



Scoping Note for Highway Modelling

Lidsing Garden Village

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1 Introduction

1.1 Overview

- 1.1.1 C&A Consulting Engineers have prepared this technical note for Lidsing Garden Village, a proposed allocation in the emerging Maidstone Local Plan Review. The development would provide around 2,000 dwellings, 14 hectares of employment, a three-form entry primary school, and a local commercial centre.
- 1.1.2 The location of the site is shown in **Figure 1.1** below. Although the site is situated in the Borough of Maidstone, it is located between the areas of Lordswood and Hempstead in Medway. As such the majority of any traffic impacts arising from the development would affect the SRN junctions and Medway local network rather than the wider Kent network.

Figure 1.1: Site Overview



1.1.3 C&A have consulted on behalf of the land promoters with Maidstone Borough Council (MBC) as the local planning authority, Kent County Council (KCC) as the highway authority, Medway Council (MC) as the adjoining authority with both planning and highways responsibilities, and National Highways (NH) in respect of the Strategic Road Network (SRN).

1.1.4 This note sets out the scope of traffic modelling which C&A would undertake using a strategic transport model originally developed for the purposes of assessing MC's emerging Local Plan. This will complement similar modelling by KCC in the Maidstone area. This scoping exercise will ensure that the highway network is adequately assessed for the Local Plan Review between this work and KCC's corresponding work.

1.2 Medway Aimsun Model

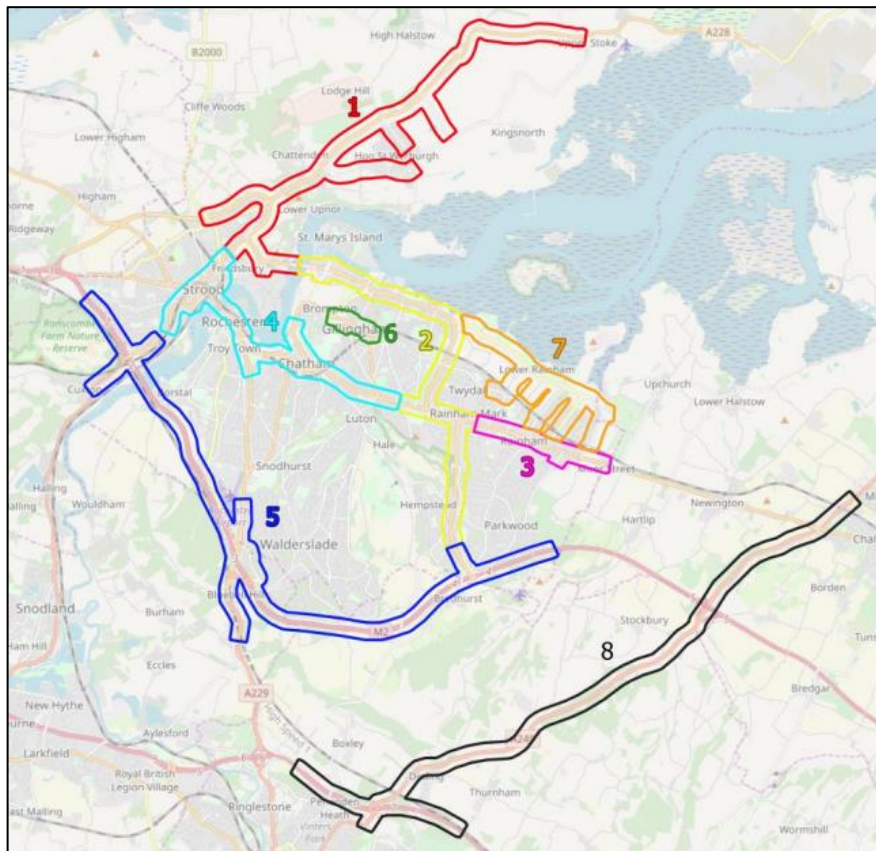
1.2.1 Fore Consulting developed the Medway Aimsun Model using base data from 2016, and validated the model in 2017. National Highways (formerly Highways England) have endorsed the base model calibration and validation process.

1.2.2 Aimsun Next is traffic modelling software which can model both at a strategic level (in the macroscopic layer) and detailed subnetwork and individual junction performance (in the microscopic layer).

1.2.3 This model includes:

- All of the UK at a low resolution (i.e. level of detail),
- Medway unitary area and M2 Junctions 1 to 5 at a higher resolution in the macroscopic layer;
- Within Medway, eight subnetworks of existing key corridors which are modelled at even higher resolution in the microscopic layer, as shown below in **Figure 1.2**.

Figure 1.2: Existing Microsimulation Subnetworks



- 1.2.4 C&A have liaised with Fore during the evidence gathering process. As part of early work for the Maidstone Local Plan Review, Fore Consulting modelled the Lidsing Garden Village proposals using traffic data provided by C&A; at this stage the modelling only used the strategic macroscopic layer. This showed where traffic flows were likely to increase or decrease on the surrounding highway network using different thresholds. This work included a sensitivity test for the proposed Lower Thames Crossing (LTC) which would interface with the A2 corridor between Greater London and the Medway Towns.
- 1.2.5 Fore need to retain a role to independently review work on behalf of Medway Council, so MC and C&A have reached agreement that that Fore will transfer their model files to enable C&A to carry out modelling for the Lidsing Garden Village site. Fore will subsequently provide an independent technical review of the C&A work on behalf of MC.
- 1.2.6 This overall assessment will enable the site promoter to demonstrate the impact of the Lidsing Garden Village development on the local highway network and to provide appropriate mitigation where necessary, to ensure that the allocation of the site in the Maidstone Local Plan Review is sound.

2 Previous Assumptions for Lidsing Garden Village

- 2.1.1 In July 2021 C&A previously set out the Lidsing Garden Village trip generation, trip distribution and mode share assumptions in report **19-062-005 Rev A**. This reflected comments which KCC and NH had made on an earlier set of assumptions.
- 2.1.2 During summer 2021 C&A discussed these assumptions in meetings with KCC and their consultants, MC and their consultants, and NH. KCC and NH were satisfied with the proposed approach.
- 2.1.3 Medway Council were broadly satisfied with the assumptions but had some concerns over the vehicle access routes to the site. These concerns are addressed by the assessment scenarios outlined later in this report.
- 2.1.4 After taking account of mode share assumptions, the resultant headline external vehicle trips are reproduced in **Table 2.1** below.

Table 2.1: External Vehicle Trips

Land use	AM Peak Hour		PM Peak Hour	
	Arrivals	Departures	Arrivals	Departures
Residential	128	668	867	313
Ancillary facilities	8	8	5	4
Employment	348	74	84	327

- 2.1.5 C&A provided the above data to Fore for strategic modelling work. C&A now intend to retain these underlying assumptions for the next stage of work, except where changes are necessary to reflect alternative development scenarios.

3 Suggested Modelling Approach

3.1 Traffic Assumptions

3.1.1 The Medway Aimsun Model uses a forecast year of 2037 which is the horizon of the Medway Local Plan. The model includes the draft Medway Local Plan allocations, the adopted Swale Local Plan allocations, and broad growth from the National Trip End Model (NTEM) for Maidstone.

3.1.2 This horizon year is beyond the 2031 horizon for the Maidstone Local Plan Review, but due to the size of the Lidsing Garden Village proposals, it is assumed that the proposals will not be fully built out until around 2037 (or beyond) in any case.

3.1.3 As this work will form evidence for the Maidstone Local Plan Review, the model will need more detail on the latest draft allocations in Maidstone. These sites will be reflected in the KCC-Jacobs work and so C&A recommend that we hold a meeting with Jacobs to obtain and transfer some of this data into the Aimsun model.

3.2 Forecast Scenarios

3.2.1 C&A will test five traffic scenarios as follows for the weekday AM and PM peak periods:

- 2037 Do Minimum: The 2037 Medway Local Plan + Mitigation scenarios developed as part of the Local Plan STA, without any Lidsing Garden Village trips.
- 2037 Do Something (Core Development Test): This scenario will be based on the 2037 Do Minimum scenario and would include trips associated with all Maidstone Local Plan Review sites including Lidsing Garden Village, with any proposed changes to the highway network around Lidsing including access from North Dane Way within Subnetwork 5.
- 2037 Do Something (Alternative Access): As above but with highway access from Shawstead Road instead of North Dane Way, again within Subnetwork 5.
- 2037 Do Something (LTC Sensitivity Test): As for the Core Development Test plus the impacts of the Lower Thames Crossing (LTC).
- 2037 Do Something (No SRN Connection Sensitivity Test): As for the Core Development Test, but with no direct connection from the site to the M2.

3.3 Network Analysis

- 3.3.1 The modelling of the surrounding highway network would fall into two tiers reflecting the proximity to the Lidsing promotion site and thus the level of traffic impact, which would typically reduce with distance from a traffic generator.
- 3.3.2 The Lidsing Garden Village proposals include new connections to M2 Junction 4 (via a fourth arm to the roundabout), Hoath Way and North Dane Way. Most of the development traffic is expected to use these three access routes. An alternative access strategy would use Shawstead Road instead of North Dane Way to provide access to and from the north.

First Tier - Microsimulation

- 3.3.3 As shown in Chapter 1, the Medway model already includes a microsimulation “Subnetwork 5” which covers M2 Junctions 1 to 5. At Junction 3 where the M2 meets the A229, the model covers the Bridgewood, Lord Lees, Taddington and Horsted Gyratory roundabouts along the A229 corridor.
- 3.3.4 The model also includes “Subnetwork 2” which covers the A289 and A278 in Gillingham and “Subnetwork 3” which covers the A2 through Rainham town centre.
- 3.3.5 In correspondence relating to the modelling approach, Fore have since stated: “For the purposes of assessing the impact of the proposed development on the Medway highway network, it is proposed to extend Subnetwork 5 to enable all key impacts associated with the proposed development to be assessed using microsimulation. The extent of the extended subnetwork will be determined following the macroscopic assignments but is likely to include extensions along the A278 Hoath Way and North Dane Way corridors to meet the boundary of other subnetworks.”
- 3.3.6 C&A have now instructed Fore to extend Subnetwork 5 as above. The extended subnetwork would cover M2 Junction 4, North Dane Way, Hoath Way and Shawstead Road. **Figure 3.1** below shows the three key Subnetworks including the pending extension of Subnetwork 5.

Figure 3.1: Aimsun Micro-simulation Subnetworks 2 (green), 3 (blue) and extended 5 (yellow)



3.3.7 In relation to the Lidsing Garden Village development, Fore will provide the wider macroscopic model including the C&A spreadsheet assumptions. C&A will then assign this traffic within the three Subnetworks above.

3.3.8 For these three Subnetworks, C&A will report the following outputs for each of the forecast scenarios set out in section 3.2 above:

- Network performance statistics such as 'total delay';
- Journey times through the subnetwork;
- Junction performance statistics;
- Merge and diverge assessments for M2 Junctions 1 to 5, including the extended Junction 4.

- 3.3.9 Naturally these results would be shared with National Highways to identify the impacts on the SRN.

Second Tier – Localised Junction Modelling

- 3.3.10 C&A would also model junctions with significant changes between the ‘2037 Do Minimum’ and ‘2037 Do Something’ Aimsun scenarios, for junctions within the Medway detailed study area north of the M2, as well as Lidsing Road, The Street (Bredhurst) and Boxley Road north of the M20 bridge.
- 3.3.11 The suggested threshold for significance at each junction is a net increase or decrease of 30+ vehicles per hour.
- 3.3.12 The assessments would be undertaken using industry standard software Junctions 9 for priority and roundabout junctions and Linsig for signal-controlled junctions. C&A would report standard output metrics from these assessments i.e. RFC or degree of saturation and queue lengths.

Excluded areas

- 3.3.13 KCC Highways have already confirmed that the KCC-Jacobs model will include detailed assessment of the M20 corridor junctions. It follows that C&A will exclude any of the M20 junctions, or the corridors leading into the Maidstone urban area south of the M20. These areas will be covered by the detailed element of the KCC-Jacobs model, and as previously discussed, it is desirable to avoid overlap between the two models where possible.

Mitigation

- 3.3.14 C&A will also use either the Aimsun model, Junctions 9 or Linsig to test potential capacity mitigation solutions in the area surrounding Lidsing where these are deemed necessary for the impacts of the Lidsing Garden Village traffic.

4 Next Steps

4.1.1 As mentioned above, C&A would like to set up a meeting with KCC and Jacobs to obtain relevant data on the Maidstone Local Review sites from the KCC-Jacobs model.

4.1.2 C&A would welcome comments from KCC on matters including:

- The general method set out above;
- Suggested model outputs;
- Suggested threshold for the significance of traffic impact at junctions;
- The suggested 'dividing line' between the C&A / Fore modelling and the KCC-Jacobs modelling;
- Any other comments from KCC's perspective.