TRANSPORT ASSESSMENT

VIASOLUTIONS

Cliff Hill, Denby Dale, Huddersfield

ON BEHALF OF

Urban Developments (York) Ltd

July 2023









Quality Management

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1. Introduction

1.1.1. Via Solutions has been appointed to prepare this Transport Assessment (TA) in support of a planning application for 62 dwellings, with access taken from Cumberworth Lane via a new priority junction. The site is located on a parcel of vacant land known as Cliff Hill and lies northeast of Cumberworth Lane at the northern fringe of the village of Denby Dale, some 12km (crow-fly distance) southeast of Huddersfield.

1.1.2. The Kirklees Unitary Development Plan (UDP) previously allocated the land as Provisional Open Land up until 2019. The UDP was then superseded by the adopted Kirklees Local Plan which allocates 113 dwellings to the wider site referenced as 'HS144'. Part of the allocated site has been developed for 6 detached dwellings accessed from Leak Hall Crescent. A parcel of the HS144 housing allocation to the north of the proposed development site is excluded from the current proposals. Therefore, the proposed site is seeking to partially develop the HS144 Cliff Hill housing allocation site. Figure 1 at Appendix A shows the site location in relation to the local highway network.

1.1.3. This TA considers such matters as traffic impact, access, sustainability, car parking and servicing and presents the proposals in relation to current guidance and data.

1.1.4. Both local and national transport policy have been reviewed in respect of the development. A review of road safety has been undertaken within this report.

1.1.5. Sustainable transport accessibility has also been reviewed within the report. The development proposals have been explained and the impact on the highway network considered.

1.1.6. A separate Framework Travel Plan for the development proposals has also been prepared to accompany this Transport Assessment.

1.1.7. The following assessment concludes that an acceptable vehicular access can be provided in terms of safety and capacity.

2. Transport Policy

2.1.1. When considering transport policy compliance for planning applications, the main focus of local, regional and national policy is that new development should be conveniently accessible by a range of sustainable transport modes, including public transport, cycling and walking. Further details of the relevant policy documents are set out below.

2.2. NATIONAL PLANNING POLICY FRAMEWORK

2.2.1. The latest version of the National Planning Policy Framework (NPPF) was published by the Ministry of Housing, Communities and Local Government on 20 July 2021.

2.2.1. Paragraph 105 states that *"significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help 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."*

2.2.2. Paragraph 110 states that when considering planning applications, it should be ensured that:

- *Appropriate opportunities to promote sustainable transport can be - or have been - taken up, given the location and type of development;*
- *Safe and suitable access to the site can be achieved for all users;*
- *The design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code 46; and*

- *Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.*

2.2.3. Paragraph 111 states that *"Development should only be prevented or refused on highway grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."*

2.2.4. In relation to paragraph 111 developments should be in accordance with paragraph 112, which states:

- *give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- *Address the needs of people with disabilities and reduce mobility in relation to all modes of transport;*
- *Create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- *Allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- *Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.*

2.2.5. Paragraph 113 of the revised NPPF states that "*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.*"

2.3. LOCAL PLANNING POLICY

WEST YORKSHIRE LOCAL TRANSPORT PLAN

2.3.1. The current Local Transport Plan is the third West Yorkshire Local Transport Plan (LTP3), which covers the period 2011 to 2026. The key objectives of the LTP3 include:

- *To improve access to jobs, education and other key services for everyone;*
- *To reduce delays to the movement of people and goods;*
- *To improve safety for all highway users;*
- *To limit transport emissions of air pollutants, greenhouse gases and noise; and*
- *To improve the condition of the highway infrastructure.*

2.3.2. The LTP sets out the walking and cycling strategy for West Yorkshire to encourage more people to use these modes of travel to help reduce the dependency on private cars. With regards to cycling provision within development proposals, the WYCS seeks to *'ensure that new development proposals are located and designed to be cycle friendly and adopt guidelines for cycle parking standards'*. With regards to walking, the LTP seeks to improve the local environment to make walking more attractive by enhancing safety, security and environmental quality.

KIRKLEES LOCAL PLAN

2.3.3. The Kirklees Local Plan was adopted on 27th February 2019. The local plan covers the period 2013 – 2031 and sets out the policies necessary to achieve the vision and strategic objectives for the development of Kirklees. The proposed development site benefits from allocation to housing within the local plan under Policy LP65 which states:

'*The sites listed below are allocated for housing in the Local Plan. Planning permission will be expected to be granted if proposals accord with the development principle set*

out in the relevant site boxes, relevant development plan policies and as shown on the Policies Map.'

2.3.4. Policy LP21 'Highways and Access' sets out that proposals shall demonstrate sustainable modes of transport and be accessed effectively and safely by all users, recognising the role of a TA in reducing the impact of developments on the environment by encouraging modal shift. A separate framework travel plan has been prepared to accompany this TA.

2.3.5. Policy LP21 states that new development will normally be permitted where safe and suitable access to the site can be achieved for all people and where the residual cumulative impacts of development are not severe. In addition, proposals should demonstrate adequate mitigation measures as necessary to avoid a detrimental impact on the local highway network. Policy LP21 states that all proposals shall;

- *a. ensure the safe and efficient flow of traffic within the development and on the surrounding highway network;*
- *b. where needed, provide new infrastructure or improvements on or off site to ensure safe access from the highway network for pedestrians, cyclists, public transport users and private vehicles;*
- *c. be accompanied by a supporting Transport Assessment or Transport Statement where the development would generate significant trip generation, providing detail as to the impact on highway safety, air quality, noise and light restrictions;*
- *d. take into account changes in site levels and topography to ensure the development can be accessed easily and safely by all sections of the community and by different modes of transport;*
- *e. take into account the features of surrounding roads and footpaths and provide adequate layout and visibility to allow the development to be accessed safely;*
- *f. take into account access for emergency, service and refuse collection vehicles; and*

- *g. provide on-site safe, secure and convenient cycle parking/storage facilities to encourage sustainable travel modes.'*

KIRKLEES HIGHWAY DESIGN GUIDE SUPPLMENTARY PLANNING DOCUMENT (SPD)

2.3.6. The Highway Design Guide (HDG) was adopted in November 2019 and specifies highway scheme design principles that reflect nationally recognised best practice. The SPD promotes a high standard of highway design that facilitates the delivery of high quality residential, employment and mixed-use development in Kirklees.

2.3.7. Various highway scheme design principles are included in the document including pedestrian movement, inclusive design, parking standards, emergency access, cycle infrastructure, the hierarchy and setting out of streets, how to accommodate the safe operation and manoeuvring of service vehicles and incorporating waste storage facilities in the context of highway impact.

2.4. SUMMARY

2.4.1. These local plan documents contain both a long-term strategy and short-term implementation plan and build on previous publications while looking to the future. These documents all aim to meet the following general objectives:

- Increase use of public transport;
- Increased walking and cycling;
- Minimise the overall growth in car travel;
- Maintain journey times and reliability on key routes; and
- Higher levels of accessibility to local jobs and services.

2.4.2. The consistent objectives across all these documents are to look to developments that promote more sustainable transport choices, thereby reducing the need to travel by car and benefitting the environment.

3. Existing Situation

3.1. SITE DESCRIPTION

3.1.1. The application site is located to the east of Cumberworth Lane in Denby Dale. The site known as 'Cliff Hill' is currently vacant with an area of approximately 1.5 hectares.

3.1.2. Denby Dale Methodist Church is located opposite the development site which lies northeast of Cumberworth Lane and to the north of Denby Dale village centre, some 12km southeast of Huddersfield. Figure 1 at Appendix A shows the site location in relation to the local highway network.

3.1.3. The northwest border is flanked by a narrow public footpath and to the northeast border is Leak Hall Lane and new build detached housing off Leak Hall Crescent. To the south there are further fields and residential dwellings along Cumberworth Lane and the nearby A636.

3.2. HIGHWAY NETWORK

3.2.1. Cumberworth Lane forms the southwestern boundary of the site, from which access into the site will be taken. Cumberworth Lane is subject to a 30mph speed limit from a point some 100m north of the proposed site boundary, leading into the residential area of Denby Dale. The road is a lightly trafficked two-way single carriageway and is approximately 5.5m wide at the development site frontage.

3.2.2. Street lighting is provided on both sides of the carriageway in a staggered arrangement appropriate for the semi-rural nature of the road. As it passes along the southwestern boundary of the site, Cumberworth Lane is on a downhill gradient of c.1 in 12 routing north to south. A road mirror is provided at Cumberworth Lane (at the

southern corner of the proposed development site) for pedestrians leaving Denby Dale Methodist Church across the road to be able to view northbound traffic.

3.2.3. In general, Cumberworth Lane routes in a north-south alignment for some 1.2km connecting the village of Lower Cumberworth to the north to the A636 Wakefield Road to the south. Although Cumberworth Lane is predominantly rural in nature the road does provides access to residential dwellings at each end via access roads and direct frontage access.



Photograph 1 : View of Site Frontage along Cumberworth Lane looking north

3.2.4. Leak Hall Crescent is a residential estate road that borders the north-eastern boundary of the site from which a number of dwellings are served including 6 new detached dwellings. Leak Hall Crescent extends from Leak Hall Road at a priority T junction with the A636 Wakefield Road approximately 200m east of the Cumberworth Lane / A636 junction. Further northeast from the site lies Leak Hall Lane, also extending from the A636 to join a Public Right of Way (PRoW) as set out in Section 3.3.

3.2.5. Cumberworth Lane connects with the A636 Wakefield Road some 150m south of its frontage with the application site at a priority T junction arrangement, split by a central island.



Photograph 2: View of Cumberworth Lane / A636 Wakefield Road junction

3.2.6. The A636 is the main road connecting with the M1 motorway at Junction 38 northeast of the site (via the A637) and ending at the A635 southwest of the site. The A635 can be accessed via Miller Lane c.80m east of the Cumberworth Lane / A636 junction and provides onwards access to more strategic routes such as the M1 Junction 37 (known as Dodworth Roundabout) to the east and A629 to the west.

3.3. PEDESTRIANS AND CYCLISTS

WALKING

3.3.1. The national policy relating to transport and development is set out in Section 9 of the NPPF, however this does not provide guidance on desirable maximum walking distances from new developments. Reference has been made to "The Guidelines for Providing for Journeys on Foot" (Institution of Highways & Transportation, May 2000), which describe best practice in planning and providing for pedestrians within the UK policy and legislative framework. This allows an assessment of the sites compliance with policy guidance on recommended walking distances to local services for residents (as provided in Table 1 below).

TABLE 1. PREFERRED MAXIMUM WALKING DISTANCES

	Town Centre	Commuting / School / Sightseeing	Elsewhere
Desirable	200m	500m	400m
Acceptable	400m	1000m	800m
Preferred Maximum	800m	2000m	1200m

Source: Providing for Journeys on Foot (IHT, 2000)

3.3.2. The facilities within the preferred maximum walking distances are summarised in Table 2 below. The walking distances are measured from the pedestrian entrance which is the proposed site access off Cumberworth Lane. Pedestrians will generally route southwards towards the local amenities and village centre.

TABLE 2. FACILITIES LOCATED WITHIN PREFERRED MAXIMUM WALKING DISTANCES

	Facilities
200m	Denby Dale Methodist Church, bus stops on Cumberworth Lane and A636, takeaway, tea room & café, public house (The White Hart), village centre and surrounding residential areas
400m	Convenience Store, restaurant (Palace Tandoori), Westleigh House & Westleigh Hall office parks, Denby Dale Tennis Club, food and non-food retail, veterinarian, Denby Dale Community Library, charity shop (Denby Dale Centre)
800m	Denby Dale Cricket Club, Denby Dale Train Station, Denby Dale First and Nursery School, employment area (Hartcliffe Mills), residential areas throughout the village
2000m	Denby Church of England First School, public swimming pool (Inkerman), Upper Denby, Upper Cumberworth, Lower Cumberworth, southern end of Skelmanthorpe including the cricket club, New Park and Dearne Park

3.3.3. Table 2 indicates that proposed residential development is within walking distance of a range of facilities, as well as large residential areas from which the local community could walk from the site to. The site is also within 1km of Denby Dale railway station for visitors / commuting from further afield.

3.3.4. There is a narrow footway measuring c.0.9m to the western flank of Cumberworth Lane opposite the application site boundary. This footway continues north along the western side of the carriageway to the southern end of Lower Cumberworth where footways are provided to both sides of the road.

3.3.5. No footway is present along the eastern side of Cumberworth Lane abutting the site boundary. Approximately 50m south of the proposed site (beyond a private drive) there are footways to both sides of the carriageway providing access to both nearby bus stops and onwards to the village centre at the A636 Wakefield Road priority junction. The footway to the western flank of Cumberworth Lane gradually widens

routing south from the site where the footways to either side of the carriageway are c.20m in width.

3.3.6. Heading south along Cumberworth Lane there are various dropped crossing points up to the Cumberworth Lane / A636 priority junction where this is a refuge island in between the eastern and western give-way layout enabling safe crossing. The A636 Wakefield Road benefits from footways to both sides of the carriageway. Good quality infrastructure is provided in all directions for pedestrians to access all the services in Table 1 above.

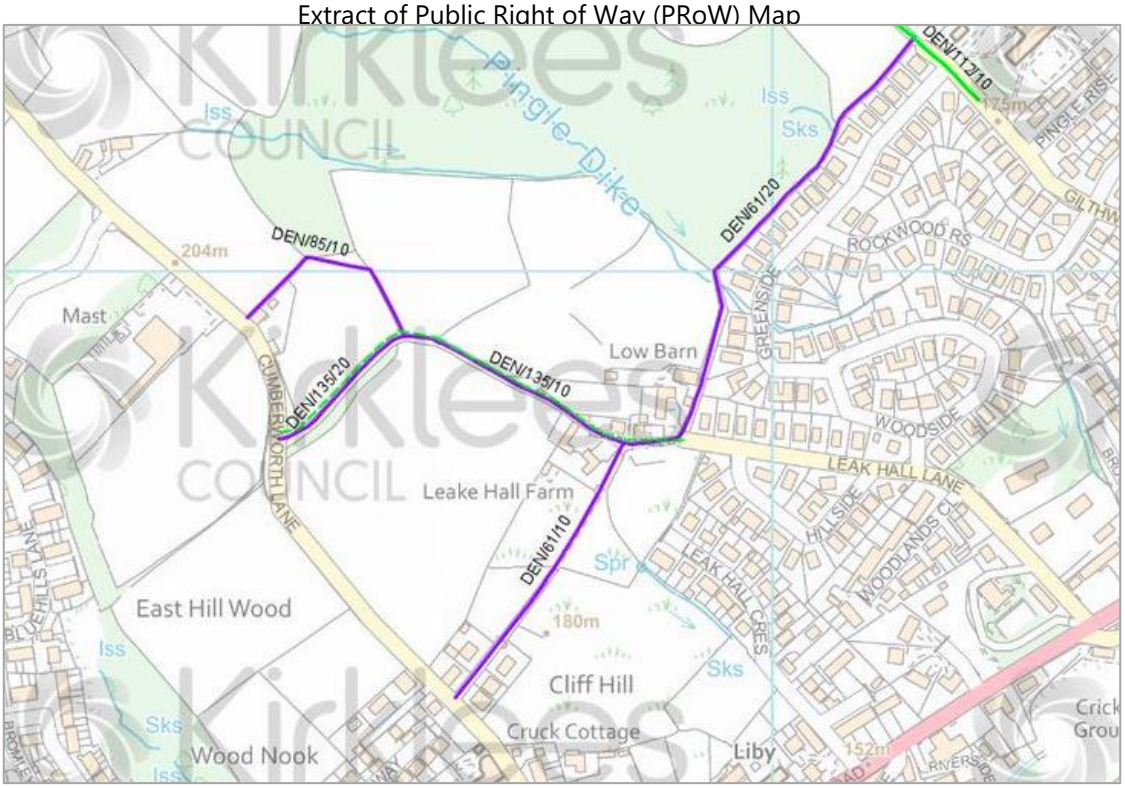
3.3.7. Public footpath DEN/61/10 runs along the northwest boundary of the site from Cumberworth Lane for those walking to access Leak Hall Lane and beyond.



Photograph 3: View of Public Footpath DEN/61/10 from Cumberworth Lane

3.3.8. Numerous other PRoW are in proximity to the site for those walking from the proposed residential development to nearby amenities or for leisure, as shown on the extract below.

Extract of Public Right of Way (PRoW) Map



(Source: Kirklees Council Definitive Map)

3.3.9. PRoW DEN/61/10 connects to Leak Hall Lane and several other public footpaths heading north and west. These footpaths connect onto Gilthwaites Lane to the east where Denby Dale First and Nursery school is located and back around to Cumberworth Lane to the west.

3.3.10. In summary, the existing pedestrian infrastructure in the vicinity of the site is of a good standard and there is excellent potential for residents and visitors to undertake journeys on foot.

CYCLING

3.3.11. National and local policy encourage sustainable development and a shift away from private car use, however, there is no specific recommended maximum cycle distances for access to services/leisure facilities from new developments.

3.3.12. It is noted that the distances people will be willing to travel on a bicycle will be highly variable depending on the type of development, site users and age profile as well as the perception of personal safety in the local environment. However, Local Transport Note 2/08 (published by the Department for Transport) does provide a useful reference point; it indicates that an acceptable distance for general trips by cycle is considered to be up to 5km, but it also acknowledges that this may be slightly longer (up to 8km) for those commuting to employment uses by cycle.

3.3.13. All local facilities and services as detailed in Table 2 above, can be accessed readily by bicycle using predominantly residential roads and off-road cycle routes. The whole of Denby Dale and nearby residential areas of Cumberworth, Skelmanthorpe and Shepley are within easy cycling distance.

3.3.14. The West Yorkshire Cycle Map highlights several routes from Denby Dale (including Miller Hill) and Lower Cumberworth as advisory cycle routes, these are at either end of Cumberworth Lane and thereby connect to a wider area for cyclists. In addition there are several bridleways / cycle tracks notably from Gilthwaites Lane to the east of the proposed site connecting to Skelmanthorpe further north.

3.3.15. The urban realm surrounding the site is generally subject to a 30mph speed limit and is designed to encourage low vehicular speeds. Low vehicular speeds increase the perception of safety for cyclists and cyclists favour using roads classified as 30mph or less. The residential estates surrounding the site are therefore safe for cyclists allowing residents at the proposed site to have the potential to cycle to and from employment, local amenities and leisure.

3.3.16. National Cycle Network Route 627 can be accessed via the A635 approximately 4.5 km to the west of the site. Route 627 is a 38km route linking Kirkburton to the north with Millhouse Green to the south via Shepley before connecting to the Trans Pennine Trail.

3.3.17. In consideration of the above, it is considered that there are practical and convenient links available to and from the proposed development offering the potential for residents to walk or cycle to local facilities and employment areas.

3.4. PUBLIC TRANSPORT

BUSES

3.4.1. The closest bus stops to the site are some 60m south of the proposed site access on Cumberworth Lane and lie approximately half-way between the site and A636 Wakefield Road. Both stops have poles and flags and are characterised by legislative road markings, the northbound stop also has a shelter with associated seating. There are also bus stops along A636 Wakefield Road within 400m of the site which are located at either side of the Cumberworth Lane priority junction. Further bus stops are located along the A636 and Miller Hill.



Photograph 4: Cumberworth Lane bus stops

3.4.2. The location of bus stops is shown on Figure 1 within Appendix A and Table 3 below provides a summary of the bus routes in the area from these stops. The routes serve a number of surrounding areas including Huddersfield, Shepley, Barnsley, Wakefield and Penistone.

TABLE 3. SUMMARY OF BUS ROUTES

Route No	Route Summary	Frequency	
		Monday to Saturday	Late Eve & Sunday
D1	Huddersfield – Kirkburton - Skelmanthorpe – Denby Dale	30 mins	60 mins
D2	Denby Dale Rail Station – Shepley – Lepton - Huddersfield	60 mins	-
D3	Denby Dale Rail Station – Shepley – Lepton - Huddersfield	120 mins	-
X1	Holmfirth – Denby Dale – Wakefield City Centre	60 mins	120 mins - Sun
99*	Denby Dale – High Hoyland – Barnsley	90 mins - Sat	-

Route No	Route Summary	Frequency	
		Monday to Saturday	Late Eve & Sunday
350*	Holmfirth – Denby Dale – Upper Denby – Penistone	60 mins - Thurs & Sat	-
353*	Holmfirth – Denby Dale – Cawthorne – Barnsley	80 mins - Mon, Wed, Fri	-

*operated by South Pennine Community Transport

3.4.3. The proposed development is accessible by bus services throughout the working day with a frequency of 4 to 5 per hour Monday to Saturday and 1 to 2 per hour in the evening and Sunday. The services that operate on Cumberworth Lane and A636 Wakefield Road serve a wide range of destinations for travel by bus to and from the site.

3.4.4. In addition to the conventional bus services, there are numerous demand responsive services within Denby Dale (operated by Valleys Community Transport - part of the Denby Dale Centre). Minibuses are available upon request to local community groups, social groups or schools as part of the Group Transport service. A ring and ride service is available for time together activities, supermarkets and shopping, days out and luncheon trips. In addition, a volunteer car service is available for hospital visiting, health appointments, visiting friends or for a shopping trip.

3.4.5. The CIHT document, 'Planning for Public Transport in Developments,' March 2009, suggests that the maximum walking distance to a bus stop should not exceed 400m. However, CIHT's later document, 'Buses in Urban Environments,' January 2018, recognises that people will walk further to access more frequent bus services.

3.4.6. From the above it is evident that the site benefits from being in proximity to frequent and good quality public transport links for commuting to work and for general travel over a wide area.

TRAINS

3.4.7. The proposed residential development is within 800m of Denby Dale railway station to the west (off Wood Lane) which provides users the opportunity to walk from the station and to travel from further afield. The station has cycle parking, which would enable visitors to cycle to the station and then travel by train.

3.4.8. Trains stop at this station from a variety of destinations including Penistone, Shepley, Huddersfield and Sheffield via Barnsley. The station has services running hourly to Huddersfield and Sheffield between Monday to Saturday, as well as running hourly in each direction on Sundays.

3.4.9. The proposed development is considered to be in a sustainable location and is well served by public transport, utilising stops that are within the maximum walking distance of 400m given in 'Planning for Public Transport in Developments' and having a mainline train station within reasonable walking and cycling distance, which is also conveniently accessed via bus.

3.5. INJURY COLLISION RECORDS

3.5.1. A review of personal injury collisions for a 5 year period from January 2017 – December 2021 has been carried out using the www.crashmap.co.uk website. The study area covers Cumberworth Lane within the vicinity of the proposed site access.

3.5.2. This shows that in the study period, there have been no collisions resulting in injury in the vicinity of the site frontage on Cumberworth Lane or at the. It is therefore considered there are no safety concerns nor any problematic safety trends on this section of the local highway network in the vicinity of the proposed development.

4. The Development Proposals

4.1. PROPOSED DEVELOPMENT

4.1.1. The applicant seeks planning permission for the construction of a residential development on a parcel of vacant land allocated for housing in the KC Local Plan, the development site is known as Cliff Hill.

4.1.2. The development proposals, which are shown on the site layout drawing contained in Appendix B, comprise of 62 dwellings with the following mix:

- 3 x 1 bedroom dwellings;
- 11 x 2 bedroom dwellings;
- 24 x 3 bedroom dwellings; and
- 24 x 4 bedroom dwellings.

4.2. SITE ACCESS

4.2.1. Vehicular access to the site is proposed from a simple priority 'T' junction off Cumberworth Lane. The proposed access is located some 17m northwest of the main pedestrian access to Denby Dale Methodist Church. The proposed site access will have a width of 5.5m with a 2m wide footway to both sides of the carriageway. The proposed access is shown on Drawing No. 2111502 in Appendix C.

4.2.2. In order to facilitate a safe means of vehicular access and egress to the site, a visibility splay assessment was undertaken to inform the access position. To establish the minimum requirement for the visibility splays, a speed survey was undertaken to determine the 85%ile speed for southbound vehicles (ATC data provided in Appendix

D, further details of the survey are set out in Section 5). The survey results show a design speed of 34.8mph for southbound.

4.2.3. The southbound approach to the proposed access on Cumberworth Lane is on a downhill gradient (c.1 in 12) and which was more likely to have approach speeds in excess of 30mph (it is also the location of the speed limit change / entry into the built up area of Denby Dale).

4.2.4. Using the Manual for Streets formula to establish the required visibility splays, a minimum of 59.5m is required to the right for exiting vehicles. This length of splay can be accommodated within the public highway / land under the control of the applicant. A 1m offset from the road edge has also been assumed, given that a boundary wall is built to the edge of the carriageway (and no vehicle could therefore be positioned on the edge of a road).

4.2.5. Given that the southern link of Cumberworth Lane is well within the 30mph limits and in the built up area of Cumberworth close to its junction with Wakefield Road, we have assumed that a 43m splay to the left is adequate. The proposed visibility splays are also shown on Drawing No. 2111502 in Appendix C. 21

4.2.6. Cumberworth Lane is subject to a 30mph speed limit therefore visibility splays of at least 2.4m x 43m should be provided (as required in the Kirklees HDG). Although the recorded speeds were just above 30mph the site access can achieve adequate visibility in both directions which is shown on Drawing 2111502.

4.3. PEDESTRIAN ACCESS

4.3.1. There are 2m footways proposed internally within site. The proposed 2m footway routing north from the site access connects to PRoW DEN/61/10. To the south the proposed footway links to the existing footway at the opposite end of the road, providing a convenient route for pedestrians to the bus stops further south. The

proposed footway link is shown at 1.8m wide and offers improved pedestrian accessibility to the site.

4.3.2. Dropped crossing provision is proposed to either side of the access junction to allow pedestrians to safely cross Cumberworth Lane.

4.4. SITE LAYOUT

4.4.1. All aspects of the internal layout will be in compliance with the Kirklees Highway Design Guide (KHDG). This includes adequate forward and exit visibility, the passing of a service vehicle and car around bends, shared surface provision, setting out of private drives and turning heads to allow for the manoeuvring of refuse collection vehicles.

4.4.2. There is currently a notable level change between Cumberworth Lane and internal site levels meaning existing levels will have to be altered to accommodate the internal road layout and the proposed site access. Drawing 2111503 in Appendix C shows the proposed internal road levels which have been proposed in compliance with KHDG.

4.4.3. The internal layout will be designed to incorporate turning heads to allow for service refuse vehicles, emergency vehicles and all other vehicles to be able to enter and leave the site in forwards gear. The swept path analysis on Drawings 2111504 and 2111505 in Appendix C show a refuse and car can pass one another along the internal layout. Localised widening around sharp bends in the internal road have been provided to allow a car and a refuse to pass one another.

4.4.4. Refuse collection will be in accordance with the councils 'Waste Management Design Guide for New Developments' (October 2020 Version 5). The layout will be designed to cater for the 11.85m refuse vehicle as this is a requirement of the highway authority to allow the road to be adopted. The swept paths also show how this refuse vehicle can turn in the two turning heads provided.

4.5. PARKING PROVISION

4.5.1. Parking provision for cars and bicycles will generally be in compliance with the parking guidance included within the KHDG. Parking is allocated to each dwelling as follows:

- 2-3 bed dwellings – 2 parking spaces
- 4+ bed dwellings – 3 parking spaces
- 1 cycle space per residential unit (desirable)

4.5.2. The majority of the smaller four bed dwellings (20 units) have only 2 car parking spaces . These include semi detached properties and townhouses which reflects the likely car ownership of these property Types C and D.

4.5.3. 11 visitor spaces are provided across the site.

4.5.4. All dwellings will include at least one electric vehicle charging point with secure cycle parking and allowances made for electric cycle charging in each dwelling.

5. Development Assessment

5.1. TRAFFIC SURVEYS

5.1.1. An Automatic Traffic Count (ATC) was undertaken on Cumberworth Lane in the vicinity of the 30mph change in speed limit sign, some 100m north of the proposed site access junction location. The survey was undertaken for a one week period between Saturday 14th May 2022 and Friday 20th May 2022 and the full ATC data set is provided at Appendix D.

5.1.2. A turning count survey has also been undertaken at the Cumberworth lane / A636 Wakefield Road junction south of the site. The Manual Classified Count (MCC) was undertaken on Wednesday 11th May 2022 during the morning and evening periods to coincide with the typical peak hours of 08:00 - 09:00. The survey times were 07:30-09:30 and 16:00-18:00. The full MCC data set is also provided within Appendix D.

5.2. TRAFFIC GENERATION

5.2.1. The proposed development is for 62 dwellings on land which is currently unoccupied and therefore has no existing impact. Traffic generated by the site will use Cumberworth Lane to access the wider highway network from the aforementioned proposed site access junction.

5.2.2. The traffic generation for the proposed site has been calculated using trip rates derived from TRICS, which are contained with Appendix E and summarised in Table 4 below.

TABLE 4. TRIP RATES FOR RESIDENTIAL DEVELOPMENT

	Residential		
	Arrivals	Departures	Total
AM	0.168	0.441	0.609
PM	0.398	0.185	0.583
Daily	2.557	2.624	5.181

5.2.3. With the total number of dwellings proposed as 62 and applying the trip rates in Table 4 to this level of development, the likely traffic generations are presented below in Table 5.

TABLE 5. TRAFFIC GENERATIONS FOR RESIDENTIAL DEVELOPMENT

	Residential		
	Arrivals	Departures	Total
AM	10	27	37
PM	25	11	36
Daily	159	163	321

5.2.4. Beyond the site access junction the traffic generated by the site is well within the normal daily fluctuations in traffic flows that could be expected on Cumberworth Lane. The impact of the traffic generated by the site is therefore considered to be negligible at the Cumberworth Lane / A636 Wakefield Road junction. This is further supported by the MCC results for the junction (Appendix D) which show that this is not a busy junction. As such, junction modelling has only been undertaken for the proposed site access junction.

5.3. TRAFFIC DISTRIBUTION

5.3.1. The 2011 Census mode of travel to work data for the middle super output area (MSOA) in which the site is located was used to determine a distribution of trips. The traffic distribution analysis is provided within Appendix F.

5.3.2. The traffic was assigned to each Local Authority area or MSOA (for finer grain analysis within Kirklees) centroid using Google maps for traffic leaving the site during the weekday morning peak hour. The shortest distance routing was used. The traffic assignments are provided within Appendix F.

5.4. FUTURE YEAR AND TRAFFIC GROWTH FACTORS

5.4.1. Based on a typical build out rate of 35 dwellings per annum the development will be completed within 2 years. However, for robustness the impact of the development has been assessed for a future scenario of 5 years beyond planning submission i.e., 2028.

5.4.2. Accordingly, this was the assessment year selected for analysis. TEMPro 7.2c was used was used to determine the National Traffic Model (NTM) factors between 2022 (traffic survey collection date) and the future assessment year of 2028. The following weekday peak hour factors were obtained:

- Weekday AM peak hour = 1.0431; and
- Weekday PM peak hour = 1.0438.

5.4.3. These growth factors have been applied to the ATC data to increase the surveyed traffic flows to predicted 2028 levels. The development traffic flows as set out in table 5 above were then added to 2028 background flows to produce 2028 design year traffic flows.

5.5. OPERATIONAL ASSESSMENT OF SITE ACCESS

5.5.1. It is proposed to provide a simple priority 'T' junction off Cumberworth Lane as described in detail in Section 4 and shown on Drawing No. 2111502 in Appendix C. An assessment using the 2028 'with development' design traffic flows was undertaken.

5.5.2. The junction has been modelled using the PICADY function within the Junctions 9 software. The results are shown in Table 6 and the full results are provided within Appendix G.

TABLE 6. PROPOSED SITE ACCESS / CUMBERWORTH LANE JUNCTION ANALYSIS (2028 WITH ALL DEVELOPMENT)

	Morning Peak Hour		Evening Peak Hour	
Approach	Max RFC	Max Queue	Max RFC	Max Queue
Site Access (Right Left)	0.05	0.1	0.02	0
Cumberworth Lane (Ahead Right)	0.01	0	0.03	0

5.5.3. A Ratio of Flow to Capacity value below 0.85 indicates that a junction or arm operates within its predicted capacity. Table 7 demonstrates that the proposed site access junction operates well within capacity in the robust 2028 design scenario with a maximum RFC of 0.05 and therefore it is suitable to serve the proposed development.

5.6. COMPLIANCE WITH NATIONAL AND LOCAL PLANNING POLICIES

5.6.1. The proposed development is considered to be located in a highly sustainable location and provides access by a genuine range of transport modes which accords with paragraph 105 of the NPPF.

5.6.2. This report has shown that a safe means of access to and from the site for all road users is achievable and the traffic impact is negligible (paragraph 110 refers).

5.6.3. The highway proposals are considered to be safe and do not result in any severe residual cumulative highway impacts, and therefore comply with paragraph 111.

Access for pedestrians and cyclists and all motor vehicles is shown to be safely achieved (paragraph 110).

5.6.4. This report has also demonstrated that the proposed development accords with the policies within the West Yorkshire Local Transport Plan and the Kirklees Local Plan in that the site is accessible by pedestrians, cyclists and bus users and adequate parking can be provided on site.

5.6.5. Therefore, the proposals comply with the national and local policies described in Section 2 of this report.

6. Conclusion

6.1.1. This Transport Assessment assesses the characteristics of the existing infrastructure in the surrounding area of the site and predicts that the development generated traffic. It concludes that the adjacent highway network can adequately accommodate the traffic impact of the proposed development in terms of safety and capacity.

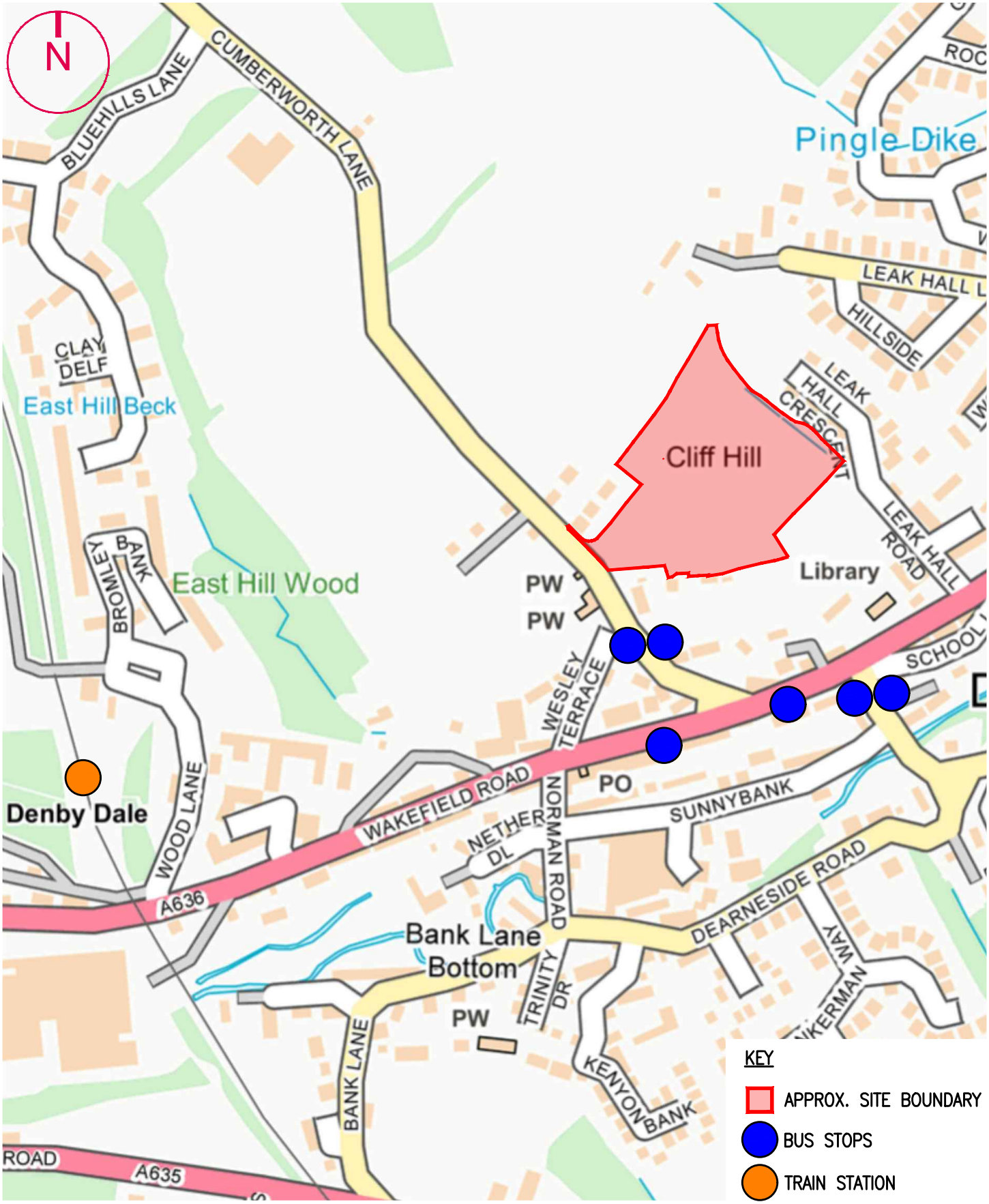
6.1.2. This assessment has considered the existing and proposed operation of the highway in terms of highway safety, sustainability and capacity. It has shown that the predicted traffic from the proposed development has no material or significant impact on any of the junctions assessed.

6.1.3. The site is considered to be in a highly sustainable location with a wide range of local services and facilities that can be accessed on foot and by cycle. Frequent bus services operate near the site and other public transport options lie within a short walk or cycle.

6.1.4. In conclusion, it has been demonstrated that the proposed development can be accommodated on the adjacent highway network without any significant negative impact and there are therefore no highway capacity or safety reasons why this development should not be granted planning approval.

APPENDICES

APPENDIX A: Site Location Plan



VIASOLUTIONS
THE OLD COACH HOUSE, 1 CAMPBELL STREET PUDSEY LS28 6DP
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PROPOSED RESIDENTIAL DEVELOPMENT

CUMBERWORTH LANE, DENBY DALE

SITE LOCATION PLAN

SCALE: 1:10 @A4

DATE: MAY 2022

FIGURE 1

APPENDIX B: Proposed Development Layout



Suitability Code:

A3

For Planning

SCHEDULE

TYPE A	9X	TYPE A - 2 BED GIA 71.2m²
TYPE B	3X	TYPE B - 3 BED GIA 86.4m²
TYPE C	6X	TYPE C - 4 BED GIA 143.3m²
TYPE D	14X	TYPE D - 4 BED GIA 133.9m²
TYPE H	4X	TYPE H - 4 BED GIA 141.9m²
TYPE K	19X	TYPE E - 3 BED GIA 100m²
TYPE L	2X	TYPE F - 3 BED GIA 120m²
TYPE M	2X	TYPE 2 - 2 BED GIA 75.4m²
TYPE N	3X	TYPE I - 1 BED GIA 58m²
TOTAL UNITS - 62		

Unit mix
1 bed = 5%
2 Bed = 18%
3 Bed = 39%
4 Bed = 38%

GIFA
6667m2

REV	COMMENT	DATE	DR	CH
P06	AMENDMENT TO HIGHWAY MINOR WIDENING AND TURNING HEAD ADJUSTMENT.	14.07.23	TC	MH
P05	AMENDMENT TO HIGHWAY RAMP LOCATION AN SHARED SURFACE	12.07.23	TC	MH
P04	AMENDMENTS TO LAYOUT PLOTS 26-28 E TYPE CHANGED TO D GARAGE ADDED TO PLOT 49	30.06.23	TC	MH
P03	AMENDMENTS TO LAYOUT PLOTS 19-28	28.06.23	TC	MH
P02	MINOR AMENDMENTS	26.06.23	TC	MH
P01	DRAWING ISSUE	06.06.23	TC	MH

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BBA
BREWSTER BYE ARCHITECTS
5 NORTH HILL ROAD, LEEDS, HEADINGLEY, LS6 2EN
T: 0113 2754000
info@brewsterbye.co.uk www.brewsterbye.co.uk

CLIENT

urban

JOB TITLE

RESDENTIAL DEVELOPMENT

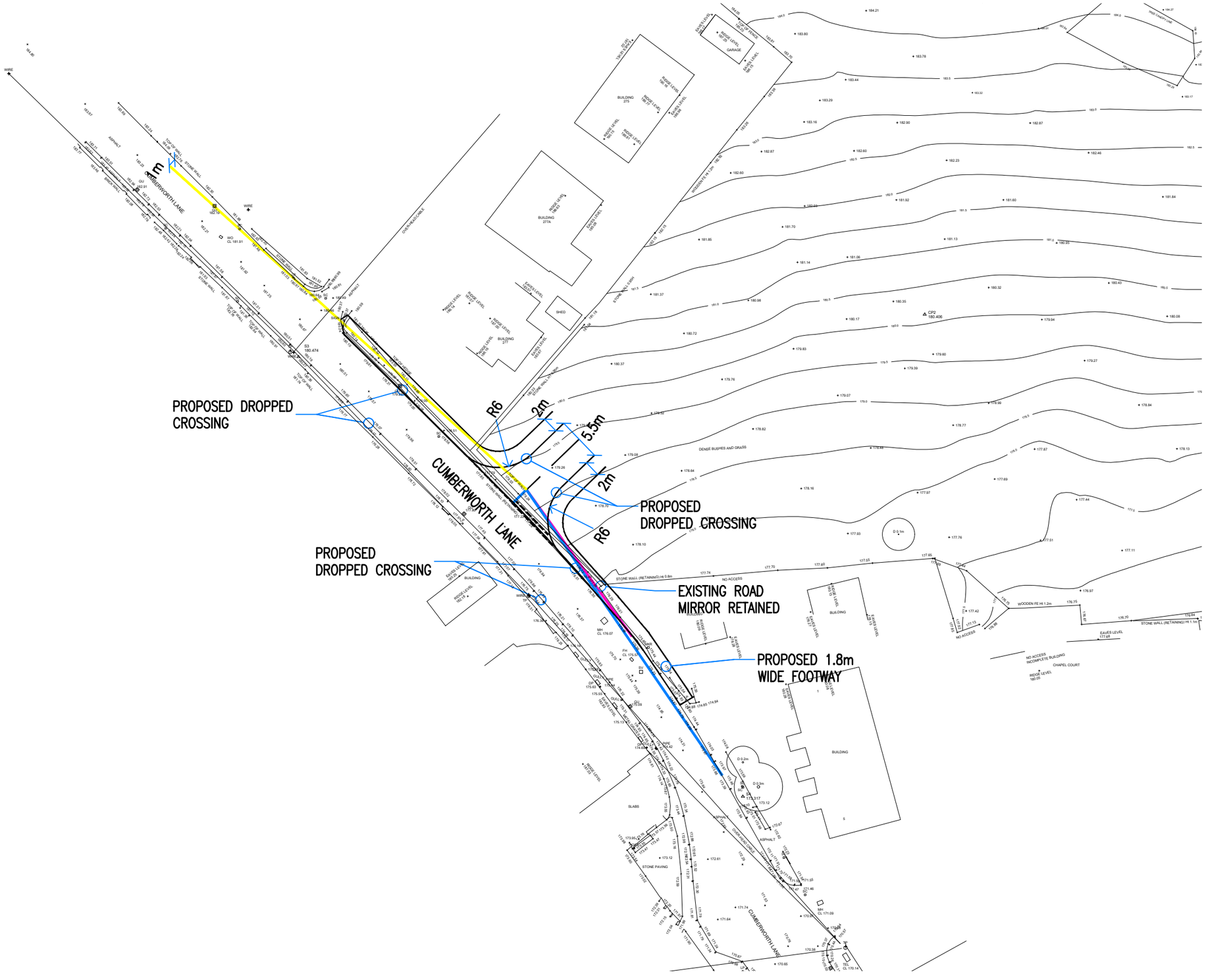
DENBY DALE

PROPOSED SITE PLAN

Drawn: TC
Date: JUN 23
Scale: 1:500 @ A2
Checked: MH

DWG NO: 57116-BBA-09-Z00-DR-A-0201
REV: P06

APPENDIX C: Proposed Highway Drawings



N

KEY

- 2.4m X 59.5m VISIBILITY SPLAY
- 2.4m X 43m VISIBILITY SPLAY
- 2.4m X 43m VISIBILITY SPLAY (TAN)

NOTES

1. THIS DRAWING SHOWS THE PRELIMINARY LAYOUT ONLY (NOT TO BE USED FOR CONSTRUCTION) AND IS SUBJECT TO DETAILED DESIGN, FULL CDM COMPLIANCE, STATUTORY UNDERTAKERS SEARCH/DIVERSION REQUIREMENTS, HIGHWAY DRAINAGE PROVISION, LAND OWNERSHIP AND LOCAL AUTHORITY APPROVAL.

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PROPOSED RESIDENTIAL DEVELOPMENT

CUMBERWORTH LANE, DENBY DALE

PROPOSED ACCESS ARRANGEMENT

SCALE: 1:500 @A3

DATE: JULY 2023

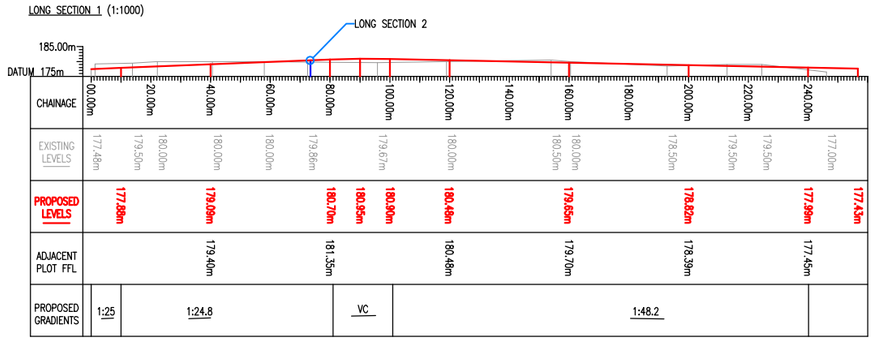
DRAWING NO: 2111502 Rev. B



SCALE: 1:500

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LONG SECTION 1 (1:1000)

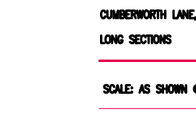


CHAINAGE	00.00m		20.00m		40.00m		60.00m		80.00m		100.00m		120.00m		140.00m		160.00m		180.00m		200.00m		220.00m		240.00m
EXISTING LEVELS	177.48m		179.50m		180.00m		180.00m		179.86m		179.67m		180.00m		180.50m		180.00m		178.50m		179.50m		179.50m		177.00m
PROPOSED LEVELS		177.88m		178.09m				180.70m		180.95m		180.90m		180.48m		178.65m				178.82m				177.99m	177.43m
ADJACENT PLOT FFL				179.40m				181.35m						180.48m		179.70m				178.39m				177.45m	
PROPOSED GRADIENTS		1:25		1:24.8						VC				1:48.2											

LONG SECTION 2 (1:1000)

CHAINAGE	00.00m		20.00m		40.00m		60.00m	80.00m
EXISTING LEVELS	179.85m	179.50m	182.00m	181.00m	183.50m	184.00m	184.50m	183.00m 182.50m
PROPOSED LEVELS	180.43m	180.33m	181.03m		181.74m		182.43m	183.42m 183.24m 183.15m
ADJACENT PLOT FFL	180.32m		180.98m		182.17m			183.15m
PROPOSED GRADIENTS				1:28.4				

LONG SECTION 3 (1:1000)



CHAINAGE	00.00m		20.00m		
EXISTING LEVELS	184.38m	180.10m	180.50m	181.50m	
PROPOSED LEVELS	182.43m	182.48m	182.19m	182.23m	182.26m
ADJACENT PLOT FFL	182.94m		182.25m		
PROPOSED GRADIENTS		1:100			

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PROPOSED RESIDENTIAL DEVELOPMENT

CUMBERWORTH LANE, DENBY DALE

LONG SECTIONS

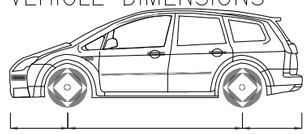
SCALE: AS SHOWN @ A1

DATE: JULY 2023

DRAWING NO: 2111503



VEHICLE DIMENSIONS

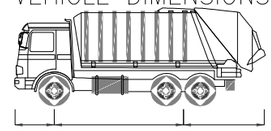


0.89 2.75 1.07

ESTATE CAR

LENGTH: 4.71 m
MAX WIDTH: 1.80 m
LOCK TO LOCK TIME: 4.0 s
MAX STEERING ANGLE: 32.22°
TURN RADIUS (CURB TO CURB): 5.95 m
TURN RADIUS (WALL TO WALL): 6.41 m

VEHICLE DIMENSIONS



1.53 5.55 4.77

KIRKLEES REFUSE

LENGTH: 11.85 m
MAX WIDTH: 2.50 m
LOCK TO LOCK TIME: 6.0 s
MAX STEERING ANGLE: 37.75°
TURN RADIUS (CURB TO CURB): 10.09 m
TURN RADIUS (WALL TO WALL): 11.00 m

N

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PROPOSED RESIDENTIAL DEVELOPMENT

CUMBERWORTH LANE, DENBY DALE

SWEPT PATH ANALYSIS

SCALE: 1:500 @A3

DATE: JULY 2023

DRAWING NO: 2111504

NOTES

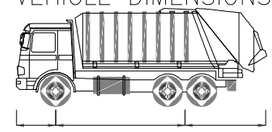
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N

VEHICLE DIMENSIONS



1.53 5.55 4.77

KIRKLEES REFUSE

LENGTH: 11.85 m
MAX WIDTH: 2.50 m
LOCK TO LOCK TIME: 6.0 s
MAX STEERING ANGLE: 37.75°
TURN RADIUS (CURB TO CURB): 10.09 m
TURN RADIUS (WALL TO WALL): 11.00 m

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PROPOSED RESIDENTIAL DEVELOPMENT

CUMBERWORTH LANE, DENBY DALE

SWEPT PATH ANALYSIS

SCALE: 1:500 @A3
DATE: JULY 2023
DRAWING NO: 2111505

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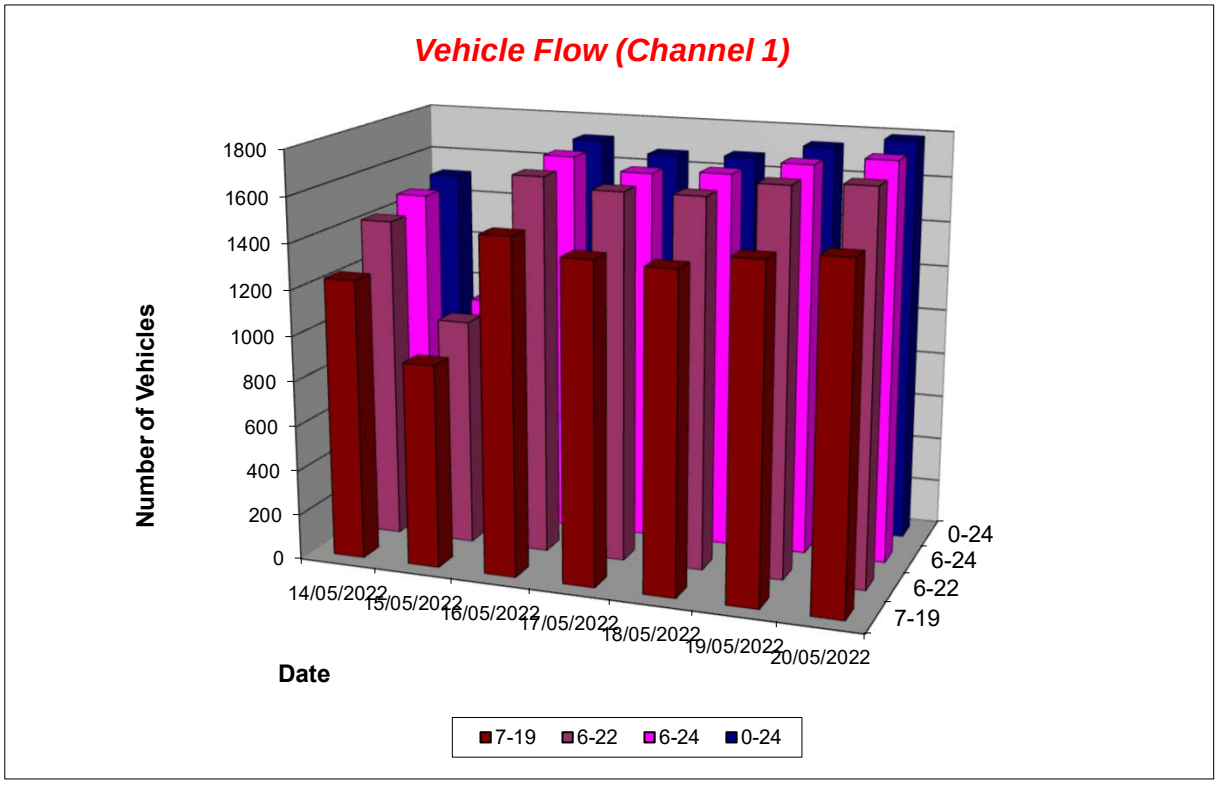
APPENDIX D: Traffic Survey Data

Denby Dale ATC, Cumberworth Road

Produced by Road Data Services Ltd.

Channel 1 - Northwestbound | **Vehicle Flow** | **Week 1**

Hr Ending	14/05/2022 Saturday	15/05/2022 Sunday	16/05/2022 Monday	17/05/2022 Tuesday	18/05/2022 Wednesday	19/05/2022 Thursday	20/05/2022 Friday	Weekday Average	Average
1	11	9	2	3	1	2	1	2	4
2	6	5	1	2	1	2	2	2	3
3	2	0	0	0	0	0	3	1	1
4	4	3	1	3	2	2	4	2	3
5	1	4	3	4	3	2	1	3	3
6	8	2	12	12	9	11	19	13	10
7	9	4	38	37	56	29	33	39	29
8	48	19	114	137	118	132	120	124	98
9	88	36	164	169	165	162	176	167	137
10	113	54	109	83	92	102	104	98	94
11	127	77	89	107	89	92	113	98	99
12	120	110	93	96	99	112	95	99	104
13	151	97	113	102	93	115	111	107	112
14	97	88	110	78	97	86	97	94	93
15	99	87	114	117	120	122	131	121	113
16	93	94	149	139	119	145	144	139	126
17	109	90	153	147	142	132	140	143	130
18	104	78	160	138	140	134	141	143	128
19	90	71	110	95	122	127	122	115	105
20	69	53	71	73	90	91	96	84	78
21	64	32	46	57	56	52	52	53	51
22	45	15	33	48	28	61	37	41	38
23	29	12	24	14	31	19	20	22	21
24	24	2	6	6	4	8	27	10	11
7-19	1239	901	1478	1408	1396	1461	1494	1447	1340
6-22	1426	1005	1666	1623	1626	1694	1712	1664	1536
6-24	1479	1019	1696	1643	1661	1721	1759	1696	1568
0-24	1511	1042	1715	1667	1677	1740	1789	1718	1592



Denby Dale ATC, Cumberworth Road

Produced by Road Data Services Ltd.

Channel 1 - Northwestbound **Average Speed** **Week 1**

Hr Ending	14/05/2022 Saturday	15/05/2022 Sunday	16/05/2022 Monday	17/05/2022 Tuesday	18/05/2022 Wednesday	19/05/2022 Thursday	20/05/2022 Friday
1	26.6	27.3	30.9	27.7	26.4	36.8	17.1
2	30.4	23.4	26.7	25.2	24.0	27.1	28.6
3	30.2	-	-	-	-	-	30.8
4	28.5	32.9	24.1	29.1	31.8	33.7	30.0
5	27.7	31.6	31.8	29.9	23.6	27.0	26.1
6	27.6	23.5	29.9	29.0	30.1	30.7	28.2
7	27.3	27.4	28.5	31.3	28.0	31.1	30.7
8	25.6	28.3	30.4	28.9	27.6	28.5	29.8
9	26.4	28.8	27.6	27.6	24.7	28.3	28.7
10	24.0	29.3	27.3	27.7	27.6	27.8	28.9
11	27.2	27.8	23.3	25.8	27.1	27.2	24.5
12	23.8	29.7	25.0	26.4	27.5	26.7	25.5
13	24.9	28.1	25.7	27.4	26.5	27.2	21.4
14	25.0	29.2	27.8	26.0	28.1	28.7	24.7
15	24.8	29.6	25.5	26.7	24.5	28.0	29.0
16	28.9	28.7	26.9	24.0	27.6	28.5	27.3
17	29.8	29.4	29.0	27.7	28.4	28.8	29.1
18	30.1	25.7	28.6	28.0	28.3	29.1	29.2
19	28.9	29.9	26.2	26.7	28.7	27.3	29.5
20	29.8	30.3	27.0	26.1	26.6	27.6	28.8
21	29.1	29.4	28.6	28.3	28.1	25.1	28.6
22	25.7	28.0	26.3	27.5	28.6	26.6	29.1
23	28.3	30.3	29.5	26.6	28.8	29.0	28.4
24	28.6	19.8	27.7	28.2	34.0	30.5	28.0
10-12	25.5	29.0	24.2	26.1	27.3	26.9	24.9
14-16	26.8	29.1	26.3	25.2	26.1	28.3	28.1
0-24	26.9	28.8	27.3	27.1	27.3	28.0	27.7

Average (ALL)	27.5
Weekday Inter-Peak	26.4

Channel 1 - Northwestbound **85th Percentile**

Hr Ending	14/05/2022 Saturday	15/05/2022 Sunday	16/05/2022 Monday	17/05/2022 Tuesday	18/05/2022 Wednesday	19/05/2022 Thursday	20/05/2022 Friday
1	29.3	33.1	35.9	33.6	-	44.4	-
2	33.3	27.0	-	27.7	-	29.8	28.8
3	34.2	-	-	-	-	-	37.1
4	32.0	39.4	-	36.2	33.2	34.6	31.4
5	-	38.3	37.7	35.8	26.9	27.2	-
6	31.3	25.9	34.5	35.5	34.6	35.8	36.1
7	31.3	32.7	35.0	36.9	34.3	37.9	37.3
8	34.6	33.3	35.4	34.5	34.3	34.8	35.4
9	33.1	35.1	33.7	33.7	31.9	34.2	33.6
10	30.9	35.7	32.8	33.9	33.4	33.0	33.6
11	33.4	34.3	29.1	30.8	32.2	32.1	30.6
12	31.2	36.8	31.1	33.4	34.2	31.5	30.8
13	31.6	33.4	31.2	32.6	32.9	34.1	28.4
14	31.5	34.0	33.4	33.2	34.3	34.0	31.7
15	31.4	34.6	32.3	33.5	31.1	35.3	35.0
16	36.5	33.9	33.2	30.6	32.6	33.8	33.3
17	34.9	35.5	34.8	33.9	34.7	35.7	34.6
18	36.0	30.9	36.1	33.3	34.7	34.7	35.6
19	35.0	34.5	32.9	32.1	34.5	34.3	34.4
20	36.4	36.3	32.8	31.5	32.5	33.8	34.2
21	36.7	34.9	34.7	36.0	34.1	32.6	35.3
22	31.9	32.1	31.3	34.5	33.3	34.0	34.0
23	32.6	35.9	35.8	33.9	35.1	33.2	33.6
24	35.0	21.8	33.2	34.4	36.9	35.8	34.4
10-12	32.5	35.9	30.2	32.2	33.3	31.8	30.7
14-16	34.2	34.2	32.8	32.0	32.2	34.6	34.2
0-24	33.9	34.6	33.6	33.4	33.7	34.2	34.0

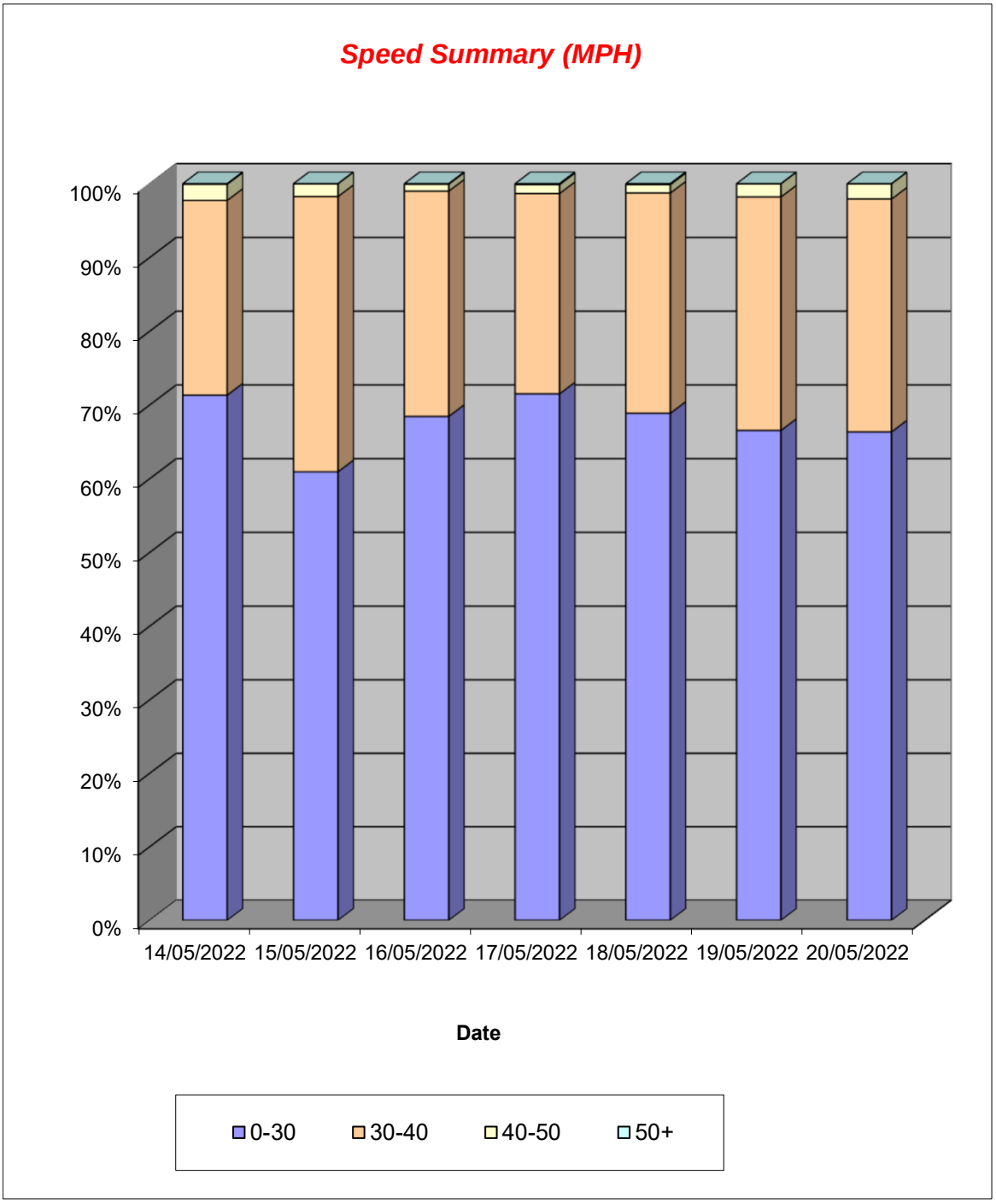
85th %ile (ALL)	33.9
Weekday Inter-Peak	32.6

Denby Dale ATC, Cumberworth Road

Produced by Road Data Services Ltd.

Channel 1 - Northwestbound | **Speed Summary** | **Week 1**

Speed (MPH)	14/05/2022 Saturday	15/05/2022 Sunday	16/05/2022 Monday	17/05/2022 Tuesday	18/05/2022 Wednesday	19/05/2022 Thursday	20/05/2022 Friday
0-30	1078	635	1174	1192	1155	1158	1187
30-40	399	389	524	453	501	551	565
40-50	33	18	16	20	19	31	37
50+	1	0	1	2	2	0	0
TOTAL	**1511**	**1042**	**1715**	**1667**	**1677**	**1740**	**1789**



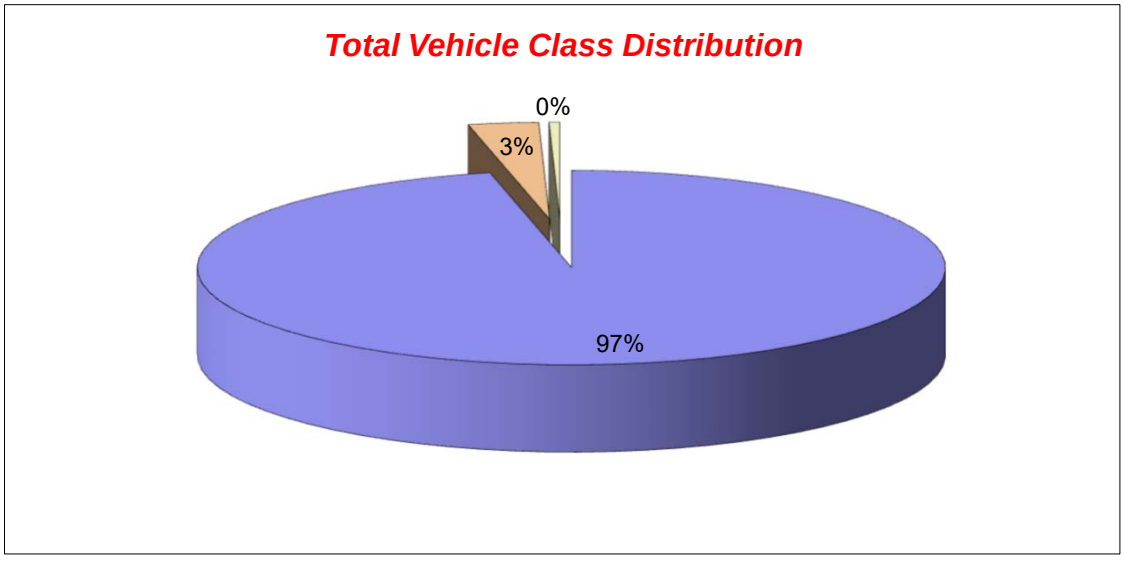
Denby Dale ATC, Cumberworth Road

Produced by Road Data Services Ltd.

Channel 1 - Northwestbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
14/05/2022				
7-19	1202	31	6	1239
6-22	1387	33	6	1426
6-24	1437	36	6	1479
0-24	1469	36	6	1511
15/05/2022				
7-19	881	18	2	901
6-22	984	18	3	1005
6-24	998	18	3	1019
0-24	1021	18	3	1042
16/05/2022				
7-19	1426	43	9	1478
6-22	1607	50	9	1666
6-24	1636	51	9	1696
0-24	1655	51	9	1715
17/05/2022				
7-19	1335	57	16	1408
6-22	1548	59	16	1623
6-24	1568	59	16	1643
0-24	1592	59	16	1667
18/05/2022				
7-19	1329	55	12	1396
6-22	1550	64	12	1626
6-24	1585	64	12	1661
0-24	1601	64	12	1677
19/05/2022				
7-19	1413	47	1	1461
6-22	1642	51	1	1694
6-24	1669	51	1	1721
0-24	1688	51	1	1740
20/05/2022				
7-19	1437	52	5	1494
6-22	1648	59	5	1712
6-24	1695	59	5	1759
0-24	1725	59	5	1789

Average				
7-19	1289	43	7	1340
6-22	1481	48	7	1536
6-24	1513	48	7	1568
0-24	1536	48	7	1592

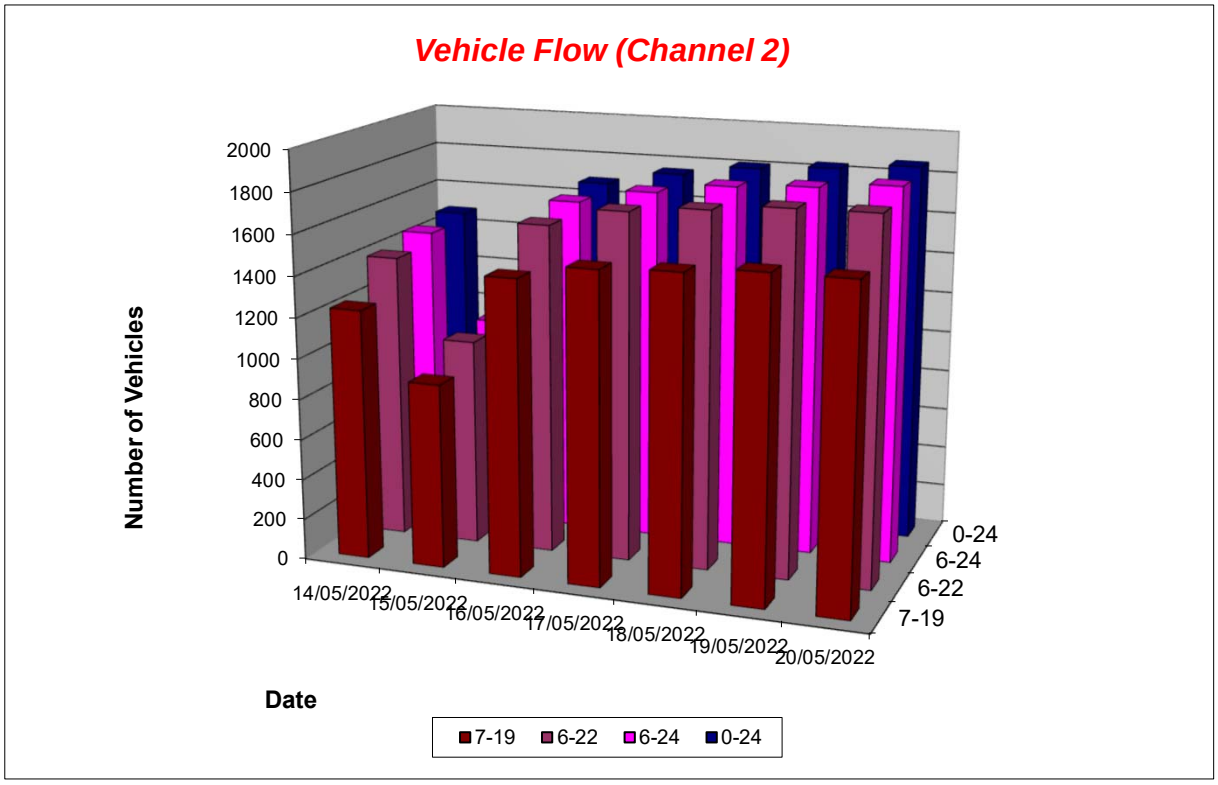


Denby Dale ATC, Cumberworth Road

Produced by Road Data Services Ltd.

Channel 2 - Southeastbound | **Vehicle Flow** | **Week 1**

Hr Ending	14/05/2022 Saturday	15/05/2022 Sunday	16/05/2022 Monday	17/05/2022 Tuesday	18/05/2022 Wednesday	19/05/2022 Thursday	20/05/2022 Friday	Weekday Average	Average
1	5	6	4	5	2	1	4	3	4
2	7	5	1	2	1	2	4	2	3
3	2	0	0	0	2	1	1	1	1
4	2	2	0	1	0	0	2	1	1
5	3	3	3	4	5	9	4	5	4
6	11	4	17	12	14	13	12	14	12
7	17	7	31	30	41	28	26	31	26
8	20	13	101	105	119	104	90	104	79
9	85	27	184	182	195	189	193	189	151
10	106	68	115	102	115	106	109	109	103
11	156	86	66	115	115	108	108	102	108
12	140	113	105	93	86	99	111	99	107
13	141	112	95	105	104	119	134	111	116
14	114	94	94	96	88	93	98	94	97
15	87	104	107	95	103	101	113	104	101
16	105	98	177	161	145	149	171	161	144
17	101	64	163	185	178	179	166	174	148
18	100	69	145	166	157	184	165	163	141
19	78	59	95	114	131	134	108	116	103
20	71	55	74	89	93	101	95	90	83
21	52	38	36	49	44	50	59	48	47
22	31	11	32	24	30	32	35	31	28
23	25	9	27	17	26	22	30	24	22
24	25	2	15	5	15	8	24	13	13
7-19	1233	907	1447	1519	1536	1565	1566	1527	1396
6-22	1404	1018	1620	1711	1744	1776	1781	1726	1579
6-24	1454	1029	1662	1733	1785	1806	1835	1764	1615
0-24	1484	1049	1687	1757	1809	1832	1862	1789	1640



Denby Dale ATC, Cumberworth Road

Produced by Road Data Services Ltd.

Channel 2 - Southeastbound **Average Speed** **Week 1**

Hr Ending	14/05/2022 Saturday	15/05/2022 Sunday	16/05/2022 Monday	17/05/2022 Tuesday	18/05/2022 Wednesday	19/05/2022 Thursday	20/05/2022 Friday
1	32.4	30.3	30.1	31.7	28.2	38.5	34.7
2	33.5	31.0	30.4	38.6	33.6	30.5	32.8
3	33.5	-	-	-	29.8	45.7	34.9
4	33.1	32.8	-	20.8	-	-	43.6
5	28.0	29.4	35.2	34.0	32.9	33.8	29.0
6	33.2	36.8	28.5	31.7	29.6	32.3	32.6
7	28.3	29.6	30.4	31.4	30.0	30.6	32.8
8	29.1	31.6	30.8	30.4	29.0	30.9	30.2
9	29.6	28.8	30.2	28.9	29.1	30.3	30.1
10	28.3	30.5	29.0	29.1	30.7	29.9	30.3
11	27.7	30.4	28.2	25.9	28.8	28.8	27.7
12	27.2	30.2	27.7	28.0	29.0	28.2	27.7
13	27.7	30.1	28.3	27.3	29.5	28.4	27.3
14	28.0	30.8	29.1	28.8	30.2	29.5	28.7
15	29.1	30.3	29.4	28.5	29.1	29.9	28.8
16	29.5	28.6	29.0	27.2	28.3	29.0	29.1
17	30.2	28.4	29.7	28.2	28.4	30.9	29.7
18	29.8	29.1	29.0	27.0	28.7	30.7	31.2
19	29.8	30.1	29.1	28.8	29.2	30.5	30.3
20	30.8	30.7	28.8	28.5	29.2	28.6	30.4
21	31.7	32.5	29.5	29.9	29.6	30.1	30.8
22	27.9	28.0	30.1	30.2	29.9	28.8	31.0
23	28.6	28.5	32.6	29.1	30.7	32.1	30.0
24	28.3	38.5	31.2	29.5	33.5	30.1	31.9
10-12	27.5	30.3	27.9	26.9	28.9	28.5	27.7
14-16	29.3	29.4	29.2	27.7	28.6	29.4	29.0
0-24	28.9	30.0	29.3	28.3	29.2	29.9	29.6

Average (ALL)	29.3
Weekday Inter-Peak	28.4

Channel 2 - Southeastbound **85th Percentile**

Hr Ending	14/05/2022 Saturday	15/05/2022 Sunday	16/05/2022 Monday	17/05/2022 Tuesday	18/05/2022 Wednesday	19/05/2022 Thursday	20/05/2022 Friday
1	39.0	36.5	36.3	37.1	33.6	-	37.3
2	39.5	34.8	-	43.0	-	34.0	35.4
3	34.1	-	-	-	34.2	-	-
4	35.0	33.0	-	-	-	-	53.5
5	37.8	33.5	37.7	35.7	38.3	39.0	35.2
6	38.0	41.8	34.1	36.3	39.0	36.6	36.6
7	34.8	32.3	37.7	37.3	36.0	39.3	39.8
8	35.6	35.9	37.8	35.3	36.2	37.7	36.4
9	35.3	35.2	35.6	35.1	34.4	35.6	34.9
10	33.7	35.4	34.3	33.8	35.5	34.8	35.3
11	32.7	36.3	32.9	31.3	34.1	33.9	34.3
12	32.1	34.6	32.9	33.9	33.9	33.5	33.0
13	32.6	35.4	33.4	31.8	34.7	34.0	33.1
14	33.2	36.8	34.1	34.0	36.0	35.6	34.0
15	34.2	34.8	34.3	33.7	33.8	35.0	33.6
16	33.6	33.8	34.1	32.7	33.7	34.1	34.3
17	35.7	33.3	34.8	32.7	32.9	35.4	34.8
18	35.7	34.7	35.1	31.6	34.3	35.4	36.6
19	35.5	35.3	34.2	34.0	34.1	36.2	35.2
20	36.5	35.3	34.4	34.0	34.4	34.7	35.9
21	37.5	38.2	34.5	34.6	33.7	35.9	35.2
22	32.1	34.7	34.7	34.6	34.8	34.1	36.3
23	35.2	38.9	38.3	33.6	34.0	38.7	34.3
24	36.7	40.0	36.9	35.3	40.5	37.9	38.7
10-12	32.4	35.4	32.9	32.7	34.1	33.7	33.7
14-16	33.9	34.3	34.2	33.2	33.8	34.5	34.0
0-24	34.4	35.4	34.8	33.7	34.6	35.5	35.1

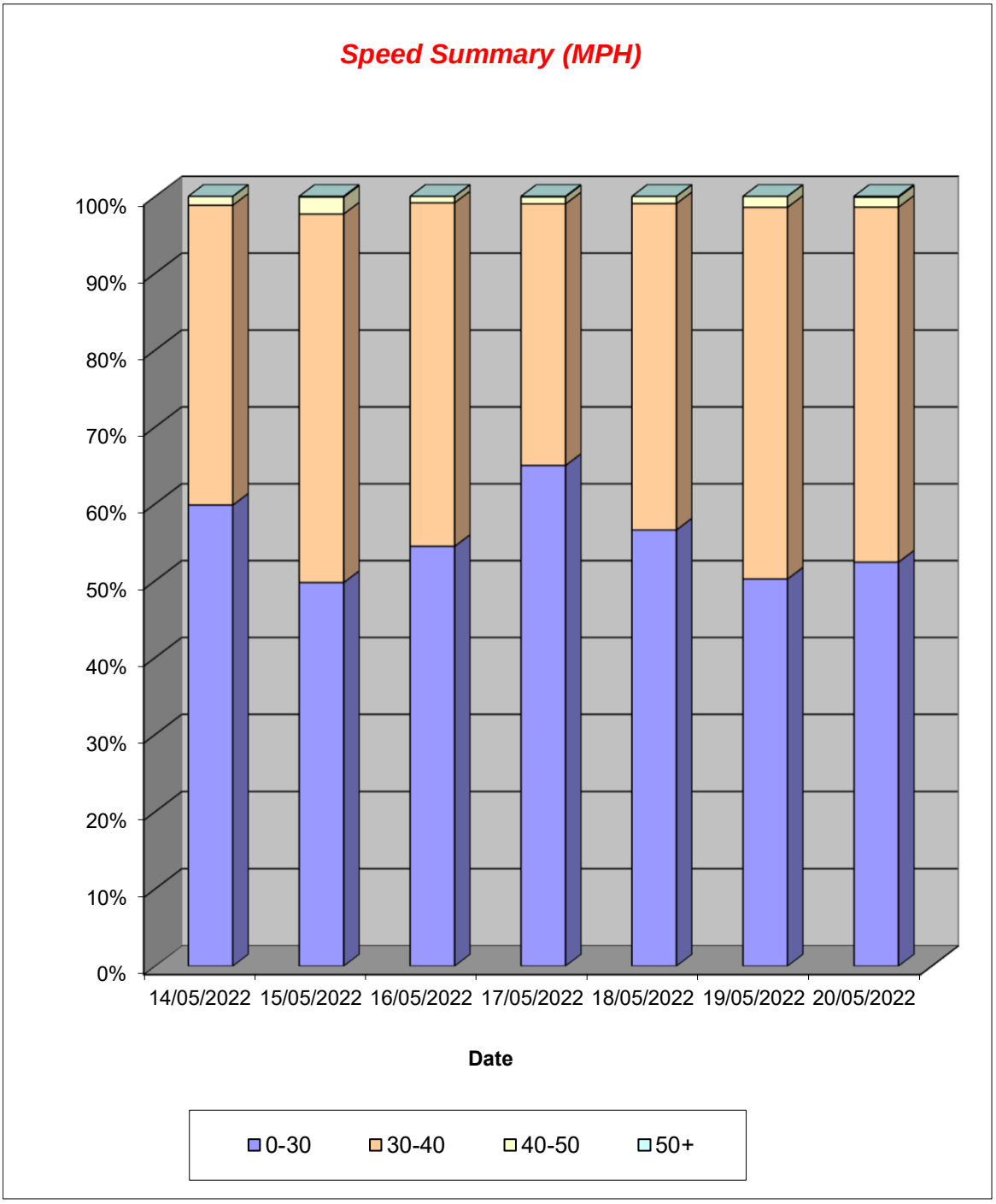
85th %ile (ALL)	34.8
Weekday Inter-Peak	33.7

Denby Dale ATC, Cumberworth Road

Produced by Road Data Services Ltd.

Channel 2 - Southeastbound | **Speed Summary** | **Week 1**

Speed (MPH)	14/05/2022 Saturday	15/05/2022 Sunday	16/05/2022 Monday	17/05/2022 Tuesday	18/05/2022 Wednesday	19/05/2022 Thursday	20/05/2022 Friday
0-30	888	522	919	1142	1024	920	976
30-40	579	503	754	598	768	886	860
40-50	17	23	14	16	17	26	24
50+	0	1	0	1	0	0	2
TOTAL	**1484**	**1049**	**1687**	**1757**	**1809**	**1832**	**1862**



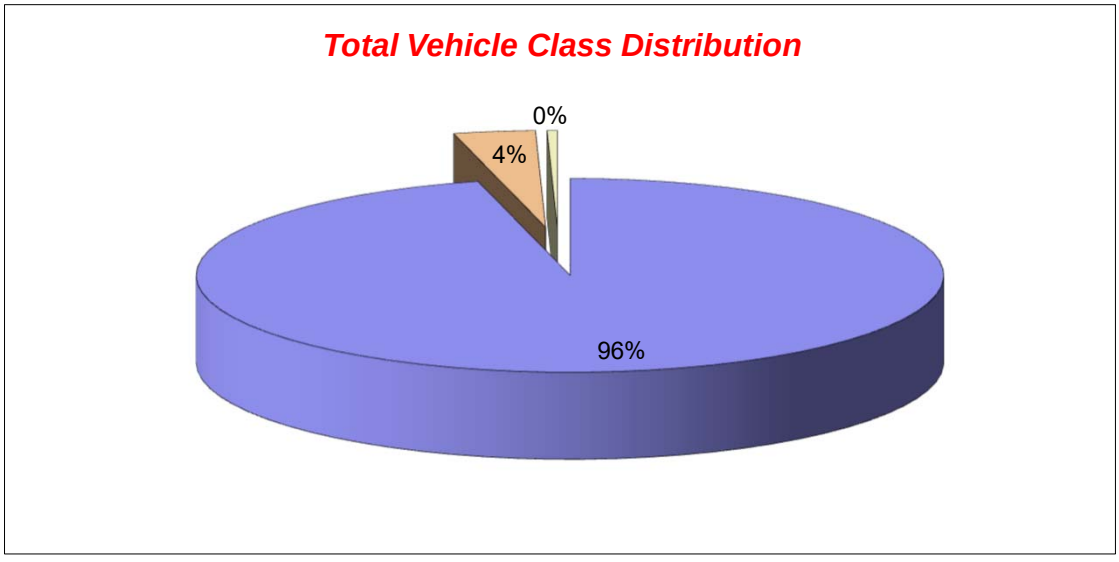
Denby Dale ATC, Cumberworth Road

Produced by Road Data Services Ltd.

Channel 2 - Southeastbound | **Vehicle Class** | **Week 1**

Classes / Day / Time	Car / LGV / Caravan - 1	OGV1 / Bus - 2,3,5,6,7,12	OGV2 - 4,8,9,10,11,13	TOTAL - 1-13
14/05/2022				
7-19	1191	37	5	1233
6-22	1361	38	5	1404
6-24	1410	39	5	1454
0-24	1440	39	5	1484
15/05/2022				
7-19	883	22	2	907
6-22	992	24	2	1018
6-24	1003	24	2	1029
0-24	1023	24	2	1049
16/05/2022				
7-19	1385	55	7	1447
6-22	1553	59	8	1620
6-24	1595	59	8	1662
0-24	1619	59	9	1687
17/05/2022				
7-19	1445	64	10	1519
6-22	1633	68	10	1711
6-24	1655	68	10	1733
0-24	1679	68	10	1757
18/05/2022				
7-19	1458	68	10	1536
6-22	1657	76	11	1744
6-24	1698	76	11	1785
0-24	1722	76	11	1809
19/05/2022				
7-19	1496	62	7	1565
6-22	1698	70	8	1776
6-24	1728	70	8	1806
0-24	1754	70	8	1832
20/05/2022				
7-19	1499	63	4	1566
6-22	1708	69	4	1781
6-24	1762	69	4	1835
0-24	1788	69	5	1862

Average				
7-19	1337	53	6	1396
6-22	1515	58	7	1579
6-24	1550	58	7	1615
0-24	1575	58	7	1640



Road Data Services Ltd

Denby Dale
Wednesday 11th May 2022
Junction: 1
Approach: Cumberworth Road

	Left to A636 Wakefield Road (E)									Right to A636 Wakefield Road (W)								
TIME	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	PCUs	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	PCUs
07:30 - 07:45	0	0	3	5	0	0	0	**8**	**8.0**	0	0	7	1	0	0	0	**8**	**8.0**
07:45 - 08:00	0	0	9	2	1	0	0	**12**	**12.5**	0	0	9	2	0	0	0	**11**	**11.0**
Hourly Total	**0**	**0**	**12**	**7**	**1**	**0**	**0**	**20**	**20.5**	**0**	**0**	**16**	**3**	**0**	**0**	**0**	**19**	**19.0**
08:00 - 08:15	0	0	23	4	0	2	0	**29**	**31.6**	0	0	6	0	0	0	0	**6**	**6.0**
08:15 - 08:30	0	0	26	3	0	0	0	**29**	**29.0**	0	0	7	1	1	0	0	**9**	**9.5**
08:30 - 08:45	0	0	49	4	1	1	0	**55**	**56.8**	0	0	9	4	0	0	1	**14**	**15.0**
08:45 - 09:00	0	0	31	2	0	1	0	**34**	**35.3**	0	0	11	2	0	0	0	**13**	**13.0**
Hourly Total	**0**	**0**	**129**	**13**	**1**	**4**	**0**	**147**	**152.7**	**0**	**0**	**33**	**7**	**1**	**0**	**1**	**42**	**43.5**
09:00 - 09:15	0	0	18	3	0	1	0	**22**	**23.3**	0	0	17	0	0	1	0	**18**	**19.3**
09:15 - 09:30	0	0	15	4	1	0	0	**20**	**20.5**	0	0	8	1	0	0	0	**9**	**9.0**
Hourly Total	**0**	**0**	**33**	**7**	**1**	**1**	**0**	**42**	**43.8**	**0**	**0**	**25**	**1**	**0**	**1**	**0**	**27**	**28.3**
TOTAL	**0**	**0**	**174**	**27**	**3**	**5**	**0**	**209**	**217.0**	**0**	**0**	**74**	**11**	**1**	**1**	**1**	**88**	**90.8**
16:00 - 16:15	0	0	26	1	0	0	0	**27**	**27.0**	0	0	12	3	0	0	1	**16**	**17.0**
16:15 - 16:30	0	1	29	2	1	0	0	**33**	**32.9**	0	0	9	1	0	0	0	**10**	**10.0**
16:30 - 16:45	0	0	24	6	0	0	0	**30**	**30.0**	0	0	12	2	0	0	0	**14**	**14.0**
16:45 - 17:00	0	0	31	4	0	1	0	**36**	**37.3**	0	0	15	1	0	0	0	**16**	**16.0**
Hourly Total	**0**	**1**	**110**	**13**	**1**	**1**	**0**	**126**	**127.2**	**0**	**0**	**48**	**7**	**0**	**0**	**1**	**56**	**57.0**
17:00 - 17:15	1	0	23	4	0	0	0	**28**	**27.2**	0	0	13	1	0	0	1	**15**	**16.0**
17:15 - 17:30	0	0	27	2	1	0	0	**30**	**30.5**	0	0	11	1	0	0	0	**12**	**12.0**
17:30 - 17:45	0	0	36	4	0	0	0	**40**	**40.0**	0	0	14	0	0	0	0	**14**	**14.0**
17:45 - 18:00	0	0	27	3	0	0	0	**30**	**30.0**	0	0	8	1	0	0	0	**9**	**9.0**
Hourly Total	**1**	**0**	**113**	**13**	**1**	**0**	**0**	**128**	**127.7**	**0**	**0**	**46**	**3**	**0**	**0**	**1**	**50**	**51.0**
TOTAL	**1**	**1**	**223**	**26**	**2**	**1**	**0**	**254**	**254.9**	**0**	**0**	**94**	**10**	**0**	**0**	**2**	**106**	**108.0**

PCU Factors:	
CYCLE	0.2
M/CYCLE	0.4
CAR	1.0
LGV	1.0
OGV1	1.5
OGV2	2.3
BUS	2.0

Road Data Services Ltd

Denby Dale
Wednesday 11th May 2022
Junction: 1
Approach: A636 Wakefield Road East

	Ahead to A636 Wakefield Road (W)									Right to Cumberworth Road								
TIME	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	PCUs	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	PCUs
07:30 - 07:45	0	0	55	11	0	3	1	**70**	**74.9**	0	0	20	3	0	0	0	**23**	**23.0**
07:45 - 08:00	0	0	49	9	1	0	0	**59**	**59.5**	0	0	28	2	0	0	0	**30**	**30.0**
Hourly Total	**0**	**0**	**104**	**20**	**1**	**3**	**1**	**129**	**134.4**	**0**	**0**	**48**	**5**	**0**	**0**	**0**	**53**	**53.0**
08:00 - 08:15	0	1	44	14	1	1	0	**61**	**62.2**	0	0	48	1	0	0	0	**49**	**49.0**
08:15 - 08:30	0	0	47	7	1	0	1	**56**	**57.5**	0	0	26	4	1	0	0	**31**	**31.5**
08:30 - 08:45	0	0	43	4	0	1	1	**49**	**51.3**	0	0	16	6	0	1	0	**23**	**24.3**
08:45 - 09:00	0	1	51	8	2	2	0	**64**	**67.0**	0	0	21	3	0	0	0	**24**	**24.0**
Hourly Total	**0**	**2**	**185**	**33**	**4**	**4**	**2**	**230**	**238.0**	**0**	**0**	**111**	**14**	**1**	**1**	**0**	**127**	**128.8**
09:00 - 09:15	1	0	49	6	1	2	1	**60**	**63.3**	0	0	18	5	0	0	0	**23**	**23.0**
09:15 - 09:30	0	0	41	7	0	0	2	**50**	**52.0**	0	0	15	4	0	0	0	**19**	**19.0**
Hourly Total	**1**	**0**	**90**	**13**	**1**	**2**	**3**	**110**	**115.3**	**0**	**0**	**33**	**9**	**0**	**0**	**0**	**42**	**42.0**
TOTAL	**1**	**2**	**379**	**66**	**6**	**9**	**6**	**469**	**487.7**	**0**	**0**	**192**	**28**	**1**	**1**	**0**	**222**	**223.8**
16:00 - 16:15	0	0	79	13	1	1	2	**96**	**99.8**	0	0	20	2	0	1	0	**23**	**24.3**
16:15 - 16:30	0	1	70	17	0	1	0	**89**	**89.7**	0	0	19	1	0	0	0	**20**	**20.0**
16:30 - 16:45	0	2	72	16	0	3	1	**94**	**97.7**	0	0	21	5	0	0	0	**26**	**26.0**
16:45 - 17:00	0	0	75	14	2	0	1	**92**	**94.0**	0	0	25	4	0	0	0	**29**	**29.0**
Hourly Total	**0**	**3**	**296**	**60**	**3**	**5**	**4**	**371**	**381.2**	**0**	**0**	**85**	**12**	**0**	**1**	**0**	**98**	**99.3**
17:00 - 17:15	0	1	76	12	0	0	0	**89**	**88.4**	0	0	23	2	0	0	0	**25**	**25.0**
17:15 - 17:30	0	0	82	7	0	1	1	**91**	**93.3**	0	0	22	1	0	0	0	**23**	**23.0**
17:30 - 17:45	3	1	95	4	0	1	0	**104**	**102.3**	0	0	29	4	0	0	0	**33**	**33.0**
17:45 - 18:00	0	2	79	9	1	0	0	**91**	**90.3**	0	0	17	2	0	0	0	**19**	**19.0**
Hourly Total	**3**	**4**	**332**	**32**	**1**	**2**	**1**	**375**	**374.3**	**0**	**0**	**91**	**9**	**0**	**0**	**0**	**100**	**100.0**
TOTAL	**3**	**7**	**628**	**92**	**4**	**7**	**5**	**746**	**755.5**	**0**	**0**	**176**	**21**	**0**	**1**	**0**	**198**	**199.3**

PCU Factors:	
CYCLE	0.2
M/CYCLE	0.4
CAR	1.0
LGV	1.0
OGV1	1.5
OGV2	2.3
BUS	2.0

Road Data Services Ltd

Denby Dale
Wednesday 11th May 2022
Junction: 1
Approach: A636 Wakefield Road West

	Left to Cumberworth Road									Ahead to A636 Wakefield Road (E)								
TIME	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	PCUs	CYCLE	M/CYCLE	CAR	LGV	OGV1	OGV2	BUS	TOTAL	PCUs
07:30 - 07:45	0	0	6	0	0	1	1	8	10.3	0	1	83	14	0	2	1	101	104.0
07:45 - 08:00	0	0	8	1	0	0	0	9	9.0	0	2	77	12	2	0	0	93	92.8
Hourly Total	**0**	**0**	**14**	**1**	**0**	**1**	**1**	**17**	**19.3**	**0**	**3**	**160**	**26**	**2**	**2**	**1**	**194**	**196.8**
08:00 - 08:15	0	0	14	2	0	1	0	17	18.3	0	0	72	17	1	2	1	93	97.1
08:15 - 08:30	0	0	10	1	1	0	0	12	12.5	0	0	79	11	0	0	0	90	90.0
08:30 - 08:45	0	0	11	3	0	0	1	15	16.0	0	0	74	16	1	1	1	93	95.8
08:45 - 09:00	0	0	7	1	0	0	1	9	10.0	0	0	81	9	1	0	1	92	93.5
Hourly Total	**0**	**0**	**42**	**7**	**1**	**1**	**2**	**53**	**56.8**	**0**	**0**	**306**	**53**	**3**	**3**	**3**	**368**	**376.4**
09:00 - 09:15	0	0	6	1	1	0	0	8	8.5	1	0	68	7	1	2	0	79	81.3
09:15 - 09:30	0	0	8	2	1	0	0	11	11.5	0	1	61	6	0	0	1	69	69.4
Hourly Total	**0**	**0**	**14**	**3**	**2**	**0**	**0**	**19**	**20.0**	**1**	**1**	**129**	**13**	**1**	**2**	**1**	**148**	**150.7**
TOTAL	**0**	**0**	**70**	**11**	**3**	**2**	**3**	**89**	**96.1**	**1**	**4**	**595**	**92**	**6**	**7**	**5**	**710**	**723.9**
16:00 - 16:15	0	0	9	1	0	0	0	10	10.0	0	0	55	9	0	2	1	67	70.6
16:15 - 16:30	0	0	7	1	1	0	0	9	9.5	0	0	44	7	0	1	0	52	53.3
16:30 - 16:45	0	0	6	2	0	0	0	8	8.0	0	0	38	14	0	0	1	53	54.0
16:45 - 17:00	0	0	9	1	0	0	0	10	10.0	0	1	46	12	1	0	1	61	61.9
Hourly Total	**0**	**0**	**31**	**5**	**1**	**0**	**0**	**37**	**37.5**	**0**	**1**	**183**	**42**	**1**	**3**	**3**	**233**	**239.8**
17:00 - 17:15	0	0	15	3	0	0	0	18	18.0	1	0	47	9	1	1	2	61	64.0
17:15 - 17:30	0	0	7	1	0	0	0	8	8.0	0	0	43	7	1	0	1	52	53.5
17:30 - 17:45	0	0	3	0	0	0	0	3	3.0	0	0	51	10	0	0	1	62	63.0
17:45 - 18:00	0	0	5	1	0	0	0	6	6.0	0	0	41	8	0	0	0	49	49.0
Hourly Total	**0**	**0**	**30**	**5**	**0**	**0**	**0**	**35**	**35.0**	**1**	**0**	**182**	**34**	**2**	**1**	**4**	**224**	**229.5**
TOTAL	**0**	**0**	**61**	**10**	**1**	**0**	**0**	**72**	**72.5**	**1**	**1**	**365**	**76**	**3**	**4**	**7**	**457**	**469.3**

PCU Factors:	
CYCLE	0.2
M/CYCLE	0.4
CAR	1.0
LGV	1.0
OGV1	1.5
OGV2	2.3
BUS	2.0

APPENDIX E: TRICS Data Output

Calculation Reference: AUDIT-724101-200904-0997

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	ES	EAST SUSSEX	1 days
	KC	KENT	1 days
	SC	SURREY	1 days
	WS	WEST SUSSEX	1 days
04	**EAST ANGLIA**		
	NF	NORFOLK	3 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	NY	NORTH YORKSHIRE	1 days
16	**ULSTER (REPUBLIC OF IRELAND)**		
	CV	CAVAN	1 days
17	**ULSTER (NORTHERN IRELAND)**		
	AN	ANTRIM	1 days
	DO	DOWN	1 days

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

Primary Filtering selection:

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

Parameter: No of Dwellings
Actual Range: 70 to 151 (units:)
Range Selected by User: 70 to 180 (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: 01/01/12 to 20/10/20

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

Selected survey days:

Monday	1 days
Tuesday	2 days
Wednesday	4 days
Thursday	3 days
Friday	1 days

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

Selected survey types:

Manual count	9 days
Directional ATC Count	2 days

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

Selected Locations:

Edge of Town	11

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	8
No Sub Category	3

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.

Secondary Filtering selection:

Use Class:

C3	11 days

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

Population within 1 mile:

1,001 to 5,000	3 days
5,001 to 10,000	4 days
10,001 to 15,000	2 days
15,001 to 20,000	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	2 days
25,001 to 50,000	2 days
75,001 to 100,000	4 days
100,001 to 125,000	1 days
125,001 to 250,000	2 days

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

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	7 days
1.6 to 2.0	1 days

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

Travel Plan:

Yes	4 days
No	7 days

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

PTAL Rating:

No PTAL Present	11 days

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

LIST OF SITES relevant to selection parameters

1 **AN-03-A-09** **DETACHED & SEMI-DETACHED** **ANTRIM**
SLOEFIELD DRIVE
CARRICKFERGUS

Edge of Town
No Sub Category
Total No of Dwellings: 151
Survey date: WEDNESDAY *12/10/16* *Survey Type: MANUAL*

2 **CV-03-A-02** **DETACHED & SEMI DETACHED** **CAVAN**
R212 DUBLIN ROAD
CAVAN
KILLYNEBBER
Edge of Town
No Sub Category
Total No of Dwellings: 80
Survey date: MONDAY *22/05/17* *Survey Type: MANUAL*

3 **DO-03-A-03** **DETACHED/SEMI DETACHED** **DOWN**
OLD MILL HEIGHTS
BELFAST
DUNDONALD
Edge of Town
Residential Zone
Total No of Dwellings: 79
Survey date: WEDNESDAY *23/10/13* *Survey Type: MANUAL*

4 **ES-03-A-05** **MIXED HOUSES & FLATS** **EAST SUSSEX**
RATTLE ROAD
NEAR EASTBOURNE
STONE CROSS
Edge of Town
Residential Zone
Total No of Dwellings: 99
Survey date: WEDNESDAY *05/06/19* *Survey Type: MANUAL*

5 **KC-03-A-04** **SEMI-DETACHED & TERRACED** **KENT**
KILN BARN ROAD
AYLESFORD
DITTON
Edge of Town
Residential Zone
Total No of Dwellings: 110
Survey date: FRIDAY *22/09/17* *Survey Type: MANUAL*

6 **NF-03-A-04** **MIXED HOUSES** **NORFOLK**
NORTH WALSHAM ROAD
NORTH WALSHAM

Edge of Town
Residential Zone
Total No of Dwellings: 70
Survey date: WEDNESDAY *18/09/19* *Survey Type: MANUAL*

7 **NF-03-A-14** **MIXED HOUSES** **NORFOLK**
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total No of Dwellings: 150
Survey date: THURSDAY *05/10/17* *Survey Type: DIRECTIONAL ATC COUNT*

8 **NF-03-A-16** **MIXED HOUSES & FLATS** **NORFOLK**
NORWICH COMMON
WYMONDHAM

Edge of Town
Residential Zone
Total No of Dwellings: 138
Survey date: TUESDAY *20/10/15* *Survey Type: DIRECTIONAL ATC COUNT*

LIST OF SITES relevant to selection parameters (Cont.)

9 **NY-03-A-10** **HOUSES AND FLATS** **NORTH YORKSHIRE**
BOROUGHBRIDGE ROAD
RIPON

Edge of Town
No Sub Category
Total No of Dwellings: 71
Survey date: TUESDAY *17/09/13* *Survey Type: MANUAL*

10 **SC-03-A-04** **DETACHED & TERRACED** **SURREY**
HIGH ROAD
BYFLEET

Edge of Town
Residential Zone
Total No of Dwellings: 71
Survey date: THURSDAY *23/01/14* *Survey Type: MANUAL*

11 **WS-03-A-04** **MIXED HOUSES** **WEST SUSSEX**
HILLS FARM LANE
HORSHAM
BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total No of Dwellings: 151
Survey date: THURSDAY *11/12/14* *Survey Type: MANUAL*

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
DN-03-A-04	Location
DN-03-A-05	Location
DV-03-A-02	Location
DV-03-A-03	Location
ES-03-A-04	Location
EX-03-A-02	Location
FA-03-A-02	Location
HF-03-A-03	Location
LT-03-A-01	Location
NF-03-A-02	Location
SF-03-A-07	Location
TY-03-A-02	Location
WS-03-A-08	Location
WS-03-A-10	Location

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

VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	11	106	0.081	11	106	0.308	11	106	0.389
08:00 - 09:00	11	106	0.168	**11**	**106**	**0.441**	**11**	**106**	**0.609**
09:00 - 10:00	11	106	0.182	11	106	0.205	11	106	0.387
10:00 - 11:00	11	106	0.147	11	106	0.175	11	106	0.322
11:00 - 12:00	11	106	0.141	11	106	0.172	11	106	0.313
12:00 - 13:00	11	106	0.174	11	106	0.155	11	106	0.329
13:00 - 14:00	11	106	0.191	11	106	0.187	11	106	0.378
14:00 - 15:00	11	106	0.176	11	106	0.211	11	106	0.387
15:00 - 16:00	11	106	0.279	11	106	0.203	11	106	0.482
16:00 - 17:00	11	106	0.313	11	106	0.197	11	106	0.510
17:00 - 18:00	**11**	**106**	**0.398**	11	106	0.185	11	106	0.583
18:00 - 19:00	11	106	0.307	11	106	0.185	11	106	0.492
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.557			2.624			5.181

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:	70 - 151 (units:)
Survey date date range:	01/01/12 - 18/09/19
Number of weekdays (Monday-Friday):	11
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	14

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.

APPENDIX F: Traffic Distribution / Assignment

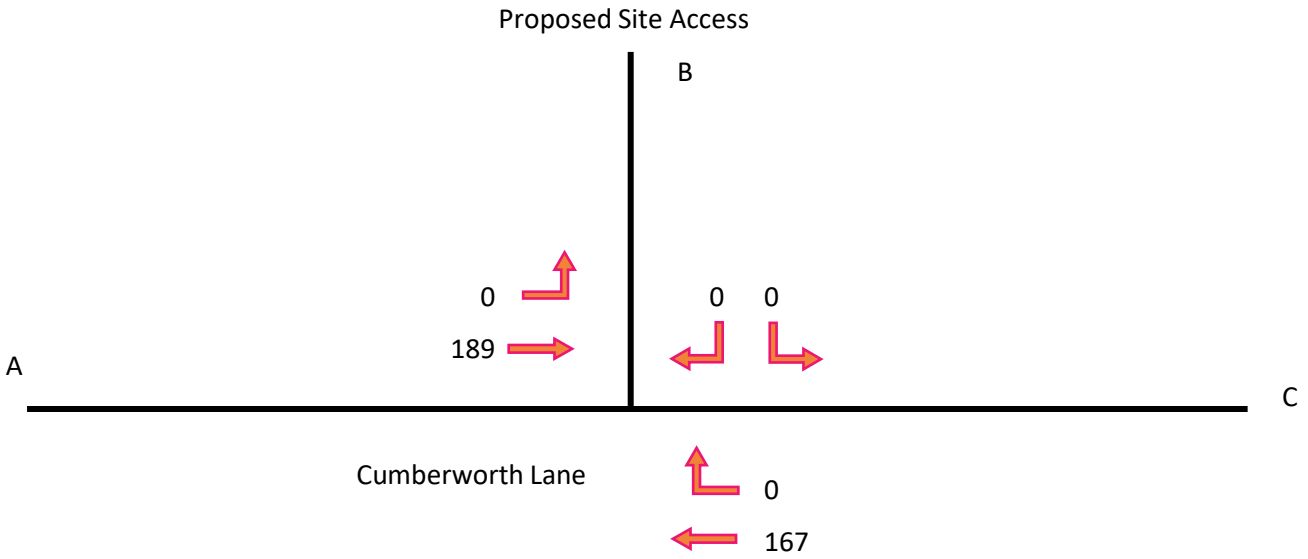
WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)

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population	All usual residents aged 16 and over in employment the week before the census
units	Persons
date	2011
usual residence	E02002327 : Kirklees 057 (2011 super output area - middle layer)

place of work	**Driving a car or van**			N	S	
Wakefield	392	1			392	
E02002327 : Kirklees 057	374	1			374	
Leeds	366	1			366	
Barnsley	315	1			315	
E02002299 : Kirklees 029	162	1		162		
E02002324 : Kirklees 054	127	1		127		
Sheffield	124	1			124	
E02002326 : Kirklees 056	117	0.5	0.5	58.5	58.5	
E02002312 : Kirklees 042	85	1		85		
E02002329 : Kirklees 059	83	1			83	
Bradford	83	1		83		
Calderdale	77	1		77		
E02002321 : Kirklees 051	75	1		75		
Rotherham	45	1			45	
E02002295 : Kirklees 025	34	1		34		
E02002328 : Kirklees 058	34	1			34	
E02002304 : Kirklees 034	33	0.5	0.5	16.5	16.5	
E02002313 : Kirklees 043	29	0.5	0.5	14.5	14.5	
E02002287 : Kirklees 017	26	1			26	
E02002316 : Kirklees 046	25	1		25		
E02002323 : Kirklees 053	24	1			24	
E02002315 : Kirklees 045	22	0.5	0.5	11	11	
E02002318 : Kirklees 048	22	0.5	0.5	11	11	
Doncaster	22	1			22	
E02002303 : Kirklees 033	21	0.5	0.5	10.5	10.5	
E02002302 : Kirklees 032	20	1		20		
E02002307 : Kirklees 037	20	1		20		
E02002309 : Kirklees 039	20	0.5	0.5	10	10	
E02002294 : Kirklees 024	19	1			19	
E02002296 : Kirklees 026	19	1		19		
E02002301 : Kirklees 031	16	0.5	0.5	8	8	
E02002292 : Kirklees 022	15	1		15		
E02002319 : Kirklees 049	15	1			15	
E02002280 : Kirklees 010	14	1			14	
E02002286 : Kirklees 016	14	1			14	
E02002283 : Kirklees 013	13	1			13	
E02002284 : Kirklees 014	13	1			13	
E02002272 : Kirklees 002	12	1			12	
E02002275 : Kirklees 005	12	1		12		
Manchester	12	0.5	0.5	6	6	
E02002314 : Kirklees 044	11	1		11		
York	10	1			10	
E02002325 : Kirklees 055	9	1			9	
Harrogate	9	1			9	
E02002273 : Kirklees 003	8	1			8	
E02002285 : Kirklees 015	8	1		8		
Oldham	8	1			8	
Selby	8	1			8	
E02002281 : Kirklees 011	7	0.5	0.5	3.5	3.5	
E02002317 : Kirklees 047	7	0.5	0.5	3.5	3.5	
E02002322 : Kirklees 052	7	1			7	
Tameside	7	1			7	
E02002293 : Kirklees 023	6	0.5	0.5	3	3	
E02002310 : Kirklees 040	6	1		6		
E02002320 : Kirklees 050	6	1			6	
Warrington	6	1			6	
Trafford	6	1			6	
E02002276 : Kirklees 006	5	1			5	
E02002289 : Kirklees 019	5	1			5	
E02002291 : Kirklees 021	5	1			5	
Bury	5	0.5	0.5	2.5	2.5	
Rochdale	5	0.5	0.5	2.5	2.5	
E02002271 : Kirklees 001	4	1			4	
E02002277 : Kirklees 007	4	1			4	
E02002279 : Kirklees 009	4	1			4	
E02002288 : Kirklees 018	4	1			4	
Cheshire East	4	0.5	0.5	2	2	
Preston	4	0.5	0.5	2	2	
Stockport	4	0.5	0.5	2	2	
Hambleton	4	1			4	
Hillingdon	4	1			4	
E02002297 : Kirklees 027	3	1		3		
E02002298 : Kirklees 028	3	1			3	
E02002300 : Kirklees 030	3	1		3		
E02002305 : Kirklees 035	3	1		3		
E02002308 : Kirklees 038	3	1			3	
E02002311 : Kirklees 041	3	0.5	0.5	1.5	1.5	
E02002306 : Kirklees 036	2	0.5	0.5	1	1	
				957.5	2203.5	3161
				30%	70%	

APPENDIX G: Traffic Flow Diagrams



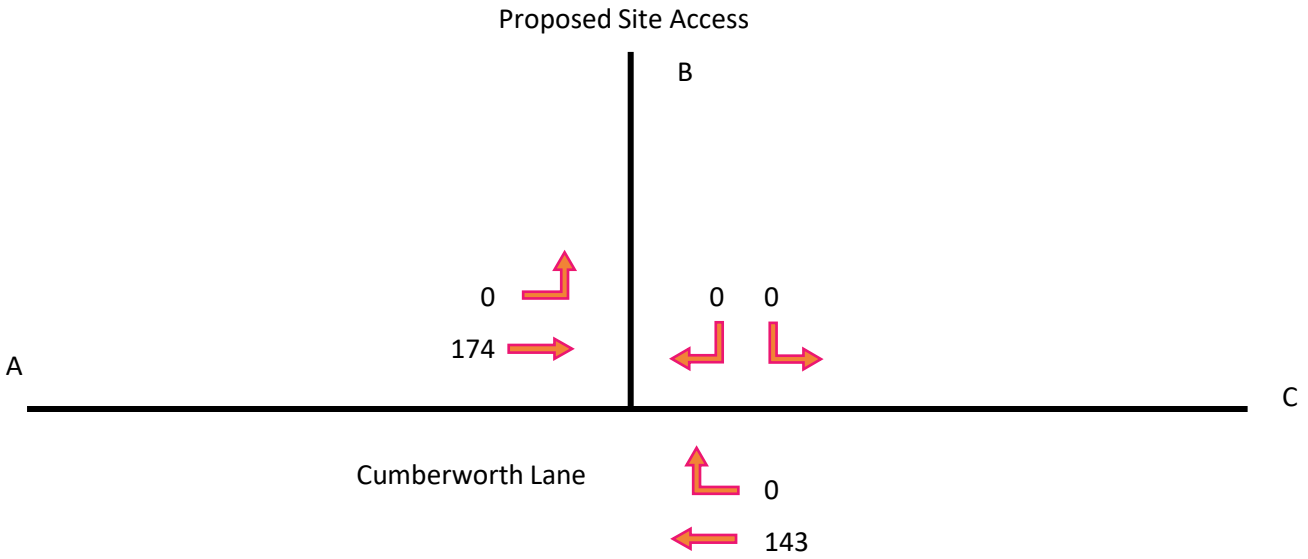
VIASOLUTIONS

Cliff Lane, Denby Dale

FIGURE 2

2022 AM FLOWS

(FLOWS IN PCUs)



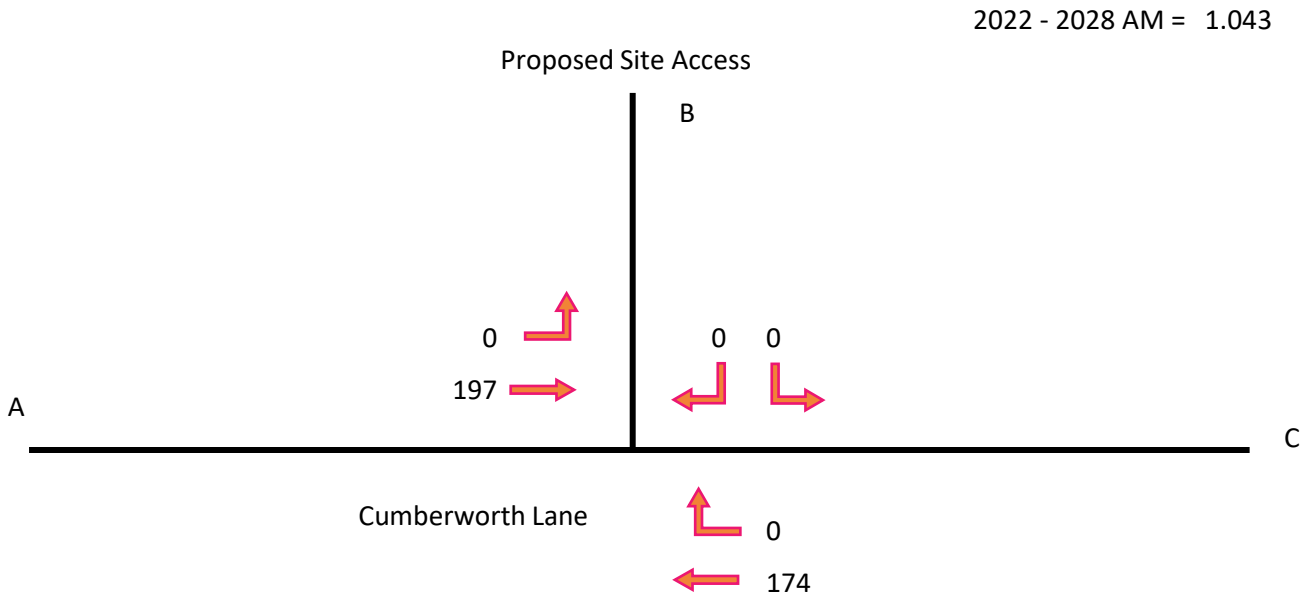
VIASOLUTIONS

Cliff Lane, Denby Dale

FIGURE 3

2022 PM FLOWS

(FLOWS IN PCUs)



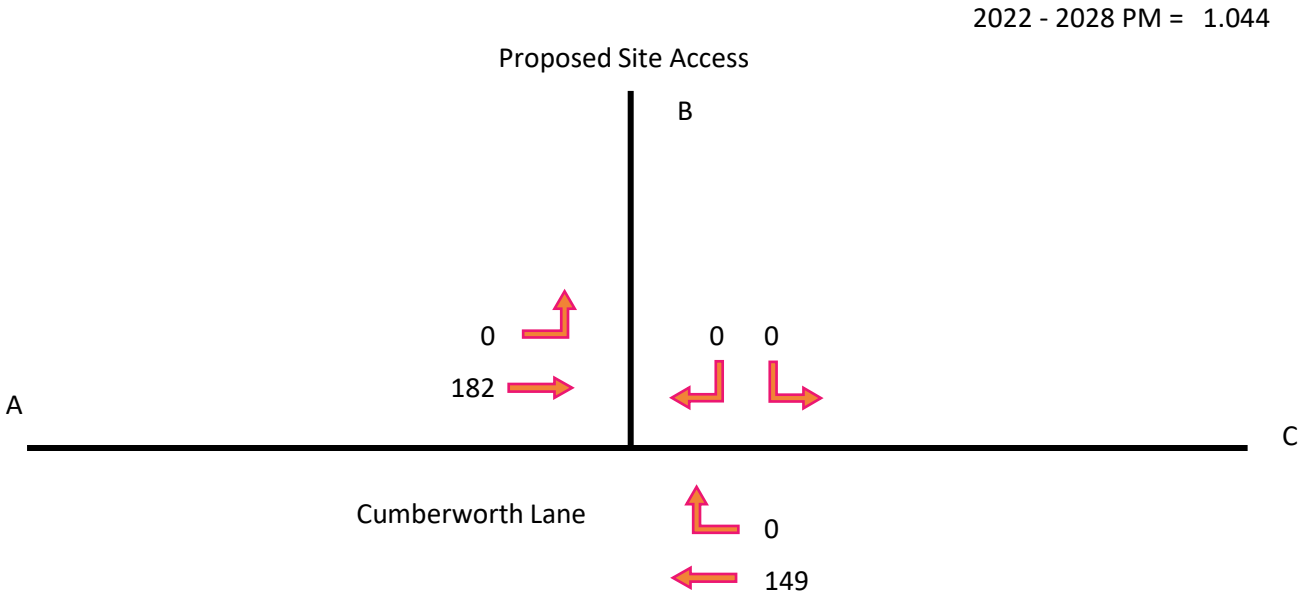
VIASOLUTIONS

Cliff Lane, Denby Dale

FIGURE 4

2028 AM FLOWS

(FLOWS IN PCUs)



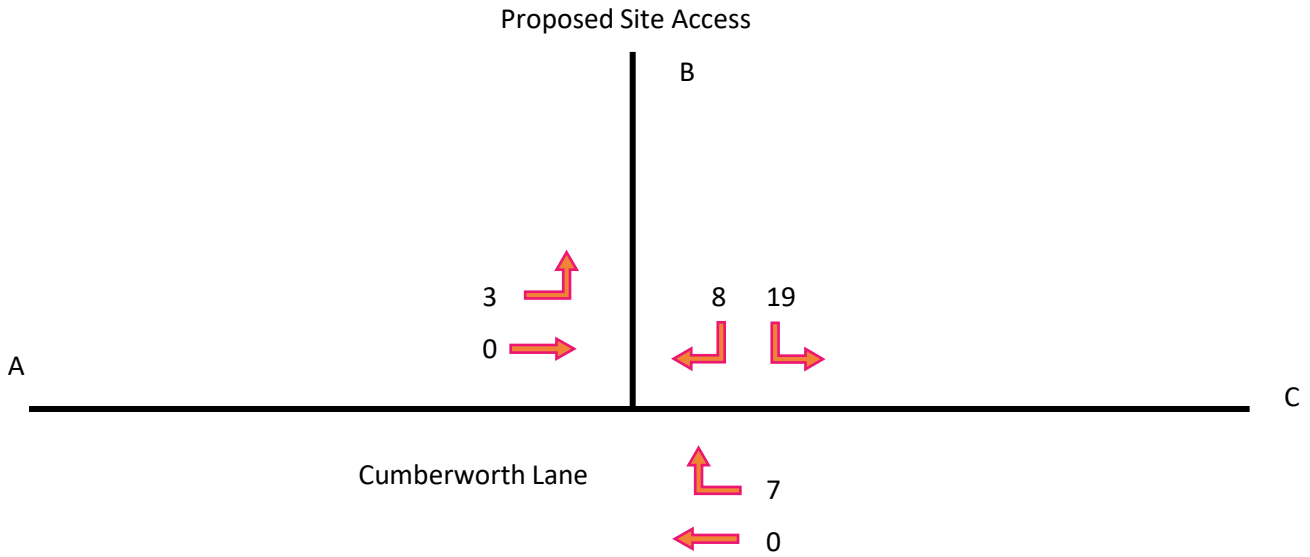
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Cliff Lane, Denby Dale

FIGURE 5

2028 PM FLOWS

(FLOWS IN PCUs)



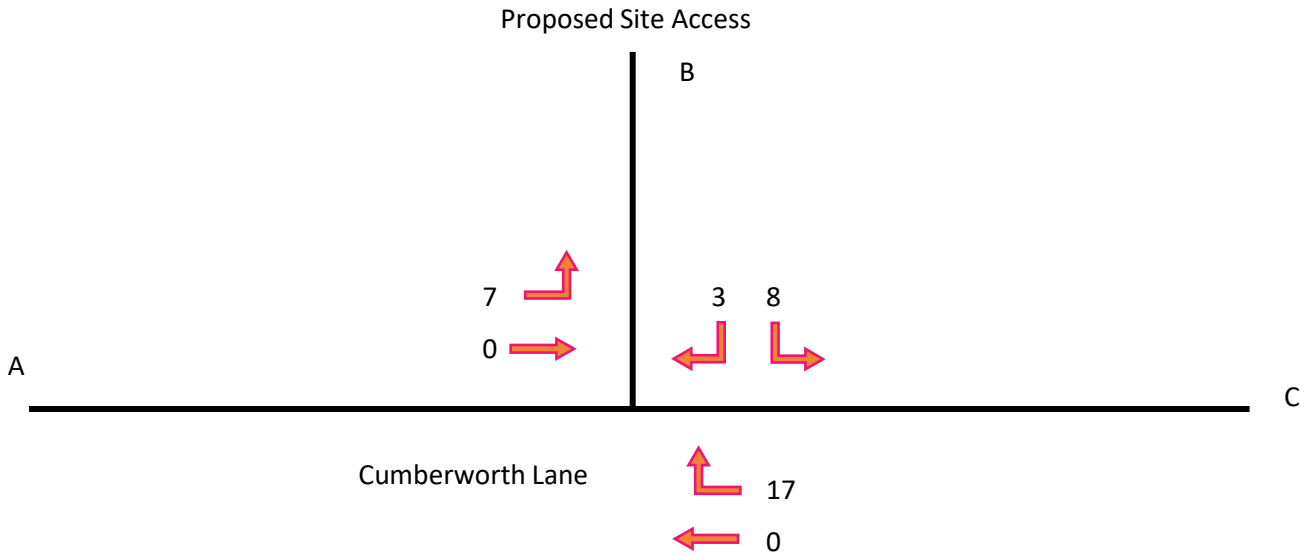
VIASOLUTIONS

Cliff Lane, Denby Dale

FIGURE 6

DEV AM FLOWS

(FLOWS IN PCUs)



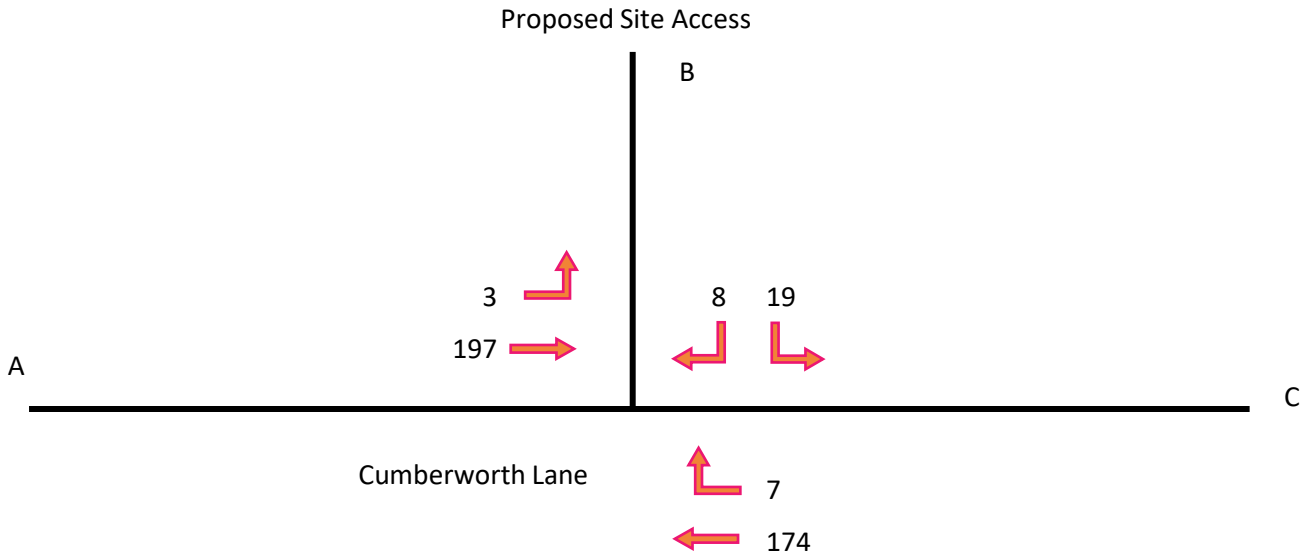
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FIGURE 7

DEV PM FLOWS

(FLOWS IN PCUs)



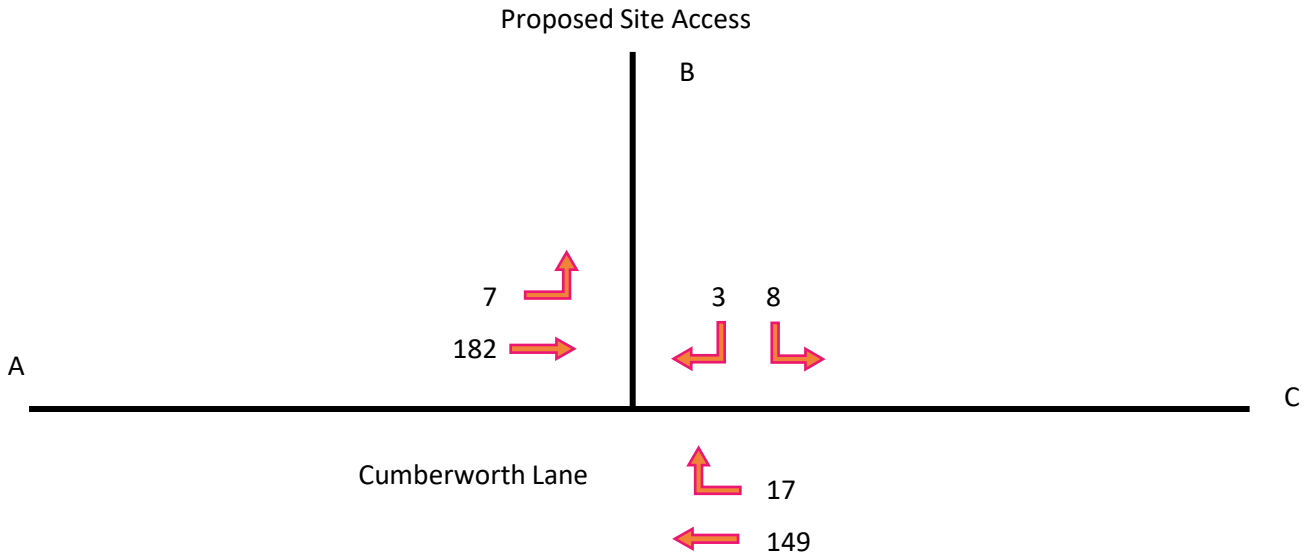
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FIGURE 8

2028 + DEV AM FLOWS

(FLOWS IN PCUs)



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FIGURE 9

2028 + DEV PM FLOWS

(FLOWS IN PCUs)

APPENDIX H: PICADY Output

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
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Filename: Cumberworth Lane_Site Access.j9
Path: C:\Users\highw\Via Solutions\CompanyShare - Documents\VIA Projects\21000s\21115 Denby Dale\2023\PICADY
Report generation date: 12/07/2023 16:42:41

»2028 Base + Dev, AM
»2028 Base + Dev, PM

Summary of junction performance

	AM						PM					
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Network Residual Capacity
	2028 Base + Dev											
Stream B-AC	D1	0.1	6.91	0.05	A	367 %	D2	0.0	6.58	0.02	A	453 %
Stream C-AB		0.0	5.14	0.01	A	[Stream B-AC]		0.0	5.28	0.03	A	[Stream B-AC]

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

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

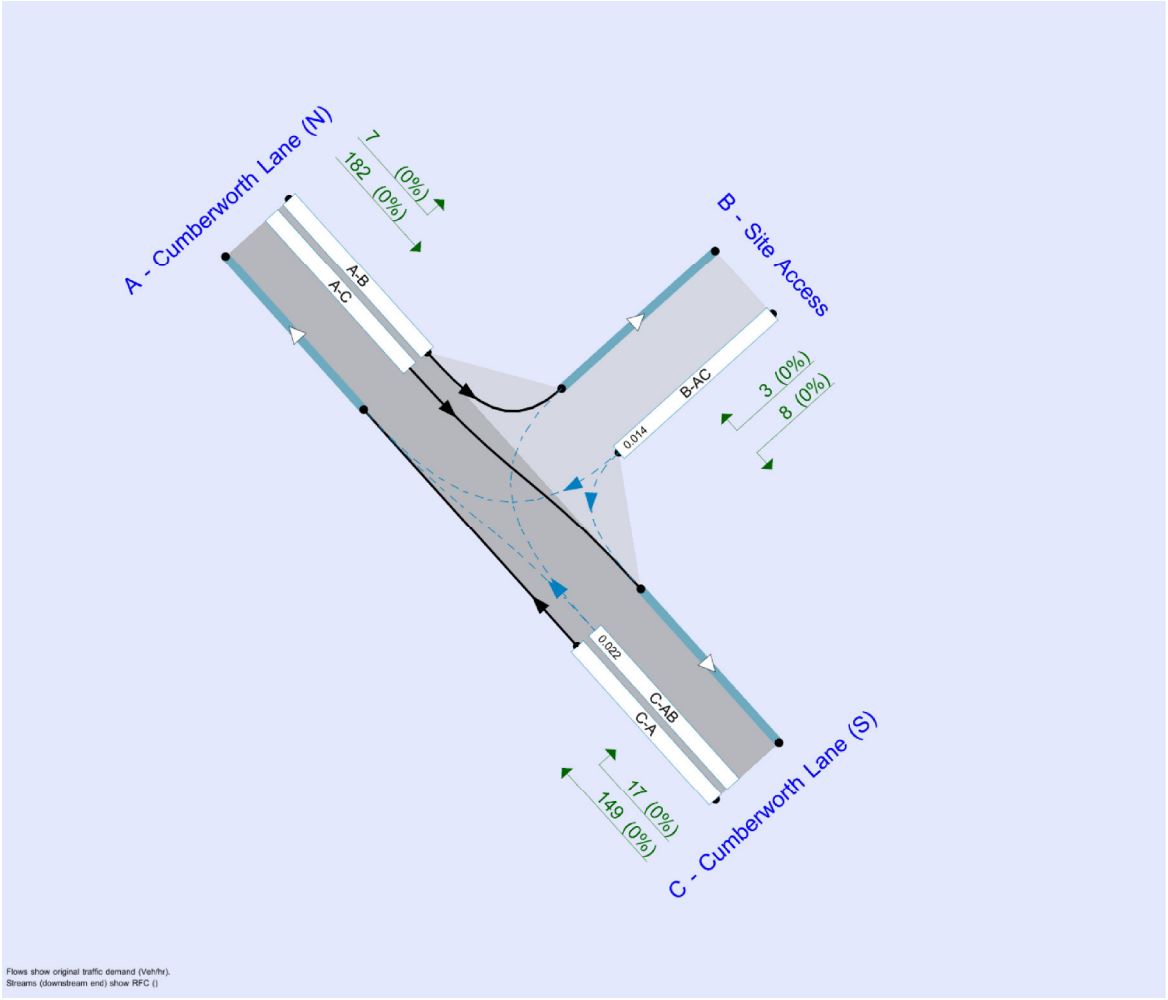
File summary

File Description

Title	Cumberworth Lane / Site Access
Location	
Site number	
Date	12/07/2023
Version	
Status	(new file)
Identifier	
Client	Urban Developments (York) Ltd
Jobnumber	21115
Enumerator	James Longley
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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75			✓	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)	Run automatically
D1	2028 Base + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D2	2028 Base + Dev	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

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

2028 Base + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	C - Cumberworth Lane (S) - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Cumberworth Lane / Site Access	T-Junction	Two-way		0.57	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	367	Stream B-AC

Arms

Arms

Arm	Name	Description	Arm type
A	Cumberworth Lane (N)		Major
B	Site Access		Minor
C	Cumberworth Lane (S)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Cumberworth Lane (S)	5.52			150.0	✓	0.00

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

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - Site Access	One lane	3.21	22	59

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	524	0.098	0.246	0.155	0.352
B-C	675	0.106	0.267	-	-
C-B	661	0.261	0.261	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2028 Base + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Cumberworth Lane (N)		ONE HOUR	✓	200	100.000
B - Site Access		ONE HOUR	✓	27	100.000
C - Cumberworth Lane (S)		ONE HOUR	✓	181	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Cumberworth Lane (N)	B - Site Access	C - Cumberworth Lane (S)
From	A - Cumberworth Lane (N)	0	3	197
	B - Site Access	8	0	19
	C - Cumberworth Lane (S)	174	7	0

Proportions

		To		
		A - Cumberworth Lane (N)	B - Site Access	C - Cumberworth Lane (S)
From	A - Cumberworth Lane (N)	0.00	0.02	0.99
	B - Site Access	0.30	0.00	0.70
	C - Cumberworth Lane (S)	0.96	0.04	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Cumberworth Lane (N)	B - Site Access	C - Cumberworth Lane (S)
From	A - Cumberworth Lane (N)	0	0	0
	B - Site Access	0	0	0
	C - Cumberworth Lane (S)	0	0	0

Average PCU Per Veh

		To		
		A - Cumberworth Lane (N)	B - Site Access	C - Cumberworth Lane (S)
From	A - Cumberworth Lane (N)	1.000	1.000	1.000
	B - Site Access	1.000	1.000	1.000
	C - Cumberworth Lane (S)	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A - Cumberworth Lane (N)	151	151
	B - Site Access	20	20
	C - Cumberworth Lane (S)	136	136
08:00-08:15	A - Cumberworth Lane (N)	180	180
	B - Site Access	24	24
	C - Cumberworth Lane (S)	163	163
08:15-08:30	A - Cumberworth Lane (N)	220	220
	B - Site Access	30	30
	C - Cumberworth Lane (S)	199	199
08:30-08:45	A - Cumberworth Lane (N)	220	220
	B - Site Access	30	30
	C - Cumberworth Lane (S)	199	199
08:45-09:00	A - Cumberworth Lane (N)	180	180
	B - Site Access	24	24
	C - Cumberworth Lane (S)	163	163
09:00-09:15	A - Cumberworth Lane (N)	151	151
	B - Site Access	20	20
	C - Cumberworth Lane (S)	136	136

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.05	6.91	0.1	A	25	37
C-AB	0.01	5.14	0.0	A	8	12
C-A					158	237
A-B					3	4
A-C					181	271

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	20	5	573	0.035	20	0.0	0.0	6.507	A
C-AB	6	2	707	0.009	6	0.0	0.0	5.136	A
C-A	130	32			130				
A-B	2	0.56			2				
A-C	148	37			148				

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	24	6	564	0.043	24	0.0	0.0	6.673	A
C-AB	8	2	717	0.011	8	0.0	0.0	5.078	A
C-A	155	39			155				
A-B	3	0.67			3				
A-C	177	44			177				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	30	7	550	0.054	30	0.0	0.1	6.914	A
C-AB	10	3	731	0.014	10	0.0	0.0	4.998	A
C-A	189	47			189				
A-B	3	0.83			3				
A-C	217	54			217				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	30	7	550	0.054	30	0.1	0.1	6.914	A
C-AB	10	3	731	0.014	10	0.0	0.0	5.000	A
C-A	189	47			189				
A-B	3	0.83			3				
A-C	217	54			217				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	24	6	564	0.043	24	0.1	0.0	6.677	A
C-AB	8	2	717	0.011	8	0.0	0.0	5.078	A
C-A	155	39			155				
A-B	3	0.67			3				
A-C	177	44			177				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	20	5	573	0.035	20	0.0	0.0	6.511	A
C-AB	6	2	707	0.009	6	0.0	0.0	5.138	A
C-A	130	32			130				
A-B	2	0.56			2				
A-C	148	37			148				

2028 Base + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Major arm width	C - Cumberworth Lane (S) - Major arm geometry	For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Cumberworth Lane / Site Access	T-Junction	Two-way		0.50	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	453	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)	Run automatically
D2	2028 Base + Dev	PM	ONE HOUR	16:45	18:15	15	✓

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

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Cumberworth Lane (N)		ONE HOUR	✓	189	100.000
B - Site Access		ONE HOUR	✓	11	100.000
C - Cumberworth Lane (S)		ONE HOUR	✓	166	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Cumberworth Lane (N)	B - Site Access	C - Cumberworth Lane (S)
From	A - Cumberworth Lane (N)	0	7	182
	B - Site Access	3	0	8
	C - Cumberworth Lane (S)	149	17	0

Proportions

		To		
		A - Cumberworth Lane (N)	B - Site Access	C - Cumberworth Lane (S)
From	A - Cumberworth Lane (N)	0.00	0.04	0.96
	B - Site Access	0.27	0.00	0.73
	C - Cumberworth Lane (S)	0.90	0.10	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - Cumberworth Lane (N)	B - Site Access	C - Cumberworth Lane (S)
From	A - Cumberworth Lane (N)	0	0	0
	B - Site Access	0	0	0
	C - Cumberworth Lane (S)	0	0	0

Average PCU Per Veh

		To		
		A - Cumberworth Lane (N)	B - Site Access	C - Cumberworth Lane (S)
From	A - Cumberworth Lane (N)	1.000	1.000	1.000
	B - Site Access	1.000	1.000	1.000
	C - Cumberworth Lane (S)	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/hr)	Demand in PCU (PCU/hr)
16:45-17:00	A - Cumberworth Lane (N)	142	142
	B - Site Access	8	8
	C - Cumberworth Lane (S)	125	125
17:00-17:15	A - Cumberworth Lane (N)	170	170
	B - Site Access	10	10
	C - Cumberworth Lane (S)	149	149
17:15-17:30	A - Cumberworth Lane (N)	208	208
	B - Site Access	12	12
	C - Cumberworth Lane (S)	183	183
17:30-17:45	A - Cumberworth Lane (N)	208	208
	B - Site Access	12	12
	C - Cumberworth Lane (S)	183	183
17:45-18:00	A - Cumberworth Lane (N)	170	170
	B - Site Access	10	10
	C - Cumberworth Lane (S)	149	149
18:00-18:15	A - Cumberworth Lane (N)	142	142
	B - Site Access	8	8
	C - Cumberworth Lane (S)	125	125

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.02	6.58	0.0	A	10	15
C-AB	0.03	5.28	0.0	A	19	29
C-A					133	199
A-B					6	10
A-C					167	251

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	8	2	581	0.014	8	0.0	0.0	6.290	A
C-AB	15	4	697	0.022	15	0.0	0.0	5.280	A
C-A	110	27			110				
A-B	5	1			5				
A-C	137	34			137				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	10	2	572	0.017	10	0.0	0.0	6.408	A
C-AB	19	5	705	0.027	19	0.0	0.0	5.250	A
C-A	130	33			130				
A-B	6	2			6				
A-C	164	41			164				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	12	3	559	0.022	12	0.0	0.0	6.580	A
C-AB	24	6	715	0.034	24	0.0	0.0	5.209	A
C-A	158	40			158				
A-B	8	2			8				
A-C	200	50			200				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	12	3	559	0.022	12	0.0	0.0	6.580	A
C-AB	24	6	715	0.034	24	0.0	0.0	5.210	A

C-A	158	40			158				
A-B	8	2			8				
A-C	200	50			200				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	10	2	572	0.017	10	0.0	0.0	6.409	A
C-AB	19	5	705	0.027	19	0.0	0.0	5.253	A
C-A	130	33			130				
A-B	6	2			6				
A-C	164	41			164				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	8	2	580	0.014	8	0.0	0.0	6.291	A
C-AB	15	4	697	0.022	15	0.0	0.0	5.281	A
C-A	110	27			110				
A-B	5	1			5				
A-C	137	34			137				


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