Town and Country Planning Act 1990 Planning and Compulsory Purchase Act 2004

Appeal by A C Goatham & Son

Land off Pump Lane, Rainham

Second Rebuttal Proof of Evidence on Access, Safety, Transport and Accessibility Prepared by Simon Tucker BSc (Hons) MCIHT on behalf of the Appellant

> PINS Ref: APP/A2280/W/20/3259868 LPA Ref: MC/19/1566



Land off Pump Lane, Rainham

Second Rebuttal Proof Of Evidence of Simon John Tucker

12th April 2021

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1.0 Introduction and Context

- 1.1 This rebuttal proof of evidence has been prepared on behalf of the appellant in response to the further modelling undertaken by Medway Council and received by the appellant on the 31st March 2021 and 8th April 2021.
- 1.2 The Council has consistently taken the position, across their evidence, that the modelling approaches undertaken by the Council and Appellant are mutually exclusive. The Council has suggested that the only appropriate way to assess a development of this scale and location is via the Council's MAM modelling and that the approach taken by the appellant is in some way inadequate. This is broadly set out in Mr Jarvis' rebuttal proof at paras 2.15 2.24.
- 1.3 The Council's position is not accepted. Albeit both methodologies are intended to provide an appraisal of impacts of the development, they provide for substantially different conclusions with respect to traffic impact. Albeit a large proportion of the modelling work is consistent in terms of baseline flows and development traffic distribution (as I highlight in section 3 below), ultimately, the significant difference between the outcomes of the methodologies is that the MAM modelling suggests individual junctions to be operating over capacity, whereas the appellant's individual junction models shows these to be operating within capacity.
- 1.4 Both parties' approaches adopt as a starting point, base line traffic flows, and then input development generated traffic. There remains disagreement on the appropriate trip rates to be adopted for the traffic generation from the site, as described in the Transport SOCG, section 8. However as confirmed in the MAM report Addendum 2 (CD12.2) there are no significant differences in terms of wider impacts between the two trip rate assumptions. This is also confirmed at Para 2.28 of Mr Jarvis' rebuttal.
- 1.5 It is noted that MAM imports a further dimension of assessment across the network of traffic impact. This dimension of assessment considers, for example, how existing flows on the network may respond to, and change upon, the addition of further development traffic. This response might mean development traffic not using a certain route, but the



route nonetheless being affected by existing traffic displacement onto it, so giving rise to a further impact.

- 1.6 Albeit the absence from the DTA work of this dimension of assessment is criticised by Mr Jarvis (at para 2.15 of his rebuttal), ultimately, the criticism is unfounded. The Council's evidence does not identify any further impacts of significance. DTA's review of traffic flows (Table 4 of proof of my evidence) identifies that all net changes in flows when taking account of this further dimension of assessment are confirmed to be immaterial, and indeed, a reduction is forecast by the modelling in some instances. It is similarly confirmed that the overall conclusions of DTA's modelling would remain materially unchanged, even accounting for the Council's assessment of across network impacts.
- 1.7 The DTA approach, alternatively, makes no allowance for wider diversion of traffic, across the network. The approach adopted is as set out in detail at section 6.1 of my proof of evidence. This approach remains robust and reflects network management priorities: no reliance is placed on the displacement of existing traffic from classified roads, meaning that the development traffic can be accommodated on all routes. This is to be preferred over the 'passive approach' within an assignment model, as the focus for adapting the network is directed to the main roads, rather than only where the traffic falls, on the basis of the current network structure and junction configurations.
- 1.8 The appellant's TA approach and conclusions have been accepted in full by Highways England. This is explained in section 7 of my proof of evidence and recorded in ID10.
- 1.9 In order to fully account for the above dimension of the Council's model, I have also fully reviewed the development impacts in light of both modelling approaches (paragraph 3.5 of my first rebuttal).
- 1.10 The TA and Addendum fully answers all of the (unfounded) methodological criticisms advanced by Mr Jarvis (at paras 2.15 and 2.16 of his rebuttal), on the basis that:
 - 1) The TA (and subsequent Technical Notes 3 and 4) assess the development impacts based on the higher junction flows arising from the DTA methodology (Technical Note



4) and also the MAM derived flows (which include the higher trip rates and any diversionary effect of traffic) (Technical Note 3);

- 2) Technical Note 3 provides an assessment of junction operation and link capacity based on MAM flows, using established DfT and TRL software, allowing for the consideration of operational impacts. These are industry standard processes. These all show the development impacts in terms of queuing is either acceptable or can be mitigated (and in a cost-effective way);
- Technical Note 4 provides the capacity assessments based upon the DTA-derived forecasts. These all show the impact of the development in terms of queuing is either acceptable or can be mitigated (and in a cost-effective way);
- 4) The final MAM modelling supports the conclusions of Technical Note 3, that there are no link capacity issues (see **Appendix REB2C**) and confirms that the queuing and delays the Council say arise are related to junction capacity only. As further explained below, the conclusions that MAM reaches in terms of individual junction capacity are neither credible nor reliable and should be discounted.
- 1.11 As I set out below in section 2, I am content to accept that the baseline validation of the MAM model, as set out in CD12.4, is adequate.
- 1.12 Throughout the various different model runs provided by the Council, there arises a clear and significant disparity between MAM's and DTA's conclusions on individual junction capacity. DTA's assessment has used established, industry standard software which are calibrated by the Transport Research Laboratory (TRL), configured to and specifically validated within the UK.
- 1.13 There is no requirement to reject the MAM's modelling approach in order to find that the junction congestion and capacity outputs derived from this modelling are significantly in error.

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2.0 Model Validation

- 2.1 It had initially appeared that the disparity in outcomes between the parties in respect of junction capacity was a consequence of a lack of validation of the MAM model. On 7th July 2020 I wrote to the Council requesting further information, and in particular, seeking a copy of "*All local model validation report (s)*" (Point C (i)). I was provided with a copy (on 6th November 2020) of a report entitled "Model Validation Report 8th June 2017 Version 0.2 Draft". CD12.5. This report gave rise to para 6.4 of my proof of evidence. Subsequently, Mr Jarvis confirmed in his proof of evidence (para 4.6) that local model validation checks had been made. These were not provided to me in advance of the evidence.
- 2.2 The criticism at para 2.4 of Mr Jarvis's rebuttal that these were readily able to be scrutinised is misleading they were neither provided or flagged to me. The screen shot below gives an example of the data that is relied upon for validation (Parage 236 of the LMVR). No reference can be found to what individual 'objects' are, or where they are located.
- 2.3 These still remain incapable of verification, and no further assistance has been forthcoming from the Council in this regard. Mr Jarvis and Mr Rand also refused to discuss the modelling, notwithstanding my enquiries, at our meeting on 24th February 2021 and so I have not been able to check these details further.



	1					Coletria 1		Collecte 2		
Object	Observed	Simulated	Absolute Difference	Relative Difference (%)	GEH	GEH Statistic less than 5.0	Count less than 700 vph modelled within 100 vph	Counts between 700 vph and 2,700 vph modelled within 155	Count greater than 2,700 vph modelled within 400 vph	Either Criteria
	1		Percentage	of Sections me	eting criteria:	86.3%	93.48	93.45	100.0%	94.4%
99810	661	894.4	233.4	35.3	8.37	N	N			N
99808	79	0.4	-78.6	-99.5	12.47	N	Y			Y
99699	1729	1754.6	25.6	1.5	0.61	Y		Y	•	Y
99686	784	831.4	47.4	6.0	1.67	Y		Y		Y
99589	3369	3439.2	70.2	2.1	1.20	Y			Y	Y
99587	753	748.0	-5.0	-0.7	0.18	Y		Y		Y
90872	838	857.0	19.0	2.3	0.65	Y		Y		Y
90870	872	855.0	-17.0	-1.9	0.58	Y		Y		Y
90461	684	707.4	23.4	3.4	0.89	Y	Y			Y
90459	300	279.0	-21.0	-7.0	1.23	Y	Y			Y
89068	479	481.8	2.8	0.6	0.13	Y	Y			Y
86804	6	0.0	-6.0	-100.0	3.46	Y	Y			Y
858842	580	459.8	-120.2	-20.7	5.27	H	N			N
858841	20	165,4	145.4	727.0	15.10	N	N			N
858840	269	211.0	-58.0	-21.6	3.74	Y	Y			Y
845926	4	0.0	-4.0	-100.0	2.83	Y	Y			Y
845913	39	0.0	-39.0	-100.0	8.83	N	Y			Y
845731	130	97.6	-32.4	-24.9	3.04	Y	Y			Y
845353	3	0.0	-3.0	-100.0	2.45	Y	Y		•	Y
845352	5	0.0	-5.0	-100.0	3.16	Y	Y			Y
845351	3	0.0	-3.0	-100.0	2.45	Y	Y		•	Y
845349	24	0.0	-24.0	-100.0	6.93	N	Y			Y
845346	0	0.0	0.0	0.0	0.00	Y	Y			Y
845345	0	0.0	0.0	0.0	0.00	Y	Y		•	Y
845344	21	0.0	-21.0	-100.0	6.48	N	Y			Y
845343	8	0.0	-8.0	-100.0	4.00	Y	Y			Y
845342	0	0.0	0.0	0.0	0.00	Y	Y			Y
845341	0	0.0	0.0	0.0	0.00	Y	Y			Y
844558	82	71.8	-10.2	-12.4	1.16	Y	Y	•	•	Y
844557	0	3.2	3.2	inf	2.53	Y	Y			Y
844556	410	377.4	-32.6	-8.0	1.64	Y	Y			Y
844555	472	409.8	-62.2	-13.2	2.96	Y	Y			Y
83498	479	481.6	2.6	0.5	0.12	Y	Y			Y
83496	294	254.2	-39.8	-13.5	2.40	Y	Y	•	•	Y
79400	678	643.0	-35.0	-5.2	1.36	Y	Y			Y
79398	249	236.0	-13.0	-5.2	0.83	Y	Y			Y
78357	609	607.4	-1.6	-0.3	0.06	Y	Y			Y
78355	0	0.0	0.0	0.0	0.00	Y	Y			Y
75555	1903	1746.0	-157.0	-8.3	3.68	Y		Y		Y
75537	67	41.2	-25.8	-38.5	3.51	Y	Y			Y
75501	1619	1501.4	-117.6	-7.3	2.98	Y		Y		Y
75,400	443	200.0		43.0	2.44	N.				

Medway Aimsun Model | Calibration Statistics Microscopic Model | Turns | AM Peak Hour

- 2.4 I am however prepared, for the sake of narrowing the essential but ultimately immaterial issues between the parties, to accept the results presented at section 2 of Mr Jarvis's rebuttal with respect to flow validation, and calibration, in relation to the baseline of the modelling. This acceptance does not however detract from my views as set out in detail below in Section 3 that the MAM does not properly nor accurately assess the impacts of the development in the future year.
- 2.5 As set out in section 5 of my first rebuttal, I also maintain my concerns regarding journey time validation on various routes. This relates to Routes 6 and 7 (see appendix REB1). Further receiving Mr Jarvis' rebuttal at Table 4, it is clear that Routes 3.1, 3.2 & 3.3 (shown on Table 4 of Jarvis Rebuttal) are all of what TAG Unit M3.1 (CD 12.8) would describe as 'excessively short' as they are less than 3km in length (see TAG Unit M3.1, para 4.3.3).
- 2.6 It is understood that the criteria that is stipulated in this TAG Unit for journey time



validation (i.e. within 60 seconds or 15%, whichever is higher) is for JT routes that fall within the length range of 3km - 15km. It is also accepted that albeit there is no criteria defined for the excessively long or excessively short routes, if the route is too short, then a significant difference in proportional terms would have a significant impact on output.



3.0 Response to Revised Modelling

- 3.1 Following the adjournment on transport issues in February 2021, a meeting was held between the parties to discuss potential mitigation. My (proposed, track changed) note of this is attached at **Appendix REB2 A**. The Council declined to agree this note. I also emailed the Council on 28th February 2021, which is attached at **Appendix REB2 B** (excluding the output modelled files).
- 3.2 At the meeting of 24th February the Council requested a Stage 1 Road Safety Audit of the mitigation schemes. This was undertaken and provided to the Council. The design office response is attached at **Appendix REB2D**. It is clear from the Audit that there are no substantive issues raised and all can be dealt with through the normal detail design progression at the Section 278 stage, post consent.
- 3.3 Revised modelling considers the physical mitigation at Bowaters Roundabout and A2 WillAdams Way. The modelling adopts a fixed and rigid assumption on lane usage.
- 3.4 Without explanation, the proposed changes to Yokosako Way Roundabout have not been included in the modelling. Nor have any changes at Pier Road been included (see further, Mr Rand's email of 10th March 2021). The omission of these changes was only evident after the final modelling report was issued on 31st March 2021 and supporting videos on 8th April 2021.
- 3.5 The appropriate test is considered to be Scenario 6A, being the test with the appellant's trip rates in the future year of 2028.
- 3.6 The trip rates are not agreed (as set out in the SOCG, section 8). However as confirmed in the MAM report Addendum 2 (CD12.2) there are no significant differences in terms of wider impacts between the two trip rate assumptions. This is also confirmed at Para 2.28 of Mr Jarvis' rebuttal.
- 3.7 **Appendix REB2 C** provides screen shots of the junctions discussed below, in terms of the development generated traffic distribution (Select Link Analysis) and overall traffic



flows on the network (flows). Further detail is available in the PDF files themselves which form part of the evidence.

- 3.8 The select Link Analysis shows the following:
 - (a) AM Peak traffic from the development split broadly 60 / 40 south and north inbound and the reverse outbound along Pump Lane. The traffic on A2 to the west of Bowaters Roundabout is less generally less than 15 additional vehicles in any one direction. The increase to the east of the roundabout is around 50 eastbound and 60 westbound.
 - (b) PM Peak a similar picture with no material increase in flows on the A2 to the west of the Bowaters roundabout.
- 3.9 Although there are clearly some differences in traffic assignment the broad distribution of traffic within the MAM on the A2 and A289 corridors is comparable to the DTA assignment, as presented on Page 91 of Technical Note 3. The principal difference is that the DTA model has assigned more traffic via Beechings Way, to the west (around 60 movements). The MAM model appears to assign this via either Lower Rainham Road or Bloors Lane, to the A2.
- 3.10 The "V/C sections" plots show the ratio of flow to capacity on links between junctions. For both Scenario 6A, and the reference case, there are no links within the vicinity of the site which worsen. Further, all remain less than 90% - or other words, within capacity. By way of example, the first plate shows the 2028 Reference Case AM peak and the second the Scenario 6A AM peak.







Scenario 6A – AM Peak



- 3.11 It is clear therefore that the MAM modelling confirms my assessment (section 6.6 of my proof of evidence) that there are no link capacity issue arising from the development.
- 3.12 The change in flows on the network once the development is added, is largely immaterial, if not negligible. The overall flows on individual links output from this latest model run are consistent with those presented in Tables 4, 5 and 6 of my evidence. A comparison of Ref 2028 PM, with Scenario 6A PM, for example, shows the only material change in flows occurring to the east of Bowaters Roundabout.
- 3.13 It is apparent from the modelling therefore that the difference of significance between the



parties is in fact the extent to which each modelling approach considers and represents junction capacity.

- 3.14 The MAM output does not disaggregate junction performance, meaning that the precise locations of bottlenecks cannot be identified. It is nonetheless clear that the bulk of queuing on the A2 is related to some suggested shortfall in junction capacity.
- 3.15 Indeed, my proposal in my email of 28th February 2021 to the Council was that comparison of individual junction modelling characteristic should be provided. Yet this has not been made available. It is therefore impossible to determine precisely what the cause of the queuing is, except to say that it cannot be link capacity and must be related to individual junctions.
- 3.16 In my email of 28th February to the Council I also made it clear that in order to provide an appropriate level of comfort on this issue to the inspector the modelling should consider optimisation of the model based on signal timings that I provided, noting that *"Appropriate optimisation of the signal timings may change if the revised MAM model runs change the demand flows at the junction. This effect is characterised as an benefit of the Model in Table 1 of Mr Jarvis' evidence. Therefore, it is appropriate that the LINSIG assessment also considers current MAM flows and if appropriate signal timings - for completeness.*
- 3.17 That has not been undertaken. The MAM model outputs specifically relate to DTA flow forecast derived signal timings.
- 3.18 During our meeting, the Council has also declined to confirm how, or indeed, if, the MAM has optimised signal timings so far. Confirmation remains outstanding. This is important because it is a stated benefit of the MAM that it can dynamically optimise junctions. This is however clearly shown not to be occurring in the model, where flows are in fact reducing (as discussed below) albeit capacity is said to worsen/reduce.
- 3.19 The Inspector is therefore invited to consider the traffic impacts in the light of the conclusions below. These should also be read in the context of my original proof of evidence and rebuttal (save for section 6.4 of my proof of evidence and rebuttal, section



5 - which are now superseded by section 2, above).

Bowater Roundabout

- 3.20 Bowater Roundabout is forecast, in LinSig modelling reported in the TA, to operate within capacity in 2028, with and without the development, with both DTA and MAM traffic forecasts.
- 3.21 The video provided by the Council shows that in both the AM and PM peak, a queue forms from the eastbound approach to Bowaters which ultimately extends past Will Adams roundabout. This is said (page 12) to be caused by a capacity constraint at the signals, but for the reasons discussed below that is not credible.
- 3.22 The length of the queue on Eastcourt Lane is not significantly changed on the video which conflicts with Table 9 of Addendum 3 which shows a change in level of service from D to F.
- 3.23 The MAM further reports queuing arising from the signals at Bowaters Roundabout that is not evident from the LinSig. Given that directly comparable traffic forecasts have been used (i.e. there is no wider reassignment effect) a higher degree of consistency would be expected. As set out in current guidance from the Department for Transport (LTN 1/09), before any reliance can be placed on the outputs of capacity from microsimulation packages at the detailed level they should reviewed at a junction level to reflect the calibration of LinSig:

5.4.1 Multi-purpose microsimulation packages such as VISSIM, Paramics and Aimsun can be used to model signalised roundabouts (Figures 5.1 and 5.2). Using a simulation model based on individual vehicle behaviour, they are capable of modelling a wide range of vehicle and driver characteristics, including pedestrians and cyclists, enabling them to be calibrated to almost any traffic environment or traffic control strategy. However, it must be stressed that accurate calibration is extremely important. Before such models are used to advise on design decisions, their lane utilisation and rate of discharge from signalised and 'give way' stoplines must be calibrated against either measured or estimated values from other



capacity analysis models such as TRANSYT, LinSig, ARCADY or PICADY.

- 3.24 Whilst externalities will be reflected in the traffic flows forecasts (i.e. in terms of throttling upstream) the downstream Tesco toucan crossing in this location was not explicitly represented in the original LINSIG model in the TA.
- 3.25 Extending the model to include this crossing confirms that the crossing does not affect operation reported within the TA. This conclusion is based on the timings being optimised such that the red light to allow pedestrians to cross is triggered (called) during the gaps in opposing traffic when the A2 eastbound traffic is held at the roundabout.
- 3.26 Notwithstanding this the mitigation works to the crossing are proposed to increase exit capacity and enhance the resilience of the crossing to such synchronisation.
- 3.27 To support the further appraisal within MAM, DTA provided LinSig models and drawings of the crossing (Appendix REB2B). The appellant has confirmed the willingness to fund these and the delivery can be secured by planning condition.

		AM	PM		
Node with Junction	Practical Reserve Capacity	Delay (pcuHr)	Practical Reserve Capacity	Delay (pcuHr)	
Twydall Lane Entry	27.9%	8.9	23.5%	8.0	
A2 London Road (E) Entry	43.0%	9.5	46.2%	7.4	
Courtenay Road Entry	55.1%	4.4	32.2%	7.5	
Hoath Way Entry	26.5%	9.2	22.5%	13.6	
Sovereign Road Entry	24.7%	11.3	11.9%	18.2	
Tesco Toucan	52.8%	1.8	71.5%	1.8	

Table 1 Bowater Roundabout LinSig results summary (Scenario 6a)

3.28 Practical reserve capacity is the amount of additional traffic through a signal node whilst maintaining degrees of saturations at individual links of no more than 90%. Delay is the overall delay hence a function of traffic volume.



- 3.29 It can be seen that each node of the junction on approach is operating within capacity (less than 90%) and therefore significant queueing will not occur.
- 3.30 On that basis there is no constraint at the node identified by MAM (Sovereign Road Entry) as it has a spare capacity for at least an uplift of 24.7% in flows.

Yokosoka Way Roundabout

- 3.31 Without mitigation, The Yokosoka Way / Lower Rainham Road roundabout was forecast, in ARCADY modelling reported in the TA, to operate over capacity on Lower Rainham Road in 2028 with the development. To provide for additional capacity on this entry mitigation was proposed to increase the number of entry lanes from one to two.
- 3.32 This would significantly increase capacity and, with the widening to the entry, the modelling in the TA operates within capacity.
- 3.33 The expected level of benefit was not evident from the MAM output. As explained in ID24, the current road markings can result in uneven pattern of demand which can influence whether the available entry capacity is used efficiently.
- 3.34 To address this, the proposed mitigation was refined to ensure that the available entry capacity could be used effectively.
- 3.35 To support the further appraisal within MAM, DTA provided ARCADY models and drawings of the revised layout. A summary of the results is presented in **Table 2** below.



	AM				PM			
	Set ID	Q (PCU)	Delay (s)	RFC	Set ID	Q (PCU)	Delay (s)	RFC
				2018	Base			
A289 Gads Hill		0.7	2.47	0.42		3.6	6.58	0.78
Lower Rainham Road E	D1	1.4	6.71	0.59	2	0.5	5.54	0.35
Yokosuka Way	וט	2.5	6.14	0.72	D2	1.0	3.14	0.49
Lower Rainham Road W		0.6	10.11	0.39		0.2	4.16	0.16
				2029	Base			
A289 Gads Hill		0.9	2.76	0.47		7.8	13.10	0.89
Lower Rainham Road E	50	2.4	9.99	0.71	D4	0.8	7.45	0.45
Yokosuka Way	D3	4.8	10.80	0.83		1.3	3.76	0.57
Lower Rainham Road W		1.4	20.54	0.60		0.3	4.85	0.21
			20)29 Ba	ise+Dev	/		
A289 Gads Hill		1.0	2.92	0.50		15.0	24.45	0.95
Lower Rainham Road E	57	4.6	16.94	0.83		1.2	8.92	0.54
Yokosuka Way	יט	6.8	15.31	0.88	00	1.5	4.13	0.60
Lower Rainham Road W		2.4	36.01	0.73		0.3	5.27	0.22

Table 2 Yokosuka Way ARCADY results summary

- 3.36 Accordingly, the junction will operate within capacity. There will be no material queuing on the Lower Rainham Road approach, with the development.
- 3.37 Notwithstanding this, the Council has not modelled these changes in MAM. The video of the run however fully supports the above assessment given that it shows all traffic trying to use a single approach lane, and this is what causes the lengthening queue on Lower Rainham Road. The proposed mitigation will resolve this. Given the absence of this being run in MAM, the Inspector is invited to agree the Arcady assessment.
- 3.38 The mitigation has been subject to a Road Safety Audit which has identified no issues.
- 3.39 On the basis of the ARCADY modelling the changes are necessary to avoid any material increase in delay on this corridor and reassignment of existing traffic on the local road network. The impact cannot therefore be considered severe.



Will Adams Way Roundabout

- 3.40 As explained in ID24, the current road markings can result in uneven pattern of demand on individual lanes on the approach to the roundabout which reduces entry capacity. This is evident in the existing pattern of queuing on the A2 westbound approach as reported in the TA where there queueing is evident in the off-side lane only.
- 3.41 This situation is replicated in the MAM video runs which show neither of the two nearside lanes in regular use. This effectively throttles capacity at that approach. In the MAM modelling (Appendix REB2C extract) the approach flows on the A2 westbound reduce from 1,636 to 1,515 (i.e. 10% drop) in the AM Peak and yet queuing appears to increase. This is counter-intuitive because the entry capacity has been re-apportioned to meet demand. This casts considerable doubt upon the validity of the output. As set out in para 13 of ID24, the intervention will clearly increase capacity for any given flow forecast at 17% increase.
- 3.42 The proposed mitigation introduces greater flexibility in lane use on the A2 westbound approach by introducing a three-lane circulatory carriageway, matching the three-lane entry and thereby spreading the demand, so aligning the arrangement on the ground with the ARCADY model.
- 3.43 The results of the ARCADY model are summarised in **Table 3** below.



	AM				РМ			
	Set ID	Q (PCU)	Delay (s)	RFC	Set ID	Q (PCU)	Delay (s)	RFC
		2018 Base						
1 - Ito Way		1.4	5.53	0.59		1.8	6.32	0.64
2 - A2 East	ח1	1.9	4.75	0.65	50	2.0	4.49	0.67
3 - Will Adams Way	וט	2.8	13.52	0.74	DZ	2.8	15.04	0.74
4 - A2 West		2.1	5.75	0.68		1.7	5.00	0.63
				2018	Base+I	Dev		
1 - Ito Way		1.7	6.20	0.63		2.0	6.77	0.66
2 - A2 East	D2	2.0	5.12	0.67	D4	2.1	4.66	0.67
3 - Will Adams Way	03	3.3	15.87	0.77	D4	3.5	18.04	0.78
4 - A2 West		2.2	6.09	0.69		1.9	5.52	0.66
				20	029 Base	;		
1 - Ito Way		2.1	7.40	0.68		3.0	9.64	0.75
2 - A2 East	DE	2.8	6.49	0.74	D4	3.1	6.26	0.76
3 - Will Adams Way	05	5.8	28.57	0.86	00	7.5	41.30	0.89
4 - A2 West		3.1	8.06	0.76		2.5	6.91	0.72
				2029	Base+I	Dev		
1 - Ito Way		2.6	8.66	0.73		3.4	10.73	0.78
2 - A2 East	70	3.1	7.22	0.76	00	3.3	6.60	0.77
3 - Will Adams Way	וט	8.1	40.70	0.90	Dδ	12.7	67.86	0.94
4 - A2 West		3.5	8.72	0.78		3.0	7.92	0.70

Table 3 Will Adams Way ARCADY results summary

- 3.44 The modelling demonstrates that the junction will continue to operate within capacity and that there are no significant changes to RFC from the base position.
- 3.45 The proposed works replicate changes to the northern side of the junction and are appropriate to mitigate any impacts.
- 3.46 The revised modelling both in MAM and Arcady confirm that the concerns raised by Mr Rand in his paras 4.21 and 4.22 of his proof of evidence are resolved.
- 3.47 That concern related to a queue on the southern approach (Will Adams Way) but that does not appear in either modelling approach.



Otterham Quay Road

- 3.48 Figures 15 and 16 of Addendum 3 appear to show large delays, not on the A2 but on Moor Park Close. Traffic demand on this arm of the junction is around 8 vehicles per hour in the original DTA surveys and the MAM validation report. In the 2028 reference this increases to over 200 vehicles (and 254 in Scenario 6A).
- 3.49 This significant change is not explained in the modelling report. I assume the change to be in error.

Land off Pump Lane, Rainham Second Rebuttal Proof of Evidence of Simon Tucker BSc (Hons) MCIHT



4.0 Policy Tests and Definition of "Severe"

- 4.1 Section 2 of the Rebuttal set out my views regarding the application of the tests set out in the NPPF in response to those set out by Mr Rand. Two further appeal decisions have been placed in front of the inquiry at ID31.
- 4.2 In APP/A0665/W/19/3220360: Land at The Hollies, School Lane, Hartford, it was concluded that the traffic from a significant residential development would not be severe. In the overall context of the network there would be no significant change in flows (Para 11). The appear also makes reference to a further two appeals which are both also provided within ID31 (APP/A0665/A/12/2179410 & APP/A0665/A/12/2179374).
- 4.3 The Inspector's report refers to both appeals, and considers traffic impact at paras 14.38 14.70. In that case, there was significant congestion on the local network (para 14.41 records queues of up to 120 vehicles). Paragraph 14.55 confirms that an increase in delay on that significant congestion did not amount to a severe impact.
- 4.4 Overall these provide further context to the definition of "severe" as I have set out already in my Rebuttal at Section 2. In that regard therefore the above assessments confirm the overall conclusions of my earlier evidence that the appeal scheme is fully consistent with the requirements of paragraphs 108 / 109 of the NPPF and Policy T1 of the adopted Local Plan in that it provides safe and secure access by all modes, direct access to public transport and local public realm improvements to reduce conflict between vehicles and other road users. The highway safety and traffic impact issues have been fully tested through a comprehensive Transport Assessment, Addendum and Road Safety Audits.
- 4.5 The assessments provide a full appraisal of the significant impacts of the development, as required by Para 108 of the NPPF. That appraisal confirms that all impacts can be cost effectively mitigated to an acceptable degree and that there are no residual cumulative impacts which can be considered "severe". There is no credible, contrary technical evidence before the Inquiry. Nor was there at the time of the determination by the Council of the application.

Appendix REB2 A



Project Name:	Pump Lane, Lower Rainham
Document Reference:	502.0109/MN/1
Document Name:	240221 Meeting Note
Prepared By:	James Rand

1. BACKGROUND

- 1.1 This Meeting Note has been prepared in relation to a planning appeal (ref APP/A2280/W/20/3259868) by A C Goatham & Son pertaining to the site known as Land off Pump Lane, Rainham, Kent.
- 1.2 During the planning inquiry, a proposed inquiry document was tabled by the appellants on 23rd February 2021, titled PUMP ID24 A2 Junction Review. This document contained additional mitigation works put forward by the appellant, and the transport matters relating to the inquiry were adjourned until mid-April. This was in turn because the Council considered that the changes would need to run through their Medway Aimsum Model. 7 so that the implications could be fully understood and assessed.
- 1.31.2 The council have used the Medway Aimsun Model (MAM) to assess the impact of the development. The first time the MAM correctly assessed the submitted application scheme including the submitted access strategy and mitigation was in October 2020 (CD12.10). As a matter of record the very first time the model work properly reflected the access proposals was in CD12.3 received by the appellant on 4th January 2021. To date, all of the assessments completed in the MAM have incorporated That assessment therefore included the mitigation works proposed by the appellant in their Transport Assessment (CD5.25), which for clarity includeds:
 - Alterations to the Lower Rainham Road/Yokosuka Way/Gads Hill roundabout
 - Alterations to the Bloors Lane/A2/Playfootball junction; and
 - Signalised shuttle working on Pump Lane through the tunnel under the railway

1.41.3 Additional mitigation works proposed on 23rd February 2021 The additional mitigation works set out in ID24 were first proposed on 23rd February 2021. The additional mitigation works proposed in ID24-relate to the toucan crossing east of Bowaters Roundabout, and Will Adams Roundabout. In order to understand the impact of these additional mitigation works upon the modelling results, the council need to re-run the assessments using the Medway Aimsun Model.

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1.51.4 To that end, a meeting was held on 24th February, to discuss the details of the Appellant's proposed additional mitigation works, so that they can be accurately incorporated into the new assessment in the MAM. In addition to myself, the following attended the meeting: Simon Tucker, David Tucker Associates (DTA), acting on behalf of the appellant Richard McCulloch, DTA, acting on behalf of the appellant Karl Jarvis, SWECO, acting on behalf of the council Alkis Papadoulis, SWECO, acting on behalf of the council Robert Neave, Medway Council ST began the meeting by requesting clarification of the assumptions in the modelling (with 1.5 Formatted: Heading 2, Numbered List reference to the traffic flow diagrams in CD12.2). He summarised that the model runs show no development traffic on the A2 west of Bowaters but that the model seemed to imply that additional development traffic on Lower Rainham Road was displacing existing traffic from that route to the A2. Medway declined to comment on that. Formatted: Heading 2, Numbered List, Left, Indent: Left: 1.3 cm ST further confirmed the central importance to the public inquiry of understanding what 1.6 Formatted: Heading 2, Numbered List, Left specific issues were highlighted in the model with regard to the locations of where congestion is said to arise. This would, in turn, allow for adequate consideration of all such additional wider mitigation, if and where necessary. The consideration of further possible mitigations with regard to these areas was expressly invited. JR however stated their unwillingness to discuss any mitigation other than that presented in proposed ID24. This approach was objected to by ST. ST's invitation is maintained. The mitigations to be incorporated within the modelling are not confined to proposed ID24, and there is no good reason in the Appellant's view, why they should be so confined, especially given the relevant live issues before the Inspector/SoS. Formatted: Heading 2, Numbered List, Indent: Left: 1.3 cm ST also queried Figure 4 of Mr Jarvis's evidence and asked specifically what impacts could Formatted: Heading 2, Numbered List, Left be determined from viewing the model run videos to establish what key constraints were causing the queuing shown in the MAM output. Mr Jarvis confirmed he had not viewed the model runs themselves and declined to answer. Formatted: Heading 2, Numbered List, Left, Indent: Left: 1.3 cm ST also queried the position relating to Pier Road contributions. RN confirmed that the Formatted: Font: (Default) Calibri Light Council have identified a improvement scheme for Pier Road as an outcome initial local Formatted: Heading 2, Numbered List, Left plan modelling. He also confirmed that had been tested (it is assumed fully) through other Formatted: Font: (Default) Calibri Light modelling undertaken by the Council. ST queried whether it was included in the previous

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Pump Farm model runs and stated that it should be included in the new run if (consistently with the Council's previous draft/s106 returns) it was assumed by Medway to be

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appropriate mitigation. [Post Meeting note – Email from James Rand (25/02/21 @ 09.23 confirmed it had not been included]

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2. AGREED ITEMS

- 2.1 The following matters were agreed during the meeting of 24th February.
- 2.2 The further assessment in the MAM will be undertaken for future years of 2028 (which is the only scenario that the appellant considers appropriate & 2037 (which relates only the current proposed end date for the local plan, albeit the model does not contain any local plan growth), for consistency with the reports produced to date. Overall, four new scenarios will be tested for the AM and PM peak periods, as set out in Table 1.

Scenario	Year of	Trip Rates	Development zone	Centroid
	Assessment		used	Configuration
2a	2037	Strategic Model Trip	Standalone	Two access
		Rates	development zone	points
3a	2037	Developer Trip	Standalone	Two access
		Rates	development zone	points
5a	2028	Strategic Model Trip	Standalone	Two access
		Rates	development zone	points
6a	2028	Developer Trip	Standalone	Two access
		Rates	development zone	points
	Table 1	: Additional Scenarios to b	e modelled in MAM	

- 2.3 ID24 contains two options for a mitigation scheme at the toucan crossing east of Bowaters roundabout, as shown on drawings 20230-16 and 20230-17. DTA will confirm which of the two options they wish to be incorporated into the revised MAM assessment.
- 2.4 DTA also wish to revise the traffic signal timings for the Bowaters roundabout itself<u>as</u> specifically referenced at Para 4 of ID24. - which was not mitigation explicitly contained within ID24.

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- <u>2.5</u> DTA will provide the proposed signal timings for the toucan crossing east of Bowater roundabout, in the form of a LINSIG model, so that it can be incorporated into the further MAM assessment.
- 2.6 DTA requested that existing traffic flow and signal timing data from the MAM model run be provided so that the appropriate junction operation and optimisation could be incorporated in the model. [Medway provided these turning flows on 26/02/21 @ 16.53]
- 2.62.7 DTA will provide the Junctions 9 model of the Will Adams Way roundabout, so that the proposed mitigation works can be incorporated into the further MAM assessment. [This information was provided by DTA on 28/02/21 @ 19.47]
- 2.72.8 DTA will ensure that a Stage 1 Road Safety Audit will be undertaken of <u>any and all the</u> additional mitigation schemes.
- 2.82.9 The council will provide the results of the new assessment in the MAM to the appellants when complete. DTA also requested that these results comprising turning movement flows, signal timing data and details on signal optimisation at each junction for appropriate and comparative review against DTA modelling work.

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Appendix REB2 B

From:	Simon Tucker
To:	James Rand
Cc:	Jarvis, Karl; Papadoulis, Alkis; neave, robert; Duncan Parr; Richard McCulloch
Bcc:	Juan Lopez
Subject:	RE: Pump Lane - Transport - Mitigation
Date:	28 February 2021 19:46:00
Attachments:	image003.png
	image004.png
	Bowaters Roundabout RevG - Split Crossing and Flare.lsg3x
	A2 Ito Way Will Adams Way RevC.i9
	Three Mariners Shuttle RevA.lsq3x
	Otterham Quay Lane A2_RevA.lsq3x
	A2 Bloors Lane signals Mit RevD.lsg3x
	<u>20230-17b.pdf</u>
	<u>20230-10b.pdf</u>
	Lower Rainham A289 Mitigation 20230-10B.j9
	<u>20230-18b.pdf</u>

James,

Thank you for your email.

I will separately forward you a revised version of the meeting note, with track changes, for review, since the first draft received is neither complete nor does it reflect the proposals made to the Council, and questions posed, on behalf of the Appellant.

Model Flows

During our meeting, I confirmed that DTA holds a LINSIG file for the junction. It is attached, as requested. As discussed, the signal timings in the LINSIG have been optimised for the flows that we have, showing the interaction of the pedestrian crossing to the east. These are based on our own

survey and growth assumptions and the 2028 flows provided to us by the Council on 26^{th} Feb 2020 (@ 16.53).

Appropriate optimisation of the signal timings *may* change if the revised MAM model runs change the demand flows at the junction. This effect is characterised as an benefit of the Model in Table 1 of Mr Jarvis' evidence. Therefore, it is appropriate that the LINSIG assessment also considers current MAM flows and if appropriate signal timings - for completeness.

During our meeting you declined to confirm how, or indeed, if, the Model has optimised signal timings so far. This information is however critical to understanding the appropriateness of the impacts the Council contends the Model suggests. It would therefore be of particular assistance to the inspector/SoS if those details are made available for all the junctions the Council suggests are affected. Clearly, in the context of the Bowater's Roundabout and signal crossing, this comparison will be essential in presenting our respective positions following the current model run.

Section 106

During our meeting Mr Neave confirmed that the Council has identified a preliminary improvement scheme for Pier Road as an outcome of initial Local plan modelling. He also confirmed that had been tested through other modelling undertaken by the Council.

In the Appellant's response to the first draft of the S106 (in which the Council included a contribution towards Pier Road) it was reciprocally confirmed that the Appellant would be content to make a reasonable contribution towards those works providing it was modelled. This is recorded in Charlotte Lockwood's (of the Appellant) email of 10th February 2021. Therefore, I request that: (a) a copy of that scheme now be provided, and (b) that this be inclusion within the modelling.

Other Mitigation / Optimisation

As discussed during our meeting, establishing the causality of any of the congestion suggested by the MAM model is unclear, particular given that congestion forecast is in clear conflict with the outputs of our own models.

I therefore attach the junction model files for the following junctions so that you can review the optimisation we consider most appropriate for those given flows. This will allow direct comparison between the models, at junction level:

- Will Adams Way / A2 Junction Arcady model file and Mitigation Scheme (20230-18b).
- A2 Bowaters Linsig model file to provide signal timings and mitigation scheme (20230-17b).
- Lower Rainham Road / Yokosako Way roundabout Arcady model file and Mitigation Scheme (20230-10b).
- Lower Rainham Road Shuttle Working by the Mariners Linsig model file to provide signal timings
- A2 / Otterham Quay Road Linsig model file to show signal timings
- A2 / Bloors Lane Linsig model file to show signal timings.

Outputs from the modelling

As I stated during our meeting, it is my view that the Inspector/SoS would be assisted generally if we could provide an agreed statement on specific junction operation and causality of any queue, so that the specific issues of impact (if any) can be properly understood. I therefore require that the outputs include turning movement and details on signal optimisation at each junction for appropriate and comparative review against DTA modelling work, and an arrange of screen shots (in the same format as Mr Jarvis' Figure 3 / 4) across the peak hours. I suggest every 10 minutes would be appropriate intervals.

Kind regards

Simon Tucker David Tucker Associates Transport Planning Consultants

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From: James Rand <james@paulbashamassociates.com>

Sent: 25 February 2021 09:23

To: Simon Tucker <SJT@dtatransportation.co.uk>

Cc: Jarvis, Karl <Karl.Jarvis@sweco.co.uk>; Papadoulis, Alkis <alkis.papadoulis@sweco.co.uk>; neave,

robert <robert.neave@medway.gov.uk>

Subject: Pump Lane - Transport - Mitigation

Hello Simon,

Please see attached meeting note outlining the agreed items.

I am afraid I do not have Richard's email address, but I would be grateful if you could please confirm DTA's agreement to these notes.

We also agreed to come back to you on a few matters as set out below, which I have kept separate because they weren't agreed during the meeting.

Model flows

The purpose of the adjournment is so that the council can assess and understand the impact of the mitigation proposed in ID24. I presume that you must have modelled this mitigation before submitting it to the inquiry, so please could you provide your LINSIG model of the Bowater roundabout & crossing with signal timings, as they stand?

You requested MAM turn flows at the Bowaters roundabout for 2028, and if I understood correctly, this is to recalculate the proposed signal timings. We can provide the flows, but it will take us a couple of days to produce these from the model – I presume you will also want the equivalent for 2037. We will have these across by the end of this week.

However, I must sound a note of caution – the MAM turn flows are those that make it through the junction, and are thus at least in part influenced by the signal timings. Therefore although we can provide the 2028 turn flows, if you then want to change the signal timings this will impact the turn flows, and so on. I should also say this information would be provided without prejudice to our position that the modelling assessments cannot be mixed and matched.

Ultimately, we need certainty from yourselves on the additional mitigation proposed. For now, we will presume that you wish to use your LINSIG model timings as they stand. If you wish to change the timings, given the time pressures to get this work completed before the inquiry resumes, we need to know <u>by the end of Tuesday 2nd March</u>. Provided this is the case, we will have the revised modelling results ready before Easter to give you and ourselves a chance to consider it in advance of the inquiry resumption on 19th April.

<u>S106</u>

The original draft of the S106 included reference to contributions for local network highway improvement works. This was included in error, and has been removed from the S106. As you will be aware the council is currently developing its local plan, and as part of that work is exploring, at a strategic level, what mitigation options may be required for traffic arising from development sites in the local plan.

For the avoidance of doubt there is <u>no local plan development traffic included in the assessments of</u> the impact of the appeal scheme.

As a result of the adjournment, I am now taking annual leave next week so if you could please ensure all those cc'd are copied into any correspondence, I would be grateful.

Kind regards,

James Rand Principal Transport Planner BSc (Hons) MSc



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Appendix REB2 C

Bowater Roundabout AM peak



Bowater Roundabout PM peak



Yokosuka Way Roundabout AM peak



Yokosuka Way Roundabout PM peak



Will Adams Roundabout AM peak



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Will Adams Roundabout PM peak



Appendix REB2 D

This report sets out the design organisation response to problems raised in the Stage 1 Road Safety Audit carried out by Mott MacDonald (reference 414124 | TPN | ITD | 039 | A, 8th April 2021).

3.1 Yokosuka Way / Lower Rainham Road Roundabout

Ref	Problem	Auditor's recommendation	Designer's Response
No probl	ems identified		

3.2 A2 London Road Toucan Crossing

Ref	Problem	Auditor's recommendation	Designer's Response
3.2.1	Existing ADS may restrict forward visibility to nearside traffic signals	It is recommended that both ADS are appropriately positioned so that they do not impede forward visibility to the nearside traffic signals whilst being suitably located to provide lane choice guidance for motorists approaching the roundabout.	Accept problem and recommendation.
5.2.2	vegetation and street furniture may lead to conflicts.	street furniture items are offset a minimum of 450mm from the realigned kerblines.	recommendation.
3.2.3	Unclear construction method may result in inappropriate drop from footway / cycleway.	It is recommended that a review of the gradient of the embankment provided between the widened carriageway and existing footway is undertaken with the view to introducing measures such as a level margin and suitably graded slope or, if this cannot be provided, segregation such as pedestrian guardrail to prevent falls into the carriageway.	Accept problem and recommendation. At detailed design the gradients will be reviewed, and guardrail provided if required.
3.2.4	Existing footway / cycleway associated with current crossing position should be removed.	It is recommended that the existing footway / cycleway links leading to the current Toucan Crossing are removed.	Accept problem and recommendation. Redundant footway will be reinstated as verge.
3.2.5	Traffic signal loops associated with Bowater Roundabout located at proposed crossing position.	It is recommended that the impact the proposed crossing location has on the Bowater Roundabout signals is assessed and the design modified if necessary.	Accept problem and recommendation. The operation of the crossing in conjunction with the roundabout has been assessed.
3.2.6	Level difference between carriageway and adjacent footways / cycleways.	It is recommended that the gradient of the footway / cycleway links is no greater than 1 in 12 and that level landings are provided either side of the proposed crossing.	Accept problem and recommendation. As noted by audit this is an existing issue that will be improved.

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3.3 Will Adams Roundabout

Ref	Problem	Auditor's recommendation	Designer's Response
3.3.1	Lack of 'confirmation' carriageway arrow markings may lead to collisions.	It is recommended that 'confirmation' carriageway markings are provided on the southern circulatory carriageway. It would also be beneficial to refresh all existing markings.	Accept problem and recommendation.
3.3.2	Proposed lane arrangement on widened circulatory carriageway may result in inappropriate swept path movements at the roundabout.	It is recommended that swept path analysis is undertaken for this junction to demonstrate that the proposed arrangements can accommodate anticipated vehicle types. If this is not possible, the geometry of the southern side of the roundabout should be modified accordingly.	Accept problem. This is no different to the existing configuration irrespective of the lane markings. Here the short flare does not allow three large vehicles to enter the circulatory concurrently.
3.3.3	Existing carriageway arrow markings require amendment.	It is recommended that the carriageway arrow markings on the A2 London Road Westbound entry are appropriately modified to provide consistency with the other proposed changes.	Accept problem and recommendation.