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BY ONLINE SUBMISSION ONLY

**Growth, Environment &
Transport**

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Maidstone
Kent
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Your Reference:
TR010032

KCC Interested Party
Reference Number:
20035779

Date: 17th November 2023

Dear Rynd,

RE: Application by National Highways for an Order Granting Development Consent for the Lower Thames Crossing (LTC) - Kent County Council's Submission to Deadline 7

As outlined within the Examination Timetable (Annex A of the Rule 8 letter (PD-020)), this letter is Kent County Council's (KCC) Deadline 7 (D7) submission which provides the following:

- Comments on Applicant's submissions at Deadline 6 (D6)
- Comments on the Applicant's submission of draft Section 106 agreement and any other draft legal agreements
- Comments on any information requested by the ExA and received by D6

Comments on Applicant's submissions at Deadline 6

9.134 Wider Network Impacts Position Paper [REP6-092]

The document is a long re-iteration of the Applicant's position on mitigation of Wider Network Impacts which were conveyed at the Issue Specific Hearings on Traffic and Transportation.

KCC considers that an appropriate response to this document requires consideration of the following elements:

1. A consideration of the policy basis of the Applicant's position.
2. A consideration of the need for specified mitigation identified in the Wider Network Impacts Study ("the Study").

3. A consideration of the need for, and form of, a Silvertown-style obligation as to monitoring of, and mitigation of, further potential traffic impacts.
4. A consideration of the need for, and form of, a Requirement to ensure the proper funding by the Applicant of the necessary mitigation works at Blue Bell Hill, in default of full funding from central government through the Large Local Major process.

Policy

KCC firstly wishes to remind the Examining Authority (ExA) of its position on the policy basis for requiring appropriate mitigation. This is in the context of the Applicant's overall position, based on its interpretation of the provisions of the National Policy Statement (NPS) for National Networks, that it is under no obligation to mitigate impacts caused by additional traffic. The Applicant considers that its obligations are limited only to mitigation for severance, accessibility and safety.

It is on that basis that the only measure of mitigation currently proposed in the draft Section 106 (S106) for KCC's network is a single pedestrian crossing on Valley Drive.

KCC contends that there is no basis for such a limited view. Instead, a proper reading of the NPS indicates clearly that appropriate mitigation for effects on traffic congestion should properly be required from the Applicant.

These submissions have already been set out extensively during the examination (see in particular transcript of ISH4 [EV-042e], pages 72-75, M. Humphries for KCC and pages 75-78, G. MacKenzie for Thurrock.) In summary:

1. The Applicant's suggestion that there should only be mitigation for severance, accessibility and safety flies in the face of the clear general policy of the NPS that there should be mitigation, where necessary, for the full range of impacts. In particular, paragraph 5.202 explicitly states that: "*The consideration and mitigation of transport impacts is an essential part of Government's wider policy objectives for sustainable development.*"
2. More generally, the NPS is replete with other references which either explicitly or implicitly indicate that wider traffic impacts, and not just the matters considered by the Applicant, are to be considered and mitigated.
3. The Applicant's attempt to confine reading of the NPS only to specific paragraphs dealing with individual impacts cannot be correct. The full text of the NPS is to be considered, including all the references referred to above which require consideration of wider traffic effects, must be considered.
4. The Applicant's approach also flies in the face of well-settled general planning policy which suggests that significant effects from a scheme should be mitigated.
5. That general policy is further clarified in the draft revised NPS, which is a material consideration to which weight can properly be attached. That makes explicit reference in several places, to the desirability in appropriate circumstances, of National Highways actually funding mitigation schemes, both inside and outside the scheme boundary.

Identified mitigation

The Study identifies the following necessary mitigations for identified impacts. The details are set out in the Study, which is appended as Appendix B. It should be noted that National Highways were provided with the Appendix B document on 16 November 2023, and so have not provided any comment. The report in Appendix B reflects studies undertaken by Kent County Council, and as acknowledged within the document, does not represent the views of National Highways.

It is KCC's position that provision for funding (estimated at £23.3 million) of these mitigations by the Applicant should be made by the s106 Agreement.

Mitigation schemes are identified on a corridor basis and include the following:

- For the A2 corridor:
 - Implementation of weight limits on roads into Gravesend.
 - Signal junction upgrades to provide bus priority.
 - Bus stop facilities and infrastructure improvements.
 - Junction capacity improvements at:
 - 1) Hall Road/Station Road/New Barn Road roundabout
 - 2) A2/A227 Wrotham Road Dumbbell roundabout junction
 - 3) Valley Drive/Marling Way junction
 - 4) Valley Drive/St Hilda's way junction.
- For the A227 and A228 corridors:
 - Reduction of the speed limits across the A227, A228 and other minor roads across the corridor.
 - Introduction of weight limits on minor roads between the A227 and A228.
 - Implement traffic calming measures minor roads between the A227 and A228.
 - Provide a series of cameras and Variable Messaging Signs on the A2/M2 to improve traffic routing and encourage traffic on the strategic arterial routes.
- For the A226 corridor
 - Upgrade the cycle provision on the route between Gravesend and Strood

Silvertown-style monitoring/mitigation provision

KCC does welcome the Applicant's proposed 'without prejudice' Requirement in paragraphs 4.2 to 4.3, for possible inclusion in the draft DCO. It would secure similar functionality to the Silvertown Tunnel DCO Requirement relating to post opening monitoring and mitigation of highways impacts.

The Applicant argues that the Proposed Requirement is not necessary in paragraphs 4.1.15 to 4.1.17 and 4.2.3, [REP6-092] saying the existing consultative process around the Road Investment Strategy (RIS) is tried & tested, already established, etc. However, a Silvertown style agreement focusses attention on our Local Road Network (LRN), whereas RIS looks at the Strategic Road Network (SRN) for the whole country. Additionally, given the precedent of National Highways ring-fencing a sum of c.£30m for Designated Funds in the LTC area, it should not be too difficult to provide a commensurate sum for the proposed Lower Thames Network Management Group (NMG) to draw upon.

The meaning of "unacceptable impacts" is earlier discussed starting on page 17 [REP6-092]. The Applicant argues that they should be defined as they relate to safety, environment and severance / accessibility. KCC's response to such a truncated consideration is set out in the policy section above. The Applicant then goes on to demonstrate how this has been done for the LTC itself, Blue Bell Hill and the A2/M2 corridor.

To finish, the Applicant reiterates its familiar position on funding scenarios for mitigations, i.e., money is available elsewhere, although their Table 4.1, Implementation scenarios for the proposed Requirement, does appear to acknowledge the possible need for "Major works within / outside highways boundary" on page 35. It is KCC's view that this demonstrates that the Applicant acknowledges the need for mitigation for their scheme, but those works should be funded and delivered by other authorities with funding from other sources. For the reasons set out in this submission, that is an inappropriate response.

Blue Bell Hill

KCC set out at ISH10 the very real uncertainty surrounding the funding of improvements to Blue Bell Hill which are necessitated by the LTC. For those reasons, it is appropriate to provide, by way of Requirement, for the Applicant to provide funding for those improvements, in the event that central government does not fully fund the improvements. The following is a suggested text for the Requirement:

Blue Bell Hill Works

1. In this Requirement:

"The Blue Bell Hill Works" means the A229 Blue Bell Hill Improvement Scheme as defined by the Local Highway Authority (Kent County Council) from time to time for works to the M20 Junction 6, M2 Junction 3, A229 and A2045.

"Large Local Majors funding" means funding from the National Roads Fund as announced by Government on 18 December 2018 for schemes that cannot reasonably be funded from any other route and the lower threshold for eligible schemes is £50 million or such equivalent scheme funding as may from time to time exist.

2. In the event that the Local Highway Authority are informed that Large Local Majors funding to undertake the Blue Bell Hill Works from the Department for Transport is not to be awarded to Kent County Council in full (100% funding), the Local Highway Authority shall within 14 days notify the undertaker in writing.
3. Upon receipt of such notification mentioned in paragraph 2 above, the undertaker shall as soon as reasonably practicable thereafter undertake or procure the undertaking of the Blue Bell Hill Works to the reasonable satisfaction of Kent County Council as Highway Authority and shall use its best endeavours to ensure that the Blue Bell Hill Works are open to traffic before the Lower Thames Crossing opens to traffic.
4. For the avoidance of doubt, the undertaking or procurement of the said works shall include the entire funding of the works by undertaker, unless Kent County Council shall agree otherwise (such agreement not to be unreasonably withheld).

5. In the event that the Local Highway Authority are informed that Large Local Majors funding to undertake the Blue Bell Hill Works from the Department for Transport is to be awarded only in an amount less than 100% funding, the Local Highway Authority shall within 14 days notify the undertaker in writing.
6. Upon receipt of such notification mentioned in paragraph 4 above, the undertaker shall as soon as reasonably practicable thereafter make a payment to the Local Highway Authority equal to the difference between the sum of Large Local Majors funding awarded and the full cost of the Blue Bell Hill Works.

6.3 Environmental Statement Appendices Appendix 6.9 - Draft Archaeological Mitigation Strategy and Outline Written Scheme of Investigation v3.0 [REP6-045]

KCC has reviewed and welcomes the recent changes made to the *Draft Archaeological Mitigation Strategy and Outline Written Scheme of Investigation v3.0* [REP6-045].

More specifically, the key changes in the latest version of the *Draft Archaeological Mitigation Strategy and Outline Written Scheme of Investigation* that are welcomed by KCC are as follows:

- Paragraph 2.5.7 – Scope to address marine archaeology issues
- Table 3.1 – removal of words ‘above ground’
- Paragraph 7.1.14 – new and additional wording related to unexpected finds
- Section 7.2 – communication, monitoring and sign-off – additional and changed wording to, amongst other things, better clarify the role of Local Authority Archaeological Advisors
- Paragraphs 7.3.36 and 7.3.127 – revised wording related to waterlogged deposits

However, there are still further changes that will be needed before all the concerns we have raised with NH have been met. We will await a further revised version of this document at Deadline 7.

Comments on Applicant’s submission of draft s106 agreement and required obligations outstanding

KCC is aware that the Applicant will be submitting draft Section 106 agreements and any other legal agreements at D7 for review by the ExA. The County Council has been involved in recent negotiations with the Applicant during the preparation of a draft s106 agreement between National Highways and KCC. However, it must be noted that KCC has been disappointed by the lack of obligations put forward by the Applicant in the draft s106 and frustrated by the amount of time that the Applicant has left for negotiations to take place.

KCC submitted the following list of asks to National Highways for inclusion within the draft S106 Agreement. For a scheme of the size and scale of the LTC, the County Council does

not deem this list to be unreasonable. At the time of writing, recent negotiations on some (but not all) of the above additional obligations have been positive. However, we believe that these discussions are not reflected in the version of the draft s106 agreement we expect will be submitted by the Applicant at this Deadline 7. KCC remains frustrated at the time left to negotiate draft legal wording and financial figures for inclusion with the final s106 Agreement which is due to be submitted by Deadline 9 (15th December).

KCC Requests for Additional S106 Obligations

- An obligation for National Highways, following consultation with KCC, to identify and fully fund mitigation to local bus services which are disrupted because of temporary works during construction. This would include a financial contribution of £80,000 due to delays arising from construction traffic management measures as set out in the Transport Assessment (APP-529). In addition, KCC Public Transport requires a further £80,000 to cover the temporary works that may impact bus services but which the Transport Assessment [APP-529] cannot determine at this stage. This funding could be held by the Applicant and only drawn down upon in the event that this is required due to the temporary construction works. This totals a potential contribution of £160,000 for public transport.
- A financial contribution towards interventions required to mitigate loss of Public Rights of Way (PRoW) and access to open space during the construction phase for residents of Westcourt and Riverside wards. These interventions would be developed in consultation with KCC.
- An obligation that the Applicant's Wider Network Impact Monitoring and Management Plan [APP-545] includes provision for a funding package (including contingency and index linking) from which the Applicant can implement junction and link mitigations where required as per the monitoring data. Alternatively, then the funding package should be secured as s106 for KCC to draw down on for Local Road Network mitigation.
- An obligation for National Highways to compensate KCC for the demonstrable loss of income at Shorne Woods Country Park (SWCP) before, during and after construction of the LTC. An annual payment is needed to protect cash flow and to mitigate against compounded losses, ensuring SWCP is left in no worse of position than it would have otherwise been before the scheme.
- A commitment from the National Highways to fund a community engagement programme and to collaborate with KCC to produce a campaign to help highlight what Shorne Woods Country Park (SWCP) has to offer. The aim of this will be to inform and promote the Country Park from an educational and environmental standpoint. We consider this will go some of the way to help mitigate some of the negative impacts that will be caused by the LTC.
- An agreement from the Applicant that members of the SWCP team, as experts in their field, lead on the planting and maintenance of the new woodland mitigation. This will help manage existing Ancient Woodland and the integration of a new habitat. KCC estimates that two members of staff will need to be dedicated full time to deliver this mitigation and seeks a commitment that associated costs would be covered by the Applicant.
- An obligation that National Highways should pay KCC a commuted sum to cover the additional maintenance costs of any new and improved Public Rights of Way (PRoW) which are to be transferred to KCC.

- An obligation for National Highways to install active travel counters for 12 months prior to construction and three years post road opening. This is needed to monitor the negative impact of the scheme on existing PRoW use.
- An obligation that National Highways should fund KCC to carry out identified mitigation measures on the Local Road Network (LRN) as identified through the Wider Network Impact (WNI) study (details of mitigation schemes including costs are provided in Appendix B to this D7 submission). The combined cost of all the proposed mitigation is estimated at £23.3m.
- KCC has developed an improvement scheme for the A229 Blue Bell Hill to mitigate the existing situation as exacerbated by the effects of the LTC. There should be a Requirement by Applicant to carry out the A229 Blue Bell Hill Improvement Scheme at its own expense in the eventuality that the Government does not provide funding for its delivery. In the alternative, the Applicant should contribute through the s106 funds to KCC to carry out such works (approximately £235million based on current programme, subject to scheme development). If the Government does provide the Large Local Major (LLM) scheme funding for the mitigation works, then the Applicant should provide the match funding element (at 15% is approximately £35million based on current programme, subject to scheme development) towards those works, should 100% funding from LLM not be confirmed. In addition, to allow KCC to continue to develop the scheme for consideration for LLM funding, the Applicant should contribute to the Outline Business Case (OBC) funding gap (approximately £3m towards the cost of the OBC) by June 2024 to allow KCC to meet its current programme.
- An obligation for National Highways to fully fund and mitigate the impacts of severance for Walkers, Cyclists and Horse Riders on Wrotham Road.
- An obligation for the Applicant to carry out a programme of pre-emptive works to prevent or minimise damage to the Local Road Network during the LTC construction phase. In the alternative, funding for KCC to undertake such works at National Highway's expense.

Heritage Section 106 Contributions

In addition to the obligations above, KCC has also been in discussion with the Applicant regarding the following Heritage S106 obligations. The Applicant and KCC have agreed to focus on the following three obligations as the other asks have been addressed either within Control Documents or proposed Designated Fund projects:

1. **Heritage Monitoring of archaeological fieldwork and other mitigation** - £300 per day call out rate (updated for inflation at the time) and calculated on the basis of weekly visits during the main mitigation programme plus follow up work and post excavation assessment and analysis (52 x 300 = £15,600 x 8 years = **£124,800**).
2. **Kent Historic Environment Record (HER) enhancement (£30,000)**. To allow for the significant changes to the HER that would result from the project and to ensure that the public can benefit from the new knowledge that would result from the project – to include upgrade of the online HER and with interpretation to be placed on the website – videos, articles etc.
3. **Kent Archive Special Materials Repository - (£200,000)** – contribution towards costs for constructing/fitting out a store and annual storage costs thereafter.

For reference, the other heritage related asks put forward by KCC were as follows:

- **Heritage Asset Improvement Contribution** (for specific heritage assets to be identified and agreed on a case by case basis – allocate **(£100,000)**).
- **Heritage Interpretation** – provision for site-wide interpretation **(£80,000)**.
- **Gravesend Museum (£100,000)** – for infrastructure and staffing to allow display and interpretation of archaeological finds.
- **Main Archive Storage** - box charge at agreed rate expected to be **c.£250 per box** (figure to add based on results of NH L&B archives project).
- The costs of storing a bulk archive box at Deepstore for 25 years are estimated at **£234** with the rest being our admin charge (to be increased in line with inflation).
- **Heritage Skills** - training of Palaeolithic and Geoarchaeological specialists. Link with Construction Skills Hub (jointly with North side). Also to allow for upskilling and training of teams **(£50,000)**.
- **Community Archaeologist post** (after the present 2 day a week NH L&B funded post (2023 and 2024) at least to run through the full project delivery phase until road open. Continue 2 days per week for five years (2025 – 2030) (52 weeks @ £600 = £31,200 x 5 = **£156,000**) (to be increased in line with inflation etc.).
- **Oral History Collection** - Specialist for 6 weeks to work with Community Archaeologist and volunteers **(£20,000)**. To collect information from local residents about the LTC project area before the new road is constructed.
- **Update South-East Research Framework (SERF) and Greater Thames Area Research Framework (GTARF) – (£25,000.00)** for specialists and KCC officer time to update SERF and GTARF to take account of key discoveries from LTC.

Comments on any information requested by the ExA and received by D6

Kent County Council's Submission to Deadline 6 [REP6-138]

KCC's Deadline 6 submission [REP6-138] noted that the Council would respond to ISH8 Action Point 9 at Deadline 7. Our response to this action points is as follows:

ISH 8 Action Point 9: KCC Shorne Woods Country Park Progress Update

“Provide an update in response of any draft s106, or equivalent side agreement process.”

KCC echoes the update provided by the Applicant which states the following:

The Applicant and Kent County Council, with the Valuation Office Agency, have had positive discussions on the matter, and agreed that a mechanism for providing and reviewing evidence linked to a formula for the payment of compensation for potential reductions in visitors (and therefore income) will be secured by a Side Agreement. It is agreed that this would be considered and paid quarterly, and would cover 100% of identified losses related to the LTC Project as determined by a methodology to be finalised.

The Applicant, Valuation Office Agency and Kent County Council are working to finalise the details of the mechanism. At present, areas of disagreement remaining under discussion include the assumption by KCC that all observed losses incurred by SWCP from the previous quarter and forecast demand are related solely to the LTC Project, and the assumption by



KCC that quarterly income forecasts should be based only on the previous observed quarter before construction. The Applicant has suggested in outline that evidence (via commentary) be provided quarterly to support KCC's application for compensation that would be considered against the activities being undertaken by Lower Thames Crossing, and other variables, during that quarter. KCC accept this in principle subject to agreement of wording within the Side Agreement. The Applicant has taken an action to provide the wording for this approach.

KCC's main concern is agreeing the wording of such Side Agreement within the timeframes of the Examination and would fully encourage the Applicant to ensure timely provision of draft wording to enable a final signed and sealed Agreement to be achieved by Deadline 9 of the Examination (15th December).

It is also understood the proposed car parking facilities near SWCP is to be removed from the proposals and this is welcomed by KCC as we would have only accepted the car park if it came with the facilities that would be required to make it financially viable.

ISH10 Action Point 11: Bridleway Best Practice

"Provide documentation/photographic examples of best practice management of bridleways in relation to reducing use by inappropriate persons and vehicles accessing such routes."

In response to ISH10 Action Point 11, KCC has prepared a statement on the Council's views on restricting inappropriate use of bridleways. This statement can be found in Appendix A of this submission.

Wider Network Impacts Update

KCC confirmed both orally at ISH10 and within our Deadline 6 submission that the outputs of the second phase of the Wider Network Impacts (WNI) study would be available by Deadline 7. The outputs of the second phase of the WNI study is attached to this letter as Appendix B.

It should be noted that National Highways were provided with this Appendix B document on 16 November 2023, and so have not provided any comment. The report in appendix B reflects studies undertaken by Kent County Council, and as acknowledged within the document, does not represent the views of National Highways.

Kent Downs AONB Unit Deadline 6 Submission – Post-event submissions, including written submission of oral comments made at the hearings held 16 to 24 Oct 2023 [REP6-140]

In the Kent Downs AONB Unit post-event submissions submitted at Deadline 6 [REP6-140], KCC notes the comments made in relation to Hole Farm Community Woodland, in particular how the woodland is proposed to compensate nitrogen deposition impacts as a result of the scheme.

KCC supports the concerns raised by the Kent Downs AONB Unit. The Applicant's proposals to compensate the impacts of Nitrogen deposition arising at sites in the Kent Downs AONB at Hole Farm is inappropriate. Whilst the principle of enhancing existing woodland is a good one, the practicalities mean that it may not be as good as intended or happen. With this approach there are also a large number of landowners from whom agreement would need to be sought.



It is KCC's view that the Applicant's original proposals to create woodlands within both sides of the River Thames is more achievable. The areas of Nitrogen Deposition compensation should not be based on the ability to create woodland but instead on the needs/requirements. More importantly, compensation should not be focused on one large area at the very north of the scheme e.g. Hole Farm, which is a long distance from the area of impact.

Yours sincerely,

Simon Jones

Corporate Director – Growth, Environment & Transport



A122 LOWER THAMES CROSSING

Appendix A - Kent County Council statement on restricting inappropriate use of bridleways

**Produced by Kent County Council
(Interested Party Reference Number: 20035779)**

17th November 2023

1. Introduction

- 1.1. This statement on Kent County Council's (KCC) views on restricting inappropriate use of bridleways arises from the Examining Authority's Action Point 11 [EV-082] following Issue Specific Hearing 10 (ISH10) held on 24th October 2023:
 - **Bridleway best practice:** Provide documentation / photographic examples of best practice management of bridleways in relation to reducing use by inappropriate persons and vehicles accessing such routes.
- 1.2. The appropriate KCC officers were not available to respond at the time, so KCC appreciates the Examining Authority's consideration of our delayed response.

2. Kent County Council's views on restricting inappropriate use of bridleways

- 2.1. In general, KCC policy is to remove not install barriers on public rights of way, as people with pushchairs, wheelchairs, bicycles and particularly adaptive bicycles would find them hard or impossible to negotiate. They would therefore be a barrier to movement, contrary to both government and KCC policy to encourage active travel.
- 2.2. This is in line with both the Department for Transport's (DfT) Local Transport Note (LTN 1/20) on Cycle Infrastructure Design and KCC's Countryside Access Improvement Plan (CAIP) Appendix 1: Operational Management. Relevant clauses of these documents are provided as Annex A and B respectively at the end of this statement.
- 2.3. In terms of restricting inappropriate use of footpaths, gates and accessible kissing gates are a potential solution. A-frame barriers can be employed on cycle tracks, although this would be a last resort as they still restrict use by some groups and powered two-wheelers can often still manoeuvre through, so the general move is to remove them where we can.
- 2.4. In terms of restricting inappropriate use of bridleways, amending or narrowing entrance points to make them less accessible to vehicles can deter fly tipping. However, there is little or nothing that can be deployed on bridleways that will prevent motorcycle use without preventing use by either equestrians and or mobility vehicle users. As above, A-frame barriers are probably the most effective in preventing motorcycle / quad bike use, but of course also prevent these other legitimate modes of access. In some instances, it may be possible to accommodate a horse stile with chicane adjacent to an A-frame barrier within the width of the bridleway. While this may slow motorcycle / quad bike use it will not exclude it.
- 2.5. KCC would challenge the premise that bridleway designation encourages motor vehicle nuisance. We feel it simply rules out the installation of barriers as a means to tackle it. Motor vehicle nuisance in terms of motorcycles and quad bikes is endemic in Dartford and Gravesham. It occurs irrespective of the status of the routes – and is as prevalent on roads.

- 2.6. The most effective solution is active enforcement / policing. A good example of this relates to the Medway Gap where we introduced an access-by-permit system and some target hardening of access points amongst other measures. That has been backed by a dedicated Police Community Support Officer (PCSO) resource until recently. It is the active policing and increased use by legitimate lawful users that has been effective, not the barriers.

Annex A: Relevant Clauses of Department for Transport Local Transport Note (LTN) 1/20 Cycle Infrastructure Design (July 2020)

Summary Principle 16:

Access control measures, such as chicane barriers and dismount signs, should not be used. They reduce the usability of a route for everyone and may exclude people riding nonstandard cycles and cargo bikes. They reduce the capacity of a route as well as the directness and comfort. Schemes should not be designed in such a way that access controls, obstructions and barriers are even necessary; pedestrians and cyclists should be kept separate with clear, delineated routes as outlined in the principles above.

Section 8.3 Access controls:

8.3.1 Access controls can reduce the usability of a route by all cyclists and may exclude some disabled people and others riding nonstandard cycles. There should therefore be a general presumption against the use of access controls unless there is a persistent and significant problem of antisocial moped or motorcycle access that cannot be controlled through periodic policing.

8.3.2 Access controls that require the cyclist to dismount or cannot accommodate the cycle design vehicle are not inclusive and should not be used.

8.3.3 Access controls should not be required simply to control cyclists on the approach to a road or footway crossing. It will normally be sufficient to provide good sightlines and road markings so that cyclists clearly understand the need to take care and give way to pedestrians and other traffic at such points.

8.3.4 Chicane barriers cannot be used by people on tandems, tricycles, cargo bikes and people with child trailers. They may also be inaccessible to some types of wheelchair and mobility scooter. An access control that requires cyclists to dismount will exclude hand cyclists and others who cannot easily walk. Barriers fitted with plates that are designed to be narrower than motorcycle handlebars will also leave a gap that is narrower than many larger cycles. This will require cyclists to stop and put a foot down to pass through, which can be difficult when carrying children or heavy luggage.

8.3.5 An alternative method is to provide bollards at a minimum of 1.5m spacing, which allows users to approach in a straight line whilst permitting all types of cycle and mobility scooter to gain access. If access is required by wider maintenance vehicles, a lockable bollard can be used.

Annex B: Relevant Clauses of KCC's Countryside Access Improvement Plan (CAIP) Appendix 1: Operational Management

Least restrictive access

5.5 In October 2010 DEFRA produced good practice guidance relating to the relevance of the Equality Act 2010 to public rights of way management. The Equality Act 2010 replaced the earlier Disability Discrimination Act 1995.

5.6 The good practice guidance indicated that authorities should:

- 1) Have a published policy on how it will meet the requirements of the Equality Act in relation to public rights of way.
- 2) Ensure that any structures they give lawful authority to are clearly specified and documented.
- 3) Consider including in any specification, provision to remove the structure when the need for it changes or ceases.
- 4) Consider displaying information on all lawful structures (including their accessibility) to enable someone with limited mobility to plan routes other than just those that are officially designated as easy access

The service has adopted policy and practice to address each of these elements:

- 1) Have a published policy on how it will meet the requirements of the Equality Act 2010 in relation to public rights of way.

5.7 A policy of least restrictive access was formerly adopted by the County Council in 2006. The policy sought to limit the introduction of further structures on the rights of way network and to actively seek the removal of existing stiles. It is one way in which the service actively tackles disadvantage within communities. 3000+ stiles have been removed from the public rights of way network since the introduction of this policy. Where stiles remain, they prevent use of paths by many in the community, particularly the elderly, young and those who suffer some form of ambulant disability.

Installation of barriers and gates for the purposes of public safety

5.15 Where barriers are requested for the purposes of safeguarding the public, for instance:

- in response to reports of nuisance motor vehicle misuse on public footpaths and bridleways;
- in response to damaging use, or
- barriers are required to enforce traffic restrictions.

Full consideration will be given to the need to preserve access for legitimate public users. Where required easy access radar key operated gates may be installed alongside barriers to facilitate use by mobility vehicle users.

5.16 In all instances where barriers are requested it is expected that the evidence available will satisfy the safety tests that the County Council must meet, as set out in the Highways Act 1980 Section 66. The installation of barriers must be likely to prevent a nuisance and safeguard users of the highway.



A122 LOWER THAMES CROSSING

Appendix B – Wider Network Impact (WNI) Study

**Produced by Kent County Council
(Interested Party Reference Number: 20035779)**

17th November 2023

1. Introduction

- 1.1. Transport and Highway impacts of the Lower Thames Crossing (LTC) scheme are discussed in Kent County Council's (KCC) Local Impact Report (LIR) [REP1-241] and Written Representation (WR) [REP1-243]. KCC has further elaborated on these impacts in subsequent submissions throughout the examination period.
- 1.2. This note focuses on providing an updated summary of the Wider Network Impacts (Transport Impact B in KCC's Local Impact Report [REP1-241]) study commissioned by Kent County Council and funded by National Highways. The information presented builds on 'Agreeing the Objectives' Task One report as appended to the LIR [REP1-241]
- 1.3. The full Wider Network Impact (WNI) study can be made available on request to appropriate parties. The full study has not been appended to this note as it contains commercially sensitive information. The mitigation schemes within the WNI Study will continue to be developed through consultation with National Highways, Local Planning Authorities (LPAs) and the public, should funding for the interventions be achieved.
- 1.4. It should be noted that National Highways were provided with this document on 16 November 2023, and so have not provided any comment. This report reflects studies undertaken by Kent County Council, and as acknowledged within the document, does not represent the views of National Highways.

2. Funding of identified mitigations – KCC position

- 2.1. National Highways do not consider that the proposed interventions are required to make the LTC acceptable. KCC fundamentally disagrees with National Highways' stance on this matter. It remains KCC's view that where the traffic modelling demonstrates an adverse effect on the highway network because of the LTC, it is imperative the Project mitigates these impacts. It is not appropriate for KCC to be expected to competitively bid for funding from entirely separate national funding pots (competing with the other affected Local Highway Authorities in the LTC area) to deliver measures that are necessary to mitigate the impacts of the LTC.
- 2.2. The mitigation for these impacts should be secured through an obligation in the Section 106 (s106) Agreement. As it stands, the draft s106 Agreement provides no provision for these mitigation measures to be delivered.

3. Corridor Identification and summary

- 3.1. The Task One 'Agreeing the Objectives' report (Appendix B to KCC's Local Impact Report – REP1-241) presented corridors to be taken forward to assessment. Following further discussion, the Chatham Road between Old Chatham Road and A229 – Kity's Coty (South of Bluebell Hill) corridor was removed from the study and will now be included in the A229 Bluebell Hill scheme. The remaining study corridors (Figure 1) are as follows:
 - **Corridor 1:** A2 Corridor - from Gravesend to the A2 between Springhead and Gravesend East
 - **Corridor 2a:** A227 Corridor – between A2/M2 and A20/M20

- **Corridor 2b:** A228 Corridor – between A2/M2 and A20/M20
- **Corridor 3:** A226 Gravesend Road – between A289 and Dillywood Lane

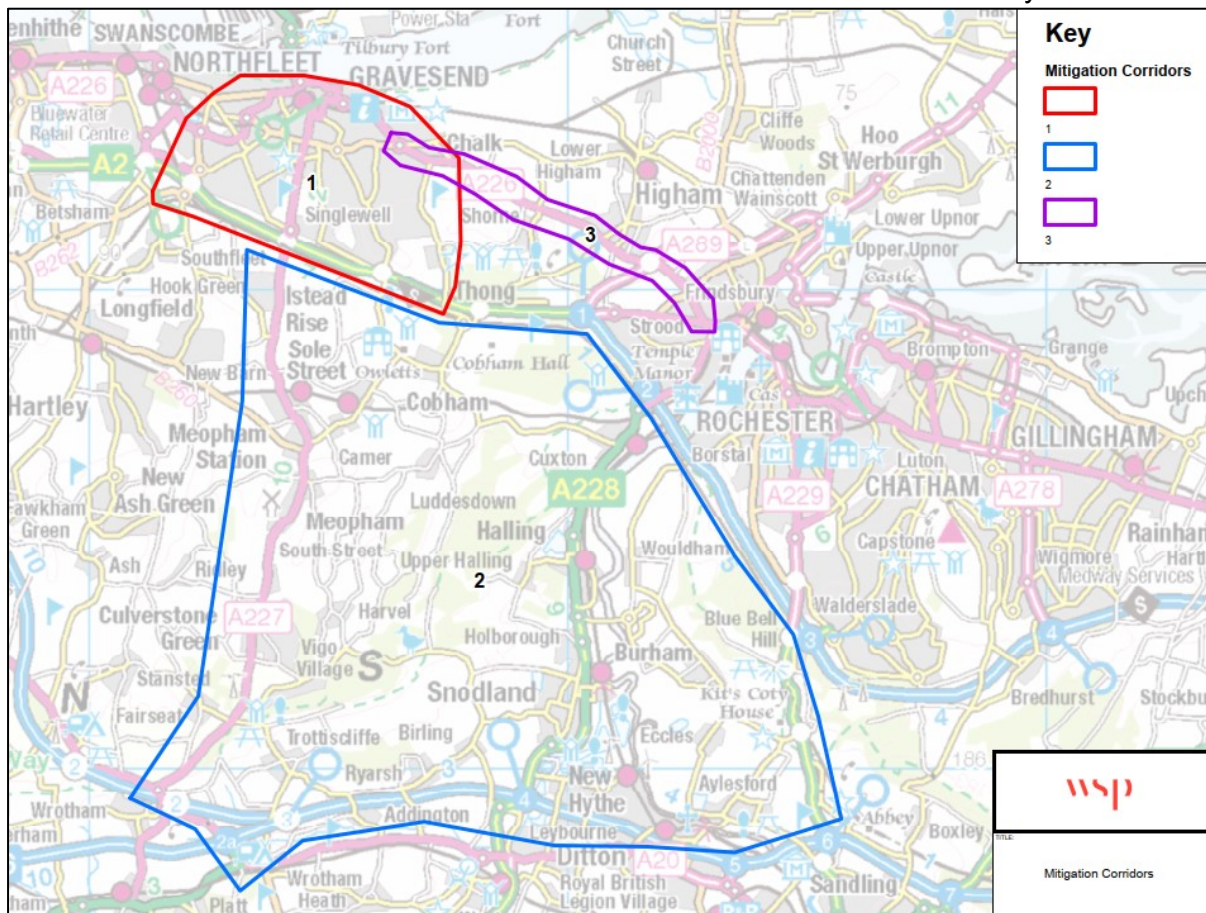


Figure 1: Mitigation corridors as identified within the WNI Study

3.2. A2 Corridor

3.2.1. The A2 Corridor study area spans the A2 access junctions between Springhead and Gravesend East. The corridor includes the Hall Road/ Station Road/ New Barn Road Roundabout, the Wrotham Road dumbbell junctions and the Valley Drive roundabouts. The study also focuses on the major corridors into Gravesend including Valley Drive, A227 Wrotham Road, Springhead Road and Hall Road.

3.3. A227 and A228

3.3.1. For modelling purposes, the A227 and A228 have been combined into a single north/south corridor. Both routes provide connections from the A2/M2 and the A20/M20 and potential rat running between the two corridors has been raised as an issue. Combining these corridors has enabled the focus to remain on the reduced use of inappropriate routes within the corridor area.

3.4. A226 Gravesend Road

3.4.1. The third corridor is the A226 Road between A289 and Dillywood Lane and is focussed on provision for cycling. The identified corridor in the initial report was only approximately 500m in length. KCC and National Highways have agreed for the route to be lengthened to connect into the A2 Gravesend Road at the eastern end and for the western end of the corridor connect to Chalk Road in Gravesend. Improving cycle

facilities for the original short section would have been counterproductive and would not align the guidance from Cycle Infrastructure Design LTN 1/20.

4. Assessment metrics

4.1. Consultants WSP, as commissioned by KCC, developed a range of metrics to assess the wider network impact of the LTC. These metrics were selected to ensure that all highway users are considered and to ensure that the identification of impacts and subsequent mitigation is not based solely on highway capacity improvements and instead considers all highway users. This approach is aligned to KCC's statutory Local Transport Plan 4 (LTP4) ambitions and the National Planning Policy Framework (NPPF).

4.2. These metrics were presented in the 'Agreeing the Objectives' Task One report but have been presented again in Table 1 for ease.

Table 1: Original assessment criteria

Junction / Link Metrics	Criteria 1	Criteria 2
Link / Junction Capacity	Volume to Capacity (V/C) increases by more than 10% in Do Something (DS) scenario	The DS V/C level is more than 85%
Queue length	Does it now obstruct another junction or entry/exit in DS scenario?	
Delay	Travel time increase by 10% in DS scenario	Travel time increases by more than 5 minutes in DS scenario
HGV Flow	HGV increase by 60 in any direction	HGVs double in any direction
Journey time	Increase in journey time of 10% in DS scenario	Increase of journey time of 10 minutes or more in DS scenario
Public Transport	Bus route journey time increases by 5% across a corridor in DS scenario	
Active Travel	Links that form part of signed cycle network where there is on-road cycle provision and traffic flow increase by 5% or more	
Development Impact	Major development planned within 3 miles and not included in DS scenario	

4.3. The initial assessment to identify where LTC was causing problems on the Local Road Network (LRN) was carried out against the assessment criteria summarised in Table 1. The proposed mitigation measures, as discussed in Section 5, were subsequently designed to target the mitigation of the failed criteria. For a detailed breakdown of the

'passed' and 'failed' criteria for each corridor, please refer to 'Agreeing the Objectives' Task One report (Appendix B to KCC's Local Impact Report REP1-242).

5. Corridor Objectives and proposed mitigation measures

5.1. A2 Corridor

5.1.1. The primary objective for this corridor is to improve junction capacity at the junctions from the A2 to reduce traffic congestion contributed to by LTC, particularly where these are forecast to block through other junctions and lead to additional delays and safety issues. A secondary objective is to mitigate the residual journey time increases caused by LTC between the A2 and Gravesend on the four arterial routes with a particular focus on public transport routes.

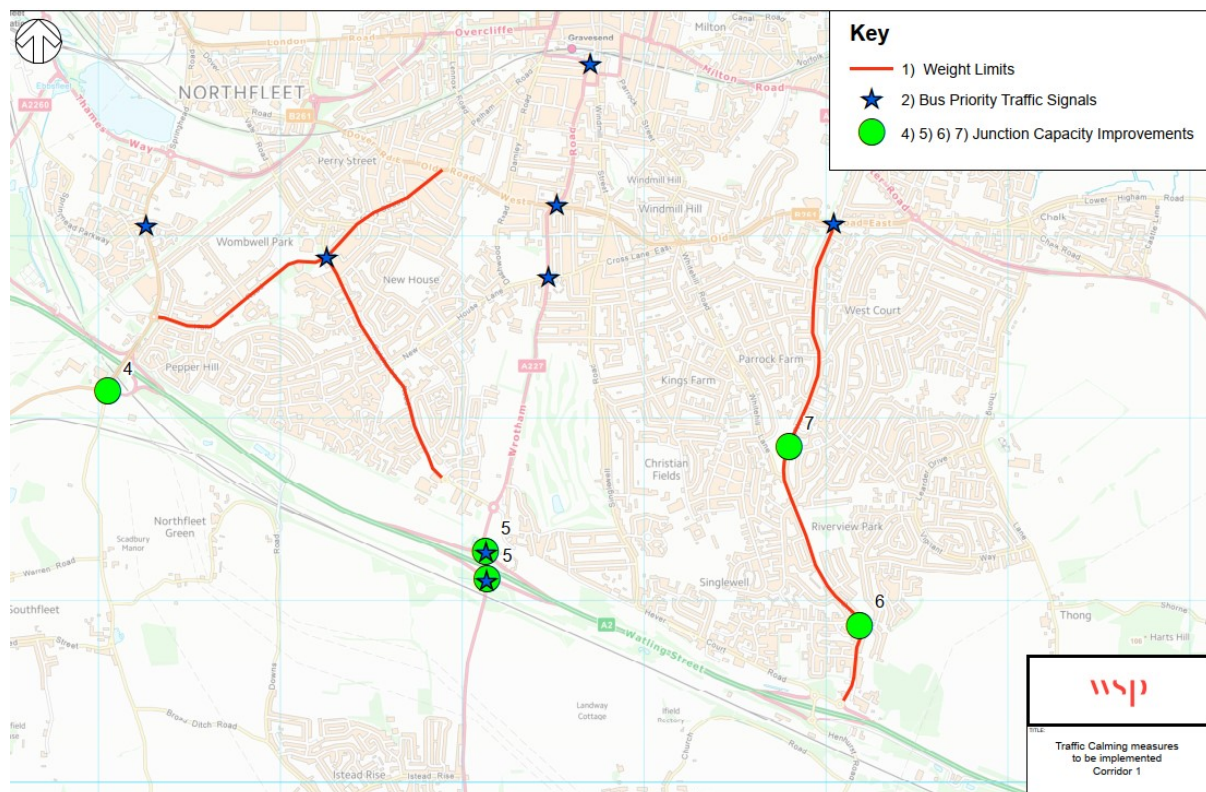


Figure 2: Proposed mitigation measures for A2 Corridor

5.1.2. The proposed interventions (Figure 2 above) for this route are as follows:

1. Implementation of weight limits of roads into Gravesend.
2. Further upgrade signal junctions across Gravesend to provide bus priority via traffic signal improvements.
3. Improvement of bus stop facilities and infrastructure on key bus routes into Gravesend.
4. Provide a junction capacity improvement option at Hall Road/Station Road/New Barn Road roundabout.
5. Provide a junction capacity improvement option at the A2/A227 Wrotham Road Dumbbell roundabout junction.
6. Provide a junction capacity improvement option at the Valley Drive/Marling Way junction.

7. Provide a junction capacity improvement option at the Valley Drive/St Hilda's way junction.

5.2. A227 and A228 Corridors

5.2.1. These corridors (Figure 3) need to balance the objectives of dissuading HGVs from using unsuitable routes and implementing capacity improvements at certain junctions on the route. To do this the following interventions are proposed for the corridor:

- Reduction of the speed limits across a series of roads on the A227, A228 and other minor roads across the corridor.
- Implement a series of weight limits on minor roads between the A227 and A228.
- Implement traffic calming measures minor roads between the A227 and A228.
- Provide a series of camera on the A227, A228 and A229 Corridor; enhancement of the Variable Messaging Signs on the A2/M2 and A20/M20 to improve traffic routing and encourage traffic on the strategic arterial routes.
- Provide a junction capacity improvement option at the A228/Sundrge Hill Roundabout (Merralls Shaw Interchange). *Note this intervention is within the Medway Council Local Highway Authority area. KCC will work with Medway Council and National Highways to progress this intervention if amenable to the Local Highway Authority.*

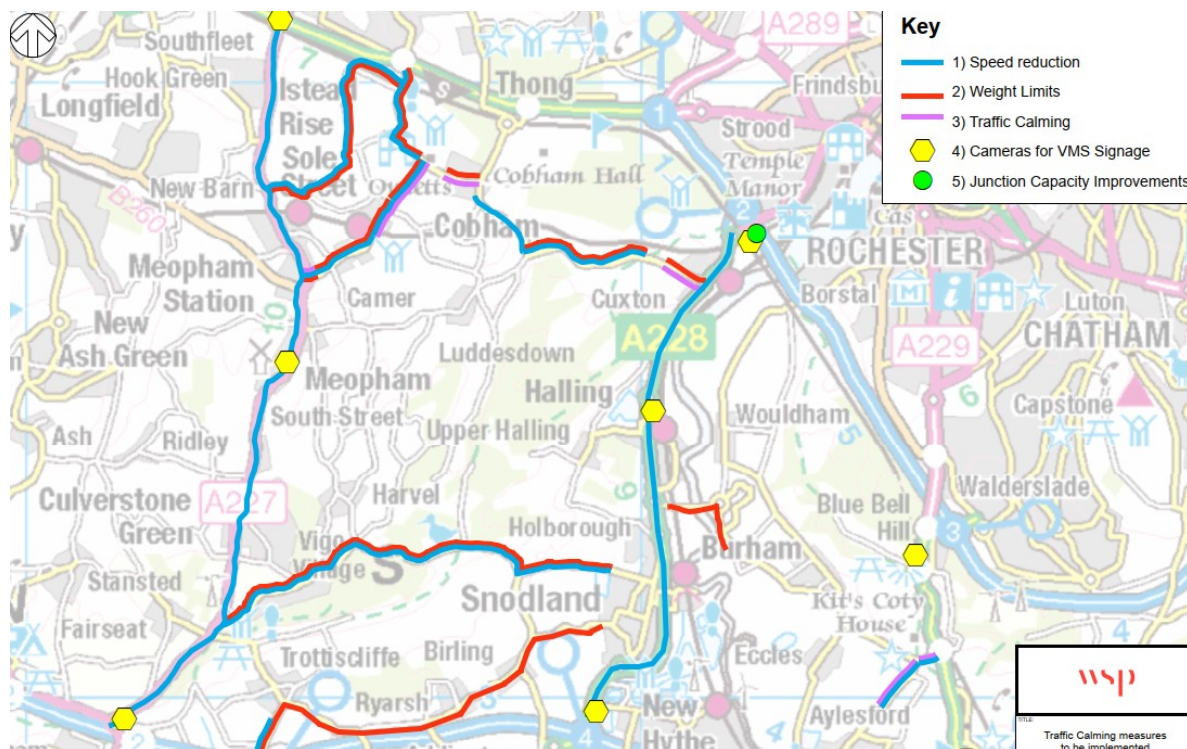


Figure 3: Proposed mitigations A227 and A228

5.3. A226 Gravesend Road

5.3.1. The objective for this corridor is to enhance the existing on-carriageway cycle provision to ensure that the traffic flow increase associated with LTC do not have a detrimental impact on cyclists/ potential to cycle. The intervention proposed is to upgrade the cycle provision on the route between Gravesend and Strood (Figure 4).

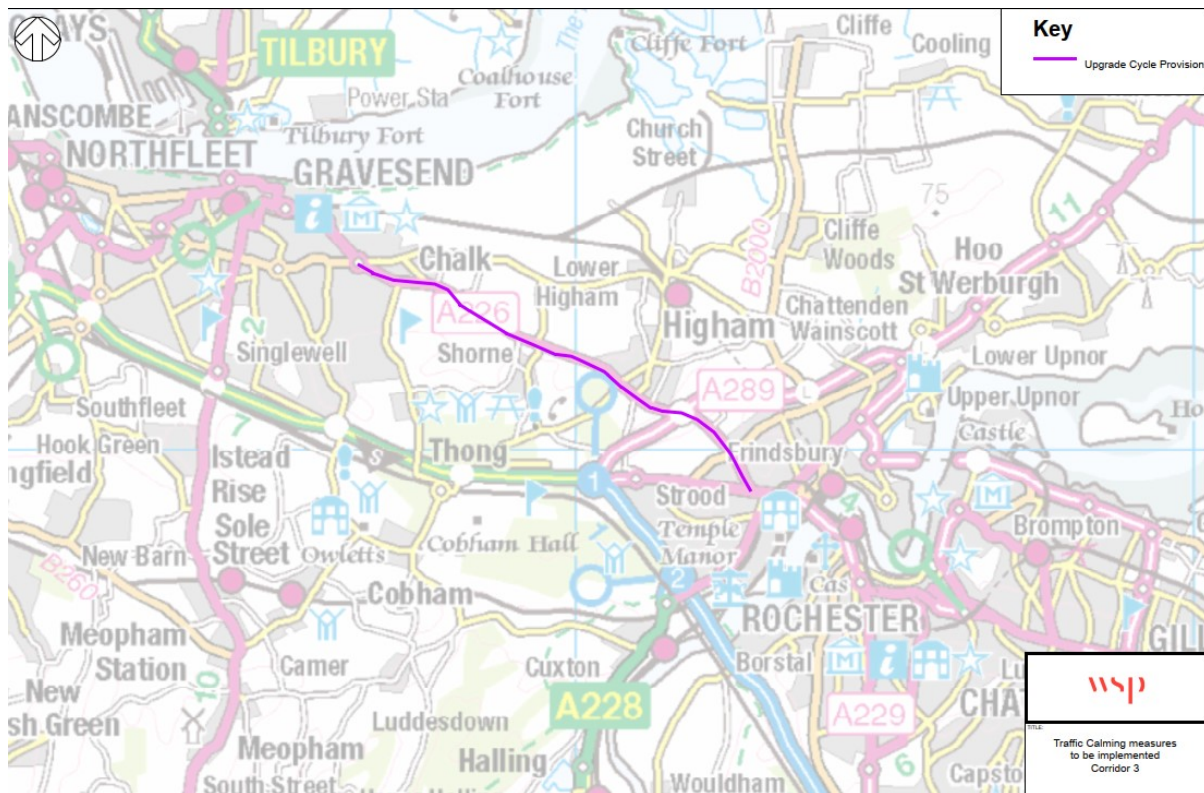


Figure 4: Proposed mitigation A226 Gravesend Road

6. Mitigation Costs

6.1. The combined cost of all the proposed mitigation is estimated at £23.3m. Table 2 provides a high-level breakdown of the costs associated with each intervention.

Table 2: Mitigation costs

Junction/Scheme	
Hall Road/ Station Road	£280,000
Valley Drive- Marling Way	£1,400,000
Valley Drive- Merral's Shaw	£600,000
Valley drive- St. Hildas	£570,000
Wrotham Road	£1,080,000
Traffic Calming Corridor 2	£760,000
Speed Limit Change Corridor 2	£720,000
Weight Limit Changes Corridor 1 & 2	£60,000
VMS costs/Bus priority and cameras	£5,350,000
Cycle improvements	£12,517,000
Total	£23,337,000

6.2. Costs for the proposed interventions have been estimated with the following assumptions:

- Prices are based on fourth quarter 2023 prices.
- Estimates have been adjusted to the construction of mid-point third quarter of 2030.
- An additional contingency of 3% per annum for inflation has been added to the inflation rate to account for inflation volatility.
- The total estimate is based on indicative designs based on OS mapping
- Costs exclude VAT, land acquisition and legal costs.

7. Impact of proposed mitigation measures

7.1. The following sections in this report describe how the proposed mitigation measures change the assessment against the criteria for each corridor.

7.2. A2 Corridors – Initial Analysis

7.2.1. The A2 corridors initially failed on multiple assessment criteria because of elevated levels of LTC traffic due to the proximity to the tunnel portal. A summary of the original analysis is as follows:

- The A2 Tollgate junction failed to operate within capacity as a result of LTC, leading to queue lengths increasing by 10m and blocking back along Wrotham Road / Coldharbour Road junction.
- The A2 Gravesend East junction is forecast to experience large Volume/Capacity (V/C) ratio increases towards Valley Drive of up to 63% in the 2045 Do Something (DS) AM scenario. The V/C ratio increased to over 100% in most scenarios showing that LTC has a significant detrimental impact on the operation of this junction.
- The A2 Gravesend East junction away from Valley Drive is also forecast to experience V/C increases of up to 21% and the queue at the junction is expected to increase by 35m when compared to the 2045 Do Minimum (DM) PM scenario.
- On all junctions except the A2 Springhead, the peak hour HGV flows increase significantly as a result of LTC, which is likely to put further strain on junction capacity whilst also having a detrimental impact on pedestrians and cyclists in the vicinity of these junctions.
- Journey time increases from Gravesend to the A2 increased within the LTC scenario. Hall Road and Springhead Road, A227 Wrotham Road and Valley Drive are all expected to have a 5-12% increase in journey time in the PM peak southbound direction as a result of LTC.

7.3. A2 Corridors - Junction Capacity

7.3.1. Table 3 shows that the junctions that originally failed against junction capacity metrics, all improve capacity with the proposed mitigations. This indicated that the proposed interventions have the desired effect.

Table 3: Junction capacity analysis

Junction Ref	Location	Without mitigation		With Mitigation
		Criteria 1	Criteria 2	
WNI201	A2 Spring Head (incl. A2260 and B259 roundabouts)	Pass	Pass	Pass
WNI202	A2 Pepper Hill (incl. Spring Head Road / Hall Road)	Pass	Fail	Pass (reduction of over 10% on the V/C in the peaks but overall V/C over 100%)
WNI203	A2 Tollgate (incl. Wrotham Road / Coldharbour Road)	Pass	Fail	Fail
WNI204	A2 Gravesend East (incl. Valley Drive / Marling Way)	Fail	Fail	Dropped from assessment - junction within the LTC Development Boundary
NEW	Hall Road / Station Road / New Barn Road (South of A2)	Fail	Pass	Fail
N/A	A2 Corridor	Pass	Pass	Pass

7.4. A2 Corridors – HGV Flow

7.4.1. Table 4 shows the areas of the corridor that were originally assessed to have failed against the assessment criteria for HGV levels.

Table 4: HGV Flow analysis

Junction Ref	Location	Share of HGV		With Mitigation
		Criteria 1	Criteria 2	
WNI201	A2 Spring Head (incl. A2260 and B259 roundabouts)	Pass	Pass	Pass
WNI202:	A2 Pepper Hill (incl. Spring Head Road / Hall Road)	Pass	Fail	Fail
WNI203	A2 Tollgate (incl. Wrotham Road / Coldharbour Road)	Pass	Fail	Fail
WNI204	A2 Gravesend East (incl. Valley Drive / Marling Way)	Pass	Fail	Dropped from assessment - junctions within the LTC Development Boundary
NEW	Hall Road / Station Road / New Barn Road (South of A2)	Pass	Fail	Fail
N/A	A2 Corridor	Fail	Fail	Fail

7.4.2. The results presented in Table 6 forecast that the mitigation measures will maintain the existing pass and fail against the metrics outlined in the Agreeing the Objectives report. Reviewing the HGV values at the junction in detail shows there is an overall reduction in HGV traffic on three of the four assessed junctions. The only junction which sees an increase is the Wrotham Road Dumbbell Roundabout, this is expected as the implementation of the weight limits on key links into Gravesend will push traffic onto the A227.

7.4.3. However, there is a noticeable increase in HGVs on some other routes, including the A227 north of the A2 and through Thong at the periphery of Gravesend. These routes will be examined in greater detail to ensure rat-running is not occurring within the subsequent stages of design. Additional restrictions will be required to prevent rat running through villages on the outskirts of Gravesend.

7.5. A2 Corridors - Journey Time

7.5.1. Tables 5 to 8 show the expected journey time impact of LTC. This is compared with the impact expected once the mitigation is installed. In most cases a small part of the journey time saving that that LTC delivers along the A2 is lost with the mitigations in place.

7.5.2. This is as expected since the measures are seeking to alleviate delays on the Local Road Network, facilitate public transport, active travel and promote the A2 as the correct route for HGVs. However, the journey times are still faster than the without LTC position.

Table 5: A2 Corridor Journey Times Impact

	Before LTC	LTC Impact			Mitigation Impact Corridor 1 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
	Journey Time	Journey Time	Change	% Impact	Journey Time	Change	% Impact	Journey Time	Change	% Impact
2045										
AM Peak EB	05:08	04:50	-00:18	-6%	04:50	00:00	0%	04:50	00:00	0%
AM Peak WB	08:26	07:35	-00:51	-10%	07:41	00:06	1%	07:46	00:11	2%
PM Peak EB	06:54	05:42	-01:12	-17%	05:47	00:05	1%	05:51	00:09	3%
PM Peak WB	06:28	06:17	-00:11	-3%	06:19	00:02	1%	06:20	00:03	1%

Table 6: Hall Road and Springhead Road Journey Times Impact

2045	Before LTC	LTC Impact			Mitigation Impact Corridor 1 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
	Journey Time	Journey Time	Change	% Impact	Journey Time	Change	% Impact	Journey Time	Change	% Impact
AM Peak NB	02:50	03:01	00:11	6%	03:01	00:00	0%	02:58	-00:03	-2%
AM Peak SB	02:36	02:40	00:04	3%	03:05	00:25	16%	03:04	00:24	15%
PM Peak NB	03:12	03:03	-00:09	-5%	03:04	00:01	1%	03:07	00:04	2%
PM Peak SB	03:07	03:29	00:22	12%	03:39	00:10	5%	03:41	00:12	6%

Table 7: A227 Wrotham Road Journey Times Impact

2045	Before LTC	LTC Impact			Mitigation Impact Corridor 1 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
	Journey Time	Journey Time	Change	% Impact	Journey Time	Change	% Impact	Journey Time	Change	% Impact
AM Peak NB	03:23	03:26	00:03	1%	03:28	00:02	1%	03:25	-00:01	0%
AM Peak SB	03:40	03:52	00:12	5%	03:52	00:00	0%	03:53	00:01	0%
PM Peak NB	03:34	03:40	00:06	3%	03:40	00:00	0%	03:41	00:01	0%
PM Peak SB	03:40	03:48	00:08	4%	03:50	00:02	1%	03:51	00:03	1%

Table 8: Valley Drive Journey Time Impact

2045	Before LTC	LTC Impact			Mitigation Impact Corridor 1 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
	Journey Time	Journey Time	Change	% Impact	Journey Time	Change	% Impact	Journey Time	Change	% Impact
AM Peak NB	04:09	04:16	00:07	3%	04:16	00:00	0%	04:16	00:00	0%
AM Peak SB	04:25	04:58	00:33	12%	05:01	00:03	1%	04:51	-00:07	-2%
PM Peak NB	04:18	04:46	00:28	11%	04:51	00:05	2%	04:46	00:03	0%
PM Peak SB	04:17	04:40	00:23	9%	04:39	-00:01	0%	04:38	-00:02	-1%

7.6. A2 Corridors - Public Transport

- 7.6.1. Gravesham bus routes are focussed on Gravesend urban area but extend to the rural communities south of the A2. These routes were assessed in line with the Journey Time assessment, and it was found that several local buses used routes where an increase in journey time of more than 5% was identified as a result of LTC, including route 306/308 (Sevenoaks Meopham Gravesend) which uses the A227 route into Gravesend.
- 7.6.2. The Kent Transport Model (KTM) model outputs presented in the above tables show overall journey times holding constant along the route with LTC in place and with the mitigations in place. The proposed mitigation includes eight locations for bus priority at junctions (including one along the A227). The existing study area currently only features bus prioritisation along Thames Way – which includes Fastrack Service A and Fastrack Services B which operate within Dartford and Gravesend.
- 7.6.3. Bus journey times have not been modelled in isolation, but it is expected this prioritisation has the potential to improve bus journey times and reliability beyond the existing conditions, even with LTC in place. This would offer an attractive alternative to car travel through a more efficient bus network which is particularly valuable to those from more deprived social groups who are less likely to own a car.
- 7.6.4. Consultants WSP's place based analysis, which will be presented in the final Strategic Outline Business Case (SOBC), shows that Gravesend has a high concentration of areas with a low Index of Multiple Deprivation (IMD).

7.7. A2 Corridors - Active Travel

7.7.1. The main A2, located on the SRN, does not support active travel options but the routes into Gravesend and the National Cycle Network are important active travel corridors. Most of the routes have pedestrian pavements and the A227 features a cycle lane approaching Gravesend. The increased traffic from LTC is likely to have a marginal detrimental impact on active travel options but the mitigation options have prioritised the other significant detrimental impacts on this corridor. Therefore, the 'with mitigation' score remains the same as without LTC mitigation.

7.8. A2 Corridors – Development

7.8.1. Plate 5.3 in the Lower Thames Crossing Transport Assessment, Volume 7 [REP 4-148] shows a concentration of developments along the A2/M2 corridor and in Gravesend. The mix of residential, employment and 'other' indicates a full spectrum that can be expected to require typical transport provision. These developments will need to demonstrate that the existing transport infrastructure provides adequate capacity otherwise they will be at risk of failing to achieve planning approval.

7.8.2. Given the junction capacity issues, increased journey times and the knock-on impacts to public transport and active travel, it is likely that planning will be harder to achieve with LTC in place. The mitigation measures proposed for Corridor 1 can demonstrate they partially reduce the issues caused by LTC and therefore, make planning applications more likely to succeed.

7.8.3. The mitigations brought about through Corridor 1 will also assist the objectives of wider developments in the area including the Thames Estuary Production Corridor and Creative Estuary. The vision for the Thames Estuary Production Corridor is a world-class cluster of production innovation that features a proposed improved connection to Ebbsfleet station and the new Lower Thames Crossing. The Creative Estuary boasts an array of creative industry businesses along the estuary that, like the Production Corridor, would benefit from mitigated congestion following LTC's implementation, ensuring the region remains accessible and attractive.

7.9. A227 and A228 Corridors – Initial Analysis

7.9.1. The A227 and A228 are considered the key north/south routes between the A20/M20 and the A2/M2 corridors. This study excludes the A229 from proposals as this strategic connection is covered within the A229 Blue Bell Hill Improvement Scheme SOBC. As traffic from LTC tries to move between the A2/M2 corridor and the M20 it will predominantly use the A229, but when capacity is limited, the modelling suggests it will start to use the less suitable A228 and A227. With lower capacity these routes become congested quickly.

7.9.2. A summary of the original analysis relating to the A227 is as follows:

- LTC does not result in capacity or queue length issues at either of the A227 junctions included within the original scope of assessment. For example, V/C values at A227 Istead Rise remained below 62% in all scenarios while at A227/Green Lane, V/C values are forecast to remain below 54%.

- The A227/Green Lane junction however does experience a significant increase in HGV traffic as a result of LTC, suggesting the use of inappropriate routes through Meopham, Hook Green, Sole Street and Cobham to access LTC.
 - HGV traffic flows experienced south of the A227 / Green Lane junction were increased by 25%-75% across the DS 2030 and 2045 scenarios, which is the equivalent to 68 to 90 per hour in 2030 AM and 71 to 95 in 2045 AM. Similar increases are expected during PM peak, showing increase from 30 to 47 HGVs in 2030 and 35 to 52 HGVs in 2045, DM and DS respectively.
- 7.9.3. The findings of this analysis are supported by findings from National Highways that increased traffic in this area would be likely to increase noise levels and so should be mitigated. The use of these routes reflects concerns raised by local stakeholders and existing issues which will be exacerbated by additional HGV traffic associated with LTC. Therefore, the forecast HGV flows are considered to provide a robust estimate of future network conditions in this location. Based on these results, the mitigation for the A227 has focused on reducing HGV traffic flows from using the A227 and the route through Hook Green, Sole Street and Cobham to access LTC.
- 7.9.4. A summary of the original analysis relating to the A228 is as follows:
- The Cuxton Road junction is caused to become over capacity by LTC in the 2030 PM scenario with the V/C value increasing from 98% to 104%. At worst, the V/C value increases by 8% to 127% in the 2045 DS PM scenario.
 - The A228/Bush Road junction is also pushed over capacity in the 2045 AM DS Scenario where the V/C value increases from 97% in the DM scenario to 101% in the DS scenario. In the other scenarios V/C values increase by 9% in the 2030 DS AM scenario, 13% in the 2030 DS PM scenario, and 15% in the 2045 DS PM scenario but the junction operates within capacity.
 - The situation is similar at the A228 / Station Road, A228 / Pilgrims Road, A228 / Germander Avenue junctions and A228/ Sundridge Hill Roundabout.
- 7.9.5. Most junctions experience a significant increase in the number of HGVs in one direction in the either the AM or PM peak as a result of LTC. These results validate concerns regarding rat running of HGVs as well as other traffic between the A229, A228 and A227 to connect between the M2/A2 corridor and the M20/A20 corridor. Many of these roads are unsuitable to accommodate HGV traffic due to their narrow width, tight bends and routes through village centres.
- 7.9.6. In addition to the junctions listed above, local roads that see an increase in vehicles or HGVs with LTC include Bush Road, Village Road, Birling Road, Rochester Road, White Horse Road. This is not an exhaustive list but provides some examples of rat running corridors.
- 7.9.7. These results highlight that additional traffic movements associated with LTC will have a significant detrimental impact on the A228 corridor with a forecast increase in traffic congestion at a number of junctions and significant increases in HGV traffic. This will impact upon all road users, leading to a deterioration in air quality and increased road safety risks, whilst also encouraging the use of alternative local routes that are unsuitable for high volumes of traffic.

7.9.8. Based on these results, the mitigation for the A228 focuses on reducing inappropriate HGV traffic flows surrounding the A228 and reducing the capacity constraints at northern junctions on the route, whilst also ensuring that this is not transferred to the A227 or other surrounding routes where identified impacts would be worsened.

7.10. A227 and A228 Corridors – Junction Capacity

7.10.1. Table 9 presents the junction capacity assessment on these routes. The mitigation measures proposed have a significant improvement to the capacity issues caused on the A227 and A228 following the implementation of LTC. Based on the V/C ratios none of the junctions are forecast to operate over capacity, this highlights the success of the mitigation measures.

Table 9: Junction capacity analysis

Junction Ref	Location	Junction Capacity		With Mitigation
		Criteria 1	Criteria 2	
WNI301	A227/Istead Rise	Pass	Pass	Pass
WNI302:	A227/Green Lane	Pass	Pass	Pass
N/A	A227 Corridor	Pass	Pass	Pass
WNI401	A228 / Cuxton Road	Pass	Fail	Pass
WNI402	A228 / Bush Road	Pass	Fail	Pass
WNI403	A228 / Kent Road	Pass	Pass	Pass
WNI404	A228 / Peter's Bridge	Pass	Pass	Pass
WNI405	A228 / Manley Boulevard	Pass	Pass	Pass
WNI406	A228 / Holborough Road	Pass	Pass	Pass
WNI407	A228 / Malling Road	Pass	Pass	Pass
WNI408	A228 / Leybourne Way	Pass	Pass	Pass
NEW	A228 / Station Road	Pass	Fail	Pass
NEW	A228 / Pilgrims Road	Pass	Fail	Pass
NEW	A228 / Sundridge Hill roundabout	Fail	Fail	Pass
NEW	A228 / Germander Avenue	Pass	Fail	Pass
N/A	A228 Corridor	Fail	Pass	Pass

7.11. A227 and A228 Corridors – HGV Flows

7.11.1. HGV flows are a serious concern for this corridor as KTM modelling showed that most of the junctions on the A227 and A228 failed our assessment criteria in earlier analysis as shown in Tables 10 to 12. The table shows that all junctions that had originally failed the criteria can now be shown to pass.

Table 10: HGV Flow Assessment

Junction Ref	Location	Share of HGV		With Mitigation
		Criteria 1	Criteria 2	
WNI301	A227/Istead Rise	Pass	Pass	Pass
WNI302:	A227/Green Lane	Pass	Fail	Pass (HGV increase now less than double)
N/A	A227 Corridor	Pass	Pass	Pass
WNI401	A228 / Cuxton Road	Pass	Pass	Pass
WNI402	A228 / Bush Road	Pass	Fail	Pass (HGV increase now less than double)
WNI403	A228 / Kent Road	Pass	Fail	Pass (HGV increase now less than double)
WNI404	A228 / Peter's Bridge	Pass	Fail	Pass (HGV increase now less than double)
WNI405	A228 / Manley Boulevard	Pass	Fail	Pass (HGV increase now less than double)
WNI406	A228 / Holborough Road	Pass	Fail	Pass (HGV increase now less than double)
WNI407	A228 / Malling Road	Pass	Fail	Pass (HGV increase now less than double)
WNI408	A228 / Leybourne Way	Pass	Pass	Pass
NEW	A228 / Station Road	Pass	Fail	Pass (HGV increase now less than double)
NEW	A228 / Pilgrims Road	Pass	Fail	Pass (HGV increase now less than double)
NEW	A228 / Sundridge Hill roundabout	Pass	Fail	Pass (HGV increase now less than double)
NEW	A228 / Germander Avenue	Pass	Fail	Pass (HGV increase now less than double)
N/A	A228 Corridor	Fail	Fail	Pass (HGV increase now less than double)

7.11.2. The result of these mitigations is that the primary target routes of the A227 and A228 now have fewer HGVs travelling on them. Conversely, the M20 and A229 show increases. It is expected that the changes of the M20 indicates that some HGVs would revert to using the Dartford crossing via the M25 if the capacity on the A229 remains as existing.

Table 11: HGV differences across Corridor Following the implementation of the mitigation measures AM Peak

	LTC			Mitigation Impact Corridor 2 Mitigation measures			Difference		
	SB/EB	NB/WB	Two-way	SB/EB	NB/WB	Two-way	SB/EB	NB/WB	Two-way
A228 (North of Bush Road)	192	200	392	168	171	339	-24	-29	-53 (-14%)
A228 (North of Leybourne Way)	152	146	298	131	121	252	-21	-25	-46 (-16%)
A228 (South of Peters Bridge)	181	141	322	152	110	262	-29	-31	-60 (19%)
A227 (North of Green Lane)	33	30	63	20	14	27	-13	-16	-29 (-58%)
Bush Road (West of Charles Drive)	2	11	13	0	0	0	-2	-11	-13 (-100%)
A229 (South of M2)	322	201	523	318	214	532	-4	13	9 (2%)
A229 (North of M20)	268	193	461	322	216	538	54	23	77 (17%)
M20 (west of Junction 4)	603	800	1,403	631	818	1,449	28	18	46 (3%)
Snodland Road	1	1	2	0	0	0	-1	-1	-2 (-100%)

Table 12: HGV differences across Corridor Following the implementation of the mitigation measures PM Peak

	LTC			Mitigation Impact Corridor 2 Mitigation measures			Difference		
	SB/EB	NB/WB	Two-way	SB/EB	NB/WB	Two-way	SB/EB	NB/WB	Two-way
A228 (North of Bush Road)	160	101	261	133	64	197	-27	-37	-54 (-25%)
A228 (North of Leybourne Way)	103	120	223	84	88	172	-19	-32	-51 (-23%)
A228 (South of Peters Bridge)	142	96	238	117	58	175	-25	-38	-63 (-27%)
A227 (North of Green Lane)	12	11	23	4	10	14	-8	-1	-9 (-40%)
Bush Road (West of Charles Drive)	3	1	4	0	0	0	-3	-1	-4 (-100%)
A229 (South of M2)	196	140	336	199	132	331	3	-8	-5 (-1%)
A229 (North of M20)	130	129	259	178	139	317	48	10	58 (22%)
M20 (west of Junction 4)	649	429	1,078	682	467	1,149	33	38	71 (7%)
Snodland Road	4	1	5	0	0	0	-4	-1	-5 (-100%)

7.11.3. The outputs from Table 11 and Table 12 above highlight the reduction of HGV across Corridor 2, on the A227 and the A228 in both the AM and PM peaks. In the AM peak on the A228 there is a reduction around 14-20% whilst in the PM peak this increase to 23-27% for the two-way movements. For the A227, the reduction is 58% in the AM peak and 40% in the PM. These results highlight the success of the measures in reducing the number of HGVs on these roads and pushing them towards the A229, which to the north of the junction with the M20 sees an increase of 17% in the AM peak and 22% in the PM peak. These results are not found to the south of Bluebell Hill which forecast to have little change in HGV flows in either peak hour. This highlights that Bluebell is operating close to capacity as HGVs are trying to find alternative routes to miss the junction. This is supported by data showing that on the M20 west of Junction 4 there is a 3% increase in HGVs in the AM peak and 7% in the PM peak.

7.12. A227 and A228 Corridors – Journey Times

7.12.1. Early analysis shows a 17% increase in journey times across all time periods in both directions on the A227 with the mitigation measures in place. This is as expected with the introduction of new speed restrictions along the route.

Table 13: A228 Journey Time impact

	Without LTC	LTC Impact			Mitigation Impact Corridor 2 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
		Journey Time	Change	% Impact	Journey Time	Change	% Impact	Journey Time	Change	% Impact
2045										
AM Peak NB	15:57	16:08	+00:11	1%	18:53	02:45	17%	18:54	02:46	17%
AM Peak SB	16:20	16:23	+00:03	0%	19:11	02:48	17%	19:15	02:52	17%
PM Peak NB	17:22	17:19	-00:03	0%	20:12	02:53	17%	20:15	02:56	17%
PM Peak SB	15:58	16:19	+00:21	2%	19:07	02:48	17%	19:10	02:51	17%

Table 14: A228 Journey Time impact

	Without LTC	LTC Impact			Mitigation Impact Corridor 2 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
		Journey Time	Change	% Impact	Journey Time	Change	% Impact	Journey Time	Change	% Impact
2045										
AM Peak NB	11:39	12:40	+01:01	9%	13:20	00:40	5%	13:18	00:38	5%
AM Peak SB	12:43	13:36	+00:53	7%	16:11	02:35	19%	16:09	0:53	19%
PM Peak NB	13:02	13:26	+00:24	3%	12:42	-00:44	-5%	12:42	-00:44	-5%
PM Peak SB	11:11	12:31	+01:20	12%	15:20	02:49	23%	15:19	02:48	22%

Table 15: A229 Journey Time impact

	Without LTC	LTC Impact			Mitigation Impact Corridor 2 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
		Journey Time	Change	% Impact	Journey Time	Change	% Impact	Journey Time	Change	% Impact
2045										
AM Peak NB	04:07	04:43	+00:36	15%	05:13	00:30	11%	05:10	00:27	10%
AM Peak SB	07:03	07:12	+00:09	2%	07:24	00:12	3%	07:24	00:12	3%
PM Peak NB	05:38	06:08	+00:30	9%	06:47	00:39	11%	06:46	00:38	10%
PM Peak SB	05:03	06:08	+01:05	21%	06:20	00:12	3%	06:20	00:12	3%

7.12.2. The tables above present the journey times on the three links between the A2/M2 and A20/M20. As expected, following the implementation of the mitigation measures the journey times increase across all of the movements except on the A228 northbound in the PM peak which presents a decrease of 44 seconds. The increased journey time is due to the reduction in speed limits across the A227 and A228. Further analysis has been undertaken of the difference in journey time between a loaded and unloaded network. Table 15, Tables 16 to 18 present the difference between the journey time on a loaded and unloaded network.

Table 16: A227 Journey Time comparison between a loaded and unloaded network

	LTC Impact			Mitigation Impact Corridor 2 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
	Journey Time (Loaded)	Journey Time (Unloaded)	Difference	Journey Time (Loaded)	Journey Time (Unloaded)	Difference	Journey Time (Loaded)	Journey Time (Unloaded)	Difference
2045									
AM Peak NB	16:08	13:05	03:03	18:53	16:42	02:09	18:54	16:42	02:10
AM Peak SB	16:23	13:04	03:19	19:11	16:43	02:28	19:15	16:43	02:32
PM Peak NB	17:19	13:05	04:14	20:12	16:42	03:28	20:15	16:42	03:31
PM Peak SB	16:19	13:04	03:15	19:07	16:43	02:24	19:10	16:43	02:27

Table 17: A228 Journey Time comparison between a loaded and unloaded network

	LTC Impact			Mitigation Impact Corridor 2 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
	Journey Time (Loaded)	Journey Time (Unloaded)	Difference	Journey Time (Loaded)	Journey Time (Unloaded)	Difference	Journey Time (Loaded)	Journey Time (Unloaded)	Difference
2045									
AM Peak NB	12:40	08:15	04:25	13:20	10:42	02:38	13:18	10:42	02:38
AM Peak SB	13:36	08:13	05:23	16:11	10:41	05:30	16:09	10:41	06:28
PM Peak NB	13:26	08:15	05:11	12:42	10:42	02:00	12:42	10:42	02:00
PM Peak SB	12:31	08:13	04:18	15:20	10:41	04:39	15:19	10:41	04:38

Table 18: A229 Journey time comparison between a loaded and unloaded network

	LTC Impact			Mitigation Impact Corridor 2 Mitigation Measures			Mitigation Impact Corridor 1&2 Mitigation Measures		
	Journey Time (Loaded)	Journey Time (Unloaded)	Difference	Journey Time (Loaded)	Journey Time (Unloaded)	Difference	Journey Time (Loaded)	Journey Time (Unloaded)	Difference
2045									
AM Peak NB	04:43	02:15	02:28	05:13	02:15	02:58	05:10	02:15	02:55
AM Peak SB	07:12	02:34	04:38	07:24	02:34	04:50	07:24	02:34	04:50
PM Peak NB	06:08	02:15	03:53	06:47	02:15	04:32	06:46	02:15	04:31
PM Peak SB	06:08	02:34	03:34	06:20	02:34	03:46	06:20	02:34	03:46

7.12.3. Table 16 highlight that there is a reduction in travel time between the loaded and unloaded network with the mitigation measures implemented. This indicates that the A227 will operate with less delays following the implementation of the mitigation measures. Conversely, Table 17 shows a reduction in travel time between the loaded and unloaded network with the mitigation measures implemented on the northbound route and a slight increase in delay on the southbound journey.

7.12.4. Table 18 presents the difference in journey times between a loaded and unloaded network and the difference on the A229. The increase in delay on the A229 northbound and southbound would indicate there is an increase in the amount of traffic utilising the

A229 compared to without the mitigation measures included. The journey time analysis of the A227, A228 and A229 corridors shows that the implementation of the mitigation measures on this route promotes the use of the key strategic routes such as the A229 and M20, above the A227 and A228 to minimise the impact to local traffic on this route.

7.13. A227 and A228 Corridors – Public Transport and Active Travel

7.13.1. This area includes seven active train stations including: Longfield, Meopham, Sole Street, Halling, Snodland, New Hythe and Aylesford. The stations provide crucial connectivity to London and the nearby key towns such as Rochester and Maidstone. The increased congestion from LTC will have a negative effect on public transport through decreased accessibility and delayed journey times.

7.13.2. The measures proposed will mitigate against these delays through junction capacity improvements. However, speed reduction and traffic calming measures mean that the journey times are increased, as such further work is required to ensure that the location of traffic calming does not unduly impact the key public transport routes to and from station hubs.

7.13.3. The A227 and A228 do not support active travel options. The corridor's congestion easing initiatives may increase safety for road users although active travel options were not included as a priority for this corridor due to the perceived minimal impact of LTC on active travel in the region.

7.14. Development

7.14.1. Plate 5.3 in the Lower Thames Crossing Transport Assessment, Volume 7 [REP4-148] shows developments planned along the length of the A228 including significant employment expansion at the New Hythe business park at the south. These developments will need to demonstrate that transport infrastructure provides adequate capacity to manage the expected additional journeys otherwise they will be at risk of failing to achieve planning approval. Given the junction capacity issues, reduced journey times and the knock-on impacts to public transport, it is likely that planning will be harder to achieve with LTC in place. The mitigation measures proposed for the corridors can demonstrate they reduce some of the issues caused by LTC and therefore make planning applications more likely to succeed than without the measures in place.

7.15. A226 Gravesend Road – Initial Analysis

7.15.1. This corridor was solely identified for its potential to enhance active travel improvements between Gravesend and Rochester. The objective for this corridor is to enhance the existing on-carriageway cycle provision to ensure that the traffic flow increase, associated with LTC, does not have a detrimental impact on cyclists and the potential to cycle on this route.

7.15.2. The route currently features an on-road dedicated lane for cyclists. KTM modelling showed that traffic congestion will increase along this corridor as a result of LTC. As part of the upgrade to the existing cycling provision along the corridor, safer junctions will make cycling safer and improve access to existing and new cyclists, with the potential to encourage mode shift from motor vehicles. The upgrade is expected to bring the propensity to cycle the route back to the level it is in the 'without LTC' scenario.

8. Conclusion

- 8.1. Overall, the proposed interventions achieve most of the objectives outlined in the WNI study. Evidence suggests the proposed interventions help to keep freight to the desired routes and maintain the road hierarchy. Targeted junctions are increased in capacity, mitigating the impact of LTC on local traffic. Public transport and active travel opportunities are improved, providing viable alternatives to car, where the impact of LTC cannot be fully mitigated.
- 8.2. The analysis shows some additional impacts that need further consideration. Some HGVs are rerouting to roads that are not appropriate and some junctions where capacity has been increased are attracting additional vehicles and therefore continue to be congested. The proposed mitigations can be further optimised to seek to achieve more effective outcomes.
- 8.3. Corridor 1
 - 8.3.1. The proposed mitigations in Corridor 1 provide a positive impact through bus prioritisation that goes beyond the existing infrastructure. This improvement on current conditions is intended to help offset other criteria in the corridor which are not fully mitigated.
- 8.4. Corridor 2
 - 8.4.1. Corridor 2 experiences journey time increases because of the speed restrictions, having the intention of encouraging long distance traffic and HGVs back onto the main Strategic Road Network. Further analysis shows that the increased journey time is largely to do with the 'unloaded' speed of the road and the amount of time spent in delays reduces.
- 8.5. Corridor 3
 - 8.5.1. Corridor 3 is an important active travel corridor and investing in the active travel provision and particularly cycling will maintain the attractiveness of this link, even with higher levels of traffic due to LTC.
- 8.6. Further work on this study is presented within the final Strategic Outline Business Case (SOBC) and agreed with National Highways. This document can be made available on request from appropriate parties.
- 8.7. Whilst National Highways does not consider that the proposed interventions are required to make the LTC acceptable. KCC fundamentally disagrees with National Highways' stance on this matter. It remains KCC's view that where the traffic modelling demonstrates an adverse effect on the highway network because of the LTC, it is imperative the Project mitigates these impacts.