Proposed Residential Development, Harras Moor, Whitehaven (Ref: 4/18/2287)

Technical Note 2: Response to Highways England - A595 Egremont Rd/Homewood Rd Junction Capacity Assessments

Project Number: A090070-410
Date: 3 April 2019

1.0 Introduction

1.1.1 This Technical Note (TN2) has been prepared to provide the additional information requested by Highways England's (HE) consultants Atkins in respect to the planning application for the proposed residential development at Harras Moor, application Ref 4/18/2287.

1.1.2 HE has requested that further junction capacity assessments be undertaken at the A595 Egremont Rd/Homewood Rd Roundabout junction incorporating a number of comments made by Atkins in recent correspondence on the modelling undertaken by WYG for the roundabout. In summary, Atkins has requested that a number of the modelling parameters used within the junction capacity assessment model should be changed and that hatching on the A595 Egremont Road southern approach to the junction should not be included within the arms 'entry width'. Relevant past correspondence between WYG and HE/Atkins is attached in **Appendix A**.

2.0 Junction Capacity Assessments

Existing Layout

2.1.1 The capacity of the A595 Egremont Rd/Homewood Rd Roundabout junction has been modelled in JUNCTIONS 9 for the assessment years 2023 and 2028.

2.1.2 In their emails of the 23rd January 2019 and 18th March 2019, HE/Atkins identified that a number of junction assessment parameters should be amended within the JUNCTION 9 model, including the entry width on the southern approach (A595 Egremont Road) to the junction so that it does not include any of the 'hatched area'.

2.1.3 The existing junction model has been amended accordingly. The results are set out in **Table 2.1** and **Table 2.2** for the 2023 and 2028 assessment years respectively. Summary result tables and JUNCTIONS 9 outputs are attached in **Appendix B.**

Table 2.1: Existing Junction - 2023 Summary Results Table

Link Description	AM Peak					PM Peak				
	2023 Without Development		2023 With Development		Diff.	2023 Without Development		2023 With Development		Diff.
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
B5295 Egremont Rd	0.25	0	0.32	1	**1**	0.22	0	0.25	0	**0**
Homewood Rd	0.58	1	0.62	2	**1**	0.76	3	0.79	4	**1**
A595 Egremont Rd	0.91	8	0.93	10	**2**	1.02	26	1.07	52	**26**
A595	0.91	8	0.92	9	**1**	0.87	6	0.89	7	**1**
Average Jun. Delay Increase Due to Dev. (s/pcu)	11				**-**	64				**-**

Table 2.2: Existing Junction - 2028 Summary Results Table

Link Description	AM Peak					PM Peak				
	2028 Without Development		2028 With Development		Diff.	2028 Without Development		2028 With Development		Diff.
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
B5295 Egremont Rd	0.26	0	0.34	1	**1**	0.23	0	0.26	0	**0**
Homewood Rd	0.62	2	0.66	2	**0**	0.81	4	0.83	5	**1**
A595 Egremont Rd	0.95	12	0.97	14	**2**	1.05	41	1.11	78	**37**
A595	0.95	11	0.97	12	**1**	0.9	7	0.93	9	**2**
Average Jun. Delay Increase Due to Dev. (s/pcu)	15				**-**	92				**-**

2.1.4 **Tables 2.1** and **2.2** show that the existing junction is forecast to operate at below its capacity during the AM peak period even in 2028, with a maximum RFC of 0.95 without the development and 0.97 with the development. During this peak period, the increase in queues and delay at the junction due to the development is negligible.

2.1.5 During the PM peak period, the results show that the junction is forecast to operate at above its capacity in 2023 even without the addition of the development, with a maximum RFC of 1.02. The addition of the development increases the maximum RFC to 1.07.

2.1.6 During the 2028 PM peak period, the results show that the existing junction is forecast to operate with a maximum RFC of 1.05 without the development, and with a maximum RFC of 1.11 with the development.

2.1.7 However, even during the worst-case scenario (2028 PM peak with development), the junction is only expected to operate at above its capacity on one arm of the junction only, and that on this arm, the arm is forecast to only operate over its capacity for 45 minutes of the day. Furthermore, the increase in average delay at the junction due to the development is only forecast to be 92 seconds per pcu, an increase in delay which is not considered to be significant.

2.1.8 Given the above, the impact of the development at the junction is not considered to be significant or severe in NPPF terms.

Mitigated Layout

2.1.9 Nevertheless, although it is considered that the impact of the proposed development on the existing junction is not 'severe', a scheme to increase the capacity on the A595 Egremont (southern approach) has been developed. The scheme which is shown in drawing no A090070-P004 Rev P01 (attached in **Appendix C**), involves the formalisation of two lanes on the approach to the roundabout on the A595 Egremont (southern) arm, using the hatched area on both the nearside and off-side of the lane.

2.1.10 Drawing no A090070-P008 Rev P01, also attached in **Appendix C,** shows that the modified junction layout would meet the relevant deflection criteria.

2.1.11 The results of the JUNCTION 9 assessments for the modified junction layout are set out in **Tables 2.3 and 2.4** for the 2023 and 2028 assessment years respectively. Summary results tables and JUNCTIONS 9 outputs are attached in **Appendix D.**

Table 2.3: Modified Junction Layout - 2023 Summary Results Table

Link Description	AM Peak					PM Peak				
	2023 Without Development Existing Layout		2023 With Development Modified Layout		Diff.	2023 Without Development Existing Layout		2023 With Development Modified Layout		Diff.
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
B5295 Egremont Rd	0.25	0	0.32	1	**1**	0.22	0	0.25	0	**0**
Homewood Rd	0.58	1	0.62	2	**1**	0.76	3	0.78	4	**1**
A595 Egremont Rd	0.91	8	0.67	2	**-6**	1.02	26	0.76	3	**-23**
A595	0.91	8	0.92	9	**1**	0.87	6	0.91	7	**1**
Average Jun. Delay Increase Due to Dev. (s/pcu)	-14				**-**	-49				**-**

Table 2.4: Modified Junction Layout - 2028 Summary Results Table

Link Description	AM Peak					PM Peak				
	2028 Without Development Existing Layout		2028 With Development Modified Layout		Diff.	2028 Without Development Existing Layout		2028 With Development Modified Layout		Diff.
	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max RFC	Max Queue (PCU)	Max Queue (PCU)
B5295 Egremont Rd	0.26	0	0.34	1	**1**	0.23	0	0.26	0	**0**
Homewood Rd	0.62	2	0.66	2	**0**	0.81	4	0.83	5	**1**
A595 Egremont Rd	0.95	12	0.69	2	**-10**	1.05	41	0.79	4	**-37**
A595	0.95	11	0.96	12	**1**	0.9	7	0.94	10	**3**
Average Jun. Delay Increase Due to Dev. (s/pcu)	-20				**-**	-74				**-**

2.1.12 **Tables 2.3** and **2.4** show that by providing two lanes on A595 Egremont Road (southern) approach to the junction as shown in drawing no A090070-P004 Rev P01, the operation of the junction is significantly improved. The modified junction is forecast to operate at below its capacity even in 2028 with the development, with a maximum RFC of 0.96 and 0.94 in the AM and PM peaks respectively. The results also show that the modified junction (with development) reduces average delay at the junction compared to the existing junction (without development) by 20 seconds per pcu during the 2028 AM peak, and by 74 seconds per pcu during the 2028 PM peak period.

2.1.13 It is therefore considered that the junction modifications shown in drawing no A090070-P004 Rev P01, more than mitigate for the impact of the development proposals at the junction.

3.0 Summary and Conclusions

3.1.1 This Technical Note has been prepared to provide additional information requested by Highways England and their consultants, Atkins, in respect to the modelling of the A595 Egremont Rd/Homewood Rd Roundabout junction, in Harras Moor, Whitehaven.

3.1.2 This note demonstrates that:

- When using Atkins' modelling parameters, the existing junction is forecast to operate at above its capacity in the PM peak in both assessments years, 2023 and 2028, even without the development. However, whilst increasing the RFC and delay at the junction, the level of increase due to the proposed development is not considered to be significant or severe in NPPF terms.

- The provision of a second lane on the A595 Egremont Road (southern) approach to the junction would improve the operation of the junction significantly, such that the junction is forecast to operate at below its capacity in 2028 with the proposed development.

Appendices

Appendix A – Atkins/WYG Correspondence

mike.smith

Subject: FW: Harras Moor 04/18/2287/0O1 - Revised TA

From: Beel, Andy <Andy.Beel@atkinsglobal.com>
Sent: 18 March 2019 12:38
To: mike.smith <mike.smith@wyg.com>
Cc: Beagon, Luke <Luke.Beagon@atkinsglobal.com>; Billinge, Ryan <Ryan.Billinge@highwaysengland.co.uk>; peter.shannon <peter.shannon@wyg.com>; simon.peake <simon.peake@wyg.com>; yujing.liu <yujing.liu@wyg.com>; 'Nick.Hayhurst@copeland.gov.uk' <Nick.Hayhurst@copeland.gov.uk>; 'Lucinda.Taylor@homesengland.gov.uk' <Lucinda.Taylor@homesengland.gov.uk>
Subject: RE: Harras Moor 04/18/2287/0O1 - Revised TA

Mike

Further to your email of 5th March, and our earlier discussion, I would provide the following response.

Firstly, in respect of the supplied modelling assessments, we note that the recommended conflict angle has been incorrectly applied to the B5295 Egremont Rd (Arm1). This should have been applied to the A595 Egremont Rd (Arm 3) which was recommended as an angle 40.44. The recommended angle for the B5292 Egremont Rd (Arm 1) was 12.26.
We also note that you have not correctly applied the suggested measurements for the A595 south arm. We suggested an entry width and flare length of 4.7 and 8.06 respectively, whereas your modelling has adopted measurements of 4.77 and 12.3 respectively. It should be noted that adoption of the alternative Atkins measurements would worsen operation of the A595 south arm compared to the results presented in the supplied Tables 3 and 4. Furthermore, with the RFC values for this approach already exceeding 1.0 in the 2023 assessment scenario, caution has to be taken over the queue length forecasts, which could be considerably greater.

We recognise there is some fading of red carriageway surfacing on approach to the junction. However, we cannot simply accept that this signifies common use of the full carriageway width to kerb edge.
We remain of the view that the entry width should be measured to exclude hatched areas. The Junctions 9 User Manual states that *"Where a layout has metre strips (or any hatching) alongside the kerbs, the carriageway width should exclude the metre strips or hatching width".* On this basis, we are of the view that the results presented in Tables 3 and 4 are likely to be the more accurate future forecast.
However, we also understand that adoption of the reduced geometrics in the base model results in a prediction of longer queues on the A595 south arm than those surveyed.

In this regard, we would recommend revisiting any queue length survey information. Assuming previous surveys were undertaken by video camera, does the camera view extend beyond the back of queue (both stationary and moving queue), and can this be demonstrated? We are mindful that sources of journey time data indicate reasonable delays on approach to the junction. Trafficmaster data for this approach reviewed by Atkins on behalf of HE, identifies evening period reductions in speed on approach to the roundabout for some distance, whilst Google traffic 'typical conditions' also indicates lengthy speed reductions. This information reinforces our concern over the assumed entry width and flare length, and implications for future year forecasts. It is recommended that if it cannot be demonstrated that MHC's queue length survey captured the full extent of queues (both stationary and moving), then additional footage of neutral day evening period queues could be captured, to support the junction model validation.

Should this data demonstrate queuing more aligned with a base model including the Atkins geometric measurements for the A595 south arm, then we would suggest that the forecast future year operation for this arm would identify a need for mitigation. On the basis of the results presented in Table 3, the development would on average add an extra 30 seconds of delay for all vehicles passing through the roundabout in the evening peak hour. For vehicles on the A595 south arm, this increase in delay would be much higher. In this scenario, and given

the uncertainty of forecasts when an RFC value exceeds 1.0, we believe there is a strong case for mitigating the impacts of development – potentially seeking to provide a short section of widening on the A595 south arm to provide a short flared (two-lane) approach to the roundabout, by way of widening into the central hatching and/or the nearside carriageway edge. It is anticipated that such localised widening would diminish the impact of additional right-turning traffic associated with the proposed development.

I appreciate you will keen to resolve this issue, but given conflicting sources of information in respect of existing junction performance, we need to make sure that the base model is as accurate as possible, and that the development will not have a significant adverse impact on performance. As discussed, I would be happy to meet to discuss these comments, and expedite any further assessment or layout proposals, and await your further response.

Many thanks
Andy

Andy Beel
Managing Consultant, Transportation

ATKINS
The Exchange, 2nd Floor, 3 New York Street, Manchester, M1 4HN | Tel: +44 (0)161 2453420 | Fax: +44 (0)161 2453500 | Email:andy.beel@atkinsglobal.com | Web: www.atkinsglobal.com

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From: mike.smith <mike.smith@wyg.com>
Sent: 05 March 2019 09:05
To: Beel, Andy <Andy.Beel@atkinsglobal.com>; 'Ryan.Billinge@highwaysengland.co.uk' <Ryan.Billinge@highwaysengland.co.uk>
Cc: peter.shannon <peter.shannon@wyg.com>; simon.peake <simon.peake@wyg.com>; yujing.liu <yujing.liu@wyg.com>; 'Nick.Hayhurst@copeland.gov.uk' <Nick.Hayhurst@copeland.gov.uk>; 'Lucinda.Taylor@homesengland.gov.uk' <Lucinda.Taylor@homesengland.gov.uk>
Subject: FW: Harras Moor 04/18/2287/0O1 - Revised TA

Dear Andy/Ryan

Thank you for sending over your latest comments on the modelling of the A595/Egremont Road/Homewood Road roundabout and your suggested modelling parameters, which are generally the same or very similar to ours with the exception of the 'Conflict Entry Angle', Entry Width, and Flare Length on the southern Egremont Road arm of the junction (with the flare length being dependent on the entry width).

We agree with your measurement of the 'Conflict Entry Angle' and have amended our junction model accordingly, although this amendment makes very little difference to the results. However, we maintain that the entry width that we have used is appropriate for the way the junction is currently used. We have measured the entry width to include the hatching on the nearside of the arm as this appears to be currently used by some vehicles as is evident by the faded hatching and faded coloured road surfacing on this approach. This also provides results which correspond relatively well with observed queues as reported in our email dated 17th January and therefore we consider our model to provide a good representation of the Roundabout's operation.

We have therefore modelled the roundabout using Direct Flow inputs with the 'Conflict Entry Angle' amended to correspond to your suggested measurement but with our original entry width. The results are summarised in **Table 1** and **Table 2** of the attached for the assessment years 2023 and 2028 respectively.

However, given your comments on the entry width, we have also remodelled the junction using Direct Flow inputs with all your suggested measurements. These results are summarised in **Table 3 and 4** of the attached.

Table 1 and **Table 2** show that the roundabout is forecast to operate at below its capacity even in 2028 with the addition of the development with a maximum RFC of 0.970 during the PM peak (the critical peak hour). The Tables also show that the increase in queue due to the development in this critical peak is only 6 vehicles with the increase in delay of only just over 7 seconds per vehicle, something which would not be noticeable to drivers and certainly not severe in NPPF terms.

Reference to **Table 3** and **Table 4** show that during the AM peak period, the junction is forecast to operate at below its capacity with the addition of the development with the development only increasing delay at the junction in 2028 by 4 seconds per pcu. During the PM peak, the results show that the junction is expected to operate at above its capacity, but on one arm only, the A595 Egremont Road (southern arm). The tables show that delays at the junction are forecast to increase by 36.3 seconds per pcu in 2023, and by 50.5 seconds per pcu in 2028.

In this scenario, it should be noted however that the modelling results only show the A595 Egremont Road arm of the junction to be operating at above its capacity, with the other three arms of the junction operating below their capacity in 2028 with the development. Furthermore, the results show that the A595 Egremont Road arm of the junction only operates above its capacity in three of the four modelled 15 minute periods and therefore it is considered that the provision of the development does not result in a severe impact at the junction.

In summary, we consider that the entry width that we have used reflects the current operation of the roundabout and that with the development, the roundabout is forecast to operate at below its capacity even in 2028, some 10 years into the future. Even when using your entry width measurement, which we consider underestimates the operational capacity of the roundabout, the junction is forecast to operate below its capacity for 23 hours and 15 minutes of the day, and that only one arm at the junction would operate at above its capacity for ¾ of an hour during a 24 hour period, something that cannot be considered to be a 'severe impact' in NPPF terms.

The junction model outputs for all the modelling undertaken above are attached.

I trust the above provides the additional information and justification that you require for Highways England to withdraw your holding objection to the proposals.

Nevertheless, if you require any further information/clarification please do not hesitate to contact me or alternatively if a meeting is required, I'd be grateful if you could let me know your availability.

Many Thanks

Mike

Mike Smith
Associate

WYG
Quay West at MediaCityUK, Trafford Wharf Road, Trafford Park, Manchester, M17 1HH
Tel: +44 161 874 8745
Mob: +44 7789 271 777

www.wyg.com

From: Billinge, Ryan <Ryan.Billinge@highwaysengland.co.uk>
Sent: 23 January 2019 11:18
To: peter.shannon <peter.shannon@wyg.com>
Cc: Nick Hayhurst <Nick.Hayhurst@copeland.gov.uk>; simon.peake <simon.peake@wyg.com>; mike.smith <mike.smith@wyg.com>
Subject: RE: Harras Moor 04/18/2287/0O1 - Revised TA [Filed 24 Jan 2019 13:11]

Peter

Our consultants have reviewed the response you sent last week and have offered the following comments:

Following confirmation of the nature of queue length surveys, and the comparison to modelled queue lengths, we are satisfied with the level of queue length validation for Junction 10 (A595/ Rosehill) and Junction 11 (A595/ Victoria Road).
On this basis we require no further detail in respect of the assessment of these junctions.

However, we continue to disagree with the assumed geometric measurements for the A595 south arm of Junction 9. Based on existing white-lining at the junction (nearside and offside hatching), we would suggest that the assumed 5.8m entry width overestimates the effective entry width by approximately 1m. The WYG measurement appears to take account of the hatched area on the nearside of the lane. This will affect the associated flare length and entry radius, and impact on not only the reported base year model performance, but also the forecast year assessments.
On the basis of the current model set-up, we would estimate that changes in the effective entry width and flare length would result in the junction operating with an RFC in excess of 1.0 in the future year assessment, and a significant increase in vehicle delay.

Whilst we note that the modelled queues for this arm exceed the observed value in the base year, we would suggest that this points towards a required review of model set-up rather than the appropriateness of assumed geometrics for the A595 south arm.
We note that the One Hour profile has been used within the model, and would request consideration of Direct Entry flows in combination with a review of geometrics for the southern arm.

In summary, whilst we are now content that the additional information confirms the absence of material highway impacts at Junctions 10 and 11, we continue to have concerns over the modelling of Junction 9 (A595/ Egremont Road/ Homewood Road), and consider that the submitted assessments could understate future performance issues for the junction. We would be happy to provide our own geometric measurements for the approach, but suggest a wider review of model set-up (demand profile) may be required given the existing findings of queue length validation.

Kind regards,

Ryan

Ryan Billinge
Assistant Asset Manager
Highways England | Piccadilly Gate | Store Street | Manchester | M1 2WD
Tel: +44 (0) 300 4705135 **Mobile**: 07850907558
Web: http://www.highwaysengland.co.uk
GTN: 0300 470 5135

From: peter.shannon [mailto:peter.shannon@wyg.com]
Sent: 17 January 2019 17:48
To: Billinge, Ryan <Ryan.Billinge@highwaysengland.co.uk>
Cc: Nick Hayhurst <Nick.Hayhurst@copeland.gov.uk>; simon.peake <simon.peake@wyg.com>; mike.smith <mike.smith@wyg.com>
Subject: FW: Harras Moor 04/18/2287/0O1 - Revised TA

Dear Ryan

Thanks for your comments, my colleague has provided a response set out below (red) and in the attached pdf.

We would appreciate it if you could review and get back to us as soon as possible as we need to resolve these issues in time for the next committee.

Regards

Peter

Peter Shannon
Associate Director

WYG
Lakeland Business Park, Lamplugh Road, Cockermouth, Cumbria, CA13 0QT
Tel: +44 1900 515 805
Mob: +44 7867 141 145

www.wyg.com

From: Billinge, Ryan <Ryan.Billinge@highwaysengland.co.uk>
Sent: 08 January 2019 11:52
To: peter.shannon <peter.shannon@wyg.com>
Subject: RE: Harras Moor 04/18/2287/0O1 - Revised TA

Hi Peter

Apologies for the delay in getting back to you on this, but our consultants have now reviewed the Transport Assessment Addendum (TAA) you sent to us.

Whilst the TAA has provided additional modelling material in line with our previous request, a number of residual issues have been identified and require further investigation before the exact impact of the development and any need for mitigation can be fully understood:

- No evidence is provided to demonstrate that the existing junction models have been validated to a reasonable level. It is unclear whether the 5-minute queue surveys are maximum, average or spot counts, and a limited review of observed queue lengths suggests junction models for J9, J10 and J11 underestimate surveyed flows. It is recommended that the queue survey data should be used to demonstrate validation of junction modelling for J9, J10, and J11 on the SRN;

    1. We can confirm that the data from the queue surveys are maximum queues undertaken at 5-mintue intervals.

2. Although not included in the report, the practice of comparing the modelled queue with the surveyed queue was undertaken at the stage of setting up all the junction models in order to ensure the models reflect the current and future performance of the junctions.

   A comparison results of the modelled queue against the surveyed queue are summarised in **Table1**, **Table 2** and **Table 3** below for J9, J10 and J11 respectively.

Table 1: J9 - Modelled Queue and Surveyed Queue Comparison (2018 Suveyed Year)

Link Description	2018 Surveyed Year						
	AM Peak				PM Peak		
	Max RFC	Modelled Queue (PCU)	Surveyed queue (PCU)	Diff.	Max RFC	Modelled Queue (PCU)	Surveyed queue (PCU)
B5295 Egremont Rd	0.250	0	4	-3	0.220	0	3
Homewood Rd	0.520	1	5	-4	0.780	3	5
A595 Egremont Rd	0.740	3	1	2	0.880	7	5
A595	0.660	2	5	-3	0.640	2	6

Table 2: J10 - Modelled Queue and Surveyed Queue Comparison (2018 Suveyed Year)

Link Description	2018 Surveyed Year						
	AM Peak				PM Peak		
	Max RFC	Modelled Queue (PCU)	Surveyed queue (PCU)	Diff.	Max RFC	Modelled Queue (PCU)	Surveyed queue (PCU)
Rosehill	0.680	2	3	-1	0.860	4	4
A595 (S)	0.160	0	1	-1	0.140	0	1

Table 3: J11 - Modelled Queue and Surveyed Queue Comparison (2018 Suveyed Year)

Link Description	2018 Surveyed Year						
	AM Peak				PM Peak		
	Max RFC	Modelled Queue (PCU)	Surveyed queue (PCU)	Diff.	Max RFC	Modelled Queue (PCU)	Surveyed queue (PCU)
Victoria Rd - Left Turn	0.080	0	1	-1	0.280	0	2
Victoria Rd - Right Turn	0.090	0	1	-1	0.200	0	2
A595 (S)	0.330	1	3	-2	0.320	1	5

The above Tables show that the modelled queues (2018 surveyed year) for the three junctions are generally consistent with the surveyed queues and it is therefore considered that those models are appropriate to be used to predict the future performance of the junctions.

It should be acknowledge that given that the queues surveys are only undertaken over a single day, the modelled queues are never going to match exactly with the surveyed queues.

- The J9 and J10 models indicate the junctions will be operating above the recommended modelling thresholds in both the 2023 and 2028 scenarios;

The modelling shows that only junction 9 will be operating at over its capacity of 1.0 and that this is only on one arm of the junction during the PM peak only. When considering whether a junction is reached its capacity and 'severe' impact levels have been reached, queue lengths and delay results also need to be considered in conjunction with the RFC/DOS of a junction.

At J9 in the 2028 PM peak scenario, the development will only increase average junction delay by 19 seconds per vehicle, something which can not be considered as meeting the 'severe' threshold set out in NPPF.

This interpretation has been recognised at many appeal situations in the past.

- The geometry used on the A595 Egremont Road (south) arm of the J9 roundabout has been coded with a longer flare length than exists and using the carriageway dimensions for the entry width and entry radius instead of the white lining. The geometry should be corrected in the baseline modelling to provide a more accurate assessment of future junction performance. Given currently reported performance, there is the potential that mitigation may be required for this junction, and this should be explored for the 'with development' scenarios. Mitigation could potentially seek to secure the current optimistic entry width and flare for the Egremont Road (south) approach, and increased circulatory width;

  We consider that the geometry data that we have used to model J9 are correct. The entry width and flare length for the A595 Egremont Road in the TAA model were measured based on the existing white lining (please see attached drawing showing the measurements of the A595 Egremont Road south arm).

  Additionally, **Table 1** above shows that the modelled queue on the A595 Egremont Road (south) (3pcus in AM and 5pcus in PM) are longer the surveyed queue (1pcu in AM and 2pcus in PM). It's therefore considered that the model provides a robust assessment.

- For J10, the 2028 *with development* AM and PM peak hour scenarios indicate that approximately 30-40 right turning vehicles from Rosehill would need to give way to approximately 2,500 two-way through vehicles on the A595, leading to significant delays of up to 3.5 minutes for right-turning vehicles. As previously recommended, queue length validation should be undertaken to confirm the base model operation.

  The base model of J10 used in TAA has already been validated based on the queue survey (please see **Table 2** above). It is considered that the WYG base model for J10 is therefore appropriate for predicting the future performance of the junction and that the capacity results set out in the TAA provide a realistic forecast.

I trust the above is agreeable in order to understand the full impact of the development and to understand what mitigation measures are required, but please let me know if you would like to clarify anything about the points raised.

Kind regards,

Ryan Billinge
Assistant Asset Manager
Highways England | Piccadilly Gate | Store Street | Manchester | M1 2WD
Tel: +44 (0) 300 4705135 **Mobile**: 07850907558
Web: http://www.highwaysengland.co.uk
GTN: 0300 470 5135

mike.smith

Subject: FW: Harras Moor 04/18/2287/0O1 - Revised TA
Attachments: Junction 9 - Egremount Road_Homewood Road Geometric Parameters Review.pdf; RE: Harras Moor 04/18/2287/0O1 - Revised TA

From: Billinge, Ryan <Ryan.Billinge@highwaysengland.co.uk>
Sent: 12 February 2019 09:44
To: peter.shannon <peter.shannon@wyg.com>
Subject: RE: Harras Moor 04/18/2287/0O1 - Revised TA

Hi Peter

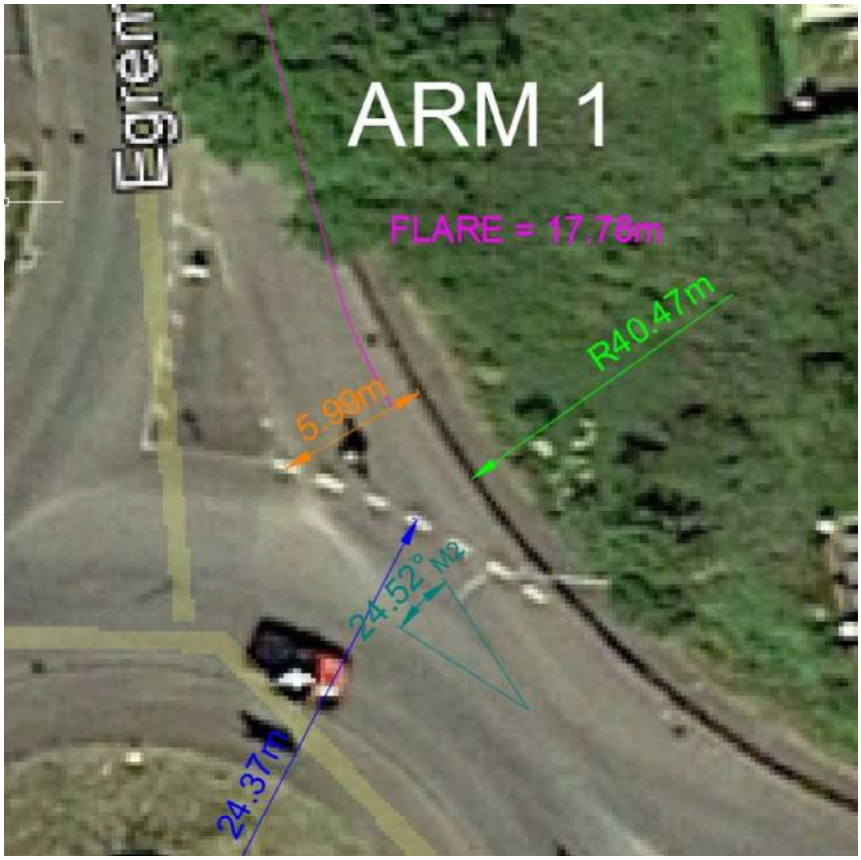
Apologies I have been out of the office. Our consultants have provided the geometric measurements which are attached to this email. They have not developed their own validated model.

In the interests of trying to get this progressed as quickly as possible I think it would be prudent to discuss the point about junction 9 directly with our consultants. Our contact at Atkins is Andy Beel and his email address is andy.beel@atkinsglobal.com

If you'd like to give me a call I will be available on my mobile this afternoon, 07931162731.

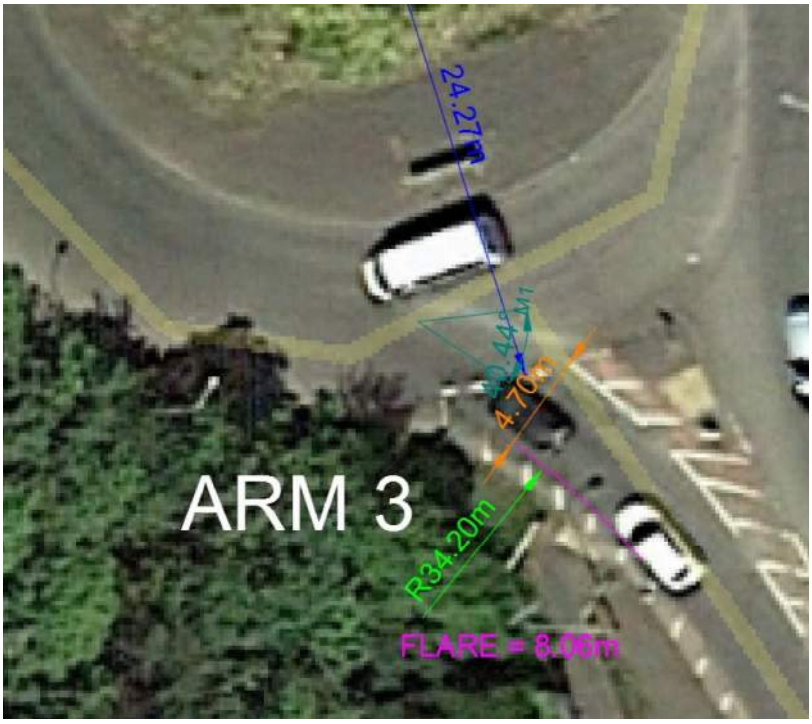
Kind regards

Ryan Billinge
Assistant Asset Manager
Highways England | Piccadilly Gate | Store Street | Manchester | M1 2WD
Tel: +44 (0) 300 4705135 **Mobile**: 07850907558
Web: http://www.highwaysengland.co.uk
GTN: 0300 470 5135

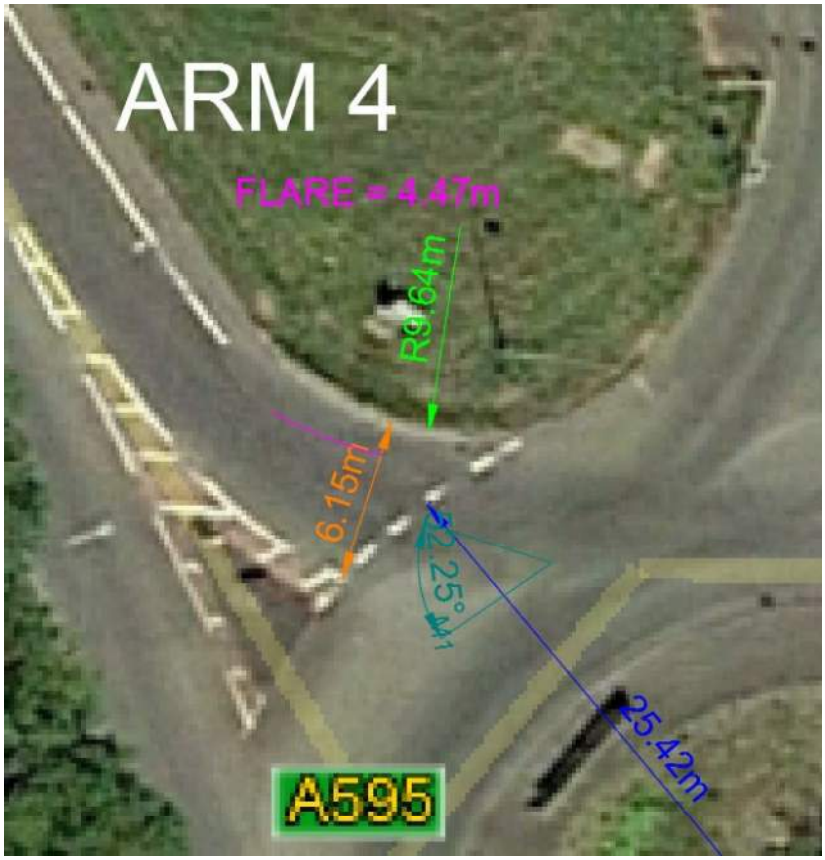


Parameter		Arm 1	Arm 2	Arm 3	Arm 4
Approach Road Half-Width	v (m)	3.57	3.17	4.18	3.55
Entry Width	e (m)	5.99	5.21	4.70	6.15
Effective Flare Length	l' (m)	17.78	2.35	8.06	4.47
Entry Radius	r (m)	40.47	13.28	34.20	9.64
Inscribed Circle Diameter (ICD)	D (m)	48.74	49.42	48.54	50.84
Conflict (entry) Angle	Φ (°)	12.26	42.89	40.44	52.25
Conflict (entry) Angle Method		M2	M1	M1	M1


24.71m
42.89°
2.21m
FLARE = 2.35m
R13.28m
3.17m
ARM 2


24.27m
4.70m
ARM 3
R34.20m
FLARE = 8.06m


4.18m


ARM 4
FLARE = 4.47m
R9.64m
6.15m
12.25°
25.42m
A595


3.55m

Appendix B – Existing Junction: JUNCTION 9 Results and Outputs

J9: B5295 Egremont Road / Homewood Road / A595 Egremont Road /A595 Hensingham Bypass

Survey Date: Wednesday 21/02/2018

THE SURVEYED RESULTS ARE ASSESSED ON THE EXISTING JUNCTION LAYOUT (OS MAPPING)
THE BASELINE IS ASSESSED ON THE EXISTING JUNCTION LAYOUT (OS MAPPING)
THE BASELINE PLUS DEVELOPMENT SCENARIO IS ASSESSED ON BOTH THE EXISITNG JUNCTION LAYOUT (OS MAPPING)

The Junctions 9 model for the existing layout has been built using geometrys provided by Highways England on 12/02/2019

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year					
	AM Peak			PM Peak		
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)
1 - B5295 Egremont Rd	0.21	4.3	0	0.2	4.0	0
2 - Homewood Rd	0.53	12.6	1	0.7	20.5	2
3 - A595 Egremont Rd	0.86	18.6	6	0.96	40.0	13
4 - A595	0.85	23.3	5	0.82	19.2	4

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	Baseline - Existing Junction Layout			Baseline Plus Development - Existing Junction Layout			Difference		Baseline - Existing Junction Layout			Baseline Plus Development - Existing Junction Layout			Difference	
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
1 - B5295 Egremont Rd	0.25	4.7	0	0.32	5.2	1	**1**	**0**	0.22	4.2	0	0.25	4.3	0	**0**	**0**
2 - Homewood Rd	0.58	14.8	1	0.62	17.4	2	**3**	**0**	0.76	26.9	3	0.79	30.2	4	**3**	**0**
3 - A595 Egremont Rd	0.91	25.8	8	0.93	30.3	10	**5**	**2**	1.02	67.9	26	1.07	124.2	52	**56**	**26**
4 - A595	0.91	32.8	8	0.92	36.1	9	**3**	**1**	0.87	24.6	6	0.89	28.6	7	**4**	**1**
							11	**3**							**64**	**27**

Table 3: 2028 Assessment Years Capacity Assessment Results

Approach	2028 AM								2028 PM							
	Baseline - Existing Junction Layout			Baseline Plus Development - Existing Junction Layout			Difference		Baseline - Existing Junction Layout			Baseline Plus Development - Existing Junction Layout			Difference	
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
1 - B5295 Egremont Rd	0.26	4.8	0	0.34	5.4	1	**1**	**0**	0.23	4.3	0	0.26	4.5	0	**0**	**0**
2 - Homewood Rd	0.62	16.5	2	0.66	19.6	2	**3**	**0**	0.81	33.8	4	0.83	38.4	5	**5**	**1**
3 - A595 Egremont Rd	0.95	33.4	12	0.97	39.8	14	**6**	**3**	1.05	98.7	41	1.11	180.5	78	**82**	**37**
4 - A595	0.95	42.5	11	0.97	47.3	12	**5**	**2**	0.9	30.1	7	0.93	35.3	9	**5**	**1**
							15	**5**							**92**	**39**

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.0.6896

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: 01 J9 (2019-03-20) - Existing Layout - HE (Direct) .j9
Path: J:\2017\A090070 - 270 and 410 - Harras Road, Harras Moor, Whitehaven\Jun. Ass\J9 A595_B5295 Egremont Rd_Homewood Rd Rdt
Report generation date: 02/04/2019 15:41:36

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
	Existing Layout - 2018 Surveyed Flows							
1 - B5295 Egremont Rd	0.3	4.33	0.21	18.01	0.2	3.96	0.20	27.81
2 - Homewood Rd	1.1	12.55	0.53		2.3	20.52	0.70	
3 - A595 Egremont Rd	5.7	18.57	0.86		13.4	40.03	0.96	
4 - A595	5.2	23.27	0.85		4.2	19.20	0.82	
	Existing Layout - 2023 Baseline Flows							
1 - B5295 Egremont Rd	0.3	4.66	0.25	24.61	0.3	4.15	0.22	43.26
2 - Homewood Rd	1.4	14.82	0.58		3.2	26.85	0.76	
3 - A595 Egremont Rd	8.4	25.83	0.91		26.1	67.92	1.02	
4 - A595	7.9	32.83	0.91		5.7	24.59	0.87	
	Existing Layout - 2023 with Dev. Flows							
1 - B5295 Egremont Rd	0.5	5.18	0.32	27.35	0.3	4.32	0.25	71.26
2 - Homewood Rd	1.6	17.35	0.62		3.5	30.21	0.79	
3 - A595 Egremont Rd	10.2	30.34	0.93		52.3	124.20	1.07	
4 - A595	8.8	36.06	0.92		6.6	28.62	0.89	
	Existing Layout - 2028 Baseline Flows							
1 - B5295 Egremont Rd	0.4	4.84	0.26	31.37	0.3	4.29	0.23	60.16
2 - Homewood Rd	1.6	16.49	0.62		4.1	33.83	0.81	
3 - A595 Egremont Rd	11.5	33.36	0.95		40.5	98.68	1.05	
4 - A595	10.9	42.47	0.95		7.3	30.06	0.90	
	Existing Layout - 2028 with Dev. Flows							
1 - B5295 Egremont Rd	0.5	5.39	0.34	35.37	0.3	4.45	0.26	100.71
2 - Homewood Rd	1.9	19.58	0.66		4.6	38.36	0.83	
3 - A595 Egremont Rd	14.3	39.84	0.97		77.5	180.48	1.11	
4 - A595	12.4	47.29	0.97		8.6	35.26	0.93	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

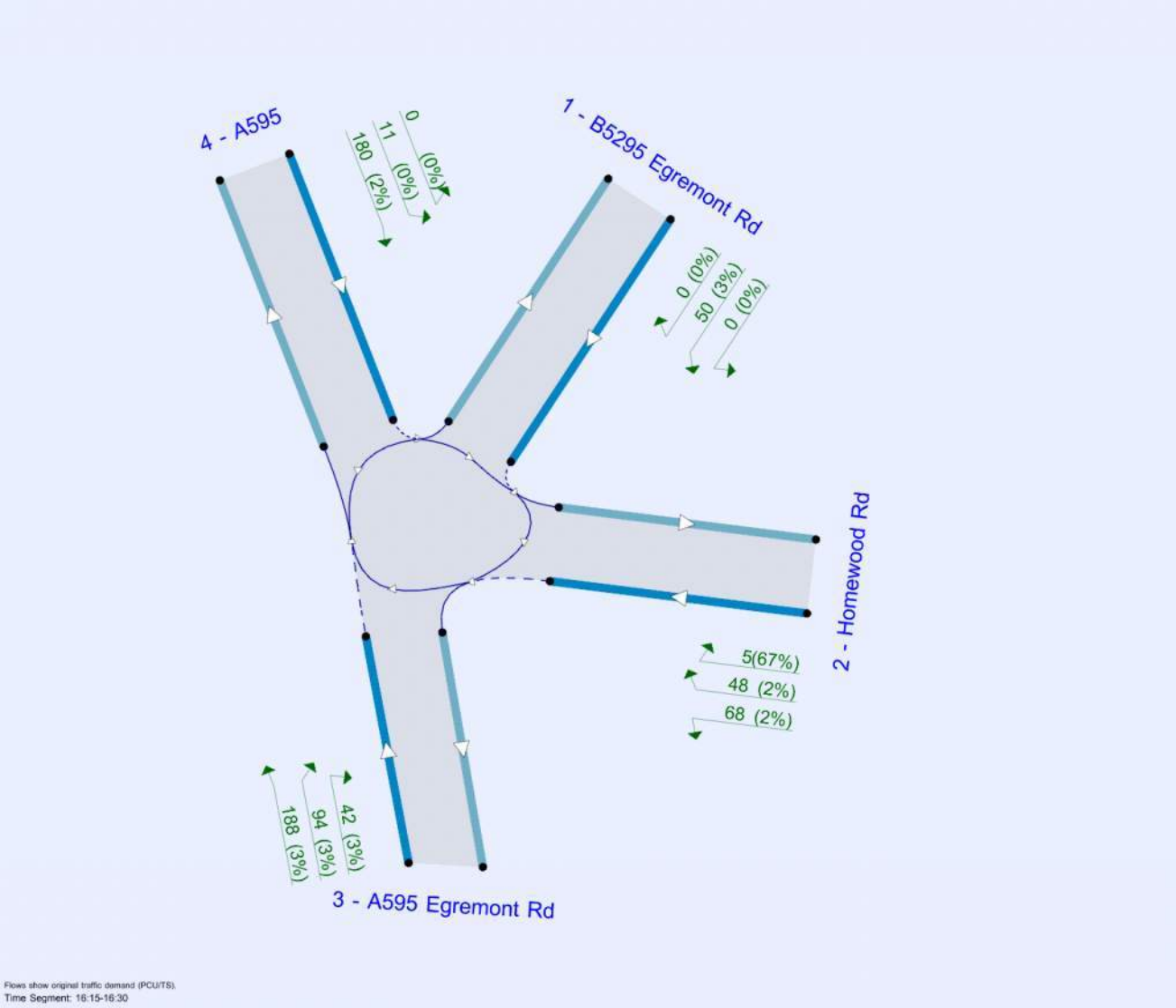
File summary

File Description

Title	(untitled)
Location	A595 / B5295 Egremont Road / Homewood Road roundabout
Site number	
Date	16/02/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	WYG\yujing.liu
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2018 Surveyed Flows	AM	DIRECT	08:00	09:00	60	15	✓
D2	2018 Surveyed Flows	PM	DIRECT	16:15	17:15	60	15	✓
D3	2023 Baseline Flows	AM	DIRECT	08:00	09:00	60	15	✓
D4	2023 Baseline Flows	PM	DIRECT	16:15	17:15	60	15	✓
D5	2023 with Dev. Flows	AM	DIRECT	08:00	09:00	60	15	✓
D6	2023 with Dev. Flows	PM	DIRECT	16:15	17:15	60	15	✓
D7	2028 Baseline Flows	AM	DIRECT	08:00	09:00	60	15	✓
D8	2028 Baseline Flows	PM	DIRECT	16:15	17:15	60	15	✓
D9	2028 with Dev. Flows	AM	DIRECT	08:00	09:00	60	15	✓
D10	2028 with Dev. Flows	PM	DIRECT	16:15	17:15	60	15	✓

Analysis Set Details

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

Existing Layout - 2018 Surveyed Flows , AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	18.01	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B5295 Egremont Rd	
2	Homewood Rd	
3	A595 Egremont Rd	
4	A595	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B5295 Egremont Rd	3.57	5.99	17.8	40.5	48.7	12.2	
2 - Homewood Rd	3.17	5.21	2.4	13.3	49.4	42.9	
3 - A595 Egremont Rd	4.18	4.70	8.1	34.2	48.5	40.4	
4 - A595	3.55	6.15	4.5	9.6	50.8	52.3	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1 - B5295 Egremont Rd	0.645	433
2 - Homewood Rd	0.467	262
3 - A595 Egremont Rd	0.548	344
4 - A595	0.469	294

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2018 Surveyed Flows	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	2	42	0
	2 - Homewood Rd	2	0	51	19
	3 - A595 Egremont Rd	51	17	4	142
	4 - A595	2	15	168	0

08:15 - 08:30

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	3	52	1
	2 - Homewood Rd	1	0	44	17
	3 - A595 Egremont Rd	74	28	1	164
	4 - A595	1	35	167	0

08:30 - 08:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	57	0
	2 - Homewood Rd	0	0	60	21
	3 - A595 Egremont Rd	74	42	4	167
	4 - A595	1	24	146	0

08:45 - 09:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	1	57	0
	2 - Homewood Rd	3	0	58	21
	3 - A595 Egremont Rd	55	42	6	130
	4 - A595	1	38	168	0

Vehicle Mix

08:00 - 08:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	2	0	0	2
	4 - A595	100	0	4	10

Heavy Vehicle Percentages

08:15 - 08:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	3	4	0	5
	4 - A595	0	0	5	10

Heavy Vehicle Percentages

08:30 - 08:45

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	5	0
	2 - Homewood Rd	0	10	9	11
	3 - A595 Egremont Rd	0	2	0	2
	4 - A595	0	9	8	10

Heavy Vehicle Percentages

08:45 - 09:00

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	2	0
	2 - Homewood Rd	0	10	2	0
	3 - A595 Egremont Rd	6	2	0	5
	4 - A595	0	3	8	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.21	4.33	0.3	A	54	217
2 - Homewood Rd	0.53	12.55	1.1	B	74	297
3 - A595 Egremont Rd	0.86	18.57	5.7	C	250	1001
4 - A595	0.85	23.27	5.2	C	192	766

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	45	45	201	303	0.149	45	56	0.0	0.2	3.488	A
2 - Homewood Rd	72	72	213	162	0.444	71	34	0.0	0.8	10.094	B
3 - A595 Egremont Rd	214	214	22	332	0.645	212	262	0.0	1.8	7.549	A
4 - A595	185	185	74	259	0.714	183	160	0.0	2.5	11.893	B

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	57	57	229	285	0.200	57	76	0.2	0.2	3.944	A
2 - Homewood Rd	62	62	221	159	0.391	62	65	0.8	0.7	9.628	A
3 - A595 Egremont Rd	267	267	20	333	0.802	265	263	1.8	3.9	13.416	B
4 - A595	203	203	104	245	0.828	201	181	2.5	4.5	20.299	C

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	57	57	217	293	0.195	57	75	0.2	0.3	4.010	A
2 - Homewood Rd	81	81	208	164	0.493	81	66	0.7	1.0	11.718	B
3 - A595 Egremont Rd	287	287	21	332	0.864	285	268	3.9	5.7	18.566	C
4 - A595	171	171	119	238	0.718	173	187	4.5	2.9	15.222	C

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	58	58	252	270	0.215	58	60	0.3	0.3	4.328	A
2 - Homewood Rd	82	82	229	155	0.531	82	81	1.0	1.1	12.549	B
3 - A595 Egremont Rd	233	233	24	331	0.705	236	287	5.7	2.6	10.275	B
4 - A595	207	207	107	244	0.849	205	153	2.9	5.2	23.273	C

Existing Layout - 2018 Surveyed Flows , PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	27.81	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2018 Surveyed Flows	PM	DIRECT	16:15	17:15	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

16:15 - 16:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	37	0
	2 - Homewood Rd	5	0	63	44
	3 - A595 Egremont Rd	69	39	5	173
	4 - A595	0	10	166	0

Demand (PCU/TS)

16:30 - 16:45

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	4	43	0
	2 - Homewood Rd	1	0	71	39
	3 - A595 Egremont Rd	56	27	3	184
	4 - A595	1	14	170	0

16:45 - 17:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	45	1
	2 - Homewood Rd	0	0	81	31
	3 - A595 Egremont Rd	56	43	3	192
	4 - A595	2	11	164	0

17:00 - 17:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	53	1
	2 - Homewood Rd	4	0	59	42
	3 - A595 Egremont Rd	65	27	4	210
	4 - A595	3	18	183	0

Vehicle Mix

16:15 - 16:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	3	0
	2 - Homewood Rd	67	0	2	2
	3 - A595 Egremont Rd	3	3	0	3
	4 - A595	0	0	2	0

16:30 - 16:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	33	0	0
	2 - Homewood Rd	0	0	1	0
	3 - A595 Egremont Rd	2	0	0	3
	4 - A595	0	0	4	0

16:45 - 17:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	0	0
	3 - A595 Egremont Rd	2	2	50	2
	4 - A595	0	0	1	0

17:00 - 17:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	5	0
	3 - A595 Egremont Rd	3	0	0	2
	4 - A595	50	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.20	3.96	0.2	A	48	190
2 - Homewood Rd	0.70	20.52	2.3	C	110	440
3 - A595 Egremont Rd	0.96	40.03	13.4	E	289	1156
4 - A595	0.82	19.20	4.2	C	186	742

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	37	37	216	293	0.126	37	72	0.0	0.1	3.615	A
2 - Homewood Rd	112	112	205	166	0.676	110	48	0.0	2.0	16.215	C
3 - A595 Egremont Rd	286	286	48	317	0.901	279	267	0.0	7.4	20.986	C
4 - A595	176	176	115	240	0.733	173	212	0.0	2.6	13.277	B

16:30 - 16:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	47	47	214	294	0.160	47	59	0.1	0.2	3.716	A
2 - Homewood Rd	111	111	216	161	0.691	111	45	2.0	2.2	18.077	C
3 - A595 Egremont Rd	270	270	40	322	0.839	272	287	7.4	5.8	18.987	C
4 - A595	185	185	88	253	0.732	185	224	2.6	2.8	13.734	B

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	49	49	221	290	0.169	49	58	0.2	0.2	3.728	A
2 - Homewood Rd	112	112	213	162	0.691	112	56	2.2	2.2	17.926	C
3 - A595 Egremont Rd	294	294	32	326	0.901	292	293	5.8	7.8	25.133	D
4 - A595	177	177	101	247	0.718	177	223	2.8	2.6	13.125	B

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	57	57	230	284	0.201	57	71	0.2	0.2	3.961	A
2 - Homewood Rd	105	105	240	150	0.701	105	48	2.2	2.3	20.520	C
3 - A595 Egremont Rd	306	306	47	318	0.962	300	298	7.8	13.4	40.026	E
4 - A595	204	204	98	248	0.823	202	249	2.6	4.2	19.197	C

Existing Layout - 2023 Baseline Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	24.61	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D3	2023 Baseline Flows	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	2	49	0
	2 - Homewood Rd	2	0	54	20
	3 - A595 Egremont Rd	55	18	4	150
	4 - A595	2	16	177	0

Demand (PCU/TS)

08:15 - 08:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	3	59	1
	2 - Homewood Rd	1	0	46	17
	3 - A595 Egremont Rd	79	30	1	173
	4 - A595	1	37	176	0

08:30 - 08:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	64	0
	2 - Homewood Rd	0	0	63	22
	3 - A595 Egremont Rd	79	44	4	176
	4 - A595	1	25	154	0

08:45 - 09:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	1	64	0
	2 - Homewood Rd	3	0	61	22
	3 - A595 Egremont Rd	59	44	6	137
	4 - A595	1	40	178	0

Vehicle Mix

08:00 - 08:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	2	0	0	2
	4 - A595	100	0	4	10

08:15 - 08:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	3	4	0	5
	4 - A595	0	0	5	10

08:30 - 08:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	5	0
	2 - Homewood Rd	0	10	9	11
	3 - A595 Egremont Rd	0	2	0	2
	4 - A595	0	9	8	10

08:45 - 09:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	2	0
	2 - Homewood Rd	0	10	2	0
	3 - A595 Egremont Rd	6	2	0	5
	4 - A595	0	3	8	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.25	4.66	0.3	A	61	245
2 - Homewood Rd	0.58	14.82	1.4	B	78	311
3 - A595 Egremont Rd	0.91	25.83	8.4	D	265	1059
4 - A595	0.91	32.83	7.9	D	202	808

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	52	52	212	296	0.176	52	59	0.0	0.2	3.681	A
2 - Homewood Rd	76	76	228	155	0.490	75	36	0.0	1.0	11.442	B
3 - A595 Egremont Rd	227	227	23	331	0.685	225	280	0.0	2.1	8.444	A
4 - A595	195	195	79	257	0.759	192	168	0.0	3.1	13.863	B

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	64	64	240	278	0.231	64	81	0.2	0.3	4.209	A
2 - Homewood Rd	64	64	235	152	0.422	64	69	1.0	0.8	10.631	B
3 - A595 Egremont Rd	283	283	20	333	0.850	280	280	2.1	5.3	16.827	C
4 - A595	214	214	111	242	0.884	211	189	3.1	6.4	27.204	D

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	64	64	229	285	0.225	64	79	0.3	0.3	4.275	A
2 - Homewood Rd	85	85	224	157	0.541	85	69	0.8	1.3	13.507	B
3 - A595 Egremont Rd	303	303	22	332	0.913	300	287	5.3	8.4	25.831	D
4 - A595	180	180	126	235	0.766	183	196	6.4	3.8	19.425	C

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	65	65	265	262	0.248	65	64	0.3	0.3	4.657	A
2 - Homewood Rd	86	86	245	147	0.584	86	85	1.3	1.4	14.819	B
3 - A595 Egremont Rd	246	246	25	330	0.745	251	306	8.4	3.2	12.670	B
4 - A595	219	219	114	240	0.911	215	162	3.8	7.9	32.828	D

Existing Layout - 2023 Baseline Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	43.26	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D4	2023 Baseline Flows	PM	DIRECT	16:15	17:15	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

16:15 - 16:30

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	40	0
	2 - Homewood Rd	5	0	66	46
	3 - A595 Egremont Rd	74	41	5	182
	4 - A595	0	11	174	0

16:30 - 16:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	4	46	0
	2 - Homewood Rd	1	0	75	41
	3 - A595 Egremont Rd	61	28	3	194
	4 - A595	1	15	178	0

16:45 - 17:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	49	1
	2 - Homewood Rd	0	0	86	33
	3 - A595 Egremont Rd	60	45	3	202
	4 - A595	2	12	172	0

17:00 - 17:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	57	1
	2 - Homewood Rd	4	0	62	44
	3 - A595 Egremont Rd	70	28	4	221
	4 - A595	3	19	192	0

Vehicle Mix

16:15 - 16:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	3	0
	2 - Homewood Rd	67	0	2	2
	3 - A595 Egremont Rd	3	3	0	3
	4 - A595	0	0	2	0

16:30 - 16:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	33	0	0
	2 - Homewood Rd	0	0	1	0
	3 - A595 Egremont Rd	2	0	0	3
	4 - A595	0	0	4	0

16:45 - 17:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	0	0
	3 - A595 Egremont Rd	2	2	50	2
	4 - A595	0	0	1	0

17:00 - 17:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	5	0
	3 - A595 Egremont Rd	3	0	0	2
	4 - A595	50	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.22	4.15	0.3	A	51	204
2 - Homewood Rd	0.76	26.85	3.2	D	116	463
3 - A595 Egremont Rd	1.02	67.92	26.1	F	305	1221
4 - A595	0.87	24.59	5.7	C	195	779

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	40	40	226	287	0.139	40	76	0.0	0.2	3.751	A
2 - Homewood Rd	117	117	216	161	0.727	114	50	0.0	2.6	19.172	C
3 - A595 Egremont Rd	302	302	50	316	0.954	290	280	0.0	11.5	28.556	D
4 - A595	185	185	120	238	0.779	182	220	0.0	3.3	15.612	C

16:30 - 16:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	50	50	225	288	0.174	50	64	0.2	0.2	3.860	A
2 - Homewood Rd	117	117	227	156	0.752	117	48	2.6	2.9	22.955	C
3 - A595 Egremont Rd	286	286	42	321	0.892	288	302	11.5	9.7	29.821	D
4 - A595	194	194	95	250	0.777	194	235	3.3	3.5	16.629	C

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	53	53	231	283	0.187	53	62	0.2	0.2	3.904	A
2 - Homewood Rd	119	119	225	156	0.761	119	59	2.9	3.0	23.686	C
3 - A595 Egremont Rd	310	310	34	325	0.954	306	310	9.7	13.3	40.459	E
4 - A595	186	186	107	244	0.762	186	234	3.5	3.3	15.764	C

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	61	61	240	278	0.220	61	74	0.2	0.3	4.151	A
2 - Homewood Rd	110	110	252	144	0.764	110	49	3.0	3.2	26.850	D
3 - A595 Egremont Rd	323	323	48	317	1.018	310	313	13.3	26.1	67.922	F
4 - A595	214	214	102	246	0.870	212	256	3.3	5.7	24.592	C

Existing Layout - 2023 with Dev. Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	27.35	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D5	2023 with Dev. Flows	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	2	68	0
	2 - Homewood Rd	2	0	54	20
	3 - A595 Egremont Rd	62	18	4	150
	4 - A595	2	16	177	0

Demand (PCU/TS)

08:15 - 08:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	3	79	1
	2 - Homewood Rd	1	0	46	17
	3 - A595 Egremont Rd	86	30	1	173
	4 - A595	1	37	176	0

08:30 - 08:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	84	0
	2 - Homewood Rd	0	0	63	22
	3 - A595 Egremont Rd	86	44	4	176
	4 - A595	1	25	154	0

08:45 - 09:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	1	84	0
	2 - Homewood Rd	3	0	61	22
	3 - A595 Egremont Rd	66	44	6	137
	4 - A595	1	40	178	0

Vehicle Mix

08:00 - 08:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	2	0	0	2
	4 - A595	100	0	4	10

08:15 - 08:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	3	4	0	5
	4 - A595	0	0	5	10

08:30 - 08:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	5	0
	2 - Homewood Rd	0	10	9	11
	3 - A595 Egremont Rd	0	2	0	2
	4 - A595	0	9	8	10

08:45 - 09:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	2	0
	2 - Homewood Rd	0	10	2	0
	3 - A595 Egremont Rd	6	2	0	5
	4 - A595	0	3	8	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.32	5.18	0.5	A	81	324
2 - Homewood Rd	0.62	17.35	1.6	C	78	311
3 - A595 Egremont Rd	0.93	30.34	10.2	D	272	1087
4 - A595	0.92	36.06	8.8	E	202	808

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	71	71	212	296	0.240	71	66	0.0	0.3	3.986	A
2 - Homewood Rd	76	76	247	146	0.519	75	36	0.0	1.1	12.791	B
3 - A595 Egremont Rd	234	234	23	331	0.706	232	299	0.0	2.4	8.990	A
4 - A595	195	195	86	254	0.769	192	168	0.0	3.2	14.503	B

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	84	84	240	278	0.302	84	88	0.3	0.4	4.636	A
2 - Homewood Rd	64	64	255	142	0.449	64	69	1.1	0.9	11.892	B
3 - A595 Egremont Rd	290	290	20	333	0.871	286	299	2.4	6.1	18.833	C
4 - A595	214	214	117	239	0.896	210	189	3.2	6.9	29.343	D

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	84	84	229	285	0.295	84	86	0.4	0.4	4.703	A
2 - Homewood Rd	85	85	244	148	0.576	84	69	0.9	1.4	15.470	C
3 - A595 Egremont Rd	310	310	22	332	0.934	306	307	6.1	10.2	30.340	D
4 - A595	180	180	132	232	0.776	183	196	6.9	4.0	20.893	C

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	85	85	264	262	0.324	85	72	0.4	0.5	5.176	A
2 - Homewood Rd	86	86	264	138	0.623	86	85	1.4	1.6	17.349	C
3 - A595 Egremont Rd	253	253	25	330	0.766	260	325	10.2	3.6	14.489	B
4 - A595	219	219	122	237	0.925	214	163	4.0	8.8	36.060	E

Existing Layout - 2023 with Dev. Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	71.26	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D6	2023 with Dev. Flows	PM	DIRECT	16:15	17:15	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

16:15 - 16:30

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	49	0
	2 - Homewood Rd	5	0	66	46
	3 - A595 Egremont Rd	92	41	5	182
	4 - A595	0	11	174	0

16:30 - 16:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	4	55	0
	2 - Homewood Rd	1	0	75	41
	3 - A595 Egremont Rd	78	28	3	194
	4 - A595	1	15	178	0

16:45 - 17:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	58	1
	2 - Homewood Rd	0	0	86	33
	3 - A595 Egremont Rd	77	45	3	202
	4 - A595	2	12	172	0

17:00 - 17:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	66	1
	2 - Homewood Rd	4	0	62	44
	3 - A595 Egremont Rd	87	28	4	221
	4 - A595	3	19	192	0

Vehicle Mix

16:15 - 16:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	3	0
	2 - Homewood Rd	67	0	2	2
	3 - A595 Egremont Rd	3	3	0	3
	4 - A595	0	0	2	0

16:30 - 16:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	33	0	0
	2 - Homewood Rd	0	0	1	0
	3 - A595 Egremont Rd	2	0	0	3
	4 - A595	0	0	4	0

16:45 - 17:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	0	0
	3 - A595 Egremont Rd	2	2	50	2
	4 - A595	0	0	1	0

17:00 - 17:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	5	0
	3 - A595 Egremont Rd	3	0	0	2
	4 - A595	50	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.25	4.32	0.3	A	60	240
2 - Homewood Rd	0.79	30.21	3.5	D	116	463
3 - A595 Egremont Rd	1.07	124.20	52.3	F	323	1290
4 - A595	0.89	28.62	6.6	D	195	779

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	49	49	224	288	0.170	49	91	0.0	0.2	3.875	A
2 - Homewood Rd	117	117	224	157	0.745	114	49	0.0	2.8	20.697	C
3 - A595 Egremont Rd	320	320	50	316	1.011	301	288	0.0	19.4	40.451	E
4 - A595	185	185	134	231	0.801	181	216	0.0	3.7	17.381	C

16:30 - 16:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	59	59	225	288	0.205	59	81	0.2	0.3	4.000	A
2 - Homewood Rd	117	117	236	151	0.773	117	48	2.8	3.2	25.509	D
3 - A595 Egremont Rd	303	303	42	321	0.945	303	310	19.4	19.2	55.652	F
4 - A595	194	194	112	242	0.803	194	234	3.7	4.0	19.271	C

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	62	62	230	284	0.218	62	77	0.3	0.3	4.050	A
2 - Homewood Rd	119	119	234	152	0.782	119	58	3.2	3.3	26.523	D
3 - A595 Egremont Rd	327	327	34	325	1.006	319	319	19.2	27.7	75.651	F
4 - A595	186	186	121	237	0.785	186	231	4.0	3.8	17.962	C

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	70	70	239	278	0.252	70	87	0.3	0.3	4.320	A
2 - Homewood Rd	110	110	260	140	0.785	110	49	3.3	3.5	30.209	D
3 - A595 Egremont Rd	340	340	48	317	1.072	315	322	27.7	52.3	124.199	F
4 - A595	214	214	115	240	0.892	211	249	3.8	6.6	28.622	D

Existing Layout - 2028 Baseline Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	31.37	D

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D7	2028 Baseline Flows	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	2	50	0
	2 - Homewood Rd	2	0	56	20
	3 - A595 Egremont Rd	57	19	4	155
	4 - A595	2	16	183	0

Demand (PCU/TS)

08:15 - 08:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	3	61	1
	2 - Homewood Rd	1	0	47	18
	3 - A595 Egremont Rd	82	31	1	179
	4 - A595	1	38	182	0

08:30 - 08:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	66	0
	2 - Homewood Rd	0	0	65	22
	3 - A595 Egremont Rd	82	46	4	182
	4 - A595	1	26	159	0

08:45 - 09:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	1	66	0
	2 - Homewood Rd	3	0	63	23
	3 - A595 Egremont Rd	61	46	7	142
	4 - A595	1	41	184	0

Vehicle Mix

08:00 - 08:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	2	0	0	2
	4 - A595	100	0	4	10

08:15 - 08:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	3	4	0	5
	4 - A595	0	0	5	10

08:30 - 08:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	5	0
	2 - Homewood Rd	0	10	9	11
	3 - A595 Egremont Rd	0	2	0	2
	4 - A595	0	9	8	10

08:45 - 09:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	2	0
	2 - Homewood Rd	0	10	2	0
	3 - A595 Egremont Rd	6	2	0	5
	4 - A595	0	3	8	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.26	4.84	0.4	A	63	252
2 - Homewood Rd	0.62	16.49	1.6	C	80	320
3 - A595 Egremont Rd	0.95	33.36	11.5	D	275	1098
4 - A595	0.95	42.47	10.9	E	209	834

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	53	53	218	292	0.182	53	61	0.0	0.2	3.761	A
2 - Homewood Rd	78	78	235	152	0.513	77	37	0.0	1.1	12.174	B
3 - A595 Egremont Rd	235	235	23	331	0.709	233	289	0.0	2.4	9.074	A
4 - A595	201	201	82	255	0.787	197	173	0.0	3.5	15.359	C

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	66	66	247	273	0.241	66	84	0.2	0.3	4.335	A
2 - Homewood Rd	66	66	242	148	0.445	66	70	1.1	0.8	11.314	B
3 - A595 Egremont Rd	293	293	21	332	0.882	289	288	2.4	6.6	19.959	C
4 - A595	221	221	114	240	0.919	216	196	3.5	8.3	33.416	D

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	66	66	238	279	0.236	66	82	0.3	0.3	4.426	A
2 - Homewood Rd	87	87	232	153	0.567	86	72	0.8	1.4	14.605	B
3 - A595 Egremont Rd	314	314	22	332	0.946	309	296	6.6	11.5	33.362	D
4 - A595	186	186	130	233	0.798	190	201	8.3	4.6	23.984	C

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	67	67	273	257	0.261	67	67	0.3	0.4	4.837	A
2 - Homewood Rd	89	89	252	144	0.619	89	88	1.4	1.6	16.491	C
3 - A595 Egremont Rd	256	256	26	330	0.777	264	315	11.5	3.8	15.742	C
4 - A595	226	226	120	238	0.951	220	169	4.6	10.9	42.465	E

Existing Layout - 2028 Baseline Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	60.16	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D8	2028 Baseline Flows	PM	DIRECT	16:15	17:15	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

16:15 - 16:30

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	41	0
	2 - Homewood Rd	5	0	68	48
	3 - A595 Egremont Rd	77	42	5	188
	4 - A595	0	11	180	0

16:30 - 16:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	4	48	0
	2 - Homewood Rd	1	0	77	42
	3 - A595 Egremont Rd	62	29	3	200
	4 - A595	1	15	184	0

16:45 - 17:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	50	1
	2 - Homewood Rd	0	0	88	34
	3 - A595 Egremont Rd	62	47	3	209
	4 - A595	2	12	178	0

17:00 - 17:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	59	1
	2 - Homewood Rd	4	0	64	46
	3 - A595 Egremont Rd	72	29	4	228
	4 - A595	3	20	199	0

Vehicle Mix

16:15 - 16:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	3	0
	2 - Homewood Rd	67	0	2	2
	3 - A595 Egremont Rd	3	3	0	3
	4 - A595	0	0	2	0

16:30 - 16:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	33	0	0
	2 - Homewood Rd	0	0	1	0
	3 - A595 Egremont Rd	2	0	0	3
	4 - A595	0	0	4	0

16:45 - 17:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	0	0
	3 - A595 Egremont Rd	2	2	50	2
	4 - A595	0	0	1	0

17:00 - 17:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	5	0
	3 - A595 Egremont Rd	3	0	0	2
	4 - A595	50	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.23	4.29	0.3	A	53	210
2 - Homewood Rd	0.81	33.83	4.1	D	119	477
3 - A595 Egremont Rd	1.05	98.68	40.5	F	315	1260
4 - A595	0.90	30.06	7.3	D	201	805

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	41	41	232	283	0.145	41	78	0.0	0.2	3.824	A
2 - Homewood Rd	121	121	222	158	0.766	118	51	0.0	3.1	21.930	C
3 - A595 Egremont Rd	312	312	52	315	0.989	296	288	0.0	15.8	35.375	E
4 - A595	191	191	123	236	0.808	187	225	0.0	3.9	17.436	C

16:30 - 16:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	52	52	232	283	0.184	52	65	0.2	0.2	3.967	A
2 - Homewood Rd	120	120	235	152	0.790	120	49	3.1	3.5	27.382	D
3 - A595 Egremont Rd	294	294	43	320	0.918	296	311	15.8	13.9	41.622	E
4 - A595	200	200	97	248	0.805	200	242	3.9	4.1	18.993	C

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	54	54	238	279	0.194	54	63	0.2	0.2	4.003	A
2 - Homewood Rd	122	122	232	153	0.796	122	60	3.5	3.6	28.221	D
3 - A595 Egremont Rd	321	321	35	324	0.989	314	319	13.9	20.6	58.415	F
4 - A595	192	192	109	243	0.791	192	240	4.1	3.9	18.041	C

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	63	63	248	273	0.231	63	74	0.2	0.3	4.290	A
2 - Homewood Rd	114	114	260	140	0.813	114	51	3.6	4.1	33.831	D
3 - A595 Egremont Rd	333	333	50	316	1.053	313	323	20.6	40.5	98.678	F
4 - A595	222	222	103	246	0.904	219	260	3.9	7.3	30.064	D

Existing Layout - 2028 with Dev. Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	35.37	E

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D9	2028 with Dev. Flows	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	2	70	0
	2 - Homewood Rd	2	0	56	20
	3 - A595 Egremont Rd	64	19	4	155
	4 - A595	2	16	183	0

Demand (PCU/TS)

08:15 - 08:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	3	80	1
	2 - Homewood Rd	1	0	47	18
	3 - A595 Egremont Rd	89	31	1	179
	4 - A595	1	38	182	0

08:30 - 08:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	86	0
	2 - Homewood Rd	0	0	65	22
	3 - A595 Egremont Rd	89	46	4	182
	4 - A595	1	26	159	0

08:45 - 09:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	1	86	0
	2 - Homewood Rd	3	0	63	23
	3 - A595 Egremont Rd	68	46	7	142
	4 - A595	1	41	184	0

Vehicle Mix

08:00 - 08:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	2	0	0	2
	4 - A595	100	0	4	10

08:15 - 08:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	3	4	0	5
	4 - A595	0	0	5	10

08:30 - 08:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	5	0
	2 - Homewood Rd	0	10	9	11
	3 - A595 Egremont Rd	0	2	0	2
	4 - A595	0	9	8	10

08:45 - 09:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	2	0
	2 - Homewood Rd	0	10	2	0
	3 - A595 Egremont Rd	6	2	0	5
	4 - A595	0	3	8	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.34	5.39	0.5	A	83	331
2 - Homewood Rd	0.66	19.58	1.9	C	80	320
3 - A595 Egremont Rd	0.97	39.84	14.3	E	282	1126
4 - A595	0.97	47.29	12.4	E	209	834

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	73	73	218	292	0.250	73	68	0.0	0.3	4.098	A
2 - Homewood Rd	78	78	254	143	0.546	77	36	0.0	1.2	13.796	B
3 - A595 Egremont Rd	242	242	23	331	0.730	239	308	0.0	2.6	9.701	A
4 - A595	201	201	89	252	0.797	197	173	0.0	3.7	16.118	C

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	85	85	246	274	0.310	85	90	0.3	0.4	4.759	A
2 - Homewood Rd	66	66	261	140	0.472	66	70	1.2	0.9	12.662	B
3 - A595 Egremont Rd	300	300	21	332	0.903	295	306	2.6	7.7	22.621	C
4 - A595	221	221	121	237	0.931	216	195	3.7	9.1	36.263	E

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	86	86	238	279	0.308	86	88	0.4	0.5	4.888	A
2 - Homewood Rd	87	87	252	144	0.605	86	72	0.9	1.6	16.935	C
3 - A595 Egremont Rd	321	321	22	332	0.968	314	316	7.7	14.3	39.836	E
4 - A595	186	186	136	230	0.808	190	200	9.1	5.0	26.248	D

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	87	87	272	257	0.338	87	75	0.5	0.5	5.392	A
2 - Homewood Rd	89	89	271	135	0.660	89	88	1.6	1.9	19.585	C
3 - A595 Egremont Rd	263	263	26	330	0.798	273	334	14.3	4.4	19.040	C
4 - A595	226	226	128	234	0.966	219	171	5.0	12.4	47.286	E

Existing Layout - 2028 with Dev. Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	100.71	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D10	2028 with Dev. Flows	PM	DIRECT	16:15	17:15	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

16:15 - 16:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	50	0
	2 - Homewood Rd	5	0	68	48
	3 - A595 Egremont Rd	94	42	5	188
	4 - A595	0	11	180	0

Demand (PCU/TS)

16:30 - 16:45

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	4	57	0
	2 - Homewood Rd	1	0	77	42
	3 - A595 Egremont Rd	80	29	3	200
	4 - A595	1	15	184	0

16:45 - 17:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	59	1
	2 - Homewood Rd	0	0	88	34
	3 - A595 Egremont Rd	79	47	3	209
	4 - A595	2	12	178	0

17:00 - 17:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	67	1
	2 - Homewood Rd	4	0	64	46
	3 - A595 Egremont Rd	89	29	4	228
	4 - A595	3	20	199	0

Vehicle Mix

16:15 - 16:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	3	0
	2 - Homewood Rd	67	0	2	2
	3 - A595 Egremont Rd	3	3	0	3
	4 - A595	0	0	2	0

16:30 - 16:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	33	0	0
	2 - Homewood Rd	0	0	1	0
	3 - A595 Egremont Rd	2	0	0	3
	4 - A595	0	0	4	0

16:45 - 17:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	0	0
	3 - A595 Egremont Rd	2	2	50	2
	4 - A595	0	0	1	0

17:00 - 17:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	5	0
	3 - A595 Egremont Rd	3	0	0	2
	4 - A595	50	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.26	4.45	0.3	A	61	245
2 - Homewood Rd	0.83	38.36	4.6	E	119	477
3 - A595 Egremont Rd	1.11	180.48	77.5	F	332	1329
4 - A595	0.93	35.26	8.6	E	201	805

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	50	50	230	284	0.176	50	92	0.0	0.2	3.951	A
2 - Homewood Rd	121	121	230	154	0.786	118	49	0.0	3.4	23.865	C
3 - A595 Egremont Rd	329	329	52	316	1.043	303	296	0.0	25.7	49.024	E
4 - A595	191	191	135	231	0.828	187	220	0.0	4.3	19.284	C

16:30 - 16:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	61	61	232	283	0.215	61	83	0.2	0.3	4.114	A
2 - Homewood Rd	120	120	244	148	0.812	119	49	3.4	3.9	30.946	D
3 - A595 Egremont Rd	312	312	43	320	0.975	311	320	25.7	26.6	79.554	F
4 - A595	200	200	115	240	0.833	200	240	4.3	4.8	22.501	C

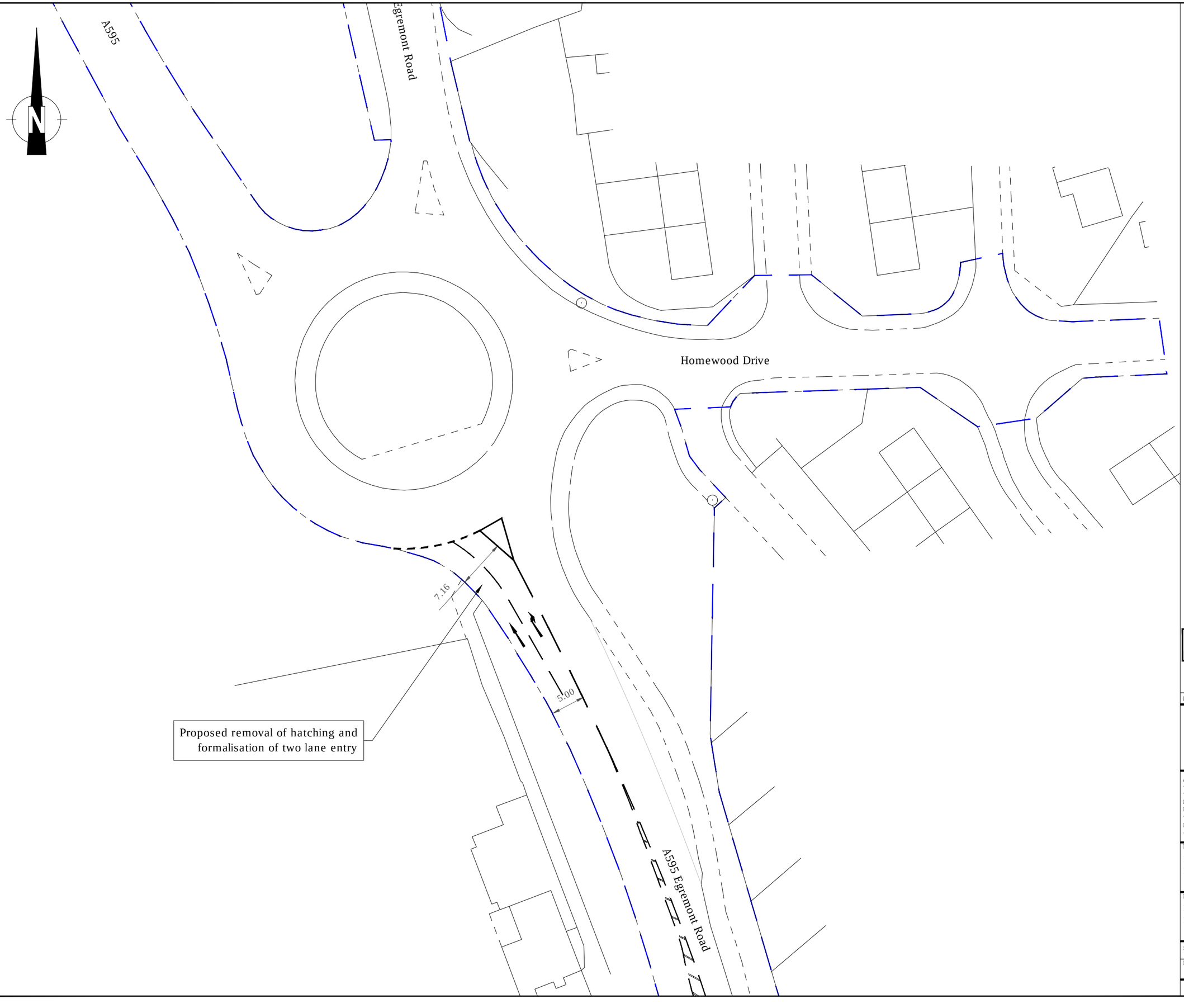
16:45 - 17:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	63	63	237	280	0.225	63	78	0.3	0.3	4.147	A
2 - Homewood Rd	122	122	241	149	0.819	122	59	3.9	4.1	32.250	D
3 - A595 Egremont Rd	338	338	35	324	1.042	322	328	26.6	43.0	107.412	F
4 - A595	192	192	122	237	0.811	192	235	4.8	4.5	20.620	C

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	71	71	247	273	0.260	71	86	0.3	0.3	4.448	A
2 - Homewood Rd	114	114	267	137	0.833	114	51	4.1	4.6	38.363	E
3 - A595 Egremont Rd	350	350	50	316	1.107	315	330	43.0	77.5	180.476	F
4 - A595	222	222	115	240	0.925	218	250	4.5	8.6	35.258	E

Appendix C – Potential Modified Junction Layout



DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

1. **This drawing should be read in relation to the subject of the title only. Other information shown on the drawing is to be considered indicative only. Reference should be made to appropriate drawing series/specifications for other information.**

2. **All dimensions are in metres unless specified otherwise.**

Key:

Adopted Highways Boundary

PRELIMINARY ISSUE

REV	DESCRIPTION	BY	CHK	APP	DATE

QUAY WEST at MediaCity UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
M17 1HH
TEL: +44 (0)161 872 3223
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com

Project:

PROPOSED RESIDENTIAL DEVELOPMENT AT HARRAS MOOR, WHITEHEAVEN

Drawing Title:

EGREMONT RD/HOMEWOOD ROAD JUNCTION ROUNDABOUT IMPROVEMENT SCHEME

Scale @ A1	Drawn Date	Checked Date	Approved Date
1:250	UA OCT 2018	LB OCT 2018	MS OCT 2018

Project No.	Office	Type	Drawing No.	Revision
A090070	27	C	A090070-P004	P01

FILENAME : \\MANCHESTER32\JOBS\2017\A090070 - 270 AND 410 - HARRAS ROAD, HARRAS MOOR, WHITEHAVEN\CAD\WYG DRAWINGS\A090070-P004.DWG | PLOTTED BY : UMAR.AHMED | PLOTTED DATE : 02 April 2019 14:57:20

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

1. This drawing should be read in relation to the subject of the title only. Other information shown on the drawing is to be considered indicative only. Reference should be made to appropriate drawing series/specifications for other information.
2. All dimensions are in metres unless specified otherwise.
3. Entry path radius assessed in accordance to TD 16/07.
4. This drawing is based on Ordnance Survey and WYG are not responsible for any discrepancies in dimensions. The proposed junction layout will be drawn on topographical survey data at detailed design stage at which point the dimensions and design parameters will be checked for accuracy.

Key:

Adopted Highways Boundary

PRELIMINARY ISSUE

REV	DESCRIPTION	BY	CHK	APP	DATE

QUAY WEST at MediaCity UK
TRAFFORD WHARF ROAD
TRAFFORD PARK
MANCHESTER
M17 1HH
TEL: +44 (0)161 872 3223
FAX: +44 (0)161 872 3193
e-mail: manchester@wyg.com

Project:

PROPOSED RESIDENTIAL DEVELOPMENT AT HARRAS MOOR, WHITEHEAVEN

Drawing Title:

EGREMONT RD/HOMEWOOD ROAD JUNCTION ROUNDABOUT IMPROVEMENT SCHEME - DEFLECTION CHECK

Scale @ A1	Drawn Date	Checked Date	Approved Date
1:250	UA APR 2019	LB APR 2019	MS APR 2019

Project No.	Office	Type	Drawing No.	Revision
A090070	27	C	A090070-P008	P01

FILENAME : \\MANCHESTER32\JOBS\2017\A090070 - 270 AND 410 - HARRAS ROAD, HARRAS MOOR, WHITEHAVEN\CAD\WYG DRAWINGS\A090070-P008.DWG | PLOTTED BY : UMAR.AHMED | PLOTTED DATE : 02 April 2019 14:58:29

Appendix D – Potential Modified Junction: JUNCTION 9 Results and Outputs

J9: B5295 Egremont Road / Homewood Road / A595 Egremont Road /A595 Hensingham Bypass

Survey Date: Wednesday 21/02/2018

THE SURVEYED RESULTS ARE ASSESSED ON THE EXISTING JUNCTION LAYOUT (OS MAPPING)
THE BASELINE IS ASSESSED ON THE EXISTING JUNCTION LAYOUT (OS MAPPING)
THE BASELINE PLUS DEVELOPMENT SCENARIO IS BASED ON DRAWING NO. A090070-P004-P01 WITH AN ENTRY WIDTH OF 7.2m, HALF WIDTH OF 4.97m AND EFFECTIVE FLARE LENGTH OF 12.44m

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year					
	AM Peak			PM Peak		
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)
1 - B5295 Egremont Rd	0.21	4.3	0	0.2	4.0	0
2 - Homewood Rd	0.53	12.6	1	0.7	20.5	2
3 - A595 Egremont Rd	0.86	18.6	6	0.96	40.0	13
4 - A595	0.85	23.3	5	0.82	19.2	4

The Junctions 9 model for the existing layout has been built using geometrys provided by Highways England on 12/02/2019
Highways England have put forward reservations as to whether deflection can be achieved on Arm 3 following the inclusion of the existing hatching to provide more capacity. Deflection can be achieved as shown in Drawing No. A090070-P008-P01

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	Baseline - Existing Junction Layout			Baseline Plus Development - Proposed Mitigated Layout			Difference		Baseline - Existing Junction Layout			Baseline Plus Development - Proposed Mitigated Layout			Difference	
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
1 - B5295 Egremont Rd	0.25	4.7	0	0.32	5.2	1	**1**	**0**	0.22	4.2	0	0.25	4.3	0	**0**	**0**
2 - Homewood Rd	0.58	14.8	1	0.62	17.4	2	**3**	**0**	0.76	26.9	3	0.78	30.2	4	**3**	**0**
3 - A595 Egremont Rd	0.91	25.8	8	0.67	6.0	2	**-20**	**-6**	1.02	67.9	26	0.76	8.7	3	**-59**	**-23**
4 - A595	0.91	32.8	8	0.92	35.3	9	**2**	**1**	0.87	24.6	6	0.91	31.3	7	**7**	**2**
							-14	**-5**							**-49**	**-21**

Table 3: 2028 Assessment Years Capacity Assessment Results

Approach	2028 AM								2028 PM							
	Baseline - Existing Junction Layout			Baseline Plus Development - Proposed Mitigated Layout			Difference		Baseline - Existing Junction Layout			Baseline Plus Development - Proposed Mitigated Layout			Difference	
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
1 - B5295 Egremont Rd	0.26	4.8	0	0.34	5.4	1	**1**	**0**	0.23	4.3	0	0.26	4.5	0	**0**	**0**
2 - Homewood Rd	0.62	16.5	2	0.66	19.7	2	**3**	**0**	0.81	33.8	4	0.83	38.1	5	**4**	**1**
3 - A595 Egremont Rd	0.95	33.4	12	0.69	6.4	2	**-27**	**-9**	1.05	98.7	41	0.79	9.7	4	**-89**	**-37**
4 - A595	0.95	42.5	11	0.96	45.7	12	**3**	**1**	0.9	30.1	7	0.94	40.3	10	**10**	**3**
							-20	**-8**							**-74**	**-34**

J9: B5295 Egremont Road / Homewood Road / A595 Egremont Road /A595 Hensingham Bypass

Survey Date: Wednesday 21/02/2018

THE SURVEYED RESULTS ARE ASSESSED ON THE EXISTING JUNCTION LAYOUT (OS MAPPING)
THE BASELINE PLUS DEVELOPMENT SCENARIO HAS BEEN ASSESSED AGAINST THE EXISTING LAYOUT (OS MAPPING) AND ASSESSED AGAINST THE LAYOUT PROVIDING DRAWING NO. A090070-P004-P01 WITH AN ENTRY WIDTH OF 7.2m, HALF WIDTH OF 4.97m AND EFFECTIVE FLARE LENGTH OF 12.44m

Table 1: Surveyed Year Capacity Assessment Results

Approach	2018 Surveyed Year					
	AM Peak			PM Peak		
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)
1 - B5295 Egremont Rd	0.21	4.3	0	0.2	4.0	0
2 - Homewood Rd	0.53	12.6	1	0.7	20.5	2
3 - A595 Egremont Rd	0.86	18.6	6	0.96	40.0	13
4 - A595	0.85	23.3	5	0.82	19.2	4

The Junctions 9 model for the existing layout has been built using geometrys provided by Highways England on 12/02/2019
Highways England have put forward reservations as to whether deflection can be achieved on Arm 3 following the inclusion of the existing hatching to provide more capacity. Deflection can be achieved as shown in Drawing No. A090070-P008-P01

Table 2: 2023 Assessment Years Capacity Assessment Results

Approach	2023 AM								2023 PM							
	Baseline Plus Development - Existing Junction Layout			Baseline Plus Development - Proposed Mitigated Layout			Difference		Baseline Plus Development - Existing Junction Layout			Baseline Plus Development - Proposed Mitigated Layout			Difference	
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
1 - B5295 Egremont Rd	0.32	5.2	1	0.32	5.2	1	**0**	**0**	0.25	4.3	0	0.25	4.3	0	**0**	**0**
2 - Homewood Rd	0.62	17.4	2	0.62	17.4	2	**0**	**0**	0.79	30.2	4	0.78	30.2	4	**0**	**0**
3 - A595 Egremont Rd	0.93	30.3	10	0.67	6.0	2	**-24**	**-8**	1.07	124.2	52	0.76	8.7	3	**-116**	**-49**
4 - A595	0.92	36.1	9	0.92	35.3	9	**-1**	**0**	0.89	28.6	7	0.91	31.3	7	**3**	**1**
							-25	**-9**							**-113**	**-48**

Table 3: 2028 Assessment Years Capacity Assessment Results

Approach	2028 AM								2028 PM							
	Baseline Plus Development - Existing Junction Layout			Baseline Plus Development - Proposed Mitigated Layout			Difference		Baseline Plus Development - Existing Junction Layout			Baseline Plus Development - Proposed Mitigated Layout			Difference	
	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	RFC	Junction Delay (S)	MMQ (pcu)	Average Delay (s/pcu)	MMQ (pcu)
1 - B5295 Egremont Rd	0.34	5.4	1	0.34	5.4	1	**0**	**0**	0.26	4.5	0	0.26	4.5	0	**0**	**0**
2 - Homewood Rd	0.66	19.6	2	0.66	19.7	2	**0**	**0**	0.83	38.4	5	0.83	38.1	5	**0**	**0**
3 - A595 Egremont Rd	0.97	39.8	14	0.69	6.4	2	**-33**	**-12**	1.11	180.5	78	0.79	9.7	4	**-171**	**-74**
4 - A595	0.97	47.3	12	0.96	45.7	12	**-2**	**-1**	0.93	35.3	9	0.94	40.3	10	**5**	**1**
							-35	**-13**							**-166**	**-72**

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 01 J9 (2019-03-20) - Mitigation Drawing P004_P01 - HE (Direct).j9
Path: \\manchester32\Jobs\2017\A090070 - 270 and 410 - Harras Road, Harras Moor, Whitehaven\Jun. Ass\J9 A595_B5295 Egremont Rd_Homewood Rd Rdt
Report generation date: 03/04/2019 15:20:17

Summary of junction performance

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)	Queue (PCU)	Delay (s)	RFC	Junction Delay (s)
	Existing Layout - 2023 with Dev. Flows							
1 - B5295 Egremont Rd	0.5	5.17	0.32	16.63	0.3	4.33	0.25	18.23
2 - Homewood Rd	1.6	17.38	0.62		3.5	30.15	0.78	
3 - A595 Egremont Rd	2.0	5.98	0.67		3.2	8.66	0.76	
4 - A595	8.5	35.25	0.92		7.3	31.27	0.91	
	Existing Layout - 2028 with Dev. Flows							
1 - B5295 Egremont Rd	0.5	5.38	0.34	20.46	0.3	4.45	0.26	22.58
2 - Homewood Rd	1.9	19.69	0.66		4.6	38.06	0.83	
3 - A595 Egremont Rd	2.3	6.44	0.69		3.7	9.65	0.79	
4 - A595	11.8	45.68	0.96		10.0	40.26	0.94	

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

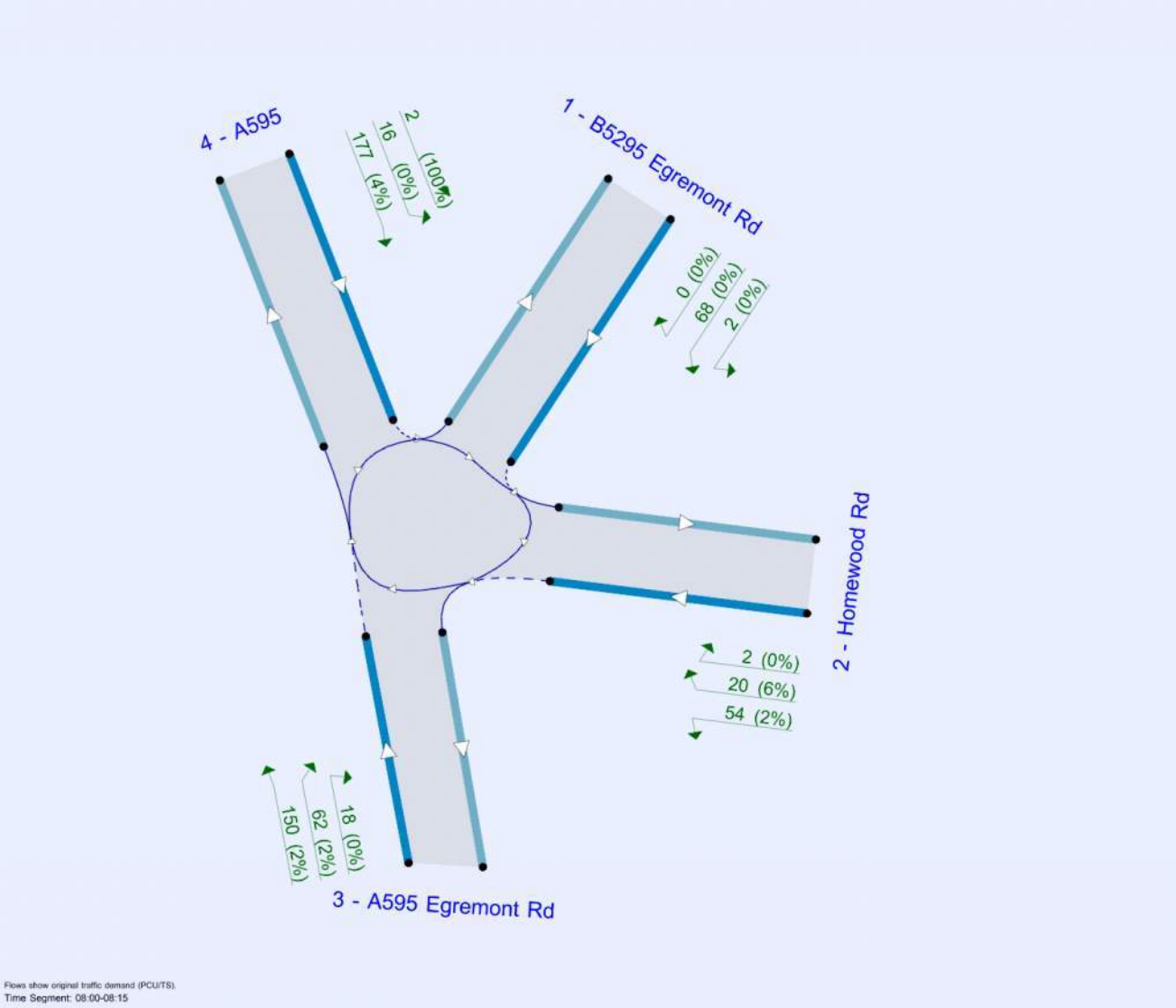
File summary

File Description

Title	(untitled)
Location	A595 / B5295 Egremont Road / Homewood Road roundabout
Site number	
Date	16/02/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	WYG\yujing.liu
Description	

Units

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



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D5	2023 with Dev. Flows	AM	DIRECT	08:00	09:00	60	15	✓
D6	2023 with Dev. Flows	PM	DIRECT	16:15	17:15	60	15	✓
D9	2028 with Dev. Flows	AM	DIRECT	08:00	09:00	60	15	✓
D10	2028 with Dev. Flows	PM	DIRECT	16:15	17:15	60	15	✓

Analysis Set Details

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

Existing Layout - 2023 with Dev. Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	16.63	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	B5295 Egremont Rd	
2	Homewood Rd	
3	A595 Egremont Rd	
4	A595	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - B5295 Egremont Rd	3.57	5.99	17.8	40.5	48.7	12.3	
2 - Homewood Rd	3.17	5.21	2.4	13.3	49.4	42.9	
3 - A595 Egremont Rd	4.97	7.20	12.4	34.2	48.5	40.4	
4 - A595	3.55	6.15	4.5	9.6	50.8	52.3	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1 - B5295 Egremont Rd	0.645	432
2 - Homewood Rd	0.467	262
3 - A595 Egremont Rd	0.650	476
4 - A595	0.469	294

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D5	2023 with Dev. Flows	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

08:00 - 08:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	2	68	0
	2 - Homewood Rd	2	0	54	20
	3 - A595 Egremont Rd	62	18	4	150
	4 - A595	2	16	177	0

08:15 - 08:30

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	3	79	1
	2 - Homewood Rd	1	0	46	17
	3 - A595 Egremont Rd	86	30	1	173
	4 - A595	1	37	176	0

08:30 - 08:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	84	0
	2 - Homewood Rd	0	0	63	22
	3 - A595 Egremont Rd	86	44	4	176
	4 - A595	1	25	154	0

08:45 - 09:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	1	84	0
	2 - Homewood Rd	3	0	61	22
	3 - A595 Egremont Rd	66	44	6	137
	4 - A595	1	40	178	0

Vehicle Mix

08:00 - 08:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	2	0	0	2
	4 - A595	100	0	4	10

Heavy Vehicle Percentages

08:15 - 08:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	3	4	0	5
	4 - A595	0	0	5	10

Heavy Vehicle Percentages

08:30 - 08:45

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	5	0
	2 - Homewood Rd	0	10	9	11
	3 - A595 Egremont Rd	0	2	0	2
	4 - A595	0	9	8	10

Heavy Vehicle Percentages

08:45 - 09:00

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	2	0
	2 - Homewood Rd	0	10	2	0
	3 - A595 Egremont Rd	6	2	0	5
	4 - A595	0	3	8	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.32	5.17	0.5	A	81	324
2 - Homewood Rd	0.62	17.38	1.6	C	78	311
3 - A595 Egremont Rd	0.67	5.98	2.0	A	272	1087
4 - A595	0.92	35.25	8.5	E	202	808

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	71	71	212	296	0.240	71	67	0.0	0.3	3.988	A
2 - Homewood Rd	76	76	247	146	0.519	75	36	0.0	1.1	12.792	B
3 - A595 Egremont Rd	234	234	23	461	0.507	233	299	0.0	1.0	3.994	A
4 - A595	195	195	87	253	0.770	192	169	0.0	3.2	14.558	B

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	84	84	240	278	0.302	84	89	0.3	0.4	4.640	A
2 - Homewood Rd	64	64	255	142	0.449	64	69	1.1	0.9	11.885	B
3 - A595 Egremont Rd	290	290	20	463	0.626	289	299	1.0	1.7	5.380	A
4 - A595	214	214	119	238	0.898	210	191	3.2	7.0	29.806	D

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	84	84	230	284	0.295	84	87	0.4	0.4	4.717	A
2 - Homewood Rd	85	85	244	148	0.576	84	70	0.9	1.4	15.483	C
3 - A595 Egremont Rd	310	310	22	462	0.671	310	307	1.7	2.0	5.982	A
4 - A595	180	180	134	231	0.779	183	198	7.0	4.1	21.329	C

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	85	85	264	263	0.324	85	70	0.4	0.5	5.167	A
2 - Homewood Rd	86	86	265	138	0.623	86	84	1.4	1.6	17.381	C
3 - A595 Egremont Rd	253	253	25	460	0.550	254	325	2.0	1.3	4.581	A
4 - A595	219	219	119	238	0.920	215	159	4.1	8.5	35.252	E

Existing Layout - 2023 with Dev. Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	18.23	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D6	2023 with Dev. Flows	PM	DIRECT	16:15	17:15	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

16:15 - 16:30

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	49	0
	2 - Homewood Rd	5	0	66	46
	3 - A595 Egremont Rd	92	41	5	182
	4 - A595	0	11	174	0

16:30 - 16:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	4	55	0
	2 - Homewood Rd	1	0	75	41
	3 - A595 Egremont Rd	78	28	3	194
	4 - A595	1	15	178	0

16:45 - 17:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	58	1
	2 - Homewood Rd	0	0	86	33
	3 - A595 Egremont Rd	77	45	3	202
	4 - A595	2	12	172	0

17:00 - 17:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	66	1
	2 - Homewood Rd	4	0	62	44
	3 - A595 Egremont Rd	87	28	4	221
	4 - A595	3	19	192	0

Vehicle Mix

16:15 - 16:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	3	0
	2 - Homewood Rd	67	0	2	2
	3 - A595 Egremont Rd	3	3	0	3
	4 - A595	0	0	2	0

16:30 - 16:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	33	0	0
	2 - Homewood Rd	0	0	1	0
	3 - A595 Egremont Rd	2	0	0	3
	4 - A595	0	0	4	0

16:45 - 17:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	0	0
	3 - A595 Egremont Rd	2	2	50	2
	4 - A595	0	0	1	0

17:00 - 17:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	5	0
	3 - A595 Egremont Rd	3	0	0	2
	4 - A595	50	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.25	4.33	0.3	A	60	240
2 - Homewood Rd	0.78	30.15	3.5	D	116	463
3 - A595 Egremont Rd	0.76	8.66	3.2	A	323	1290
4 - A595	0.91	31.27	7.3	D	195	779

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	49	49	227	286	0.171	49	96	0.0	0.2	3.898	A
2 - Homewood Rd	117	117	224	157	0.745	114	51	0.0	2.8	20.700	C
3 - A595 Egremont Rd	320	320	50	444	0.721	317	288	0.0	2.6	7.192	A
4 - A595	185	185	142	227	0.814	181	225	0.0	4.0	18.452	C

16:30 - 16:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	59	59	224	288	0.205	59	80	0.2	0.3	3.994	A
2 - Homewood Rd	117	117	236	151	0.773	117	47	2.8	3.2	25.527	D
3 - A595 Egremont Rd	303	303	42	449	0.675	303	311	2.6	2.2	6.360	A
4 - A595	194	194	110	242	0.801	194	235	4.0	4.1	19.274	C

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	62	62	232	283	0.219	62	79	0.3	0.3	4.073	A
2 - Homewood Rd	119	119	234	152	0.782	119	60	3.2	3.3	26.534	D
3 - A595 Egremont Rd	327	327	34	454	0.720	327	319	2.2	2.6	7.206	A
4 - A595	186	186	125	235	0.790	186	236	4.1	3.9	18.552	C

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	70	70	240	278	0.252	70	94	0.3	0.3	4.326	A
2 - Homewood Rd	110	110	260	140	0.785	110	50	3.3	3.5	30.146	D
3 - A595 Egremont Rd	340	340	48	445	0.765	339	321	2.6	3.2	8.661	A
4 - A595	214	214	123	236	0.906	211	265	3.9	7.3	31.270	D

Existing Layout - 2028 with Dev. Flows, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	20.46	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D9	2028 with Dev. Flows	AM	DIRECT	08:00	09:00	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

08:00 - 08:15

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	2	70	0
	2 - Homewood Rd	2	0	56	20
	3 - A595 Egremont Rd	64	19	4	155
	4 - A595	2	16	183	0

Demand (PCU/TS)

08:15 - 08:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	1	3	80	1
	2 - Homewood Rd	1	0	47	18
	3 - A595 Egremont Rd	89	31	1	179
	4 - A595	1	38	182	0

08:30 - 08:45

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	86	0
	2 - Homewood Rd	0	0	65	22
	3 - A595 Egremont Rd	89	46	4	182
	4 - A595	1	26	159	0

08:45 - 09:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	1	86	0
	2 - Homewood Rd	3	0	63	23
	3 - A595 Egremont Rd	68	46	7	142
	4 - A595	1	41	184	0

Vehicle Mix

08:00 - 08:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	2	0	0	2
	4 - A595	100	0	4	10

08:15 - 08:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	10	2	6
	3 - A595 Egremont Rd	3	4	0	5
	4 - A595	0	0	5	10

08:30 - 08:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	5	0
	2 - Homewood Rd	0	10	9	11
	3 - A595 Egremont Rd	0	2	0	2
	4 - A595	0	9	8	10

08:45 - 09:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	2	0
	2 - Homewood Rd	0	10	2	0
	3 - A595 Egremont Rd	6	2	0	5
	4 - A595	0	3	8	10

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.34	5.38	0.5	A	83	331
2 - Homewood Rd	0.66	19.69	1.9	C	80	320
3 - A595 Egremont Rd	0.69	6.44	2.3	A	282	1126
4 - A595	0.96	45.68	11.8	E	209	834

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	73	73	218	292	0.250	73	69	0.0	0.3	4.100	A
2 - Homewood Rd	78	78	254	143	0.546	77	37	0.0	1.2	13.796	B
3 - A595 Egremont Rd	242	242	23	461	0.524	241	308	0.0	1.1	4.135	A
4 - A595	201	201	90	252	0.798	197	174	0.0	3.8	16.197	C

08:15 - 08:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	85	85	246	274	0.311	85	92	0.3	0.4	4.763	A
2 - Homewood Rd	66	66	261	140	0.472	66	71	1.2	0.9	12.646	B
3 - A595 Egremont Rd	300	300	21	462	0.649	299	306	1.1	1.9	5.723	A
4 - A595	221	221	123	236	0.935	215	198	3.8	9.3	37.089	E

08:30 - 08:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	86	86	239	278	0.309	86	90	0.4	0.5	4.910	A
2 - Homewood Rd	87	87	252	144	0.605	86	73	0.9	1.6	16.955	C
3 - A595 Egremont Rd	321	321	22	462	0.695	321	317	1.9	2.3	6.439	A
4 - A595	186	186	139	229	0.813	190	204	9.3	5.2	27.312	D

08:45 - 09:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	87	87	271	257	0.338	87	72	0.5	0.5	5.382	A
2 - Homewood Rd	89	89	272	135	0.661	89	87	1.6	1.9	19.691	C
3 - A595 Egremont Rd	263	263	26	459	0.573	264	335	2.3	1.4	4.837	A
4 - A595	226	226	124	236	0.959	219	165	5.2	11.8	45.678	E

Existing Layout - 2028 with Dev. Flows, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	A595/B5295 Egremont Rd/Homewood Rd rdt	Standard Roundabout		1, 2, 3, 4	22.58	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D10	2028 with Dev. Flows	PM	DIRECT	16:15	17:15	60	15	✓

Vehicle mix varies over time	Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1 - B5295 Egremont Rd		DIRECT	✓	100.000
2 - Homewood Rd		DIRECT	✓	100.000
3 - A595 Egremont Rd		DIRECT	✓	100.000
4 - A595		DIRECT	✓	100.000

Origin-Destination Data

Demand (PCU/TS)

16:15 - 16:30

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	50	0
	2 - Homewood Rd	5	0	68	48
	3 - A595 Egremont Rd	94	42	5	188
	4 - A595	0	11	180	0

Demand (PCU/TS)

16:30 - 16:45

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	4	57	0
	2 - Homewood Rd	1	0	77	42
	3 - A595 Egremont Rd	80	29	3	200
	4 - A595	1	15	184	0

16:45 - 17:00

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	59	1
	2 - Homewood Rd	0	0	88	34
	3 - A595 Egremont Rd	79	47	3	209
	4 - A595	2	12	178	0

17:00 - 17:15

Demand (PCU/TS)

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	3	67	1
	2 - Homewood Rd	4	0	64	46
	3 - A595 Egremont Rd	89	29	4	228
	4 - A595	3	20	199	0

Vehicle Mix

16:15 - 16:30

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	3	0
	2 - Homewood Rd	67	0	2	2
	3 - A595 Egremont Rd	3	3	0	3
	4 - A595	0	0	2	0

16:30 - 16:45

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	33	0	0
	2 - Homewood Rd	0	0	1	0
	3 - A595 Egremont Rd	2	0	0	3
	4 - A595	0	0	4	0

16:45 - 17:00

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	0	0
	3 - A595 Egremont Rd	2	2	50	2
	4 - A595	0	0	1	0

17:00 - 17:15

Heavy Vehicle Percentages

		To			
		1 - B5295 Egremont Rd	2 - Homewood Rd	3 - A595 Egremont Rd	4 - A595
From	1 - B5295 Egremont Rd	0	0	0	0
	2 - Homewood Rd	0	0	5	0
	3 - A595 Egremont Rd	3	0	0	2
	4 - A595	50	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/TS)	Total Junction Arrivals (PCU)
1 - B5295 Egremont Rd	0.26	4.45	0.3	A	61	245
2 - Homewood Rd	0.83	38.06	4.6	E	119	477
3 - A595 Egremont Rd	0.79	9.65	3.7	A	332	1329
4 - A595	0.94	40.26	10.0	E	201	805

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	50	50	233	282	0.177	50	98	0.0	0.2	3.982	A
2 - Homewood Rd	121	121	230	154	0.786	118	52	0.0	3.4	23.844	C
3 - A595 Egremont Rd	329	329	52	443	0.743	326	296	0.0	2.9	7.772	A
4 - A595	191	191	145	226	0.845	186	233	0.0	4.8	21.035	C

16:30 - 16:45

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	61	61	231	284	0.215	61	82	0.2	0.3	4.108	A
2 - Homewood Rd	120	120	244	148	0.813	119	48	3.4	3.9	31.009	D
3 - A595 Egremont Rd	312	312	43	448	0.696	312	320	2.9	2.4	6.820	A
4 - A595	200	200	113	241	0.831	200	242	4.8	4.9	22.679	C

16:45 - 17:00

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	63	63	240	278	0.227	63	81	0.3	0.3	4.190	A
2 - Homewood Rd	122	122	241	149	0.819	122	62	3.9	4.1	32.278	D
3 - A595 Egremont Rd	338	338	35	453	0.746	337	328	2.4	2.9	7.913	A
4 - A595	192	192	129	233	0.822	192	244	4.9	4.8	22.047	C

17:00 - 17:15

Arm	Total Demand (PCU/TS)	Junction Arrivals (PCU)	Circulating flow (PCU/TS)	Capacity (PCU/TS)	RFC	Throughput (PCU/TS)	Throughput (exit side) (PCU/TS)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - B5295 Egremont Rd	71	71	247	273	0.260	71	96	0.3	0.3	4.446	A
2 - Homewood Rd	114	114	266	137	0.831	114	51	4.1	4.6	38.060	E
3 - A595 Egremont Rd	350	350	50	444	0.789	349	330	2.9	3.7	9.650	A
4 - A595	222	222	126	235	0.945	217	274	4.8	10.0	40.262	E