

Justification for a Stepped Housing Requirement

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Project name:	Medway Local Plan	Cottons Lane
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Introduction

As Kent Transport Model (KTM) custodian to Kent County Council (KCC), Jacobs has been commissioned to support Medway Council (MC) to produce the Strategic Transport Assessment (refs: B18.1 to B18.12 inclusive, MLP/ED25 and MLP/ED26) for the Medway Local Plan 2041 (LP).

To ascertain the impact of the LP, the following model scenarios have been developed.:

- 2019 Base Year – Representative of on-ground conditions in 2019, based on a cordon of the KTM and refined to develop the support of LP transport evidence base. The Area of Detailed Modelling (AODM) has been defined using the Medway district boundary with the addition of a 2km boundary.
- 2041 Refined Reference Case (rRC) – Committed and completed developments between 2019 and 2041, including the full build-out of MedwayOne and inclusion of associated approved infrastructure improvements at Four Elms and Main Road Hoo roundabouts.
- 2041 Interim Do Something (iDS) – this scenario builds on the rRC, with the inclusion of the LP site allocations. This scenario was used to determine the need for mitigation on the network.
- 2041 Final Do Something with Mitigation – this builds on the iDS with the inclusion of highway intervention schemes to mitigate highway network issues identified in the iDS. In addition, this scenario includes the updated trip rates to reflect existing accessibility (Stage 1 Modal Shift) and proposed improvements following implementation of sustainable led mitigation strategy (Stage 2 Modal Shift) (ref: B18.2).

The comparison of the 2041 rRC and iDS isolated the impacts of the LP itself, and the results were used to identify potential congestion hot spots on the existing network and, where appropriate, mitigation measures have been determined to alleviate these and concept designs were prepared. As part of defining potential mitigation, the point within the plan period (Year 5, 10 and 15) which these were required was also analysed using a temporal proportionality assessment.

This Technical Memorandum explains the existing and future transport constraints affecting the Medway network, demonstrating that a number of key junctions are operating at or beyond capacity with forecast committed growth and LP growth. This Technical Memorandum also considers and explains the importance of timing the mitigation in line with a stepped housing requirement.

Executive Summary of Findings

The transport evidence prepared in support of the Medway LP demonstrates there are areas on the highway network that are forecast to experience significant operational issues because of committed development, background and LP growth. The modelling identifies that Four Elms roundabout is over capacity before the implementation of the LP, with significant rerouting through Wainscott.

The need for mitigation as a result of the LP was determined at seven junctions. A mitigation design was further prepared to mitigate the full build out of the local plan, in 2041. The mitigation design was then input into the fDS VISUM models and costing analysis was undertaken. Using the housing trajectory (provided by MC in February 2025), a temporal assessment was undertaken to capture at what point in the plan period mitigation would be required.

This analysis identified that two junctions, A228 Peninsula Way / Main Road Hoo and Sans Pareil roundabouts, would require mitigation within the first five years of the plan period. The point at which the junction mitigation is required in the LP period is summarised in Table 1.

Table 1 – Junction Mitigation Requirements

Junction	Mitigation Required		Comment
	5 Year	10 Year	
J3: A228 Peninsula Way / Main Road Hoo	Y	Y	<i>Operating over capacity in Year 5</i>
J4: A228 Peninsula Way / Dux Court Road / Bells Lane	N	N	<i>Operating at capacity in Year 10.</i>
J5: A228 Peninsula Way / Roper's Lane / Ratcliffe Highway	N	N	<i>Operating within capacity in Year 5 but operating at capacity in Year 10.</i>
J6: Sans Pareil Roundabout	Y	Y	<i>Junction is over capacity in Year 5.</i>
J7: A2 High Street / Station Road	N	N	<i>Junction operates at capacity in Year 5 and Year 10. Only exceeds capacity in Year 15.</i>
J8: Pier Road / Gillingham Gate / Dynamo Way Gyratory	N	N	<i>Junction exceeds capacity at the end of the plan period</i>
J10: Dock Road / Middle Street / Wood Street	N	Y	<i>Operating at capacity in Year 5, mitigation required at Year 10 as junction over capacity.</i>

In addition to the junctions requiring mitigation within the first five years of the plan period, the Four Elms roundabout is a known pressure point on the network and is forecast to operate over capacity with the committed growth only.

As part of the evidence base to support the LP, concept designs to mitigate the 2041 demand at those junctions exceeding capacity were prepared. The mitigations considered a large change in existing arrangement, and the associated high-level costings were substantial. These are significant infrastructure schemes, which will require time to develop, secure funding for, obtain approvals for and construct.

Impact of Committed Growth

The RC includes development which is either completed, under construction, committed through planning consent, or otherwise expected to come forward irrespective of the LP. As a result, the operational issues identified within the modelling cannot be considered solely a consequence of the emerging LP.

The growth forecast results in increased flow on key strategic corridors such as A289 Pier Road, A289 Hasted Road and A228 Four Elms Hill/ Peninsula Way for flows travelling through north-west Kent, this is illustrated by the flow increases when compared to the 2019 base) in Figure 6-3, 6-4, 6-7 and 6-8 of the Forecasting Report (ref: B18.1). The same analysis sees reductions of flow on the A289 Wulfere Way approach/exit to the Four Elms roundabout; this is due to the locations of the committed growth whereby larger vehicular volumes approach the junction from A228 Four Elms Hill, and the additional demand creates more opposing flow and increased delay in this locality. Flow previously using A289 Wulfere Way in the Base scenario uses alternate parallel routes such as B200 Cooling Road, Iden Road and Benenden Road (Figure 6-9) in the 2041 RC.

The forecast committed growth identifies large increases of flow on the network. The modelling demonstrates that transport issues arise within the RC scenario, indicating that the network is already forecast to experience operational difficulties because of committed development and background traffic growth. These constraints are therefore not solely attributable to the emerging LP.

The Proportionality Assessment (ref: B18.6) excluded Four Elms Roundabout because mitigation is required under RC conditions alone. This demonstrates that the need for intervention at this location arises independently of LP growth and within the first five years of the plan period.

Mitigation Strategy and the Importance of Timing

The transport evidence has identified a package of highway mitigation measures to address the operational issues forecast across the network. These interventions have been tested through strategic modelling software (VISUM) and local junction modelling. The final mitigations have been incorporated into the 2041 fDS scenario to assess their effectiveness, with the high-level costings for these prepared. Additionally, proportional interim mitigation to unlock the first five years of growth in the plan period have been identified at Four Elms roundabout, A228 Peninsula Way / Main Road Hoo and Sans Pareil roundabouts (see MLP/ED25 and MLP/ED26); MC intends to use this work as a foundation for a Monitor and Manage Mitigation Strategy.

The delivery of the full interventions and mitigation schemes cannot be assumed to occur immediately. Many of the schemes identified are substantial infrastructure projects that require further development, funding, design, approval and construction before their benefits can be realised.

This relationship between infrastructure delivery and development delivery is particularly important for key junctions serving routes to the Hoo Peninsula to provide sufficient capacity and reduce congestion and delay for the proposed growth.

The evidence therefore supports a phased approach whereby development is aligned with the delivery of the necessary transport infrastructure. This ensures that growth occurs in a coordinated and sustainable manner, avoids placing unacceptable stress on an already constrained network, and provides confidence that the planned mitigation can be delivered before significant additional demand is introduced.

Four Elms Roundabout

The 2041 modelling demonstrates that Four Elms Roundabout experiences significant operational issues with the committed growth only, prior to the addition of LP demand. The evidence identifies capacity issues on the A289 approach together with substantial delays, queuing and network re-routing effects. This demonstrates that the need for intervention is driven, at least in part, by committed growth rather than the LP itself.

The addition of LP growth further worsens conditions at Four Elms; the evidence therefore demonstrates that:

- the constraint exists in the RC;
- LP growth exacerbates the constraint;
- mitigation is required to accommodate planned growth;
- the need for intervention is not solely attributable to LP development.

The location of Four Elms roundabout serves numerous key strategic routes through north-west Kent, as such, any significant delays in this location has an impact on the wider network and feeding routes such as A289 Pier Road and A228 Main Road Hoo/ Four Elms Hoo.

The full mitigation design at this junction is detailed in Figure 2-2 (of the Junction Modelling and Mitigation Report (ref: B18.7)), and the high-level costings prepared for this have a value in the region of £51-84 million (further details in Junction Modelling And Mitigation Report (ref: B18.7)).

The need for mitigation within the first five years of the plan period is crucial to unlock growth on the network. As such, an interim, less substantial mitigation option has been developed which would need to be taken forward in a Monitor and Manage Mitigation Strategy. This used the mitigation scheme associated with

the outline planning permission for MedwayOne, which is further detailed in Figure 2-2 of the Junction Modelling And Mitigation Report (ref: B18.7).

The interim assessment using the 2031 LJM software assessment saw all approaches to the junction operating significantly over capacity (except for the Hoo Road approach) in the RC, with substantial queue lengths and vehicle delays. The additional trips from the LP sites further exacerbated the capacity constraints at the junction, which led to reassignment of traffic away from the junction, through Wainscott, specifically on the A289 routes. The LJM assessment found that the proposed Stantec design would provide nil detriment in this location. This is therefore deemed an appropriate proportional mitigation within the first five years of the plan period. This mitigation scheme is considered to require substantially less investment.

This distinction of proportional mitigation and costings is important when considering both the proportionality of developer contributions and the timing of infrastructure delivery.

Hoo Peninsula Constraints

The Hoo Peninsula represents one of the principal growth locations within the LP, however, the transport evidence demonstrates that the ability of the network to accommodate this growth is dependent upon the delivery of a package of highway interventions. Numerous junctions along the Hoo corridor are forecast to experience capacity issues under the future year conditions. Transport modelling demonstrates that, without mitigation, congestion and delay increase materially at several locations.

The evidence therefore indicates that the planned growth on the Hoo Peninsula is intrinsically linked to the delivery of supporting transport infrastructure. Whilst the modelling demonstrates that appropriate mitigation has been identified, development cannot realistically be assumed to come forward independently of these improvements.

The high-level costings and point in the plan period when the three junctions on the Hoo Peninsula require mitigation has been identified and is summarised below:

- J3 - A228 Peninsula Way / Main Road Hoo
 - Full mitigation defined to be delivered by the end of the plan period, forecast to cost in the region of £11-18 million
 - Mitigation required at Year 5 of the plan period
- A228 Peninsula Way / Dux Court Road / Bells Lane Roundabout
 - Full mitigation defined to be delivered by the end of the plan period, forecast to cost £1-2 million
 - Mitigation required at/ beyond Year 10 of the plan period
- A228 Peninsula Way / Ropers Lane / Ratcliffe Highway Roundabout
 - Full mitigation defined to be delivered by the end of the plan period, forecast to cost £1-2 million
 - Mitigation required at / beyond Year 10 of the plan period

The A228 Peninsula Way/ Main Road Hoo roundabout is determined to need mitigation within the first five years of the plan period; with the full mitigation in this location forecast to cost £11-18 million. As such, an interim mitigation has been identified, which would need to be taken forward in a Monitor and Manage Mitigation Strategy.

Jacobs has identified an interim mitigation scheme to improve junction operational performance, which comprises increasing flare lengths on Peninsula Way south and Main Road Hoo approach arms, as well increasing the northbound circulatory lanes to accommodate the three lanes entry on Peninsula Way south

arm. This is detailed in Figure 3-3 of the 2031 Medway Junction Modelling and Mitigation Report (ref: MLP/ED26).

The cost associated with implementing the interim scheme in this location is £2.87million. The need for mitigation and build out of the proposed developments is intrinsically linked; with added development build out, there are additional funds to support mitigation, however, there is also a greater demand on the highway network. MC intends to commission a Monitor and Manage Mitigation Strategy to determine early delivery of interim mitigation schemes.

Sans Pareil Constraints

The Sans Pareil junction handles multiple intersecting corridors, making it a primary capacity constraint across the network. There is large demand on this junction for flows travelling east-west between Gillingham and Hoo area. As the performance of the Sans Pareil junction is intricately linked to the performance at Four Elms, a sensitivity test assuming unlimited capacity at Four Elms has been undertaken. This assesses the performance at Sans Pareil in conditions where all vehicles that wish to use the junction (as if the junction were uncongested) do so. When considering the travel patterns associated with this sensitivity network, mitigation is required within the first five years of the plan period. The increases of flows using this junction in the LP scenario is evidenced in Figure 7-1 and 7-2 of the Forecasting Report (ref: B18.1).

A mitigation design for the full build out of the LP has been defined and considers full signalisation, realignment of the junction and removal of the Wainscott Road approach. This is a considerable mitigation scheme, with the high-level costings for the full mitigation forecast in the range of £23-38 million.

An interim mitigation has been developed; this is summarised in Figure 4-2 of the Medway 2031 Interim Junction Modelling & Mitigation Report (ref: MLP/ED26), which would need to be taken forward in a Monitor and Manage Mitigation Strategy. This captures a movement of lane markings and partial signalisation of the junction. The interim design features a lower complexity profile, which translates to reduced development overhead, which is reflected in the costings of the interim design of £1.14million.

Proportionality and Funding

As part of the LP evidence base, full and proportional mitigation measures have been defined. Those junctions requiring mitigation within the first five years of the plan period have identified interim, proportional mitigation proposals.

Infrastructure contributions should reflect the proportion of impact generated by LP growth over and above that already present within the RC. This approach is consistent with the Proportionality Assessment (ref: B18.6) undertaken as part of the evidence base and reflects the distinction between existing transport problems, committed growth impacts and additional LP impacts.

Implications for Housing Delivery and Plan Strategy

The transport evidence demonstrates that there is limited spare capacity available at several key locations within the Medway highway network. In particular, the evidence shows that major junctions such as Four Elms, the A228 Main Road Hoo corridor and Sans Pareil roundabout are forecast to experience significant operational issues.

Whilst an appropriate package of mitigation has been identified, the delivery of such interventions will require time. Scheme development, funding arrangements, approvals, detailed design and construction programmes must all be completed before the full benefits of these interventions can be realised.

Consequently, there is limited value in considering materially higher levels of growth than those already proposed within the LP unless additional transport infrastructure is first identified and secured.

The evidence therefore supports a stepped approach to housing delivery whereby the timing and rate of development is aligned with the realistic and deliverable implementation of transport infrastructure. Such an approach reflects the existing constraints affecting the network, recognises the role of committed development in creating those constraints, and provides a robust mechanism for ensuring that growth occurs alongside the infrastructure required to support it.

Summary and Conclusion

The transport evidence demonstrates that a number of key locations within the Medway highway network are forecast to experience significant operational constraints.

The LP adds further demand to this already constrained network, particularly on the Hoo Peninsula corridor, and consequently exacerbates existing congestion, delay and capacity issues. Appropriate mitigation has been identified, indicating that the proposed level of growth can be accommodated subject to delivery of the identified infrastructure.

However, many of the required interventions are significant schemes that will require time to develop, fund, obtain approvals for and deliver.

Accordingly, the transport evidence supports a stepped housing requirement. This approach would align the timing of growth with the realistic delivery of transport infrastructure, ensure the impacts of development are appropriately managed, and provide a robust and deliverable basis for accommodating future growth within Medway.