16:30	8	0	8	3	0	3	5	0	5
16:45	5	0	5	9	0	9	1	0	1
HH/TOT	13	0	13	12	0	12	6	0	6
17:00	7	0	7	1	0	1	3	0	3
17:15	5	0	5	3	0	3	14	0	14
17:30	13	0	13	6	0	6	15	0	15
17:45	7	0	7	7	0	7	21	0	21
H/TOT	32	0	32	17	0	17	53	0	53
18:00	6	0	6	8	0	8	12	0	12
18:15	6	0	6	5	0	5	10	0	10
HH/TOT	12	0	12	13	0	13	22	0	22
P/TOT	57	0	57	42	0	42	81	0	81

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	TO ARM A B6194			FROM ARM A B6194		
	LV	HV	TOT	LV	HV	TOT
07:30	115	4	119	52	0	52
07:45	146	1	147	44	6	50
HH/TOT	261	5	266	96	6	102
08:00	123	7	130	56	2	58
08:15	100	1	101	55	3	58
08:30	114	3	117	60	6	66
08:45	90	5	95	64	2	66
H/TOT	427	16	443	235	13	248
09:00	85	5	90	70	3	73
09:15	58	2	60	39	2	41
HH/TOT	143	7	150	109	5	114
P/TOT	831	28	859	440	24	464

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	TO ARM A B6194			FROM ARM A B6194		
	LV	HV	TOT	LV	HV	TOT
16:30	64	1	65	112	2	114
16:45	68	2	70	114	1	115
HH/TOT	132	3	135	226	3	229
17:00	73	0	73	129	0	129
17:15	80	0	80	144	2	146
17:30	72	1	73	106	4	110
17:45	73	1	74	95	0	95
H/TOT	298	2	300	474	6	480
18:00	59	0	59	98	3	101
18:15	59	1	60	80	2	82
HH/TOT	118	1	119	178	5	183
P/TOT	548	6	554	878	14	892

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	TO ARM B NEW BROAD LANE			FROM ARM B NEW BROAD LANE		
	LV	HV	TOT	LV	HV	TOT
07:30	60	0	60	100	4	104
07:45	56	5	61	124	1	125
HH/TOT	116	5	121	224	5	229
08:00	62	3	65	106	7	113
08:15	60	2	62	86	1	87
08:30	61	4	65	98	3	101
08:45	58	4	62	81	5	86
H/TOT	241	13	254	371	16	387
09:00	62	3	65	75	5	80
09:15	34	1	35	53	2	55
HH/TOT	96	4	100	128	7	135
P/TOT	453	22	475	723	28	751

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	TO ARM B NEW BROAD LANE			FROM ARM B NEW BROAD LANE		
	LV	HV	TOT	LV	HV	TOT
16:30	97	2	99	67	1	68
16:45	107	0	107	72	2	74
HH/TOT	204	2	206	139	3	142
17:00	102	0	102	77	0	77
17:15	105	2	107	71	0	71
17:30	96	4	100	70	1	71
17:45	83	0	83	59	1	60
H/TOT	386	6	392	277	2	279
18:00	88	3	91	53	0	53
18:15	76	2	78	55	1	56
HH/TOT	164	5	169	108	1	109
P/TOT	754	13	767	524	6	530

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	TO ARM C BROAD LANE			FROM ARM C BROAD LANE		
	LV	HV	TOT	LV	HV	TOT
07:30	3	0	3	26	0	26
07:45	3	1	4	37	0	37
HH/TOT	6	1	7	63	0	63
08:00	5	0	5	28	1	29
08:15	5	1	6	24	0	24
08:30	5	2	7	22	0	22
08:45	12	0	12	15	2	17
H/TOT	27	3	30	89	3	92
09:00	15	0	15	17	0	17
09:15	9	1	10	9	0	9
HH/TOT	24	1	25	26	0	26
P/TOT	57	5	62	178	3	181

MANUAL CLASSIFIED COUNTS



JOB REF: 24767

JOB NAME: ROCHDALE

SITE: 1

LOCATION: B6194 / NEW BROAD LANE / BROAD LANE

DATE: 12/11/19

DAY: TUESDAY

TIME	TO ARM C BROAD LANE			FROM ARM C BROAD LANE		
	LV	HV	TOT	LV	HV	TOT
16:30	26	0	26	8	0	8
16:45	21	1	22	10	0	10
HH/TOT	47	1	48	18	0	18
17:00	35	0	35	4	0	4
17:15	47	0	47	17	0	17
17:30	29	0	29	21	0	21
17:45	26	0	26	28	0	28
H/TOT	137	0	137	70	0	70
18:00	24	0	24	20	0	20
18:15	15	0	15	15	0	15
HH/TOT	39	0	39	35	0	35
P/TOT	223	1	224	123	0	123

Appendix G

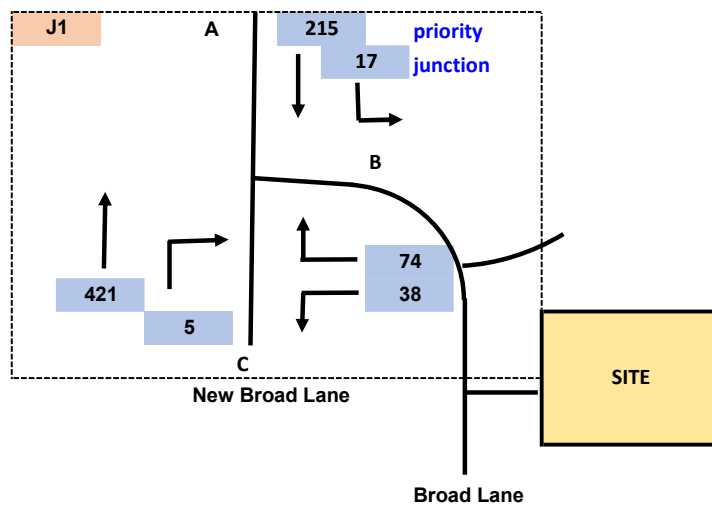
Forecast traffic flow matrices, year 2028

Client	David Wilson Homes		Prepared by NRV
Job	Housing at Broad Lane, Rochdale		Date 7 December 2023
Title	Figure 1, AM & PM	Existing traffic	Job No P1432
Date of surveys	Tuesday 12/11/2019		Version 3



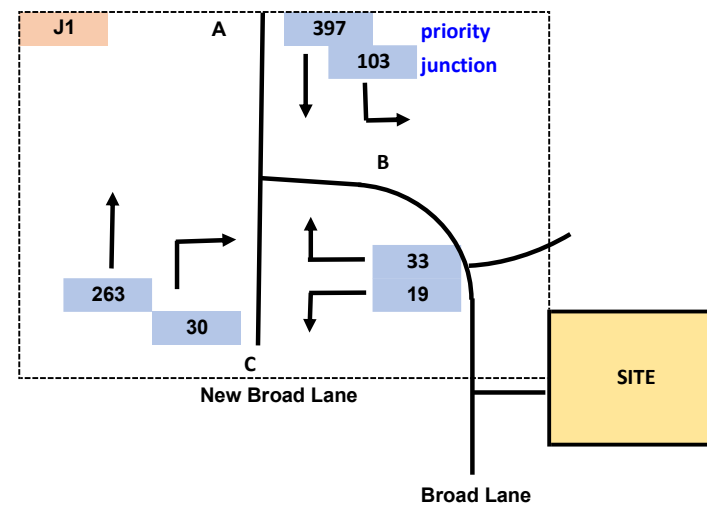
AM, Flow in vehs 0745-0845 hrs

vehs	Existing		
770	A	B	C
A	0	17	215
B	74	0	38
C	421	5	0



PM, Flow in vehs 1645-1745 hrs

vehs	Existing		
845	A	B	C
A	0	103	397
B	33	0	19
C	263	30	0

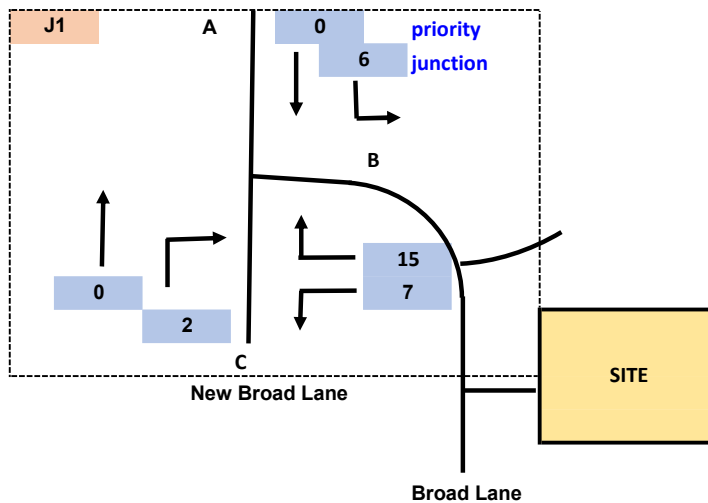


Client	David Wilson Homes		Prepared by NRV
Job	Housing at Broad Lane, Rochdale		Date 7 December 2023
Title	Figure 2, AM & PM	Development traffic	Job No P1432
Date of surveys	Tuesday 12/11/2019		Version 3



AM, Flow in vehs 0745-0845 hrs

vehs	Development		
30	A	B	C
A	0	6	0
B	15	0	7
C	0	2	0



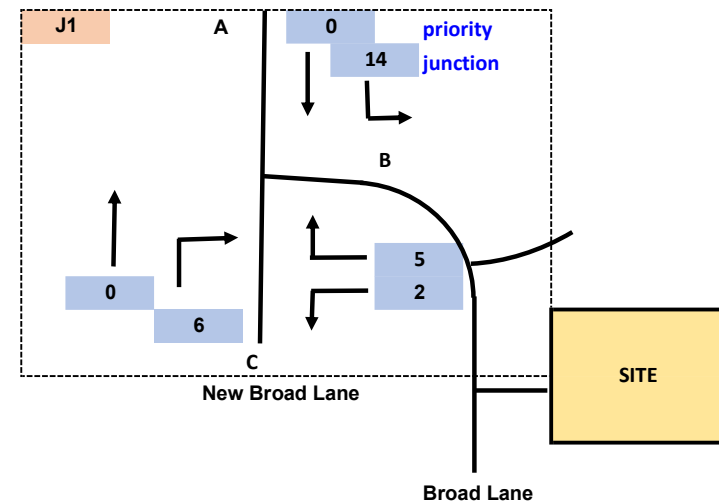
Traffic generation

No of dwellings	57	Arrivals	0.140	8
AM Peak		Departures	0.381	22

70%	north
30%	south

PM, Flow in vehs 1645-1745 hrs

vehs	Development		
27	A	B	C
A	0	14	0
B	5	0	2
C	0	6	0



Traffic generation

No of dwellings	57	Arrivals	0.353	20
PM Peak		Departures	0.128	7

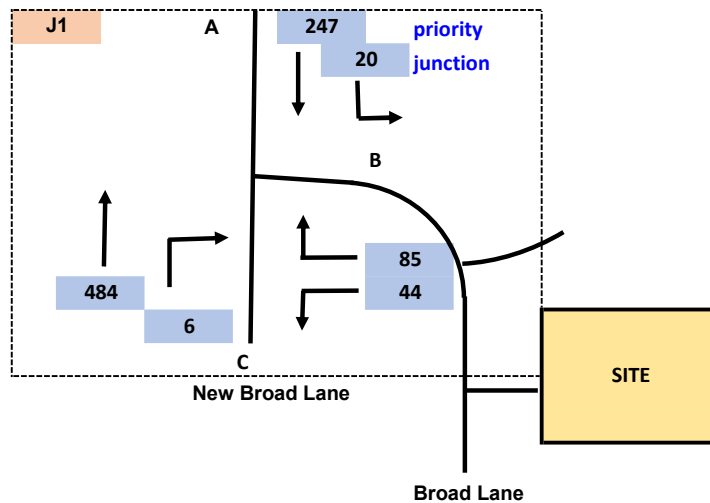
70%	north
30%	south

Client	David Wilson Homes		Prepared by NRV
Job	Housing at Broad Lane, Rochdale		Date 7 December 2023
Title	Figure 3, AM & PM	Design year of 2028 (existing plus growth)	Job No P1432
Date of surveys	Tuesday 12/11/2019		Version 3



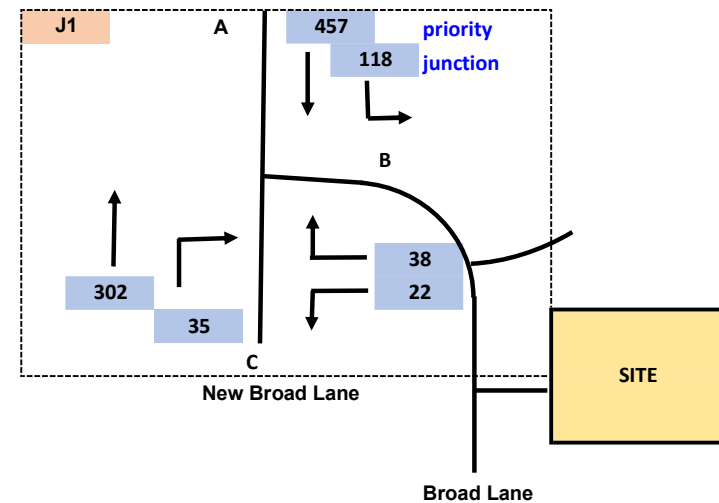
AM, Flow in vehs 0745-0845 hrs

vehs	Design year 2028		
886	A	B	C
A	0	20	247
B	85	0	44
C	484	6	0



PM, Flow in vehs 1645-1745 hrs

vehs	Design year 2028		
972	A	B	C
A	0	118	457
B	38	0	22
C	302	35	0



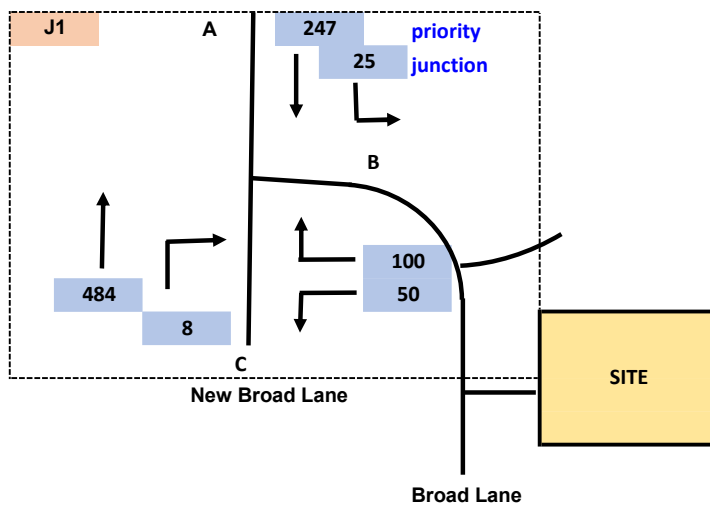
Traffic growth			Use
NTM growth factor	2019 to 2028	1.0895	1.15

Client	David Wilson Homes		Prepared by NRV
Job	Housing at Broad Lane, Rochdale		Date 7 December 2023
Title	Figure 4, AM & PM	Design year, 2028 growth plus development	Job No P1432
Date of surveys	Tuesday 12/11/2019		Version 3



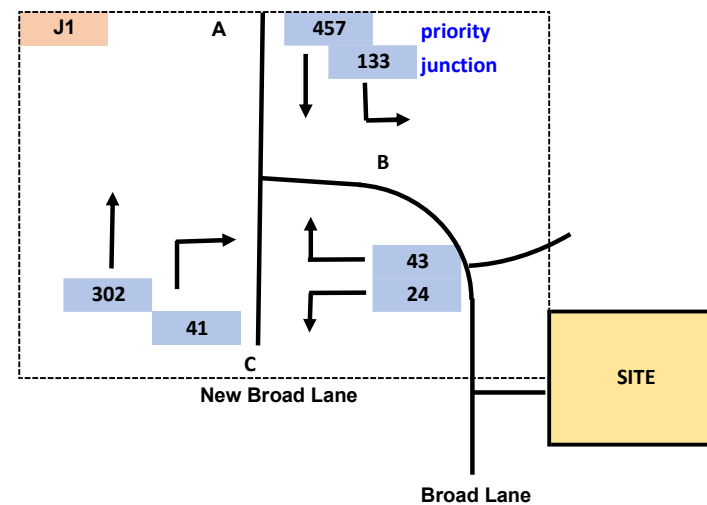
AM, Flow in vehs 0745-0845 hrs

vehs	Growth plus devel, 2028		
915	A	B	C
A	0	25	247
B	100	0	50
C	484	8	0



PM, Flow in vehs 1645-1745 hrs

vehs	Growth plus devel, 2028		
999	A	B	C
A	0	133	457
B	43	0	24
C	302	41	0



Appendix H

PICADY analysis - Broad Lane / New Broad Lane priority junction

Junctions 9							
PICADY 9 - Priority Intersection Module							
Version: 9.0.1.4646 [] © Copyright TRL Limited, 2023							
For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trisoftware.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: broad2023.j9

Path: D:\transport\1432\picady

Report generation date: 07/12/2023 14:46:22

- »Broad Lane - 2028, AM
- »Broad Lane - 2028, PM
- »Broad Lane - 2028 plus development, AM
- »Broad Lane - 2028 plus development, PM

Summary of junction performance

	AM					PM				
	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
Broad Lane - 2028										
Stream B-AC	0.5	13.16	0.34	B	62 %	0.2	11.86	0.18	B	78 %
Stream C-B	0.0	6.26	0.01	A	[Stream B-AC]	0.1	7.84	0.08	A	[Stream B-AC]
Broad Lane - 2028 plus development										
Stream B-AC	0.7	14.51	0.40	B	48 %	0.3	12.37	0.20	B	70 %
Stream C-B	0.0	6.30	0.02	A	[Stream B-AC]	0.1	8.03	0.09	A	[Stream B-AC]

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

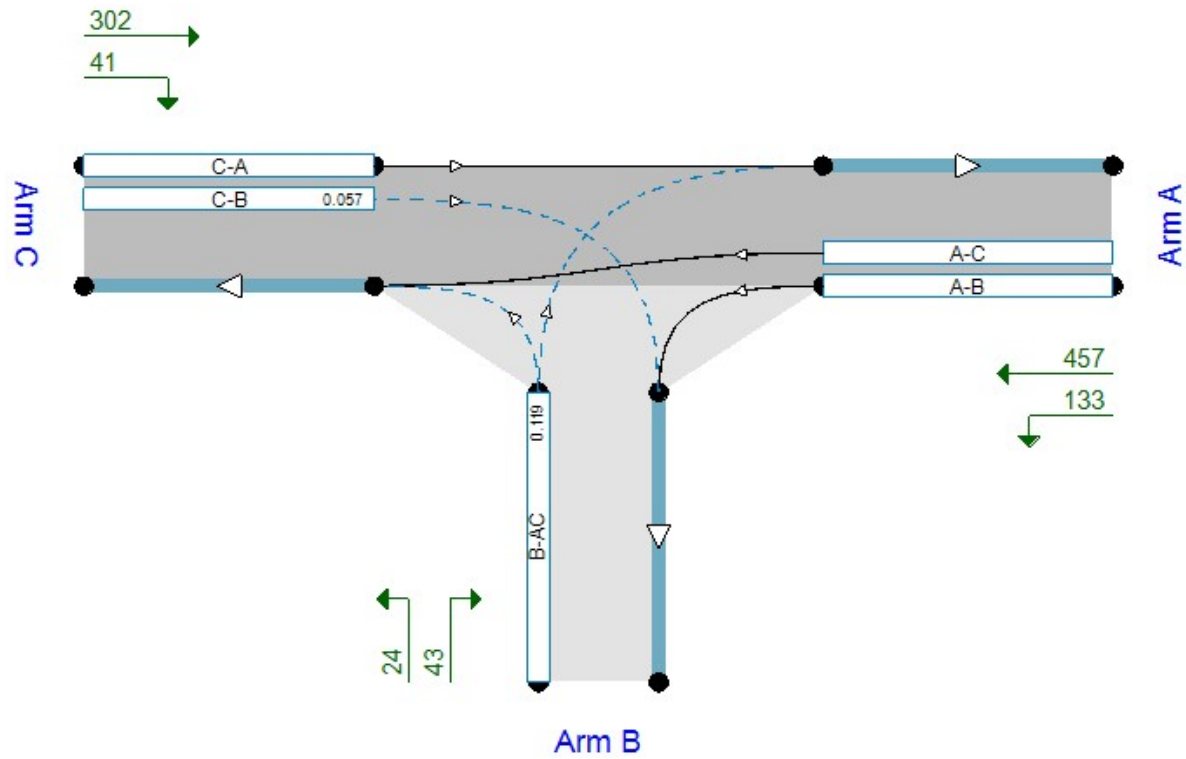
File summary

File Description

Title	Broad Lane junction
Location	Rochdale
Site number	
Date	07/01/2020
Version	
Status	planning
Identifier	NRV
Client	David Wilson Homes
Jobnumber	P1432
Enumerator	bannersgate\Nigel Vening
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	Veh	Veh	perHour	s	-Min	perMin



Flows show original traffic demand (Veh/h).
Streams (downstream end) show RFC (%)

The junction diagram reflects the last run of Junctions.

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
	✓	Delay	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)
D1	2028	AM	ONE HOUR	07:30	09:00	15
D2	2028	PM	ONE HOUR	16:30	18:00	15
D3	2028 plus development	AM	ONE HOUR	07:30	09:00	15
D4	2028 plus development	PM	ONE HOUR	16:30	18:00	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Broad Lane	100.000

Broad Lane - 2028, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Broad Lane	T-Junction	Two-way	1.93	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	62	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	New Broad Lane north		Major
B	Broad Lane and development		Minor
C	New Broad Lane south		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	7.00		✓	3.00	60.0		-

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	2.75	60	60

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	514	0.089	0.226	0.142	0.323
1	B-C	645	0.095	0.239	-	-
1	C-B	662	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)
D1	2028	AM	ONE HOUR	07:30	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	267	100.000
B		✓	129	100.000
C		✓	490	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
		A	B	C
From	A	0	20	247
	B	85	0	44
	C	484	6	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
		A	B	C
From	A	0	1	3
	B	1	0	1
	C	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.34	13.16	0.5	B
C-A				
C-B	0.01	6.26	0.0	A
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	97	458	0.212	96	0.3	9.918	A
C-A	364			364			
C-B	5	605	0.007	4	0.0	5.994	A
A-B	15			15			
A-C	186			186			

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	116	440	0.263	116	0.4	11.074	B
C-A	435			435			
C-B	5	595	0.009	5	0.0	6.102	A
A-B	18			18			
A-C	222			222			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	142	416	0.342	141	0.5	13.100	B
C-A	533			533			
C-B	7	582	0.011	7	0.0	6.258	A
A-B	22			22			
A-C	272			272			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	142	416	0.342	142	0.5	13.157	B
C-A	533			533			
C-B	7	582	0.011	7	0.0	6.258	A
A-B	22			22			

A-C	272			272			
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08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	116	440	0.263	117	0.4	11.141	B
C-A	435			435			
C-B	5	595	0.009	5	0.0	6.105	A
A-B	18			18			
A-C	222			222			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	97	458	0.212	97	0.3	9.995	A
C-A	364			364			
C-B	5	605	0.007	5	0.0	5.995	A
A-B	15			15			
A-C	186			186			

Broad Lane - 2028, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Broad Lane	T-Junction	Two-way	1.00	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	78	Stream B-AC

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)
D2	2028	PM	ONE HOUR	16:30	18:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	575	100.000
B		✓	60	100.000
C		✓	337	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
	A	B	C	
From	A	0	118	457
	B	38	0	22
	C	302	35	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	1	3
	B	1	0	1
	C	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.18	11.86	0.2	B
C-A				
C-B	0.08	7.84	0.1	A
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	45	428	0.106	45	0.1	9.391	A
C-A	227			227			
C-B	26	547	0.048	26	0.1	6.907	A
A-B	89			89			
A-C	344			344			

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	54	403	0.134	54	0.2	10.295	B
C-A	271			271			
C-B	31	526	0.060	31	0.1	7.272	A
A-B	106			106			
A-C	411			411			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	66	369	0.179	66	0.2	11.845	B
C-A	333			333			
C-B	39	497	0.077	38	0.1	7.842	A
A-B	130			130			
A-C	503			503			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	66	369	0.179	66	0.2	11.864	B
C-A	333			333			
C-B	39	497	0.077	39	0.1	7.844	A
A-B	130			130			
A-C	503			503			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	54	403	0.134	54	0.2	10.318	B
C-A	271			271			
C-B	31	526	0.060	32	0.1	7.275	A
A-B	106			106			
A-C	411			411			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	45	428	0.106	45	0.1	9.422	A
C-A	227			227			
C-B	26	547	0.048	26	0.1	6.910	A
A-B	89			89			
A-C	344			344			

Broad Lane - 2028 plus development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Broad Lane	T-Junction	Two-way	2.40	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	48	Stream B-AC

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)
D3	2028 plus development	AM	ONE HOUR	07:30	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	272	100.000
B		✓	150	100.000
C		✓	492	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0	25	247
	B	100	0	50
	C	484	8	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	1	3
	B	1	0	1
	C	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.40	14.51	0.7	B
C-A				
C-B	0.02	6.30	0.0	A
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	113	456	0.248	112	0.3	10.415	B
C-A	364			364			
C-B	6	604	0.010	6	0.0	6.019	A
A-B	19			19			
A-C	186			186			

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	135	438	0.308	134	0.4	11.833	B
C-A	435			435			
C-B	7	594	0.012	7	0.0	6.132	A
A-B	22			22			
A-C	222			222			

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	165	413	0.400	164	0.6	14.417	B
C-A	533			533			
C-B	9	580	0.015	9	0.0	6.297	A
A-B	28			28			
A-C	272			272			

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	165	413	0.400	165	0.7	14.511	B
C-A	533			533			
C-B	9	580	0.015	9	0.0	6.297	A
A-B	28			28			
A-C	272			272			

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	135	438	0.308	136	0.5	11.933	B
C-A	435			435			
C-B	7	594	0.012	7	0.0	6.135	A
A-B	22			22			
A-C	222			222			

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	113	456	0.248	113	0.3	10.523	B
C-A	364			364			
C-B	6	604	0.010	6	0.0	6.021	A
A-B	19			19			
A-C	186			186			

Broad Lane - 2028 plus development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	Broad Lane	T-Junction	Two-way	1.14	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	70	Stream B-AC

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)
D4	2028 plus development	PM	ONE HOUR	16:30	18:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		✓	590	100.000
B		✓	67	100.000
C		✓	343	100.000

Origin-Destination Data

Demand (Veh/hr)

	To			
	A	B	C	
From	A	0	133	457
	B	43	0	24
	C	302	41	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A	B	C	
From	A	0	1	3
	B	1	0	1
	C	3	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS
B-AC	0.20	12.37	0.3	B
C-A				
C-B	0.09	8.03	0.1	A
A-B				
A-C				

Main Results for each time segment

16:30 - 16:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	50	424	0.119	50	0.1	9.607	A
C-A	227			227			
C-B	31	545	0.057	31	0.1	7.001	A
A-B	100			100			
A-C	344			344			

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	60	399	0.151	60	0.2	10.605	B
C-A	271			271			
C-B	37	523	0.070	37	0.1	7.402	A
A-B	120			120			
A-C	411			411			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	74	365	0.202	73	0.2	12.345	B
C-A	333			333			
C-B	45	493	0.091	45	0.1	8.027	A
A-B	146			146			
A-C	503			503			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	74	365	0.202	74	0.3	12.370	B
C-A	333			333			
C-B	45	493	0.091	45	0.1	8.030	A
A-B	146			146			
A-C	503			503			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	60	399	0.151	61	0.2	10.634	B
C-A	271			271			
C-B	37	523	0.070	37	0.1	7.408	A
A-B	120			120			
A-C	411			411			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	LOS
B-AC	50	424	0.119	51	0.1	9.645	A
C-A	227			227			
C-B	31	545	0.057	31	0.1	7.011	A
A-B	100			100			
A-C	344			344			