



From: Ian Gledhill [REDACTED]
Sent: 27 September 2017 11:24
To: David Innes
Subject: WSCC Comments on Cumulative TAs - Pagham

David, apologies firstly for the delay in getting this to you. Going through three assessments has been incredibly time consuming given the number of junctions involved.

Comments will follow in respects of the individual TA's in due course.

Kind regards

Ian Gledhill

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FROM: Ian Gledhill TO: Arun District Council
FAO: David Innes

SUBJECT: P/134/16/OUT (Land North of Sefter Road), P/140/16/OUT (South Pagham), and P/6/17/OUT (Land at Hook Lane) – Cumulative Transport Assessments

West Sussex County Council, in its role as Local Highway Authority, has previously issued comments in connection with the above developments. The comments made to date largely focus on the individual requirements of the developments. The applicants have though been instructed to also consider the cumulative impacts of the developments. The applicants have therefore jointly collaborated and produced three separate cumulative transport assessments (CTA's).

The LHA are aware of a fourth development at Church Barton Farm (P/17/251) for 89 dwellings. Although a CTA has not been submitted by the applicants of this proposal, the dwellings forming part of this application are included within the modelling. Further comments are included below on what other developments (committed and proposed) are within the future year modelling work.

The scope of the CTA has been discussed and agreed with the LHA. Separate discussions have been held with Highways England who is responsible for the A27. No comments are made as part of this response in relation to those junctions that fall under the responsibility of the HE.

Due consideration has been given to the policy wording covering the Pagham developments within the draft Arun District Council Local Plan. Account is also given to the Stage 3 Transport Study (prepared by Systra) in support of the draft Local Plan and the Infrastructure Delivery Plan. The IPD sets out and proportions the cost of delivering that infrastructure as necessary to enable the housing growth planned in the Local Plan.

These comments are intended only to cover the cumulative impacts of the development. The LHA will provide further comments on the individual application sites in due course when full replies have been provided by the respective applicants.

Matters Agreed as Consistent

For the purposes of the CTA, the following matters are consistent throughout the three documents.

Trip Generation – Trip rates for the various proposed uses included within the development sites have been taken from the individual TA's. The trip rates used within these have been agreed as part of pre application discussions.

Trip Distribution – A manual means of distributing traffic has been applied. This uses Census Journey to Work data recorded from existing residents. From this, potential route choices have been identified. Trips arising from the development have then been assigned to routes. Slightly different assumptions have been applied by RPS although these are not fundamentally significant from those included within the other CTA's.

Extent of Junctions Assessed – Those junctions that are forecast to see increased entry flows of 30 or more vehicles as a consequence of the development have been identified. Where necessary, the junctions have then been modelled using appropriate industry accepted software. Not all junctions where 30 or more vehicle movements are anticipated have been modelled. This is due to these junctions having a low number of existing movements. Even with the development, these junctions would continue to operate well within capacity.

Background Traffic Flows - Two different approaches have been applied. For the local road network within Pagham, traffic flow and turning data has been collected at those junctions identified as needing to be assessed.

In most cases, each developer has collected and used their own data. The data has been collected at traffic neutral times as set out within the Design Manual for Roads and Bridge TA22/81. The use of such data is acceptable. This does however lead to inconsistencies between the documents in terms of the traffic flows, and consequently in the forecasting of queues and delays. Unless stated otherwise, the outputs are still though comparable.

For the strategic roads (those routes leading towards Chichester), data has been extracted from the traffic model prepared in support of the draft Arun DC Local Plan. As this model has been validated only for those junctions within Arun, data has also been extracted from the Chichester Area Traffic Model (CATM) to cover those junctions within the Chichester area.

This approach has been applied given that ADC LP traffic model does not include sufficient detail for the local road network.

Committed/Proposed Development – A future year of 2031 has been applied for all the modelling scenarios in the CTA. Whilst accepted that all the proposed developments, if permitted, would be completed by 2031, the use of this future year is then consistent with the horizon year of the draft Arun DC Local Plan. As such, the future year includes all development, and with and without the mitigation planned as part of the Local Plan. This includes the proposed residential allocation on land west of Bersted. The use of the CATM flows will also include the planned growth within the adopted Chichester Local Plan.

Those committed but as yet un-commenced developments approved under planning references P/58/15 and P/125/14 are both also included in the assessment work.

Capacity Modelling – Very similar and in most cases identical junction geometries are used within all three CTA's.

Overall Results of Capacity Modelling

Taking the above methodology, the capacity impacts have then been modelled using industry accepted techniques at the following junctions.

Sefter Road / Pagham Road - priority junction

The modelling assessment results vary significantly through the three CTA's. In all of the CTA's the capacity issues are forecast on the minor road arm (Sefter Road) in the AM peak hour. For this arm the future year scenario, the three CTA's provide the following forecasts.

2031 AM Base + Committed

	Queue	Delay (S)	RFC
Highgate	2.0	25.91	0.68

RPS	34.2	273.96	1.14
C&A	6.2	58.91	0.89

2031 AM Base + Committed + All Pagham development

	Queue	Delay (S)	RFC
Highgate	6.3	69.82	0.89
RPS	65.6	612.05	1.31
C&A	16.3	2061.47	1.02

Whilst some variation is expected as a consequence of the developers using their own traffic data, the variations here are quite significant. No mitigation is proposed at this junction. Instead, the CTA's are indicating the traffic using Sefter Road will divert to other alternative and less congested routes (for example the Hook Lane/Pagham Road junction) before continuing their journey northwards. This is considered unlikely as to do this would involve a 1.5km diversion from the Sefter Road/Hook Lane junction southwards to the Hook Lane/Pagham Road junction before then continuing northwards and passing the Pagham Road/Sefter Road junction. Considering also that traffic calming measures are proposed along Hook Lane as part of P/61/17/OUT and that the access roads within the Hook Lane development will be designed to restrain vehicle speeds, such a diversion is potentially even more unlikely.

Given the substantial differences in the modelling outputs, it's is not possible to determine what cumulative impact will result. Further information is required in regards of this junction.

Hook Lane / Pagham Road - priority junction

In all scenarios within all the CTA's, this junction is forecast to work well within theoretical capacity. No mitigation is required.

Hook Lane / Sefter Road - priority junction

In all scenarios within all the CTA's, this junction is forecast to work well within theoretical capacity. No mitigation is required.

Grosvenor Gardens / Rose Green Road / Carlton Avenue - staggered priority junctions

All three CTA's forecast capacity issues on certain arms in the AM and PM peak hours. These issues are evident in the without development scenario. With the development queues and delays are set to increase most notably on the Rose Green Road arm. Similar to the Pagham Road/Sefter Road junction, there is variation in the forecast queues and delays.

A scheme of mitigation is proposed to widen the Rose Green Road North arm to provided two separate lanes for left and right turning traffic. This improvement is modelled with the flows from all three CTA's. With all flows the proposed improvements are considered to mitigate the severe impacts arising from the increase in vehicle movements. The improvement has been the subject of a design check and Stage One Road Safety Audit.

Nyetimber Lane / Grosvenor Road / Rose Green Road - staggered signalised junction

There are differences in the modelling assumptions particularly between the RPS and Highgate/C&A CTA's. As a result, there is a notable difference in queue lengths and average delay especially on the Gossamer Lane arm. The RPS CTA also does not include the stage sequence diagrams or signal timings, or for that matter any other model input details. Putting aside these issues, all of the CTA's identify that this junction would be operating above capacity with the proposed developments. The modelling results taken from the Highgate and C&A CTA's are though taken as an accurate representation of conditions with the proposed developments.

Although the developments will result in increased queuing, this in part can be mitigated through the increase cycle time. This in turn allows for more time to be given to each arm during the stages of the signal cycle to allow traffic to clear.

With the proposed mitigation, the impacts of the development are not considered to be severe.

Gossamer Lane / Aldwick Street / Aldwick Road – Roundabout

In all scenarios within all the CTA's, this junction is forecast to work well within theoretical capacity. No mitigation is required.

Pagham Road / Nyetimber Lane - Priority Junction

In all scenarios within all the CTA's, this junction is forecast to work well within theoretical capacity. No mitigation is required.

Pagham Road / Lower Bognor Road - priority Junction

In all modelling scenarios, the main interest is the Lower Bognor Road arm where capacity issues of varying degrees are forecast in all CTA's. In the majority of scenarios, the junction is forecast to operate above theoretical capacity without the inclusion of the proposed Pagham developments. The capacity issues here are not therefore solely as a result of the proposed development. The additional increases to queues and delays resulting from the development therefore should be viewed against the base situation.

Lower Bognor Road Arm - 2031 Base + Committed

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	18	153	1.03	5	58	0.87
RPS	9	75.52	0.93	3	39.8	0.79
C&A	18.1	145.34	1.03	46.8	353.08	1.19

Lower Bognor Road Arm - 2031 Base + Committed + All Pagham development

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	40	326	1.18	15	150	1.02
RPS	26.6	213.16	1.09	8/1*	94.11/405.14*	0.95/0.94*
C&A	40.6	314.89	1.17	84.1	756.19	1.41

*RPS have modelled the minor road arm with a flare that allows for left and right turning movements. The two sets of figures are for right and left turns respectively. It is modelled in this way for all scenarios but for other time periods there are no queues or delays for left turns.

Similar to the Pagham Road/Sefter Road junction, there is a degree of variability in terms of the forecast operation of the junction, particularly in the PM peak. Taking account of the development traffic, the increase in delays are quite notable. Due to land ownership constraints there is though a limit upon what meaningful improvements are possible and can be delivered at the Lower Bognor Road junction by the various developers. Again, it is acknowledged that the development is not the sole reason for the capacity issues. It is expected that the majority of traffic using the Lower Bognor Road in the base situation is doing so as an alternative to using the A259. The A259 is known to be congested at peak times especially where it meets the A27.

In order to address the above points, a contribution is being offered towards local highway improvements. This contribution is based upon the cost of constructing a potential roundabout junction improvement; an obligation could not be put upon the

developer to construct these works given that 3rd party land is required. The contribution will therefore be used alongside those sought from other developments towards capacity improvements in the wider area. These most likely will include works along the A259 corridor towards Chichester. The undertaking of such works should then encourage less traffic to use alternate routes to the A259. Alternately the contribution may be used towards improvements at the Pagham Road/Lower Bognor Road junction should WSCC obtain the necessary land.

Whilst the impacts at this junction are recognised, it's considered that the securing of a contribution of £373,000 is reasonable and proportionate in overcoming any severe residual cumulative impacts arising from the development.

B2166 Lagness Road/Mill Lane/Vinnetrow Road Roundabout

For this junction base 2031 traffic flows have been taken from the Chichester Area Traffic Model (CATM) rather than using the Arun Traffic Model (ATM). The reason for this is that this roundabout lies within the Chichester District Council administrative area. The data from the ATM has not been validated for junctions beyond the Arun DC area. The model may therefore not include trips that start and stay within the CDC area. CATM has been validated and as such this is considered to be the more appropriate base data source.

CATM has been updated so as to include the growth planned as part of the Arun DC Local Plan and the mitigation also proposed. CATM will already include growth associated with the adopted CDC Local Plan as well as the mitigation required as part of this.

Using the CATM data, it's apparent that only the B2166 Lagness Road (E) arm is approaching capacity. With the proposed development, all arms are operating within theoretical capacity, but queues and delays increase on B2166 Lagness Road (E) arm.

A scheme of mitigation is proposed to resolve the residual severe cumulative impacts of the proposed development. The improvement has been the subject of a design check and Stage One Road Safety Audit. The junction is forecast to operate as follows with the improvement works.

Vinnetrow Road Arm - 2031 Base + Committed + All Pagham development with mitigation

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	0.3	5.6	0.24	0.6	9.75	0.37
RPS	0	4.26	0.12	2.8	14.45	0.75
C&A	0.2	5.39	0.15	12.5	64.12	0.96

B2166 East Arm - 2031 Base + Committed + All Pagham development with mitigation

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	3.0	9.49	0.75	0.5	3.46	0.33
RPS	14.7	36.41	0.95	2	5.78	0.61
C&A	11.2	27.59	0.93	1.4	5.21	0.58

Mill Road Arm - 2031 Base + Committed + All Pagham development with mitigation

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	0.1	6.40	0.11	0	3.51	0.04
RPS	0	9.17	0.17	0	4.95	0.07
C&A	0.2	10.75	0.18	0.1	5.07	0.05

B2166 West Arm - 2031 Base + Committed + All Pagham development with mitigation

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	0.9	4.58	0.45	3.3	9.96	0.77
RPS	0.6	4.52	0.37	0.6	4.44	0.37
C&A	0.5	4.03	0.34	0.6	4.15	0.36

Certain arms are forecast to be nearing theoretical capacity. Even taking the worst case, again, as for other junctions modelled, there is a degree of variability in the results. The proposed improvements are considered to resolve the severe residual cumulative impacts arising from the development.

B2145/B2166 Roundabout

Prior to this junction being modelled, a comparison was undertaken between flows from the Arun Traffic Model and the Chichester Area Traffic Model. From this comparison, it's apparent that there is little difference in the traffic flows. Base data from the ATM has therefore been applied. All of the CTA's should therefore result in very similar results. The following are taken from the respective CTA's.

B2145 North Arm - 2031 with LP and Mitigation without Pagham

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	1.6	7.75	0.61	36.0	95.16	1.03
RPS	1.7	8.18	0.64	39.6	103.19	1.04
C&A	0.9	5.17	0.47	6.1	19.58	0.87

B2166 Arm - 2031 Base with LP and Mitigation without Pagham

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	4.5	14.59	0.82	1.3	6.25	0.56
RPS	3.0	10.9	0.76	1.1	5.60	0.52
C&A	5.2	14.02	0.84	1.7	6.12	0.63

B2145 South Arm - 2031 with LP and Mitigation without Pagham

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	7.7	26.71	0.89	1.7	6.43	0.62
RPS	8.1	28.17	0.90	1.8	6.69	0.64
C&A	7.1	26.72	0.89	1.8	6.68	0.64

Without the development, the outputs are quite consistent with capacity issues primarily on the B2145 north arm. Other arms are approaching theoretical capacity during the AM peak.

B2145 North Arm - 2031 Base + Committed + All Pagham development

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	2	8.75	0.65	87.9	203.29	1.13
RPS	2	9.19	0.68	94	216.77	1.14
C&A	1.1	5.86	0.52	21.5	61.5	0.99

B2166 Arm - 2031 Base + Committed + All Pagham development

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	10.6	31.63	0.93	1.6	6.94	0.61
RPS	11	31.3	0.93	2	6.65	0.61
C&A	29.5	68.7	1.01	2.7	9.06	0.99

B2145 South Arm - 2031 Base + Committed + All Pagham development

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	17.2	57.39	0.97	2	7.3	0.66
RPS	33	99.81	1.03	2	6.65	0.61
C&A	36.2	117.54	1.05	2.6	9.94	0.73

It's apparent that whilst there are differences, there are consistent capacity issues on certain arms in the scenario with the development in both the AM and PM peaks. A scheme of mitigation is consequently proposed. These improvements propose the increase of entry arm widths to varying degrees. The improvement has been the subject of a design check and Stage One Road Safety Audit.

B2145 North Arm - 2031 Base + Committed + All Pagham development with mitigation

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	1.8	7.87	0.63	62.6	145.21	1.08
RPS	1.0	5.45	0.50	9.0	26.79	0.91
C&A	1.0	*	0.51	14.7	*	0.96

*No data available within CTA

B2166 Arm - 2031 Base + Committed + All Pagham development with mitigation

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	5.0	14.49	0.84	1.3	5.52	0.56
RPS	4.9	11.96	0.84	1.5	5.14	0.61
C&A	12.1	*	0.94	2.1	*	0.68

*No data available within CTA

B2145 South Arm - 2031 Base + Committed + All Pagham development with mitigation

	AM			PM		
	Queue	Delay (S)	RFC	Queue	Delay (S)	RFC
Highgate	11.1	38.16	0.93	1.8	6.65	0.64
RPS	21.3	74.36	1.00	2.1	8.07	0.68
C&A	16.5	*	0.98	2.1	*	0.68

*No data available within CTA

In all scenarios with the proposed improvements, the operation of all arms of improves. It's accepted that the operation on some arms is worse with the additional development than without it. Current national planning policy requires a development only to mitigate the residual severe cumulative impacts. The improvements are considered to resolve the severe residual cumulative impacts arising from the development.

Other Matters

There are a large number of 3rd party objections submitted to the Local Planning Authority regarding delays on the B2166 Pagham Road arising from slow moving traffic associated with other uses. These comments are acknowledged. However given that they are existing, they are not for the applicants of the current applications to resolve.

The LHA are also aware of the potential for further development on land west of Bersted. As noted elsewhere in this report, this development along with all of that currently proposed as part of the draft Arun District Council Local Plan as well as the associated strategic level mitigation is included within the base model flows. The focus of the current CTA's is though on the developments in Pagham, for which planning applications are presently under consideration. In the event that a planning application is submitted for west of Bersted, a transport assessment will be required that will need to examine and identify what mitigation is necessary specifically as a consequence of that development.

Summary of Cumulative Modelling

As highlighted above, for some junctions there are quite notable differences with some of the modelling outputs. However, for the most part the outputs are largely comparable and any variations immaterial. Further clarification is though required in connection with the Sefter Road/Pagham Road junction given that the variations here are significant.

Where mitigation is required, this is to be split amongst the developers. This approach is considered acceptable given that the mitigation is required specifically to deal with the developments tested as part of the CTA. The split of works is as set out within the statement of common ground included within each of the CTA's. Each developments s106 agreement will then include those works/proportion of contribution required for the cumulative impact alongside any works specific identified for that development. Such an approach is accepted. The only disagreement would

be the suggested trigger point of the completion of 200th dwelling within the respective development. As each of developments is of different size, it's recommended that a trigger point of 50% of completions for each respective development is applied.

Accessibility

The accessibility of each site and those improvements identified as necessary have been considered separately as part of the TA supporting that respective development. The LHA's formal responses to these applications should be referred to for further details.

For the cumulative assessment, a contribution of £100,000 is proposed to be shared amongst the developments. This contribution has been sought by WSCC to enable the creation of an off-road cycle route. This route is intended to run from Summer Lane (where land is to be safeguarded as part of P/140/16) through to South Mundham. The route is intended to use existing public rights of way that will be upgraded to facilitate cycling.

Conclusions

The LHA has reviewed the three Cumulative Transport Assessments submitted in support of the current planning applications in Pagham. The CTA's have been prepared in accordance with current best practice and the scope has been agreed with the LHA. Whilst the majority of the conclusions within the CTA's are broadly comparable, there are still in certain places quite notable differences as to the anticipated future operation of the junctions. The most notable of these is the Pagham Road/Sefton Road. A further review of the operation of this junction by the developers is necessary.

For those junctions where mitigation is required, the proposed works or contributions are considered acceptable in mitigating the severe residual cumulative impacts of the development.

Ian Gledhill
Planning Services