

# Technical Note 1: Highways



Project: Dobroyd Mill, Jackson Bridge / Hepworth,  
West Yorkshire

31 July 2017

This Technical Note has been written in response to comments made by Kirklees Metropolitan Council's (KMC) Highways Officers on planning application reference 2017 / 90620. The document was not dated nor is it annotated except by headings and the pages (6 no.) are not marked. Reference is therefore made to the pages (1 to 6 in the Word document) and headings as appropriate. The said document is attached to this Technical Note.

**Page 1** describes the development proposals and a heading of **Traffic Generation** is found half way down. **Page 2** continues with the traffic generation theme quoting from the Transport Assessment prepared by Via Solutions dated 27<sup>th</sup> January 2017.

On **Page 3** the comment is made that *"Highways DM consider that the proposal has the potential to generate significantly more traffic than the current derelict mill and the analysis based on the assumption that 50% of the present area could be used to its full potential in terms of traffic generation is not acceptable as reasonable. The traffic generated by the existing mill uses including the Oil Can café could however be off-set against the potential traffic impact. This is not however presented in this report. The peak time base flows provided in the report show the majority of traffic using Bank Street and a PICADY Assessment of this junction is considered necessary"*.

1

No explanation is given why Officers do not consider a 50% reuse of the existing floorspace is not reasonable or what they would consider to be a "reasonable" reuse. It is our view that some reuse of the existing buildings is perfectly feasible. However, as a worst case for the further analyses in this Technical Note it has been assumed that the traffic from the development is all new to the highway network.

Similarly, mention is made of the existing mill uses including the Oil Can Café. We are advised that the typical weekday vehicle movements for the latter amount to around 170 (85 in / 85 out) with the peak times being around lunch and for afternoon teas (and morning coffees).

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At weekends, the movements increase to about 240 per day and more on fine days. Again, as a worst case for the further analyses in this Technical Note it has been assumed that the traffic from the development is all new with no discounting for current uses including the Oil Can Cafe.

The Summary on **Page 5** clarifies that the Bank Street junction in need of a PICADY assessment is the one with the A616 Sheffield Road. A peak period traffic survey has been undertaken to establish the turning movements at this junction. Tempro 7.2 has been used to determine the potential growth factors to a future design year (2022 has been used in this instance being application year plus 5 years) in the area as being 1.0591 and 1.0571 in the AM and PM peak periods respectively.

We have then used the predicted development flows (increased to take account of the revised restaurant TRICS rates) and added those in full with no discounting for existing traffic movements from the development site on to this junction. In addition, as a worst case we have assumed that all the traffic from the development would use this junction (there are other alternate routes that people will take to a variety of destinations) and that there is a 10% heavy goods vehicle content in the turning movements (actually significantly less).

2

A summary of the PICADY analyses can be found in the tables below and are attached to this Technical Note.

**TABLE 1. A616 SHEFFIELD ROAD / BANK STREET – 2017 FLOWS**

Arm	AM Peak		PM Peak	
	Max RFC	Queue (PCUs)	Max RFC	Queue (PCUs)
Bank Street	0.30	0.5	0.10	0.3
A616 North Right into Bank St	0.19	0.4	0.34	0.7

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**TABLE 2. A616 SHEFFIELD ROAD / BANK STREET – 2022 FLOWS**

Arm	AM Peak		PM Peak	
	Max RFC	Queue (PCUs)	Max RFC	Queue (PCUs)
Bank Street	0.32	0.5	0.20	0.3
A616 North Right into Bank St	0.21	0.5	0.37	0.8

**TABLE 3. A616 SHEFFIELD ROAD / BANK STREET – 2022 FLOWS + DEVELOPMENT**

Arm	AM Peak		PM Peak	
	Max RFC	Queue (PCUs)	Max RFC	Queue (PCUs)
Bank Street	0.44	0.9	0.29	0.4
A616 North Right into Bank St	0.33	0.8	0.54	1.6

The PICADY analyses above show that the junction will continue to operate well within capacity with Ratios of Flow to Capacity (RFC) values significantly less than 0.85 in all flow scenarios. The addition of development traffic has a modest effect on queuing but this is neither material nor significant in real terms.

3

We have examined the safety record at the Sheffield Road / Bank Street junction and noted that during the **18 year period** from 1999 to the end of 2016 there has been only **one** incident which resulted in injury. Therefore, there is no reason to suggest that the present junction layout causes a road safety problem nor would that deteriorate as a result of the increase in traffic at this junction.

Under the heading **Proposed Layout** on **Page 3** the request is made for the 2.4 x 43m visibility splays to be shown on a drawing – see 1604601 attached to this Technical Note which shows the splays and the tangential splays as well both of which are achievable.

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Under the heading **Parking** on **Page 3 / Page 4** the Officer quotes the parking guidance for A3 Leisure as being 1 space per 4sqm but has not accounted for that should be based on the public floor area and not the total gross area of 418 sqm). If it is assumed the public area is about 50% of the gross then only 52 spaces would be required using the Council guidance.

The comment on **Page 4** still under **Parking** does accept some dual use of spaces but is unclear why the Council consider different proposed uses would then require more parking spaces. It is noted by the Council that the parking accumulation assessment originally used data which included some national chains and suggest that these are unlikely to be representative of the site. Whilst some chains might not find this site attractive others may take a different view.

The correct approach is to identify the use in a similar location regardless of the actual occupier – we recently carried out a similar exercise for a restaurant use in a similar location (not in Kirklees) and attach the TRICS data that we agreed with the Council. We have then revised the parking accumulation calculation using that new data which shows a peak accumulation slightly higher than in the Transport Assessment (69 compared to 55) but still less than the proposed level of provision of 80 spaces.

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Therefore, it is considered the level of parking provision proposed is reasonable and robust having due regard to the site location and potential mix of uses.

Under the heading **PROW** on **Page 4** the comments made are noted. As the part of the development proposals affecting any PROW's (Public Rights of Way) is an Outline application then conditions surrounding their protection and diversion if necessary would be expected.

Under the heading **Section 38 Comments** on **Page 4** and **Page 5** a request is made for long sections and level information. A long section is attached to this Technical Note for the new spine road – the internal layout of the remainder of the site is yet to be finalised and would be subject to detailed design and conditions requiring such would be expected on an Outline consent.

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However, having due regard to the difficult topography within the site which is typical of such sites in the Kirklees valleys internal gradients of between 1:12 and 1:15 are achievable (the maximum gradient on the new spine road long section is 1:14 – the starting gradient of the vertical curve at the junction with Hepworth Road is less than 1:45 (actually about 1:100)).

This same response can be applied to the comment regarding swept path analyses of the internal road layout – this is an Outline application for this element of highway works. A swept path analysis of the junction with Hepworth Road has been prepared and is attached to this Technical Note.

Under the heading **Section 38 Comments** on **Page 5** the Officer asks that the feasibility of extending the footway north to the existing bus shelter and south to the public footpath be investigated. The proposals already include for the provision of a new footway along the site frontage to Hepworth Road and ties in to the existing footway which leads up to the bus stop. To the south the property fronting Hepworth Road is not in our clients ownership and so any footway provision to the south of the site would have to be within the carriageway. The width of this carriageway is circa 5.5m so it is not possible to narrow it further to link the new footway to the public footpath.

5

The remaining comments under the heading **Section 38 Comments** on **Page 5** are noted and can be conditioned where necessary on an Outline consent.

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## Attachments

- 1 - KMC Highways Comments
- 2 - Figure 3 Traffic Flow Diagram
- 3 - PICADY Analyses Output
- 4 - Restaurant TRICS Data
- 5 - Revised Parking Accumulation
- 6 - Spine Road Long Section / Visibility Splays
- 7 - Swept Path Analyses



This application seeks planning permission for demolition of existing buildings, change of use of existing building to mixed uses comprising B1a (offices), B1c (light industrial), A3 (food and drink) and C3 (up to 18 dwellings) and outline permission with access the only matter to be considered for the erection of 75 dwellings at Dobroyd Mills, Hepworth Road, New Mill, Holmfirth

The applicant seeks planning permission for a mixed use development. The planning application includes for the demolition of a number of the existing buildings on the site to provide an improved access from Hepworth Road. This access will serve a retained part of the mill buildings at the lower level and a residential development at the higher level linked by a new road.

There are two retained mill buildings – the smaller one is to provide accommodation for a local brass band to practice in whilst the larger one is over several floors which is proposed to provide a mix of potential uses including residential (apartments), offices, light industrial and café / restaurant. The residential development at higher level forms part of the outline section of the application which could accommodate up to about 75 dwellings.

The proposed access to serve the development will be formed off Hepworth Road. The junction will have 9m radii and footways to either side leading on to a 5.5m wide estate road.

A footway will be provided along the site frontage to Hepworth Road.

### **Traffic Generation**

Based on the information contained within the Transport assessment prepared by Via Solutions the potential traffic impact is assessed as follows:

There is currently a total of 20,043 sqm of buildings on the site with a mix of B2 (12,958 sqm) and B8 (7085 sqm) uses.

It is assumed that not all of the existing buildings to be demolished could be used to their full potential in terms of traffic generation. Therefore for the purpose of this analysis it is assumed that 50% of the present area (10,022 sqm) could be used to its full potential in terms of traffic generation.

The TRICS database has been interrogated to produce suitable trip rates for the current B2 and B8 uses on the site.

	Morning	Peak	Evening	Peak
	Arrival	Departure	Arrival	Departure
B2	29	14	12	30
B8	10	8	3	4
Totals	39	21	15	34

The potential reuse of 50% of the existing buildings on the site could generate 60 and 49 vehicle movements in the AM and PM peak hours respectively.

The larger retained mill building is proposed to provide a mix of potential uses including residential (apartments), offices / light industrial and café / restaurant. Such a mix will be dependent on market demands but in practice the uses are likely to be split by floor levels.

The likely mix that is considered within this report can be broken down as follows:

- Residential ----- 1,672 sqm – approx. 18 units
- Offices ----- 1,068 sqm
- A3 Leisure -----418 sqm

These uses can be split by floor as follows:

- Top & Second Floor - Residential -- 1,672 sqm – 18 units
- First Floor - Offices ----- 836 sqm
- Ground Floor - Offices ----- 232 sqm
- Ground Floor - A3 Leisure ----- 418 sqm

The anticipated traffic generation for these uses is as follows:

	Morning	Peak	Evening	Peak
	Arrivals	Departures	Arrivals	Departures
75 Houses	15	45	45	15
18 Apartments	3	6	6	3
Offices	16	3	3	6
A3 Leisure	5	4	10	8
Totals	39	58	64	39

The net increase in traffic from the mix of proposed development compared to the level of traffic that the potential reuse of 50% of the existing buildings on the site for B2 and B8 commercial uses would be 37 and 54 vehicle movements in the AM and PM peak hours respectively.

The existing two way flows on Bank Street are 220 and 244 vehicles in the AM and PM peak hours. If the traffic from a 50% reuse of the existing buildings on the site all used Bank Street then these flows would increase to 280 and 293 vehicles per hour respectively. If all the traffic from the mix of the proposed development was to use Bank Street then the peak hour flows would increase to 316 and 347 respectively.

	AM peak	PM peak
--	---------	---------

Existing flows	220	240
Plus 50 reuse of existing building	280	293
Plus development traffic	316	347

The above table shows that the potential increase in traffic at peak hours would add 2 vehicles per minute compared to the existing situation and about 1 vehicle every two minutes compared to 50% reuse of the buildings.

Highways DM consider that the proposal has the potential to generate significantly more traffic than the current derelict mill and the analysis based on the assumption that 50% of the present area could be used to its full potential in terms of traffic generation is not acceptable as reasonable.

The traffic generated by the existing mill uses including the Oil Can café could however be off-set against the potential traffic impact. This is not however presented in this report.

The peak time base flows provided in the report show the majority of traffic using Bank Street and a PICADY Assessment of this junction is considered necessary.

### **Proposed layout**

The proposed access to serve the development will be formed off Hepworth Road. The junction will have 9m radii and footways to either side leading on to a 5.5m wide estate road.

The Transport assessment refers to visibility splays of 2.4 x 43m will be provided in each direction but these are not shown on the proposed plans.

### **Parking**

Parking accumulation figures for the various proposed uses within the proposed retained mill building are provided within the Transport Assessment.

The results are as follows:

A3 Leisure (restaurant) - max accumulation 14 at 19.00 to 20.00 in the evening

Offices - max accumulation 25 at 11.00 to 12.00 in the afternoon.

Apartments - max accumulation 27 at 06.00 to 07.00 in the morning

The maximum combined parking accumulation estimated by Via Solutions 55 at 13.00 to 14.00 in the afternoon.

UDP recommended standards are as follows

A3 Leisure (418 sqm) - 1 space per 4 sqm = 104 spaces

Offices (1068 sqm) - 1 space per 25 sqm = 43 spaces

Apartments (18) - 1 space per apartment plus 1 per 4 visitor parking = 22 spaces

Total 169 spaces

Whilst it is acknowledged that there may be some potential for the dual use of the parking areas given the different proposed uses particularly between the office and restaurant Highways still consider that additional parking should be provided.

The parking accumulation assessment is based on a TRICs Assessment and the restaurants included within the assessment La Tasca, Pizza Express, Chiquitos, TGI Friday, Pizza hut are all national chain restaurants and unlikely to be representative of this site.

## **PROW**

Indicative layout shows dashed lines without a key – presumably these are meant to depict public footpaths

Access shown from the south is along vehicular 'un-adopted' access carrying a public footpath, outside the identified site. This footpath is not identified in any way on the site plan;

Development as shown in indicative layout would require the diversion/closure by formal legal order of public rights of way. This is by separate process, by separate application and subject to separate significant fees. The prospective applicant is advised to contact the council's PROW unit for further information. Such legal processes are generally lengthy and may significantly affect the timing of and ability to develop the site. No interference or obstruction of PROWs is authorised by planning consent;

Parts of the routes are shown over estate road footways; this is not the preferred treatment for public rights of way and should be avoided where possible, with routes instead running within wider corridors away from vehicular user;

Appropriate treatments, including surfacing or other improvement works to PROWs would be expected, potentially off-site as well as on-site;

Proposed new routes should be afforded appropriate protection through adoption or relevant formal agreement.

## **Section 38 Comments**

There is no level information provided with the submission however there are significant changes in level across the development. Longitudinal section through the centre line of the proposed roadways should be provided to demonstrate that acceptable gradients can be

provided. The proposed levels to the car parking area to the retained mill areas should also be provided.

There is currently no footway along Hepworth Road along the development frontage. The proposed footway should extend to the full frontage of the development site. The applicants should also investigate feasibility of extending the footway northwards to the existing bus shelter and ideally south to the public footpath.

The applicants should be asked to demonstrate that an 11.85 metre refuse vehicle will be able to enter and exit the development in forward gear. Vehicular tracking should be provided to demonstrate that these refuse vehicles can enter and manoeuvre within the access roads.

Turning heads as shown may not be insufficient to accommodate the turning envelope required by Kirklees Council refuse vehicles.

There don't appear to be any visitor parking spaces provided within the residential area of the development.

The footway width should be maintained along all lengths of the traditional estate road.

There are no pedestrian crossing facilities shown on the drawing.

There are no construction or drainage proposals provided with the application.

## **Summery**

Highways DM consider that the proposal has the potential to generate significantly more traffic the current derelict mill and the analysis based on the assumption that 50% of the present area could be used to its full potential in terms of traffic generation is not acceptable as reasonable.

The traffic generated by the existing mill uses including the Oil Can café could however be off-set against the potential traffic impact. This is not however presented in this report.

The peak time base flows provided in the report show the majority of traffic using Bank Street and PICADY Assessment of the junction with Sheffield Road is considered necessary

Highways consider that additional parking should be provided.

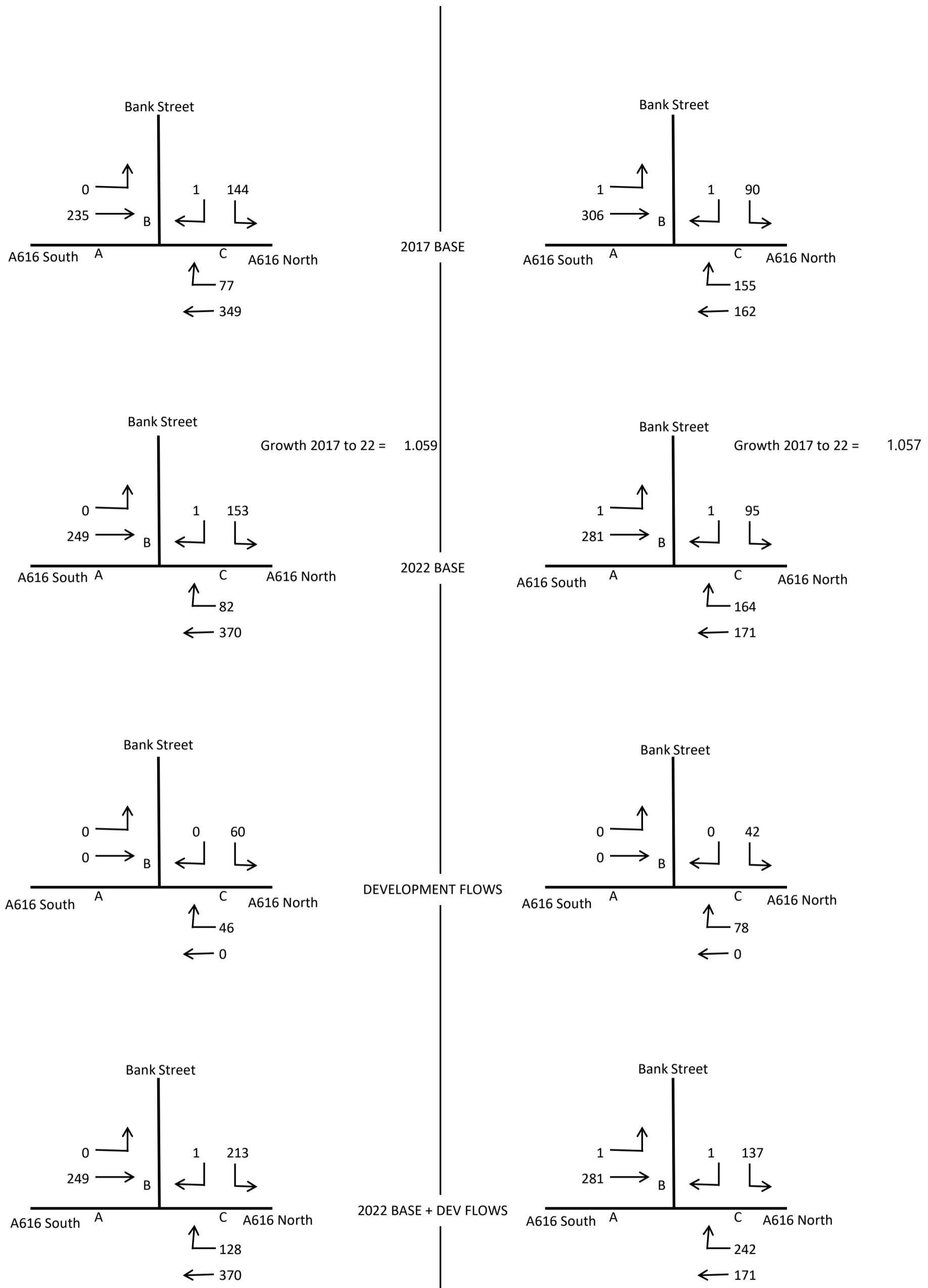
2.4 x 43m visibility spays need to be shown in each direction onto Hepworth Road.

There are a number of PROWs crossing the site which will be directly affected by the proposals. No detailed proposals are provided. I would recommend contacting our PROW team for further information and guidance. It is not clear how the proposals connect with the existing pedestrian routes within an in the vicinity of the development.

Level information and details of gradients need to be provided

Vehicular tracking should be provided to demonstrate that 11.85 metre refuse vehicles can enter and manoeuvre within the access roads.

It is not clear whether retaining walls will be necessary as part of the development. Any retaining features affecting the highway will require formal technical approval by the Council as the Highway Authority. I would recommend providing details of all proposed structures, retaining features, underground storage facilities (including pipes) and culverts to my colleague Farhad Khatibi (Team Leader) in the structures section at the earliest opportunity, who will be able to advise you of the necessary requirements in more detail.



PROPOSED MIXED USE DEVELOPMENT  
 DOBROYD MILL, JACKSON BRIDGE / HEPWORTH

ALL FLOWS IN VEHS (10% HGV ASSUMED)

FIGURE 3  
 FLOW DIAGRAMS

Junctions 9
PICADY 9 - Priority Intersection Module
Version: 9.0.1.4646 [] © Copyright TRL Limited, 2017
For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk
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**Filename:** A616 Bank St.j9  
**Path:** C:\Users\eric\Google Drive\16046 - Dobroyd Mill 2016\PICADY  
**Report generation date:** 27/07/2017 10:35:15

- »2017, AM
- »2017, PM
- »2022, AM
- »2022, PM
- »2022 + Dev, AM
- »2022 + Dev, PM

### Summary of junction performance

	AM					PM				
	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity	Queue (PCU)	Delay (s)	RFC	LOS	Network Residual Capacity
<b>2017</b>										
Stream B-AC	0.5	10.61	0.30	B	119 %	0.3	9.35	0.19	A	94 %
Stream C-AB	0.4	5.93	0.19	A	[Stream B-AC]	0.7	8.89	0.34	A	[Stream C-AB]
<b>2022</b>										
Stream B-AC	0.5	10.99	0.32	B	107 %	0.3	9.57	0.20	A	83 %
Stream C-AB	0.5	5.96	0.21	A	[Stream B-AC]	0.8	9.19	0.37	A	[Stream C-AB]
<b>2022 + Dev</b>										
Stream B-AC	0.9	13.45	0.44	B	62 %	0.4	10.75	0.29	B	40 %
Stream C-AB	0.8	7.03	0.33	A	[Stream B-AC]	1.6	12.73	0.54	B	[Stream C-AB]

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	(untitled)
Location	A616 / Bank Street
Site number	
Date	13/07/2017
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	eric-PC\eric
Description	

### Units

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

### 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	2017	AM	ONE HOUR	07:45	09:15	15	✓
D2	2017	PM	ONE HOUR	16:30	18:00	15	✓
D3	2022	AM	ONE HOUR	07:45	09:15	15	✓
D4	2022	PM	ONE HOUR	16:30	18:00	15	✓
D5	2022 + Dev	AM	ONE HOUR	07:45	09:15	15	✓
D6	2022 + Dev	PM	ONE HOUR	16:30	18:00	15	✓

### Analysis Set Details

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

# 2017, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A616 / Bank Street	T-Junction	Two-way	2.88	A

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	119	Stream B-AC

## Arms

### Arms

Arm	Name	Description	Arm type
A	A616 South		Major
B	Bank Street		Minor
C	A616 North		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 - A616 North	6.00			90.0	✓	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 - Bank Street	One lane	2.30	25	25

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	463	0.084	0.213	0.134	0.305
1	B-C	595	0.091	0.230	-	-
1	C-B	626	0.243	0.243	-	-

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	2017	AM	ONE HOUR	07:45	09:15	15	✓

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

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A616 South		ONE HOUR	✓	235	100.000
B - Bank Street		ONE HOUR	✓	145	100.000
C - A616 North		ONE HOUR	✓	426	100.000

## Origin-Destination Data

### Demand (PCU/hr)

From	To			
		A - A616 South	B - Bank Street	C - A616 North
A - A616 South	0	0	235	
B - Bank Street	1	0	144	
C - A616 North	349	77	0	

### Proportions

From	To			
		A - A616 South	B - Bank Street	C - A616 North
A - A616 South	0.00	0.00	1.00	
B - Bank Street	0.01	0.00	0.99	
C - A616 North	0.82	0.18	0.00	

## Vehicle Mix

### Heavy Vehicle Percentages

From	To			
		A - A616 South	B - Bank Street	C - A616 North
A - A616 South	10	10	10	
B - Bank Street	10	10	10	
C - A616 North	10	10	10	

### Average PCU Per Veh

From	To			
		A - A616 South	B - Bank Street	C - A616 North
A - A616 South	1.100	1.100	1.100	
B - Bank Street	1.100	1.100	1.100	
C - A616 North	1.100	1.100	1.100	

## Detailed Demand Data

### Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A - A616 South	177	177
	B - Bank Street	109	109
	C - A616 North	321	321
08:00-08:15	A - A616 South	211	211
	B - Bank Street	130	130
	C - A616 North	383	383
08:15-08:30	A - A616 South	259	259
	B - Bank Street	160	160
	C - A616 North	469	469
08:30-08:45	A - A616 South	259	259
	B - Bank Street	160	160
	C - A616 North	469	469
08:45-09:00	A - A616 South	211	211
	B - Bank Street	130	130
	C - A616 North	383	383
09:00-09:15	A - A616 South	177	177
	B - Bank Street	109	109
	C - A616 North	321	321

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.30	10.61	0.5	B	133	200
C-AB	0.19	5.93	0.4	A	121	182
C-A					270	405
A-B					0	0
A-C					216	323

### Main Results for each time segment

#### 07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	109	27	552	0.198	108	0.0	0.3	8.895	A
C-AB	89	22	761	0.116	88	0.0	0.2	5.880	A
C-A	232	58			232				
A-B	0	0			0				
A-C	177	44			177				

#### 08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	130	33	544	0.240	130	0.3	0.3	9.556	A
C-AB	115	29	789	0.146	115	0.2	0.3	5.886	A
C-A	268	67			268				
A-B	0	0			0				
A-C	211	53			211				

#### 08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	160	40	533	0.300	159	0.3	0.5	10.581	B
C-AB	159	40	828	0.192	158	0.3	0.4	5.926	A
C-A	310	78			310				
A-B	0	0			0				
A-C	259	65			259				

#### 08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	160	40	533	0.300	160	0.5	0.5	10.608	B
C-AB	159	40	828	0.192	159	0.4	0.4	5.935	A
C-A	310	77			310				
A-B	0	0			0				
A-C	259	65			259				

**08:45 - 09:00**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	130	33	544	0.240	131	0.5	0.4	9.593	A
C-AB	116	29	789	0.147	116	0.4	0.3	5.897	A
C-A	267	67			267				
A-B	0	0			0				
A-C	211	53			211				

**09:00 - 09:15**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	109	27	552	0.198	109	0.4	0.3	8.952	A
C-AB	89	22	761	0.117	89	0.3	0.2	5.901	A
C-A	232	58			232				
A-B	0	0			0				
A-C	177	44			177				

# 2017, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A616 / Bank Street	T-Junction	Two-way	3.91	A

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	94	Stream C-AB

## 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	2017	PM	ONE HOUR	16:30	18:00	15	✓

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

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A616 South		ONE HOUR	✓	267	100.000
B - Bank Street		ONE HOUR	✓	91	100.000
C - A616 North		ONE HOUR	✓	317	100.000

## Origin-Destination Data

### Demand (PCU/hr)

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	0	1	266	
B - Bank Street	1	0	90	
C - A616 North	162	155	0	

### Proportions

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	0.00	0.00	1.00	
B - Bank Street	0.01	0.00	0.99	
C - A616 North	0.51	0.49	0.00	

## Vehicle Mix

### Heavy Vehicle Percentages

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	10	10	10	
B - Bank Street	10	10	10	
C - A616 North	10	10	10	

### Average PCU Per Veh

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	1.100	1.100	1.100	
B - Bank Street	1.100	1.100	1.100	
C - A616 North	1.100	1.100	1.100	

## Detailed Demand Data

### Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:30-16:45	A - A616 South	201	201
	B - Bank Street	69	69
	C - A616 North	239	239
16:45-17:00	A - A616 South	240	240
	B - Bank Street	82	82
	C - A616 North	285	285
17:00-17:15	A - A616 South	294	294
	B - Bank Street	100	100
	C - A616 North	349	349
17:15-17:30	A - A616 South	294	294
	B - Bank Street	100	100
	C - A616 North	349	349
17:30-17:45	A - A616 South	240	240
	B - Bank Street	82	82
	C - A616 North	285	285
17:45-18:00	A - A616 South	201	201
	B - Bank Street	69	69
	C - A616 North	239	239

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.19	9.35	0.3	A	84	125
C-AB	0.34	8.89	0.7	A	185	277
C-A					106	159
A-B					0.92	1
A-C					244	366

### Main Results for each time segment

#### 16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	69	17	546	0.126	68	0.0	0.2	8.277	A
C-AB	143	36	660	0.217	142	0.0	0.4	7.625	A
C-A	96	24			96				
A-B	0.75	0.19			0.75				
A-C	200	50			200				

#### 16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	82	20	536	0.153	82	0.2	0.2	8.704	A
C-AB	179	45	668	0.267	178	0.4	0.5	8.090	A
C-A	106	27			106				
A-B	0.90	0.22			0.90				
A-C	239	60			239				

**17:00 - 17:15**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	100	25	524	0.191	100	0.2	0.3	9.339	A
C-AB	232	58	678	0.342	231	0.5	0.7	8.857	A
C-A	117	29			117				
A-B	1	0.28			1				
A-C	293	73			293				

**17:15 - 17:30**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	100	25	524	0.191	100	0.3	0.3	9.351	A
C-AB	232	58	679	0.342	232	0.7	0.7	8.892	A
C-A	117	29			117				
A-B	1	0.28			1				
A-C	293	73			293				

**17:30 - 17:45**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	82	20	536	0.153	82	0.3	0.2	8.720	A
C-AB	179	45	668	0.268	180	0.7	0.5	8.134	A
C-A	106	27			106				
A-B	0.90	0.22			0.90				
A-C	239	60			239				

**17:45 - 18:00**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	69	17	546	0.126	69	0.2	0.2	8.306	A
C-AB	143	36	660	0.217	144	0.5	0.4	7.681	A
C-A	95	24			95				
A-B	0.75	0.19			0.75				
A-C	200	50			200				

# 2022, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A616 / Bank Street	T-Junction	Two-way	2.99	A

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	107	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
D3	2022	AM	ONE HOUR	07:45	09:15	15	✓

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

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A616 South		ONE HOUR	✓	249	100.000
B - Bank Street		ONE HOUR	✓	154	100.000
C - A616 North		ONE HOUR	✓	451	100.000

## Origin-Destination Data

### Demand (PCU/hr)

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	0	0	249	
B - Bank Street	1	0	153	
C - A616 North	370	82	0	

### Proportions

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	0.00	0.00	1.00	
B - Bank Street	0.01	0.00	0.99	
C - A616 North	0.82	0.18	0.00	

## Vehicle Mix

### Heavy Vehicle Percentages

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	10	10	10	
B - Bank Street	10	10	10	
C - A616 North	10	10	10	

### Average PCU Per Veh

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	1.100	1.100	1.100	
B - Bank Street	1.100	1.100	1.100	
C - A616 North	1.100	1.100	1.100	

## Detailed Demand Data

### Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A - A616 South	187	187
	B - Bank Street	116	116
	C - A616 North	340	340
08:00-08:15	A - A616 South	224	224
	B - Bank Street	138	138
	C - A616 North	406	406
08:15-08:30	A - A616 South	274	274
	B - Bank Street	169	169
	C - A616 North	497	497
08:30-08:45	A - A616 South	274	274
	B - Bank Street	169	169
	C - A616 North	497	497
08:45-09:00	A - A616 South	224	224
	B - Bank Street	138	138
	C - A616 North	406	406
09:00-09:15	A - A616 South	187	187
	B - Bank Street	116	116
	C - A616 North	340	340

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.32	10.99	0.5	B	141	211
C-AB	0.21	5.96	0.5	A	133	199
C-A					281	422
A-B					0	0
A-C					228	343

### Main Results for each time segment

#### 07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	116	29	550	0.210	114	0.0	0.3	9.074	A
C-AB	96	24	769	0.125	95	0.0	0.2	5.874	A
C-A	243	61			243				
A-B	0	0			0				
A-C	187	47			187				

#### 08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	138	35	541	0.255	138	0.3	0.4	9.807	A
C-AB	126	32	799	0.158	126	0.2	0.3	5.888	A
C-A	280	70			280				
A-B	0	0			0				
A-C	224	56			224				

**08:15 - 08:30**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	169	42	529	0.319	169	0.4	0.5	10.960	B
C-AB	175	44	840	0.208	174	0.3	0.5	5.954	A
C-A	322	80			322				
A-B	0	0			0				
A-C	274	69			274				

**08:30 - 08:45**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	169	42	529	0.319	169	0.5	0.5	10.992	B
C-AB	175	44	841	0.208	175	0.5	0.5	5.963	A
C-A	322	80			322				
A-B	0	0			0				
A-C	274	69			274				

**08:45 - 09:00**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	138	35	541	0.255	139	0.5	0.4	9.848	A
C-AB	126	32	799	0.158	127	0.5	0.3	5.906	A
C-A	279	70			279				
A-B	0	0			0				
A-C	224	56			224				

**09:00 - 09:15**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	116	29	550	0.210	116	0.4	0.3	9.135	A
C-AB	97	24	770	0.126	97	0.3	0.3	5.899	A
C-A	243	61			243				
A-B	0	0			0				
A-C	187	47			187				

# 2022, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A616 / Bank Street	T-Junction	Two-way	4.08	A

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	83	Stream C-AB

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2022	PM	ONE HOUR	16:30	18:00	15	✓

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

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A616 South		ONE HOUR	✓	282	100.000
B - Bank Street		ONE HOUR	✓	96	100.000
C - A616 North		ONE HOUR	✓	335	100.000

## Origin-Destination Data

### Demand (PCU/hr)

		To		
		A - A616 South	B - Bank Street	C - A616 North
From	A - A616 South	0	1	281
	B - Bank Street	1	0	95
	C - A616 North	171	164	0

### Proportions

		To		
		A - A616 South	B - Bank Street	C - A616 North
From	A - A616 South	0.00	0.00	1.00
	B - Bank Street	0.01	0.00	0.99
	C - A616 North	0.51	0.49	0.00

## Vehicle Mix

### Heavy Vehicle Percentages

		To		
		A - A616 South	B - Bank Street	C - A616 North
From	A - A616 South	10	10	10
	B - Bank Street	10	10	10
	C - A616 North	10	10	10

### Average PCU Per Veh

		To		
		A - A616 South	B - Bank Street	C - A616 North
From	A - A616 South	1.100	1.100	1.100
	B - Bank Street	1.100	1.100	1.100
	C - A616 North	1.100	1.100	1.100

## Detailed Demand Data

### Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:30-16:45	A - A616 South	212	212
	B - Bank Street	72	72
	C - A616 North	252	252
16:45-17:00	A - A616 South	254	254
	B - Bank Street	86	86
	C - A616 North	301	301
17:00-17:15	A - A616 South	311	311
	B - Bank Street	106	106
	C - A616 North	369	369
17:15-17:30	A - A616 South	311	311
	B - Bank Street	106	106
	C - A616 North	369	369
17:30-17:45	A - A616 South	254	254
	B - Bank Street	86	86
	C - A616 North	301	301
17:45-18:00	A - A616 South	212	212
	B - Bank Street	72	72
	C - A616 North	252	252

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.20	9.57	0.3	A	88	132
C-AB	0.37	9.19	0.8	A	198	298
C-A					109	164
A-B					0.97	1
A-C					258	387

### Main Results for each time segment

#### 16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	72	18	543	0.133	72	0.0	0.2	8.392	A
C-AB	153	38	662	0.231	152	0.0	0.4	7.739	A
C-A	99	25			99				
A-B	0.80	0.20			0.80				
A-C	212	53			212				

#### 16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	86	22	533	0.162	86	0.2	0.2	8.854	A
C-AB	192	48	670	0.286	191	0.4	0.5	8.263	A
C-A	110	27			110				
A-B	0.95	0.24			0.95				
A-C	253	63			253				

**17:00 - 17:15**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	106	26	520	0.204	106	0.2	0.3	9.559	A
C-AB	250	63	682	0.367	249	0.5	0.8	9.153	A
C-A	119	30			119				
A-B	1	0.29			1				
A-C	310	77			310				

**17:15 - 17:30**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	106	26	520	0.204	106	0.3	0.3	9.571	A
C-AB	250	63	682	0.367	250	0.8	0.8	9.194	A
C-A	119	30			119				
A-B	1	0.29			1				
A-C	310	77			310				

**17:30 - 17:45**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	86	22	533	0.162	87	0.3	0.2	8.874	A
C-AB	192	48	671	0.286	193	0.8	0.5	8.316	A
C-A	109	27			109				
A-B	0.95	0.24			0.95				
A-C	253	63			253				

**17:45 - 18:00**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	72	18	543	0.133	73	0.2	0.2	8.422	A
C-AB	154	38	663	0.232	154	0.5	0.4	7.805	A
C-A	99	25			99				
A-B	0.80	0.20			0.80				
A-C	212	53			212				

# 2022 + Dev, AM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A616 / Bank Street	T-Junction	Two-way	4.65	A

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	62	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
D5	2022 + Dev	AM	ONE HOUR	07:45	09:15	15	✓

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

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A616 South		ONE HOUR	✓	249	100.000
B - Bank Street		ONE HOUR	✓	214	100.000
C - A616 North		ONE HOUR	✓	498	100.000

## Origin-Destination Data

### Demand (PCU/hr)

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	0	0	249	
B - Bank Street	1	0	213	
C - A616 North	370	128	0	

### Proportions

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	0.00	0.00	1.00	
B - Bank Street	0.00	0.00	1.00	
C - A616 North	0.74	0.26	0.00	

## Vehicle Mix

### Heavy Vehicle Percentages

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	10	10	10	
B - Bank Street	10	10	10	
C - A616 North	10	10	10	

### Average PCU Per Veh

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	1.100	1.100	1.100	
B - Bank Street	1.100	1.100	1.100	
C - A616 North	1.100	1.100	1.100	

## Detailed Demand Data

### Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:45-08:00	A - A616 South	187	187
	B - Bank Street	161	161
	C - A616 North	375	375
08:00-08:15	A - A616 South	224	224
	B - Bank Street	192	192
	C - A616 North	448	448
08:15-08:30	A - A616 South	274	274
	B - Bank Street	236	236
	C - A616 North	548	548
08:30-08:45	A - A616 South	274	274
	B - Bank Street	236	236
	C - A616 North	548	548
08:45-09:00	A - A616 South	224	224
	B - Bank Street	192	192
	C - A616 North	448	448
09:00-09:15	A - A616 South	187	187
	B - Bank Street	161	161
	C - A616 North	375	375

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.44	13.45	0.9	B	196	295
C-AB	0.33	7.03	0.8	A	208	312
C-A					249	373
A-B					0	0
A-C					228	343

### Main Results for each time segment

#### 07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	161	40	550	0.293	159	0.0	0.4	10.083	B
C-AB	151	38	769	0.196	150	0.0	0.4	6.384	A
C-A	224	56			224				
A-B	0	0			0				
A-C	187	47			187				

#### 08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	192	48	542	0.355	192	0.4	0.6	11.298	B
C-AB	198	49	799	0.248	197	0.4	0.5	6.590	A
C-A	250	62			250				
A-B	0	0			0				
A-C	224	56			224				

**08:15 - 08:30**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	236	59	530	0.445	235	0.6	0.9	13.361	B
C-AB	275	69	841	0.327	274	0.5	0.8	6.994	A
C-A	273	68			273				
A-B	0	0			0				
A-C	274	69			274				

**08:30 - 08:45**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	236	59	530	0.445	236	0.9	0.9	13.453	B
C-AB	275	69	841	0.327	275	0.8	0.8	7.025	A
C-A	273	68			273				
A-B	0	0			0				
A-C	274	69			274				

**08:45 - 09:00**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	192	48	542	0.355	193	0.9	0.6	11.404	B
C-AB	199	50	800	0.248	200	0.8	0.6	6.628	A
C-A	249	62			249				
A-B	0	0			0				
A-C	224	56			224				

**09:00 - 09:15**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	161	40	550	0.293	162	0.6	0.5	10.211	B
C-AB	152	38	770	0.197	152	0.6	0.4	6.429	A
C-A	223	56			223				
A-B	0	0			0				
A-C	187	47			187				

# 2022 + Dev, PM

## Data Errors and Warnings

No errors or warnings

## Junction Network

### Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	A616 / Bank Street	T-Junction	Two-way	6.66	A

### Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	40	Stream C-AB

## Traffic Demand

### Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2022 + Dev	PM	ONE HOUR	16:30	18:00	15	✓

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

### Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - A616 South		ONE HOUR	✓	282	100.000
B - Bank Street		ONE HOUR	✓	138	100.000
C - A616 North		ONE HOUR	✓	413	100.000

## Origin-Destination Data

### Demand (PCU/hr)

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	0	1	281	
B - Bank Street	1	0	137	
C - A616 North	171	242	0	

### Proportions

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	0.00	0.00	1.00	
B - Bank Street	0.01	0.00	0.99	
C - A616 North	0.41	0.59	0.00	

## Vehicle Mix

### Heavy Vehicle Percentages

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	10	10	10	
B - Bank Street	10	10	10	
C - A616 North	10	10	10	

### Average PCU Per Veh

From	To			
	A - A616 South	B - Bank Street	C - A616 North	
A - A616 South	1.100	1.100	1.100	
B - Bank Street	1.100	1.100	1.100	
C - A616 North	1.100	1.100	1.100	

## Detailed Demand Data

### Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:30-16:45	A - A616 South	212	212
	B - Bank Street	104	104
	C - A616 North	311	311
16:45-17:00	A - A616 South	254	254
	B - Bank Street	124	124
	C - A616 North	371	371
17:00-17:15	A - A616 South	310	310
	B - Bank Street	152	152
	C - A616 North	455	455
17:15-17:30	A - A616 South	310	310
	B - Bank Street	152	152
	C - A616 North	455	455
17:30-17:45	A - A616 South	254	254
	B - Bank Street	124	124
	C - A616 North	371	371
17:45-18:00	A - A616 South	212	212
	B - Bank Street	104	104
	C - A616 North	311	311

## Results

### Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.29	10.75	0.4	B	127	190
C-AB	0.54	12.73	1.6	B	293	440
C-A					86	129
A-B					0.92	1
A-C					258	387

### Main Results for each time segment

#### 16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	104	26	544	0.191	103	0.0	0.3	8.962	A
C-AB	226	57	662	0.342	224	0.0	0.7	8.990	A
C-A	85	21			85				
A-B	0.75	0.19			0.75				
A-C	212	53			212				

#### 16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	124	31	534	0.232	124	0.3	0.3	9.647	A
C-AB	283	71	670	0.422	282	0.7	0.9	10.189	B
C-A	88	22			88				
A-B	0.90	0.22			0.90				
A-C	253	63			253				

**17:00 - 17:15**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	152	38	520	0.292	151	0.3	0.4	10.719	B
C-AB	369	92	682	0.542	367	0.9	1.5	12.553	B
C-A	85	21			85				
A-B	1	0.28			1				
A-C	309	77			309				

**17:15 - 17:30**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	152	38	520	0.292	152	0.4	0.4	10.747	B
C-AB	370	92	683	0.542	370	1.5	1.6	12.733	B
C-A	85	21			85				
A-B	1	0.28			1				
A-C	309	77			309				

**17:30 - 17:45**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	124	31	534	0.232	125	0.4	0.3	9.684	A
C-AB	284	71	671	0.423	286	1.6	1.0	10.370	B
C-A	88	22			88				
A-B	0.90	0.22			0.90				
A-C	253	63			253				

**17:45 - 18:00**

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
B-AC	104	26	544	0.191	104	0.3	0.3	9.017	A
C-AB	227	57	663	0.342	228	1.0	0.7	9.151	A
C-A	84	21			84				
A-B	0.75	0.19			0.75				
A-C	212	53			212				

Calculation Reference: AUDIT-707701-170222-0255

## TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 06 - HOTEL, FOOD & DRINK  
 Category : B - RESTAURANTS  
 VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	HC HAMPSHIRE	1 days
06	WEST MIDLANDS	
	ST STAFFORDSHIRE	1 days
11	SCOTLAND	
	EA EAST AYRSHIRE	1 days
	RF RENFREWSHIRE	1 days

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

## Secondary 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: Gross floor area  
 Actual Range: 175 to 350 (units: sqm)  
 Range Selected by User: 130 to 2400 (units: sqm)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/08 to 23/11/15

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
Thursday	1 days
Friday	2 days

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

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	2
Edge of Town	1
Neighbourhood Centre (PPS6 Local Centre)	1

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:

Development Zone	1
Retail Zone	2
No Sub Category	1

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

Secondary Filtering selection:

Use Class:

A3 4 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:

5,001 to 10,000	1 days
10,001 to 15,000	1 days
15,001 to 20,000	1 days
20,001 to 25,000	1 days

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

Population within 5 miles:

25,001 to 50,000	1 days
50,001 to 75,000	1 days
125,001 to 250,000	1 days
250,001 to 500,000	1 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	1 days
1.1 to 1.5	3 days

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

Travel Plan:

No 4 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 4 days

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

LIST OF SITES relevant to selection parameters

1	EA-06-B-01	PIZZA HUT		EAST AYRSHIRE
		LOW GLENCAIRN STREET		
		KILMARNOCK		
		Suburban Area (PPS6 Out of Centre)		
		Retail Zone		
		Total Gross floor area:	350 sqm	
		Survey date: FRIDAY	20/06/08	Survey Type: MANUAL
2	HC-06-B-01	PIZZA HUT		HAMPSHIRE
		BINNACLE WAY		
		COSHAM		
		PORTSMOUTH		
		Suburban Area (PPS6 Out of Centre)		
		Development Zone		
		Total Gross floor area:	325 sqm	
		Survey date: MONDAY	23/11/15	Survey Type: MANUAL
3	RF-06-B-01	INDIAN RESTAURANT		RENFREWSHIRE
		LINWOOD ROAD		
		PHOENIX LEISURE PARK		
		PAISLEY		
		Neighbourhood Centre (PPS6 Local Centre)		
		No Sub Category		
		Total Gross floor area:	175 sqm	
		Survey date: FRIDAY	20/06/14	Survey Type: MANUAL
4	ST-06-B-01	RESTAURANT		STAFFORDSHIRE
		STONE ROAD		
		TRENTHAM		
		STOKE-ON-TRENT		
		Edge of Town		
		Retail Zone		
		Total Gross floor area:	259 sqm	
		Survey date: THURSDAY	24/10/13	Survey Type: MANUAL

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

TRIP RATE for Land Use 06 - HOTEL, FOOD & DRINK/B - RESTAURANTS  
VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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									
08:00 - 09:00									
09:00 - 10:00									
10:00 - 11:00	4	277	1.803	4	277	0.631	4	277	2.434
11:00 - 12:00	4	277	2.615	4	277	1.262	4	277	3.877
12:00 - 13:00	4	277	7.394	4	277	2.885	4	277	10.279
13:00 - 14:00	4	277	6.492	4	277	6.492	4	277	12.984
14:00 - 15:00	4	277	2.705	4	277	5.050	4	277	7.755
15:00 - 16:00	4	277	2.164	4	277	3.156	4	277	5.320
16:00 - 17:00	4	277	2.435	4	277	2.525	4	277	4.960
17:00 - 18:00	4	277	5.591	4	277	2.525	4	277	8.116
18:00 - 19:00	4	277	6.673	4	277	5.681	4	277	12.354
19:00 - 20:00	4	277	6.583	4	277	7.755	4	277	14.338
20:00 - 21:00	4	277	4.869	4	277	6.763	4	277	11.632
21:00 - 22:00	4	277	2.795	4	277	3.517	4	277	6.312
22:00 - 23:00	4	277	1.533	4	277	2.885	4	277	4.418
23:00 - 24:00	4	277	0.361	4	277	2.344	4	277	2.705
<b>Total Rates:</b>			54.013			53.471			107.484

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.

#### Parameter summary

Trip rate parameter range selected: 175 - 350 (units: sqm)  
 Survey date date range: 01/01/08 - 23/11/15  
 Number of weekdays (Monday-Friday): 4  
 Number of Saturdays: 0  
 Number of Sundays: 0  
 Surveys automatically removed from selection: 0  
 Surveys manually removed from selection: 0

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

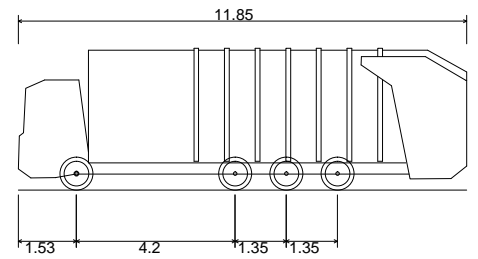
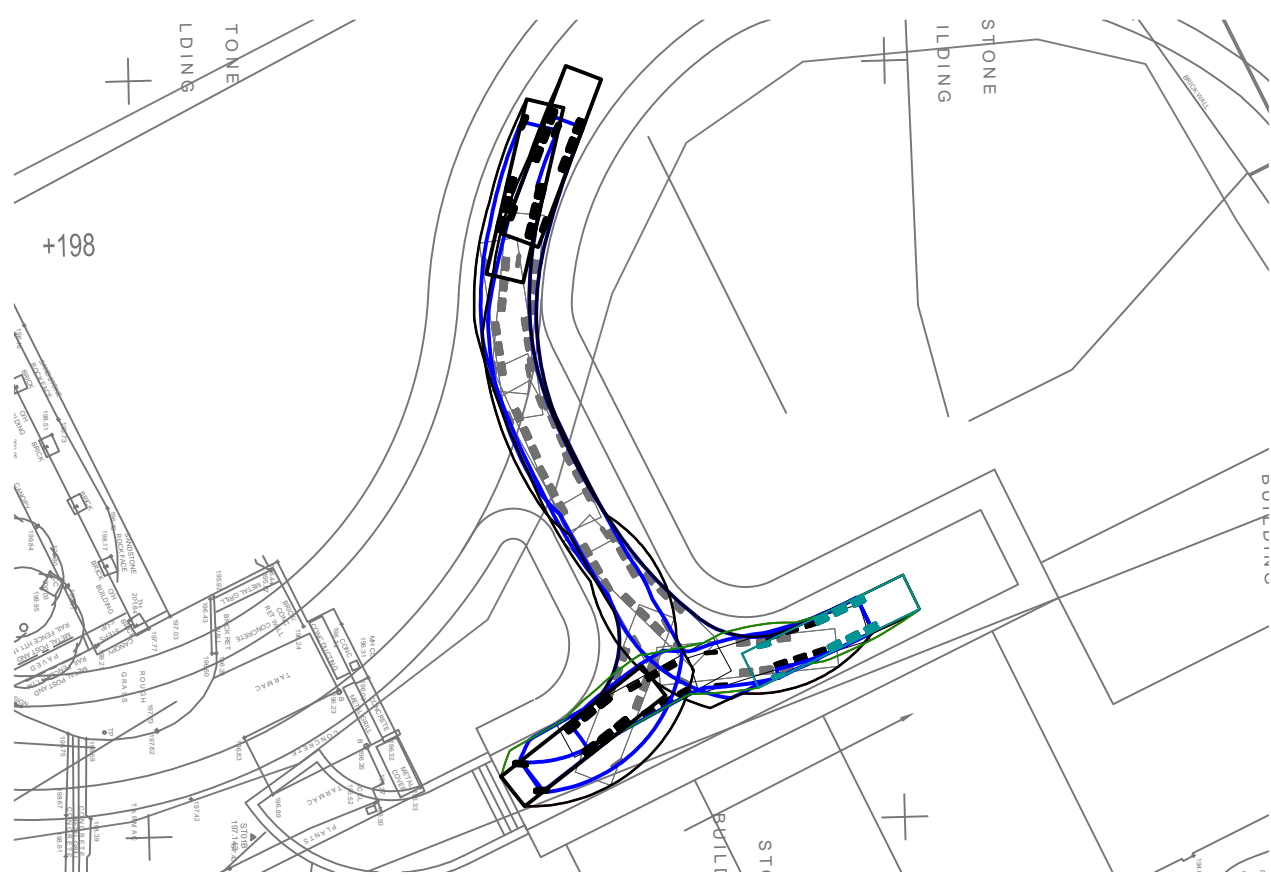
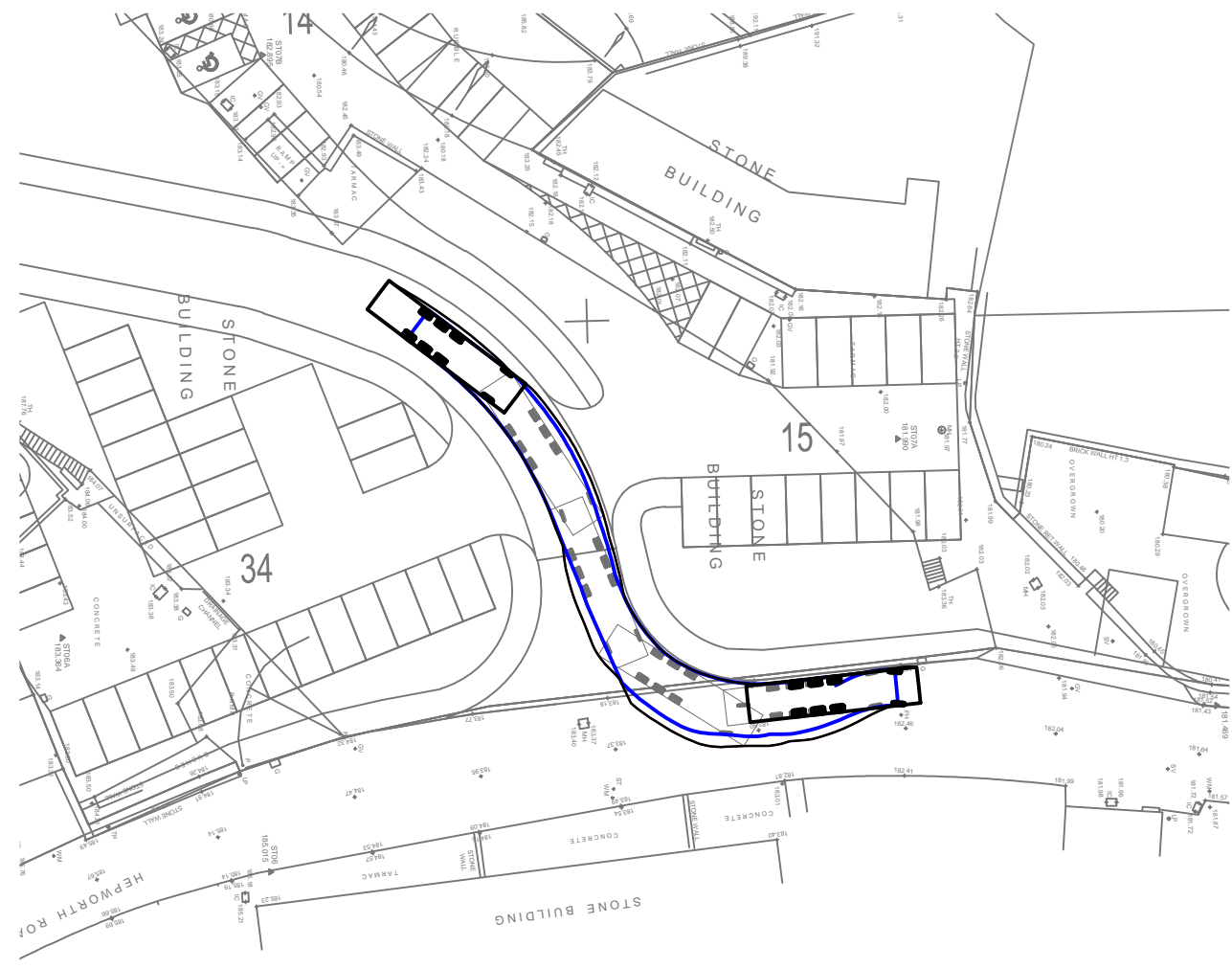
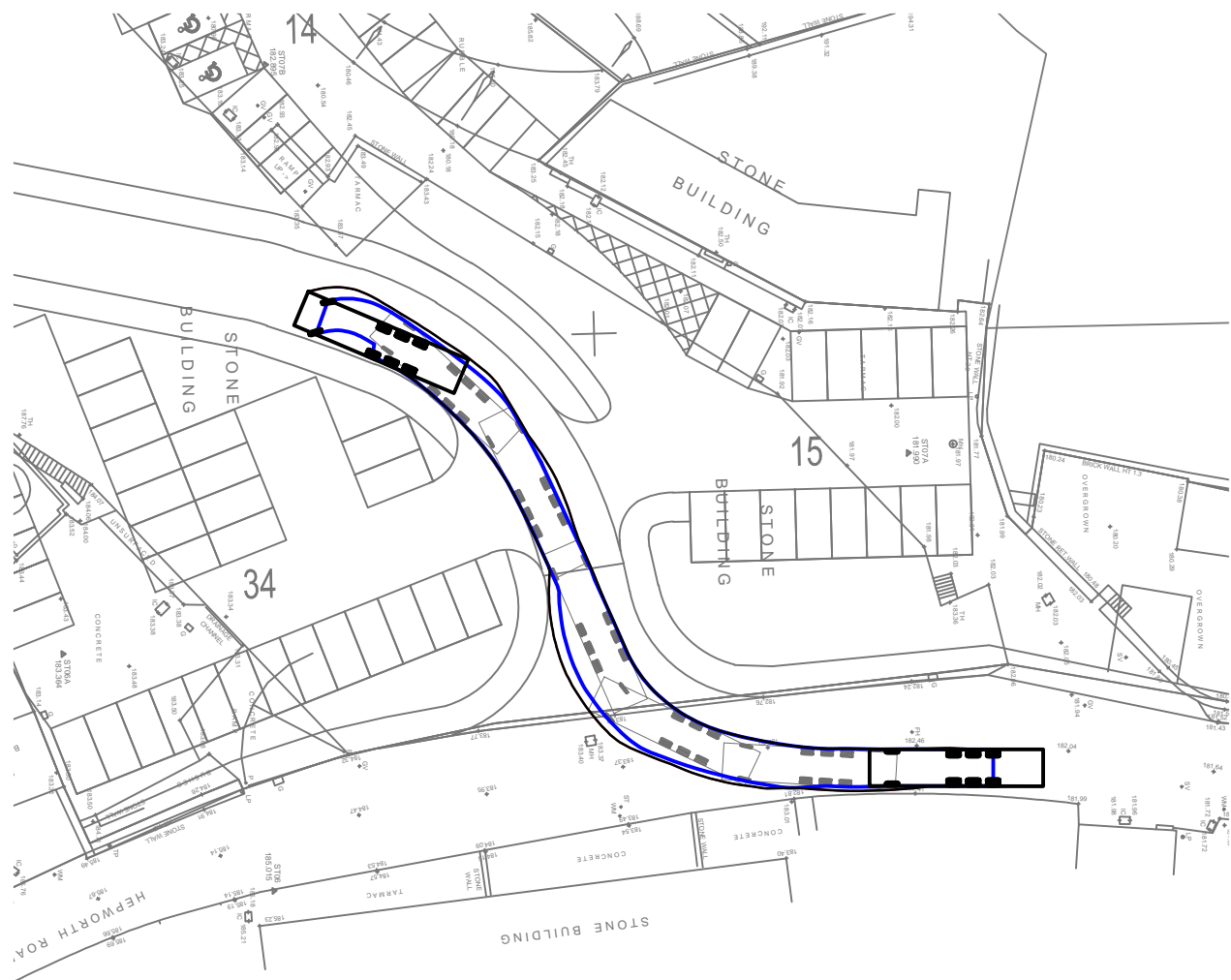
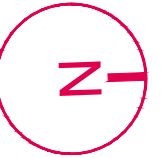
Restaurant - LCC Rates					4500
ARRIVALS					418.06
DEPARTURES					Parking
Time Range	Trip Rate	Flow	Trip Rate	Flow	Accummulation
00:00-01:00	0	0	0	0	
01:00-02:00	0	0	0	0	0
02:00-03:00	0	0	0	0	0
03:00-04:00	0	0	0	0	0
04:00-05:00	0	0	0	0	0
05:00-06:00	0	0	0	0	0
06:00-07:00	0	0	0	0	0
07:00-08:00	0	0	0	0	0
08:00-09:00	0	0	0	0	0
09:00-10:00	0	0	0	0	0
10:00-11:00	1.803	7.5	0.631	2.6	5
11:00-12:00	2.615	10.9	1.262	5.3	11
12:00-13:00	7.394	30.9	2.885	12.1	29
13:00-14:00	6.492	27.1	6.492	27.1	29
14:00-15:00	2.705	11.3	5.05	21.1	20
15:00-16:00	2.164	9.0	3.156	13.2	15
16:00-17:00	2.435	10.2	2.525	10.6	15
17:00-18:00	5.591	23.4	2.525	10.6	28
18:00-19:00	6.673	27.9	5.681	23.8	32
19:00-20:00	6.583	27.5	7.755	32.4	27
20:00-21:00	4.869	20.4	6.763	28.3	19
21:00-22:00	2.795	11.7	3.517	14.7	16
22:00-23:00	1.533	6.4	2.885	12.1	11
23:00-24:00	0.361	1.5	2.344	9.8	2
Daily Trip Rates:	28.796	120.4	28.51	119.2	

Offices					11500
ARRIVALS					1068.38
DEPARTURES					Parking
Time Range	Trip Rate	Flow	Trip Rate	Flow	Accummulation
00:00-01:00	0	0.0	0	0.0	
01:00-02:00	0	0.0	0	0.0	0
02:00-03:00	0	0.0	0	0.0	0
03:00-04:00	0	0.0	0	0.0	0
04:00-05:00	0	0.0	0	0.0	0
05:00-06:00	0	0.0	0	0.0	0
06:00-07:00	0	0.0	0	0.0	0
07:00-08:00	0.596	6.4	0.128	1.4	5
08:00-09:00	1.512	16.2	0.281	3.0	18
09:00-10:00	0.782	8.4	0.247	2.6	24
10:00-11:00	0.284	3.0	0.227	2.4	24
11:00-12:00	0.27	2.9	0.262	2.8	25
12:00-13:00	0.386	4.1	0.533	5.7	23
13:00-14:00	0.514	5.5	0.46	4.9	24
14:00-15:00	0.279	3.0	0.335	3.6	23
15:00-16:00	0.253	2.7	0.43	4.6	21
16:00-17:00	0.25	2.7	0.853	9.1	15
17:00-18:00	0.195	2.1	1.209	12.9	4
18:00-19:00	0.114	1.2	0.441	4.7	0
19:00-20:00	0	0.0	0	0.0	0
20:00-21:00	0	0.0	0	0.0	0
21:00-22:00	0	0.0	0	0.0	0
22:00-23:00	0	0.0	0	0.0	0
23:00-24:00	0	0.0	0	0.0	0
Daily Trip Rates:	5.435	58.1	5.406	57.8	

Flats					18.00
ARRIVALS					Parking
DEPARTURES					Accummulation
Time Range	Trip Rate	Flow	Trip Rate	Flow	Accummulation
00:00-01:00		0.0		0.0	
01:00-02:00		0.0		0.0	0
02:00-03:00		0.0		0.0	0
03:00-04:00		0.0		0.0	0
04:00-05:00		0.0		0.0	0
05:00-06:00		0.0		0.0	0
06:00-07:00	0	0.0	0	0.0	22
07:00-08:00	0.03	0.5	0.152	2.7	20
08:00-09:00	0.078	1.4	0.241	4.3	17
09:00-10:00	0.067	1.2	0.093	1.7	16
10:00-11:00	0.078	1.4	0.089	1.6	16
11:00-12:00	0.061	1.1	0.07	1.3	16
12:00-13:00	0.073	1.3	0.103	1.9	16
13:00-14:00	0.086	1.5	0.087	1.6	15
14:00-15:00	0.085	1.5	0.078	1.4	16
15:00-16:00	0.117	2.1	0.082	1.5	16
16:00-17:00	0.116	2.1	0.085	1.5	17
17:00-18:00	0.215	3.9	0.11	2.0	19
18:00-19:00	0.179	3.2	0.109	2.0	20
19:00-20:00	0	0.0	0	0.0	20
20:00-21:00	0	0.0		0.0	20
21:00-22:00		0.0		0.0	20
22:00-23:00		0.0		0.0	20
23:00-24:00		0.0		0.0	20
Daily Trip Rates:		0.0		0.0	

Total	
Time Range	Parking Accummulation
00:00-01:00	0.0
01:00-02:00	0.0
02:00-03:00	0.0
03:00-04:00	0.0
04:00-05:00	0.0
05:00-06:00	0.0
06:00-07:00	22.0
07:00-08:00	24.8
08:00-09:00	35.0
09:00-10:00	40.3
10:00-11:00	45.6
11:00-12:00	51.2
12:00-13:00	67.9
13:00-14:00	68.5
14:00-15:00	58.2
15:00-16:00	52.8
16:00-17:00	46.5
17:00-18:00	50.4
18:00-19:00	52.3
19:00-20:00	47.4
20:00-21:00	39.5
21:00-22:00	36.5
22:00-23:00	30.8
23:00-24:00	22.5
Daily Trip Rates:	





KIRKLEES REFUSE VEHICLE	
OVERALL LENGTH	11.850m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	3.749m
MIN BODY GROUND CLEARANCE	0.302m
TRACK WIDTH	2.490m
LOCK TO LOCK TIME	6.00s
WALL TO WALL TURNING RADIUS	11.000m

THIS DRAWING SHOWS THE PRELIMINARY DESIGN ONLY AND IS SUBJECT TO DETAILED DESIGN, TOPOGRAPHICAL SURVEY INFORMATION AND LOCAL AUTHORITY APPROVAL



DOBROYD MILL, JACKSON BRIDGE  
HEPWORTH, WEST YORKSHIRE

SWEPT PATH ANALYSIS

SCALE: 1:500 @A3  
DATE: JULY 2017  
DRAWING No: 1604602