

Maldon Local Development Plan Examination

Chelmsford City Council Hearing Statement to Matter 2

Representation Reference: 0145-5274-S2

Response to Question 1

1. Chelmsford City Council (CCC) submitted a representation to the Pre-Submission consultation with respect to Policy S2 (Strategic Growth) and its supporting text (Ref: 0145-5274-S2). The substance of the representation was that the 2012 Strategic Housing Market Assessment (SHMA) may indicate that the Local Development Plan (LDP) could be under-providing affordable housing. Further clarification on this matter was sought.
2. Maldon District Council (MDC) has subsequently published additional evidence on housing need within the District (Refs: EB010f, EB010g and CED10 – Appendix 1a and 1b). These provide CCC with further clarification on Maldon's affordable housing need. As such, this Council does not wish to pursue this representation or participate in the Hearing Session on this question.

Response to Question 19

This should be read in conjunction with Chelmsford City Council's Hearing Statements in respect of Matters 1, 3, 4 and 10.

Summary

3. Chelmsford City Council's (CCC) submitted a representation to the Pre-Submission consultation with respect to Policies S2, S4 and their supporting text (Ref: 0145-5273-S2-12). The substance of the representation was that the planned growth in Maldon could have a significant and detrimental impact upon the road network in Danbury. However, the full effects of the proposed developments and mitigation measures remained unclear given a lack of published traffic surveys, modelling and capacity analysis. As such, the technical highways work supporting the two strategic allocations at Maldon and Heybridge was not considered complete. In the absence of comprehensive highways evidence, CCC's concerns regarding the potential impact from these developments on the Eves Corner junction and Well Lane mini-roundabout and potential mitigation measures could not be effectively addressed.
4. This evidence base has now emerged¹ and through continued and active engagement with MDC and Essex Highways, CCC is now satisfied that the LDP evidence supporting Policies S2 and S4 in respect of transportation implications on the A414 through Danbury is complete, robust and that potential impacts and mitigation measures have been adequately assessed. However, CCC maintains that the evidence base demonstrates that the potential traffic impacts are likely to be severe through the Eves Corner junction following Maldon's developments and with pre-signals mitigation in place. CCC does agree that the potential impact on the Well Lane junction could be acceptable with the implementation of a priority junction.

¹ EB004d, Eves Corner Traffic Flows (the basis of Appendix 3) and LINSIG data (extracts provided in Appendix 4)

5. CCC therefore maintains its representation to the LDP with respect to these Policies and that Policy S2 does not effectively address cross-boundary highways issues at Eves Corner junction in Danbury arising from the proposed strategic allocations. These concerns are of a technical nature and relate to the content of the LDP. They are not objections under the Duty to Co-operate.

Background and History

6. Prior to the Pre-Submission consultation, CCC had raised concerns that Maldon's emerging LDP could have potential traffic impacts on the A414 through Danbury. The chronology and nature of CCC's concerns to the emerging LDP and the work undertaken by Essex Highways on behalf of MDC to overcome these is documented in the Duty to Co-operate Compliance Statement (Ref: SD06) and Position Statement DOC100 (and its emerging update in January 2015).
7. In 2013, CCC's response to the Draft LDP (in Appendix 1) continued to highlight concerns that the A414 through Danbury is already congested during peak periods and that this could be further exacerbated post-development to the detriment of Chelmsford residents. Furthermore, CCC requested further traffic studies to be undertaken looking at the wider implications of MDC's strategic allocations.
8. CCC's Pre-Submission LDP representation (summarised in paragraph 3) reflects its previous LDP consultation remarks and requests. It was accompanied by a highways study commissioned by CCC.
9. Following the provision of further data by Essex Highways, CCC commissioned an additional Study. This is referred to in DOC100², its emerging update³ (January 2015) and was submitted to MDC in October 2014.
10. CCC considers that the LDP evidence base pre-signals at Eves Corner junction appear preferable to no pre-signals. However, even with their implementation by 2026 with the LDP in place, queuing along the A414 in peak periods would be significantly worse than at present. The plans in Appendix F of Appendix 2 of this Hearing Statement estimate that queues could stretch to Oak Corner roundabout in the AM peak and Danbury Palace in the PM peak. CCC accepts that when the capacity analysis shows that an arm of a junction is over capacity, the queue length predictions may become unreliable. However, it does provide a measure of the extent of the queuing and is a useful indicator for comparison purposes.

Current Position

11. CCC has reviewed the latest transport and access evidence in EB004d, Eves Corner Traffic Flows (basis of Appendix 3⁴) and LINSIG data (extracts in Appendix 4) provided by Essex Highways. CCC acknowledges that the data forming appendices 4 and 5 was provided in good faith in order to help CCC and its traffic consultant better understand the position and to try and reach agreement ahead of the Examination. CCC and its traffic advisor have reviewed the data and assessed whether it would enable the City Council to remove its concerns. Regrettably this is not the case.

² Page 3, paragraph 4b

³ Paragraph 2a)

⁴ Please note that CCC has added column totals and included a key to the spreadsheet

12. CCC's current position is set out in the following section (and summarised in the emerging update to DOC100).

Eves Corner Junction

13. CCC considers that Table 4-1 of EB004d demonstrates that the A414 arms of the Eves Corner junction currently operate over capacity at peak periods. This results in significant congestion and delays for drivers. In the AM Peak period, the Ratio of Flow to Capacity (RFC) is 1.47 on A414 East with a Queue length of "150+". The actual queue length prediction is given as 243 passenger car units (PCUs) in Table 4.1 of Essex Highways December 2013 report (Ref: EB004b). In the PM peak period, the RFC on A414 West is 1.38 again with a queue length of "150+" (Table 4-1 of EB004c). CCC notes that the actual predicted figure is given as 169 in Table 4-1 of EB004b.
14. It is not understood why the arbitrary figure of "150+" is used in Tables 4.1 and 4.2 of EB004d when the actual theoretical queue lengths are given in an earlier published report (EB004b). The significant increase in the RFC's (for the ARCADY analysis for the current layout) and the Degrees of Saturation (for the Pre-Signals LINSIG analysis) results in substantial increases in the predicted queue lengths which is not reflected by stating only "150+". As already indicated, the queue length predictions, whilst not being entirely accurate, do provide a measure of the extent of the queuing and is, therefore, a useful indicator for comparison purposes.
15. Based on data in appendix 3, in 2026, the developments at Heybridge and Maldon would add a total of approximately 390 additional PCUs per peak hour through Eves Corner junction. In particular, in the AM peak hour, there would be an increase of 280 PCUs on the A414 from the east approaching Eves Corner. This is around a 28% increase over the current flows on this approach or around a 25.8% increase over the predicted base 2026 flows without the development. In the PM peak hour, there are predicted to be 256 additional PCUs leaving the junction on the A414 towards the east. This represents an increase of 29.6% over existing flows and 26.7% over the base 2026 flows without the LDP strategic housing proposals.
16. Post-development in the LDP, traffic impacts at Eves Corner junction are likely to be significant. Tables 4-1 and 4-2 of EB004d indicate that these impacts could at best be reduced through the installation of pre-signals but would not be satisfactorily resolved. Using the figures from the Pre-Signals analysis in Table 4.2 of EB004d, there is predicted to be around a 25% increase in the 2026 Degree of Saturation as a result of the development traffic in the AM Peak on the A414 east of Eves Corner. Table 4.2 only stipulates a Queue length of 150+ in both situations. However from the LINSIG analysis (Appendix 4) provided to CCC this shows that the theoretical queue lengths would increase from around 180 passenger car units (PCUs) i.e. around a queue length around 1,080 metres, to around 340 PCUs (over 2,050 metres) i.e. over an 85% increase in queuing.
17. In the PM Peak, on the A414 west of Eves Corner, the Table 4.2 figures for the Degree of Saturation show a predicted increase of around 22% with the development generated traffic added resulting in an increase in queuing from around 115 PCUs (690 metres) to over 230 PCUs (1,400 metres) – a doubling in the theoretical queue length (see Appendix 4). In reality, once the predicted traffic generation occurs with the resultant severe implications on the capacity at Eves Corner (even with the Pre-signals in place), then this would result in peak spreading as well as traffic trying to find an alternative route resulting in a significant increase in rat running within the Danbury area.

18. Given the above, CCC considers that the level of development traffic associated with the LDP strategic sites is anticipated to result in a severe impact on performance of the Eves Corner junction (particularly the A414 arms) that cannot be adequately mitigated. Traffic queuing through this junction in peak periods could be notably worse than at present by 2026 when the LDP developments are in place and with a pre-signals arrangement.
19. CCC notes that the latest indicative cost of installing pre-signals is estimated to be around £280,000 (paragraph 4.3 of EB004d). This is significantly higher than the £120,000 preliminary estimate contained in paragraph 4.6 of EB004b. CCC is unclear why the proposed cost has substantially increased and has not seen an explanation for the increase.
20. For clarification, CCC does not support a staggered priority junction or signalised crossroads at Eves Corner junction. CCC agrees with Essex Highways that a priority junction could cause significant delays on Mayes Lane and Little Baddow Road in peak periods (see Table 4-2 and paragraph 4.4 of EB004b). This could have a major adverse impact on local residents who use these minor roads who could find it almost impossible to access the A414 (paragraph 4.2 of EB004d). CCC considers that a signalised junction would be an unacceptable urban option which would be wholly inappropriate within a rural village context. This option is not also preferred by Essex Highways for a number of technical issues and potential significant cost (paragraph 4.5 of EB004b).

Well Lane mini-roundabout

21. CCC considers that Table 5-1 of EB004d indicates that the current layout of Well Lane mini-roundabout means that it currently operates over capacity at peak periods. This results in congestion and delays. In the morning peak period, the RFC is 1.0 with a predicted queue length of 25 PCUs (or 150 metres) on the A414 East. Further, during the PM peak period, the RFC is 1.22 with a predicted queue length of 127 PCUs (or 760 metres) on the A414 West.
22. Based on figures in Appendix 3, post-development would add approximately 250 additional vehicles in the AM Peak hour on the A414 westbound through the mini-roundabout. This represents around a 23% increase over the current flows in this direction or around 21% increase over the predicted base 2026 flows. In the PM peak hour, there are predicted to be around 195 additional PCUs at the Well Lane mini-roundabout on A414 towards the east. This represents around a 23% increase over the current flows in this direction or around 21% increase over the predicted base 2026 flows.
23. Given the above, CCC considers that the level of development traffic associated with the LDP strategic sites is therefore anticipated to result in a major adverse impact on the performance of the A414 arms of the Well Lane mini-roundabout. Table 5-2 of EB004d indicates that whilst not a perfect solution, a priority junction could adequately mitigate this impact. CCC therefore agrees with Essex Highways that a priority junction should be taken forward as a potential mitigation measure for the LDP development (paragraph 5.5 of EB004d) as part of a package of measures for Danbury.
24. Overall the City Council considers:

- That the potential highways implications of the proposed growth in the LDP in Chelmsford have been adequately assessed through the various studies undertaken by Essex Highways (on behalf of MDC) and by CCC (Refs: EB004a-d)
- Although there are some differences in the methodology and transport assumptions used to underpin the Essex Highways and CCC commissioned studies (e.g. growth in car ownership) there are no outstanding strategic cross-boundary highways matters that require further appraisal. This includes a Danbury 'rat-running' study. CCC has relied on the LDP transport and access evidence base and Essex Highways baseline data sets to assess the impacts on the road network through Danbury.
- The proposed mitigation measure of pre-signals at Eves Corner junction is the only option for reducing the potential significant traffic impacts post-development in the short-term. A staggered priority junction or full signalisation would not be appropriate and potential longer-term solutions (e.g. new junction along the A12) would be far beyond the reasonable scope of the current LDP, and
- That the potential impact of development on the Well Lane mini-roundabout could be acceptable with a priority junction in place. CCC therefore supports this proposed mitigation measure in principle although notes that it would not be a perfect solution as it could cause significant delays along Well Lane in the AM peak (Table 5-2 of EB004d). Therefore CCC specifically requests that it be identified as a Section 106 requirement of strategic sites S2 (a) and S2 (d) in the LDP to ensure its implementation.

25. Notwithstanding the above, CCC remains of the view that the level of development traffic associated with Maldon's strategic sites through Danbury is anticipated to result in a severe adverse impact at the Eves Corner junction that cannot be effectively mitigated through pre-signalisation. This is considered contrary to paragraph 32 of the National Planning Policy Framework (NPPF) which explains that development should only be prevented or refused where the residual traffic impacts are severe. Whilst this is subject to interpretation, CCC considers that the residual impact (post pre-signals mitigation) as assessed is likely to be severe. This, in the view of CCC, does not represent a sound LDP.

Conclusion

26. CCC's current position is based on information and reports provided by Essex Highways, which it considers provides a reliable evidence base. CCC also considers that use of the LDP transport and access evidence base (rather than its own highways studies which predict a worse situation) is a reasonable to take.

27. It is from this highways analysis that MDC have come to the conclusion that the potential LDP cross-boundary highways impacts on the A414 through Eves Corner junction can be adequately mitigated with pre-signals. CCC disagrees and instead considers that the highways impacts post-development and with pre-signals mitigation would be severe, contrary to the NPPF.

28. CCC remains of the view that MDC has failed to put in place within the LDP suitable long-term traffic mitigation for Eves Corner in Danbury. Significant congestion through Danbury could have serious implications for the residents and businesses using the A414 (as noted in CCC's representation 0145-5273-S2-12). Congestion could result in peak spreading and increase rat-running around the Danbury area.

29. On this basis, CCC considers that as it stands Policy S2 fails the soundness criteria of being positively prepared, justified or consistent with national policy as it does not effectively address cross-boundary traffic issues in Danbury. Specifically it fails to

overcome the highway impacts arising from the proposed strategic housing allocations along the A414 at Eves Corner junction. It also fails to include proposals for mitigation measures necessary at Well Lane mini-roundabout. These concerns relate to the content of the LDP and are not objections under the Duty to Co-operate.

30. CCC considers that there is no simple solution to addressing CCC fundamental concerns regarding Eves Corner junction. One option could be for MDC to re-consider the LDPs current distribution of major growth and explore locating more of its strategic housing developments in other parts of the District, in order to reduce the traffic impact on Eves Corner junction. CCC regrets that such changes would undoubtedly require the recommendation of Major Modifications which could significantly delay or even halt the progress of the LDP.
31. If the Inspector finds that the LDP is sound in this respect, CCC requests that Policies S2, S4 and I1 and Table 1 specifically require pre-signals at the Eves Corner junction and a priority junction at Well Lane mini-roundabout to be a Section 106 requirement of these strategic sites. These changes could be accommodated more readily into the LDP and would ensure that these highway mitigation measures in Danbury are a requirement of the planning permission and the financial contributions are ringfenced for this specific use. Please refer to this Council's hearing statement on Infrastructure for further details (Matter 10).

Chelmsford City Council 9.1.15
2840 words

Appendices

- Appendix 1 CCC's representation to the Draft LDP
- Appendix 2 Maldon Local Development Plan – Additional Statement Considering the Essex Highways 'Technical Note – Impact of Proposed Development Sites in Heybridge and South Maldon on Wider Highway Network' Dated December 2013 in relation particularly to the A414 through Danbury (Rowland Bilisland Traffic Planning Ltd, September 2014).
- Appendix 3 Summary of Calculations of Design Year Traffic Flows for Eves Corner (Based on Essex Highways File "Eves Corner Traffic Flows - Base 2026.xlsx" received by CCC from ECC in June 14)
- Appendix 4 Extracts from Eves Corner LINSIG Base, Essex Highways, 2014

Appendix 1

Maldon District Council Draft Local Development Plan Consultation **2014-2029**

Please find below Chelmsford City Council's response to Maldon District Council's Draft Local Development Plan consultation.

The City Council supports Maldon District Council's (MDC) vision to grow sustainably to meet objectively assessed housing needs over the Plan period. The City Council, therefore, supports the increase in the proposed number of new dwellings from 3,000 to 4,410 to meet this need. However, the City Council notes that the Spatial Vision states that:

"Growth will be concentrated in the most sustainable, accessible and appropriate locations taking into account constraints and the need to protect valued local countryside."

The City Council would like to focus on the issue of constraints and the concerns that it has on the location and distribution of housing across Maldon District.

Impacts on the Highway Network

Policy S4 – 'Maldon and Heybridge Strategic Growth' is a new policy which reflects changes set out in Policy S2. These changes include an increase in the number of dwellings to the south of Maldon from 1,250 to 1,830. One of the requirements of Policy S4 is that development can be accommodated within the capacity of the Maldon and Heybridge road network and junctions. Essex Highways has already indicated that both Maldon and Heybridge have highway capacity issues and that mitigation measures are required, including improvements to the following junctions;

- A14/Spital Road roundabout
- A14/Limebrook Way roundabout
- A14 Oak Corner junction

The City Council would like further details of these junction improvements and the benefit of these junction improvements to the highway network, in particular traffic flow to and from Chelmsford and Maldon. Of particular interest are the improvements to the A14 Oak Corner junction.

'An Assessment of Impact of Proposed Development Sites in Heybridge, South Maldon and Burnham-on-Crouch on Highway Network' was prepared by MDC in May 2013. Section 8 of this report acknowledges that a large proportion of highway demand in morning and evening peaks is between Chelmsford and Maldon, along the A14 through Danbury. The report goes further to state that by virtue of the

planned development at Maldon and Heybridge, the increase in traffic along this route is likely to be significant. The demand on the A414 Chelmsford Road westbound at the Oak Corner junction is predicted to increase by 34% in the AM peak which, as the report acknowledges, is concerning given that the A414 in Danbury is already congested in the morning peak. Conversely, in the PM peak, Maldon-bound flows are predicted to increase by 36% on Chelmsford Road. Similar to the AM peak, the Chelmsford Road trips will have to negotiate Danbury and its congested thoroughfare prior to accessing the Oak Corner junction. This includes the already very busy Eves Corner roundabout. It is evitable that this junction will be impacted upon by reason of MDC's proposed growth, yet no mitigation measures have been put forward to alleviate the potentially significant traffic and congestion problems that will occur. Although, given the existing land constraints at this junction, it is a question whether mitigation is in fact possible.

Section 8 of the report also indicates that there will be an increase in demand along the B1019 which connects to the B1137 and the A12 at Hatfield Peverel. Westbound towards Hatfield Peverel, traffic is predicted to increase by 33% in the AM peak. This increase also has implications for Chelmsford as it is likely to result in an increase in traffic along the B1137 through Boreham - this route is notoriously used as a 'rat run' into Chelmsford.

In addition to the above, the increase of development in Maldon and Heybridge raises concerns that there may be more pressure on the new railway station to the North East of Chelmsford. This may attract more traffic to the area and there is concern that the capacity of the wider road network has again not been fully considered. This matter should be factored into further traffic modelling, taking account of the proposed usage of this new station from both Chelmsford residents (factoring in the major growth proposed to the North East of Chelmsford) and surrounding residents from Maldon and Braintree districts.

Conclusion

It is evident that the planned growth at Maldon will have a significant and detrimental impact upon Chelmsford's road network, yet MDC has not put forward any specific mitigation measures to solve the significant traffic flow and congestion issues that will occur. Instead the traffic studies undertaken by MDC to support their Spatial Strategy are completely localised and do not take into account the wider implications the proposed growth of Maldon District will have upon the neighbouring districts of both Chelmsford and Braintree. The City Council considers that it is imperative that wider traffic studies are undertaken to identify the traffic impacts MDC's Draft Local Plan will have upon Chelmsford's road network and that appropriate mitigation measures to overcome and avoid identified adverse impacts are included within their Local Plan. This may include highway improvements within the boundaries of Chelmsford City. The relevant traffic studies which Chelmsford City Council feel are necessary should be undertaken and made available prior to the next round of public consultation on MDC's Local Plan proposed in November 2013.

The City Council considers that the improvement of major highway routes both in and around Maldon District is an integral part to the successful delivery of MDC's

growth strategy. Any failure to recognise and mitigate the potential highway impacts of MDC's planned growth on the residents of Chelmsford will result in the City Council objecting to MDC's Spatial Strategy.

Yours sincerely,

Derek Stebbing

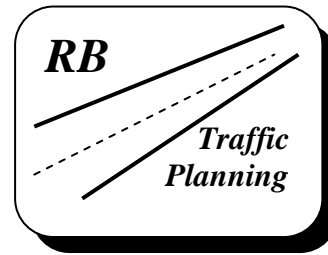
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Appendix 2

Rowland Bilisland Traffic Planning

Highway and Traffic Planning Consultants

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MALDON LOCAL DEVELOPMENT PLAN

ADDITIONAL STATEMENT CONSIDERING THE IMPACT OF THE PROPOSED DEVELOPMENT SITES IN HEYBRIDGE AND SOUTH MALDON IN RELATION PARTICULARLY TO THE A414 THROUGH DANBURY

ADDITIONAL STATEMENT ON BEHALF OF CHELMSFORD CITY COUNCIL

SJB/AR/14010
September, 2014
14010mlp2

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0.0 EXECUTIVE SUMMARY

- 0.1 Additional information has now been provided by Essex Highways relating to the design year flows for 2013, 2026 base flows and 2026 with the proposed LDP developments.
- 0.2 A queue length survey has been undertaken on 4th June 2014 in the AM peak period on the A414(E) approach to Eves Corner from the Maldon direction. This has shown that a queue of 800 metres was observed.
- 0.3 Further, a survey of the puffin crossing to the east of the junction has shown that, in the peak hour, it operates only 19 times in the hour.
- 0.4 Traffic growth factors used by Essex Highways in their preparation of the Eves Corner 2026 flows have been considered and are felt that they are not sufficiently robust. Essex Highways have used the same growth factors for Danbury as for Maldon.
- 0.5 Once again, no consideration or traffic assessment has been provided in relation to the A414/Well Lane mini-roundabout. This is of concern based on the traffic queuing that occurs back from this junction particularly in the PM peak period. This is before any background traffic growth or the traffic from the LDP proposals are added.
- 0.6 LINSIG analysis has been undertaken on the proposal for Pre-Signals on the side roads at Eves Corner. This analysis concludes that there is a benefit of providing the Pre-Signals as soon as possible. The analysis shows that the traffic queuing in the base 2026 situation, without the LDP development, would be similar to the current queuing conditions based on the existing layout.
- 0.7 Once the additional traffic generated by the proposed LDP developments are added, then the predicted queuing becomes extensive. However, with the Pre-

Signals, the queuing is not as extensive as it would be without them in operation but it would still be significant.

- 0.8 All the possible solutions for Eves Corner are likely to have significant queuing through Danbury in 2026 with the LDP development. However, it has been proposed that £900,000 (including land take) is spent on reducing a significantly less queuing problem at Oak Corner whilst the more serious problems in the centre of Danbury are not having a more extensive solution proposed.
- 0.9 The signalled crossroads option at Eves Corner appears to have the least queuing associated with it with the LDP proposals in place but has been dismissed as needing some land and having some possible technical issues. It is concluded, therefore, that this solution should be considered in depth further and the potential for a more comprehensive solution established.

1.0 INTRODUCTION

- 1.1 Rowland Bilslund Traffic Planning Limited are instructed by Chelmsford City Council to consider the highway and traffic aspects associated with the traffic information and documentation provided by Essex Highways in support of the proposed developments as part of the Maldon Local Development Plan.
- 1.2 A statement was prepared by Rowland Bilslund Traffic Planning Limited dated 26th February, 2014 titled 'Statement Considering the Essex Highways "Technical Note - Impact of Proposed Development Sites in Heybridge and South Maldon on Wider Highway Network" dated December, 2013 in Relation Particularly to the A414 Through Danbury' in which comments were made regarding additional information and analysis being required.
- 1.3 Further brief site visits have been made since that Statement and at the beginning of June, 2014, a formal queue length survey was undertaken on the A414 (east) approach to Eves Corner. Details of the subsequent site visits and queue length survey are given in Section 2 of this document.
- 1.4 Chelmsford City Council requested, and have subsequently received, additional data/information relating to the turning flows at the A414 Eves Corner Junction in Danbury. Comments on this additional information are made in Section 3 of this document.
- 1.5 As part of the February, 2014 Statement, comment was made in relation to the lack of analysis of the Essex Highways preferred scheme of Pre-Signals being provided at the Eves Corner junction.
- 1.6 It is understood that Essex Highways still have not undertaken any analysis in relation to this and so, in Section 4 of this statement, details are provided relating to preliminary LINSIG analysis of the potential Pre-Signals proposed.

1.7 Finally, Section 5 of this statement provides further comments in relation to the highway and traffic aspects of the proposed Heybridge and South Maldon development proposals before the summary and conclusions being provided in Section 6.

2.0 DETAILS OF FURTHER SITE VISITS AND QUEUE LENGTH SURVEYS

2.1 Following the submission of the previous statement at the end of February, 2014, further brief site visits to the Danbury area have taken place during the peak periods. These visits did not involve detailed timings etc., but were a "spot check" on four separate occasions - two in the morning peak and two in the afternoon peak period. Below is a summary of these site visits.

Tuesday, 4th March 2014 - 07.45 hours

2.2 The back of the westbound queue on A414 travelling towards Eves Corner from the east was around 100 metres beyond the junction with Cherry Garden Lane i.e., a queue length of around 950 metres. Traffic was slow moving and took approximately 5 minutes to reach Eves Corner. Traffic on the side roads at Eves Corner ie Little Baddow Road and Mayes Lane, was present but no queues were observed.

2.3 The queue back from the Well Lane mini-roundabout junction, for traffic travelling from the east, was approximately 200 metres but moved relatively quickly.

Wednesday, 9th April 2014 - 17.25 hours

2.4 Two separate queues were observed on A414 between A414/A12 junction and Eves Corner. Firstly, there was a slow moving queue towards Danbury the back of which was approximately 300 metres to the east of the Hulls Lane junction with A414 - approximately 1.5 kms back from the Well Lane mini-roundabout.

2.5 Beyond Well Lane the traffic moved freely until the back of a queue from Eves Corner which stretched around the double bend to approximately 400 metres to the west of the Eves Corner mini-roundabouts.

Wednesday, 14th May 2014 - 08.10 hours

2.6 The westbound queue on A414 east of Eves Corner was beyond the Tesco Express garage approximately 800 metres back from Eves Corner with a time of 4

minutes 45 seconds to move forward to the mini-roundabouts. The westbound queue, to the east of Well Lane, was only back around 100 metres and dispersed relatively quickly.

Thursday, 29th May 2014 - 17.45 hours

- 2.7 The slow moving queue was effectively back to the A12 junction from Well Lane mini-roundabout - approximately 2 kms. It took about 4 minutes to reach Well Lane mini-roundabout. The queue back from Eves Corner was around the double bend to outside the Griffin Public House, approximately 500 metres again taking a further 3½ minutes to reach the double mini-roundabout.
- 2.8 This is a total of approximately 8 minutes travelling time from the A12/A414 junction to Eves Corner (including travelling from Well Lane mini-roundabout to the back of the queue from Eves Corner). In free flowing conditions, this same journey would take around 4 minutes.

Queue Length Survey

- 2.9 In the information and documentation provided by Essex Highways, no formal details have been provided for the length of the queue on A414 east of Eves Corner in the morning peak period. As their surveys were undertaken by cameras they unfortunately could not observe the queue beyond the first 100 metres once it had built back past the bend adjacent to the Bakers Arms Public House.
- 2.10 Therefore, a formal queue length survey was undertaken on Wednesday, 4th June, 2014, between 07.00 to 10.00 hours, by an independent survey company. They observed the queue lengths with two observers throughout the period and recorded the distance from the give-way line at the first mini-roundabout (with Little Baddow Road) to the back of the queue. Please see Appendix B for a summary of the results of this survey.
- 2.11 From the survey results, it can be seen that the maximum queue length observed was 800 metres at 07.41 hours. The peak period of queuing was between 07.35 to 07.45 hours when the queuing was between 560 metres and 800 metres.

- 2.12 Due to the location of the Puffin crossing located approximately 25 metres to the east of the mini-roundabout give-way line, the frequency of operation of the Puffin crossing and the number/direction of pedestrians using the crossing was also observed. Please see Appendix C for a summary of the Puffin crossing data.
- 2.13 From the observations made there were a total of 27 pedestrian crossing from south to north and 24 pedestrians crossing from north to south during the 3 hours period of the survey. This averages out at 9 pedestrians per hour and 8 pedestrians per hour, respectively. This is very low pedestrian use. The peak hour for pedestrians was between 08.00 to 09.00 hours with a total of 29 pedestrians per hour two-way.
- 2.14 In terms of the activation of the Puffin crossing, this operated a total of 37 times during the 3 hours period of the survey with a peak of 19 times during the peak hour of 08.00 to 09.00 hours.

3.0 COMMENTS ON LATEST INFORMATION PROVIDED BY ESSEX HIGHWAYS

- 3.1 Chelmsford City Council requested further information from Essex Highways in relation to the turning movements at the double mini-roundabout at Eves Corner. Also, information relating to the ARCADY analysis that had been undertaken by Essex Highways for Eves Corner was also requested. Subsequently, turning flows for 2013, 2026 without development and 2026 with development were provided for Eves Corner. Also, information was provided of how the predicted figures for the Maldon area were calculated.
- 3.2 The information provided by Essex Highways provides the growth factors they have used for Maldon between 2010 and 2026 for the AM and PM peaks. Background traffic growth is due to both local and national trends e.g. population growth, Gross National Product (GNP), vehicle ownership, general housing growth in an area etc. It varies by region, area, town/city etc. and the normal method of calculating it is by using the TEMPRO programme.
- 3.3 In the calculations provided by Essex Highways, there is a comment on each of the growth figures which states "With 800 houses removed from planning considerations". This has subsequently been confirmed by Essex Highways that 800 houses have been removed from the planning assumptions within the TEMPRO growth calculations to avoid double counting development when the background growth was calculated.
- 3.4 Whilst this is accepted as a basis of growth assumptions, there are a couple of points to make. In TEMPRO, calculations can be based on areas/towns within a local authority district, borough etc. Calculations are also based on planning assumptions for an area as well as car ownership, economic activity and other relevant factors to that area.
- 3.5 Therefore, if the basic traffic growth factors from TEMPRO are considered for Maldon and Danbury, they can be established as follows:-

	<u>AM Peak</u>	<u>PM Peak</u>
Maldon - Maldon	1.0944	1.1454
Chelmsford - Danbury/Little Baddow	1.1489	1.1654

- 3.6 The above figures have not been adjusted in any way e.g., to allow for planning assumptions. They are just the average of the basic Production/Attraction figures obtained from the TEMPRO program. Please see Appendix D for details of the basic growth factors obtained from the TEMPRO programme.
- 3.7 However, this shows that basic traffic growth predictions for the Danbury area are higher than for the Maldon area i.e., in the AM peak Maldon basic growth is 9.44% whereas for the Danbury area it is 14.89% and in the PM peak 14.54% for Maldon and 16.54% for the Danbury area. In the Essex Highway's assessment of Eves Corner, the same Maldon growth rates have been used for the assessment.
- 3.8 Secondly, in the assumptions made by Essex Highways for Maldon it is assumed that they have removed 800 houses as part of the planning assumptions. With the growth factors used for the assessment of Eves Corner, it is again assumed that the Maldon growth factors, including the reduction of all 800 houses, should be used. Obviously, not all traffic from the 800 houses will pass through Danbury as it is distributed on the road network around the Maldon area.
- 3.9 Therefore, by reducing the growth factors used in the Danbury assessment by the same 800 dwellings, the growth rates are again lower than they should be as only a proportion of the traffic generated by the LDF proposals will distribute through Danbury. It is assumed in the growth factors that all 800 dwellings have been removed from the planning assumptions.
- 3.10 Thus, in conclusion, the assumptions on growth used by Essex Highways are believed to be underestimated firstly, by not considering the appropriate growth in the Danbury area and also by removing all the assumed reduction of 800 houses. In reality, only a proportion of the traffic generated by these dwellings will actually pass through Danbury. The trip generations and proposed development

traffic passing through Danbury has been proportioned but in terms of the basic traffic growth assumptions this has not been correctly established.

- 3.11 Therefore, in the subsequent Essex Highways assessment of the capacity of Eves Corner, the traffic growth has been underestimated and so the predicted design flows, and subsequent capacity calculations, are also an underestimate.
- 3.12 Information has still not been provided in relation to the existing A414/Well Lane mini-roundabout even though, from site observations, significant queues (albeit mostly slow moving) occurs particularly in the PM peak period. It appears that no surveys - neither traffic nor queue length, have been undertaken and no ARCADY assessment of the junction has been carried out.
- 3.13 The queuing that occurs at the Well Lane mini-roundabout at present is what has been observed in 2014. Thus, the slow moving queues occur now even before traffic growth to 2026 is added to the existing flows. Therefore, this queuing is only going to get significantly worse.
- 3.14 Further, with the significant additional amount of traffic generated by the proposals in Maldon that will pass along the A414, this junction will only get worse in terms of traffic congestion/queuing but no assessment of the existing situation, or the 2026 situation, appears to have been considered.

4.0 ANALYSIS OF PRE-SIGNALS PROPOSAL AT EVES CORNER

- 4.1 In the document "Wider Impacts Study - December, 2013" prepared by Essex Highways, consideration was given to various options for possible solutions to the Eves Corner junction. Capacity analysis for the 2026 with development in place situation was undertaken by Essex Highways for the existing double mini-roundabout layout, staggered priority junction and a signalised crossroads arrangement.
- 4.2 Details were also given on the potential Pre-Signals option including a plan of the potential arrangement. However, no capacity analysis of the Pre-Signals proposed was undertaken.
- 4.3 Therefore, it was assumed that this system would be beneficial and as none of the other options were deemed acceptable it was proposed that the Pre-Signals was the solution to the problems at Eves Corner even though this was not quantified.
- 4.4 The report stated that the Pre-Signals option had been considered previously, several years ago, but never progressed.
- 4.5 It was felt, however, that some form of analysis was feasible, even if this was useful only as a comparative exercise. It might not be possible to predict accurately the queue length etc., but, as was stated in the December, 2013 report, queue length predictions for all options is not considered accurate once an arm becomes over capacity. However, it does give an indication of the capacity of an arm and can be used as a comparative tool to see if a particular option is better or worse than another.
- 4.6 Therefore, capacity assessment of the potential Pre-Signals option has been undertaken using the nationally recognised LINSIG program. This program is basically for the analysis of traffic signals although it can incorporate roundabout junctions within the analysis if the relevant data (slope and intercept) has been extracted from an ARCADY analysis of the roundabouts.

- 4.7 Essex Highways provided their ARCADY analysis of the double mini-roundabout and so the relevant slope and intercept data was extracted and input into the LINSIG model.
- 4.8 Certain assumptions have had to be made in order to undertake the analysis. Firstly, as indicated by Essex Highways in their December, 2013 report, one of the concerns with Pre-Signals is driver frustration at being stopped at a red signal for no apparent reason. Therefore, it has been assumed that the maximum red time for drivers being held on the side road Pre-Signals is 30 seconds.
- 4.9 At a normal traffic signal junction it is common for drivers at side roads to have to wait longer than 30 seconds. However, they can see the reason for the delay, i.e. traffic moving on the main road, pedestrian stages at the junctions etc. However, in this situation, the stop line for the signals is, by definition, set back from the mini roundabouts and so there is no obvious reason for the signals being at red.
- 4.10 Therefore, there is the real risk that traffic could jump the red lights and so the maximum red time for traffic of 30 seconds, assumed in the calculations, is considered a reasonable time for vehicles to wait without drivers becoming too frustrated and potentially driving through the red signal.
- 4.11 The Puffin crossing immediately to the east of the double mini-roundabout has been included within the analysis as it has also been assumed in the ARCADY analysis undertaken by Essex Highways. In the ARCADY analysis it was assumed that there were 60 pedestrians per hour averaging at 1 pedestrian/minute so the Puffin operated 60 times per hour. From the surveys undertaken in early June, the Puffin operated a maximum of only 19 times in an hour.
- 4.12 However, in order to consider the Pre-Signals it has been assumed that there would basically be a 90 seconds cycle time. This is so that, within this 90 seconds cycle, the Puffin crossing would operate once within this period i.e., 40 times per hour or twice that observed on street in June, 2014. Please see diagrams on Page 2 of Linsig printouts at Appendix E.

4.13 The Pre-Signals would, however, operate twice in the 90 seconds i.e., with two 30 seconds red time periods and two 10 seconds green time period for vehicles plus the 10 seconds of inter green periods. Please see diagrams on Page 3 of Linsig printouts at Appendix E. This results in side road traffic being held up for 30 seconds then a short “burst” of traffic for 10 seconds moving forward to the mini-roundabouts. This, hopefully, would discourage rat running but still allow traffic from the side roads to exit out on to the A414.

4.14 Three situations have been assessed as follows:-

- (i) Base 2013 flows (i.e. existing situation)
- (ii) Base 2026 flows without the Local Development Plan (LDP) proposals
- (iii) Base 2026 flows with the LDP proposals.

4.15 A summary of the predicted queue lengths, in pcu’s *, from these assessments, is given below:-

Table 4.1

AM Peak		Base 2013			Base 2026		2026 with Dev		
		RFC	Queue Length	% Change	RFC	Queue Length	RFC	Queue Length	% Change
A414(E)	Existing layout	1.47	243.2	-21%		n/a	2.07	750.5	-45%
	Pre-Signals layout	1.31	191.9		1.47	255.3	1.84	415.2	
A414(W)	Existing layout	0.91	7.8	-69%		n/a	1.15	62.4	25%
	Pre-Signals layout	0.83	2.4		0.93	10.1	1.06	77.7	

* Passenger Car Units (pcu’s) applies a factor to HGV’s, Buses, m/cycles etc. to convert to the equivalent number of cars. So pcu’s basically converts the queue length to totally in cars. The normally assumed factors are as follows:-

Cars/Light Goods Vehicles	1.0
Medium Goods Vehicles	1.5
Heavy Goods Vehicles	2.3
Buses	2.0
M/cycles	0.4

Table 4.2

PM Peak		Base 2013			Base 2026		2026 with Dev		
		RFC	Queue Length	% Change	RFC	Queue Length	RFC	Queue Length	% Change
A414(E)	Existing layout	0.97	14.3	42%		n/a	1.28	130.2	-1%
	Pre-Signals layout	0.87	20.3		0.98	28.9	1.15	129.0	
A414(W)	Existing layout	1.38	169.3	-9%		n/a	1.95	558.4	-41%
	Pre-Signals layout	1.28	154.7		1.45	211.8	1.80	331.9	

Please see Appendix E for copies of the LINSIG printouts.

In the above tables, the Degree of Saturation that is calculated by the Linsig programme is assumed to be a similar capacity indicator to the Ratio of Flow to Capacity (when converted to a factor instead of a percentage).

4.16 From the above tables it can be seen that in the AM peak period in the existing situation, i.e., 2013, the Pre-Signals will have a theoretical benefit over the existing layout. For the A414(E) from Maldon, the current predicted queue length is 243pcu's while with the Pre-Signals this could reduce to 192 pcu's - a reduction of around 20%. The A414(W) reduces from 2.4 pcu's with the Pre-Signals compared with 7.8 pcu's without.

4.17 As far as the side roads are concerned, from the results at Appendix E, the predicted mean maximum queues with the 2013 flows on the Pre-Signal layout on Mayes Lane is 2.3 pcu's while on Little Baddow Road is 4.3 pcu's. This compares with 0.9 pcu's and 3.1 pcu's respectively for the current layout with the 2013 flows.

4.18 In the PM peak, the queuing on A414 west of Eves Corner (from A12/Chelmsford) is predicted to be 169 pcu's with existing layout and 155 pcu's with the Pre-Signals - a reduction of around 9%.

- 4.19 As far as the A414(E) is concerned, the queuing for the 2013 flows is predicted to be slightly worse, increasing from 14 pcu's with the existing layout to 20 pcu's with the Pre-Signals. This is assumed to be due to the traffic from Little Baddow Road exiting onto the roundabout in short "bursts" and so holding up the A414 (E) traffic slightly at any one time with the minimal increase in queues as a result.
- 4.20 If the pre-signals were installed now, before any background traffic growth and traffic from the LDP development, there could potentially be a reduction in queuing on A414 - particularly in the AM peak period where there could theoretically be a reduction in queuing of around 20%.
- 4.21 In 2026 without the LDP development, the LINSIG analysis shows that there would be 255 pcu queue in the morning peak on A414(E) from Maldon. This is similar to what is predicted using the 2013 traffic flows with the existing layout in the morning peak i.e., 243 pcu's compared with the 255 pcu's with the Pre-Signals in 2026 but without the LDP proposals.
- 4.22 There is no information relating to the ARCADY analysis for 2026 for the existing layout but the queue lengths would obviously be a lot worse than the 2013 assessment.
- 4.23 From the above tables, it can be seen that in the 2026 base situation, without the LDP proposals in place, the benefit of the Pre-Signals means that the situation would be similar to that currently experienced on the existing layout in 2013. This is particularly the case in the morning peak when the base 2026 figures with the Pre-signals has a predicted queue of 255 pcu's compared with a predicted queue of 243 pcu's for 2013 existing layout i.e. without the Pre-signals.
- 4.24 The final situation to be considered is the effect of the proposed development related to the LDP proposals on the junction with the Pre-Signals in place. From the earlier tables 4.1 and 4.2 it can be seen that in the AM peak hour, the queue, with the Pre-Signals in place, on A414(E) from Maldon reduces from the predicted 750 pcu's with the existing layout to 415 pcu's with the Pre-Signals.

- 4.25 However, it should be noted that this is still a significant increase over and above the base 2026 situation with the Pre-Signals but without the LDP development i.e., 415 pcu's, with the LDP development, to 255 pcu's, without the development.
- 4.26 This means that the predicted queue lengths with the LDP development in place is around 60% higher than without the development in place.
- 4.27 Similarly, in the PM peak hour in 2026 with the LDP proposals in place, the Pre-Signals would theoretically reduce the queuing from 558 pcu's on A414(W) from Chelmsford, with the existing layout, to 332 pcu's, with the Pre-Signals. However, this is still significantly higher than the predicted queue in 2026 without the development but with the Pre-signals i.e., 332 pcu's to 212 pcu's.
- 4.28 Therefore, whilst the implementation of the Pre-Signals appears to have benefits over and above the "do nothing" situation i.e. with the existing layout, the queuing is significantly worse with the development in place.
- 4.29 As indicated by Essex Highways, the Pre-Signals had been considered previously. If they were installed now, they would have benefits not only with present flows but also in the design year of 2026 without the LDP development.
- 4.30 Thus, if the Pre-signals were installed, the addition of the generated traffic from the LDP proposals will make the situation significantly worse when compared to the 'without the development' situation.
- 4.31 The Pre-Signals will not solve the problems of the development generated traffic only reduce the queuing from what it would be if the Pre-Signals were not installed. There will still be significant queuing on A414(E) in the AM peak and A414(W) in the PM peak with the LDP proposals in place.
- 4.32 In relation to the side roads, the predicted mean maximum queues are summarised below in Tables 4.3 and 4.4 for Little Baddow Road and Mayes Lane. It should be noted that with the existing layout there are only queues predicted from the

give way lines on the respective side road. With the Pre-signals, there are two predicted queues on each side road – the Stop Line (SL) for the Pre-signals and the Give Way Line (GWL) for the relevant mini-roundabout.

Table 4.3

AM Peak			Base 2013		Base 2026		2026 with Dev	
			RFC	Queue Length	RFC	Queue Length	RFC	Queue Length
Little Baddow Road	Existing layout	GWL	0.77	3.1	-	-	0.94	8.7
	Pre-Signals Layout	GWL	0.65	4.3	0.71	5.1	0.73	5.3
		SL	0.67	4.9	0.77	5.9	0.84	6.7
Mayes Lane	Existing layout	GWL	0.48	0.9	-	-	0.57	1.3
	Pre-Signals layout	GWL	0.41	2.3	0.45	2.6	0.47	2.8
		SL	0.43	2.8	0.47	3.1	0.50	3.3

Table 4.4

PM Peak			Base 2013		Base 2026		2026 with Dev	
			RFC	Queue Length	RFC	Queue Length	RFC	Queue Length
Little Baddow Road	Existing layout	GWL	0.73	2.5	-	-	0.92	7.5
	Pre-Signals Layout	GWL	0.55	3.4	0.61	3.9	0.65	4.3
		SL	0.64	4.1	0.71	4.8	0.79	5.7
Mayes Lane	Existing layout	GWL	0.68	2.0	-	-	0.88	5.9
	Pre-Signals layout	GWL	0.65	4.3	0.72	5.1	0.81	6.4
		SL	0.59	4.5	0.69	5.3	0.79	6.5

4.33 From the above tables it can be seen that the side road queues are still relatively short even with the Pre-signals. This assessment has, as indicated earlier, been undertaken on the basis of a 30 second red period for vehicles.

- 4.34 However, a longer red time can be applied for the side roads which would delay traffic longer thus more likely to discourage rat running. On the other hand, the chance of vehicles jumping the red light would be greater. If the Pre-signals are installed then the timings can be adjusted at that time to try and achieve the best balance.
- 4.35 In conclusion, therefore, the proposed Pre-Signals will not solve the problems that occur in Danbury. If the development traffic is added into the 2016 flows the Pre-Signals will only reduce the queuing but it will still be extensive.
- 4.36 If the Pre-Signals are installed independently of the LDP proposals, at an estimated cost of around £120,000, then this would mean that in 2026 with traffic growth, but not the LDP proposals, the situation is not going to be significantly different to what occurs at present.
- 4.37 The Pre-Signals would not be switched on throughout the day but would be activated by queue detectors on the A414. Care will have to be taken to ensure that they operate for a set minimum period and switch on and off in a safe and understandable way so as not to confuse drivers.

5.0 OTHER COMMENTS

- 5.1 As indicated previously, there still has not been any consideration of, and certainly no assessment of, the A414/Well Lane mini-roundabout junction. Given the slow moving queuing that has been observed on site, particularly in the PM peak period, extending back to the A12 interchange, this is considered to be an oversight.
- 5.2 With the addition of the significant development generated traffic that is likely to be passing through Danbury in the peak periods this situation can only get worse and an appropriate consideration of this junction seems justified.
- 5.3 The significant amount of data provided in relation to the calculation and distribution of the generated traffic has not been fully assessed as part of this Statement. However, it appears that the calculation for the generated flows at Oak Corner to/from Danbury (and subsequently used in the assessment of Eves Corner) for the South Maldon Groups A to D PM peak figures have been distributed on the basis of the 2013 AM peak flows at Oak Corner. However, it is felt that this would not make a significant difference to the overall assessment at Eves Corner but it appears to be incorrect.
- 5.4 In the Essex Highways document "Further Assessment of Impact of Proposed Development Sites in Heybridge and South Maldon on Highway Network" dated November, 2013, details of the capacity assessment of A414 Oak Corner junction have been provided. This shows in Table 5.13 of that document that in 2026, with the development proposals in place, the maximum queue length is 108 pcu's in the AM peak (on A414 Maldon Road) and 179 pcu's in the PM peak (on B1418 Southend Road).
- 5.5 These figures compare with the predicted 750.5 pcu's in the AM peak on A414(E) at Eves Corner and 558.4 pcu's on A414(W) at Eves Corner in the PM peak. Despite the significantly less problem at Oak Corner, there are details of a possible mitigation scheme to improve the roundabout at an estimated cost of

£900,000. This compares with a Pre-Signal scheme at Eves Corner at a cost of £120,000 even through the problems caused by the development at Eves Corner are significantly worse.

5.6 The other possible solution at Eves Corner was for a full signalised crossroads. The assessment that was undertaken by Essex Highways showed a significant reduction in queuing etc. at the junction, with this scheme. However, this was dismissed due to land and technical issues which would have implications on the cost of that scheme. However, this may well resolve significantly the problems at Eves Corner even though the cost would be significantly higher than the £120,000 for the Pre-Signals.

5.7 Below is a summary of the mean maximum queue lengths in pcu's for the A414 approaches for the three different options – existing layout, Pre-signals or full signalisation:-

Table 5.1

AM Peak		2013 Base	2026 with LDP Dev
A414 (E)	Existing layout	243.2	750.5
	Pre-signals layout	191.9	415.2
	Full Signalisation	32.6	128.7
A414 (W)	Existing layout	7.8	62.4
	Pre-signals layout	2.4	77.7
	Full Signalisation	10.0	15.3

Table 5.2

PM Peak		2013 Base	2026 with LDP Dev
A414 (E)	Existing layout	14.3	130.2
	Pre-signals layout	20.3	129.0
	Full Signalisation	14.5	126.1
A414 (W)	Existing layout	169.3	558.4
	Pre-signals layout	154.7	331.9
	Full Signalisation	6.7	83.9

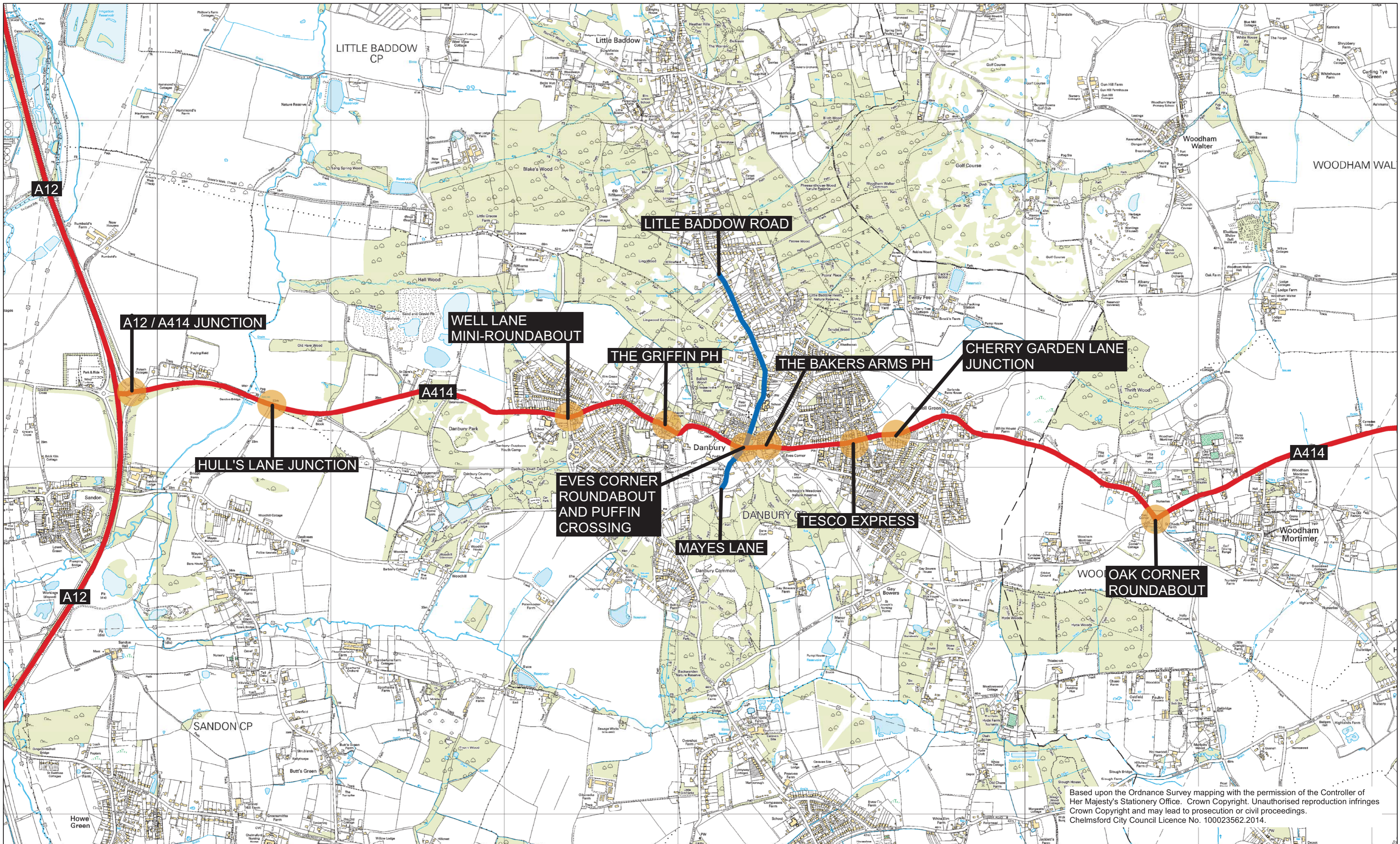
- 5.8 From these tables it can be clearly seen that full signalisation of the junction will significantly reduce the queuing on the A414 in both peak periods. In the AM Peak there would be a theoretical reduction of around 80% in the queues on the A414 East approaching from Maldon between the existing layout in 2026 with LDP proposal in place and the full signalisation scheme. There would even be a significant reduction in the queues over the Pre-signal scheme.
- 5.9 In the PM peak there again would theoretically be a reduction of over 80% in the queues on the A414 West (from Chelmsford direction) in 2026 with the LDP proposals with a full signal scheme. Please see plans at Appendix F showing the theoretical lengths of the queues for the different layouts.
- 5.7 There is the issue relating to a fully signalised scheme at Eves Corner as to whether this is an appropriate form of junction in such a village centre location. However, given the extensive queuing predicted with the other options, including the Pre-Signals, which is also very intrusive on the village, this may be an acceptable option if the technical issues can be dealt with.

6.0 SUMMARY AND CONCLUSIONS

- 6.1 Additional information has now been provided by Essex Highways relating to the design year flows for 2013, 2026 base flows and 2026 with the proposed LDP developments.
- 6.2 A queue length survey has been undertaken in the AM peak period on the A414(E) approach to Eves Corner from the Maldon direction. This has shown that a queue of 800 metres was observed. However, observations on site at other times have also seen queues significantly in excess of this.
- 6.3 Further, a survey of the puffin crossing to the east of the junction has shown that, in the peak hour, it operates only 19 times in the hour.
- 6.4 It is considered that the traffic growth factors used by Essex Highways in their preparation of the Eves Corner 2026 flows are not sufficiently robust. Essex Highways have used the same growth factors for Danbury as for Maldon.
- 6.5 Firstly, Danbury's traffic growth is predicted to be higher than for Maldon on the basis of the base TEMPRO data. Also, it has been assumed that 800 houses are removed from the planning assumptions to establish the Maldon growth factors but traffic from these will not all be passing through Danbury so the traffic growth assumed is considered to be lower than it should be.
- 6.6 Once again, no consideration or traffic assessment has been provided in relation to the A414/Well Lane mini-roundabout. This is of concern based on the traffic queuing that occurs back from this junction particularly in the PM peak period.
- 6.7 LINSIG analysis has been undertaken on the proposal for Pre-Signals on the side roads at Eves Corner. This analysis concludes that there is a benefit of providing the Pre-Signals now such that the traffic queuing etc., in the base 2026 situation without the development would be similar to the current queuing conditions.

- 6.8 Once the additional traffic generated by the proposed LDP developments are added, then the predicted queuing becomes extensive. However, with the Pre-Signals, the queuing is still not as extensive as it would be without the Pre-Signals in operation but with the proposed development.
- 6.9 All the possible solutions for Eves Corner are likely to have significant queuing through Danbury in 2026 with the development. However, it has been proposed that £900,000 (including land take) is spent on reducing significantly less queuing at Oak Corner whilst the more serious problems in the centre of Danbury are not having a more extensive solution proposed.
- 6.10 The signalled crossroads option at Eves Corner appears to have the least queuing associated with it with the LDP proposals in place but has been dismissed as needing some land and having some possible technical issues. It is concluded, therefore, that this solution should be considered in depth further and the potential for a more comprehensive solution established.

APPENDIX A



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Maldon Local Plan

Appendix A - Context Plan of Area



JULY 2014



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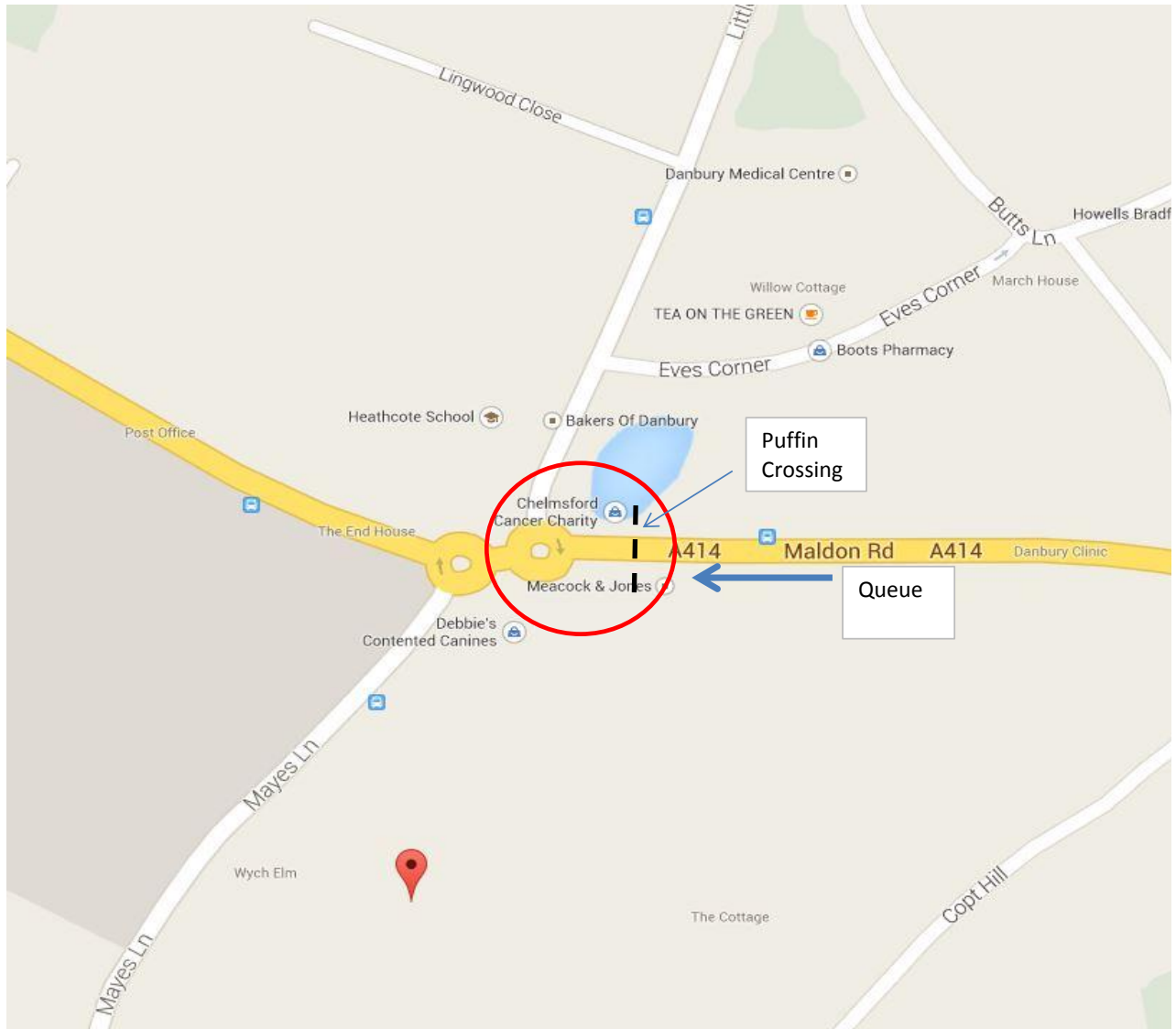
APPENDIX B

TSUK

DANBURY

Eves Corner Maldon Road A414

Date: Wednesday June 4th 2014



Client Stewart Bilisland RB TRAFFIC

Survey Time (1) 07:00 - 10:00

Survey Method Manual **Weather** light rain

Class **Pedestrian Count at Puffin Crossing & Queue study in metres**

Observations No incidents to report

TSUK

DANBURY

Eves Corner Maldon Road A414

Date: Wednesday June 4th 2014

Approach Maldon Road - from Eves Corner Junction West Bound

Maldon Road Queue Study							
Time	Metres		Time	Metres		Time	Metres
07:00	0		08:00	160		09:03	180
07:05	0		08:01	280		09:06	140
07:08	0		08:04	400		09:08	200
07:10	10		08:07	220		09:11	25
07:12	15		08:08	200		09:14	10
07:15	60		08:10	350		09:20	20
07:18	30		08:11	380		09:23	25
07:20	95		08:12	170		09:27	70
07:21	130		08:15	380		09:30	60
07:22	155		08:16	110		09:35	30
07:23	196		08:17	160		09:38	45
07:24	220		08:18	200		09:40	90
07:26	450		08:20	30		09:41	150
07:28	170		08:23	15		09:43	100
07:29	180		08:25	140		09:44	35
07:30	210		08:26	210		09:45	150
07:32	100		08:27	210		09:50	195
07:33	200		08:31	65		09:55	130
07:35	580		08:32	150		09:57	210
07:36	680		08:34	30		09:59	190
07:37	820		08:35	15			
07:38	575		08:38	20			
07:39	640		08:39	40			
07:41	800		08:41	15			
07:45	120		08:44	115			
07:48	45		08:46	145			
07:51	60		08:50	160			
07:57	80		08:55	195			
07:58	90		08:56	225			
07:59	140		08:57	330			
			08:58	370			

Note

Hoyners is 675m from Eves Corner

Cherry Garden Lane is 861m from Eves Corner

APPENDIX C

Puffin Crossing Survey Results Summary

TSUK

DANBURY

Eves Corner Maldon Road A414

Date: Wednesday June 4th 2014

Time	Northbound				
	PED				
0700 - 0715	0				
0715 - 0730	1				
0730 - 0745	1				
0745 - 0800	2				
0800 - 0815	4				
0815 - 0830	1				
0830 - 0845	2				
0845 - 0900	5				
0900 - 0915	2				
0915 - 0930	1				
0930 - 0945	3				
0945 - 1000	5				

Crossing Activations
0
2
1
2
6
1
5
7
2
2
4
5

TSUK

DANBURY

Eves Corner Maldon Road A414

Date: Wednesday June 4th 2014

Time	Southbound				
	PED				
0700 - 0715	0				
0715 - 0730	2				
0730 - 0745	0				
0745 - 0800	1				
0800 - 0815	2				
0815 - 0830	1				
0830 - 0845	7				
0845 - 0900	7				
0900 - 0915	0				
0915 - 0930	1				
0930 - 0945	1				
0945 - 1000	2				

APPENDIX D

Dataset Version: 62
Result Type: Trip ends by time period
Base Year: 2010
Future Year: 2026
Trip Purpose Group: All purposes
Time Period: Weekday AM peak period (0700 - 0959)
Trip End Type: Production/Attraction
Alternative Assumpti No

Growth Factors

Area Description		All purposes		
Level	Name	Production	Attraction	Average
GB	GB	1.1244	1.1244	1.1244
Region	EAST	1.1382	1.1587	1.1485
County	Essex	1.1252	1.1554	1.1403
Authority	Chelmsford	1.1784	1.139	1.1587
22UF4	Danbury/Little Baddow	1.164	1.1338	1.1489
Authority	Maldon	1.0629	1.1102	1.0866
22UK1	Maldon	1.0723	1.1165	1.0944

Dataset Version: 62
Result Type: Trip ends by time period
Base Year: 2010
Future Year: 2026
Trip Purpose Group: All purposes
Time Period: Weekday PM peak period (1600 - 1859)
Trip End Type: Production/Attraction
Alternative Assumptions: No

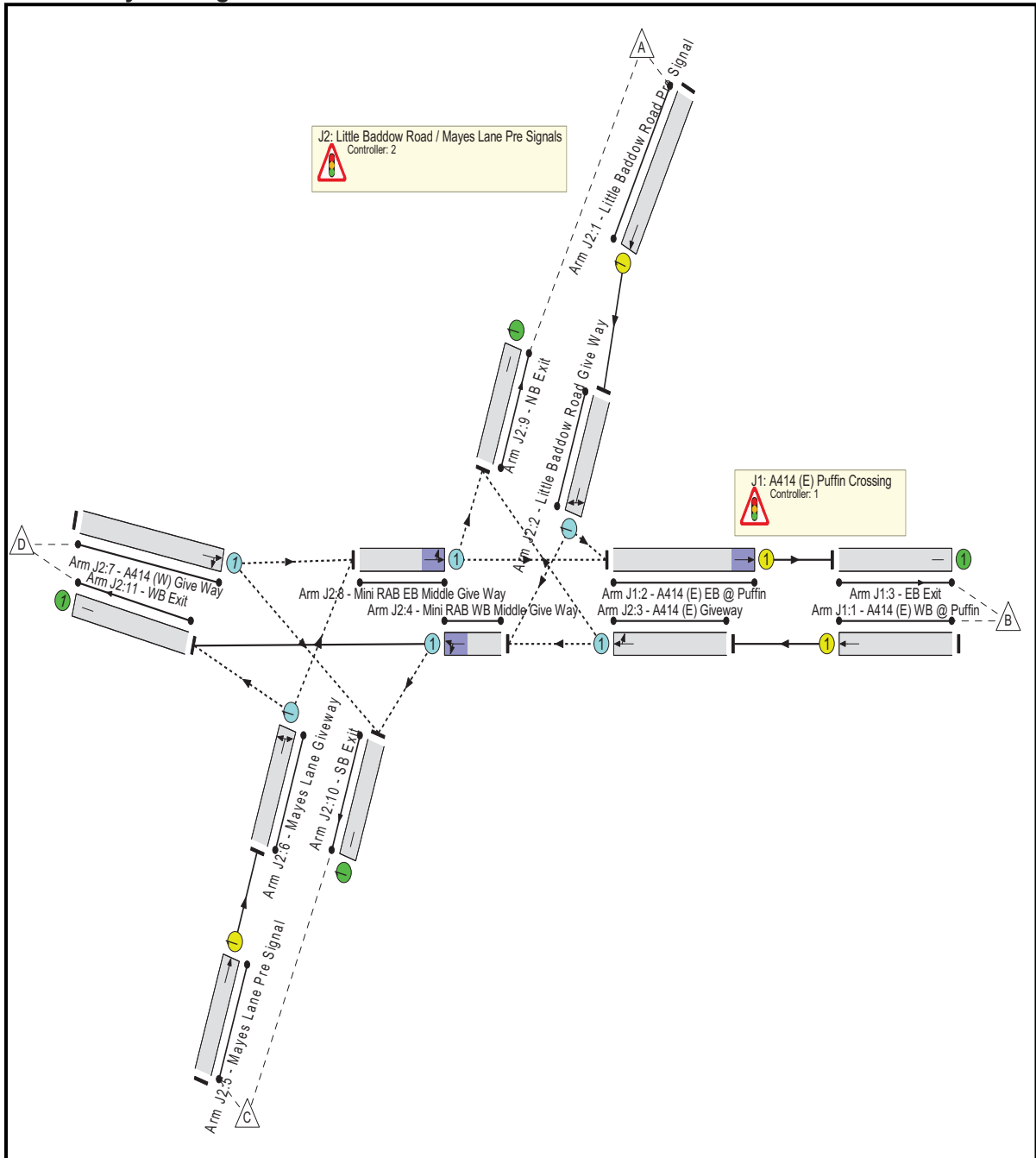
Growth Factor

Area Description		All purposes		
Level	Name	Production	Attraction	Average
GB	GB	1.1362	1.1362	1.1362
Region	EAST	1.1646	1.1808	1.1727
County	Essex	1.1521	1.1771	1.1646
Authority	Chelmsford	1.1883	1.1556	1.1720
22UF4	Danbury/Little Baddow	1.182	1.1481	1.1651
Authority	Maldon	1.1143	1.1606	1.1375
22UK1	Maldon	1.1226	1.1682	1.1454

APPENDIX E

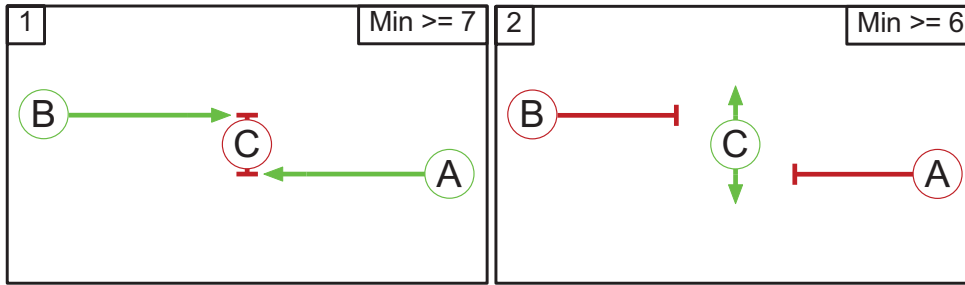
A414 / Mayes Lane / Little Baddow Road, Eves Corner, Danbury.
Linsig V3 Test. File RB1410-3.lsg3x

Network Layout Diagram

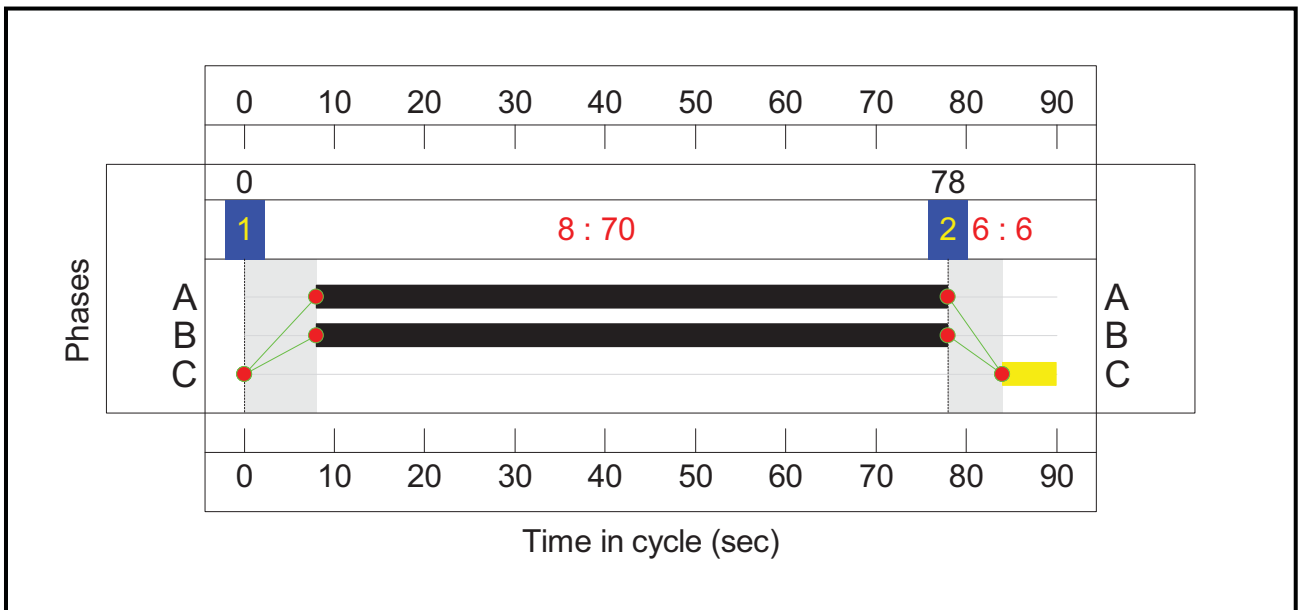


Stage Sequence Diagram.

Controller 1 A414 (E) Puffin Crossing.

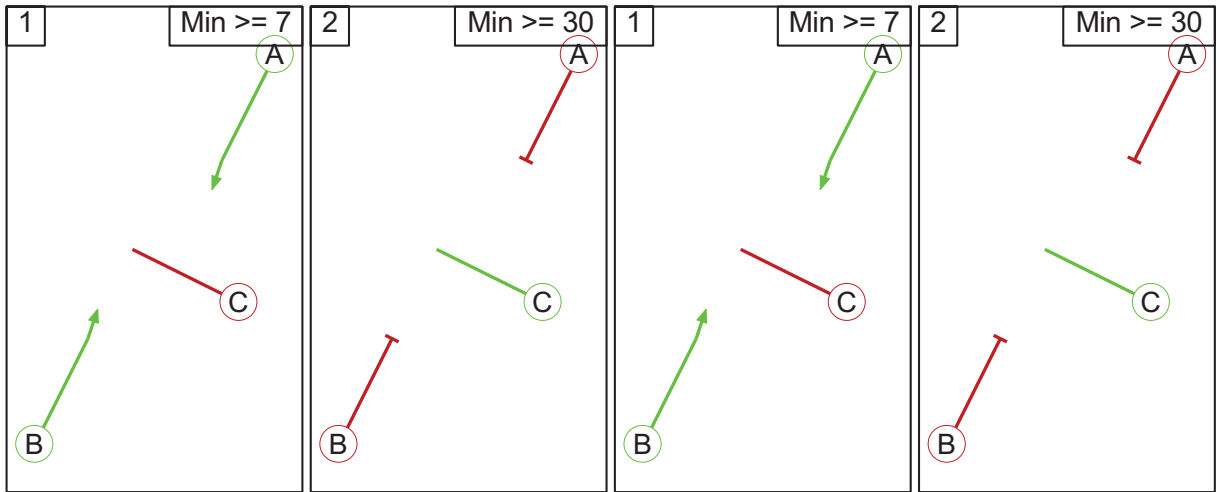


Signal Timings Diagram

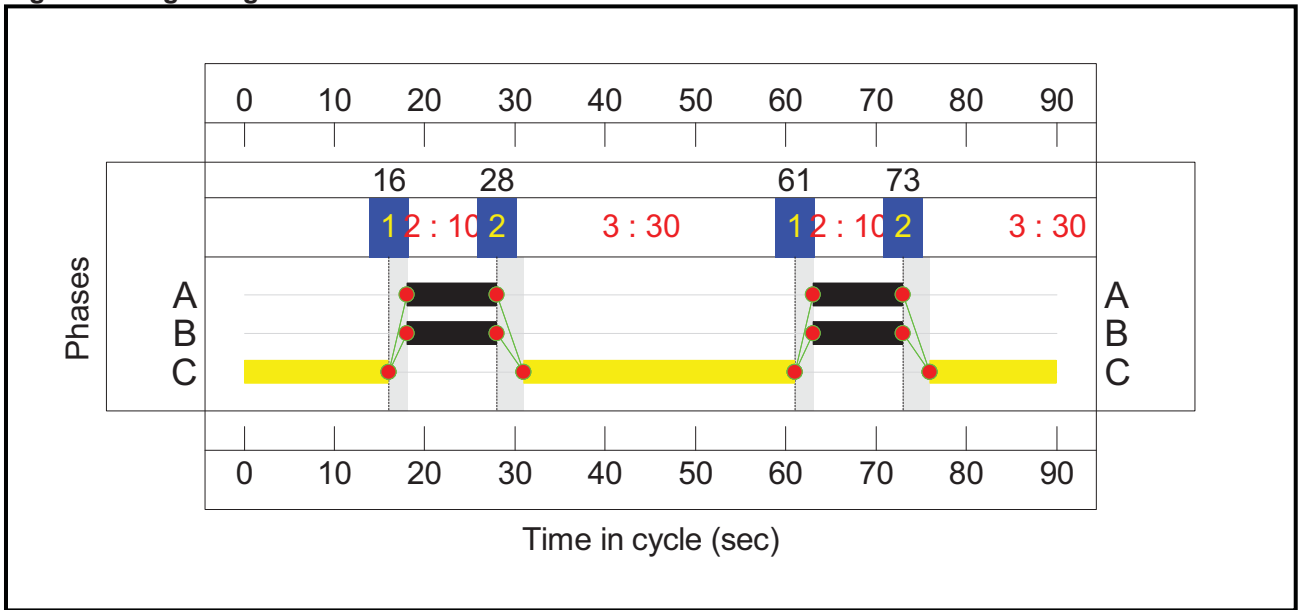


**A414 / Mayes Lane / Little Baddow Road, Eves Corner, Danbury.
Linsig V3 Test. File RB1410-3.lsg3x**

Controller 2 Little Baddow Road / Mayes Lane Pre Signals.



Signal Timings Diagram



A414 / Mayes Lane / Little Baddow Road, Eves Corner, Danbury.
Linsig V3 Test. File RB1410-3.lsg3x

Scenario 1.
'2013 Base AM Peak.'

Item	Lane Description	Deg Sat (%)	MMQ PCUs
J1: A414 (E) Puffin Crossing	-	63.7%	-
1/1	A414 (E) WB @ Puffin Ahead	63.7%	11.3
2/1	A414 (E) EB @ Puffin Ahead	36.1%	3.6
J2: Little Baddow Road / Mayes Lane Pre Signals	-	130.6%	-
1/1	Little Baddow Road Pre Signal Ahead	64.7%	4.3
2/1	Little Baddow Road Give Way Right Left	67.4%	4.9
3/1	A414 (E) Giveway Ahead Right	130.6%	191.9
4/1	Mini RAB WB Middle Give Way Left Ahead	60.5%	0.8
5/1	Mayes Lane Pre Signal Ahead	40.8%	2.3
6/1	Mayes Lane Giveway Right Left	42.7%	2.8
7/1	A414 (W) Give Way Ahead Right	83.3%	2.4
8/1	Mini RAB EB Middle Give Way Left Ahead	60.5%	0.8
C1 - Stream: 1 C2 - Stream: 1	PRC for Signalled Lanes (%): 41.2 PRC for Signalled Lanes (%): 39.0 PRC Over All Lanes (%): -45.1		Cycle Time 90 seconds.

Scenario 2.
'2013 Base PM Peak.'

Item	Lane Description	Deg Sat (%)	MMQ PCUs
J1: A414 (E) Puffin Crossing	-	45.4%	-
1/1	A414 (E) WB @ Puffin Ahead	44.4%	5.9
2/1	A414 (E) EB @ Puffin Ahead	45.4%	5.1
J2: Little Baddow Road / Mayes Lane Pre Signals	-	128.0%	-
1/1	Little Baddow Road Pre Signal Ahead	54.8%	3.4
2/1	Little Baddow Road Give Way Right Left	63.7%	4.1
3/1	A414 (E) Giveway Ahead Right	86.7%	20.3
4/1	Mini RAB WB Middle Give Way Left Ahead	51.2%	0.5
5/1	Mayes Lane Pre Signal Ahead	64.5%	4.3
6/1	Mayes Lane Giveway Right Left	58.9%	4.5
7/1	A414 (W) Give Way Ahead Right	128.0%	154.7
8/1	Mini RAB EB Middle Give Way Left Ahead	74.5%	1.4
C1 - Stream: 1 C2 - Stream: 1	PRC for Signalled Lanes (%): 98.4 PRC for Signalled Lanes (%): 39.5 PRC Over All Lanes (%): -42.2		Cycle Time 90 seconds.

A414 / Mayes Lane / Little Baddow Road, Eves Corner, Danbury.
Linsig V3 Test. File RB1410-3.lsg3x

Scenario 3.
'2026 AM Peak.'

Item	Lane Description	Deg Sat (%)	MMQ PCUs
J1: A414 (E) Puffin Crossing	-	70.1%	-
1/1	A414 (E) WB @ Puffin Ahead	70.1%	13.8
2/1	A414 (E) EB @ Puffin Ahead	39.7%	3.9
J2: Little Baddow Road / Mayes Lane Pre Signals	-	146.5%	-
1/1	Little Baddow Road Pre Signal Ahead	71.3%	5.1
2/1	Little Baddow Road Give Way Right Left	77.4%	5.9
3/1	A414 (E) Giveway Ahead Right	146.5%	255.3
4/1	Mini RAB WB Middle Give Way Left Ahead	61.2%	0.8
5/1	Mayes Lane Pre Signal Ahead	44.9%	2.6
6/1	Mayes Lane Giveway Right Left	47.0%	3.1
7/1	A414 (W) Give Way Ahead Right	92.6%	10.1
8/1	Mini RAB EB Middle Give Way Left Ahead	66.5%	1.0
C1 - Stream: 1 C2 - Stream: 1	PRC for Signalled Lanes (%): 28.5 PRC for Signalled Lanes (%): 26.3 PRC Over All Lanes (%): -62.7		Cycle Time 90 seconds.

Scenario 4.
'2026 PM Peak.'

Item	Lane Description	Deg Sat (%)	MMQ PCUs
J1: A414 (E) Puffin Crossing	-	49.2%	-
1/1	A414 (E) WB @ Puffin Ahead	49.2%	7.1
2/1	A414 (E) EB @ Puffin Ahead	46.2%	5.0
J2: Little Baddow Road / Mayes Lane Pre Signals	-	144.7%	-
1/1	Little Baddow Road Pre Signal Ahead	60.7%	3.9
2/1	Little Baddow Road Give Way Right Left	71.0%	4.8
3/1	A414 (E) Giveway Ahead Right	97.6%	28.9
4/1	Mini RAB WB Middle Give Way Left Ahead	56.8%	0.7
5/1	Mayes Lane Pre Signal Ahead	71.6%	5.1
6/1	Mayes Lane Giveway Right Left	69.3%	5.3
7/1	A414 (W) Give Way Ahead Right	144.7%	211.8
8/1	Mini RAB EB Middle Give Way Left Ahead	76.0%	1.6
C1 - Stream: 1 C2 - Stream: 1	PRC for Signalled Lanes (%): 82.9 PRC for Signalled Lanes (%): 25.8 PRC Over All Lanes (%): -60.8		Cycle Time 90 seconds.

A414 / Mayes Lane / Little Baddow Road, Eves Corner, Danbury.
Linsig V3 Test. File RB1410-3.lsg3x

Scenario 5.
'2026 with development traffic AM Peak.'

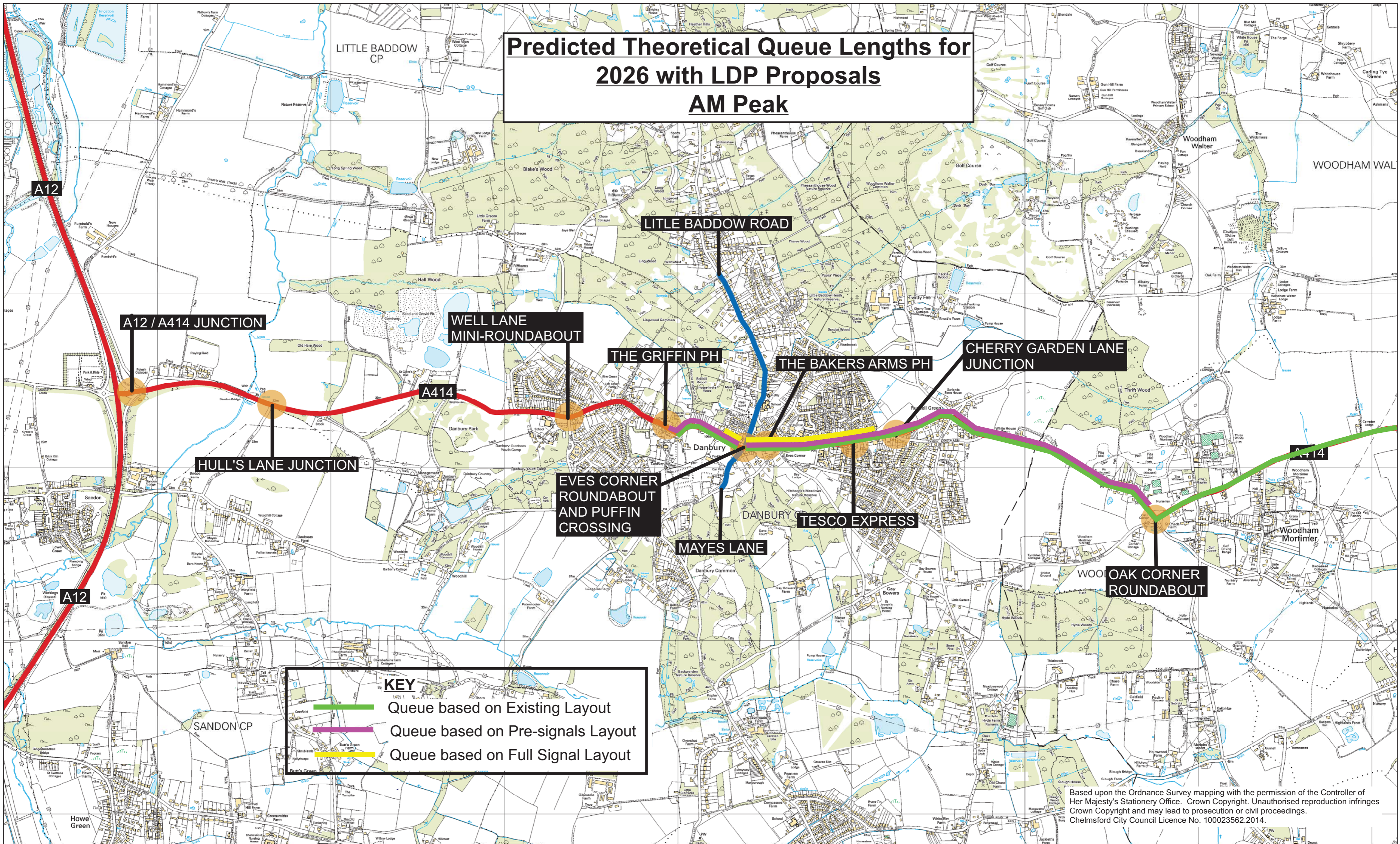
Item	Lane Description	Deg Sat (%)	MMQ PCUs
J1: A414 (E) Puffin Crossing	-	88.1%	-
1/1	A414 (E) WB @ Puffin Ahead	88.1%	27.1
2/1	A414 (E) EB @ Puffin Ahead	44.3%	4.1
J2: Little Baddow Road / Mayes Lane Pre Signals	-	184.1%	-
1/1	Little Baddow Road Pre Signal Ahead	73.0%	5.3
2/1	Little Baddow Road Give Way Right Left	83.9%	6.7
3/1	A414 (E) Giveway Ahead Right	184.1%	415.2
4/1	Mini RAB WB Middle Give Way Left Ahead	60.8%	0.8
5/1	Mayes Lane Pre Signal Ahead	47.4%	2.8
6/1	Mayes Lane Giveway Right Left	49.7%	3.3
7/1	A414 (W) Give Way Ahead Right	106.1%	77.7
8/1	Mini RAB EB Middle Give Way Left Ahead	71.5%	1.2
C1 - C2 -	Stream: 1 Stream: 1	PRC for Signalled Lanes (%): 2.2 PRC for Signalled Lanes (%): 23.4 PRC Over All Lanes (%): -104.6	Cycle Time 90 seconds.

Scenario 6.
'2026 with development traffic PM Peak.'

Item	Lane Description	Deg Sat (%)	MMQ PCUs
J1: A414 (E) Puffin Crossing	-	57.9%	-
1/1	A414 (E) WB @ Puffin Ahead	57.9%	9.2
2/1	A414 (E) EB @ Puffin Ahead	50.5%	5.7
J2: Little Baddow Road / Mayes Lane Pre Signals	-	180.4%	-
1/1	Little Baddow Road Pre Signal Ahead	64.7%	4.3
2/1	Little Baddow Road Give Way Right Left	79.3%	5.7
3/1	A414 (E) Giveway Ahead Right	114.8%	129.0
4/1	Mini RAB WB Middle Give Way Left Ahead	57.5%	0.7
5/1	Mayes Lane Pre Signal Ahead	80.5%	6.4
6/1	Mayes Lane Giveway Right Left	79.0%	6.5
7/1	A414 (W) Give Way Ahead Right	180.4%	331.9
8/1	Mini RAB EB Middle Give Way Left Ahead	78.9%	1.8
C1 - C2 -	Stream: 1 Stream: 1	PRC for Signalled Lanes (%): 55.4 PRC for Signalled Lanes (%): 11.8 PRC Over All Lanes (%): -100.4	Cycle Time 90 seconds.

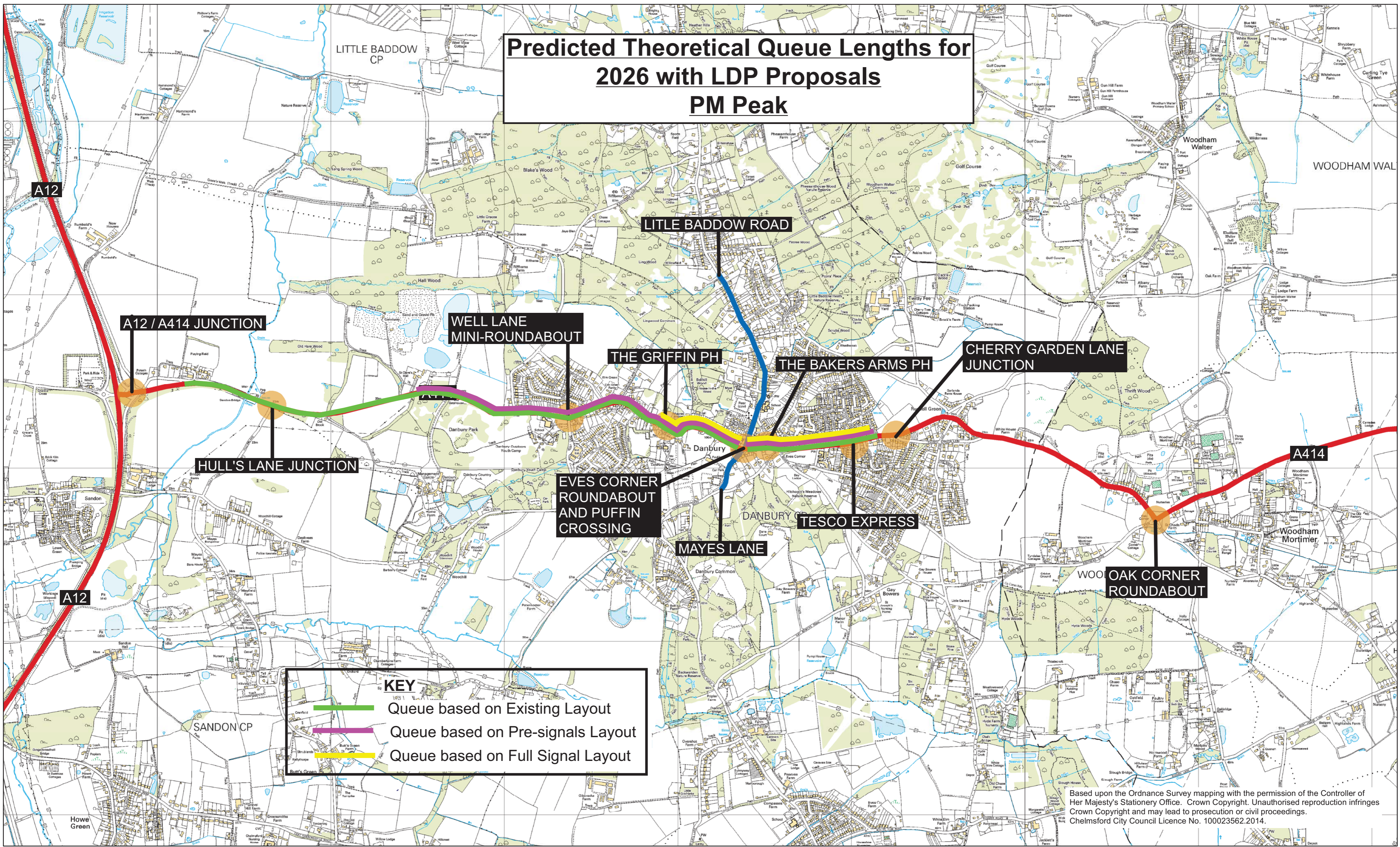
APPENDIX F

Predicted Theoretical Queue Lengths for 2026 with LDP Proposals AM Peak



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Predicted Theoretical Queue Lengths for 2026 with LDP Proposals PM Peak



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Appendix 3

Summary of Calculations of Design Year Traffic Flows for Eves Corner, Danbury
(as provided by Essex CC)

AM PEAK

Base 2013

07:45 - 08:45	North	East	South	West	Total
North	0	46	100	161	307
East	61	0	32	895	988
South	90	63	0	38	191
West	88	465	22	0	575
Total	239	574	154	1094	2061

Base 2026

Factor	1.0991				
07:45 - 08:45	North	East	South	West	Total
North	0.0	50.6	109.9	177.0	337.4
East	67.0	0.0	35.2	983.7	1085.9
South	98.9	69.2	0.0	41.8	209.9
West	96.7	511.1	24.2	0.0	632.0
Total	262.7	630.9	169.3	1202.4	2265.2

Devt Traffic

	Deps	279	Arres	107	
07:45 - 08:45	North	East	South	West	Total
North	0.0	8.6	0.0	0.0	8.6
East	17.8	0.0	9.0	252.7	279.6
South	0.0	11.7	0.0	0.0	11.7
West	0.0	86.7	0.0	0.0	86.7
Total	17.8	107.0	9.0	252.7	386.6

2026 with Devt Traffic

07:45 - 08:45	North	East	South	West	Total
North	0.0	59.1	109.9	177.0	346.0
East	84.8	0.0	44.2	1236.4	1365.5
South	98.9	81.0	0.0	41.8	221.7
West	96.7	597.8	24.2	0.0	718.7
Total	280.5	737.9	178.3	1455.2	2651.8

PM PEAK

Base 2013

16:30 - 17:30	North	East	South	West	Total
North	0	64	85	111	260
East	78	0	39	572	689
South	103	143	0	56	302
West	123	658	46	0	827
Total	304	865	170	739	2078

Base 2026

Factor	1.1086				
16:30 - 17:30	North	East	South	West	Total
North	0.0	71.0	94.2	123.1	288.2
East	86.5	0.0	43.2	634.1	763.8
South	114.2	158.5	0.0	62.1	334.8
West	136.4	729.5	51.0	0.0	916.8
Total	337.0	958.9	188.5	819.3	2303.7

Devt Traffic

	Deps	133	Arres	256	
16:30 - 17:30	North	East	South	West	Total
North	0.0	18.9	0.0	0.0	18.9
East	16.0	0.0	7.5	110.4	133.9
South	0.0	42.3	0.0	0.0	42.3
West	0.0	194.7	0.0	0.0	194.7
Total	16.0	256.0	7.5	110.4	389.9

2026 with Devt Traffic

16:30 - 17:30	North	East	South	West	Total
North	0.0	89.9	94.2	123.1	307.2
East	102.4	0.0	50.8	744.5	897.7
South	114.2	200.9	0.0	62.1	377.1
West	136.4	924.2	51.0	0.0	1111.5
Total	353.0	1214.9	196.0	929.7	2693.6

KEY

North	Little Baddow Road
East	A414 East
South	Mayes Lane
West	A414 West

Appendix 4

AM Peak - A414 East - Pre-Signals Layout - 2026 Background Traffic

Full Input Data And Results

Extract from ECC File "Eves Corner Pre Signals LINSIG - 2026 B-ground - Full Input Data And Results.pdf"

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	122.5%
J1: A414 (E) Puffin Crossing	-	-	N/A	-	-		-	-	-	-	-	-	71.0%
1/1	A414 (E) WB @ Puffin Ahead	U	N/A	N/A	C1:A		1	70	-	1086	1940	1530	71.0%
2/1	A414 (E) EB @ Puffin Ahead	U	N/A	N/A	C1:B		1	70	-	631	1940	1530	41.2%
3/1	EB Exit	U	N/A	N/A	-		-	-	-	631	Inf	Inf	0.0%
Ped Link: P1	Puffin	-	N/A	-	C1:C		1	10	-	0	-	0	0.0%
J2: Little Baddow Road / Mayes Lane Pre Signals	-	-	N/A	-	-		-	-	-	-	-	-	122.5%
1/1	Little Baddow Road Pre Signal Ahead	U	N/A	N/A	C2:A		2	17	-	338	1940	366	92.2%
2/1	Little Baddow Road Give Way Left Right	O	N/A	N/A	-		-	-	-	338	1915	495	68.3%
3/1	A414 (E) Give Way Ahead Right	O	N/A	N/A	-		-	-	-	1086	1980	887	122.5%
4/1	Mini Rab WB Middle Give Way Left Ahead	O	N/A	N/A	-		-	-	-	1306	2115	1195	93.7%
5/1	Mayes Lane Pre Signal Ahead	U	N/A	N/A	C2:B		2	17	-	210	1940	366	57.3%
6/1	Mayes Lane Give Way Right Left	O	N/A	N/A	-		-	-	-	210	1902	407	51.6%
7/1	A414 (W) Give Way Ahead Right	O	N/A	N/A	-		-	-	-	632	1980	846	74.7%
8/1	Mini Rab EB Give Way Ahead Left	O	N/A	N/A	-		-	-	-	776	2115	1088	71.3%
9/1	NB Exit	U	N/A	N/A	-		-	-	-	263	1940	1940	12.9%
10/1	SB Exit	U	N/A	N/A	-		-	-	-	169	1940	1940	8.4%

Full Input Data And Results

11/1	WB Exit	U	N/A	N/A	-	-	-	-	1203	Inf	Inf	0.0%	
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	3961	0	0	21.8	119.9	0.0	141.6	-	-	-	-
J1: A414 (E) Puffin Crossing	-	-	0	0	0	1.8	1.6	0.0	3.4	-	-	-	-
1/1	1086	1086	-	-	-	1.4	1.2	-	2.6	8.6	13.0	1.2	14.2
2/1	631	631	-	-	-	0.4	0.4	-	0.8	4.4	4.4	0.4	4.7
3/1	631	631	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
J2: Little Baddow Road / Mayes Lane Pre Signals	-	-	3961	0	0	20.0	118.3	0.0	138.3	-	-	-	-
1/1	338	338	-	-	-	1.7	4.5	-	6.2	66.0	4.1	4.5	8.6
2/1	338	338	338	0	0	0.9	1.1	-	2.0	21.4	4.3	1.1	5.4
3/1	1086	887	887	0	0	15.9	102.4	-	118.3	392.0	80.3	102.4	182.6
4/1	1119	1119	1119	0	0	0.1	6.3	-	6.4	20.6	10.7	6.3	17.0
5/1	210	210	-	-	-	1.0	0.7	-	1.6	28.0	2.4	0.7	3.1
6/1	210	210	210	0	0	0.4	0.5	-	1.0	16.4	2.7	0.5	3.2
7/1	632	632	632	0	0	0.0	1.5	-	1.5	8.3	0.0	1.5	1.5
8/1	776	776	776	0	0	0.0	1.2	-	1.2	5.7	0.0	1.2	1.2
9/1	251	251	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
10/1	163	163	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
11/1	1022	1022	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
		C1	PRC for Signalled Lanes (%):		26.8	Total Delay for Signalled Lanes (pcuHr):		3.36	Cycle Time (s):		90		
		C2	PRC for Signalled Lanes (%):		-2.5	Total Delay for Signalled Lanes (pcuHr):		7.83	Cycle Time (s):		90		
			PRC Over All Lanes (%):		-36.1	Total Delay Over All Lanes(pcuHr):		141.62					

Relevant Link highlighted in yellow by CCC

PM Peak - A414 East - Pre-Signals Layout - 2026 Background Traffic

Extract from ECC File "Eves Corner Pre Signals LINSIG - 2026 B-ground - Full Input Data And Results.pdf"

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	112.6%
J1: A414 (E) Puffin Crossing	-	-	N/A	-	-		-	-	-	-	-	-	57.4%
1/1	A414 (E) WB @ Puffin Ahead	U	N/A	N/A	C1:A		1	70	-	764	1940	1530	49.9%
2/1	A414 (E) EB @ Puffin Ahead	U	N/A	N/A	C1:B		1	70	-	960	1940	1530	57.4%
3/1	EB Exit	U	N/A	N/A	-		-	-	-	960	Inf	Inf	0.0%
Ped Link: P1	Puffin	-	N/A	-	C1:C		1	10	-	0	-	0	0.0%
J2: Little Baddow Road / Mayes Lane Pre Signals	-	-	N/A	-	-		-	-	-	-	-	-	112.6%
1/1	Little Baddow Road Pre Signal Ahead	U	N/A	N/A	C2:A		2	16	-	288	1940	345	83.5%
2/1	Little Baddow Road Give Way Left Right	O	N/A	N/A	-		-	-	-	288	1915	445	64.7%
3/1	A414 (E) Give Way Ahead Right	O	N/A	N/A	-		-	-	-	764	1980	902	84.7%
4/1	Mini Rab WB Middle Give Way Left Ahead	O	N/A	N/A	-		-	-	-	894	2115	1190	75.1%
5/1	Mayes Lane Pre Signal Ahead	U	N/A	N/A	C2:B		2	16	-	335	1940	345	97.1%
6/1	Mayes Lane Give Way Right Left	O	N/A	N/A	-		-	-	-	335	1902	456	73.4%
7/1	A414 (W) Give Way Ahead Right	O	N/A	N/A	-		-	-	-	917	1980	815	112.6%
8/1	Mini Rab EB Give Way Ahead Left	O	N/A	N/A	-		-	-	-	1139	2115	1081	96.5%
9/1	NB Exit	U	N/A	N/A	-		-	-	-	337	1940	1940	16.6%
10/1	SB Exit	U	N/A	N/A	-		-	-	-	188	1940	1940	9.4%

Full Input Data And Results

11/1	WB Exit	U	N/A	N/A	-	-	-	-	819	Inf	Inf	0.0%	
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	4138	0	0	14.7	81.6	0.0	96.3	-	-	-	-
J1: A414 (E) Puffin Crossing	-	-	0	0	0	1.6	1.2	0.0	2.7	-	-	-	-
1/1	764	764	-	-	-	0.7	0.5	-	1.2	5.7	6.6	0.5	7.1
2/1	879	879	-	-	-	0.9	0.7	-	1.5	6.3	8.1	0.7	8.8
3/1	879	879	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
J2: Little Baddow Road / Mayes Lane Pre Signals	-	-	4138	0	0	13.1	80.4	0.0	93.5	-	-	-	-
1/1	288	288	-	-	-	1.4	2.3	-	3.8	47.1	3.4	2.3	5.8
2/1	288	288	288	0	0	0.8	0.9	-	1.7	20.8	3.6	0.9	4.5
3/1	764	764	764	0	0	1.7	2.7	-	4.3	20.4	17.8	2.7	20.5
4/1	894	894	894	0	0	0.0	1.5	-	1.5	6.0	0.0	1.5	1.5
5/1	335	335	-	-	-	1.7	7.0	-	8.7	93.7	4.1	7.0	11.1
6/1	335	335	335	0	0	1.0	1.4	-	2.3	25.0	4.2	1.4	5.5
7/1	917	815	815	0	0	6.4	55.3	-	61.7	242.2	61.6	55.3	116.9
8/1	1042	1042	1042	0	0	0.2	9.2	-	9.4	32.4	11.1	9.2	20.3
9/1	322	322	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
10/1	182	182	-	-	-	0.0	0.1	-	0.1	1.0	0.0	0.1	0.1
11/1	819	819	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
		C1	PRC for Signalled Lanes (%):		56.8	Total Delay for Signalled Lanes (pcuHr):		2.74	Cycle Time (s):		90		
		C2	PRC for Signalled Lanes (%):		-7.9	Total Delay for Signalled Lanes (pcuHr):		12.49	Cycle Time (s):		90		
			PRC Over All Lanes (%):		-25.1	Total Delay Over All Lanes (pcuHr):		96.26					

Relevant Link highlighted in yellow by CCC

AM Peak - A414 East - Pre-Signals Layout - 2026 with Heybridge/Maldon Development

Extract from ECC File "Eves Corner Pre Signals LINSIG - 2026 + devt - Full Input Data And Results.pdf"

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	154.0%
J1: A414 (E) Puffin Crossing	-	-	N/A	-	-		-	-	-	-	-	-	89.2%
1/1	A414 (E) WB @ Puffin Ahead	U	N/A	N/A	C1:A		1	70	-	1365	1940	1530	89.2%
2/1	A414 (E) EB @ Puffin Ahead	U	N/A	N/A	C1:B		1	70	-	738	1940	1530	48.2%
3/1	EB Exit	U	N/A	N/A	-		-	-	-	738	Inf	Inf	0.0%
Ped Link: P1	Puffin	-	N/A	-	C1:C		1	10	-	0	-	0	0.0%
J2: Little Baddow Road / Mayes Lane Pre Signals	-	-	N/A	-	-		-	-	-	-	-	-	154.0%
1/1	Little Baddow Road Pre Signal Ahead	U	N/A	N/A	C2:A		2	18	-	346	1940	388	89.2%
2/1	Little Baddow Road Give Way Left Right	O	N/A	N/A	-		-	-	-	346	1915	473	73.1%
3/1	A414 (E) Give Way Ahead Right	O	N/A	N/A	-		-	-	-	1365	1980	887	154.0%
4/1	Mini Rab WB Middle Give Way Left Ahead	O	N/A	N/A	-		-	-	-	1567	2115	1195	93.6%
5/1	Mayes Lane Pre Signal Ahead	U	N/A	N/A	C2:B		2	18	-	222	1940	388	57.2%
6/1	Mayes Lane Give Way Right Left	O	N/A	N/A	-		-	-	-	222	1902	407	54.5%
7/1	A414 (W) Give Way Ahead Right	O	N/A	N/A	-		-	-	-	719	1980	845	85.1%
8/1	Mini Rab EB Give Way Ahead Left	O	N/A	N/A	-		-	-	-	875	2115	1088	80.4%
9/1	NB Exit	U	N/A	N/A	-		-	-	-	281	1940	1940	12.9%
10/1	SB Exit	U	N/A	N/A	-		-	-	-	178	1940	1940	8.4%

Full Input Data And Results

11/1	WB Exit	U	N/A	N/A	-	-	-	-	1455	Inf	Inf	0.0%	
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	4167	0	0	40.2	262.3	0.0	302.5	-	-	-	-
J1: A414 (E) Puffin Crossing	-	-	0	0	0	3.2	4.4	0.0	7.6	-	-	-	-
1/1	1365	1365	-	-	-	2.6	3.9	-	6.5	17.2	24.3	3.9	28.2
2/1	738	738	-	-	-	0.6	0.5	-	1.1	5.4	5.6	0.5	6.1
3/1	738	738	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
J2: Little Baddow Road / Mayes Lane Pre Signals	-	-	4167	0	0	37.0	257.9	0.0	294.9	-	-	-	-
1/1	346	346	-	-	-	1.7	3.5	-	5.2	54.2	4.1	3.5	7.7
2/1	346	346	346	0	0	1.1	1.3	-	2.4	24.9	4.3	1.3	5.7
3/1	1365	887	887	0	0	32.7	240.6	-	273.4	721.0	101.2	240.6	341.8
4/1	1118	1118	1118	0	0	0.0	6.3	-	6.3	20.3	10.0	6.3	16.3
5/1	222	222	-	-	-	1.0	0.7	-	1.7	27.0	2.5	0.7	3.1
6/1	222	222	222	0	0	0.5	0.6	-	1.1	17.5	2.8	0.6	3.4
7/1	719	719	719	0	0	0.0	2.7	-	2.7	13.7	0.0	2.7	2.7
8/1	875	875	875	0	0	0.0	2.0	-	2.0	8.3	0.0	2.0	2.0
9/1	251	251	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
10/1	163	163	-	-	-	0.0	0.0	-	0.0	1.0	0.0	0.0	0.0
11/1	1022	1022	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
C1		PRC for Signalled Lanes (%):		0.9		Total Delay for Signalled Lanes (pcuHr):		7.61		Cycle Time (s):		90	
C2		PRC for Signalled Lanes (%):		0.9		Total Delay for Signalled Lanes (pcuHr):		6.88		Cycle Time (s):		90	
		PRC Over All Lanes (%):		-71.1		Total Delay Over All Lanes(pcuHr):		302.49					

Relevant Link highlighted in yellow by CCC

PM Peak - A414 East - Pre-Signals Layout - 2026 with Heybridge/Maldon Development

Extract from ECC File "Eves Corner Pre Signals LINSIG - 2026 + devt - Full Input Data And Results.pdf"

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	N/A	-	-		-	-	-	-	-	-	136.9%
J1: A414 (E) Puffin Crossing	-	-	N/A	-	-		-	-	-	-	-	-	62.6%
1/1	A414 (E) WB @ Puffin Ahead	U	N/A	N/A	C1:A		1	70	-	898	1940	1530	58.7%
2/1	A414 (E) EB @ Puffin Ahead	U	N/A	N/A	C1:B		1	70	-	1215	1940	1530	62.6%
3/1	EB Exit	U	N/A	N/A	-		-	-	-	1215	Inf	Inf	0.0%
Ped Link: P1	Puffin	-	N/A	-	C1:C		1	10	-	0	-	0	0.0%
J2: Little Baddow Road / Mayes Lane Pre Signals	-	-	N/A	-	-		-	-	-	-	-	-	136.9%
1/1	Little Baddow Road Pre Signal Ahead	U	N/A	N/A	C2:A		2	17	-	307	1940	366	83.8%
2/1	Little Baddow Road Give Way Left Right	O	N/A	N/A	-		-	-	-	307	1915	432	71.1%
3/1	A414 (E) Give Way Ahead Right	O	N/A	N/A	-		-	-	-	898	1980	902	99.6%
4/1	Mini Rab WB Middle Give Way Left Ahead	O	N/A	N/A	-		-	-	-	1013	2115	1192	85.0%
5/1	Mayes Lane Pre Signal Ahead	U	N/A	N/A	C2:B		2	17	-	377	1940	366	102.9%
6/1	Mayes Lane Give Way Right Left	O	N/A	N/A	-		-	-	-	377	1902	432	84.9%
7/1	A414 (W) Give Way Ahead Right	O	N/A	N/A	-		-	-	-	1111	1980	812	136.9%
8/1	Mini Rab EB Give Way Ahead Left	O	N/A	N/A	-		-	-	-	1375	2115	1077	100.3%
9/1	NB Exit	U	N/A	N/A	-		-	-	-	352	1940	1940	16.1%
10/1	SB Exit	U	N/A	N/A	-		-	-	-	196	1940	1940	9.4%

Full Input Data And Results

11/1	WB Exit	U	N/A	N/A	-	-	-	-	930	Inf	Inf	0.0%	
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	4473	0	0	30.9	206.1	0.0	237.0	-	-	-	-
J1: A414 (E) Puffin Crossing	-	-	0	0	0	2.0	1.5	0.0	3.5	-	-	-	-
1/1	898	898	-	-	-	0.9	0.7	-	1.6	6.6	8.7	0.7	9.4
2/1	958	958	-	-	-	1.0	0.8	-	1.9	7.0	9.8	0.8	10.6
3/1	958	958	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
Ped Link: P1	0	0	-	-	-	-	-	-	-	-	-	-	-
J2: Little Baddow Road / Mayes Lane Pre Signals	-	-	4473	0	0	28.9	204.6	0.0	233.5	-	-	-	-
1/1	307	307	-	-	-	1.5	2.4	-	3.9	45.6	3.7	2.4	6.1
2/1	307	307	307	0	0	0.9	1.2	-	2.2	25.2	3.9	1.2	5.1
3/1	898	898	898	0	0	3.5	14.0	-	17.5	70.2	21.2	14.0	35.3
4/1	1013	1013	1013	0	0	0.0	2.7	-	2.7	9.8	0.0	2.7	2.7
5/1	377	366	-	-	-	2.4	12.7	-	15.1	144.6	5.4	12.7	18.1
6/1	366	366	366	0	0	1.4	2.6	-	4.0	39.0	4.9	2.6	7.4
7/1	1111	812	812	0	0	18.7	151.5	-	170.3	551.7	80.6	151.5	232.1
8/1	1081	1077	1077	0	0	0.4	17.2	-	17.7	58.9	64.6	17.2	81.8
9/1	312	312	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
10/1	182	182	-	-	-	0.0	0.1	-	0.1	1.0	0.0	0.1	0.1
11/1	928	928	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
		C1	PRC for Signalled Lanes (%):		43.8	Total Delay for Signalled Lanes (pcuHr):		3.50	Cycle Time (s):		90		
		C2	PRC for Signalled Lanes (%):		-14.3	Total Delay for Signalled Lanes (pcuHr):		19.03	Cycle Time (s):		90		
			PRC Over All Lanes (%):		-52.1	Total Delay Over All Lanes(pcuHr):		237.00					

Relevant Link highlighted in yellow by CCC