

Land East of Wandleys Lane, Fontwell

Transport Assessment Addendum

On behalf of **Welbeck Strategic Land II LLP**



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- Appendix A – TRICS data
- Appendix B – CAD plan measurements
- Appendix C – Mitigation scheme

1 Introduction

- 1.1.1 The following report comprises an Addendum to the Transport Assessment submitted in relation to planning application WA/73/17/OUT.
- 1.1.2 This Addendum addresses the points raised by Highways England in their consideration of the planning application by summarising the additional information submitted to Highways England by PBA.
- 1.1.3 The information within this Addendum and mitigation proposed has been agreed as acceptable by Highways England.

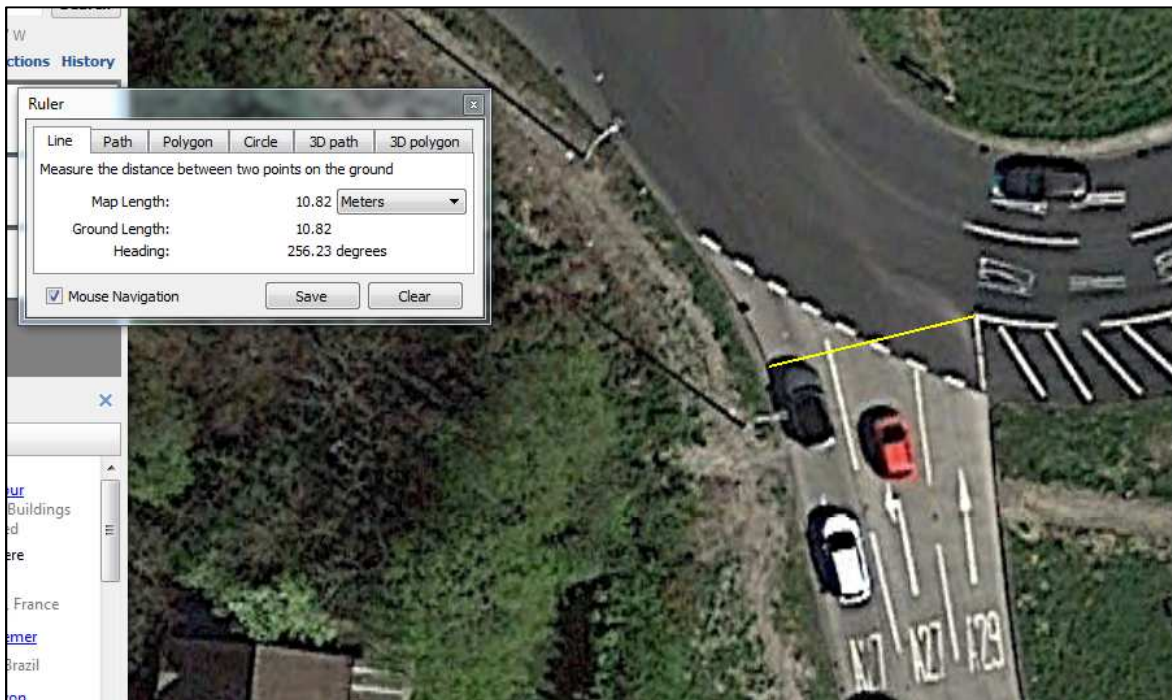
2 Trip generation and trip distribution

- 2.1.1 The correct Transport Assessment Appendix H is appended to this technical note as Appendix A. This details the trip generation rates agreed.
- 2.1.2 The 2017 to 2022 growth factors used by PBA within the Transport Assessment were derived from the dataset v.70 in TEMPRO 7.2.
- 2.1.3 The Highways England consultants have undertaken their own review of TEMPRO and derived factors of 1.0270 and 1.0261 for AM and PM peaks respectively.
- 2.1.4 As requested, PBA have re-run the modelling adopting the growth factors above for 2019. Adopting these growth factors results in the 2019 turning flows summarised at Figure B.
- 2.1.5 In addition, a minor discrepancy has been corrected in relation to the PM turning flow movement on Figure C (attached).
- 2.1.6 The above turning flow figures have now been agreed with Highways England.

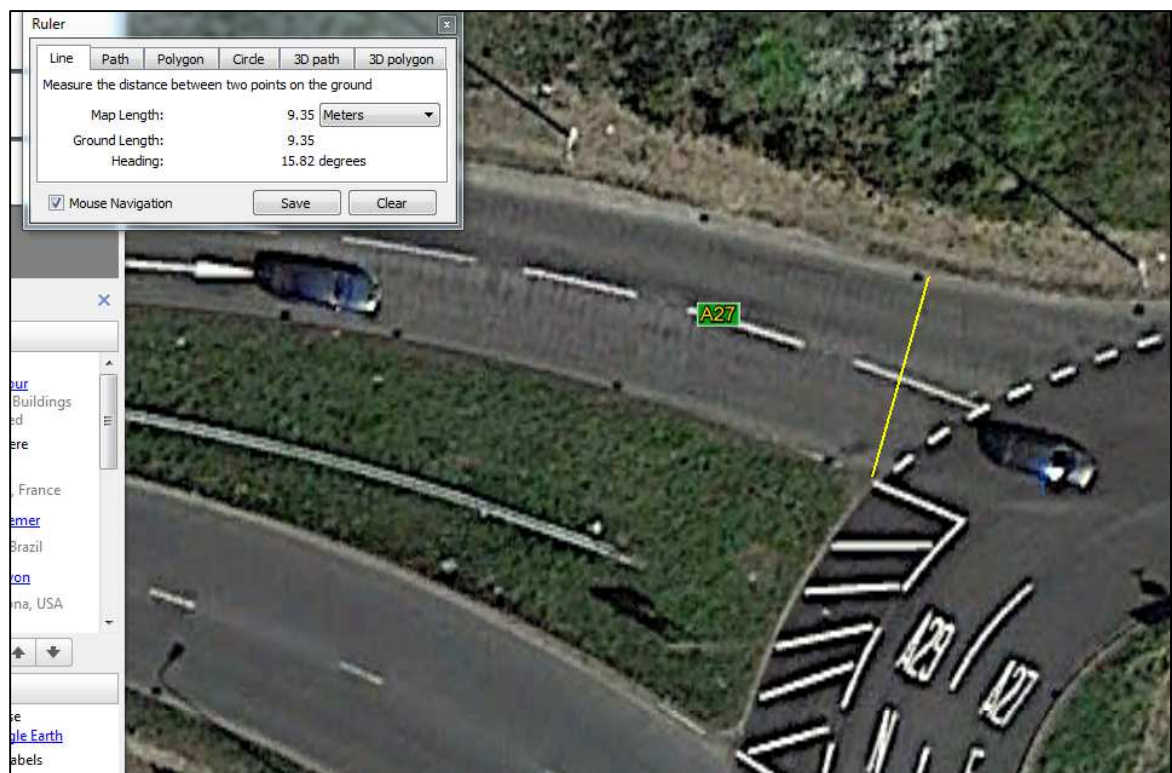
3 2019 model review

- 3.1.1 The Highways England consultants have suggested the geometry of the Fontwell East roundabout be checked for a number of dimensions.
- 3.1.2 The figures below illustrate the PBA measurements derived from Google Earth Pro for the geometry queries raised. These measurements have been adjusted in the 2019 model for the Fontwell East roundabout.

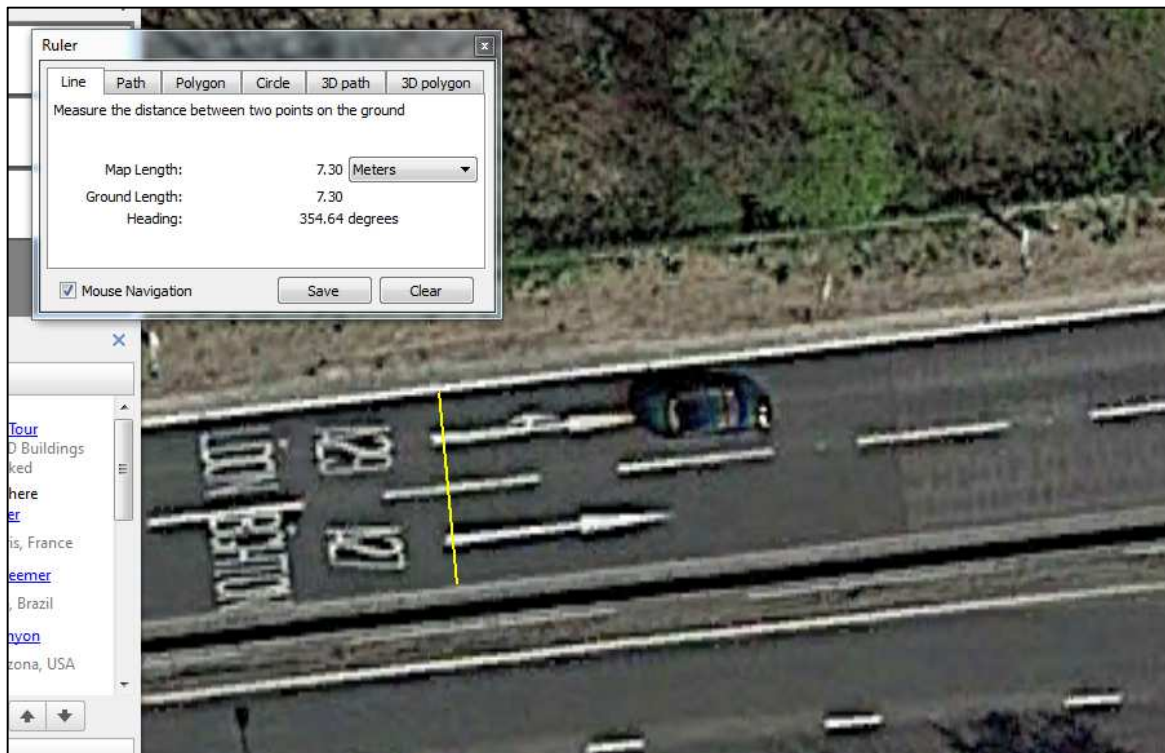
A27 (S) illustrating an entry width of 10.8m



A27 (W) illustrating an entry width of 9.4m

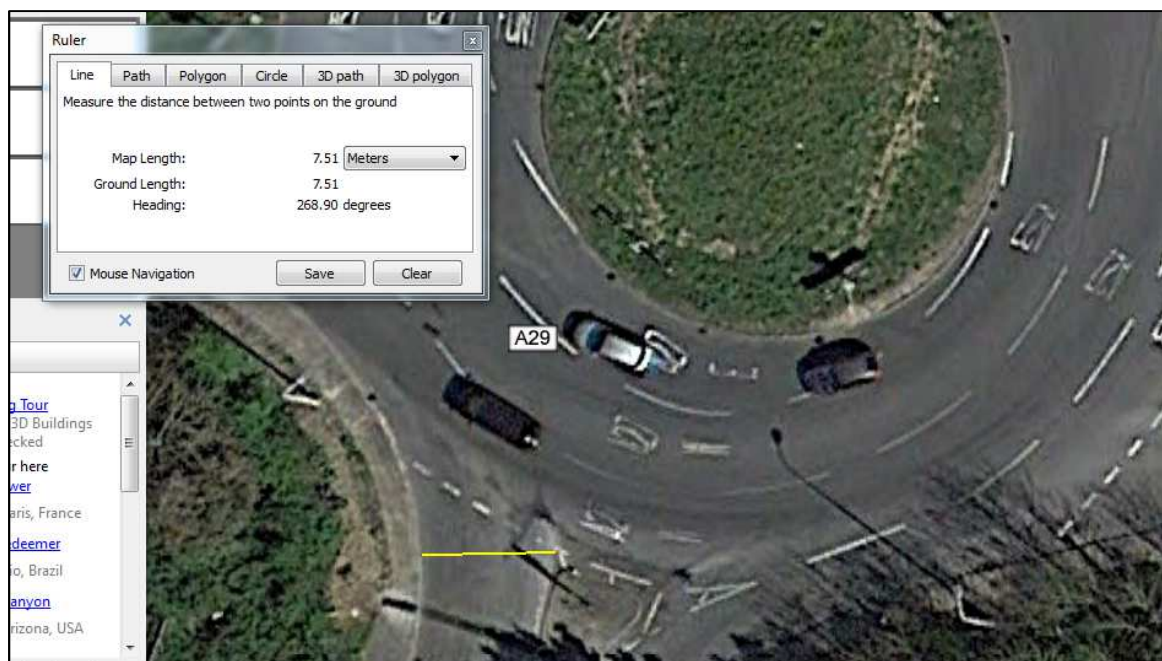


A27 (W) illustrating a half width of 7.3m



- 3.1.3 The above geometry has now been agreed with Highways England as acceptable for modelling purposes.
- 3.1.4 A similar set of comments has been made for the Fontwell West roundabout and accordingly a similar review has been completed by PBA.
- 3.1.5 The geometry of the roundabout has been checked for the dimensions queried. The figure below illustrates the measurement derived from Google Earth Pro for the A29 south arm entry width.

A29 (S) illustrating an entry width of 7.5m



- 3.1.6 In addition, the CAD plan attached as Appendix B illustrates the effective flare length measurements derived for the A29 (S) and A27 (W) arms.
- 3.1.7 These measurements have been incorporated within a revised 2019 model. The north arm has been re-labelled as A27 north.
- 3.1.8 The above geometry has now been agreed with Highways England.

4 Model results

- 4.1.1 The Highways England consultants have advised that the DIRECT method of traffic data input is considered the most accurate method. The 2019 traffic data has been input to the 2019 model using the DIRECT method.
- 4.1.2 The 2019 models have been re-run with the adjusted inputs as described above. The models have been provided to Highways England and outputs summarised below.

FONTWELL EAST 2019 baseline	AM			PM		
	RFC	Delay	Q	RFC	Delay	Q
A29 (E)	0.57	6.76	1.3	0.73	11.39	2.6
A27 (S)	0.77	6.44	3.3	0.51	3.25	1.0
A27 (W)	0.78	6.52	3.4	0.77	6.01	3.3

FONTWELL EAST 2019 baseline plus Wandleys Lane development	AM			PM		
	RFC	Delay	Q	RFC	Delay	Q
A29 (E)	0.58	6.86	1.3	0.73	11.57	2.6
A27 (S)	0.78	6.60	3.4	0.51	3.27	1.0
A27 (W)	0.78	6.64	3.5	0.77	6.06	3.3

- 4.1.3 It is noted that the model results show that junction is expected to operate within capacity in all 2019 scenarios.

FONTWELL WEST 2019 baseline	AM			PM		
	RFC	Delay	Q	RFC	Delay	Q
A27 (N)	0.83	7.51	4.7	0.85	10.34	5.4
Arundel Road	0.54	17.24	1.1	0.52	25.38	1.1
A29	2.13	1632.54	180.4	0.64	15.10	1.8
A27 (W)	0.61	3.40	1.6	0.73	4.19	2.7

FONTWELL WEST 2019 baseline plus Wandleys Lane development	AM			PM		
	RFC	Delay	Q	RFC	Delay	Q
A27 (N)	0.83	7.64	4.8	0.86	10.97	5.8
Arundel Road	0.60	19.60	1.4	0.56	27.46	1.2
A29	2.24	1802.29	190.6	0.65	15.51	1.8
A27 (W)	0.61	3.40	1.6	0.74	4.31	2.8

- 4.1.4 It is noted that the junction is predicted to exceed capacity during the morning peak hour for the baseline scenario and that this is exacerbated by the addition of Wandleys Lane development traffic.
- 4.1.5 The above outputs have been agreed with Highways England.

5 2031 Linsig model – east roundabout

- 5.1.1 The Highways England consultants have requested that the Linsig modelling be updated incorporating a number of comments. The Linsig model has therefore been updated to incorporate the following:
- The cycle time and signal times have been optimised for the 2031 Local Plan (baseline) traffic flows.
 - The OD matrices have been assigned to the network.
 - Cycle times are retained for the 2031 baseline plus Wandleys development (“with development”) scenarios, but signal time optimisation has been completed.
- 5.1.2 The table below demonstrates the results from the revised modelling exercise described above for the 2031 baseline scenario. The digital model files were passed to Highways England for review.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead Ahead2	81.1 : 81.1%	5.6 (2.9+2.7)	8.1	81.4 : 81.4%	5.0 (2.3+2.7)	7.6
1/3	A27 (W) Ahead	67.6%	2.6	6.3	67.7%	2.2	5.3
2/1+2/2	A29 Ahead Ahead2	82.3 : 82.3%	3.9 (2.0+2.0)	6.4	79.0 : 79.0%	3.5 (1.8+1.8)	5.3
3/1	A27 (E) Ahead	75.8%	3.3	9.0	55.6%	1.5	3.5
3/2+3/3	A27 (E) Ahead Ahead2	82.1 : 82.1%	4.2 (2.3+1.9)	9.4	65.2 : 65.2%	2.2 (1.4+0.8)	3.6
4/1	Circ1 Right	58.5%	0.6	1.6	0.0%	0.0	0.0
4/2	Circ1 U-Turn Right	62.8%	0.6	2.9	51.7%	0.3	1.9
5/1	Circ2 Right	0.0%	0.0	0.0	0.0%	0.0	0.0
5/2	Circ2 Right Right2	0.0%	0.0	0.0	0.0%	0.0	0.0
6/1	Circ 3 Right	82.9%	1.9	4.8	79.9%	0.5	3.8
6/2	Circ 3 Right Right2	82.9%	1.9	4.8	79.9%	0.5	3.8
Cycle time (secs)		45			33		
PRC (%)		8.6			10.6		

- 5.1.3 An optimised cycle time of 45s in the AM period and 33s in the PM period have been identified for the 2031 baseline scenario above.
- 5.1.4 The table below provides the modelling output for the 2031 “with development” scenario. The cycle times have been retained from the 2031 baseline scenario although signal times have been optimised as suggested by Atkins.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead Ahead2	83.7 : 83.7%	6.3 (3.2+3.1)	8.7	81.4 : 81.4%	5.0 (2.3+2.7)	7.6
1/3	A27 (W) Ahead	71.6%	3.0	6.7	67.7%	2.2	5.3
2/1+2/2	A29 Ahead Ahead2	80.1 : 79.9%	3.5 (1.8+1.7)	6.0	79.7 : 79.7%	3.6 (1.8+1.8)	5.4
3/1	A27 (E) Ahead	76.3%	3.4	9.1	55.4%	1.5	3.5
3/2+3/3	A27 (E) Ahead Ahead2	82.5 : 82.5%	4.3 (2.3+2.0)	9.5	65.6 : 65.6%	2.2 (1.4+0.8)	3.6
4/1	Circ1 Right	56.2%	0.5	1.2	0.0%	0.0	0.0
4/2	Circ1 U-Turn Right	59.9%	0.5	2.7	52.8%	0.5	2.2
5/1	Circ2 Right	0.0%	0.0	0.0	0.0%	0.0	0.0
5/2	Circ2 Right Right2	0.0%	0.0	0.0	0.0%	0.0	0.0
6/1	Circ 3 Right	83.1%	1.8	4.8	80.1%	0.6	2.9
6/2	Circ 3 Right Right2	82.9%	1.8	4.8	80.1%	0.6	2.9
Cycle time (secs)		45			33		
PRC (%)		7.6			10.6		

5.1.5 The results demonstrate that, when using the fixed-cycle time of 45s in the AM and 33s in the PM the junction is expected to operate within capacity in the 2031 scenario with both Local Plan and Wandleys Lane development flows added.

5.1.6 The results output table below summarises the performance of the junction at 2031 baseline but with the Tye Lane site included (2031 sensitivity). Once again the junction cycle time has been retained at 45s in the AM and 33s in the PM although signal timings have been optimised.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead Ahead2	84.4 : 84.4%	6.5 (3.3+3.1)	9.0	81.4 : 81.4%	4.8 (2.0+2.7)	7.6
1/3	A27 (W) Ahead	72.9%	3.1	6.8	80.2%	3.5	7.4
2/1+2/2	A29 Ahead Ahead2	80.4 : 80.2%	3.5 (1.8+1.8)	6.1	80.8 : 80.1%	3.7 (1.9+1.9)	5.5
3/1	A27 (E) Ahead	78.8%	3.7	9.8	57.4%	1.6	3.7
3/2+3/3	A27 (E) Ahead Ahead2	84.2 : 84.2%	4.6 (2.5+2.1)	10.3	66.7 : 66.7%	2.3 (1.4+0.9)	3.7

4/1	Circ1 Right	56.2%	0.5	1.2	0.2%	0.0	0.0
4/2	Circ1 U-Turn Right	60.3%	0.5	2.7	53.2%	0.5	2.2
5/1	Circ2 Right	0.0%	0.0	0.0	0.0%	0.0	0.0
5/2	Circ2 Right Right2	0.0%	0.0	0.0	0.0%	0.0	0.0
6/1	Circ 3 Right	82.9%	1.8	4.8	79.9%	0.6	2.8
6/2	Circ 3 Right Right2	82.9%	1.8	4.8	79.9%	0.6	2.8
Cycle time (secs)		45			33		
PRC (%)		6.7			10.6		

5.1.7 The Wandleys Lane development flows have been added to the 2031 sensitivity model described above (2031 sensitivity plus Wandleys Lane). The results are summarised below with a 45s cycle time in the AM and 33s in the PM and optimised signal timings.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead Ahead2	84.4 : 84.4%	6.5 (3.3+3.1)	9.0	81.4 : 81.4%	5.1 (2.4+2.6)	7.6
1/3	A27 (W) Ahead	72.9%	3.1	6.8	68.2%	2.2	5.3
2/1+2/2	A29 Ahead Ahead2	81.9 : 81.9%	3.8 (1.9+1.9)	6.4	81.4 : 80.7%	3.8 (1.9+1.9)	5.6
3/1	A27 (E) Ahead	80.5%	4.0	10.2	57.2%	1.6	3.6
3/2+3/3	A27 (E) Ahead Ahead2	84.0 : 84.0%	4.6 (2.6+2.1)	10.3	67.2 : 67.2%	2.3 (1.4+0.9)	3.7
4/1	Circ1 Right	58.9%	0.5	1.2	0.0%	0.0	0.0
4/2	Circ1 U-Turn Right	58.9%	0.5	2.7	54.5%	0.7	1.1
5/1	Circ2 Right	0.0%	0.0	0.0	0.0%	0.0	0.0
5/2	Circ2 Right Right2	0.0%	0.0	0.0	0.0%	0.0	0.0
6/1	Circ 3 Right	82.9%	1.8	4.8	80.1%	1.8	4.2
6/2	Circ 3 Right Right2	83.1%	1.8	4.8	80.1%	1.8	4.2
Cycle time (secs)		45			33		
PRC (%)		6.7			10.5		

5.1.8 The results demonstrate that the junction is expected to operate within capacity at 2031 for all scenarios.

5.1.9 The above outputs have been agreed with Highways England.

6 2031 Linsig model – west roundabout

6.1.1 Similarly, to the Fontwell East roundabout, the Highways England consultants have requested that the Linsig modelling be updated incorporating a number of comments. The Linsig model has therefore incorporated the following:

- The cycle time and signal times have been optimised for the 2031 Local Plan (baseline) traffic flows.
- The OD matrices have been assigned to the network.
- Cycle times are retained for the 2031 baseline plus Wandleys development (“with development”) scenarios, but signal time optimisation has been completed.
- The same process has been completed for the sensitivity assessment including the Tye Lane site.

6.1.2 The model has been provided to Highways England and the outputs below summarise the results from the 2031 baseline model.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead	85.5 : 85.5%	7.7 (3.9+3.9)	13.9	94.9 : 94.9%	12.5 (6.3+6.3)	17.5
1/3	A27 (W) Ahead	43.9%	2.0	6.9	116.8%	94.5	106.3
2/1	A27 (E) Ahead Left	95.6%	13.1	27.0	109.7%	49.1	57.3
2/2	A27 (E) Ahead	95.5%	13.0	26.9	109.7%	49.1	57.3
3/1+3/2	Arundel Rd Ahead Left	86.5 : 86.1%	5.6 (2.8+2.8)	8.1	115.6 : 115.0%	25.4 (12.9+12.5)	29.9
4/1+4/2	A29 Fontwell Ave Ahead Left	90.6 : 92.2%	7.4 (3.7+3.7)	9.9	49.2 : 49.8%	1.7 (0.8+0.9)	2.9
5/1	Circ1 Right	27.4%	1.7	4.0	26.0%	0.2	1.6
5/2	Circ1 Right Right2	32.7%	2.1	4.8	35.5%	0.3	2.4
6/1	Circ2 Ahead	17.1%	0.6	1.5	38.1%	0.2	2.3
6/2	Circ2 Right	34.7%	1.2	3.0	82.8%	1.0	10.3
Cycle time (secs)		88			56		
PRC (%)		-6.3%			-29.8		

6.1.3 The model outputs for the 2031 Local Plan scenario demonstrate that the junction is expected to operate over capacity at the end of the Local Plan period.

6.1.4 The model outputs below summarise the junction performance when the Wandleys Lane traffic is added to the model described above. The cycle times have been retained although the signal timings have been optimised.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead	118.3 : 118.3%	113.9 (56.9+56.9)	121.7	94.9 : 94.9%	12.5 (6.3+6.3)	17.5
1/3	A27 (W) Ahead	73.3%	4.6	10.9	118.8%	106.4	118.6
2/1	A27 (E) Ahead Left	75.0%	4.6	16.4	109.8%	49.0	57.8
2/2	A27 (E) Ahead	75.0%	4.6	16.4	109.8%	49.0	57.8
3/1+3/2	Arundel Rd Ahead Left	118.3 : 118.3%	47.4 (23.7+23.7)	54.9	117.7 : 117.9%	29.2 (14.5+14.7)	32.6
4/1+4/2	A29 Fontwell Ave Ahead Left	116.9 : 118.5%	45.5 (22.0+23.5)	52.6	49.7 : 50.3%	1.7 (0.8+0.9)	2.9
5/1	Circ1 Right	15.2%	0.0	0.7	26.0%	0.2	1.7
5/2	Circ1 Right Right2	17.9%	0.0	0.8	35.5%	0.3	2.5
6/1	Circ2 Ahead	25.0%	0.2	3.2	39.5%	0.2	2.2
6/2	Circ2 Right	48.3%	0.7	6.9	81.3%	0.8	9.6
Cycle time (secs)		88			56		
PRC (%)		-31.6			-32.0		

- 6.1.5 The model outputs demonstrate that the operation of the junction is predicted to deteriorate with the uplift in flows and no further mitigation. Hence a mitigation scheme is required.
- 6.1.6 The mitigation measure assessed comprises a widening of 0.7m on each approach lane (a total widening of 1.4m) which equates to an additional 70 PCUs saturation flow capacity for each lane.
- 6.1.7 The model has been updated with the cycle times generated for the above model and the outputs are summarised below.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead	72.2 : 72.2%	3.8 (1.9+1.9)	8.4	94.9 : 94.9%	12.5 (6.3+6.3)	17.5
1/3	A27 (W) Ahead	35.4%	1.1	5.1	118.8%	104.7	116.7
2/1	A27 (E) Ahead Left	92.2%	10.3	24.0	105.9%	36.3	45.0
2/2	A27 (E) Ahead	92.2%	10.3	24.0	105.9%	36.3	45.0
3/1+3/2	Arundel Rd Ahead Left	88.8 : 88.9%	6.2 (3.1+3.1)	8.1	118.2 : 118.4%	29.7 (14.8+14.9)	33.9
4/1+4/2	A29 Fontwell Ave Ahead Left	92.6 : 94.4%	8.1 (4.0+4.1)	10.9	49.6 : 50.3%	1.7 (0.8+0.9)	2.9
5/1	Circ1 Right	43.0%	2.3	3.9	26.0%	0.2	1.7
5/2	Circ1 Right Right2	51.4%	2.8	4.7	35.5%	0.3	2.5

6/1	Circ2 Ahead	17.9%	0.6	2.0	39.5%	0.2	2.2
6/2	Circ2 Right	34.7%	1.3	3.9	81.3%	0.8	9.6
Cycle time (secs)		88			56		
PRC (%)		-4.9			-32.0		

- 6.1.8 It is noted that the mitigation measure suggested (incorporating the cycle times described) does not fully offset the Wandleys Lane traffic in both peak hours.
- 6.1.9 However, it is considered acceptable to re-optimize cycle times when traffic flows and / or the highway network change.
- 6.1.10 The model results below demonstrate the operation of the junction assuming the same flows as above, but with a revised (re-optimised) cycle time of 102s in the AM and 50s in the PM.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead	70.8 : 70.8%	3.3 (1.7+1.7)	8.4	88.4 : 88.4%	7.5 (3.8+3.8)	11.8
1/3	A27 (W) Ahead	33.0%	1.0	5.0	113.9%	82.2	93.6
2/1	A27 (E) Ahead Left	93.0%	11.7	27.6	114.5%	64.4	71.3
2/2	A27 (E) Ahead	93.0%	11.7	27.6	114.5%	64.4	71.3
3/1+3/2	Arundel Rd Ahead Left	83.9 : 83.9%	5.5 (2.7+2.7)	7.8	112.0 : 112.2%	22.8 (11.3+11.5)	26.7
4/1+4/2	A29 Fontwell Ave Ahead Left	91.1 : 93.0%	7.7 (3.8+3.9)	11.1	47.2 : 47.9%	1.4 (0.7+0.7)	2.5
5/1	Circ1 Right	49.8%	1.6	3.0	29.9%	0.3	1.4
5/2	Circ1 Right Right2	59.6%	2.0	4.0	40.8%	0.4	2.3
6/1	Circ2 Ahead	17.2%	0.7	2.5	40.1%	0.2	2.2
6/2	Circ2 Right	33.4%	1.4	5.0	82.6%	0.9	9.2
Cycle time (secs)		102			50		
PRC (%)		-3.3			-27.2		

- 6.1.11 The modelling results above demonstrate that with the proposed widening and re-optimised cycle times the proposed mitigation measure will offset the effect of the Wandleys Lane development traffic.
- 6.1.12 The sensitivity model has been run with an optimised cycle time adopting the methodology above. The output is summarised below and the model is attached.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead	91.0 : 91.0%	11.1 (5.5+5.5)	26.3	92.1 : 92.1%	8.9 (4.5+4.5)	15.0

1/3	A27 (W) Ahead	42.9%	2.3	8.6	95.4%	11.9	28.8
2/1	A27 (E) Ahead Left	85.7 : 85.7%	8.7 (6.8+1.9)	22.1	95.2 : 95.2%	14.2 (5.7+8.5)	20.0
2/2	A27 (E) Ahead	92.3%	11.6	29.2	95.5%	11.2	19.4
3/1+3/2	Arundel Rd Ahead Left	86.5 : 86.1%	5.9 (3.0+3.0)	9.6	95.5 : 95.1%	7.3 (3.7+3.6)	8.6
4/1+4/2	A29 Fontwell Ave Ahead Left	92.4 : 86.9%	7.8 (4.1+3.7)	11.2	47.6 : 43.8%	1.7 (0.9+0.8)	3.4
5/1	Circ1 Right	28.0%	1.9	4.8	37.6%	0.7	1.7
5/2	Circ1 Right Right2	30.7%	2.1	5.1	45.9%	0.8	2.1
6/1	Circ2 Ahead	17.6%	0.7	1.8	39.8%	1.8	7.1
6/2	Circ2 Right	35.8%	1.5	3.6	86.5%	5.7	15.5
Cycle time (secs)		114			71		
PRC (%)		-2.7			-6.1		

6.1.13 The Wandleys Lane traffic has been added to the model and assigned again, retaining the cycle times described above. The output is summarised below.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead	77.4 : 77.4%	5.0 (2.5+2.5)	11.3	92.1 : 92.1%	8.9 (4.5+4.5)	15.0
1/3	A27 (W) Ahead	35.4%	1.3	6.4	97.1%	14.4	32.2
2/1	A27 (E) Ahead Left	88.6 : 88.6%	9.9 (7.7+2.2)	23.8	95.5 : 95.5%	14.9 (6.3+8.6)	20.4
2/2	A27 (E) Ahead	95.9%	14.9	32.9	90.9%	8.1	15.7
3/1+3/2	Arundel Rd Ahead Left	83.1 : 83.2%	5.5 (2.8+2.8)	8.1	97.6 : 97.8%	8.8 (4.4+4.4)	10.2
4/1+4/2	A29 Fontwell Ave Ahead Left	95.6 : 89.4%	8.6 (4.5+4.0)	12.4	51.2 : 51.2%	1.8 (1.1+0.8)	3.8
5/1	Circ1 Right	41.2%	1.8	3.6	41.8%	0.8	1.9
5/2	Circ1 Right Right2	44.8%	1.9	3.7	41.8%	0.8	2.1
6/1	Circ2 Ahead	17.8%	0.8	2.6	42.0%	2.1	7.5
6/2	Circ2 Right	34.4%	1.6	5.0	86.5%	6.1	15.5
Cycle time (secs)		114			71		
PRC (%)		-6.5			-8.6		

6.1.14 The model outputs demonstrate that the operation of the junction is predicted to deteriorate with the uplift in flows and no further mitigation. Hence a mitigation scheme is required.

6.1.15 The mitigation measure assessed comprises a lengthening of the flare length on the A27 east arm by 3 PCUs and adding 50 PCU's to the Sat Flow of Lane 1 of the A27(E) arm, representing an increase of approximately 0.5m at the stop line.

6.1.16 The model has been re-run with the cycle times generated above and the results are summarised below.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead	77.4 : 77.4%	5.0 (2.5+2.5)	11.3	92.1 : 92.1%	8.9 (4.5+4.5)	15.0
1/3	A27 (W) Ahead	35.4%	1.3	6.4	97.1%	14.4	32.2
2/1	A27 (E) Ahead Left	84.5 : 84.5%	8.6 (6.8+1.8)	20.9	96.9 : 96.9%	16.9 (7.0+9.9)	22.3
2/2	A27 (E) Ahead	92.9%	12.1	29.5	97.5%	13.1	21.3
3/1+3/2	Arundel Rd Ahead Left	84.1 : 84.1%	5.8 (2.9+2.9)	8.3	95.2 : 95.4%	7.5 (3.7+3.7)	8.8
4/1+4/2	A29 Fontwell Ave Ahead Left	94.1 : 93.3%	9.2 (4.6+4.5)	12.8	51.4 : 51.4%	1.8 (1.1+0.8)	3.8
5/1	Circ1 Right	39.8%	1.6	3.2	41.8%	0.6	3.1
5/2	Circ1 Right Right2	46.2%	1.9	3.7	41.8%	0.7	3.1
6/1	Circ2 Ahead	18.1%	0.9	2.7	40.8%	0.4	3.8
6/2	Circ2 Right	35.0%	1.8	5.2	84.0%	1.7	15.0
Cycle time (secs)		114			71		
PRC (%)		-4.5			-8.3		

6.1.17 The modelling results demonstrate that, despite the physical mitigation measures assessed, this does not completely offset the effect of the Wandleys Lane development traffic.

6.1.18 However, it is considered appropriate to re-optimize the cycle time when physical changes are made to the junction. The model has therefore had its cycle time re-optimised, the results of which are demonstrated below.

Link ref	Link description	AM			PM		
		Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Q (pcu)
1/2+1/1	A27 (W) Ahead	92.0 : 92.0%	11.8 (5.9+5.9)	26.9	90.5 : 90.5%	7.8 (3.9+3.9)	13.7
1/3	A27 (W) Ahead	44.6%	2.4	8.9	94.3%	10.5	27.7
2/1	A27 (E) Ahead Left	83.6 : 83.6%	8.2 (6.5+1.7)	20.0	94.4 : 94.4%	13.7 (5.6+8.0)	19.2
2/2	A27 (E) Ahead	92.2%	11.4	28.4	94.9%	10.6	18.8
3/1+3/2	Arundel Rd Ahead Left	90.7 : 90.7%	7.3 (3.6+3.6)	11.1	95.1 : 95.3%	7.4 (3.7+3.7)	8.8
4/1+4/2	A29 Fontwell Ave Ahead Left	92.2 : 91.3%	8.5 (4.3+4.2)	11.6	51.7 : 51.7%	1.9 (1.1+0.8)	3.9
5/1	Circ1 Right	26.4%	1.9	4.9	45.0%	0.8	1.9
5/2	Circ1 Right Right2	30.7%	2.3	5.7	45.0%	0.8	2.0
6/1	Circ2 Ahead	18.4%	0.7	1.7	41.4%	2.0	7.6

6/2	Circ2 Right	35.5%	1.4	3.3	85.2%	5.8	15.7
Cycle time (secs)		111			72		
PRC (%)		-2.5			-5.8		

- 6.1.19 The modelling results above demonstrate that with the proposed physical mitigation and adjusted cycle times, the proposed mitigation measure will offset the effect of the Wandleys Lane development traffic.

6.2 Summary

- 6.2.1 The Highways England consultants have provided comments with respect to the above modelling output. However, in conclusion they have advised :

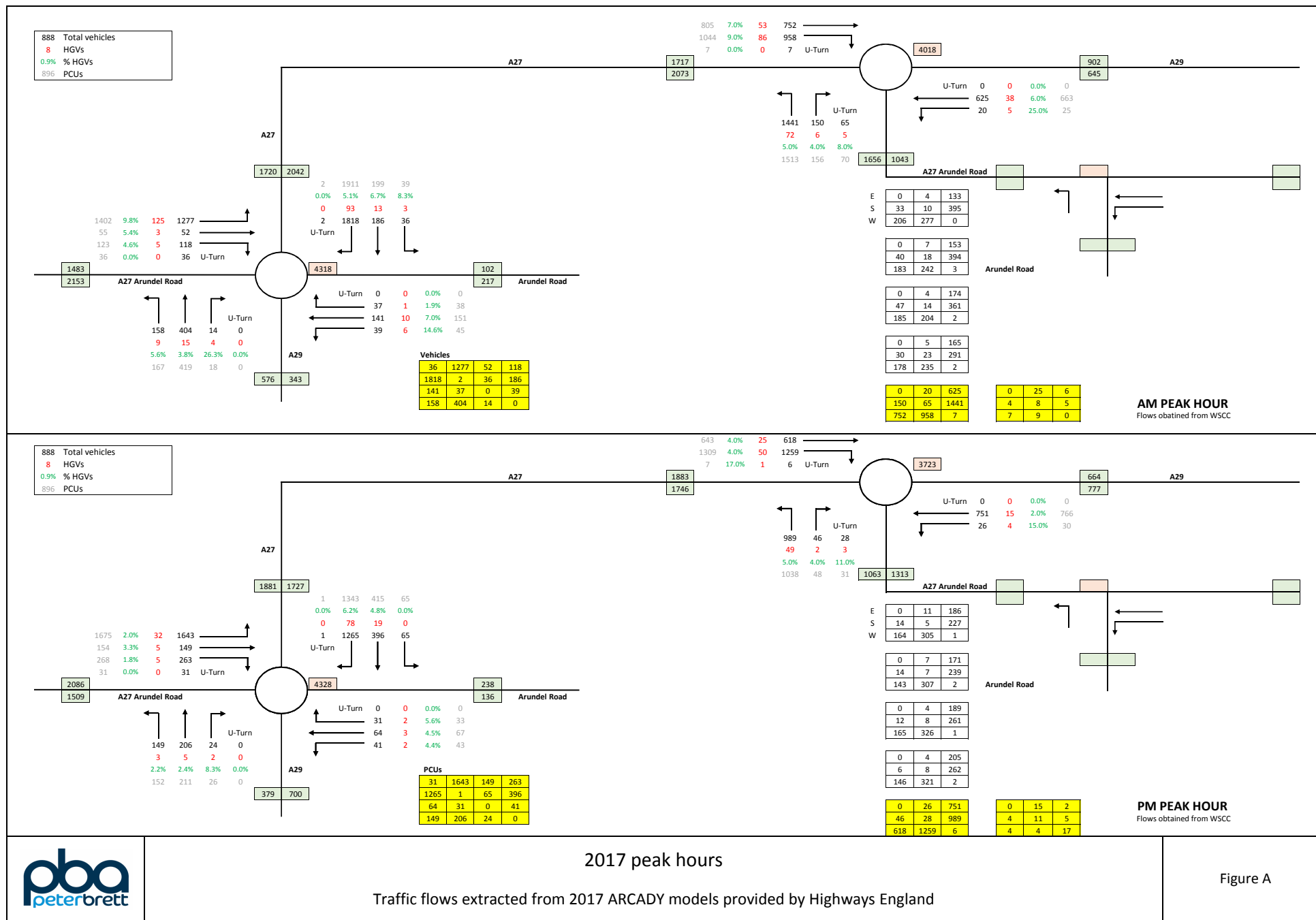
“Despite issues with some of the predicted PRC and Delay values in some of the scenarios, the proposed mitigation strategy seems proportional to the potential impact of the Wandleys development traffic generation. It is recommended that an allowance of 5%-10% is provided to account for the difference between theoretical and realised saturation flows. This could be done by increasing the proposed widening from 0.7m per lane to 0.8m per lane. It is recommended that these junction models are not used for implementation purposes without further fine tuning.”

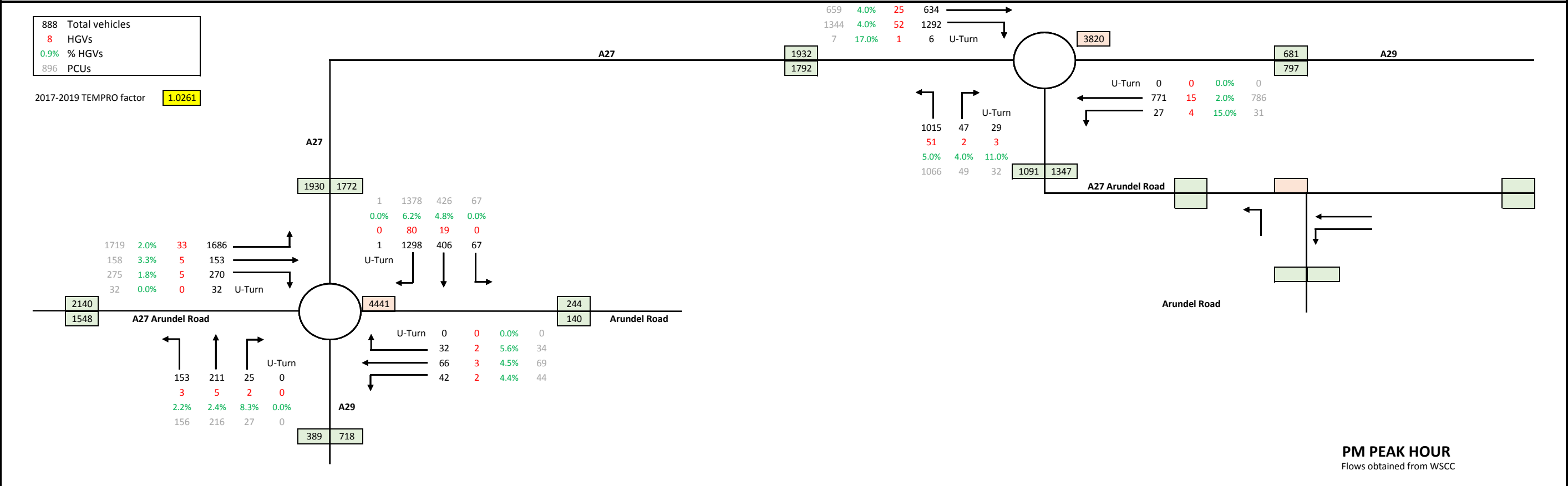
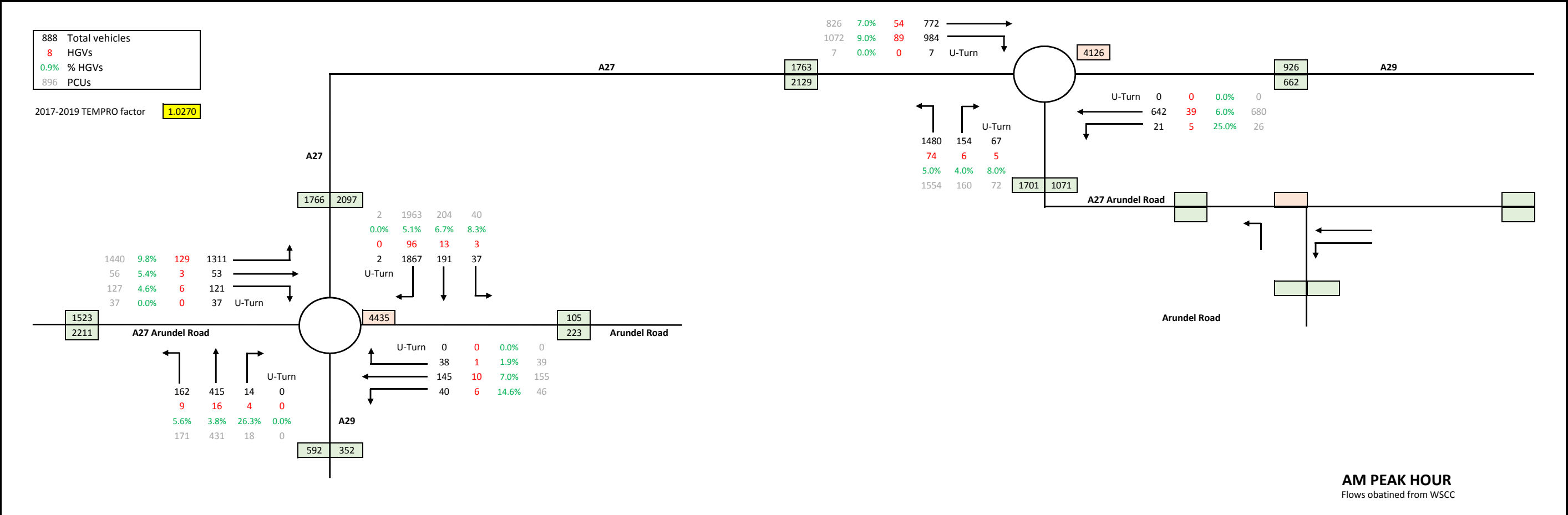
- 6.2.2 Hence, the mitigation approach has been agreed through the widening of the two approach lanes on the east arm by 0.8m per lane.

- 6.2.3 The widening of this arm is illustrated by the figure attached as Appendix C.

7 Conclusions

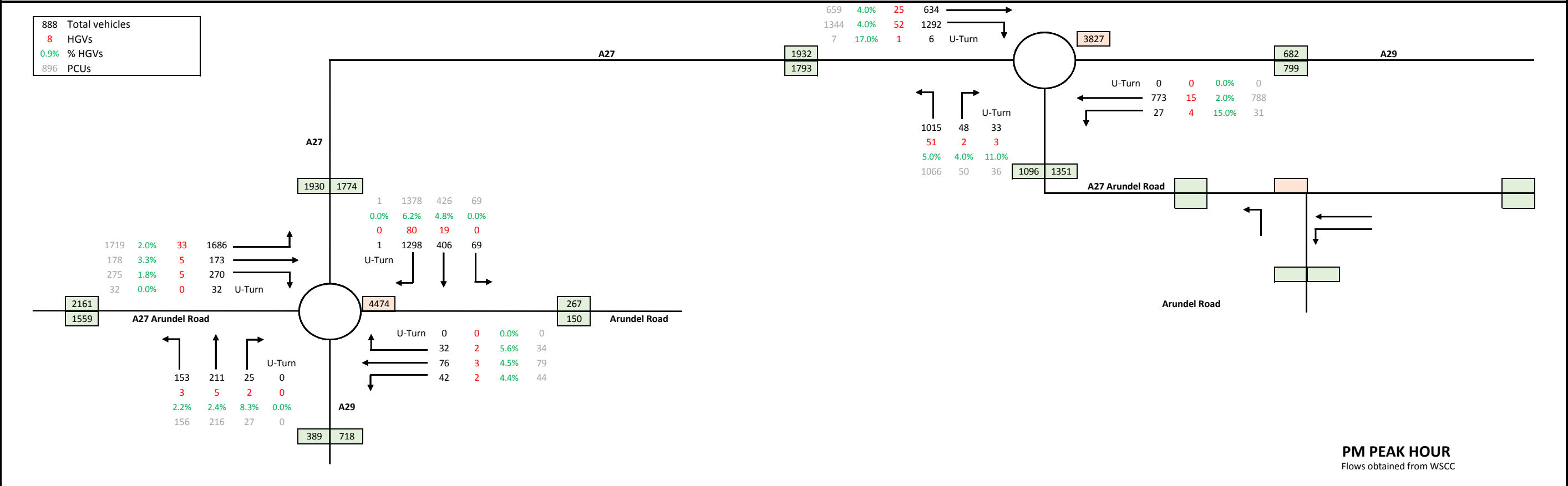
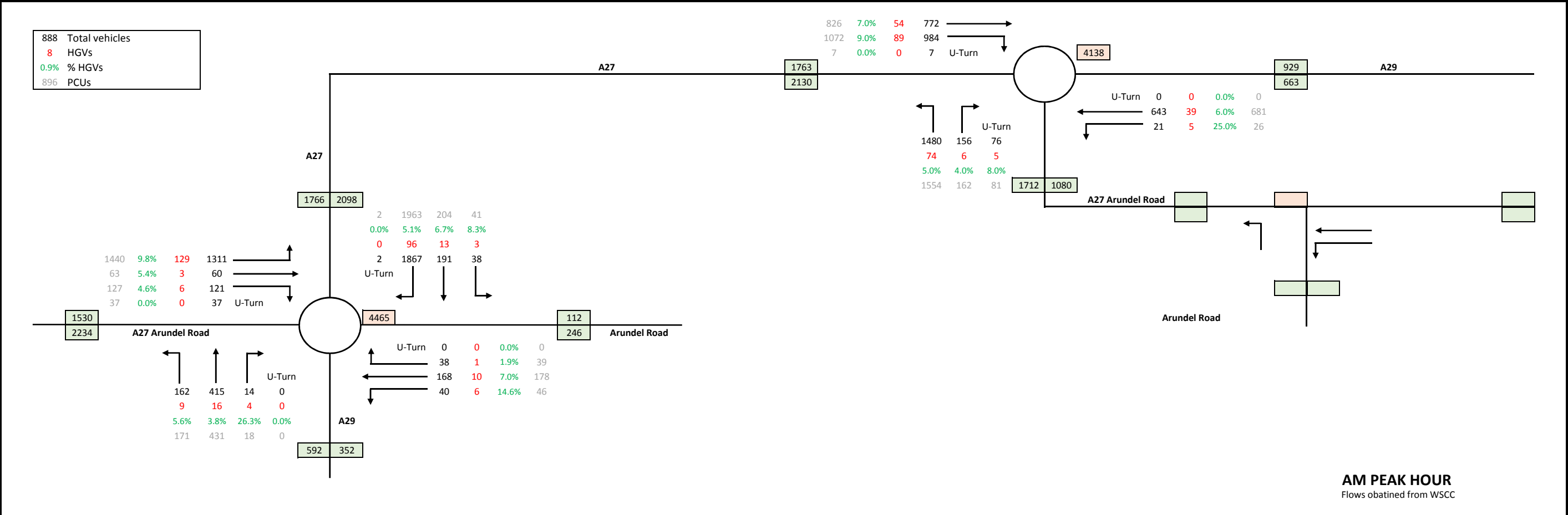
- 7.1.1 PBA has addressed the modelling comments raised by the Highways England consultants to the satisfaction of Highways England.
- 7.1.2 The Fontwell West Roundabout is predicted to operate over capacity at 2031 scenario. The Land East of Wandleys development traffic will impact on the junction.
- 7.1.3 PBA have demonstrated a potential mitigation measure that can mitigate the impact of the Wandleys Lane development traffic to the satisfaction of Highways England. This comprises increasing the lane width of the east arm approach by 0.8m per lane.





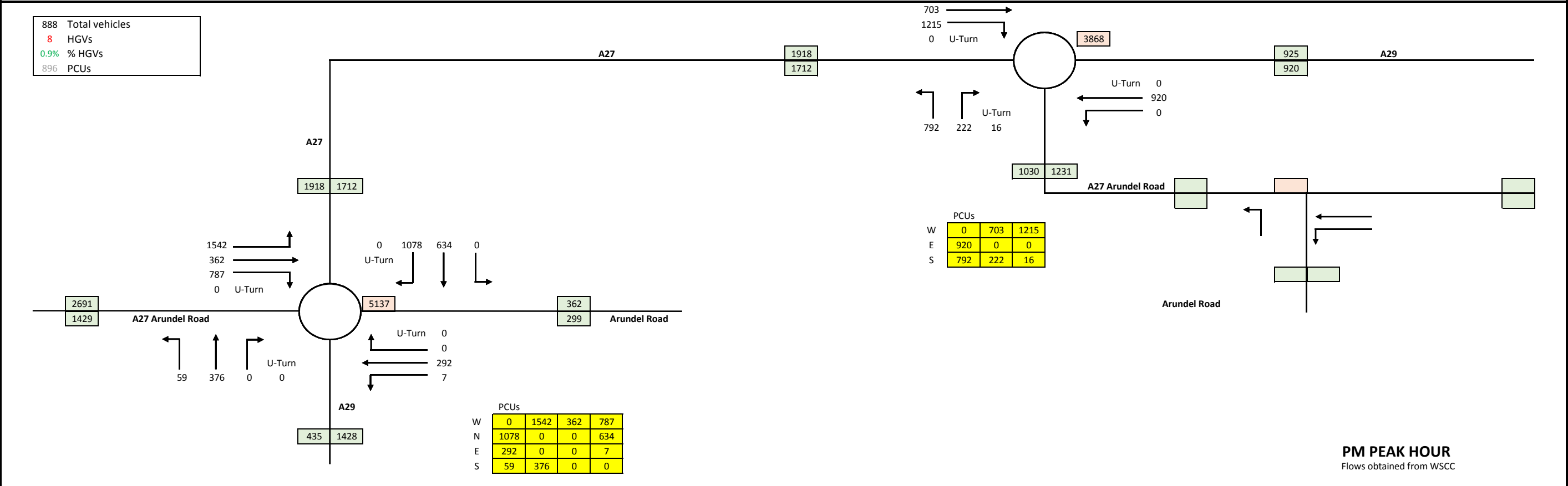
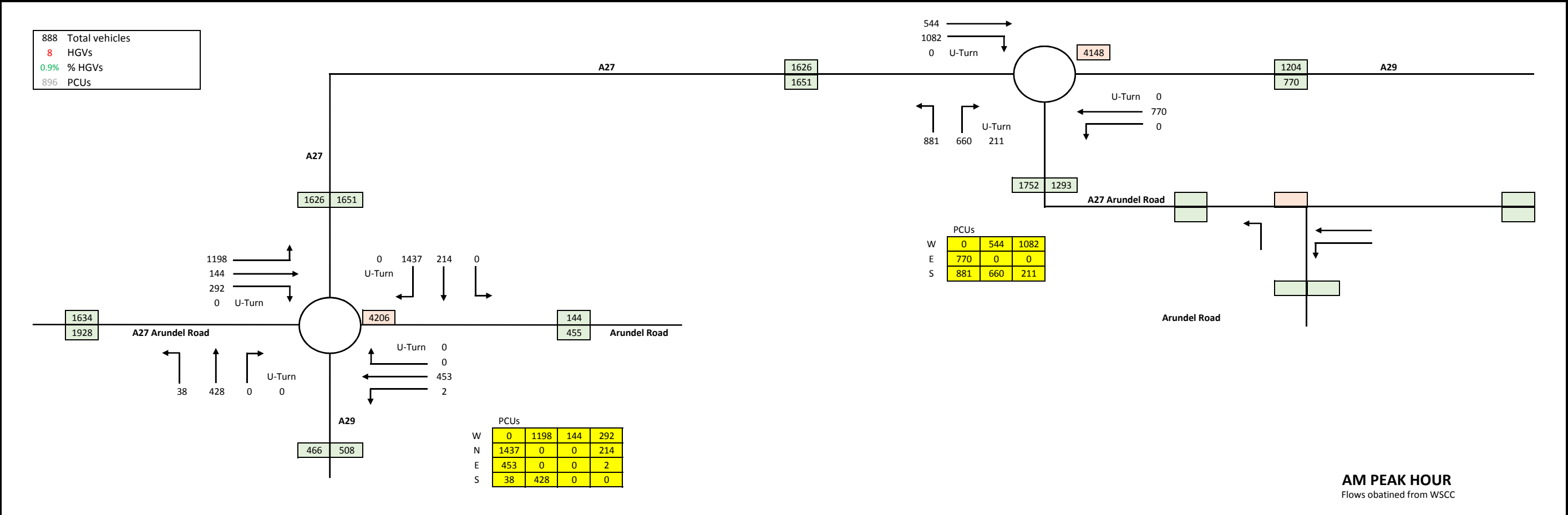
2019 opening year base flows

Figure B



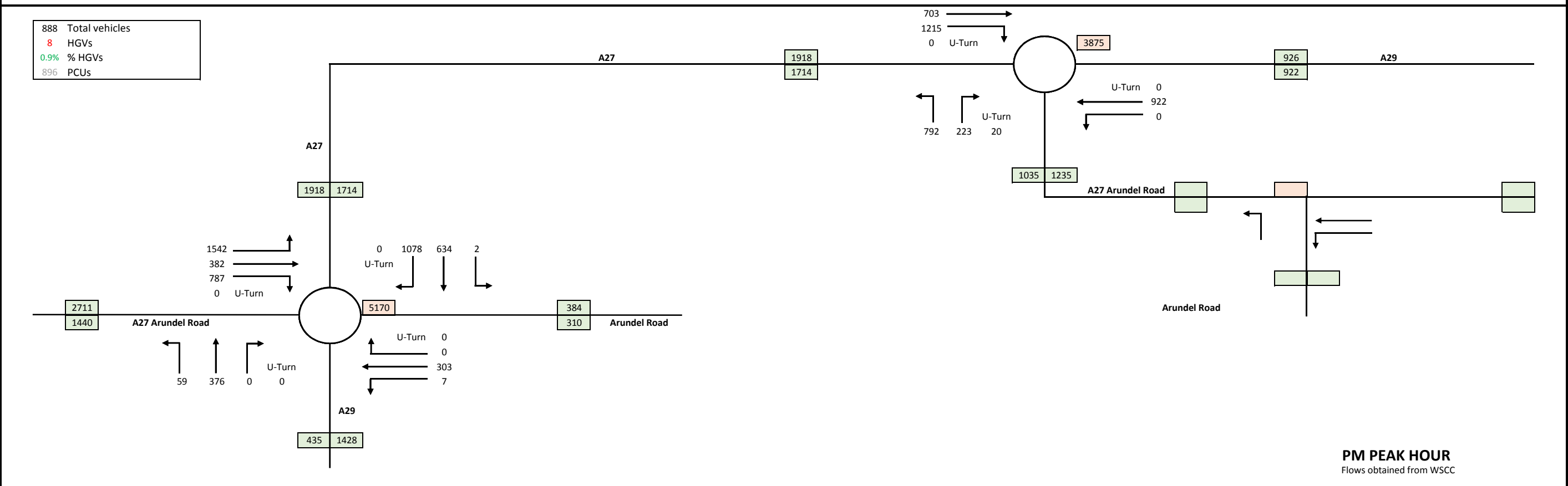
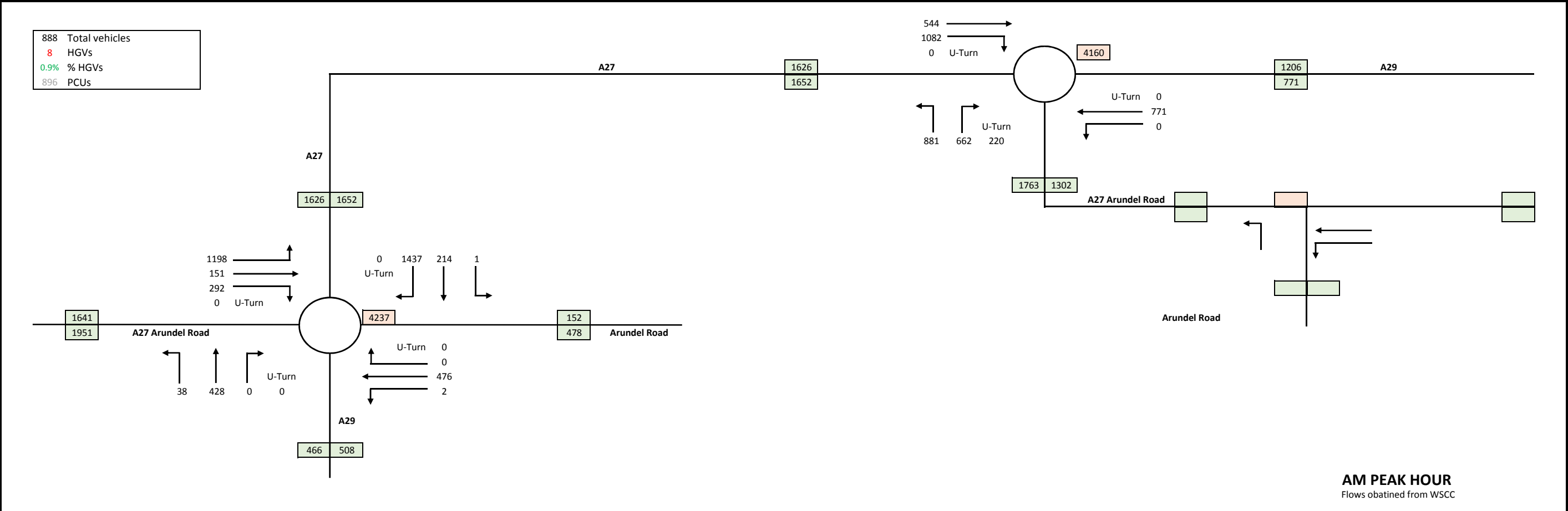
2019 opening year base flows plus Wandleys Lane development

Figure C



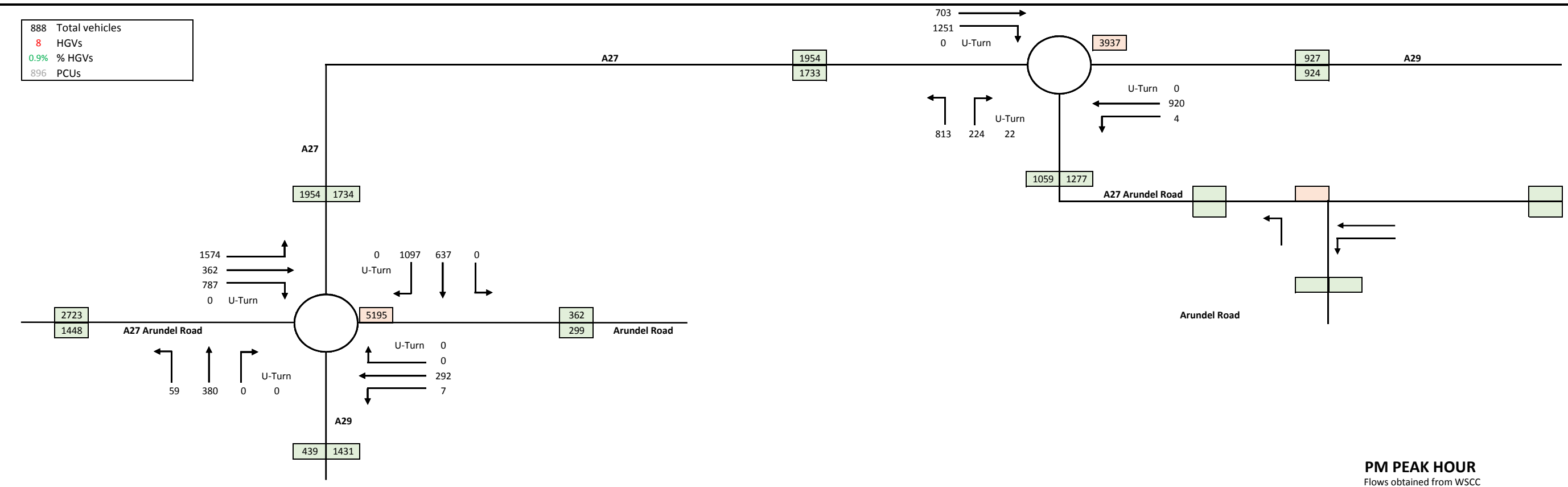
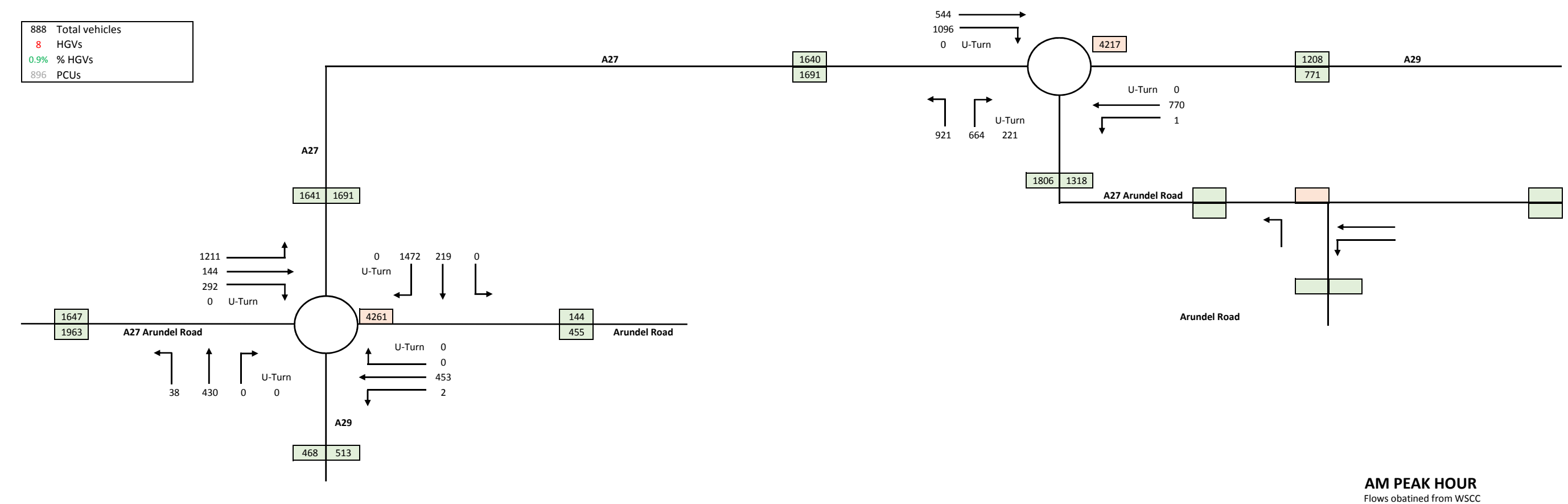
2031 Local Plan base flows
Traffic flows extracted from 2031 LINSIG models provided by Highways England

Figure D



2031 Local Plan base flows plus Wandleys Lane development

Figure E



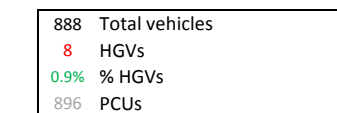


Figure G

Appendix A TRICS data

Calculation Reference: AUDIT-706709-170421-0428

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

03	SOUTH WEST	
	DV DEVON	2 days
04	EAST ANGLIA	
	NF NORFOLK	2 days
	SF SUFFOLK	1 days
05	EAST MIDLANDS	
	LN LINCOLNSHIRE	1 days
06	WEST MIDLANDS	
	SH SHROPSHIRE	3 days
	WK WARWICKSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE	
	NE NORTH EAST LINCOLNSHIRE	1 days
	NY NORTH YORKSHIRE	5 days
08	NORTH WEST	
	CH CHESHIRE	1 days
09	NORTH	
	CB CUMBRIA	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: Number of dwellings
 Actual Range: 10 to 432 (units:)
 Range Selected by User: 6 to 4334 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/09 to 29/11/16

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	4 days
Tuesday	4 days
Wednesday	3 days
Thursday	3 days
Friday	4 days

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

Selected survey types:

Manual count	18 days
Directional ATC Count	0 days

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

Selected Locations:

Suburban Area (PPS6 Out of Centre)	6
Edge of Town	12

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:

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

Secondary Filtering selection:

Use Class:

C3

18 days

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

Population within 1 mile:

1,001 to 5,000

4 days

5,001 to 10,000

5 days

10,001 to 15,000

9 days

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

Population within 5 miles:

5,001 to 25,000

5 days

25,001 to 50,000

4 days

50,001 to 75,000

3 days

75,001 to 100,000

6 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

7 days

1.1 to 1.5

11 days

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

Travel Plan:

No

18 days

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

PTAL Rating:

No PTAL Present

18 days

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

LIST OF SITES relevant to selection parameters

1	CB-03-A-04	SEMI DETACHED	CUMBRIA
	MOORCLOSE ROAD		
	SALTERBACK		
	WORKINGTON		
	Edge of Town		
	No Sub Category		
	Total Number of dwellings:	82	
	Survey date: FRIDAY	24/04/09	Survey Type: MANUAL
2	CH-03-A-09	TERRACED HOUSES	CHESHIRE
	GREYSTOKE ROAD		
	HURDSFIELD		
	MACCLESFIELD		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	24	
	Survey date: MONDAY	24/11/14	Survey Type: MANUAL
3	DV-03-A-02	HOUSES & BUNGALOWS	DEVON
	MILLHEAD ROAD		
	HONITON		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	116	
	Survey date: FRIDAY	25/09/15	Survey Type: MANUAL
4	DV-03-A-03	TERRACED & SEMI DETACHED	DEVON
	LOWER BRAND LANE		
	HONITON		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	70	
	Survey date: MONDAY	28/09/15	Survey Type: MANUAL
5	LN-03-A-03	SEMI DETACHED	LINCOLNSHIRE
	ROOKERY LANE		
	BOULTHAM		
	LINCOLN		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	22	
	Survey date: TUESDAY	18/09/12	Survey Type: MANUAL
6	NE-03-A-02	SEMI DETACHED & DETACHED	NORTH EAST LINCOLNSHIRE
	HANOVER WALK		
	SCUNTHORPE		
	Edge of Town		
	No Sub Category		
	Total Number of dwellings:	432	
	Survey date: MONDAY	12/05/14	Survey Type: MANUAL
7	NF-03-A-01	SEMI DET. & BUNGALOWS	NORFOLK
	YARMOUTH ROAD		
	CAISTER-ON-SEA		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Number of dwellings:	27	
	Survey date: TUESDAY	16/10/12	Survey Type: MANUAL

PBA Bank Street Ashford

Licence No: 706709

LIST OF SITES relevant to selection parameters (Cont.)

8	NF-03-A-03 HALING WAY	DETACHED HOUSES	NORFOLK
	THETFORD Edge of Town Residential Zone		
	Total Number of dwellings:	10	
	Survey date: WEDNESDAY	16/09/15	Survey Type: MANUAL
9	NY-03-A-06 HORSEFAIR	BUNGALOWS & SEMI DET.	NORTH YORKSHIRE
	BOROUGHBRIDGE Suburban Area (PPS6 Out of Centre) Residential Zone		
	Total Number of dwellings:	115	
	Survey date: FRIDAY	14/10/11	Survey Type: MANUAL
10	NY-03-A-07 CRAVEN WAY	DETACHED & SEMI DET.	NORTH YORKSHIRE
	BOROUGHBRIDGE Edge of Town No Sub Category		
	Total Number of dwellings:	23	
	Survey date: TUESDAY	18/10/11	Survey Type: MANUAL
11	NY-03-A-09 GRAMMAR SCHOOL LANE	MIXED HOUSING	NORTH YORKSHIRE
	NORTHALLERTON Suburban Area (PPS6 Out of Centre) Residential Zone		
	Total Number of dwellings:	52	
	Survey date: MONDAY	16/09/13	Survey Type: MANUAL
12	NY-03-A-10 BOROUGHBRIDGE ROAD	HOUSES AND FLATS	NORTH YORKSHIRE
	RIPON Edge of Town No Sub Category		
	Total Number of dwellings:	71	
	Survey date: TUESDAY	17/09/13	Survey Type: MANUAL
13	NY-03-A-11 HORSEFAIR	PRIVATE HOUSING	NORTH YORKSHIRE
	BOROUGHBRIDGE Edge of Town Residential Zone		
	Total Number of dwellings:	23	
	Survey date: WEDNESDAY	18/09/13	Survey Type: MANUAL
14	SF-03-A-05 VALE LANE	DETACHED HOUSES	SUFFOLK
	BURY ST EDMUNDS Edge of Town Residential Zone		
	Total Number of dwellings:	18	
	Survey date: WEDNESDAY	09/09/15	Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

15	SH-03-A-03 SOMERBY DRIVE BICTON HEATH SHREWSBURY Edge of Town No Sub Category	DETACHED		SHROPSHIRE
	Total Number of dwellings:	10		
	Survey date: FRIDAY	26/06/09		Survey Type: MANUAL
16	SH-03-A-05 SANDCROFT SUTTON HILL TELFORD Edge of Town Residential Zone	SEMI-DETACHED/TERRACED		SHROPSHIRE
	Total Number of dwellings:	54		
	Survey date: THURSDAY	24/10/13		Survey Type: MANUAL
17	SH-03-A-06 ELLESMERE ROAD	BUNGALOWS		SHROPSHIRE
	SHREWSBURY Edge of Town Residential Zone			
	Total Number of dwellings:	16		
	Survey date: THURSDAY	22/05/14		Survey Type: MANUAL
18	WK-03-A-02 NARBERTH WAY POTTERS GREEN COVENTRY Edge of Town Residential Zone	BUNGALOWS		WARWICKSHIRE
	Total Number of dwellings:	17		
	Survey date: THURSDAY	17/10/13		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 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	66	0.064	18	66	0.229	18	66	0.293
08:00 - 09:00	18	66	0.108	18	66	0.361	18	66	0.469
09:00 - 10:00	18	66	0.148	18	66	0.148	18	66	0.296
10:00 - 11:00	18	66	0.150	18	66	0.169	18	66	0.319
11:00 - 12:00	18	66	0.137	18	66	0.141	18	66	0.278
12:00 - 13:00	18	66	0.165	18	66	0.159	18	66	0.324
13:00 - 14:00	18	66	0.144	18	66	0.147	18	66	0.291
14:00 - 15:00	18	66	0.165	18	66	0.184	18	66	0.349
15:00 - 16:00	18	66	0.254	18	66	0.184	18	66	0.438
16:00 - 17:00	18	66	0.276	18	66	0.179	18	66	0.455
17:00 - 18:00	18	66	0.320	18	66	0.165	18	66	0.485
18:00 - 19:00	18	66	0.252	18	66	0.179	18	66	0.431
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		2.183			2.245			4.428	

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: 10 - 432 (units:)
 Survey date range: 01/01/09 - 29/11/16
 Number of weekdays (Monday-Friday): 18
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 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.

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

TAXIS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	66	0.003	18	66	0.003	18	66	0.006
08:00 - 09:00	18	66	0.002	18	66	0.002	18	66	0.004
09:00 - 10:00	18	66	0.002	18	66	0.002	18	66	0.004
10:00 - 11:00	18	66	0.003	18	66	0.003	18	66	0.006
11:00 - 12:00	18	66	0.002	18	66	0.002	18	66	0.004
12:00 - 13:00	18	66	0.001	18	66	0.001	18	66	0.002
13:00 - 14:00	18	66	0.001	18	66	0.001	18	66	0.002
14:00 - 15:00	18	66	0.003	18	66	0.002	18	66	0.005
15:00 - 16:00	18	66	0.001	18	66	0.002	18	66	0.003
16:00 - 17:00	18	66	0.001	18	66	0.001	18	66	0.002
17:00 - 18:00	18	66	0.001	18	66	0.001	18	66	0.002
18:00 - 19:00	18	66	0.002	18	66	0.001	18	66	0.003
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.022			0.021			0.043

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: 10 - 432 (units:)
 Survey date date range: 01/01/09 - 29/11/16
 Number of weekdays (Monday-Friday): 18
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 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.

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

OGVS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	66	0.000	18	66	0.000	18	66	0.000
08:00 - 09:00	18	66	0.001	18	66	0.001	18	66	0.002
09:00 - 10:00	18	66	0.001	18	66	0.001	18	66	0.002
10:00 - 11:00	18	66	0.004	18	66	0.002	18	66	0.006
11:00 - 12:00	18	66	0.001	18	66	0.002	18	66	0.003
12:00 - 13:00	18	66	0.000	18	66	0.001	18	66	0.001
13:00 - 14:00	18	66	0.000	18	66	0.000	18	66	0.000
14:00 - 15:00	18	66	0.003	18	66	0.003	18	66	0.006
15:00 - 16:00	18	66	0.002	18	66	0.001	18	66	0.003
16:00 - 17:00	18	66	0.003	18	66	0.002	18	66	0.005
17:00 - 18:00	18	66	0.001	18	66	0.001	18	66	0.002
18:00 - 19:00	18	66	0.000	18	66	0.000	18	66	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.016			0.014			0.030

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: 10 - 432 (units:)
 Survey date date range: 01/01/09 - 29/11/16
 Number of weekdays (Monday-Friday): 18
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 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.

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

PSVS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	66	0.000	18	66	0.000	18	66	0.000
08:00 - 09:00	18	66	0.000	18	66	0.000	18	66	0.000
09:00 - 10:00	18	66	0.000	18	66	0.000	18	66	0.000
10:00 - 11:00	18	66	0.000	18	66	0.000	18	66	0.000
11:00 - 12:00	18	66	0.002	18	66	0.002	18	66	0.004
12:00 - 13:00	18	66	0.000	18	66	0.000	18	66	0.000
13:00 - 14:00	18	66	0.000	18	66	0.000	18	66	0.000
14:00 - 15:00	18	66	0.000	18	66	0.000	18	66	0.000
15:00 - 16:00	18	66	0.000	18	66	0.000	18	66	0.000
16:00 - 17:00	18	66	0.000	18	66	0.000	18	66	0.000
17:00 - 18:00	18	66	0.000	18	66	0.000	18	66	0.000
18:00 - 19:00	18	66	0.000	18	66	0.000	18	66	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.002			0.002			0.004

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: 10 - 432 (units:)
 Survey date date range: 01/01/09 - 29/11/16
 Number of weekdays (Monday-Friday): 18
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 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.

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

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	18	66	0.001	18	66	0.014	18	66	0.015
08:00 - 09:00	18	66	0.003	18	66	0.010	18	66	0.013
09:00 - 10:00	18	66	0.001	18	66	0.004	18	66	0.005
10:00 - 11:00	18	66	0.003	18	66	0.012	18	66	0.015
11:00 - 12:00	18	66	0.002	18	66	0.003	18	66	0.005
12:00 - 13:00	18	66	0.005	18	66	0.003	18	66	0.008
13:00 - 14:00	18	66	0.008	18	66	0.003	18	66	0.011
14:00 - 15:00	18	66	0.005	18	66	0.003	18	66	0.008
15:00 - 16:00	18	66	0.008	18	66	0.002	18	66	0.010
16:00 - 17:00	18	66	0.011	18	66	0.003	18	66	0.014
17:00 - 18:00	18	66	0.010	18	66	0.004	18	66	0.014
18:00 - 19:00	18	66	0.002	18	66	0.002	18	66	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.059			0.063			0.122

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.

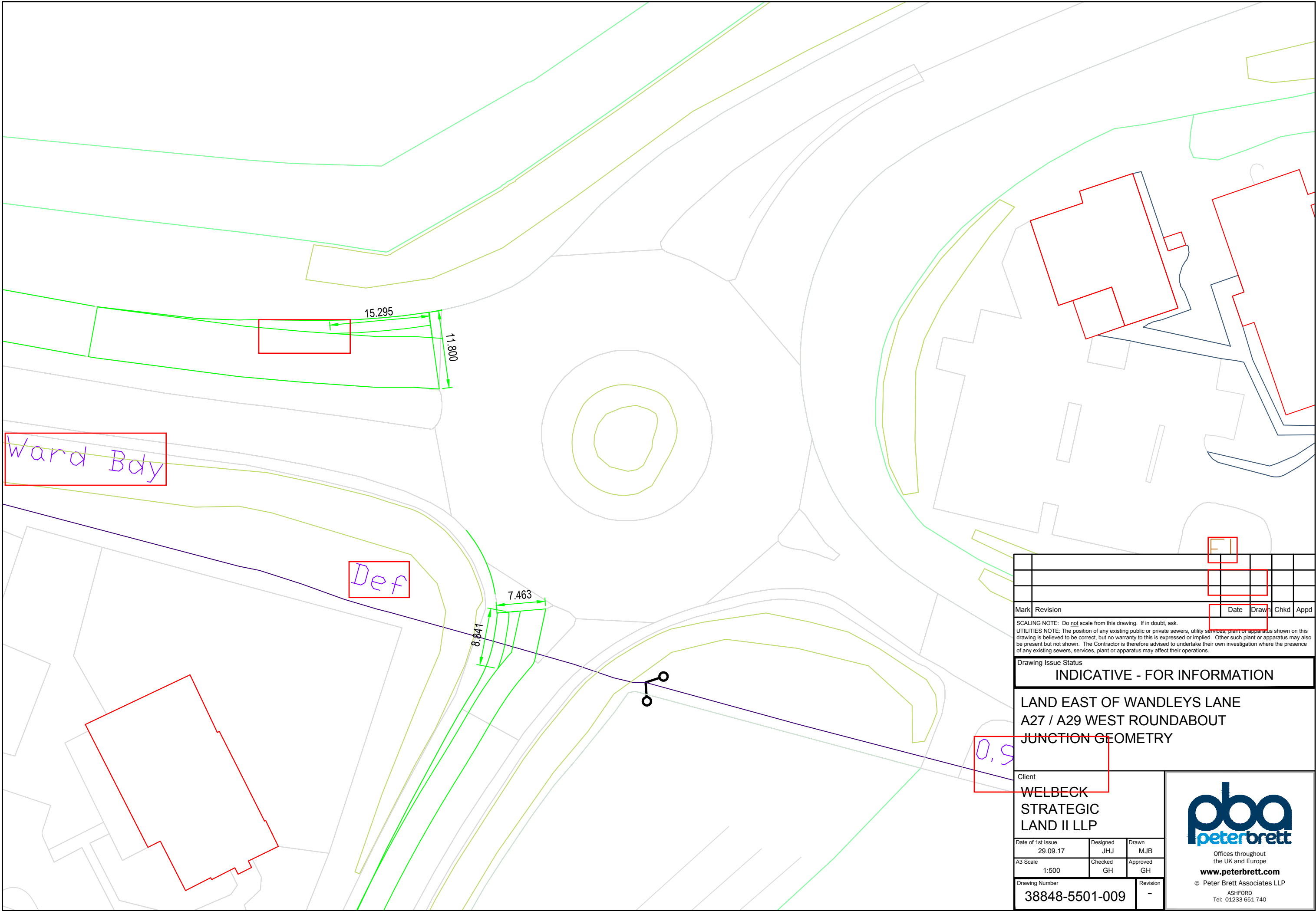
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected 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: 10 - 432 (units:)
 Survey date date range: 01/01/09 - 29/11/16
 Number of weekdays (Monday-Friday): 18
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 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.

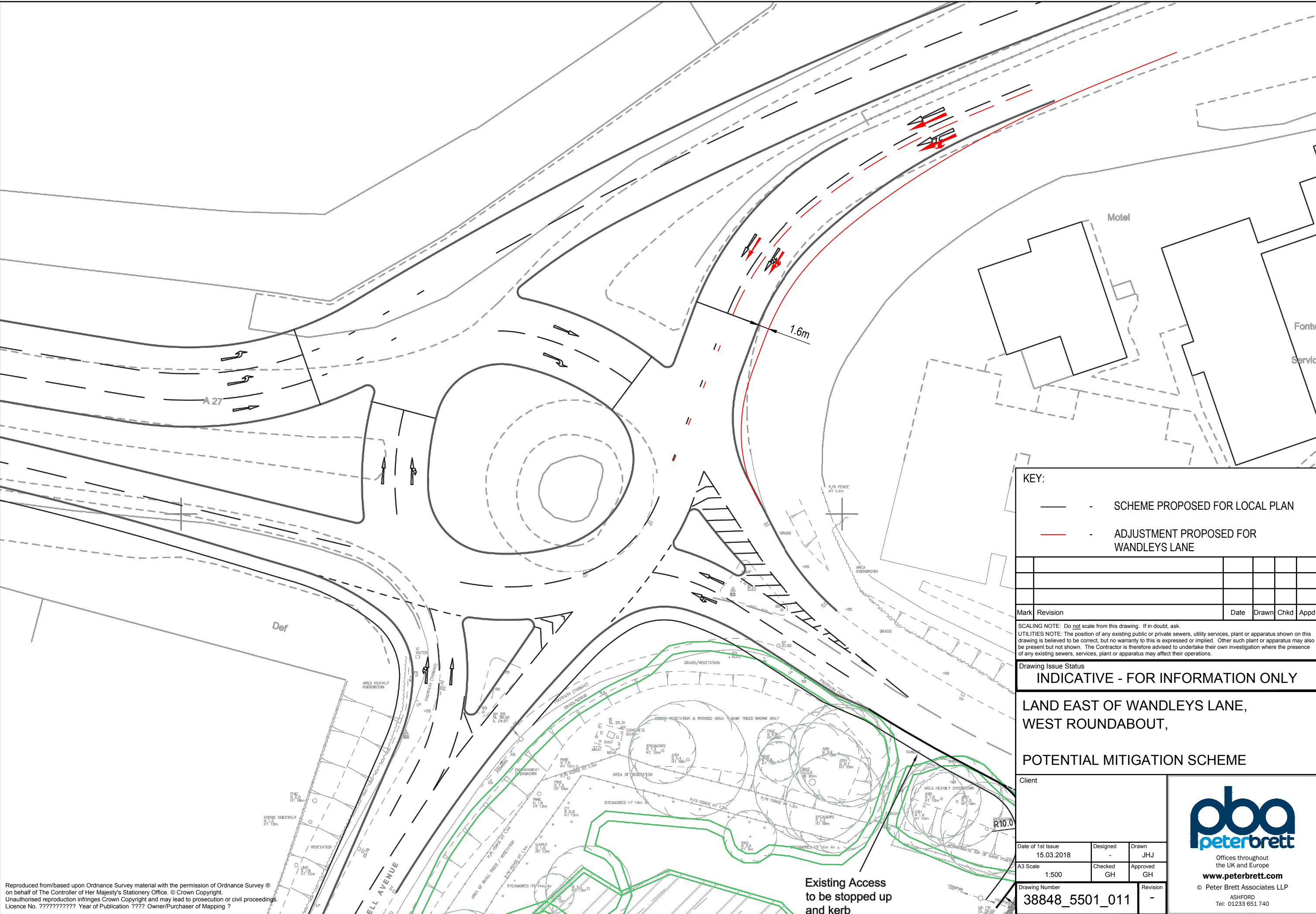
Appendix B CAD measurements



Mark	Revision	Date	Drawn	Chkd	Appd
SCALING NOTE: Do not scale from this drawing. If in doubt, ask.					
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.					
Drawing Issue Status					
INDICATIVE - FOR INFORMATION					
LAND EAST OF WANDLEYS LANE A27 / A29 WEST ROUNDABOUT JUNCTION GEOMETRY					
Client					
WELBECK STRATEGIC LAND II LLP					
Date of 1st Issue	Designed	Drawn			
29.09.17	JHJ	MJB			
A3 Scale	Checked	Approved			
1:500	GH	GH			
Drawing Number	Revision				
38848-5501-009	-				

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Appendix C Mitigation scheme



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KEY:

- SCHEME PROPOSED FOR LOCAL PLAN
- ADJUSTMENT PROPOSED FOR WANDLEYS LANE

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status
INDICATIVE - FOR INFORMATION ONLY

**LAND EAST OF WANDLEYS LANE,
WEST ROUNDABOUT,
POTENTIAL MITIGATION SCHEME**

Client

Date of 1st Issue	Designed	Drawn
15.03.2018	-	JHJ
A3 Scale	Checked	Approved
1:500	GH	GH
Drawing Number	Revision	
38848_5501_011	-	

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