Residential Development, Woolley Bridge

Transport Statement

Report

July 2012

Prepared for:
Tornillo Homes (Hadfield) Limited
acting by Joe Pitt and Ben Moon, Joint Fixed Charge Receivers of the land lying south of Woolley Bridge Road, Glossop

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1 Residential Development, Woolley Bridge – Transport Statement

Introduction

1.1 Steer Davies Gleave has been commissioned by Tornillo Homes (Hadfield) Limited, acting by Joe Pitt and Ben Moon, to produce a Transport Statement in support of an outline planning application for a new residential development just off the A57 at Woolley Bridge, to the north west of Glossop.

1.2 The development site is located immediately west of Hadfield, less than 1km south of Hollingworth and approximately 3km from Glossop Town Centre. A general location plan is provided at Figure 1.1, with the more specific site location shown in Figure 1.2.

1.3 Immediately south of the site, between the site boundary and the residential property known as 'Hillside', there is a small car sales business operating under the name 'Car Movers'.

FIGURE 1.1 WOOLLEY BRIDGE – SITE LOCATION

FIGURE 1.2 SITE LOCATION PLAN

1.4 It has been agreed with Derbyshire County Council (DCC), as local highway authority, that a Transport Statement (TS) is sufficient to demonstrate the impact that the development proposals will have on the surrounding transport network, and this TS is submitted as a supporting document to the planning application to High Peak Borough Council and DCC.

Development Proposals

1.5 The proposal is for a small residential development of approximately 31 new homes.

1.6 The proposed site layout is shown in Figure 1.3.

1.7 The site was previously used as garage/car sales centre but has been vacant for a number of years. The old marketing suite building still occupies part of the site.

FIGURE 1.3 PROPOSED SITE LAYOUT

1.8 The High Peak Adopted Local Plan and Saved local Plan Policies provide recommendations for the maximum provision of off-street parking for all new developments, relating to different land uses. For residential dwellings, the guidelines are summarised below. It has been assumed that the average number of bedrooms across the site will be between two and three, and that the parking requirement for a site of 30 units will be up to a total of 62 parking spaces.

- One bedroom dwellings — 1.5 spaces per unit
- Two and three bedroom dwellings — 2 spaces per unit
- Four and five bedroom dwellings — 3 spaces per unit
- Over five bedrooms — 0.7 spaces per bedroom

1.9 A single point of access to the development site will be provided direct off the A57. The access junction will be a simple priority controlled T-junction.

Existing Conditions

Public transport accessibility

1.10 A number of bus services pass within reasonable distance of the site, as shown in the route map replicated in Figure 1.4 and described in more detail in Table 1.1.

1.11 The main service is Route 236, operated by Stagecoach, goes directly past the site along the A57. Route 236 provides an hourly service between Glossop to the south and Mottram, Stalybridge and Ashton to the north-west.

1.12 The southbound bus stop for Route 236 (towards Glossop) is located directly adjacent to the site. The northbound bus stop with a shelter, seating and timetable information is located on the approach to the mini-roundabout A57/Woolley Bridge Road junction, approximately 200m north of the site.

Northbound bus stop - Route 236

1.13 Slightly further afield, Routes 237 (Stagecoach) and 393 (Bowers/Centrebus, now operating as High Peak Buses) also provide connections to Hadfield and provide alternative options for those travelling to Glossop. The nearest stops for the 237 and 393 services are located on Shaw Lane, approximately 650m to the south of the site.

FIGURE 1.4 LOCAL BUS ROUTE MAP

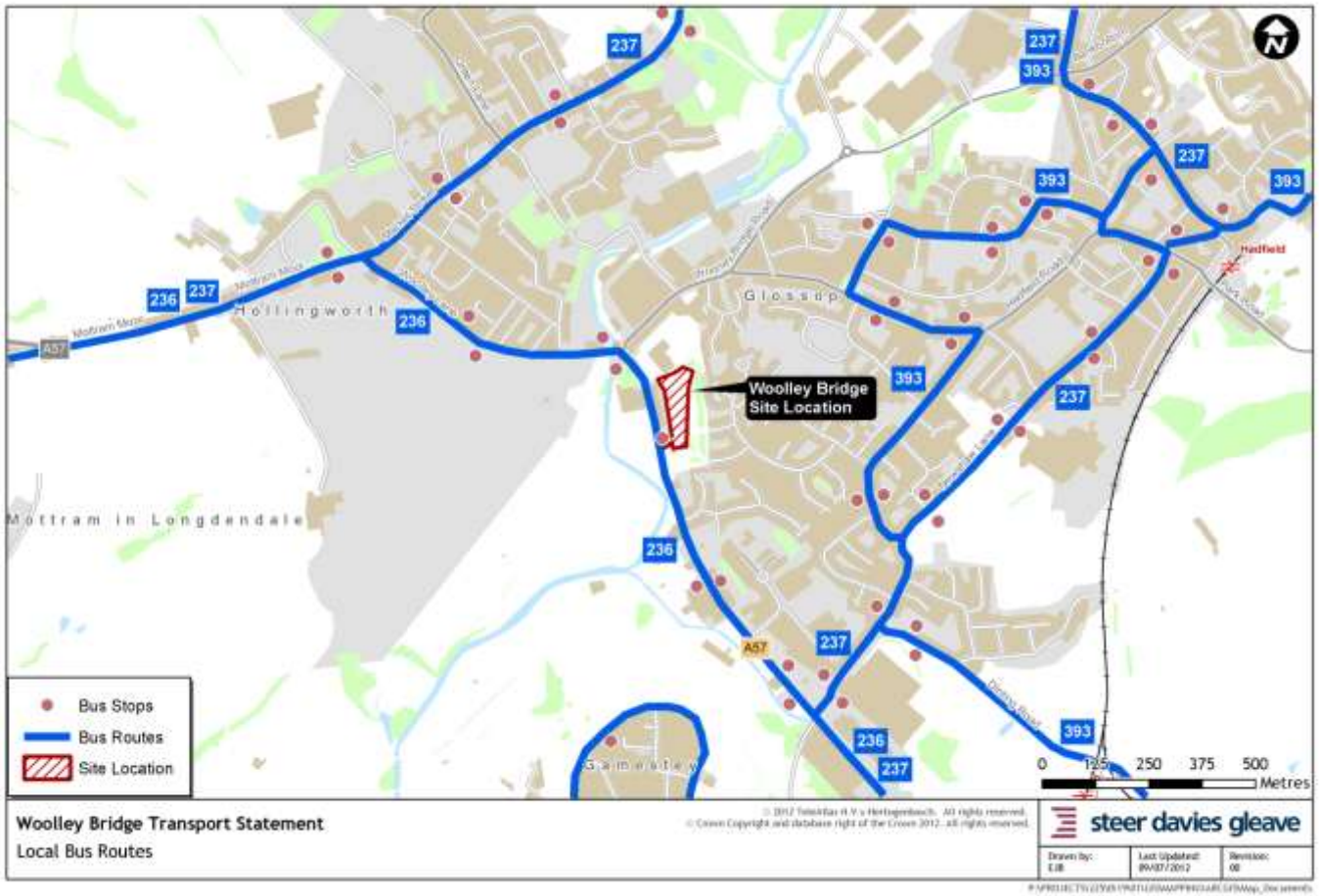


TABLE 1.1 LOCAL BUS SERVICES

Route Number	Route	Frequency
236	Glossop – Mottram – Stalybridge – Ashton	Mon-Sat: hourly Sun/BH: hourly
237	Glossop – Hadfield – Mottram – Stalybridge – Ashton	Mon-Sat: hourly Sun/BH: hourly
393	Glossop – Hadfield – Padfield Circular	Mon-Sat: hourly (no evening service) Sun/BH: no service

Note: early morning and evening weekday services on Routes 236 and 237 run limited stop between Ashton and Manchester Piccadilly.

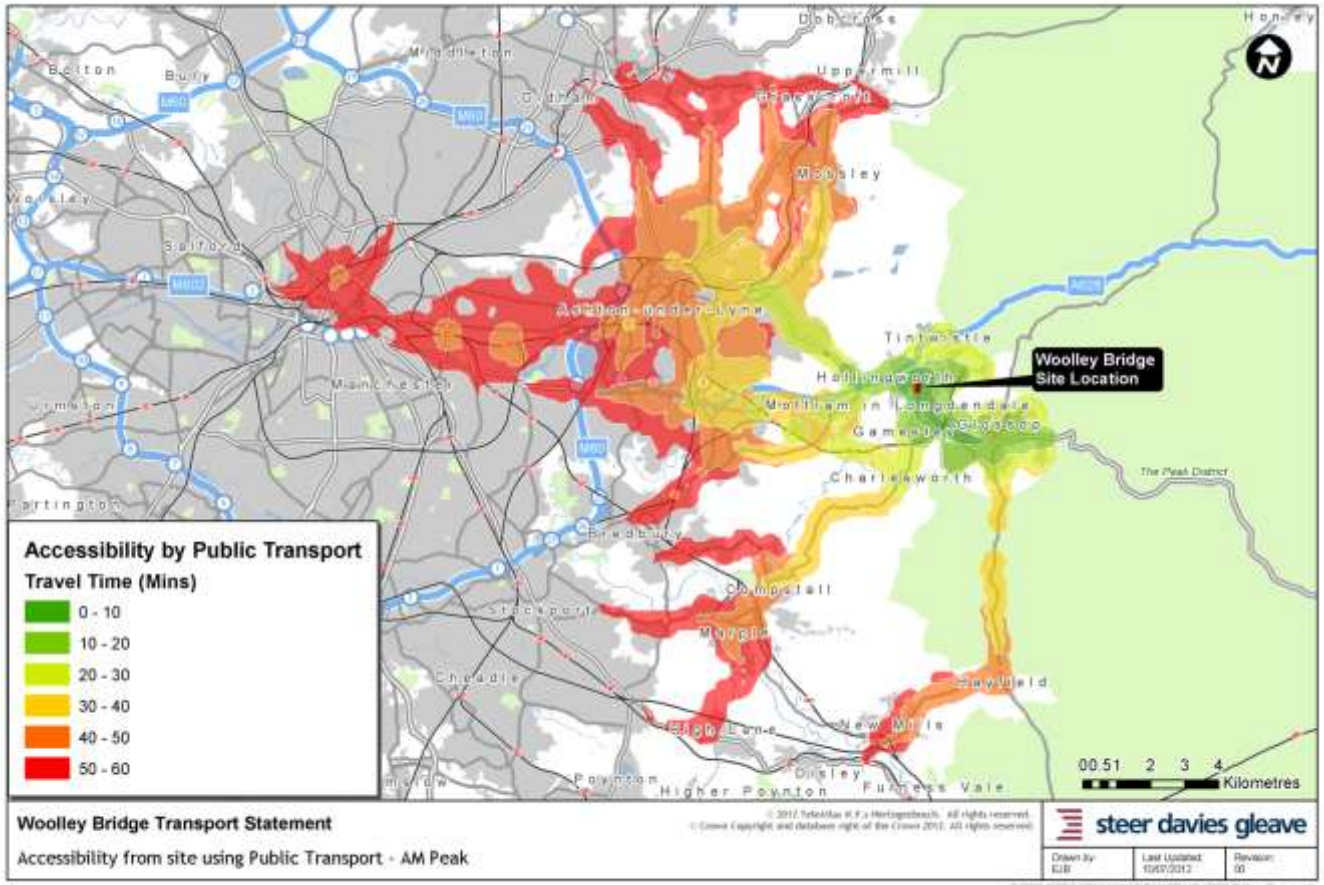
1.14 Hadfield and Dinting rail stations are located approximately 1.8km and 1.7km respectively from the site by road. Each station has limited car parking and cycle storage and offer regular half hourly services to Manchester Piccadilly, stopping at Broadbottom, Hattersley, Godley, Newton for Hyde, Flowery Field, Guide Bridge, Gorton and Ashburys.

1.15 Based on the above information, the accessibility of the site by public transport has been assessed using the Department for Transport's recommended software, Accession. Accession calculates the level of accessibility of a site from the surrounding area using local public transport information and including estimates of walking distance to local bus stops.

1.16 The level of accessibility from the site within 60 minutes has been identified and the results of this analysis for the morning peak period are shown in Figure 1.5.

1.17 Figure 1.5 shows that local towns such as Glossop, Hollingworth, Tintwistle and Mottram are all accessible within 30 minutes, with a combination of rail services and onward bus connections providing wider accessibility into parts of Greater Manchester and the City Centre itself within one hour.

FIGURE 1.5 60 MINUTE PUBLIC TRANSPORT ACCESSIBILITY FROM THE DEVELOPMENT SITE (AM PEAK)



Walking and Cycling

1.18 A public footpath/cycleway runs along the eastern boundary of the site connecting to Woolley Bridge Road to the north. Where the footpath crosses the A57 to the south of the site, close to the junction with Potter Road, a signalised pedestrian crossing is provided. There are three formal connections off this footpath into the residential areas of Hadfield.

1.19 This footpath/cycleway forms part of the Trans Pennine Trail, which is a 215 mile route for walkers, cyclists and horse riders passing through the Pennines as it links the west coast at Southport to the east coast at Hornsea. This section of cycleway is also at a point were National Cycle Networks 62 and 68 are combined. These routes are known as the Trans Pennine Trail and Pennine Cycleway respectively.

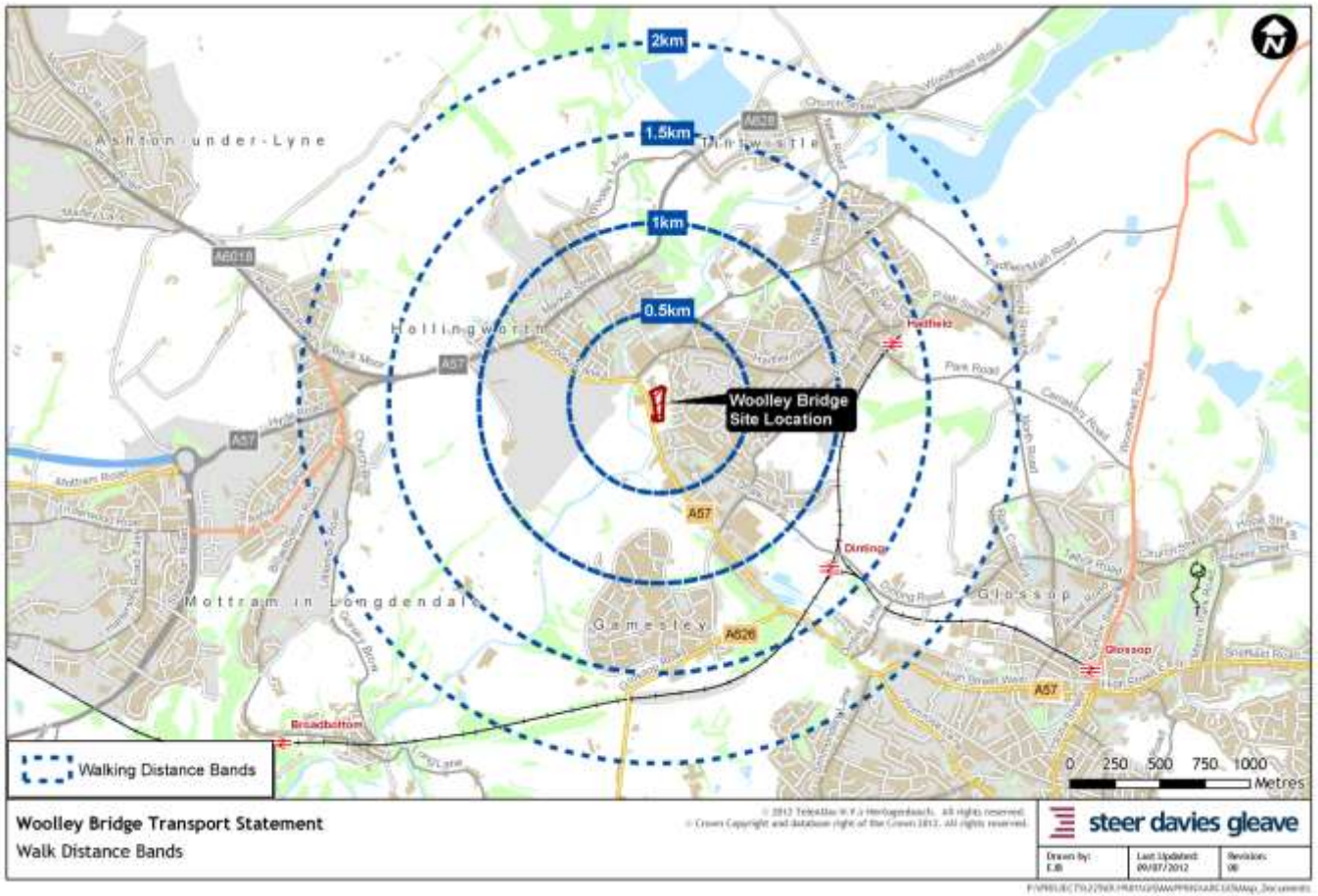
Trans Pennine Way Signage

1.20 There is a footway on the eastern side of A57 only, with a hedge up against the highway boundary on the western side.

1.21 Figure 1.6 illustrates accessibility by pedestrians over a 2km radius within which a number of schools, businesses and retail opportunities are available, including the centres of Hadfield, Hollingworth and Gamesley.

1.22 Apart from the trails described above, cyclists will be largely reliant on the local road network.

FIGURE 1.6 WALKING CATCHMENT (2KM)



1.23 The National Planning Policy Framework (NPPF) promotes opportunities for residents of new developments to be able to walk to local amenities, and NPPF replaces PPG13:Transport which went further in suggesting that walking is a suitable alternative to the car for trips under 2km. The IHT publication 'Providing for Journeys on Foot' (2000) identifies acceptable walking distances for various land uses, as set out in Table 1.2. These figures represent approximately a 10 minute walk to town centres, 25 minutes to work/school and 15 minute walk elsewhere.

TABLE 1.2 SUGGESTED ACCEPTABLE WALKING DISTANCES

Definition	Town Centres (m)	Commuting/Schools (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

1.24 Based on the distance bands illustrated in Figure 1.5 above, the following amenities and associated distance from the site provide an indication of the range of facilities accessible on foot.

- Schools: Merseybank Lodge Nursery, St Andrews CofE Junior School and Glossopdale College Lower School (within 1km); Gamesley Community Primary School (within 1.5km); and Glossopdale College Upper School (greater than 2km but accessible by the 393 bus route).
- Employment: various employment opportunities located close to the A57/Woolley Bridge Road junction and along the A57, such as Etherow and Brookfield Industrial Estates, all within 500m.
- Local retail: local convenience store (at the BP filling station) and the Green Lane retail units in Hadfield within 500m.
- Leisure: dance studio and fitness & martial arts centre off Woolley Bridge Road, plus access to the Trans Pennine Trail within 500m of the site.

Local Road Network

1.25 The A57, defined as a Strategic County Route in the Derbyshire County Council Highway Network Management Plan, runs alongside the western boundary of the site. In the vicinity of the site, the A57 provides a connection from Manchester to Glossop, before continuing on across the Pennines into Sheffield.

1.26 The A57 is a single carriageway road with street lighting, a width of approximately 8-9m, and is subject to a 30mph speed limit. Approximately 200m to the north of the site is a mini-roundabout junction with Woolley Bridge Road, with single lane approach and exit on each arm. The closest junction south of the site is with Potter Road, which provides access to approximately 80 residential units. Right turn lanes into and out of the junction are provided at this location.

1.27 Immediately north of the site, there is a row of 12 terraced houses with limited off-street parking available. As such vehicles are observed parking on-street, in front of these properties, partly blocking the footway.

1.28 Traffic flow data for the A57 has been collected over a period of 6 days between Thursday 5th and Wednesday 11th July 2012. A summary of the data is provided in Appendix A and shows that flows are relatively consistent across each day and that an average, two-way weekday flow of 16,675 is observed, with 1,023 and 1,168 in the AM and PM peak periods respectively.

	Northbound	Southbound	2-way
08:00-09:00	459	564	1,023
17:00-18:00	593	575	1,168
07:00-19:00	6,030	6,098	12,128
00:00-24:00	8,258	8,417	16,675

1.29 Analysis of the data confirms that the AM peak hour occurs between 08:00 and 09:00, and that the PM peak is 17:00-18:00.

Trip Generation

1.30 The number of vehicular trips expected to and from the site in the morning (08:00-09:00) and evening (17:00-18:00) peak hours has been derived using the latest version of TRICS (2012(a)v6.9.2). The database has been interrogated to include only sites in the North West, North, Yorkshire & North Lincolnshire, East Midlands and West Midlands. Furthermore, only data for weekdays is included, and the search is restricted to sites with fewer than 100 houses.

1.31 Output from the TRICS analysis is provided in Appendix B.

1.32 The vehicular trip rates derived are presented in Table 1.3 below, along with the corresponding number of trips forecast to be generated by a development of 31 new homes.

TABLE 1.3 VEHICULAR TRIP RATES AND RESULTING TRIP GENERATION FORECASTS

Time Period	Arrivals	Departures	Total 2-way
Trip Rates (per household unit)			
AM Peak (08:00-09:00)	0.169	0.390	0.559
PM Peak (17:00-18:00)	0.359	0.236	0.595
Daily (07:00-19:00)	2.770	2.780	5.550
Trip Generation Forecasts (31 units)			
AM Peak (08:00-09:00)	5	12	17
PM Peak (17:00-18:00)	11	7	18
Daily (07:00-19:00)	86	86	172

1.33 As shown, the total number of peak hour trips likely to be generated is less than 20 vehicles in both directions, equal to less than one every three minutes.

1.34 A two-way increase of 20 vehicles represents less than 2% of the observed peak hour flow and, as such, is considered to be within the daily fluctuation in flow.

1.35 Based on the latest traffic flow data for the A57, it is expected that the split between traffic to/from the north and south in the morning peak will be a ratio of 45%:55%, with a corresponding 51%:49% split in the evening peak.

1.36 Using the same TRICS selections outlined above, we anticipate the following share of overall trips between different modes.

- Vehicle occupants 71.5%
- Public Transport users 2.1%
- Cyclists 2.4%
- Pedestrians 24.0%

1.37 These figures are supported by a review of data contained in the 2001 Census Data – Method of Travel to Work for Residential Population (UV39) for the Hadfield South ward, within which the site lies. Comparable findings for Hadfield South are provided below and demonstrate that the proportion of vehicle occupants is likely to be around 71-72% and suggests that the proportion using public transport might be slightly higher than indicated by TRICS.

- Vehicle occupants 72.0%
- Public Transport users 3.8%
- Cyclists 2.2%
- Pedestrians 20.3%
- Motorcyclists 1.0%
- Other 0.6%

Site Access

1.38 Access to the site will be direct from the A57, located at the southern boundary of the site adjacent to the 'Car Movers' car sales business. The proposed layout is shown in Appendix C.

1.39 The proposed site access conflicts with the location of the southbound bus stop for the hourly Route 236 service. This will require relocation of the stop to the north of its current location, to a point between the site access and the southernmost existing residential property.

1.40 In Manual for Streets it is recommended that for a road with a 30mph speed limit, visibility for a vehicle entering the main line from a side road must be a minimum of 40.0 metres measured from a point 2.4 metres back from the give way line. The manual refers to evidence that visibility measured from further back from the give way line may result in drivers failing to take full account of other road users, particularly pedestrians and cyclists and that accident risk increases. The proposed site access diagram in Appendix C demonstrates that the required visibility is achieved.

Operational Analysis

1.41 The operation of the proposed access junction with the A57 has been assessed for the following scenario:

- Future 2017 – with development

1.42 An assessment year of 2018 has been chosen to represent the date of the application plus five years hence.

1.43 Background traffic growth between the date of the surveys, 2012, and 2018 has been calculated using growth factors derived from the National Trip End Model (NTM), adjusted using Tempro for Glossop and Hollingworth.

1.44 Analysis of NTM regional growth for Urban, Principal roads in the East Midlands produces a NTM factor of 1.057 between 2012 and 2017.

1.45 WebTAG Unit 3.5.2 then recommends local adjustments according to the following formula:

NTM Region * (peak local / average day region)

1.46 Table 1.4 provides Tempro factors for car drivers, origins and destinations, for the East Midlands and Glossop/Hollingworth.

TABLE 1.4 TEMPRO GROWTH FACTORS

Region/ District	AM Peak			PM Peak			Average weekday		
	O	D	Ave	O	D	Ave	O	D	Ave
2012-2017									
East Mids	-	-	-	-	-	-	1.05009	1.0509	1.0509
Glossop	1.0310	1.0319	1.0315	1.0332	1.0322	1.0327	-	-	-

1.47 Using the Tempro factors in the table above, and the WebTAG formula, we derive the following factors for each of the AM and PM peak.

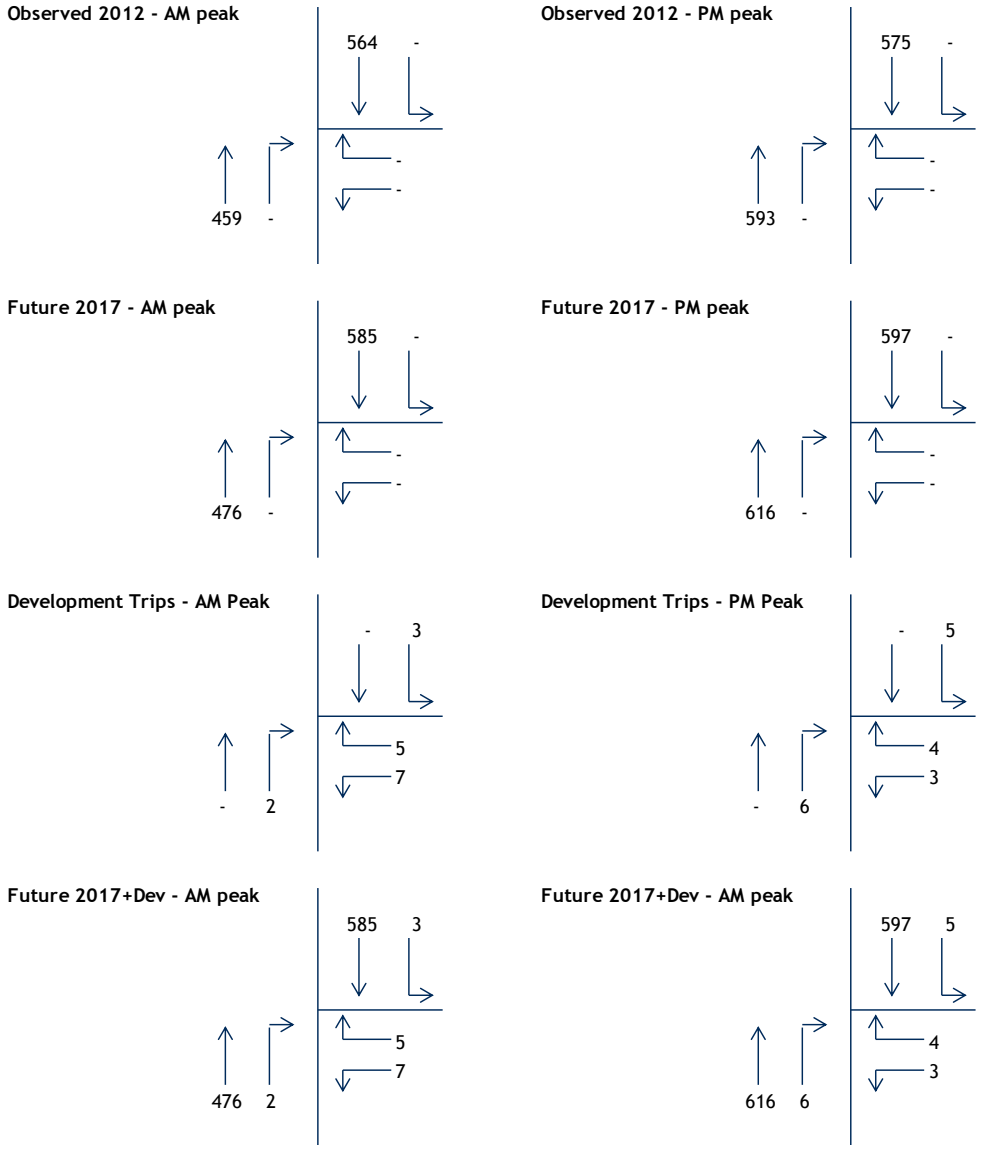
- AM peak 2012-2017 1.0372
- PM peak 2012-2017 1.0384

1.48 These factors are applied to the 2012 count data to derive Future 2017 equivalents, to which development trip forecasts are added as shown in Figure 1.6.

1.49 This access has been assessed for operational capacity using PICADY, which is the industry standard software used for predicting capacities, queue lengths and delays at non-signalised major/minor priority junctions.

1.50 Based on the traffic flow predictions shown in Figure 1.7 the PICADY models shows minimal queuing and delay at the proposed site access junction which indicates that there will be no capacity issue at this junction when development traffic is introduced. In particular, the PICADY model is used to demonstrate that a right-turn lane facility from the A57 is not required.

FIGURE 1.7 SITE ACCESS – TURNIG FLOW DIAGRAMS



1.51 The results of the operational analysis are shown in Table 1.5 below and the full PICADY output is included in Appendix D.

TABLE 1.5 SITE ACCESS – PICADY RESULTS – 2017 WITH DEVELOPMENT

Arm	AM Peak (0800-0900)		PM Peak (1700-1800)	
	RFC	Queue	RFC	Queue
A57 North	0.000	0	0.000	0
Site Access	0.038	0	0.026	0
A57 South	0.007	0	0.022	0

1.52 Beyond the site access, the level of increased traffic generated by the development in the peak hours will disperse north and south and have minimal impact on adjacent junctions. As such, no further junction operational assessments have been undertaken.

Conclusions

1.53 It can be seen that the number of vehicle movements expected to be generated by the residential development proposals at Woolley Bridge are low and will add less than 2% to daily traffic flows along the A57.

1.54 Analysis of the access junction demonstrates that all arms of the junction are predicted to operate well under capacity in 2017 and it is demonstrated that the Manual for Streets visibility requirement can be achieved at the site access junction, although relocation of the existing southbound bus stop will be required.

1.55 As such, we conclude that there are no highway reasons why the proposed residential development at Woolley Bridge should not proceed.

APPENDIX

A

AUTOMATIC TRAFFIC COUNT DATA

A1 AUTOMATIC TRAFFIC COUNT DATA - JULY 2012

A57 Northbound

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

Hr Ending	05/07/2012 Thursday	06/07/2012 Friday	07/07/2012 Saturday	08/07/2012 Sunday	09/07/2012 Monday	10/07/2012 Tuesday	11/07/2012 Wednesday	5 Day Ave	7 Day Ave
1	0	58	75	88	61	56	51	45	56
2	0	32	57	58	25	37	27	24	34
3	0	33	51	59	26	32	26	23	32
4	0	29	41	51	24	28	28	22	29
5	0	83	61	50	84	80	83	66	63
6	0	190	83	56	183	177	170	144	123
7	0	445	149	48	437	453	415	350	278
8	0	438	108	45	413	440	428	344	267
9	0	470	149	79	461	465	441	367	295
10	0	482	263	158	474	479	448	377	329
11	0	519	404	308	525	507	477	406	391
12	0	506	414	386	489	479	513	397	398
13	0	529	429	364	509	507	479	405	402
14	0	485	398	310	473	506	484	390	379
15	412	500	456	384	478	490	482	472	457
16	520	474	394	300	466	490	467	483	444
17	533	569	385	298	547	588	519	551	491
18	529	613	364	277	606	598	553	580	506
19	536	507	344	255	505	502	489	508	448
20	450	432	323	247	427	444	0	351	332
21	332	348	279	249	347	355	0	276	273
22	268	279	223	222	269	292	0	222	222
23	186	194	172	103	189	205	0	155	150
24	114	108	133	52	116	108	0	89	90
7-19	2530	6092	4108	3164	5946	6051	5780	5280	4810
6-22	3580	7596	5082	3930	7426	7595	6195	6478	5915
6-24	3880	7898	5387	4085	7731	7908	6195	6722	6155
0-24	3880	8323	5755	4447	8134	8318	6580	7047	6491

A57 Southbound

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

Hr Ending	05/07/2012 Thursday	06/07/2012 Friday	07/07/2012 Saturday	08/07/2012 Sunday	09/07/2012 Monday	10/07/2012 Tuesday	11/07/2012 Wednesday	5 Day Ave	7 Day Ave
1	0	81	102	118	74	81	70	61	75
2	0	17	33	24	16	13	13	12	17
3	0	18	32	34	19	16	16	14	19
4	0	27	32	37	22	29	22	20	24
5	0	53	39	30	41	61	52	41	39
6	0	113	49	32	97	110	100	84	72
7	0	263	94	36	254	263	267	209	168
8	0	487	120	53	489	482	479	387	301
9	0	570	183	96	545	586	555	451	362
10	0	493	264	160	463	476	461	379	331
11	0	479	370	291	447	484	477	377	364
12	0	422	335	324	404	423	421	334	333
13	0	456	376	325	440	466	445	361	358
14	0	619	508	374	598	605	601	485	472
15	360	392	373	310	374	408	369	381	369
16	544	514	426	314	486	530	505	516	474
17	507	564	392	290	559	570	531	546	488
18	492	588	352	262	537	606	568	558	486
19	630	597	394	293	558	576	554	583	515
20	532	567	409	314	534	565	0	440	417
21	472	460	366	331	423	476	0	366	361
22	350	347	277	273	336	356	0	278	277
23	269	268	236	143	253	264	0	211	205
24	146	152	178	72	151	139	0	118	120
7-19	2533	6181	4093	3092	5900	6212	5966	5358	4854
6-22	3887	7818	5239	4046	7447	7872	6233	6651	6077
6-24	4302	8238	5653	4261	7851	8275	6233	6980	6402
0-24	4302	8547	5940	4536	8120	8585	6506	7212	6648

APPENDIX

B

TRICS OUTPUT

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	LE	LEICESTERSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	ST	STAFFORDSHIRE	1 days
	WM	WEST MIDLANDS	3 days
	WO	WORCESTERSHIRE	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	3 days
08	NORTH WEST		
	CH	CHESHIRE	1 days
	GM	GREATER MANCHESTER	1 days
	LC	LANCASHIRE	1 days
09	NORTH		
	CB	CUMBRIA	3 days

Filtering Stage 2 selection:

Parameter: Number of dwellings
Actual Range: 9 to 98 (units:)
Range Selected by User: 9 to 100 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/04 to 18/10/11

Selected survey days:

Monday	4 days
Tuesday	6 days
Wednesday	4 days
Thursday	3 days
Friday	3 days

Selected survey types:

Manual count	20 days
Directional ATC Count	0 days

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	7
Edge of Town	11
Neighbourhood Centre (PPS6 Local Centre)	1

Selected Location Sub Categories:

Residential Zone	16
No Sub Category	4

LIST OF SITES relevant to selection parameters

1 CA-03-A-04 DETACHED, PETERBOROUGH CAMBRIDGESHIRE

THORPE PARK ROAD
PETERBOROUGH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 9

2 CB-03-A-02 SEMI DETACHED, WORKINGTON CUMBRIA
HAWKSHEAD AVENUE

WORKINGTON
Edge of Town
Residential Zone
Total Number of dwellings: 40

3 CB-03-A-03 SEMI DETACHED, WORKINGTON CUMBRIA
HAWKSHEAD AVENUE

WORKINGTON
Edge of Town
Residential Zone
Total Number of dwellings: 40

4 CB-03-A-04 SEMI DETACHED, WORKINGTON CUMBRIA
MOORCLOSE ROAD
SALTERBACK
WORKINGTON
Edge of Town
No Sub Category
Total Number of dwellings: 82

5 CH-03-A-05 DETACHED, CREWE CHESHIRE
SYDNEY ROAD
SYDNEY
CREWE
Edge of Town
Residential Zone
Total Number of dwellings: 17

6 DS-03-A-01 SEMI D./TERRACED, DRONFIELD DERBYSHIRE
THE AVENUE
HOLMESDALE
DRONFIELD
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of dwellings: 20

7 GM-03-A-10 DETACHED/SEMI, MANCHESTER GREATER MANCHESTER
BUTT HILL DRIVE
PRESTWICH
MANCHESTER
Edge of Town
Residential Zone
Total Number of dwellings: 29

8 LC-03-A-22 BUNGALOWS, BLACKPOOL LANCASHIRE
CLIFTON DRIVE NORTH

BLACKPOOL
Edge of Town
Residential Zone
Total Number of dwellings: 98

9 LE-03-A-01 DETACHED, MELTON MOWBRAY LEICESTERSHIRE
REDWOOD AVENUE

MELTON MOWBRAY
Edge of Town
Residential Zone
Total Number of dwellings: 11

LIST OF SITES relevant to selection parameters (Cont.)

10 NY-03-A-01 MIXED HOUSES,NORTHALLERTON NORTH YORKSHIRE
GRAMMAR SCHOOL LANE

NORTHALLERTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 52

11 NY-03-A-03 PRIVATE HOUSING, BOROUGHBRIDGE NORTH YORKSHIRE
NEW ROW

BOROUGHBRIDGE
Edge of Town Centre
Residential Zone
Total Number of dwellings: 14

12 NY-03-A-05 HOUSES AND FLATS, RIPON NORTH YORKSHIRE
BOROUGHBRIDGE ROAD

RIPON
Edge of Town
No Sub Category
Total Number of dwellings: 71

13 SF-03-A-01 SEMI DETACHED, IPSWICH SUFFOLK
A1156 FELIXSTOWE ROAD
RACECOURSE
IPSWICH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 77

14 SH-03-A-03 DETATCHED, SHREWSBURY SHROPSHIRE
SOMERBY DRIVE
BICTON HEATH
SHREWSBURY
Edge of Town
No Sub Category
Total Number of dwellings: 10

15 ST-03-A-05 TERRACED/DETACHED, STOKE STAFFORDSHIRE
WATERMEET GROVE
ETRURIA
STOKE-ON-TRENT
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 14

16 WM-03-A-01 TERRACED, COVENTRY WEST MIDLANDS
FOLESHILL ROAD
FOLESHILL
COVENTRY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 79

17 WM-03-A-02 DETACHED/SEMI D., STRBRIDGE WEST MIDLANDS
HEATH STREET

STOURBRIDGE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 12

18 WM-03-A-03 MIXED HOUSING, COVENTRY WEST MIDLANDS
BASELEY WAY
ROWLEYS GREEN
COVENTRY
Edge of Town
Residential Zone
Total Number of dwellings: 84

LIST OF SITES relevant to selection parameters (Cont.)

19 WO-03-A-01 DETACHED, BROMSGROVE WORCESTERSHIRE
MARLBOROUGH AVENUE
ASTON FIELDS
BROMSGROVE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of dwellings: 10

20 WO-03-A-02 SEMI DETACHED, REDDITCH WORCESTERSHIRE
MEADOWHILL ROAD

REDDITCH
Edge of Town
No Sub Category
Total Number of dwellings: 48

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

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	20	41	0.076	20	41	0.257	20	41	0.333
08:00 - 09:00	20	41	0.169	20	41	0.390	20	41	0.559
09:00 - 10:00	20	41	0.198	20	41	0.229	20	41	0.427
10:00 - 11:00	20	41	0.188	20	41	0.241	20	41	0.429
11:00 - 12:00	20	41	0.223	20	41	0.196	20	41	0.419
12:00 - 13:00	20	41	0.226	20	41	0.173	20	41	0.399
13:00 - 14:00	20	41	0.192	20	41	0.201	20	41	0.393
14:00 - 15:00	20	41	0.208	20	41	0.213	20	41	0.421
15:00 - 16:00	20	41	0.284	20	41	0.250	20	41	0.534
16:00 - 17:00	20	41	0.362	20	41	0.206	20	41	0.568
17:00 - 18:00	20	41	0.359	20	41	0.236	20	41	0.595
18:00 - 19:00	20	41	0.285	20	41	0.188	20	41	0.473
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			2.770			2.780			5.550

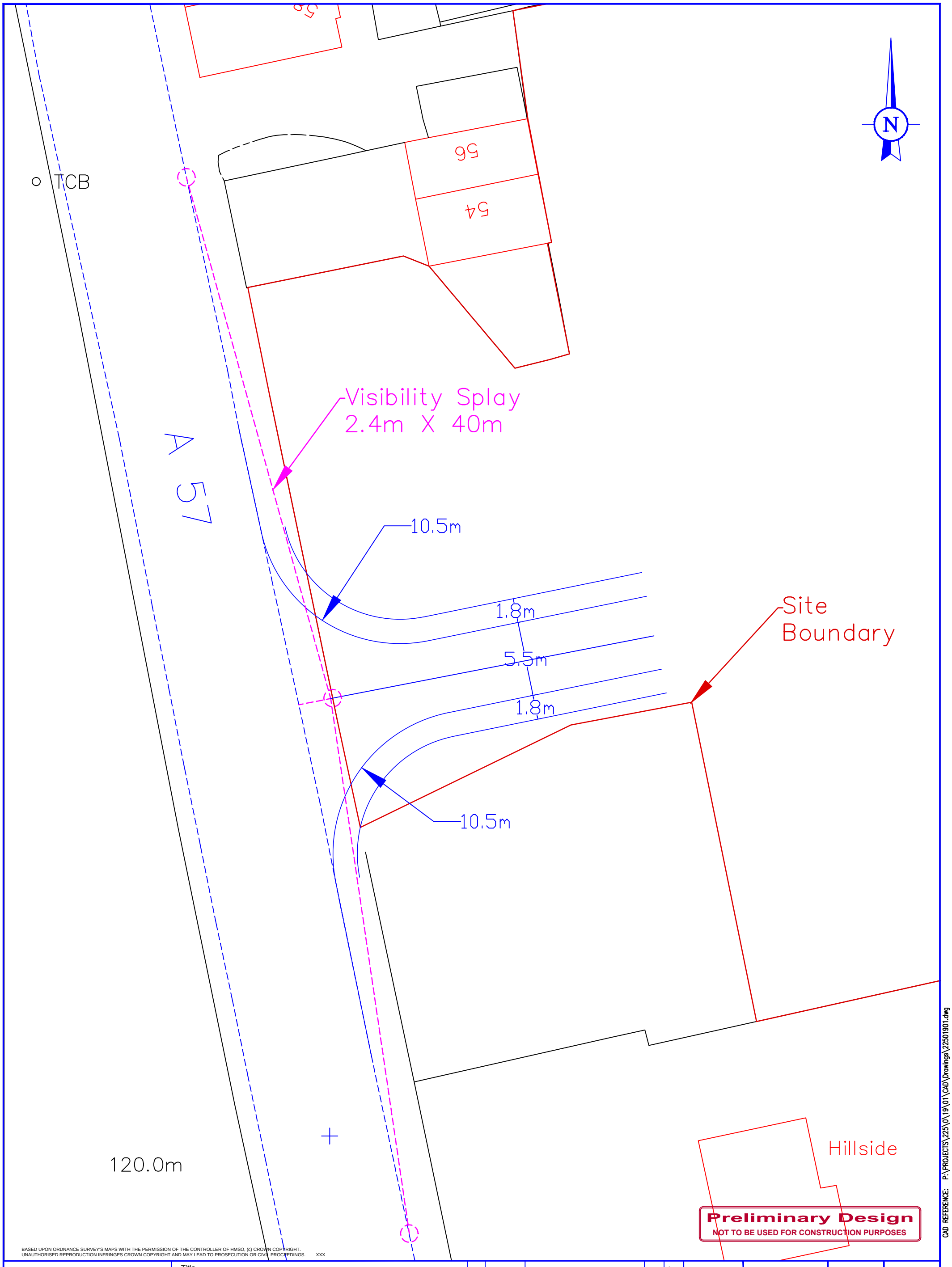
Parameter summary

Trip rate parameter range selected:	9 - 98 (units:)
Survey date date range:	01/01/04 - 18/10/11
Number of weekdays (Monday-Friday):	20
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

APPENDIX

C

PROPOSED ACCESS LAYOUT



steer davies gleave
28-32 Upper Ground London SE1 9PD
Tel: 020 7910 5000 Fax: 020 7910 5001

Client :
Tornillo Homes (Hadfield) Limited

Title
WOOLLEY BRIDGE TS
ACCESS JUNCTION

Rev.	Date	Comments	Ckd	App
–	18/07/12	ORIGINAL ISSUE	ADB	STO

Drawn	Scale.		Rev.
EJB	1:250	@ A3	-

Drawing No. **22501901/01**

Sheet No. 01 of 01

CAD REFERENCE: P:\PROJECTS\225\01\19\01\CAD\Drawings\22501901.dwg
PLOT DATE: 18/07/12

APPENDIX

D

PICADY OUTPUT

D1 PICADY RESULTS - SITE ACCESS JUNCTION

2017 with Development - AM Peak

```
                              TRL LIMITED

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   CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

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                           RELEASE 5.0 (JUNE 2010)

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 Run with file:- "P:\PROJECTS\225\0\19\01\Work\PICADY\Site Access AM17DS.vpi" (drive-on-the-left) at 09:19:23 on
Friday, 13 July 2012

 .RUN INFORMATION
 **************

 RUN TITLE       : Site Access - AM 2017 with Dev
 LOCATION        : Woolley Bridge
 DATE            : 13/07/12
 CLIENT          : In-Site
 ENUMERATOR      : soliver [W7-2765]
 JOB NUMBER      : 22501901
 STATUS          : On-going
 DESCRIPTION     :

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
  ************************************

  INPUT DATA
  ----------

                     MAJOR ROAD (ARM C) ---------------------- MAJOR ROAD (ARM A)
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                                          MINOR ROAD (ARM B)

 ARM A IS A57 North
 ARM B IS Site Access
 ARM C IS A57 South

.STREAM LABELLING CONVENTION
 ---------------------------
         STREAM  A-B  CONTAINS TRAFFIC GOING FROM ARM  A TO ARM B
         STREAM  B-AC CONTAINS TRAFFIC GOING FROM ARM  B TO ARM A AND TO ARM  C
         ETC.

.GEOMETRIC DATA
 --------------
 ------------------------------------------------------------------------------------------
 I                DATA ITEM                                      I   MINOR ROAD B    I
 ------------------------------------------------------------------------------------------
 I  TOTAL MAJOR ROAD CARRIAGEWAY WIDTH                           I ( W  )  9.00 M.   I
 I  CENTRAL RESERVE WIDTH                                        I (WCR )  0.00 M.   I
 I                                                               I                   I
 I  MAJOR ROAD RIGHT  TURN - WIDTH                               I (WC-B)  2.20 M.   I
 I                         - VISIBILITY                          I (VC-B)100.00 M.   I
 I                         - BLOCKS TRAFFIC (SPACES)             I         YES  ( 0) I
 I                                                               I                   I
 I  MINOR ROAD - VISIBILITY TO LEFT                              I (VB-C)  60.0 M.   I
 I             - VISIBILITY TO RIGHT                             I (VB-A)  60.0 M.   I
 I             - LANE 1 WIDTH                                    I (WB-C)  2.75 M.   I
 I             - LANE 2 WIDTH                                    I (WB-A)  0.00 M.   I
 ------------------------------------------------------------------------------------------


 .SLOPES AND INTERCEPT
  --------------------
  (NB:Streams may be combined, in which case capacity will be adjusted)

 ------------------------------------------------------
 I Intercept For Slope For Opposing   Slope For Opposing I
 I STREAM B-C     STREAM  A-C          STREAM A-B        I
 ------------------------------------------------------
 I     645.15            0.22                0.09       I
```

```
 ---------------------------------------------------------

 ------------------------------------------------------------------------------------------------------
 I Intercept For Slope For Opposing   Slope For Opposing   Slope For Opposing   Slope For OpposingI
 I STREAM B-A     STREAM  A-C          STREAM A-B          STREAM  C-A          STREAM  C-B       I
 ------------------------------------------------------------------------------------------------------
 I     513.64            0.21                0.08                  0.13                 0.29       I
 ------------------------------------------------------------------------------------------------------

 ---------------------------------------------------------
 I Intercept For Slope For Opposing   Slope For Opposing I
 I STREAM C-B     STREAM  A-C          STREAM A-B        I
 ---------------------------------------------------------
 I     631.87            0.21                0.21       I
 ---------------------------------------------------------
  (NB These values do not allow for any site specific corrections)

.TRAFFIC DEMAND DATA
 -------------------
 ----------------------
 I ARM I FLOW SCALE(%) I
 ----------------------
 I A   I      100      I
 I B   I      100      I
 I C   I      100      I
 ----------------------

.Demand set:        Walkers Tannery - Site Access - AM 2017 with Dev

 TIME PERIOD BEGINS 08.00 AND ENDS  09.30

 LENGTH OF TIME PERIOD  -   90 MIN.
 LENGTH OF TIME SEGMENT -   15 MIN.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

 ------------------------------------------------------------------------------------
 I        I   NUMBER OF MINUTES FROM START WHEN    I   RATE OF FLOW (VEH/MIN)       I
 I  ARM   I FLOW STARTS I TOP OF PEAK I FLOW STOPS I BEFORE I AT TOP  I AFTER       I
 I        I   TO RISE   I  IS REACHED I FALLING    I  PEAK  I OF PEAK I PEAK        I
 I        I             I             I           I        I         I              I
 ------------------------------------------------------------------------------------
 I ARM  A I     15.00   I     45.00   I    75.00   I  7.35  I  11.02  I  7.35       I
 I ARM  B I     15.00   I     45.00   I    75.00   I  0.15  I   0.23  I  0.15       I
 I ARM  C I     15.00   I     45.00   I    75.00   I  5.97  I   8.96  I  5.97       I
 ------------------------------------------------------------------------------------

.Demand set:        Walkers Tannery - Site Access - AM 2017 with Dev
 ---------------------------------------------------------
 I                   I         TURNING PROPORTIONS        I
 I                   I         TURNING COUNTS             I
 I                   I        (PERCENTAGE OF H.V.S)       I
 I                   ---------------------------------------
 I        TIME       I FROM/TO I ARM  A I ARM  B I ARM  C I
 ---------------------------------------------------------
 I   08.00 - 09.30   I         I        I        I        I
 I                   I ARM  A  I  0.000 I  0.005 I  0.995 I
 I                   I         I    0.0 I    3.0 I  585.0 I
 I                   I         I (  0.0)I ( 10.0)I ( 10.0)I
 I                   I         I        I        I        I
 I                   I ARM  B  I  0.417 I  0.000 I  0.583 I
 I                   I         I    5.0 I    0.0 I    7.0 I
 I                   I         I ( 10.0)I (  0.0)I ( 10.0)I
 I                   I         I        I        I        I
 I                   I ARM  C  I  0.996 I  0.004 I  0.000 I
 I                   I         I  476.0 I    2.0 I    0.0 I
 I                   I         I ( 10.0)I ( 10.0)I (  0.0)I
 I                   I         I        I        I        I
 ---------------------------------------------------------
 TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
 DEFAULT PROPORTIONS OF HEAVY VEHICLES ARE USED

.              QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
               ---------------------------------------------------------
                FOR COMBINED DEMAND SETS
                AND FOR TIME PERIOD        1
.-----------------------------------------------------------------------------------------------------------------
 I  TIME      DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END       DELAY     GEOMETRIC DELAY   AVERAGE DELAY I
 I         (VEH/MIN) (VEH/MIN) CAPACITY      FLOW     QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/      PER ARRIVING  I
 I                             (RFC)     (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 08.00-08.15                                                                                                   I
 I   B-AC      0.15      6.79    0.022                0.00   0.02        0.3                            0.15      I
 I   C-AB      0.05     12.06    0.004                0.00   0.00        0.1                            0.08      I
 I   C-A       5.95                                                                                              I
 I   A-B       0.04                                                                                              I
 I   A-C       7.34                                                                                              I
 I                                                                                                               I
.-----------------------------------------------------------------------------------------------------------------
 .----------------------------------------------------------------------------------------------------------------
 I  TIME      DEMAND  CAPACITY  DEMAND/   PEDESTRIAN  START   END       DELAY     GEOMETRIC DELAY   AVERAGE DELAY I
 I         (VEH/MIN) (VEH/MIN) CAPACITY      FLOW     QUEUE  QUEUE    (VEH.MIN/      (VEH.MIN/      PER ARRIVING  I
 I                             (RFC)     (PEDS/MIN) (VEHS) (VEHS)  TIME SEGMENT)  TIME SEGMENT)    VEHICLE (MIN) I
 I 08.15-08.30                                                                                                   I
 I   B-AC      0.18      6.38    0.028                0.02   0.03        0.4                            0.16      I
 I   C-AB      0.06     12.55    0.005                0.00   0.01        0.1                            0.08      I
 I   C-A       7.10                                                                                              I
 I   A-B       0.04                                                                                              I
 I   A-C       8.77                                                                                              I
 I                                                                                                               I
```

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	0.22	5.80	0.038		0.03	0.04	0.6		0.18
C-AB	0.09	13.22	0.007		0.01	0.01	0.1		0.08
C-A	8.68								
A-B	0.06								
A-C	10.73								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-AC	0.22	5.80	0.038		0.04	0.04	0.6		0.18
C-AB	0.09	13.22	0.007		0.01	0.01	0.1		0.08
C-A	8.68								
A-B	0.06								
A-C	10.73								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-AC	0.18	6.38	0.028		0.04	0.03	0.5		0.16
C-AB	0.06	12.55	0.005		0.01	0.01	0.1		0.08
C-A	7.10								
A-B	0.04								
A-C	8.77								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.15-09.30									
B-AC	0.15	6.79	0.022		0.03	0.02	0.4		0.15
C-AB	0.05	12.06	0.004		0.01	0.00	0.1		0.08
C-A	5.95								
A-B	0.04								
A-C	7.34								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	16.5	11.0	2.7	0.16	2.7	0.16
C-AB	5.9	3.9	0.5	0.08	0.5	0.08
C-A	652.0	434.7				
A-B	4.1	2.8				
A-C	805.2	536.8				
ALL	1483.8	989.2	3.2	0.00	3.2	0.00

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

2017 with Development - PM Peak

```
                                TRL LIMITED

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   CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

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 Run with file:- "P:\PROJECTS\225\0\19\01\Work\PICADY\Site Access PM17DS.vpi" (drive-on-the-left) at 09:21:37 on
Friday, 13 July 2012

.RUN INFORMATION
 ***************

 RUN TITLE       : Site Access - PM 2017 with Dev
 LOCATION        : Woolley Bridge
 DATE            : 13/07/12
 CLIENT          : In-Site
 ENUMERATOR      : soliver [W7-2765]
 JOB NUMBER      : 22501901
 STATUS          : On-going
 DESCRIPTION     :

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
  ***************************************

  INPUT DATA
  ----------

                    MAJOR ROAD (ARM C) ---------------------- MAJOR ROAD (ARM A)
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                                          MINOR ROAD (ARM B)

 ARM A IS A57 North
 ARM B IS Site Access
 ARM C IS A57 South

.STREAM LABELLING CONVENTION
 ---------------------------
         STREAM  A-B  CONTAINS TRAFFIC GOING FROM ARM  A TO ARM B
         STREAM  B-AC CONTAINS TRAFFIC GOING FROM ARM  B TO ARM A AND TO ARM  C
         ETC.

.GEOMETRIC DATA
 --------------
 ------------------------------------------------------------------------------------
 I                DATA ITEM                                    I   MINOR ROAD B    I
 ------------------------------------------------------------------------------------
 I  TOTAL MAJOR ROAD CARRIAGEWAY WIDTH                         I ( W  )  9.00 M.   I
 I  CENTRAL RESERVE WIDTH                                      I (WCR )  0.00 M.   I
 I                                                             I                   I
 I  MAJOR ROAD RIGHT  TURN - WIDTH                             I (WC-B)  2.20 M.   I
 I                         - VISIBILITY                        I (VC-B)100.00 M.   I
 I                         - BLOCKS TRAFFIC (SPACES)           I         YES  ( 0) I
 I                                                             I                   I
 I  MINOR ROAD - VISIBILITY TO LEFT                            I (VB-C)  60.0 M.   I
 I             - VISIBILITY TO RIGHT                           I (VB-A)  60.0 M.   I
 I             - LANE 1 WIDTH                                  I (WB-C)  2.75 M.   I
 I             - LANE 2 WIDTH                                  I (WB-A)  0.00 M.   I
 ------------------------------------------------------------------------------------


 .SLOPES AND INTERCEPT
  --------------------
  (NB:Streams may be combined, in which case capacity will be adjusted)

 ------------------------------------------------------
 I Intercept For Slope For Opposing   Slope For Opposing I
 I STREAM B-C     STREAM  A-C          STREAM A-B        I
 ------------------------------------------------------
 I     645.15            0.22               0.09        I
 ------------------------------------------------------

 ---------------------------------------------------------------------------------------------------
 I Intercept For Slope For Opposing   Slope For Opposing   Slope For Opposing   Slope For OpposingI
```

I STREAM B-A	STREAM A-C	STREAM A-B	STREAM C-A	STREAM C-B
513.64	0.21	0.08	0.13	0.29

Intercept For Slope For Opposing STREAM C-B	Slope For Opposing STREAM A-C	Slope For Opposing STREAM A-B
631.87	0.21	0.21

(NB These values do not allow for any site specific corrections)

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100

.Demand set: Walkers Tannery - Site Access - AM 2017 with Dev

TIME PERIOD BEGINS 08.00 AND ENDS 09.30

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	7.53	11.29	7.53
ARM B	15.00	45.00	75.00	0.09	0.13	0.09
ARM C	15.00	45.00	75.00	7.78	11.66	7.78

.Demand set: Walkers Tannery - Site Access - AM 2017 with Dev

TIME	FROM/TO	ARM A	ARM B	ARM C
08.00 - 09.30	TURNING PROPORTIONS / TURNING COUNTS / (PERCENTAGE OF H.V.S)			
	ARM A	0.000	0.008	0.992
		0.0	5.0	597.0
		(0.0)	(10.0)	(10.0)
	ARM B	0.571	0.000	0.429
		4.0	0.0	3.0
		(10.0)	(0.0)	(10.0)
	ARM C	0.990	0.010	0.000
		616.0	6.0	0.0
		(10.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
DEFAULT PROPORTIONS OF HEAVY VEHICLES ARE USED

. QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	0.09	6.16	0.014		0.00	0.01	0.2		0.16
C-AB	0.16	13.12	0.012		0.00	0.01	0.2		0.08
C-A	7.65								
A-B	0.06								
A-C	7.49								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-AC	0.10	5.68	0.018		0.01	0.02	0.3		0.18
C-AB	0.22	13.77	0.016		0.01	0.02	0.3		0.07
C-A	9.10								
A-B	0.07								
A-C	8.94								

TIME	DEMAND	CAPACITY	DEMAND/	PEDESTRIAN	START	END	DELAY	GEOMETRIC DELAY	AVERAGE DELAY

	(VEH/MIN)	(VEH/MIN)	CAPACITY (RFC)	FLOW (PEDS/MIN)	QUEUE (VEHS)	QUEUE (VEHS)	(VEH.MIN/ TIME SEGMENT)	(VEH.MIN/ TIME SEGMENT)	PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	0.13	5.00	0.026		0.02	0.03	0.4		0.21
C-AB	0.32	14.63	0.022		0.02	0.03	0.4		0.07
C-A	11.10								
A-B	0.09								
A-C	10.96								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-AC	0.13	5.00	0.026		0.03	0.03	0.4		0.21
C-AB	0.32	14.63	0.022		0.03	0.03	0.4		0.07
C-A	11.10								
A-B	0.09								
A-C	10.96								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-AC	0.10	5.68	0.018		0.03	0.02	0.3		0.18
C-AB	0.22	13.77	0.016		0.03	0.02	0.3		0.07
C-A	9.10								
A-B	0.07								
A-C	8.94								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.15-09.30									
B-AC	0.09	6.16	0.014		0.02	0.01	0.2		0.16
C-AB	0.16	13.12	0.012		0.02	0.01	0.2		0.08
C-A	7.64								
A-B	0.06								
A-C	7.49								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	9.6	6.4	1.8	0.18	1.8	0.18
C-AB	20.8	13.9	1.7	0.08	1.7	0.08
C-A	835.3	556.9				
A-B	6.9	4.6				
A-C	821.7	547.8				
ALL	1694.4	1129.6	3.5	0.00	3.5	0.00

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES
WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS
A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

CONTROL SHEET

Project/Proposal Name	Residential Development, Woolley Bridge
Document Title	Transport Statement
Client Contract/Project No.	Click here to enter text.
SDG Project/Proposal No.	225019/01

ISSUE HISTORY

Issue No.	Date	Details
1	11 July 12	Draft Report
2	13 July 12	Revised Draft

REVIEW

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	Sign	

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