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Technical Note

East Hill, Hempstead Valley

17-035-009 Rev A

Transport Assessment Addendum

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1 Introduction

1.1 Overview

1.1.1 This Transport Assessment Addendum (TAA) has been prepared by Charles & Associates Consulting Engineers Ltd (C&A) on behalf of FD Attwood and Partners in support of the planning application (Ref: MC/19/0765) relating to the proposed development of Land at East Hill, Chatham, Kent. The development proposals comprise a residential led development of circa 800 dwellings and a 2 form-entry primary school off North Dane Way in Hempstead Valley, Medway; as presented in the preferred options for the emerging Medway Local Plan.

1.1.2 This TAA should be read in conjunction with the Transport Assessment (TA), C&A Report No: 17-035-005, which was submitted in support of the application. The TA gave due consideration to the travel Implications of future residents, school users and employees within the proposed development and the anticipated traffic impact the proposals would have on the local highway network.

1.1.3 Medway Council (MC) acts as the local highway authority (LHA) with responsibility for the majority of the roads in the area. This report addresses the post application consultation comments predominantly from the LHA.

1.2 Consultation Responses

1.2.1 The comments received from MC were provided at a meeting held at MC's offices on 11th December 2019 and subsequent emails from MC officers. The minutes of the meeting are provided at Appendix A for reference.

1.2.2 The comments received are summarised below and these have been addressed in the following chapters of this report:

1. Justification/confirmation of assessment methodology using Medway AIMSUN forecast transport model;
2. School trip generation in the AM peak;
3. Request for additional junction assessments at:
   - Princes Avenue / Prince Charles Avenue junction; and
   - Princes Avenue / Dargets Road junction;

1.2.3 In addition, further to comments received from Highways England (HE) the following has also been addressed:

4. Junction Geometry input to Arcady Junctions 9 for the A2045 / Fostington Way junction.

2 Traffic Impact Assessment Methodology

2.1 Overview

2.1.1 As presented in the TA, the assessment of the traffic impact of the development proposals on the surrounding highway network has been based upon comparative outputs from MC's AIMSUN forecast traffic model. This outline methodology was indeed suggested by and agreed with MC during pre-application discussions.

2.1.2 MC's consultant Sweco UK Ltd were instructed by the applicant to undertake the modelling work to ensure independence in the process and in order to take advantage of their experience in the modelling work being undertaken on behalf of MC. The forecast scenarios for the horizon year 2035 which were used in the assessment are set out below:

- Do Minimum – incorporates growth associated with a potential LP strategy and no transport infrastructure;
- With Development – as per the Do Minimum scenario above + the East Hill development proposals and associated link road and access junction improvements;

2.1.3 The relative traffic impact of the development proposals was assessed through forecast junction assessments at key junctions on the surrounding highway network using turning movement outputs from the 2035 Do Minimum and With Development AIMSUN model scenarios as the demand inputs to the individual junction models.

2.2 Justification

2.2.1 Within email correspondence from MC Highways Officer some clarification and explanation has been sought with regards to specific outputs from the AIMSUN model. During the post application meeting on 11th December 2019 (Item 3), it was confirmed that subject to justification of the adopted methodology (to be set out in a formal submission), MC is content that use of the Medway Strategic AIMSUM model is appropriate in this case.

2.2.2 The forecast Do Minimum model, developed by Sweco on behalf of MC, was understood and agreed (between MC and the applicant) to represent a potential spatial strategy for development allocations sites within the emerging Local Plan for Medway. However, given the early stage and unpublished nature of the emerging Local Plan it was not possible for the applicant to be aware of the details of the potential LP strategy included in this scenario. As such it was only possible to provide the details of the proposed development and associated highways infrastructure to be added to the Do Minimum scenario to form the 'With Development' scenario.

2.2.3 Given the nature of the assessment methodology, as suggested by MC during pre-application discussions i.e. the applicant not being aware of the full input parameters to the forecast models and essentially having to take the outputs at face value, it is not possible to provide detailed explanation of the subsequent outputs from the model.

2.2.4 Notwithstanding the above, however, following the concerns raised by MC, Sweco were requested by the applicant to undertake a review of strategic modelling outputs provided to ensure they were accurate. Following this, C&A undertook a review of the traffic demand inputs to each of the individual junction assessments. The outcome of these reviews indicated that there were no significant concerns and therefore it is considered that the local network assessments have been developed in an appropriate manner.

2.2.5 Further dialogue with MC highlighted that there were some specific detailed concerns raised by HE with respect to the forecast AIMSUN transport model. These specific concerns were reviewed in the context of their potential implications to the assessment in the East Hill TA. The review concluded that they would be non-material in terms of the assessment of the relative impacts of the development proposals.

2.2.6 Furthermore, the nature of the assessment methodology adopted, i.e. taking into consideration the full impact of the emerging Local Plan, despite its unpublished status and the limited weight that should therefore be applied, has been considered in the context of relevant national policy and planning guidance.

2.2.7 Para 49 of the NPPF clearly defines that the allocations within a Local Plan only need to be considered when the plan is at an advanced stage. Furthermore, the Planning Practice Guidance for Travel Plan, Transport Assessments and Statements provides unambiguous guidance on consideration of cumulative impact, stating as follows:

'It is important to give appropriate consideration to the cumulative impacts arising from other committed development (ie development that is consented or allocated where there is a reasonable degree of certainty will proceed within the next 3 years). At the decision-taking stage this may require the developer to carry out an assessment of the impact of those adopted Local Plan allocations which have the potential to impact on the same sections of transport network as well as other relevant local sites benefitting from as yet unimplemented planning approval.'

2.2.8 Given the above it is considered that the applicant has sought to provide a cumulative assessment of the Local Plan and the proposed development, over and above what is required in national planning policy and guidance, and as far as reasonably practical. As such we propose that the modelling undertaken to date is appropriate and robust for the purposes of assessing the impact of the East Hill development proposals.

3 School Trip Generation

3.1 Overview

3.1.1 MC identified a concern that the AM peak trip generation relating to the proposed primary school within the development may have been underestimated.

3.1.2 In response to this a sensitivity test has been carried out to assess a set of alternative assumptions, as suggested by MC, in regard to the school trip generation as set out below.

3.2 Assumptions

3.2.1 As has been previously discussed in the TA, the AIMSUM strategic model for Medway has been used for the purposes of the initial assessment, using development trip generation as an input and assigning those trips within the functions of the strategic model.

3.2.2 The trip generation assumed in the original submission involved 66 arrivals and 50 departures attributed to school activity in the AM, which were inserted into the model and distributed accordingly.

3.2.3 Medway council after reviewing those numbers requested a further assessment that would incorporate:

- 40% of the 241 pupils external to the development that would travel by car – based on the travel data of the existing school. This translates to a total of 96 school arrivals and departures in the AM peak period; and
- 20 school trip arrivals in the AM that can be attributed to school staff.

3.2.4 These assumptions result in an anticipated trip generation of 116 and 96 for AM school arrivals and departures respectively. The revised primary school trips have been distributed using a manual exercise to assign the additional 50 and 46 arrival and departure trips to the network.

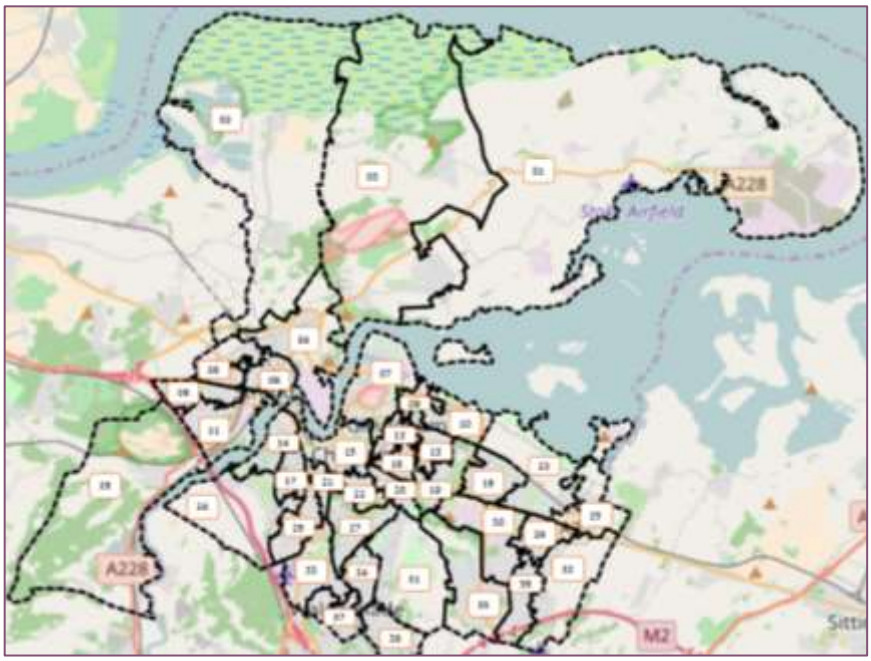
3.2.5 Revised junction assessments, using the sensitivity test flows, have been provided where considered necessary using the Junctions 9 and Linsig models as built for the purposes of the original assessment (as described in the TA).

3.2.6 For distribution purposes, Medway's population split was used for the output areas east of the Medway river (Table 3.1, Figure 3.1).

Table 3.1 - Medway Population by Output Area

Output Area	Population	%
E02003320 : Medway 007	8258	4%
E02003322 : Medway 009	6975	3%
E02003323 : Medway 010	7265	4%
E02003325 : Medway 012	7000	3%
E02003326 : Medway 013	7787	4%
E02003327 : Medway 014	7314	4%
E02003328 : Medway 015	8279	4%
E02003329 : Medway 016	6656	3%
E02003330 : Medway 017	6755	3%
E02003331 : Medway 018	8789	4%
E02003332 : Medway 019	6002	3%
E02003333 : Medway 020	6704	3%
E02003334 : Medway 021	5961	3%
E02003335 : Medway 022	7135	4%
E02003336 : Medway 023	5856	3%
E02003337 : Medway 024	7061	3%
E02003338 : Medway 025	7030	3%
E02003339 : Medway 026	6277	3%
E02003340 : Medway 027	7792	4%
E02003342 : Medway 029	6270	3%
E02003343 : Medway 030	5954	3%
E02003344 : Medway 031	7022	3%
E02003345 : Medway 032	5903	3%
E02003346 : Medway 033	6228	3%
E02003347 : Medway 034	6228	3%
E02003348 : Medway 035	8003	4%
E02003349 : Medway 036	7478	4%
E02003350 : Medway 037	6291	3%
E02003351 : Medway 038	7901	4%
Total	202174	100%

Figure 3.1 - Medway Output Areas



3.2.7 The resultant distribution proportions are shown in Figure 3.2 and the resultant distribution of the additional school trips to allow for the assignment of vehicles on the network is shown in Figure 3.3. The total 2035 AM Peak Sensitivity Test scenario flows are shown in Figure 3.4.

3.3 Junctions Assessments

3.3.1 In order to determine which junctions require an updated assessment the additional flows shown in Figure 3.3 were reviewed. The following junctions have been assessed for the 2035 AM Peak Sensitivity Test scenario:

- Junction 1 – High Street/A2 Chatham Hill/Magpie Hall Road Roundabout
- Junction 2 – A2/Luton Road Signalised Junction
- Junction 3 – A2/Ash Tree Lane/Canterbury Street Signalised Junction
- Junction 4 – A2/Courteney Rd/Hoath Way/Twydall Ln Signalised Rdbt
- Junction 5 – Luton High St/Capstone Rd/Street End Rd Proposed Mini-Rdbt
- Junction 6 – North Dane Way/Capstone Road Roundabout
- Junction 7 – Ash Tree Lane/Beacon Road Priority Junction
- Junction 8 – Capstone Road/Ash Tree Lane Roundabout
- Junction 9 – Pear Tree Lane/Hempstead Road Proposed Signals
- Junction 10 – Hoath Way/Hempstead Road Roundabouts
- Junction 11 – North Dane Way/Lords Wood Lane Priority Junction
- Site Access - East
- Site Access - West
- Site Access - South

3.3.2 All results are provided below, while full Junctions 9 and Linsig reports are included in Appendix B.

Table 3.2: J1 - High Street/A2 Chatham Hill/Magpie Hall Road Roundabout

Arm	RFC	Queue (PCU)	Delay (s)
Do Minimum AM			
High Street (NW)	0.77	3.6	23.23
Chatham Hill (E)	1.51	450.8	1155.57
New Road (W)	0.53	1.1	4.02
With Development (TA) AM			
High Street (NW)	0.70	2.5	18.10
Chatham Hill (E)	1.43	371.3	925.60
New Road (W)	0.54	1.2	4.10
With Development (Sensitivity) AM			
High Street (NW)	0.71	2.6	18.51
Chatham Hill (E)	1.44	377.4	939.45
New Road (W)	0.54	1.2	4.12

Table 3.3: J2 – A2/Luton Road Signalised Junction

Arm	DoS	Queue (PCU)	DoS	Queue (PCU)	DoS	Queue (PCU)
	Do Minimum AM		With Dev (TA) AM		With Dev (Sensitivity) AM	
A2 Chatham Hill (E)	66.6%	13	65.5%	12	65.5%	12
A2 Chatham Hill (W)	65.4%	8	63.6%	8	65.0%	8
Luton Road	66.2%	7	64.1%	7	64.7%	7

3.3.3 As can be seen from the assessment results presented in Table 3.2 and Table 3.3 above, the conclusions on the performance of Junctions 1 and 2, although slightly worse under the sensitivity flows, remain slightly better than the Do Minimum scenarios.

3.3.4 Junction 3, as shown in Table 3.4, operates slightly worse in the sensitivity scenario than it does in the With Development one, with the sensitivity results being at comparable levels to the operation of the junction under the Do Minimum flows.

Table 3.4: J3 – A2/Ash Tree Lane/Canterbury Street Signalised Junction

Arm	DoS	Queue (PCU)	DoS	Queue (PCU)	DoS	Queue (PCU)
	Do Minimum AM		With Dev (TA) AM		With Dev (Sensitivity) AM	
Ash Tree Ln	121.2%	64	118.9%	62	121.6%	68
A2 Rainham Rd	39.6%	8	41.5%	9	41.5%	9
Canterbury St	45.5%	7	43.5%	6	44.3%	6
A2 Watling St	94.9%	16	94.2%	16	94.2%	16

3.3.5 The sensitivity test results for Junction 4 (Table 3.5) indicate that, as with Junctions 1 and 2, the junction operates slightly worse than under the original With Development scenario, but overall slightly better than the Do Minimum scenario.

Table 3.5: J4 – A2/Courteney Rd/Hoath Way/Twydall Ln Signalised Rdbt

Arm	DoS	Queue (PCU)	DoS	Queue (PCU)	DoS	Queue (PCU)
	Do Minimum AM		With Dev (TA) AM		With Dev (Sensitivity) AM	
A2 Sovereign Blvd	88.2%	14	87.9%	14	88.0%	14
Twydall Ln	173.7%	108	159.9%	89	160.7%	90
A2 London Rd	150.4%	142	149.2%	139	150.0%	141
Courteney Rd	48.6%	3	53.3%	3	53.3%	3
Hoath Way	148.1%	238	145.9%	223	146.3%	225

3.3.6 The proposed arrangement at junction 5 (Table 3.6), performs slightly worse in the sensitivity test than both the original With Development and the Do minimum scenarios, although still within capacity.

Table 3.6: J5 - Luton High St/Capstone Rd/Street End Rd Proposed Mini-Rdbt

Arm	RFC	Queue (PCU)	Delay (s)
With Development (TA) AM			
Luton High Street (N)	0.59	1.5	8.21
Capstone Road (SE)	0.82	4.4	46.54
Street End Road	0.59	1.5	9.20
With Development (Sensitivity) AM			
Luton High Street (N)	0.60	1.6	8.55
Capstone Road (SE)	0.87	5.7	57.39
Street End Road	0.60	1.5	9.53

3.3.7 Both Junctions 6 and 7 (Table 3.7 and Table 3.8 respectively) indicate greatly improved performance in both the original and sensitivity With Development scenarios than in Do Minimum, with the sensitivity results slightly worse than the original ones, as expected, but well within capacity.

Table 3.7: J6 - North Dane Way/Capstone Road Roundabout

Arm	RFC	Queue (PCU)	Delay (s)
Do Minimum AM			
Capstone Road (SE)	0.86	5.9	23.52
North Dane Way (S)	0.78	3.6	9.85
Capstone Road (NW)	0.26	0.4	7.99
Capstone Green Access (NE)	0.14	0.2	9.65
With Development (TA) AM			
Capstone Road (SE)	0.42	0.8	5.64
North Dane Way (S)	0.45	0.8	3.87
Capstone Road (NW)	0.21	0.3	4.64
Capstone Green Access (NE)	0.08	0.1	5.73
With Development (Sensitivity) AM			
Capstone Road (SE)	0.43	0.8	5.73
North Dane Way (S)	0.46	0.9	3.94
Capstone Road (NW)	0.22	0.3	4.75
Capstone Green Access (NE)	0.08	0.1	5.81

Table 3.8: J7 - Ash Tree Lane/Beacon Road Priority Junction

Arm	RFC	Queue (PCU)	Delay (s)
Do Minimum AM			
Beacon Road	0.83	4.1	77.62
Ash Tree Lane (N)	0.66	3.7	13.36
With Development (TA) AM			
Beacon Road	0.56	1.3	29.10
Ash Tree Lane (N)	0.56	2.8	9.68
With Development (Sensitivity) AM			
Beacon Road	0.57	1.3	30.50
Ash Tree Lane (N)	0.57	2.9	9.85

3.3.8 As can be seen from Table 3.9, the assessment results of Junction 8 indicate a significant improvement in both the With Development scenarios when compared to the Do Minimum, with the sensitivity test results being slightly worse than the results of the original assessment.

Table 3.9: J8 - Capstone Road/Ash Tree Lane Roundabout

Arm	RFC	Queue (PCU)	Delay (s)
Do Minimum AM			
Darland Farm Private Road	0.00	0.0	0.00
Capstone Road (S)	1.51	322.8	1412.18
Capstone Road (W)	1.22	109.8	476.37
Ash Tree Lane	1.31	103.7	689.49
With Development (TA) AM			
Darland Farm Private Road	0.00	0.0	0.00
Capstone Road (S)	0.97	14.1	68.71
Capstone Road (W)	0.72	2.5	17.13
Ash Tree Lane	0.97	14.5	77.00
With Development (Sensitivity) AM			
Darland Farm Private Road	0.00	0.00	0.00
Capstone Road (S)	0.98	16.1	76.56
Capstone Road (W)	0.72	2.5	17.48
Ash Tree Lane	0.99	17.2	88.05

3.3.9 The results of the proposed signalisation designed to mitigate the capacity issues at Junction 9 (Table 3.10) indicate that, despite the sensitivity scenario performing marginally worse than the original, both With Development scenarios operate well within capacity.

Table 3.10: J9 – Pear Tree Ln/Hempstead Rd Proposed Signalised Junction

Arm	DoS	Queue (PCU)	DoS	Queue (PCU)
	With Dev (TA) AM		With Dev (Sensitivity) AM	
Pear Tree Lane	77.7%	17	78.8%	18
Hempstead Rd (W)	79.1%	8	79.1%	8
Hempstead Valley Drive	38.9%	2	39.9%	3
Hempstead Rd (W)	64.1%	11	65.2%	11

3.3.10 Junction 10 (Table 3.11) operates slightly worse in the sensitivity scenario than the original With Development scenario, although it maintains the improvement Do Something scenario introduced when compared to the Do Minimum, with low levels of queues and delays for all junctions.

Table 3.11: J10 - Hoath Way/Hempstead Road Roundabouts

Arm	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)	Queue (PCU)	Delay (s)
	Do Minimum AM		With Dev (TA) AM		With Dev (Sensitivity) AM	
West: Hoath Way (E)	0.5	2.80	0.4	2.67	0.4	2.74
West: Hempstead Road (S)	0.7	4.65	0.7	4.54	0.9	4.71
West: Ambley Road (N)	0.1	2.81	0.1	2.71	0.2	2.75
Centre: Hoath Way (E)	1.1	10.61	1.2	9.14	0.9	8.77
Centre: Hoath Way (S)	2.0	4.62	1.6	4.40	1.8	4.37
Centre: Hoath Way (W)	1.0	6.06	0.7	4.94	0.7	5.30
Centre: Hoath Way (N)	1.4	2.81	1.3	2.49	1.3	2.60
East: Hoath Lane (S)	0.5	4.56	0.5	4.94	0.5	4.90
East: Hoath Way (W)	0.4	4.65	0.4	4.62	0.3	4.39
East: Courteney Road (N)	0.1	3.24	0.1	3.36	0.1	3.47

3.3.11 In regards to Junction 11, it can be seen from Table 3.12 that, although the sensitivity results are marginally worse than the originally submitted ones, the junction operates well within capacity.

Table 3.12: J11 - North Dane Way/Lords Wood Lane Priority Junction

Arm	RFC	Queue (PCU)	Delay (s)
Do Minimum AM			
Lords Wood Lane Left Turn	0.37	0.6	10.09
Lords Wood Lane Right Turn	0.31	0.4	16.22
N Dane Way	0.28	0.4	8.61
With Development (TA) AM			
Lords Wood Lane Left Turn	0.63	1.7	17.64
Lords Wood Lane Right Turn	0.35	0.5	21.94
N Dane Way	0.38	0.6	10.18
With Development (Sensitivity) AM			
Lords Wood Lane Left Turn	0.64	1.8	18.19
Lords Wood Lane Right Turn	0.36	0.5	22.56
N Dane Way	0.39	0.6	10.36

3.3.12 Similar conclusions with Junction 11 can be drawn for the eastern site access (Table 3.13), at the existing Pear Tree Lane / Capstone Road intersection.

Table 3.13: Eastern site access

Arm	RFC	Queue (PCU)	Delay (s)
Do Minimum AM			
New Link Road	0.00	0.0	0.00
Capstone Road (N)	0.67	2.0	6.52
Pear Tree Lane	0.66	2.0	8.24
Capstone Road (S)	0.57	1.4	9.15
With Development (TA) AM			
New Link Road	0.00	0.0	0.00
Capstone Road (N)	0.61	1.6	7.16
Pear Tree Lane	0.75	3.0	12.15
Capstone Road (S)	0.91	8.7	32.04
With Development (Sensitivity) AM			
New Link Road	0.00	0.0	0.00
Capstone Road (N)	0.62	1.6	7.44
Pear Tree Lane	0.77	3.3	13.01
Capstone Road (S)	0.93	10.6	38.18

3.3.13 Both west (Table 3.14) and south (Table 3.15) accesses operate well within capacity in both With Development scenarios, with sensitivity scenario results slightly worse than the results originally submitted in the TA.

Table 3.14: Western site access

Arm	RFC	Queue (PCU)	Delay (s)
With Development (TA) AM			
New Link Road	0.45	0.8	4.21
North Dane Way (S)	0.36	0.6	3.62
Princess Avenue	0.56	1.3	4.94
North Dane Way (N)	0.24	0.3	3.23
With Development (Sensitivity) AM			
New Link Road	0.47	0.9	4.35
North Dane Way (S)	0.37	0.6	3.69
Princess Avenue	0.56	1.3	5.07
North Dane Way (N)	0.26	0.4	3.30

Table 3.15: Southern site access

Arm	RFC	Queue (PCU)	Delay (s)
With Development (TA) AM			
North Dane Way (N)	0.35	0.5	5.31
Site Access	0.37	0.6	7.02
North Dane Way (S)	0.77	3.2	12.49
With Development (Sensitivity) AM			
North Dane Way (N)	0.35	0.6	5.35
Site Access	0.37	0.6	7.06
North Dane Way (S)	0.77	3.3	12.72

3.3.14 In summary, it is considered that the impact of the additional school trips on the network is minimal and that the conclusions reached in the TA remain unchanged.

4 Additional Junction Assessments

4.1 Introduction

4.1.1 Further to the junctions already assessed for the purposes of the TA, MC required an assessment of the impact of the development on the following junctions:

1. The mini roundabout at Princes Avenue / Prince Charles Avenue; and
2. The priority junction of Princes Avenue / Dargets Road.

4.1.2 These assessments have been carried out with the use of the Arcady and Picady functions of Junctions 9 software respectively. The junction assessment output reports are contained within Appendix B for reference.

4.2 Assessment Results

4.2.1 Both Junctions have been tested under the 2035 Do Minimum and 2035 With Development flows. It should be noted that the With Development AM Peak scenario flows used are derived from the Sensitivity Test scenario, as described in Section 2 of this report, for consistency. The With Development PM scenario remain as presented in the submitted TA. For consistency in the naming of the scenarios of the two peaks, they are both referred to as With Development (Sensitivity).

4.2.2 Table 4.1 below presents the results of the assessment of Princes Avenue / Princes Charles Avenue mini Roundabout.

Table 4.1: J22 - Princes Avenue / Princes Charles Avenue Mini-Roundabout

Arm	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
	Do Minimum AM			Do Minimum PM		
Prince Charles Avenue	0.33	0.5	10.80	0.92	7.9	68.20
Princes Avenue (S)	0.73	2.7	15.35	0.79	3.7	21.26
Princes Avenue (N)	0.85	5.4	29.10	0.71	2.5	15.35
	With Development (Sensitivity) AM			With Development (Sensitivity) PM		
Prince Charles Avenue	0.43	0.7	12.29	1.17	48.0	288.86
Princes Avenue (S)	0.88	6.6	32.62	0.85	5.4	28.92
Princes Avenue (N)	0.92	8.8	48.77	0.78	3.5	20.81

4.2.3 The results indicate that the performance of Junction 22 is worse under the With Development (Sensitivity) flows than it is in the Do Minimum scenarios, with the junction operating over capacity on the Prince Charles Avenue arm in the PM peak.

4.2.4 As such it was considered necessary to identify an improvement scheme at this junction to mitigate the impact of the development. A scheme has been identified which is discussed in greater detail in the following section.

4.2.5 Regarding the Princes Avenue / Dargets Road Priority Junction, the results (Table 4.2) show that the junction operates slightly worse in the With Development (Sensitivity) scenario than in the Do Minimum in the AM, but well within capacity, while in the PM the junction operates at capacity under the Do Minimum flows, experiencing an improvement for the Dargets Road arm and a minor worsening for the Princes Avenue south arm.

Table 4.2: J23 - Princes Avenue / Dargets Road Priority Junction

Arm	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
	Do Minimum AM			Do Minimum PM		
Dargets Road	0.59	1.4	18.28	0.74	2.6	39.32
Princes Avenue (S)	0.42	1.2	8.04	0.99	27.6	80.87
	With Development (Sensitivity) AM			With Development (Sensitivity) PM		
Dargets Road	0.59	1.5	19.43	0.54	1.2	23.15
Princes Avenue (S)	0.43	1.4	7.72	1.04	46.8	130.27

4.3 Proposed Junction Mitigation Measures

4.3.1 As identified in the previous section of the report, the junction of Princes Avenue/Prince Charles Avenue has been forecast to operate over capacity in 2035 with the proposed development in place during the weekday PM peak. A proposed improvement scheme has been developed which introduces traffic signal control at the junction as shown in Drawing 17-035-027 contained in Appendix C.

4.3.2 The proposal comprises single lane approaches on each of the arms of the junction and retains the existing pedestrian crossing facility on the Princes Avenue (S) arm. The traffic signal arrangement comprises of 3 stages with a maximum cycle time of 120 seconds.

4.3.3 A junction capacity assessment has been undertaken based upon the revised junction arrangement using LinSig industry standard software which is summarised in Table 4.3 below. The full LinSig assessment output report is also contained in Appendix C.

Table 4.3: J22 - Princes Avenue / Princes Charles Avenue Proposed Signals

Arm	DoS	Queue (PCU)	DoS	Queue (PCU)
	With Development (Sensitivity) AM		With Development (Sensitivity) PM	
Prince Charles Avenue	81.2%	8.2	98.5%	26.5
Princes Avenue (S)	81.4%	21.6	98.3%	31.5
Princes Avenue (N)	81.0%	20.0	81.3%	19.2

4.3.4 The assessment of the proposed signal controlled junction arrangement indicates that the junction would operate within capacity during both the AM and PM peak periods.

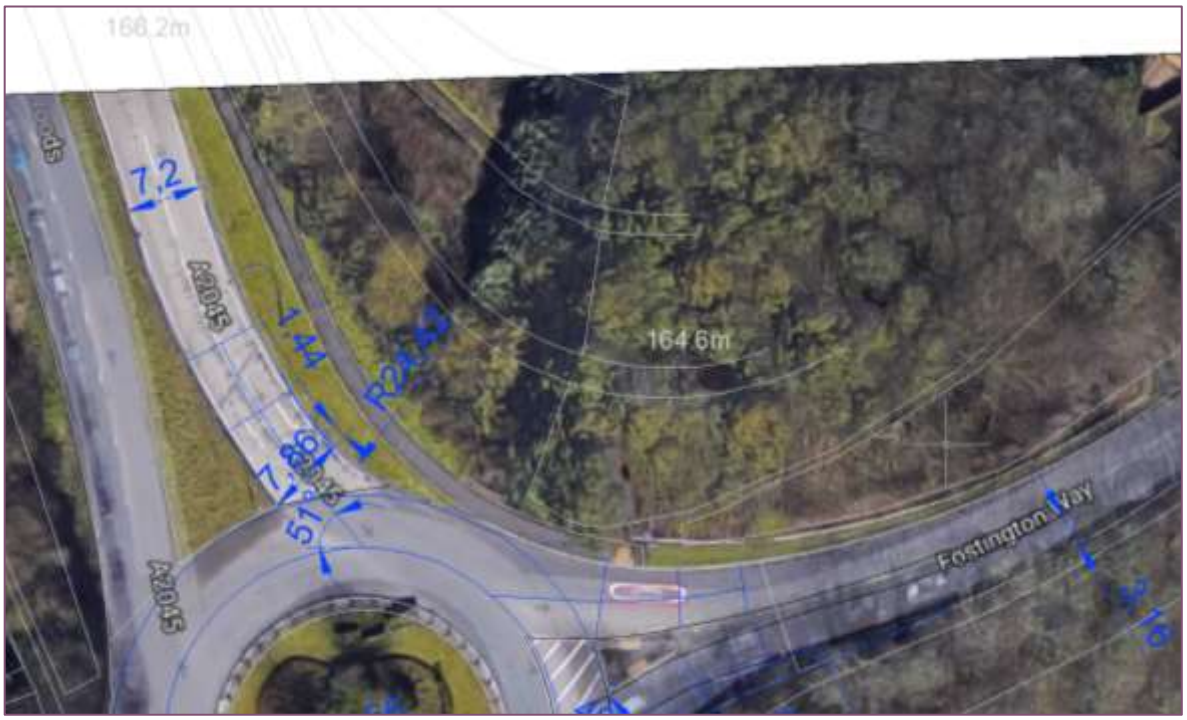
5 Junction Geometry - A2045 / Fostington Way Junction

5.1.1 In response to comments from HE regarding the geometry measurements used for the modelling of the roundabout of A2045 / Fostington Way, C&A has undertaken a review of the input parameters to the Arcady model.

5.1.2 The comments received in regard to A2045 / Fostington Way Junction were as follows:

1. The entry width entered for the A2045 north arm may be over-estimated slightly;
2. The approach road half widths on the A2045 north and Fostington Way east arms may be over-estimated a little.

Figure 5.1 – Geometry measurements – OS map with overlaid google earth image



5.1.3 Having reviewed the geometry measurements obtained from OS mapping and checking these have been input correctly, it is maintained that the geometry inputs used for the purposes of the TA are appropriate and fit for purpose, as shown in Figure 5.1 above.

6 Summary

6.1 Summary

6.1.1 This Transport Assessment Addendum (TAA) has been prepared by Charles & Associates Consulting Engineers Ltd. on behalf of FD Attwood and Partners, in support of the planning application (Ref: MC/19/0765) relating to the proposed residential development of land at East Hill located in the Hempstead Valley, Medway.

6.1.2 The TAA responds to formal post application consultation comments from MC, in the capacity of the local highway authority, during a meeting held in December of 2019 as well as subsequent post application discussions.

6.1.3 The note addresses the key issues identified either through the provision of additional data or clarification of information in the original TA.

6.1.4 The fundamental concerns from MC related to 3 main subjects: the suitability of the assessment methodology adopted in the TA, the school trip generation and the additional assessment of two junctions, not included in the initial submission. Moreover, the geometry measurements of the A2045 / Fostington Way roundabout were reviewed, and justification presented in this report.

6.1.5 Within section 2, the adopted assessment methodology by use of the MC's AIMSUN forecast traffic model, has been discussed and justified. The output flows of the strategic model, as well as the input flows of the junction assessment models, were reviewed and were no significant concerns were raised, while the assessment methodology adopted has also been considered in the context of relevant national policy and planning guidance. Overall, it was concluded that the modelling undertaken to date is appropriate and robust for the purposes of assessing the impact of the East Hill development proposals.

6.1.6 In response to the school trip generation comments, a sensitivity test scenario has been derived based upon anticipated AM school arrivals and departures, as discussed with MC. For consistency this sensitivity test scenario has been used throughout this TAA, including in the assessment of additional junctions requested by MC. The impact of the development within the sensitivity test scenario is assessed within section 3. This concludes that the net impact of the development on the network will be either offset by the proposed mitigations or negligible.

6.1.7 The assessment of the additional junctions, as requested by MC, is presented in section 4 of this TAA. This has highlighted capacity concerns at the junction of Princes Avenue/Prince Charles Avenue for which a mitigation scheme is required. A proposed scheme has been identified which comprises a traffic signal controlled arrangement. A capacity assessment of the proposed arrangement indicates that the junction would operate within capacity during weekday peak periods in the 2035 With Development scenario.

6.1.8 A review of the geometry measurements of the A2045 / Fostington Way junction can be found in section 5, demonstrating the suitability of the parameters used.

6.1.9 In summary, it is considered that this TAA addresses the key concerns of the relevant planning authority through the provision of additional information/clarification or through revised traffic impact assessment within a sensitivity test scenario. As such it is concluded that there are no sound reasons for refusal of the proposed development on highways and transport grounds.

Figures

Appendix A Minutes from Meeting with MC

Appendix B Junction Assessment Reports

Appendix C Princes Ave/Prince Charles Ave – Proposed Arrangement Drawing & Capacity Assessment