

A4/A4174 Hicks Gate Roundabout - Traffic Flow Data

MCC: Wednesday 13th June 2012

Table 1 A4/A4174 Hicks Gate Roundabout: Traffic Volumes - Weekday 8:00-9:00 am

Arm From	Arm To				
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	TOTAL
A: A4 Bath Road	2	503*	383	419	1,307
B: A4174 Ring Road	794	0	350	211	1,355
C: A4 Keynsham Bypass	610	519	0	13	1,142
D: A4175 Durley Hill	232	442	121	0	795
TOTAL	1,638	1,464	854	643	4,599

Notes: * Segregated left turn filter lane

Table 2 A4/A4174 Hicks Gate Roundabout: Traffic Volumes - Weekday 5:00-6:00 pm

Arm From	Arm To				
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	TOTAL
A: A4 Bath Road	0	808*	571	471	1,850
B: A4174 Ring Road	633	0	530	390	1,553
C: A4 Keynsham Bypass	429	650	0	44	1,123
D: A4175 Durley Hill	167	324	164	0	655
TOTAL	1,229	1,782	1,265	905	5,181

Notes: * Segregated left turn filter lane

Comments:

CH2M Technical Report 'A4/A4174 Hicks Gate Roundabout Improvement Options' - February 2025

- *"In the morning peak hour the current exit flow to the A4 Bath Road towards Brislington in this period is 1,638vph. This is close to the link capacity of the single westbound lane available to general traffic not using the nearside access lane to the Brislington Park and Ride site, notwithstanding any constraint imposed by the signals at the Emery Road junction and beyond this"; and*
- *"In the evening peak period the existing traffic flows show that the approach flow on the A4 Bath Road is 1,850vph. In link capacity terms this represents a close to or maximum throughput at the two lane to one lane merge point just east of the Park and Ride exit".*

Existing capacity constraints for general traffic through Brislington will not be addressed with any proposed JTS measures. Whilst it is intended the Brislington Park and Ride would move to the SW quadrant of Hicks Gate, the two to one merge just east of Emery Road and the single outbound lane on Bath Road beyond this as far as Ironmould Lane is expected and assumed to remain.

GBATS: Calibrated/Validated Base Model: 2013

Table 3 A4/A4174 Hicks Gate Roundabout: Traffic Volumes - Weekday 8:00-9:00 am

Arm From	Arm To				
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	TOTAL
A: A4 Bath Road	0	486*	437	176	1,099
B: A4174 Ring Road	539	0	401	577	1517
C: A4 Keynsham Bypass	634	299	0	7	940
D: A4175 Durley Hill	247	700	0	0	948
TOTAL	1,420	1,485	838	760	4,504

Notes: * Segregated left turn filter lane

Table 4 A4/A4174 Hicks Gate Roundabout: Traffic Volumes - Weekday 5:00-6:00 pm

Arm From	Arm To				
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	TOTAL
A: A4 Bath Road	0	775*	613	236	1,624
B: A4174 Ring Road	545	0	566	642	1,753
C: A4 Keynsham Bypass	540	458	0	6	1,004
D: A4175 Durley Hill	172	607	0	0	779
TOTAL	1,257	1,840	1,179	884	5,160

Notes: * Segregated left turn filter lane

Comments:

AM Peak Hour

- The 2013 GBATS flows show a good compatibility with the overall inflow counted in the June 2012 MCC. However, the 'fit' at a turning count level shows some significant anomalies. This is likely to be due to the 'coarseness' of the network modelling in this part of the GBATS model, but also reflects assignment problems locally;
- There is an anomaly with the respective volumes exiting to the A4175 Durley Hill from the A4 Bath Road and A4174 Ring Road approaches. GBATs under-assigns the former, and over-assigns the latter, with the overall exit flow higher than observed in the MCC;
- There is a significant anomaly with the flows exiting to the A4174 Ring Road from the Keynsham Bypass and A4175 Durley Hill approaches. The former is much lower than observed, and traffic modelled making this movement from Durley Hill way too high. This is probably due to the coarseness of the GBATS network modelling in this area, with 'all' traffic originating from Keynsham or the B3116 routing out via Durley Hill. The work done in developing and calibrating the Keynsham S-Paramics model shows that a significant amount of traffic from Keynsham and the B3116 to the south accesses the westbound Bypass via Broadmead Roundabout.

PM Peak Hour

- As with the AM model, the 2013 GBATS flows show a good compatibility with the overall inflow counted in the June 2012 MCC. However, the 'fit' at a turning count level shows some significant anomalies;
- As with the AM model, there is again an anomaly with the respective volumes exiting to the A4175 Durley Hill from the A4 Bath Road and A4174 Ring Road approaches. GBATs under-assigns the former, and over-assigns the latter, although the overall exit flow across both movements is very consistent with the MCC (OBS: 861 and MOD: 878);
- There is again an anomaly with the flows exiting to the A4174 Ring Road from the Keynsham Bypass and A4175 Durley Hill approaches, with too much bias to Durley Hill in the GBATS model.

Overall

In overall terms the 2013 GBATS flows are not a bad fit with the observed MCC, in that the overall inflows compare well in the two 'peak' hours. However, to resolve deficiencies in the turning flows, it is recommended that 2013-2036 'growth' from GBATS is taken and applied to the MCC figures in generating the 'Design Flow' forecast for 2036. Using the ABS 2036 forecasts directly extracted from GBATS could otherwise incorporate these 2013 base-line deficiencies.

It should be noted, however, that a poor base-line turning count 'fit' is not ideal, particularly where 'key' movements are under-assigning. This is because the GBATS model will assume there is capacity for growth in these which may not actually exist movements when forecasting future flows (2036).

GBATS: With A4-A37 Link: 2036

Table 5 A4/A4174 Hicks Gate Roundabout: 2036 Traffic Volumes - Weekday 8:00-9:00 am

Arm From	Arm To					TOTAL
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	E: A4-A37 LINK	
A: A4 Bath Road	0	462	360	206	82	1,110
B: A4174 Ring Road	583	0	388	162	917	2,050
C: A4 Keynsham Bypass	616	371	0	0	268	1,255
D: A4175 Durley Hill	274	104	0	0	0	378
E: A4-A37 LINK	50	856	139	232	0	1,277
TOTAL	1,523	1,793	887	600	1,267	6,070

Table 6 A4/A4174 Hicks Gate Roundabout: Changes relative to 2013 BASE - Weekday 8:00-9:00 am

Arm From	Arm To					TOTAL
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	E: A4-A37 LINK	
A: A4 Bath Road	0	-24	-77	+30	+82	+11
B: A4174 Ring Road	+44	0	-13	-410	+917	+538
C: A4 Keynsham Bypass	-18	+72	0	-7	+268	+315
D: A4175 Durley Hill	+27	-596	0	0	0	-569
E: A4-A37 LINK	+50	+856	+139	+232	0	+1,277
TOTAL	+103	+308	+49	-155	1,267	+1,572

Notes: GBATS predicted 2013-2036 growth of **+34.76%**

Comments

- The bulk of the growth is associated with movements to or from the new A4-A37 Link Road. With the notable exception of movements between the A4174 Ring Road and the A4175 Durley Hill there is negligible predicted change to the 2013 GBATS 'Base' movements through Hicks Gate Roundabout;
- The effect of the growth in usage generated by the A4-A37 Link and 'Southern Orbital' is shown to reduce traffic usage between the A4175 Durley Hill and the A4174 Ring Road. Some of this will be 'draw off' from the Charlton Road/Woollard Lane route through Keynsham which can be used now as a linkage between the A4 and A37. However, most is likely to be the result of diversion off the A4174 to the alternative river crossing provided by the A175 Keynsham Road. This 'transfer' seems excessive given the capacity constraints which also exist on this route, and likely to be result of the coarser model coding used in this 'edge' part of the GBATS model.

Table 7 A4/A4174 Hicks Gate Roundabout: 2036 Traffic Volumes - Weekday 5:00-6:00 pm

Arm From	Arm To					
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	E: A4-A37 LINK	TOTAL
A: A4 Bath Road	0	690	676	204	83	1,653
B: A4174 Ring Road	388	0	555	69	1,136	2,148
C: A4 Keynsham Bypass	522	488	0	0	246	1,256
D: A4175 Durley Hill	121	87	0	0	0	208
E: A4-A37 LINK	0	884	162	524	0	1,570
TOTAL	1,031	2,149	1,393	797	1,465	6,835

Table 8 A4/A4174 Hicks Gate Roundabout: Changes relative to 2013 BASE - Weekday 5:00-6:00 pm

Arm From	Arm To					
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	E: A4-A37 LINK	TOTAL
A: A4 Bath Road	0	-85	+63	-32	+83	+29
B: A4174 Ring Road	-157	0	-11	-573	+1,136	+395
C: A4 Keynsham Bypass	-18	+30	0	-6	246	+252
D: A4175 Durley Hill	-51	-520	0	0	0	-571
E: A4-A37 LINK	0	884	162	524	0	1,570
TOTAL	-226	+309	+214	-87	+1,465	+1,675

Notes: GBATS predicted 2013-2036 growth of **+32.46%**

Comments

- As with the AM peak hour, the bulk of the predicted growth is associated with movements to or from the new A4-A37 Link Road. Again, with the notable exception of movements between the A4174 Ring Road and the A4175 Durley Hill, there is negligible predicted change to the 2013 GBATS 'Base' movements through Hicks Gate Roundabout.

Adjusted DESIGN FLOW: 2036

Table 9 A4/A4174 Hicks Gate Roundabout: 2036 Traffic Volumes - Weekday 8:00-9:00 am

Arm From	Arm To					TOTAL
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	E: A4-A37 LINK	
A: A4 Bath Road	2	479	306	449	82	1,318
B: A4174 Ring Road	838	0	337	59	917	2,151
C: A4 Keynsham Bypass	592	591	0	6	268	1,457
D: A4175 Durley Hill	259	65	121	0	0	445
E: A4-A37 LINK	50	856	139	232	0	1,277
TOTAL	1,741	1,991	903	746	1,267	6,648

Notes:

1. 'Red Cells' - Absolute 2013-2036 changes applied to the June 2012 MCC flows; and
2. 'Blue Cells' - Relative or 'percentage' 2013-2036 change applied to June 2012 MCC flows.
3. DESIGN growth of +44.5% from 2012 MCC (2036)

Table 10 A4/A4174 Hicks Gate Roundabout: 2036 Traffic Volumes - Weekday 5:00-6:00 pm

Arm From	Arm To					TOTAL
	A: A4 Bath Road	B: A4174 Ring Road	C: A4 Bypass	D: A4175 Durley Hill	E: A4-A37 LINK	
A: A4 Bath Road	0	723	634	439	83	1,879
B: A4174 Ring Road	476	0	519	42	1,136	2,173
C: A4 Keynsham Bypass	411	680	0	38	246	1,375
D: A4175 Durley Hill	116	46	164	0	0	326
E: A4-A37 LINK	0	884	162	524	0	1,570
TOTAL	1,003	2,333	1,479	1,043	1,465	7,323

Notes

1. 'Red Cells' - Absolute 2013-2036 changes applied to the June 2012 MCC flows; and
2. 'Blue Cells' - Relative or 'percentage' 2013-2036 change applied to June 2012 MCC flows.
3. DESIGN growth of +41.3% from 2012 MCC (2036)

Comments

- In the AM peak hour, the predicted inbound flow on the A4 Bath Road towards Brislington is higher than the 2012 MCC, albeit capacity here is already constrained and opportunity for further growth extremely limited. Consider a reduction factor to correct to 'base' level (1,638/1,741) or 0.94;
- In the PM peak hour, the flow on the A4 Bath Road from Brislington at 1,879 is virtually identical to the 2012 MCC (1,850). This is realistic as the one lane section between the Park and Ride site and Ironmould Lane will continue to control and restrict this outflow; and
- As the GBATS source flows are WebTAG compliant in ignoring non-committed development, the traffic forecasts exclude consideration of the local traffic generation effects of the SDL sites at

North Keynsham and Whitchurch. However, this should not necessarily be assumed as necessarily 'additional' to the above if specifically considered/assigned. This is because the development traffic can be expected to have a suppression or re-assignment effect on traffic in the above figures using Hicks Gate Roundabout in the non-SDL situation.