

A428 Black Cat to Caxton Gibbet improvements

TR010044

Volume 9

9.121 Applicant's response to the request for further information
from the Examining Authority – Rule 17 Letter

Planning Act 2008

Rule 8(1)(k)

Infrastructure Planning (Examination Procedure) Rules 2010

February 2022

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Examination Procedure) Rules 2010****A428 Black Cat to Caxton Gibbet
improvements
Development Consent Order 202[]**

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1 Applicant's Response to the request for further information from the Examining Authority

- 1.1.1 This document comprises the Applicant's response to the request from the Examining Authority for further information in relation to several matters, as set out in the Rule 17 letter **[PD-017]** that was published on 7 February 2022.
- 1.1.2 It should be noted that some of the information that has been submitted comprises personal and confidential information, therefore the Applicant would request the appropriate parts of this document are redacted prior to it being published on the Planning Inspectorate website.

2 Applicant's response to the Rule 17 request for further information

2.1.1 **Table 2-1** sets out the Applicant's response to the request for further information from the ExA.

Table 2-1 Applicant's response to the request for further information from the Examining Authority

Reference Number	Applicant's Comments
1.	<p>Habitats Regulations Assessment</p> <p>The Examining Authority (ExA) has noted the representations made by the Applicant and Natural England regarding the Eversden and Wimpole Woods Special Area of Conservation (SAC), and whether an Appropriate Assessment (AA) is required or not, including [APP-233] [RR-076] [EV016] [REP1-032] [REP1-033] [REP4-044] [REP-006] [REP6-027] [REP8-009] [REP8-016] [REP8-048] [REP8-049] [REP9-023] [REP9-026] [REP9-056].</p> <p>In light of this, and particularly Natural England's comments at Deadline 9 (D9) [REP9-056], including those concerning the Bat activity surveys April/May to October 2018 (transects) and June to October 2019 and April/May to October 2018 (statics) and Bat Crossing Point Surveys May to September 2019; and given the small sample sizes from the various surveys tagged and tracked in the SAC or in and near to the Order Limits; the differences between the 2018/19 and 2021 surveys including in terms of scope and time-of-year undertaken; and the absence of comments from the Cambridgeshire Councils at D9, the ExA, taking a precautionary approach, is not currently satisfied that there is adequate evidence that likely significant effects (LSE) on this SAC can be definitively ruled out.</p> <p>Furthermore, the ExA is not satisfied that the Applicant's position [REP8-016, Paragraph 6.3.1] for not considering in-combination effects at Habitats Regulation Assessment (HRA) Stage 1 – Screening, is sufficient.</p> <p>Given the outstanding concerns regarding the 2018/2019 surveys that have been raised and the small sample size of Barbastelle bats tagged and tracked in the SAC or in and near to the Order Limits, the ExA does not believe it has been demonstrated that for screening and AA stages the Proposed Development would have no effect on the SAC.</p> <p>In line with Government guidance for Stage 1 Screening and Stage 2 Appropriate Assessment, where there may be an effect on a SAC, which on its own is not significant, then an assessment must be made as to whether this effect could combine with effects, which on their own are not significant, from any other proposal planned or underway affecting the same SAC. The ExA notes that no assessment of in-combination effects is in the submitted evidence.</p> <p>The Competent Authority may need to undertake an AA of the effect of the Proposed Development on the integrity of this SAC. Notwithstanding the comments from Natural England [REP9-056, Page 5] the ExA is not satisfied that there is sufficient information in the</p>

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	<p>evidence, including the Report to Inform Appropriate Assessment [REP8-016], for the Competent Authority to undertake an AA, given the absence of any assessment of in-combination effects.</p> <ol style="list-style-type: none"> <li data-bbox="309 443 2002 544">i. Applicant, respond to the outstanding concerns raised by Natural England with regard to the 2018/19 surveys, which are set out in their D9 submission [REP9-056], in particular those concerning the Bat activity surveys April/May to October 2018 (transects) and June to October 2019 and April/May to October 2018 (statics) and Bat Crossing Point Surveys May to September 2019. <li data-bbox="309 555 2002 751">ii. Natural England's view on the Applicant's Report to Inform Appropriate Assessment [REP8-016] is: <i>"The report confirms that the barbastelle bats that were observed/heard along the A428 route are not attributed to the SAC barbastelle population. This is not to say that none of the SAC barbastelles use the A428 scheme area as all survey data sets used were relatively small samples"</i> [REP9-056, Page 6, 1]. In light of the possibility that some SAC bats may use the area and so may be affected by the Proposed Development, Applicant, provide an assessment of any in-combination effects of the Proposed Development with other plans and projects that are planned, approved or underway in the area. <li data-bbox="309 762 2002 863">iii. Natural England and Applicant, consider whether any mitigation measures for the SAC population of Barbastelle bats are needed for the AA, and incorporate any further SAC mitigation measures and monitoring measures into the Environmental Master Plan and First Iteration Environmental Management Plan (EMP).
Applicant's comments	<ol style="list-style-type: none"> <li data-bbox="309 898 2002 1158">i. The Applicant has responded to outstanding concerns raised by Natural England as set out in 9.119 Applicant's comments on submissions received at Deadline 9 [TR010044/EXAM/9.119] on baseline surveys, mitigation and monitoring. The Applicant's responses were shared with Natural England on 8 February 2022 and further comments were received to address any outstanding points and clarifications which have been integrated into the response presented at Deadline 10. As requested by Natural England, further details of bat monitoring have been provided in the form of an outline bat monitoring plan, which is presented and secured in Annex D as part of the First Iteration Environmental Management Plan submitted at Deadline 10 [TR010044/APP/6.8v4]. This monitoring plan will be finalised in the Second Iteration Environmental Management Plan, on which Natural England and other stakeholders will be consulted. To this end, all of Natural England's concerns have now been addressed. <li data-bbox="309 1169 2002 1394">ii. The population of Barbastelle for the Eversden and Wimpole Woods SAC has been estimated as up to 50 individuals as reported in the Habitats Regulations Assessment: Report to Inform Appropriate Assessment [TR010044/EXAM/9.99v2]. On this basis, the trapping and tagging of bats has been of a sample size of at least 14% of the population which enables a statistically sound conclusion to be drawn. The Applicant and Natural England are satisfied that the sample size and survey data obtained are sufficient to demonstrate, beyond reasonable scientific doubt, that SAC Barbastelles are not interacting with the footprint of the Scheme (see Biodiversity section in the Statement of Common Ground with Natural England [TR010044/EXAM/8.3v4]). Notwithstanding this, a full assessment of any in-combination effects of the Scheme with other plans and projects that are planned, approved or underway in the

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	<p>area has been undertaken and is reported in an update to the Habitats Regulations Assessment: Report to Inform Appropriate Assessment [TR010044/EXAM/9.99v2] submitted at Deadline 10. Based on this assessment the RIAA concludes that:</p> <ul style="list-style-type: none"> a) The A428 Black Cat to Caxton Gibbet Improvements Scheme would not result in an adverse effect on the integrity of Eversden and Wimpole Woods SAC either alone or in-combination with other plans and projects. b) Available information indicates that SAC Barbastelle bats are not currently using habitats along the footprint of the Scheme for roosting, foraging or commuting. c) The survey data presented therein forms a scientifically robust data set that evidences the absence of a link between the Barbastelle population of the SAC and the effects of the construction and/ or operation of the Scheme. <p>iii. As reported in the updated Habitats Regulations Assessment: Report to Inform Appropriate Assessment [TR010044/EXAM/9.99v2] submitted at Deadline 10, the Applicant and Natural England are satisfied that there is no requirement for any mitigation specific to the SAC (see Biodiversity section in the Statement of Common Ground with Natural England [TR010044/EXAM/8.3v4]).</p>
2.	<p>High Pressure Pipeline Diversion</p> <p>Applicant and Central Bedfordshire Council (CBC), the ExA has regard to your representations and updates on the matter relating to the archaeological excavation on Field 44, site 7 (planning permission reference CB/20/04185/FULL) [REP1-022, 3.8] [REP1-055] [EV-052] [EV-047] [REP8-014, Q3.8.3.1] [REP8-038, Q3.8.3.1]. Consider jointly the completed findings of the excavation work and the updated screening assessment, prior to Deadline 10 (D10) and provide jointly considered responses to the following, highlighting disagreements if any.</p> <ul style="list-style-type: none"> i. Can Applicant and CBC confirm that the archaeological excavation pursuant of planning permission CB/20/04185/FULL is being undertaken in line with the Archaeological Mitigation Strategy (AMS) [REP4-031]. In doing so, explain with reasons how the archaeological excavation when completed would effectively and adequately mitigate the adverse effects to the archaeology in Field 44, in a way that satisfies the standard expected for any archaeological works authorised, should this Order be granted. ii. Given that the excavations work is likely to be completed before the close of the Examination, would it not ensure that with the archaeology removed, the site has been fully mitigated in advance of construction activity? Consequently, with the screening assessment updated before the close of the Examination, would it be possible for parties, and for the ExA to have a view to offer, for consideration by the Secretary of State (SoS), if the high pressure pipeline diversion is a Nationally Significant Infrastructure Project (NSIP) or not. The ExA acknowledges that irrespective of the pipeline diversion being an NSIP or not, the Overarching National

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	<p>Policy Statement (NPS) for Energy (EN-1) and the NPS for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) will be important and relevant in the ExA's considerations.</p> <p>iii. Notwithstanding your response to First Written Questions (WQ1) and the flowchart [REP1-022, 3.8], summarise and update the steps required by the Applicant, Cadent Gas, and subsequently by the Secretary of State (SoS), after the close of the Examination.</p> <p>iv Applicant, notwithstanding your case [APP-240, Appendix B] and response [REP1-022, Q1.8.4.2], can you confirm if you notified the Health and Safety Executive (HSE), about the high pressure pipeline diversion and of your approach regarding Health and Safety and Major Accidents, in compliance with policy requirements in NPS EN-4 (Sections 2.4 and 2.19)? Provide evidence that this approach has been agreed or provide reasons why the HSE were not required to be notified or involved.</p>
Applicant's comments	<p>i. The archaeological works in Field 44 have been undertaken in line with the Archaeological Mitigation Strategy (AMS) [TR010044/EXAM/9.23v3]. The AMS states that the site is a Category A site: Sites with intrinsic value (i.e. those so important they need to be intensively excavated and with increased sampling). Table 5-1 states that this site would be subject to Intensive Excavation. A Scope of Works was prepared, which followed the methodology detailed in the AMS, and the Site Specific Written Scheme of Investigation (SSWSI) prepared by the Archaeological Contractor echoed this methodology. At all stages the approach and methodology has been discussed and agreed by the CBC Archaeologist. By undertaking the archaeological excavation to this methodology, the site has been investigated and excavated in line with standard requirements as a minimum. All work is in line with Chartered Institute for Archaeologist's standards and guidance for archaeology, although increased sampling of some features has been undertaken, meaning that this site was excavated beyond the 'standard' sampling strategy. The archaeology has been investigated and sampled appropriately, and no further site investigation is required. The work in Field 44 is considered to have effectively and adequately mitigated the adverse effects on the archaeology in this field. A summary report will be produced within two weeks of work completed on site, and a full post-excavation assessment report will be submitted in draft within 6 months of the completion of the fieldwork, as detailed in the SSWSI.</p> <p>ii. As the excavation works in Field 44 are 99% complete as at Deadline 10 (on 15 February 2022) and will be completed by the end of Examination, Field 44 is considered to be fully mitigated on site. The full mitigation will only be completed when all the archaeological works, including the post-excavation analysis, assessment, reporting and deposition of the archive has taken place. However, this does not present an issue because the AMS allows for the completion of the post-excavation works to be undertaken with the other post-consent archaeological works. Furthermore, the works at Field 44 are subject to a planning condition and therefore, if the Scheme did not proceed, measures are in place for the completion of the mitigation works. Appendix 4.4 Screening assessment of proposed gas pipeline works for the purpose of section 20 of the Planning Act 2008 [TR010044/APP/6.3] Revision 2 has been updated and submitted into the Examination at Deadline 10 and confirms the Cadent pipeline diversion would not give rise to likely significant effects due to the absence of any archaeological receptors. The Explanatory Memorandum [TR010044/APP/3.2v6] has</p>

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	<p>also been updated to acknowledge that in the absence of likely significant effects arising from the diversion of the gas pipeline, the thresholds in section 20 of the Planning Act 2008 will not be met and the Cadent pipeline diversion will not amount to a Nationally Significant Infrastructure Project in its own right.</p> <p>iii. Following close of the Examination, Cadent will agree the final design for the pipeline diversion works and then apply for a screening opinion from the Secretary of State for Business, Energy and Industrial Strategy in accordance with the screening criteria, if required. The Secretary of State will then provide their screening opinion, which the Applicant anticipates will confirm no likely significant effects based on the updated screening assessment, set out in the Screening assessment of proposed gas pipeline works for the purposes of section 20 of the Planning Act 2008 (Appendix 4.4v2 [TR010044/APP/6.3] of the Environmental Statement submitted at Deadline 10). If the SoS confirms no likely significant effects would occur as a result of the pipeline diversion, the Works would not be deemed an NSIP. In the event that the SoS finds that there would be likely significant effects resulting from the diversion, the diversion will be treated as an energy NSIP.</p> <p>iv. The Applicant confirms that, as stated in the Consultation Report, Appendix J [APP-043], which lists the prescribed consultees that were consulted under Planning Act 2008 Section 42(1)(a), the Health and Safety Executive (HSE) was consulted at pre-application stages.</p> <p>HSE's response to the statutory consultation was documented in the application document 5.2 - Consultation Report - Appendix U - Tables evidencing regard to statutory consultation responses (in accordance with s49 of the Planning Act 2008) - Part 1 – Section 42(1)(a) Prescribed Consultees [APP-064], between pages 181 and 184. An extract from their response is copied below:</p> <p><i>"..It is likely that HSE would advise against this application, as the proposed dual carriageway passes through the land use planning zones, specifically the inner zone, of these pipelines.</i></p> <p><i>It is noted that on page 52 of the 'A428 Black Cat to Caxton Gibbet Improvements Have Your Say Public Consultation June 2019' document it states that ". Other areas may only be needed temporarily, for example for construction compounds, storage sites, or land needed to divert utilities including power lines or gas pipes".</i></p> <p><i>If the gas pipes were moved so that the dual carriageway was not within the inner zones of the above pipelines then HSE would not advise against the proposal.</i></p> <p><i>Hazardous Substance Consent: The presence of hazardous substances on, over or under land at or above set threshold quantities (Controlled Quantities) will probably require Hazardous Substances Consent (HSC) under the Planning (Hazardous Substances) Act 1990 as amended. The substances, alone or when aggregated with others for which HSC is required and the associated Controlled Quantities, are set out in The Planning (Hazardous Substances) Regulations 2015. Hazardous Substances Consent would be required to store or use any of the Named Hazardous Substances or Categories of Substances at or above the controlled quantities</i></p>

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	<p><i>set out in schedule 1 of these Regulations. Further information on HSC should be sought from the relevant Hazardous Substances Authority.</i></p> <p><i>Explosives Sites: HSE has no comment to make as there are no licensed explosives sites in the vicinity.</i></p> <p><i>Electrical Safety: No comment from a planning perspective.”</i></p> <p>Further updated information was provided by HSE in response to the supplementary consultation in application document 5.2 - Consultation Report - Appendix V - Tables evidencing regard had to supplementary consultation responses and additional consultations (in accordance with s49 of the Planning Act 2008) [APP-068] and in particular, Part 3: Tables evidencing regard had to responses to High Pressure Gas Pipeline diversion consultation (in accordance with s49 of the Planning Act 2008) High Pressure Gas Pipeline diversion consultation (11 November-18 December 2020) (pages 674 to 675). The updated information provided was as follows, the remainder of the response was identical to that provided above:</p> <p><i>“The recent information regarding diversion of pipelines indicates that the layout will not be in HSE's inner zone; based on the diversions HSE would not advise against the proposal.”</i></p> <p>In the 7 February 2022 Rule 17 request for information, the Examining Authority (ExA) specifically refers to EN-4 sections 2.4 and 2.19, in relation to the Applicant notifying HSE about the high pressure pipeline diversion and the approach regarding health and safety and major accidents.</p> <p>While the Department for Business, Energy and Industrial Strategy (BEIS) consulted upon reviews of the energy National Policy Statements (including EN-4), between 6 September and 29 November 2021, there have been no further updates regarding these NPSs. So the July 2011 version of EN-4 remains extant at the time of writing this response for Deadline 10 (15 February 2022). However, for the avoidance of doubt, the Applicant has reviewed sections 2.4 and 2.19 of the 2021 consultation draft version of EN-4. These sections of the NPS have only minor proposed changes in the 2021 review, so the review of EN-4, if adopted in the future in accordance with the 2021 review consultation documentation, would not alter the substance of the NPS in these matters.</p> <p>EN-4, section 2.4, relates to the storage of Hazardous Substances. As the proposed pipeline diversion does not include any storage of hazardous substances, no Hazardous Substances consent is necessary.</p> <p>EN-4 section 2.19 relates to gas and oil pipelines. Paragraphs 2.19.4 to 2.19.6 specifically relate to pipeline safety. Paragraph 2.19.4 explains that the HSE enforces the Pipeline Safety Regulations (1996), which place general duties on all pipeline operators and additional duties on the operators of Major Accident Hazard Pipelines. The additional duties require the pipeline operator to provide certain information to HSE at various stages in the lifecycle of the pipeline. It goes on to explain that the IPC (so now the Planning Inspectorate) should seek advice from HSE about safety issues when considering an application.</p>

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	<p>The Applicant concludes that no further assessments are required to demonstrate its compliance with policy requirements in NPS EN-4, as identified in Appendix 4.2 Major Accidents and Disasters Screening [APP-156] of the Environmental Statement and any other relevant legislative requirements. The Applicant can also conclude that it has undertaken all of its necessary statutory duties in respect of consultation upon the gas pipe diversion with the HSE, for the Scheme.</p> <p>The Applicant and pipeline operator (Cadent) have entered into an agreement relating to the Scheme, comprising an Agreement Letter for the Works, Annexes and Standard Conditions of Contract. This outlines division of responsibilities, which confirms the pipeline operator (Cadent) will appoint a Principal Contractor to undertake the pipeline diversion and details of the Principal Contractor will be provided to the Applicant following appointment. Also, the pipeline operator (Cadent) will be responsible for the delivery of the Health & Safety Handover File upon completion of the diversion. The pipeline operator (Cadent) has confirmed in writing that they will be applying CDM Regulations 2015 and will issue an F10 notification to the Health and Safety Executive (HSE). A copy of this email is provided at Appendix A. In addition to the CDM Regulations and F10 notification, the pipeline operator (Cadent) must under the Pipeline Safety Regulations 1996 notify Major Accident Hazard Pipelines (MAHP) to the HSE, in accordance with Regulations 20, 21 and 22.</p> <p>Furthermore, the Applicant can also confirm the following, from its ongoing discussions with the pipeline operator (Cadent):</p> <ul style="list-style-type: none"> • Works on the gas pipeline diversion are planned to start in October 2022 and that is the time Cadent will issue the F10 form to formally notify HSE (the F10 form sets out the start date and duration amongst other details); • There will not be any hazardous materials on site; • The Cadent methodology minimises risk and the new connection procedure at the tie-ins minimises the time the pipeline is open.
3.	<p>Noise effects of Borrow Pits</p> <p>Bedford Borough Council to respond to the Applicant's comment regarding noise associated with Borrow Pits [REP9-023, WQ3.6.2.1] and confirm their position with regard the adequacy of information provided to the Examination to date</p>
Applicant's comments	<p>Please refer to the Construction Noise Impacts at Borrow Pits Technical Note [TR010044/EXAM/9.123] that addresses this point from the Applicant's perspective.</p>

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4.	<p>Operational Noise Monitoring</p> <p>The Applicant's attention is drawn to the ExA's proposed changes to the dDCO, specifically that relating to Requirement (R) 18 – Noise Mitigation [PD-015, Q4.8.1.6]. As requested, and without prejudice, Applicant provide additional wording in the First Iteration EMP and/or R18 of the dDCO relating to operational noise monitoring. Alternatively, the ExA may propose an amendment to R18 of the dDCO to secure operational noise mitigation.</p>
Applicant's comments	<p>The Applicant refers to its responses to REP1-048bv in the Applicant's Comments on Written Representations [REP3-008] submitted at Deadline 3 and REP3-041b in the Applicant's Comments on Deadline 3 Submissions [REP4-036] submitted at Deadline 4, which provide further details on why routine operational noise monitoring has, to the Applicant's knowledge, not previously been secured in development consent orders for National Highways schemes. The Applicant also refers to the Applicant's response to comments on the ExA's proposed schedule of changes to the dDCO [REP9-024, Q4.8.1.6] in which it confirmed that it had not identified commitments to operational noise monitoring in made DCOs for the 15 schemes it investigated.</p> <p>At Deadline 9, the Applicant also included commitments ESS NV-6, ESS NV-7 and ESS NV-8 in Table 3-9 of the First Iteration EMP [REP9-009], to secure monitoring which ensures that the intended noise mitigation measures would achieve their desired outcome, as requested by the Examining Authority. The monitoring secured in these commitments is that which was envisaged and referred to in paragraph 11.10.2 of the Environmental Statement [APP-080]. Also, as explained in the Applicant's response to comments on the ExA's proposed schedule of changes to the dDCO [REP9-024, Q4.8.1.6], this proposed monitoring is in accordance with Section 4.2 of the Design Manual for Roads and Bridges (DMRB) LA 111 Noise and Vibration, which requires the monitoring of significant environmental effects to include:</p> <ol style="list-style-type: none"> 1) Ensuring mitigation measures included with the project design are incorporated with the as-built project. Where they are not included, ensuring resultant noise levels, taking account of any additional mitigation installed but not included in the assessed design, are no higher than set out in the project assessment. 2) Ensuring specifications of noise mitigation measures, including barriers and low noise surfaces, meet design specifications. <p>With regard to 2) above, the Applicant confirms that no noise barriers (fencing) are proposed as part of Scheme design. The Applicant also confirms that a Highways Agency Product Approval Scheme (HAPAS) certificate will be required to demonstrate that performance of the low noise surfacing meets the design specification as described in ESS NV-7 [REP9-009]. This approach is in accordance with that applied in all National Highways schemes. The Applicant notes that it does not routinely retest the noise reduction performance of such products once they are installed, as this is not considered to be an effective use of taxpayers' money given the products are themselves certified for the level of performance expected.</p>

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	<p>With regards to noise bunds, these form part of the earthworks and, unlike noise barriers, are not a specific product with a certified noise performance. Therefore, confirmation that the design of the earth bunds is in accordance with those illustrated on Figure 2.4 v4 Environmental Masterplan [APP-091] will form part of the submission to the Secretary of State following consultation with the relevant planning authority. to comply with Requirement 18 of the dDCO [TR010044/APP/3.1].</p> <p>National Highways is a professional, public body accountable to DfT and the Secretary of State for Transport. It is required under the terms of its licence to 'Minimise the environmental impacts of operating, maintaining and improving its network and seek to protect and enhance the quality of the surrounding environment; (see paragraph 4.2g) As such it is guided by rigorous standards and governance to ensure compliance. This includes the application of DMRB, appropriate monitoring and evaluation and the means to intervene if required. Governance includes a structured handover process between delivery and operational teams and demonstration of compliance to specification and standards. This includes demonstrating the performance of mitigation measures. In conformance to DMRB, the Project will produce a Second Iteration Environmental Management Plan and a Third Iteration Environmental Management Plan. The Third Iteration Environmental Management Plan covers the activities required to ensure the effective long-term management of environmental matters associated with the operation of the works, including noise. It is the main vehicle for passing essential environmental information to maintenance and operational teams. It also sets out what monitoring needs to be undertaken, by who and when to report on the performance of the design, achievement of environmental objectives and delivery of commitments.</p> <p>The Post Project Opening Evaluation (POPE) process is carried out by a dedicated, but separate team to ensure evaluation remains objective and maintain the company's governance process. Evaluation includes an assessment of overall noise impact of the scheme. It compares changes predicted at the stage assessed in the Environmental Statement to observed traffic flows, speeds and composition and considers the installed mitigation measures. Typically, this process is carried out twice post-opening of a scheme to traffic.</p> <p>For all of the above reasons, the Applicant considers no further amendments to Requirement 18 of the dDCO are required to secure operational noise mitigation or its monitoring as described in paragraph 11.10.2 of Chapter 11, Noise and Vibration [APP-080] of the Environmental Statement. However, should the Examining Authority recommend further amendments to Requirement 18, the Applicant, without prejudice to its position, would suggest the following:</p> <p><i>18.—(1) No part of the authorised development is to commence until written details of the proposed noise mitigation for the use and operation of that part of the authorised development, including noise barriers, noise bunds and low noise surfacing, has been submitted to and approved in writing by the Secretary of State, following consultation with the relevant planning authority.</i></p> <p><i>(2) The written details referred to in paragraph (1) must:</i></p> <p><i>(a) reflect the mitigation measures for operation included in Chapter 11 Noise and Vibration, of the environmental statement; or</i></p> <p><i>(b) where it materially differs from these measures, must demonstrate that the mitigation proposed would not give rise to any materially</i></p>

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	<p><i>new or materially different environmental effects in comparison with those reported in the environmental statement.</i></p> <p><i>(3) The noise mitigation must be provided in accordance with the approved details referred to in paragraph (1) and must be retained thereafter.</i></p> <p><i>(4) Before any part of the authorised development is open for traffic, the undertaker must submit written details for approval by the Secretary of State which:</i></p> <p><i>(a) demonstrate that the low noise surfacing installed meets the requirements of the specification approved under paragraph (1); and</i></p> <p><i>(b) will explain how the undertaker intends to evaluate how the overall traffic noise impacts of the Scheme compare with those in the Environmental Statement.</i></p>
5.	<p>Statements of Common Ground (SoCG)</p> <p>To avoid any scope for conflicting information being provided to the ExA, when SoCGs are being finalised, the ExA would remind all Parties to work with the Applicant to ensure that submissions reflect the most up to date positions of the relevant signatories. In particular, Bedford Borough Council's position relating to baseline noise monitoring and assessment methodology appears to conflict with that discussed at ISH2 [EV-020].</p> <p>It should also be noted that all SoCGs must be signed by relevant parties and submitted to Examination by D10, and unsigned SoCGs will carry no weight in the Examination.</p>
Applicant's comments	<p>During the Applicant's discussions with Bedford Borough Council, the Applicant has continued to explain its position regarding baseline noise monitoring which has not deviated from that explained at Issue Specific Hearing 2 held on 23 September 2021. In short, noise monitoring data was used to validate the operational noise model and not used to identify likely significant adverse effects as a result of the construction and operation of the Scheme.</p> <p>Regarding the assessment methodology, Bedford Borough Council's position in the SoCG is that they have requested, but not received, noise data relating to the assessment of impacts at the borrow pits during construction. The Applicant previously met with Bedford Borough Council on 05/07/2021 to provide an overview of the methodologies the Applicant applied to assess the construction noise and vibration impacts of the Scheme which were submitted as part of the Application. The Applicant requested a further meeting focusing on the construction noise model to demonstrate how the assessment has been undertaken, including at the borrow pits. Meetings with Bedford Borough Council were requested by the Applicant on a number of different occasions (an original meeting was postponed from 10/08/2021, further requests were made on 11/08/2021, 18/11/2021 and 03/12/2021), and a meeting was eventually held on 07/02/2022.</p>

Reference Number	Applicant's Comments
	<p>At this meeting, the Applicant explained that the baseline from which construction noise impacts have been determined is from ambient noise levels predicted using Do Minimum 2025 traffic noise levels, as set out in paragraph 11.6.29 within Chapter 11 Noise and Vibration [APP-080] of the Environmental Statement. Bedford Borough Council requested data relating to background sound levels to inform an impact assessment based on BS4142. However, the Applicant confirmed that the assessment was based on BS5228, in accordance with the methodology set out in Design Manual for Roads and Bridges (DMRB) Volume 11. Therefore, the Applicant was able to confirm that the additional data which the Council were requesting, i.e., background sound levels, does not form part of the construction noise impact assessment methodology.</p> <p>Regarding Bedford Borough Council's comments on Best Practicable Means (BPM), Chapter 11 Noise and Vibration [APP-080] of the Environmental Statement confirms that the construction noise and vibration impacts have been predicted without the effect of mitigation. At the detailed design stage exact details of the works in terms of the location, extent and timing of the works, and the number and type of plant to be used, will be more certain. Therefore, the noise assessment as presented within the Environmental Statement is not the final stage for determining construction mitigation. The construction noise assessment will be re-visited at the detailed design stage to ensure Best Practicable Means (BPM) have been adopted. This will be dealt with through the Second Iteration Environmental Management Plan on which local authorities, including BBC, will be consulted in accordance with Requirement 3 of the dDCO [TR010044/APP/3.1v6].</p>
6.	<p>Deadline 10 submissions</p> <p>The ExA notes that the Cambridgeshire Councils intend to submit its comments on the Applicant's traffic modelling and mitigation measures at D10 [REP8-027] [REP8-032] [REP9-042]. The ExA encourage Cambridgeshire Council to share their comments with the Applicant prior to D10 so as to enable the Applicant to provide a response or clarification at D10, prior to the end of the Examination.</p>
Applicant's comments	<p>The Cambridgeshire Authorities responded to this request on 8 February 2022 with a Technical Note that was emailed to the Applicant entitled: 'Wyboston and Barford Road Roundabouts Mitigation Note' (CCC Technical Note). The CCC Technical Note is appended to this response as Appendix B. This contains the results of further ARCADY model assessments and presents the Cambridgeshire Authorities' view as to the potential for mitigation measures to be brought forward at the Wyboston and Barford Road roundabouts.</p> <p>In reviewing this material, it is important to remember that the impact of the Scheme is to reduce overall traffic volumes at the Wyboston and Barford Road roundabouts through the removal of A428 through traffic onto the new dual carriageway, and that the point at issue is a small increase in queue length on one of the four arms of each of the junctions, which results from the re-assignment of local traffic to these junctions from other less suitable routes within the local area, as a result of the Scheme.</p> <p>The Applicant does not dispute that the Strategic Model predicts an increase in traffic flows on Great North Road (to the north of the</p>

Reference Number	Applicant's Comments
	<p>A1/A428 Wyboston junction) and Barford Road (to the north of the A428 Barford Road junction) following the opening of the Scheme, resulting in some increases in queueing and delay on these arms of the junction. However, the Applicant's original analysis as set out in section 3 of the Transport Assessment Annex [APP-243] shows that, as a result of the Scheme, the junctions are predicted to remain within capacity through to 2040. Nevertheless, the Applicant understands that the Cambridgeshire Authorities remain concerned that if additional capacity is not provided on the Great North Road north and Barford Road north approach arms to these two junctions, the wider Scheme benefits to St Neots will not be realised.</p> <p>During the course of the Examination, the Applicant undertook sensitivity testing of these junctions because the Cambridgeshire Authorities did not agree with the Applicant's method used to derive peak hour turning flows for use in the junction models. The results of the sensitivity tests are set out in document 9.68 'Junction Model Sensitivity Test Results' [REP5-018]. These indicate that the junctions would be over capacity in both 2025 and 2040 without the Scheme and that the Scheme results in an overall improvement in the performance of the junctions. However, the arms that are of concern to the Cambridgeshire Authorities do experience some minor increases in queueing and delay in the 'with Scheme' scenario relative to the 'without Scheme' scenario. The reasons for these increases in traffic flow are set out in Consultation report Appendix W [APP-069].</p> <p>In response to a request from the Examining Authority at ISH5, the Applicant reviewed the performance of these junctions and the potential to mitigate these impacts through the re-allocation of road space. The results are set out in document 9.105 Applicant's Response to issues raised at Issue Specific Hearing 5 on 1 December 2021' [REP8-022]. This concluded that by re-allocating road space within the existing carriageway, the benefits in traffic operations would be negligible or, at best, marginal. It also concluded that whilst more substantive widening or improvements could bring in some potential benefits, the more substantial nature of the improvements meant that they could not be delivered as part of the Scheme currently the subject of this DCO application. Given this, no further sensitivity tests have been undertaken on those potential widening or improvement projects.</p> <p>Wyboston Junction</p> <p>In the CCC Technical Note, the Cambridgeshire Authorities report a re-run of the Applicant's ARCADY model and re-present the Applicant's results in Table 1. The individual results differ slightly because the model is run in Junctions 10, whereas the Applicant's model was run in Junctions 9. However, this does not materially affect the results and conclusions as presented by the Applicant. Queueing on the Great North Road (north) arm of the junction increases from 9 vehicles to 33 vehicles in the AM peak and from 50 to 55 vehicles in the PM peak. The Cambridgeshire Authorities also re-run the model using a slightly different method of forecasting future year flows. The results of this are presented in Table 2 of the CCC Technical Note. This shows queueing on the Great North Road (north) arm of the junction increasing from 11 vehicles to 21 vehicles in the AM peak and decreasing from 51 to 40 vehicles in the PM peak. It should be noted, that the Applicant has not received the models used by the Cambridgeshire Authorities and, at this late stage of the Examination, will not have an opportunity to audit the models in order to check the accuracy of the figures.</p>

Reference Number	Applicant's Comments
	<p>The Cambridgeshire Authorities then test the potential benefit of a free-flow left turn lane from Great North Road (north) to the A428 (east). The results of this are set out in Table 3 of the CCC Technical Note. This indicates that the additional capacity introduced by the free-flow left turn lane would result in the Great North Road (north) arm of the junction returning to being within capacity and that queueing on this arm would reduce to a minimal level. Whilst the introduction of a free-flow left turning lane from Great North Road (north) to the A428 (east) arms of this junction may benefit the operation of this arm, it is not appropriate (at this very late stage of the Examination) to include a free-flow left turn lane in the Scheme at this location for the following reasons:</p> <ol style="list-style-type: none"> 1. No drawings have been submitted to illustrate the layout of the free-flow left turn lane which, at this stage, is understood to be conceptual only. Significant feasibility work would need to be undertaken to assess whether a free flow lane could be delivered, having regard to the following: <ol style="list-style-type: none"> a) In order to comply with the requirements of the Design Manual of Roads and Bridges (DMRB) standard CD116, a segregated lane, separated from the main carriageway of both Great North Road and the A428 by a kerbed island, would be required. This would require carriageway construction beyond the existing kerb line. b) The free-flow lane would also require forward visibility to be provided in accordance with the requirements of CD116. The Applicant has carried out a preliminary assessment of the potential layout and the location of the visibility splays and considers that this would require the acquisition of land from the Colmworth Business Park, located in the north-east corner of the junction. The land required is outside of the Order Limits for the Scheme, and would increase the Scheme's scope and cost. c) The proposal would require further traffic modelling and assessment to understand the potential for wider impacts on the network, preliminary design work to be undertaken and an environmental assessment, as well as consultation with statutory consultees and local stakeholders. d) Any resulting benefits of the proposal would need to be weighed against the ability to make a compelling case for the acquisition of additional land and would need to be supported by a separate business case for the additional costs arising from the proposed change in design. 2. It would also be necessary to consider the traffic capacity case for an intervention in this location, with regard to the following factors: <ol style="list-style-type: none"> a) The ARCADY analysis submitted by the Applicant for the current layout in Table 4-1 of [REP5-018] indicates that, in 2025, queueing on the Great North Road arm in the PM peak (when the longest queues are anticipated) reduces from 32 vehicles to 16 vehicles. In the AM peak, the queue increases from 9 vehicles to 10. There is therefore no case to bring forward any further intervention as at the opening year of the Scheme. b) By 2040, a substantial increase in queueing is predicted whether the Scheme goes ahead or not. The effect of the Scheme in 2040 is to increase the PM peak queue from 48 to 55 vehicles, and the AM peak queue from nine to 29 vehicles. An increase in a queue of 7 vehicles (approximately 40m) would not be regarded as significant. A queue of 29 vehicles would be contained within

Reference Number	Applicant's Comments
	<p>the space available to accommodate it without affecting the operation of the next junction on the Local Road Network at Alpha Drive/ Marlborough Road. The analysis submitted by the Cambridgeshire Authorities supports this view. In fact, the Cambridgeshire Authorities' sensitivity test (Table 2) indicates a <i>reduction</i> in queueing in the PM peak as a result of the Scheme.</p> <p>In view of this, the Applicant considers that a further intervention is not required on the Great North Road (north) arm of this junction as part of the Scheme. The 2025 (opening year) modelling shows an improvement in the operation of this arm of the junction. Whilst the 2040 assessment shows some increases in queueing, these are minimal. The Applicant has agreed to monitor operational traffic flows along this section of Great North Road (as secured by Requirement 22 of the dDCO [REP9-004]) and the monitoring could be used to determine whether any future intervention is required as a result of further growth in traffic between 2025 and 2040.</p> <p>As set out in document 9.81 'Monitor and Manage Technical Note' [REP6-041], the Applicant's licence does not grant it any rights, responsibilities, or powers to improve, enhance, or deliver interventions in respect of the Local Road Network. It would therefore fall to the Local Highway Authorities to bring forward appropriate mitigation in respect of the Wyboston junction, should it be required, at the point in time when that requirement becomes evident. Document 9.81 'Monitor and Manage Technical Note' [REP6-041], also refers to potential sources of funding upon which the Local Highway Authorities may draw, to bring forward any future intervention which may subsequently be found to be necessary. In any event, for the reasons given above, it is clear that mitigation is not required in this location either in 2025 or 2040 as a result of the Scheme.</p> <p>Barford Road Junction</p> <p>In the CCC Technical Note, the Cambridgeshire Authorities report a re-run of the Applicant's ARCADY model and re-present the Applicant's results in Table 4. The individual results differ slightly because the model is run in Junctions 10, whereas the Applicant's model was run in Junctions 9. However, this does not materially affect the results and conclusions as presented by the Applicant. Queueing on the Barford Road (north) arm of the junction is predicted to decrease from ten vehicles to six vehicles in the AM peak and increases from eight vehicles to 14 vehicles in the PM peak, as a result of the Scheme. A queue of 14 vehicles would occupy about half the distance between this junction and the 'Tesco' roundabout and would therefore not adversely affect the operation of the wider Local Road Network. It should be noted, that the Applicant has not received the models used by the Cambridgeshire Authorities and, at this late stage of the Examination, will not have an opportunity to review the models and results and check their accuracy.</p> <p>The Cambridgeshire Authorities then re-run the model using a slightly different allocation of traffic to lanes. The results of this are presented in Table 5. This shows essentially similar results to the original assessment carried out by the Applicant.</p> <p>The Cambridgeshire Authorities also re-run the model using a slightly different method of forecasting future year flows. The results of this are presented in Table 7 of the CCC Technical Note. This indicates an improvement in the performance of all arms of the junction, including the Barford Road (north) arm, with shorter queues and reduced delays in both the AM and PM peaks as a result of the Scheme.</p>

Reference Number	Applicant's Comments
	<p>The Applicant therefore considers that there is no case to consider any further intervention at the Barford Road junction, nor to consider monitoring, since, under the revised assessment, its performance clearly improves and offers beneficial impacts as a result of the operation of the Scheme.</p>
<p>7.</p>	<p>Network Management Duty</p> <p>Notwithstanding submissions received at Deadline 8, having considered all the information submitted during the Examination, including but not limited to additional traffic modelling and sensitivity testing, Local Highways Authorities explicitly state whether the Proposed Development will enable you, and the Applicant, to effectively discharge your statutory Network Management Duty, as defined in S16 of the Traffic Management Act, 2004?</p>
<p>Applicant's comments</p>	<p>The Applicant is of the view that the LHAs' Network Management Duty in this area would be significantly more challenging without the Scheme than with. Without the Scheme, there is forecast to be an increase of 80-100% in traffic along minor east-west routes from 2015 to 2040, that results from an increase in the use of alternative routes to the SRN ([APP-241] para 6.2.5). The Scheme will be effective in mitigating this increase and therefore support both the Applicant and the LHAs in discharging their Network Management Duty.</p> <p>The Applicant is bringing the Scheme forward principally because the existing A428 is congested, provides unreliable journey times and the existing roundabout junctions are over capacity. As a result traffic joining from the Local Road Network experiences frequent delays. All of these factors encourage self-diverting traffic to the detriment of communities near to the Scheme and impact the LHAs' ability to effectively discharge their Network Management Duty. Additionally, as the existing A428 is already operating over capacity it will constrain growth planned in the area. The Scheme resolves these issues by increasing capacity and improving flow and therefore will assist the LHAs to discharge their Network Management Duty.</p> <p>The results from the Strategic Model show that the Scheme will achieve its aims and will support National Highways to discharge its Network Management Duty by:</p> <ul style="list-style-type: none"> • Removing queues at all SRN junctions; • Upgrading the existing roundabouts to grade separated junctions; • Allowing the strategic road network (SRN) and the LRN to interact more efficiently; and • Providing a new dual carriageway. <p>The Scheme supports the LHAs to discharge their Network Management Duty by attracting traffic more directly to the SRN, reducing traffic volumes on local roads. Self-diverting traffic will be reduced, alleviating congestion in villages and less suitable roads. The retention</p>

Reference Number	Applicant's Comments																							
	<p>of the existing A428 as a local road, which has been maintained to trunk road standards, will provide improved connectivity between communities.</p> <p>If the Scheme is not delivered many of the existing congestion issues will be exacerbated. The table below summarises issues that would present particular issues for the LHAs and put at risk their ability to fulfil their Network Management Duty:</p> <p>Table 1: A comparison of with and without Scheme impacts</p> <table border="1"> <thead> <tr> <th style="text-align: left;">Location</th> <th style="text-align: center;">Becomes worse or goes over capacity without the Scheme</th> <th style="text-align: center;">Becomes worse with the Scheme than without</th> <th style="text-align: center;">Improves as a result of the Scheme</th> <th style="text-align: left;">Benefit to LRN from reduced queues and volumes</th> </tr> </thead> <tbody> <tr> <td>A1/A421 Black Cat Junction</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">✓</td> <td>Reduces traffic volume on roads leading to Black Cat roundabout and those currently used in both Bedfordshire and Cambridgeshire by self-diverting traffic to avoid Black Cat roundabout.</td> </tr> <tr> <td>A1/A428 Wyboston Junction</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">✓</td> <td>Reduces traffic volumes on the current A428 at Wyboston roundabout and those used by self-diverting traffic to avoid queues here .</td> </tr> <tr> <td>A428 Barford Road Junction</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">✓</td> <td>Reduces traffic volumes on current A428 either side of Barford Road junction and on Barford Road to the south of A428 because the Black Cat junction will be operating within capacity, there will no longer be an incentive for drivers to self-divert through Little Barford and Tempsford to get to Sandy and the A603.</td> </tr> </tbody> </table>				Location	Becomes worse or goes over capacity without the Scheme	Becomes worse with the Scheme than without	Improves as a result of the Scheme	Benefit to LRN from reduced queues and volumes	A1/A421 Black Cat Junction	✓		✓	Reduces traffic volume on roads leading to Black Cat roundabout and those currently used in both Bedfordshire and Cambridgeshire by self-diverting traffic to avoid Black Cat roundabout.	A1/A428 Wyboston Junction	✓		✓	Reduces traffic volumes on the current A428 at Wyboston roundabout and those used by self-diverting traffic to avoid queues here .	A428 Barford Road Junction	✓		✓	Reduces traffic volumes on current A428 either side of Barford Road junction and on Barford Road to the south of A428 because the Black Cat junction will be operating within capacity, there will no longer be an incentive for drivers to self-divert through Little Barford and Tempsford to get to Sandy and the A603.
Location	Becomes worse or goes over capacity without the Scheme	Becomes worse with the Scheme than without	Improves as a result of the Scheme	Benefit to LRN from reduced queues and volumes																				
A1/A421 Black Cat Junction	✓		✓	Reduces traffic volume on roads leading to Black Cat roundabout and those currently used in both Bedfordshire and Cambridgeshire by self-diverting traffic to avoid Black Cat roundabout.																				
A1/A428 Wyboston Junction	✓		✓	Reduces traffic volumes on the current A428 at Wyboston roundabout and those used by self-diverting traffic to avoid queues here .																				
A428 Barford Road Junction	✓		✓	Reduces traffic volumes on current A428 either side of Barford Road junction and on Barford Road to the south of A428 because the Black Cat junction will be operating within capacity, there will no longer be an incentive for drivers to self-divert through Little Barford and Tempsford to get to Sandy and the A603.																				

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Reference Number	Applicant's Comments				
	A428 Wintringham Park access junction	✓		✓	Reduction in flows along existing A428 prevents issues following de-trunking
	A428 Cambridge Road Junction	✓		✓	Reduced queues on Cambridge Road and on existing A428; reduces risk of self-diversion through Yelling and Toseland
	A428 Toseland Road/ Abbotsley Road crossroads	✓		✓	Reduced volumes of traffic passing through Croxton. By removing the current congestion at this location, the Scheme improves accessibility to the local road network for villages such as Toseland and Abbotsley. Prevents issues following de-trunking
	A428/ B1040 Eltisley Junctions	✓		✓	Reduced volumes on existing A428 will substantially improve conditions for users of the B1040 north and south of the existing A428 and remove the incentive to self-divert through Eltisley village.
	A428/ A1198 Caxton Gibbet Junction	✓		✓	By grade-separating this junction, the Scheme will substantially improve conditions for users of the A1198 north and south of the existing A428, and reduce the incentive to self-divert through Caxton, Great Gransden, Little Gransden and, Abbotsley,
	A428 Cambourne Junction	Junction predicted to remain within capacity through to 2040 whether or not			

Reference Number	Applicant's Comments			
		the Scheme goes ahead – minimal impact from Scheme		
	A428 Scotland Road Junction, Hardwick	Junction predicted to remain within capacity through to 2040 whether or not the Scheme goes ahead – minimal impact from Scheme		
	A428 Madingley Mulch Junction	✓	✓	These results are artificially poor due to the inclusion in the traffic forecasts of substantial proposed development within the A1303 corridor and the omission of mitigation measures approved to reduce the impacts of these developments, affecting traffic volumes. See document TR010044/EXAM/ 9.124 for further detail
	M11 Junction 13	✓	✓	Although the existing capacity issues along the A1303 mainly stem from the signalised junctions to the east of M11 Junction 13, the current operation of the M11 Junction 13 contributes to the eastbound congestion issues on the A1303. Higher levels of traffic are forecast along the A1303. M11 Junction 13 improvements included as a potential scheme in the pipeline of schemes being considered for RIS3.
	M11 Junction 14 (A428 eastbound & M11 slip road merge)	✓	✓	As required to discharge its network management duties, National Highways will monitor flows and queuing this junction location

Reference Number	Applicant's Comments			
				and has the ability to intervene should safety or capacity become an issue.
	A1 Buckden Junction	✓	Scheme has a marginal impact on an existing capacity issue	
	Crossroads between Yelling and Toseland		Junction predicted to remain within capacity through to 2040 whether or not the Scheme goes ahead – minimal impact from Scheme	The Scheme will reduce overall traffic flows through this junction.
	A421/A4280 Renhold Junction	✓	Scheme has a marginal impact on an existing capacity issue	No adverse effect predicted.
	A421/A6 Junction	✓	✓	Higher usage demonstrates movement from less suitable roads onto the former trunk road (A6) as traffic makes a more direct, appropriate route to the SRN
	A1/A603 Sandy Junction	✓	Scheme has a marginal impact on an existing capacity issue	Whilst the Scheme has a marginal impact on this junction, it is predicted to reduce traffic flows along the A603 through Moggerhanger and Willington.
	A1/A6001 Biggleswade North Junction	✓	Scheme has a marginal impact on an existing capacity issue	

Reference Number	Applicant's Comments		
A1/A6001 Biggleswade North Junction	✓	Scheme has a marginal impact on an existing capacity issue	
M1 Junction 13	✓	Scheme has a marginal impact on an existing capacity issue	

The table above demonstrates how improvements to the SRN and considerably reduced volumes of traffic on the existing A428 improve the performance of adjoining local road junctions, providing wider benefit for the LRN and villages surrounding the Scheme. The model predicts more than 4,000 vehicles will transfer from the LRN to the Scheme during peak hours. This benefit was frequently recognised within the public responses to statutory consultation, and according to the Preferred Route Announcement brochure, 89% of respondents agreed that there was a need to improve journeys between Black Cat and Caxton Gibbet

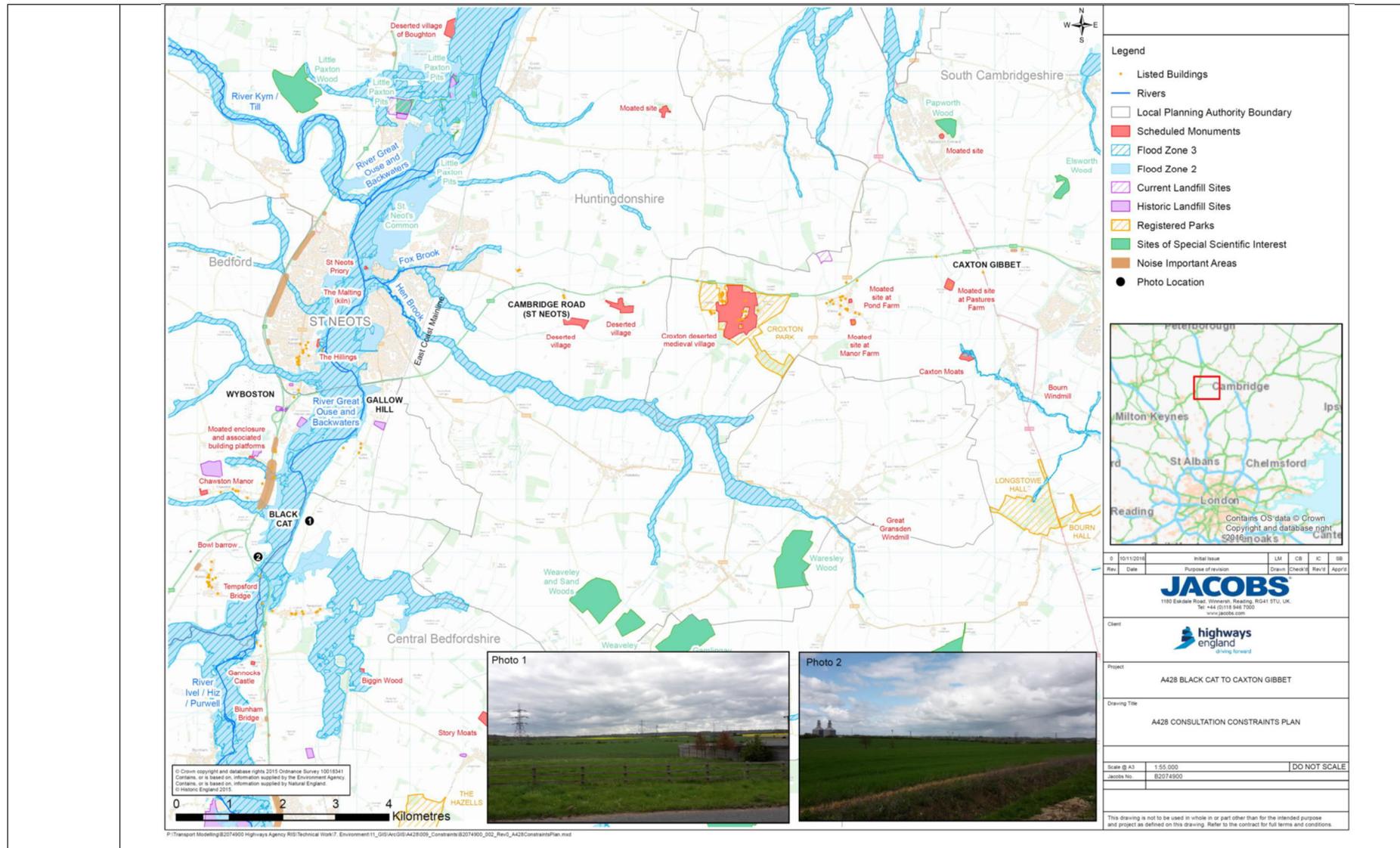
The benefit to local junctions along the existing A428 is illustrated by the assessments undertaken in the Transport Assessment **[APP-241]** at the A428/ Toseland Road/ Abbotsley Road junction and in the Transport Assessment Annex (TAA) **[APP-243]** at the Barford Road and Wyboston junctions. Without the Scheme, the Toseland Road/ Abbotsley Road junction is forecast to go significantly over capacity by 2025; with the Scheme it remains well within capacity through to 2040 (**[APP-241]** para 6.15.3.) The Barford Road and Wyboston junctions have recently been the subject of sensitivity tests **[REP5-018]**. These confirm that the Scheme provides a substantial benefit to each of these junctions.

Further benefits are expected at the locations listed below, as the Scheme will result in reduced traffic flows. It should be noted that the TAA **[APP-243]** was prepared to assess 'impacts' (i.e. places where the Scheme will result in more traffic) and, as a result, locations in the wider area where the Scheme is predicted to reduce traffic flows and provide benefits were excluded from further assessment. The locations where additional benefits are expected include:

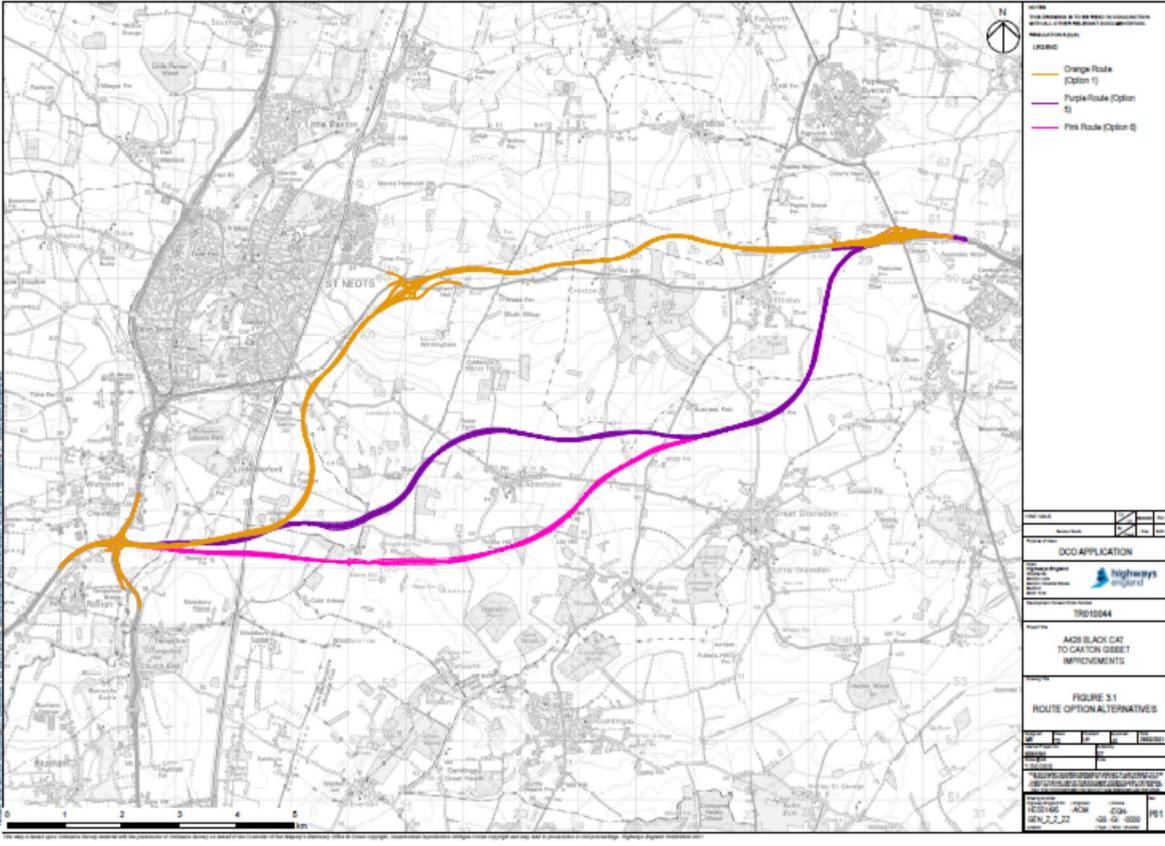
- A421/ Marston Moretaine junction;
- A421/A428 Marsh Leys junction;
- A421/A600 Shortstown junction;
- A421/A603 junction to the SE of Bedford;
- A1198/B1040 Papworth Everard junctions;
- The junctions along the B1046 corridor between St Neots and the M11 where the Scheme reduces traffic flows.

Reference Number	Applicant's Comments
	<ul style="list-style-type: none"> At Sandy, the junctions along the A603-B1042-A603 corridor between Bedford and Cambridge where the Scheme reduces traffic flows.
8.	<p>Flood Risk</p> <p>Applicant, in your response to the ExA's first written questions [REP1-022, Q1.9.1.1 a)], and your response [REP3-007] to the Environment Agency's (EA's) comments on your approach [REP1-076], you have not addressed the sequential approach taken to determine the route of the Proposed Development between the River Great Ouse and Caxton Gibbet roundabout, which sought to avoid areas at risk of flooding. This land is predominantly Flood Zone 1, but the preferred route crosses a number of ordinary watercourses at a higher risk of flooding, together with parts of their floodplains. Following a selection process three route options were considered at Non-Statutory Consultation, prior to the announcement of the preferred route [APP-035].</p> <p>Environment Agency, you have raised concerns with the Applicant's Flood Risk Assessment (FRA) during the Examination, including at [REP1-008] [REP1-076] [REP4-068] and [REP8-046]. The ExA notes that a version of the FRA Technical Note [REP6-042] will be shared with you by the Applicant, prior to the submission of a final version to the Examination at D10 [REP9-023, Q3.9.2.2].</p> <ol style="list-style-type: none"> Applicant, explain how the sequential approach to flood risk was used in determining the preferred route of the Proposed Development between the River Great Ouse and Caxton Gibbet roundabout. Environment Agency please provide comments. Applicant and Environment Agency, please ensure that any unresolved differences, with the FRA and FRA Technical Note, and their significance, are clearly set out in the final SOCG or in a supporting document to be submitted at D10.
Applicant's comments	<ol style="list-style-type: none"> Whilst the land between the River Great Ouse and Caxton Gibbet roundabout is predominantly Flood Zone 1, the alignment of the preferred route of the new dual carriageway and its associated junction designs has been based upon the development and assessment of options that result in the least impact on the two main rivers and their flood plains, the River Great Ouse and Hen Brook, as well as a number of their associated tributaries, and other environmental and physical constraints. The River Great Ouse is associated with an extensive floodplain, while the Hen Brook has a considerably less extensive flood plain, both predominantly classed as Flood Zone 3. The extent of Flood Zone 2 and 3 are shown on the Environmental Constraints Plan in Appendix B of the Stage 1 Environmental Assessment Report [REP4-033 Appendix I], and is provided below:

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Reference Number	Applicant's Comments
	<p>Consideration of the flood risk for alternative routes between the River Great Ouse and Caxton Gibbet Junction was considered during the Option Identification stage (PCF Stage 1). The Environment Agency was one of the stakeholders who attended the Environmental Forum during Stage 1 on 25 July 2016. The attendees were asked to identify specific environmental features that they felt should be considered in the process of Option Identification. Flood risk was one of the environmental issues and constraints raised and discussed at the forum. These issues and constraints were used to inform the qualitative assessment of 8 route options, including all feasible options between the River Great Ouse and Caxton Gibbet, which are offline. A summary of the options is in the Technical Appraisal Report and these reports are provided in Appendices G and I to the Overview of the Alternatives considered at the Black Cat Junction [REP4-033] respectively. The Technical Appraisal Report contains sections on Environmental Assessment and Assessment Summary at Chapters 18 and 19. In addition, Chapter 2.8 of the Stage 1 Environmental Assessment Report relates to the road drainage and the water environment and includes a section on flood risk and the Options Appraisal Matrix is reported at Appendix F.</p> <p>From this early stage, preference was given to locating the Scheme in areas least at risk of flooding, but it was evident that no viable route options that met the Scheme objectives could avoid crossing both the River Great Ouse and Hen Brook flood plains and meet the Scheme objectives. At this stage of Scheme development, all off line route options between the River Great Ouse and Caxton Gibbet were assessed to have a similar impact on the crossings of the River Great Ouse and Hen Brook, as well as several associated tributary flood plains. As a result, similar flood compensation measures would be required to mitigate the risk of major flood events for all of these route options. The environmental assessment of the route options is summarised in Table 19.2 of the Technical Appraisal Report. This assessment indicated that all the options between the River Great Ouse and Caxton Gibbet have the same “Red/Amber” adverse effect rating for Water Environment, except for Option 2 which was rated as “Amber”. However, as reported in Table 19.3 (Objective Summary Table) Option 2, an online upgrade proposal, was discounted on safety grounds and it also performed poorly against the “supporting economic growth” and “a more free flowing network” objectives.</p> <p>Three route options were taken forward from Stage 1 into Stage 2 and were presented at the Non-Statutory Consultation between the River Great Ouse and Caxton Gibbet. These were Option 1 (Orange), Option 5 (Purple) and Option 6 (Pink). A plan showing the route of these three options was shown in the Non-Statutory Consultation brochure [APP-035 Part B2] and in the Environmental Statement Figure 3.1 - Route Option Alternatives [APP-093]. A copy of Figure 3.1 showing the 3 main route options is presented below:</p>

Reference Number	Applicant's Comments
	 <p>The map displays three proposed route alternatives for the A428 Black Cat to Caxton Gibbet improvements. The routes are color-coded: Orange (Option 1), Purple (Option 2), and Pink (Option 3). The map shows the routes crossing the River Great Ouse flood plain and the Hen Brook and tributaries flood plain. A legend in the top right corner identifies the routes. The title block in the bottom right corner provides project details, including the DCO Application number (TR010044) and the project name (A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS). The map also includes a north arrow and a scale bar.</p> <p>All three options involved one crossing of the River Great Ouse flood plain and one crossing of the Hen Brook and tributaries flood plain. The length of the flood plains impacted was similar for all three options. These options were designed to minimise the impact on the flood plains and other constraints. The next stage of flood risk assessment for the three options is provided in the Stage 2 Environmental Assessment Report at Appendix J to the Overview of the Alternatives considered at the Black Cat Junction [REP4-</p>

Reference Number	Applicant's Comments
	<p>033]. The assessment of road drainage and the water environment, including flood risk, for the three route options between the River Great Ouse and Caxton Gibbet junction is described in Chapter 5.9 of this report. The Options Appraisal Matrix at Appendix F summarises the potential effects and mitigation for the water topic for each option as follows:</p> <ul style="list-style-type: none"> • Option 1 (Orange) - <i>“This option would require a new crossing and works within the flood zone of the River Great Ouse. The option would also require the extension of existing structures on three smaller watercourses, with new crossings and potential realignments. The option could alter existing flood risk patterns as a result of new and extended structures and working within the floodplain. Floodplain losses around the River Great Ouse are likely to require compensation. Physical modifications to rivers/watercourse could alter the channel characteristics and water quality and could lead to a change or deterioration in the WFD status of the rivers/watercourses.”</i> • Option 5 (Purple) - <i>“Similar to Option 1 except the option would require the extension of existing structures on two smaller watercourses, with new crossings and potential realignments.”</i> • Option 6 (Pink) – <i>“Similar to Option 1 except that the option would require the extension of existing structures on three smaller watercourses, the crossing of four new watercourses and the potential requirement for realignments. Would also require construction in an additional area of flood zone 2.”</i> <p>All three route options had the same “Red / Amber” rating for overall impact. The outcome of this assessment was also summarised in the “Comparison of route options” table at Section 6 of the Non- Statutory Consultation Brochure [APP-035 Part B2]. The same summary was reported for the three options and reads <i>“Requires a new crossing over the River Great Ouse. It could alter existing flood risk patterns as a result of construction within the floodplain.”</i> No response was received from the Environment Agency to the Non- Statutory Consultation.</p> <p>Thus, a sequential approach to flood risk was used in the assessment of options between the River Great Ouse and Caxton Gibbet to see which option had the lowest risk of flooding, however, all three options had a similar impact on the water environment and flood risk. Flood Risk was therefore not a determining factor for the selection of the preferred option for the main route</p> <p>The reasons for the selection of the Option 1 (Orange) as the preferred route are set out in the Environmental Statement Chapter 3 - Assessment of Alternatives [APP-072] and the Preferred Route Announcement brochure [APP-035 B17]. The assessments demonstrated that the Option 1 (Orange) route option presented the best value for money, had the least overall impact on the environment, and provided the greatest economic return compared to the other options. It was determined from the assessments that, whilst all three route options improved journey times, only the Option 1 (Orange) route option provided a new junction at Cambridge Road, thereby giving greater access for more drivers travelling to and from St Neots and providing better connections into the town and the train station. The Option 1 (Orange) route option was also identified as removing the largest number of vehicles</p>

Reference Number	Applicant's Comments
	<p>from the existing A428 and local roads, with the new dual carriageway reducing rat-running on smaller local roads in surrounding villages and removing long distance traffic using these roads as a diversion route. Also, the Option 1 (Orange) route option received the most support from respondents at the Non-Statutory Consultation with 3019 of the 3616 (83%) expressing it as their preferred route option [APP-035 B16].</p> <p>The Environment Agency's response to the Statutory Consultation is included in the Consultation Report Appendix U - Tables evidencing regard to statutory consultation responses (in accordance with s49 of the Planning Act 2008) - Part 1 – Section 42(1)(a) Prescribed Consultees [APP-064]. Their response included the following comments: <i>"The proposed route of the A428 scheme crosses the River Great Ouse and several of its larger tributaries, so we are encouraged to see that flood risk has been incorporated into the Preliminary Environmental Information (PEI) Report in the Road Drainage and Water Environment section."</i> and <i>"We are pleased to see that flood risk has been considered during construction, operation and maintenance of the scheme under section 13 (Road Drainage and the Water Environment) within the PEI report".</i> The Environment Agency also commented <i>"Whilst we are encouraged to see that consideration has been given to including flood plain compensation areas within the DCO boundary, we are concerned that the boundary has been provided prior to the completion of a FRA"</i>. The Applicant included the following summary in their response <i>"The final extent of the flood risk study area was agreed in consultation with the Environment Agency. The study area is presented in the Flood Risk Assessment, which is included as Appendix 13.4 of the Environmental Statement [TR010044/APP/6.3]. The River Great Ouse hydraulic modelling has taken into consideration the river catchment."</i></p> <p>The Case for the Scheme [APP-240] sets out further information on the sequential test at paragraphs 5.10.21 to 5.10.22. Paragraph 5.10.21 explains that Paragraph 5.105 of the NPSNN and paragraph 155 of the NPPF state that under the Sequential test preference would be given to developments located in Flood Zone 1 but also acknowledges that if there is no reasonably available site in Flood Zone 1 then developments can be located in Flood Zone 2, and if no suitable land is available in Flood Zone 2 the land in Flood Zone 3 can be used subject to the Exception Test. However, NPSNN acknowledges at the final bullet point of paragraph 5.102 that infrastructure connecting two points may need to pass through flood risk areas, as is the case with the Scheme.</p> <p>Paragraph 5.10.22 further explains that the location for the Scheme is dictated by the need to construct a new dual carriageway from west of the A421/A1 Black Cat roundabout through to east of the A428/A1198 Caxton Gibbet roundabout of a suitable standard to form part of the SRN. Given that flood plain associated with the River Great Ouse, Hen Brook and other ordinary watercourses lie between the fixed start and end points of the Scheme, the need for the Scheme to cross land that falls within Flood Zones 2 and 3 is unavoidable, and therefore the Scheme accords with NPSNN paragraph 5.105 and passes the Sequential Test as per the requirements of paragraph 5.98 of the NPSNN. Appendix A of the Case for the Scheme also sets out that in relation to NPSNN paragraph 5.94, the Sequential Test has been applied to the Scheme. The development cannot be directed to an area with lowest probability of flooding and is classed as 'Critical Infrastructure'. The Scheme is therefore subject to the Exception Test. The Scheme ensures that flood risk to people and property is not increased. Flood risk mitigation measures have been developed as part of the</p>

Reference Number	Applicant's Comments
	<p>EIA and are described within Chapter 13, Road Drainage and the Water Environment [APP-082] of the Environmental Statement, the Schedule of Mitigation [APP-235], and in the FRA included within Appendix 13.4 of the Environmental Statement [APP-220].</p> <p>ii. An updated Flood Risk Assessment Technical Note [TR010044/EXAM/9.82v2] has been submitted at Deadline 10 to help resolve differences between the Applicant and the Environment Agency. The submission of the updated Flood Risk Assessment Technical Note [TR010044/EXAM/9.82v2] follows further review of a draft by the Environment Agency before Deadline 10. There are no remaining significant unresolved differences that need to be added to the updated Flood Risk Assessment Technical Note [TR010044/EXAM/9.82v2] or Statement of Commn Ground [TR010044/EXAM/8.1].</p>
9.	<p>Designated Funds</p> <p>The Applicant has confirmed at various points of the Examination that measures including schemes and forward design will be funded through the use of Designated Funds. Applicant, provide a definitive list of all schemes within the geographical extent of the Order Limits of the Proposed Development, or likely to be affected by it, that have been allocated funding from Designated Funds, an indication of timescales and any caveats for delivery, such as being subject to the SoS approval of the Proposed Development and, or, external or joint funding with Local Authorities being required. Whilst it is acknowledged that these matters are not secured in any way in relation to the Proposed Development, the ExA consider that the SoS should be made aware of the Applicant's approach to dealing with issues and concerns raised during the Examination.</p>
Applicant's comments	<p>Designated Funds is managed centrally within National Highways and is subject to aligning to funding principles. Proposals can be submitted in partnership with others or can be raised internally and independently of stakeholders. Designated Funds do not secure mitigation required for schemes, and any Designated Funds provided are therefore separate to and outside of the DCO process.</p> <p>Set out in the table below is the definitive list of schemes that National Highways is managing within the geographical extent of the Order Limits that have been successfully allocated funding from Designated Funds. <u>Items highlighted in orange have not been approved and are included for information.</u> It should be noted that this is the current position at the time of writing and the list may expand. If a proposal is not listed, this does not rule out an opportunity for the submission of a funding application in the future. It should also be noted that the list includes both partnership and internal proposals.</p>

A428 Black Cat to Caxton Gibbet improvements
 Applicant's response to the request for further information from the Examining Authority – Rule 17 Letter

Reference Number	Applicant's Comments					
	Name	Funding stage	Funding approved and funding year*	Location (within Order Limits / outside Order Limits but impacted)	Comments	Caveats for delivery
	St Neots Town Centre enhance programme	Implementation (delivery)	£3,493,218 (for 23/24 and 24/25)	Outside Order Limits but impacted	This is a contribution to a Huntingdonshire District Council led project and to be delivered by Cambridgeshire County Council.	HDC / CCC to maintain current schedule. If delivery is delayed to beyond 2025 may lose funding.
	Roxton Road Bridge equestrian parapets	Detailed Design Implementation (delivery)	£118,582 (for 23/24)	Within Order Limits	N/A	Secretary of State for Transport approval of the A428 Scheme
	Biodiversity Net Gain project	Feasibility	£36,000 (for 21/22)	Outside Order Limits but impacted	This is a scoping study to identify biodiversity opportunities with local authorities, parish councils, non-government organisations and other community groups. Caveat for delivery is	Availability of opportunities and land.
	Wetland creation – Hen & Abbotsley Brooks	Feasibility	£100,000 (for 21/22)	Outside Order Limits but impacted	Standalone project with local farming cluster. May require planning	Delivery is subject to securing further Design and Delivery

Reference Number	Applicant's Comments					
					permission but engaging with the Environment Agency and Cambridgeshire County Council as Lead Flood Authority.	funding.
	Croxton Park enhancement programme	Feasibility	£22,288 (for 21/22)	Outside Order Limits but impacted	Standalone project with Croxton Park estate owners.	Delivery is subject to securing further Design and Delivery funding.
	Cambridgeshire County Council Walkers, Cyclists, Horse-Riders (WCH) Programme	Feasibility	£500,000 (for 22/23)	Both	Programme includes: <ul style="list-style-type: none"> • Cambourne to Madingley Mulch WCH route (8km). • St Neots to Cambourne WCH route (12km). • Eltisley to Caxton Gibbet junction WCH route (0.65km). • A new crossing of the existing A428 at Wintringham 	Can be delivered independently of the A428 Scheme. Delivery is subject to outcome of feasibility and securing further design and delivery funding and confirmation of contribution of partnership (as previously listed).

Reference Number	Applicant's Comments					
					(0.2km)	
	Brook Cottages	Feasibility	£55,725 (to be moved to 22/23)	Outside Order Limits but impacted	To support the relocation of the cottages and to support engagement with the Museum of Anglian Life.	Secretary of State for Transport approval of the Proposed A428 Development.
	Public Archaeology and Community Engagement (PACE) Programme (for enabling works)	Design and Implementation	£398,168.00 (for 21/22 and 22/23)	Within Order Limits	Delivery of digital outreach for the enabling archaeology works.	No caveats for delivery as this is support for enabling works up to Sept 22, pre Secretary of State for Transport approval.
	Archaeology Data Innovation	Concept	£10,000 (for 21/22)	Within Order Limits	Trial to evaluate if archaeology data can be uploaded directly to the Archaeology Data Services.	No caveats for delivery
	Black Cat Shared Use route (circular and riverside walk connecting villages of Roxton, Wyboston and Little Barford)	Feasibility	£100,000 (22/23)	Both	Proposed by Beds Borough Council and Bedfordshire Local Access Forum	Delivery is subject to outcome of feasibility and securing further design and delivery funding and confirmation of contribution of partnership (as previously listed).

A428 Black Cat to Caxton Gibbet improvements
 Applicant's response to the request for further information from the Examining Authority – Rule 17 Letter

Reference Number	Applicant's Comments					
	Community Speed Signs	Implementation	£25,000 (22/23)	Outside Order Limits but impacted	Project proposal to purchase 6 interactive speed signs to support residents in local villages.	No caveats for delivery.
	Forestry England Woodland Partnership	Feasibility	£120,000 (22/23)	Outside Order Limits but impacted	Partnership proposal with Forestry England to support their Woodland Partnership offer in the area.	No caveats for delivery.
<p><i>*Please note the Applicant is unable to provide specific timescales however work must be completed within the period agreed at the time of funding approval. .</i></p>						

Appendix A – Cadent email confirming their responsibilities under the CDM Regulations 2015 and the Health and Safety Executive (HSE) notification procedure

From: Nick Morrison [<mailto:nick.morrison@iacsltd.co.uk>]
Sent: 10 February 2022 09:12
To: Andrew Gosling (HE) <Andrew.Gosling@a428.co.uk>
Cc: Moj, Borys (SCE) <borys.moj@skanska.co.uk>; Sean Stacey <Sean.Stacey@cadentgas.com>
Subject: FW: [EXT] Fwd: Cadent Standard Conditions of Contract

Please below the response, hope this is what you require.

From: Harrison, Dave <Dave.Harrison@cadentgas.com>
Sent: Thursday, February 10, 2022 8:57 AM
To: Nick Morrison <nick.morrison@iacsltd.co.uk>
Subject: RE: [EXT] Fwd: Cadent Standard Conditions of Contract

Nick,

Please issue the attached response:-

Cadent will be applying CDM Regulations 2015 and will issue an F10 notification.

Cadent are also required under the Pipeline Safety Regulations to notify Major Accident Hazard Pipelines (MAHP) to the HSE. These notifications are broken down into:-

- Regulation 20 - Notification before construction

The operator shall ensure that the construction of a Major Accident Hazard Pipeline is not commenced unless he has notified to the Executive the particulars specified in Schedule 4 at least 6 months, or such shorter time as the Executive may approve, before such commencement.

- Regulation 21 - Notification before use

The operator shall ensure that no fluid is conveyed in a Major Accident Hazard Pipeline, or conveyed following a period in which it has been out of commission (other than for routine maintenance), until the expiration of 14 days, or of such shorter period as the Executive may in that case approve, from the receipt by it of a notification of the date on which it is intended to convey or, as the case may be, resume the conveyance of fluid in the pipeline.

- Regulation 22 - Notification in other cases

(1) Where there is a change of operator of a Major Accident Hazard Pipeline, or of his address, the operator shall notify any such change to the Executive within 14 days thereafter.

(2) Subject to paragraph (3), in the case of a Major Accident Hazard Pipeline the construction of which has commenced, or has been completed, the operator shall ensure that no event of a kind described in Schedule 5 takes place until the expiration of 3

months, or such shorter time as the Executive may in that case approve, from the receipt by the Executive of particulars specified in that Schedule in relation to such event.

(3) Where an event of a kind described in Schedule 5 takes place in an emergency, the operator shall notify to the Executive the particulars specified in that Schedule as soon as is reasonably practicable.

Events which are captured under (2) above shall ensure a minimum of three months' notice to the HSE is given prior to the commencement of any works of construction.

For pipeline diversions, in line with the above, Cadent will issue a Regulation 22 Letter to the HSE with a minimum 3 months notice prior to start of construction, following this a Regulation 21 Letter will be issued at least 14 days prior to commissioning the diverted section of pipeline.

This is covered with in Cadent's QMS to ensure that the notifications are issued.

Thanks,

Dave Harrison
Design Co-ordinator HS2(Pipeline Diversions)
Construction – Capital Delivery

Cadent

Windsor Street, Birmingham B7 4DW

Tel. M +44(0)7970 251585

Dave.harrison@cadentgas.com

cadentgas.com

Appendix B - CCC Technical Note

A428 Black Cat to Caxton Gibbet Scheme

Wyboston and Barford Road Roundabouts Mitigation Note

Prepared by: Cambridgeshire County Council

Authors: Lou Mason-Walsh/Steve Newby

Date: 1 February 2022

Introduction

CCC have concerns about the impact of the proposed A428 Black Cat to Caxton Gibbet scheme at the Wyboston and Barford Road roundabouts in St Neots. Strategic modelling commissioned by National Highways (NH), demonstrating the case for the scheme shows that in the 2040 design year:

- Although the scheme reduces total in flows to the Wyboston junction by some 5,700 pcu (AADT flow), the flow from St Neots on the Great North Road north approach arm increases by 1,690 pcu (AADT), an increase of 21%
- Total in flows to the Barford Road junction reduce by 13,700 pcu (AADT) but flows from the Barford Road north approach arm increase by 490 pcu (AADT), an increase of 7%.

CCC are concerned that if sufficient capacity is not provided on the Great North Road north and Barford Road north approach arms to these two key junctions, the wider scheme benefits to St Neots will not be realised.

To assess the impact of the proposed scheme at the two junctions in more detail, NH built junction models and reported findings in the Transport Assessment Annex (A428 inquiry document reference **APP-243**). The results from this modelling were unacceptable to CCC because NH used turning flows from the strategic SATURN model as direct inputs to the junction models. Since the strategic model was only calibrated using link flows, use of turning flows output from the model in this manner was wholly inappropriate unless observed turning flows had been used to calibrate them at the junctions in question. NH subsequently undertook sensitivity tests at the junctions using CCC's suggested method for developing forecast year flows (Appendix 1) and reported this work at deadline 5 in "9.68 Junction Model Sensitivity Test Results" [**REP5-018**].

The flows used in this modelling were accepted by CCC with the sensitivity modelling showing the Wyboston roundabout to be operating over capacity in 2040 with the introduction of the scheme, particularly the Great North Road north arm. The tests also showed the Barford Road roundabout to be operating over capacity in 2040 with the introduction of the scheme, with the Barford Road north and south, and A428 east approach arms worst affected.

Based on these results, CCC discussed the need for mitigation at these two junctions at a meeting on 29 November 2021. NH agreed to investigate road space reallocation at the junctions to see if this could mitigate the impacts of the scheme at these junctions. This work was reported by the Applicant in Chapter 6 of "9.105 Applicants Response to issues raised at Issue Specific Hearing 5 on 1 December 2021" [**REP8-022**].

The note considered options but contrary to CCC's understanding, NH did not use the junction models to support their conclusions and instead undertook a desk top exercise that stated lane reallocation would not have a significant impact at these

junctions and therefore there was no mitigation suggested. As a result, CCC have investigated options using NH's junction models and this note presents our results and conclusions.

Discussion

The following sections present CCC's modelling results for the Wyboston and Barford Road junctions and discuss options and CCC's conclusions.

Wyboston Roundabout

NH reported results from junction model sensitivity tests, including the Wyboston junction in their document "9.68 Junction Model Sensitivity Test Results" [REP5-018]. Forecast year traffic flows used in this analysis were developed using a method similar to the method suggested by CCC and as a result CCC broadly accept the flows used as well as the results and conclusions from this modelling.

We note however that NH used the strategic model to calculate growth factors between the base and forecast year Do Minimum (DM) scenario, and then applied differences between the Do Something (DS) and DM scenarios to obtain the forecast year DS sensitivity test demand. CCC's method recommended using differences between the DM / DS scenarios and base year to generate demand for the respective future year scenarios. Both methods are equally valid, and in this case very similar forecast year demand was obtained using either method.

Junction results for Wyboston junction in the 2040 design year without and with the proposed A428 Black Cat to Caxton Gibbet scheme, the Do Minimum (DM) and Do Something (DS) scenarios respectively are shown below. The results shown below differ slightly from those presented by NH in REP5-018 because CCC re-ran the models using Junctions 10 software rather than Junctions 9 that was used by NH. *Note: the differences are minimal and do not change any conclusions drawn.*

Table 1 – Wyboston junction NH Sensitivity test results

Approach Arm	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
[Lane Simulation] – 2040 DM										
Great North Road (N)	D7	9	45	0.89	E	D8	50	145	1.00	F
A428		11	23	0.83	C		14	27	0.90	D
Great North Road (S)		53	139	1.11	F		67	180	1.12	F
Premier Inn Access		0	14	0.11	B		1	18	0.40	C
A1 Southbound Offslip		42	172	0.95	F		1	14	0.41	B
[Lane Simulation] – 2040 DS										
Great North Road (N)	D9	33	109	0.99	F	D10	55	145	1.01	F
A428		8	23	0.83	C		13	28	0.88	D
Great North Road (S)		3	10	0.72	B		10	27	0.93	D
Premier Inn Access		0	10	0.10	A		1	30	0.50	D
A1 Southbound Offslip		29	111	0.97	F		2	19	0.55	C

[Junction Models\2021.11.24 Sensitivity Test Junction Models\4. Wyboston\Models\ST Wyb rbt lane sim_051121-NH.i10](#)

Notes:

1. RFC = Ratio of Flow to Capacity. Values greater than 0.85 indicate the junction operates over its operational capacity with little reserve capacity and will be unable to cope effectively with daily fluctuations in traffic flows. Values greater than 1.00 indicate the junction operates over practical capacity and significant queuing and delays will be experienced by users.
2. LOS = Level of service. A = free flow, B = reasonably free flow, C = stable flow, D = approaching unstable flow, E = unstable flow, F = breakdown flow.

Results from the table above show:

- Although the scheme provides some slight benefits especially in the morning peak, overall junction performance does not markedly improve between DM and DS scenarios
- The Great North Road north approach arm remains over capacity in the DS scenario in both morning and evening peak hours. Importantly the queues on this approach would extend for distances of 190m and 316m upstream of the junction in the morning and evening peak hours respectively, with the queue projected to reach the junction of Howard Road in the evening peak hour
- Great North Road south approach arm experiences the most benefit from the scheme although this arm is still shown to be operating over capacity in the PM peak.
- The A1 off-slip remains over capacity in the morning peak hour in the DS scenario although the model indicates that the levels of queuing and delay reduces slightly.
- In the morning peak two of the five arms are shown to be operating very close to the absolute capacity
- in the evening peak three of the five approach arms are either at or close to the absolute capacity in the DS scenario during the evening peak hour, with the exceptions being the A1 off-slip and the lightly trafficked Premier Inn access.

For completeness, results using CCC forecast demand are shown in Table 2 below.

Table 2 - Wyboston junction NH Sensitivity test results, using CCC demand

Approach Arm	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
[Lane Simulation] – 2040 DM										
Great North Road (N)	D13	11	53	0.90	F	D14	51	150	0.99	F
A428		8	17	0.79	C		11	21	0.88	C
Great North Road (S)		52	136	1.08	F		58	149	1.09	F
Premier Inn Access		0	14	0.10	B		1	17	0.38	C
A1 Southbound Offslip		23	97	0.96	F		2	14	0.40	B
[Lane Simulation] – 2040 DS										
Great North Road (N)	D15	21	72	0.98	F	D16	40	104	0.99	F
A428		7	20	0.84	C		11	27	0.87	D
Great North Road (S)		2	9	0.70	A		6	18	0.88	C
Premier Inn Access		0	10	0.08	B		1	25	0.45	C
A1 Southbound Offslip		13	59	0.89	F		2	16	0.50	C

[Junction Models\2021.11.24 Sensitivity Test Junction Models\4. Wyboston\Models\ST Wvrb rbt lane sim 051121-NH.i10](#)

Notes:

1. RFC = Ratio of Flow to Capacity. Values greater than 0.85 indicate the junction operates over its operational capacity with little reserve capacity and will be unable to cope effectively with daily fluctuations in traffic flows. Values greater than 1.00 indicate the junction operates over practical capacity and significant queuing and delays will be experienced by users.
2. LOS = Level of service. A = free flow, B = reasonably free flow, C = stable flow, D = approaching unstable flow, E = unstable flow, F = breakdown flow.

Inspection of results in Table 2 shows the conclusions drawn from the NH modelling still apply with the Great North Road north approach arm being over capacity with the introduction of the A428 scheme.

National Highways Options Investigation for Wyboston Roundabout

NH examined options for improving capacity at the Wyboston roundabout and presented their findings in Chapter 6 of “9.105 Applicants Response to issues raised at Issue Specific Hearing 5 on 1 December 2021” [REP8-022].

This document reported a desktop exercise in examining options at the junction, with NH’s questionable decision not to use the ARCADY model to test options. CCC note that this would have been a relatively quick and easy task.

The Applicant’s opening statement that mitigation would not include carrying out physical construction work on the local road network is also disputed by CCC as the capacity issues at this junction are a direct result of building the proposed scheme and need to be mitigated by the applicant as part of the scheme.

NH set out a number of options in the note, these focussed on the Great North Road north approach arm, the options considered were:

- Retain the existing layout: re-mark the current lanes to allocate straight ahead traffic to the offside lane only;
- Increase the capacity of the roundabout approach;
- Provide a free-flow left turn lane from Great North Road north into the A428 eastbound exit;
- Reduce the capacity of one of the other arms to provide more gaps in the circulatory flow at the Great North Road north arm.
- Signalisation of the junction

NH’s conclusions for the Wyboston junction were:

- that by solely adjusting the lane markings, the benefits in traffic operations would be negligible or marginal
- that more substantive widening or improvements could bring in some potential benefits but they were beyond the proper scope of the Scheme
- that NH did not propose to undertake any further sensitivity tests of any alternative schemes for these junctions, which were unaltered from their current forms in the assessment of this scheme

CCC disagree that more substantive widening or improvements are beyond the scope of the A428 scheme and as a result undertook testing of the junction to determine what mitigation might be needed. Only impacts in the 2040 design year for the DS scenario were considered, using both NH and CCC derived flows for completeness.

CCC Options Investigation for the Wyboston Roundabout

NH modelling showed the Great North Road north approach arm was most in need of mitigation at this junction. There were a number of options for mitigation but tests undertaken by CCC using NH’s ARCADY model indicate the provision of a free-flow left turning lane between the Great North Road northern arm and the A428 east

bound would be the most viable solution. Results from this test are shown in the table below, using both NH and CCC derived forecast year flows.

Table 3 - Wyboston junction mitigation test results (segregated left turn traffic)

Approach Arm	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
[Lane Simulation] – 2040 DS No LT traffic from GNR – NH demand										
Great North Road (N)	D11	1	7	0.32	A	D12	1	8	0.48	A
A428		8	22	0.84	C		15	35	0.91	E
Great North Road (S)		3	10	0.72	B		9	28	0.92	D
Premier Inn Access		0	10	0.08	B		2	30	0.52	D
A1 Southbound Offslip		28	112	0.95	F		2	19	0.57	C
[Lane Simulation] – 2040 DS No LT traffic from GNR – CCC demand										
Great North Road (N)	D17	1	7	0.30	A	D18	1	7	0.47	A
A428		7	18	0.82	C		11	25	0.89	D
Great North Road (S)		2	9	0.70	A		6	18	0.87	C
Premier Inn Access		0	9	0.07	A		1	24	0.45	C
A1 Southbound Offslip		14	58	0.91	F		2	15	0.50	C

[Junction Models\2021.11.24 Sensitivity Test Junction Models4. Wyboston\Models\ST_Wyb_rbt_lane_sim_051121-NH.i10](#)

Notes:

1. RFC = Ratio of Flow to Capacity. Values greater than 0.85 indicate the junction operates over its operational capacity with little reserve capacity and will be unable to cope effectively with daily fluctuations in traffic flows. Values greater than 1.00 indicate the junction operates over practical capacity and significant queuing and delays will be experienced by users.
2. LOS = Level of service. A = free flow, B = reasonably free flow, C = stable flow, D = approaching unstable flow, E = unstable flow, F = breakdown flow.

Results from the table above show:

- results from both demand sets are consistent
- queues and delay on Great North Road north arm are significantly reduced, to such a level that even when the left turning traffic is included in the traffic flow upstream of the junction, no significant queues should form
- the A1 off-slip remains over capacity in the morning peak hour, although there is sufficient queuing space on this arm to accommodate the expected 28 queued vehicles in the NH demand scenario. Due to flaring on this approach arm, queued vehicles will extend approximately 113m along the 400m long slip road
- The A428 approach arm remains over reserve capacity in the evening peak hour (RFC =0.91) with average delays of 35s per vehicle in the NH demand scenario.

Providing a free-flow left turn slip from Great North Road north on to the existing A428 eastbound would therefore be a realistic option to improve capacity at this junction.

CCC ran an additional test examining the impact of adding a give-way left turn lane on the Great North Road north approach arm but this showed a marked deterioration in the performance of this arm, with delays increasing from 145s to 254s per vehicle during the evening peak hour. This option was therefore not considered viable.

NH mention the presence of a bus layby and an uncontrolled crossing on the A428 east of the Wyboston Roundabout as reasons why they have not tested the effectiveness of a filter lane at this junction. However, the bus layby is not currently in

use and if such a facility were required in the future the location could be explored at that time. The uncontrolled crossing is substandard (due to crossing the 3-lane widened approach and areas of carriageway hatching) and the pedestrian route may be better provided for on the west side of the roundabout, routing to Wyboston Lakes via improved pedestrian facilities at the existing traffic light junction. Therefore, neither of these features precludes the introduction of a left filter lane in this location.

In addition, there would appear to be sufficient existing verge and road width to be able to construct the segregated left turn without additional land take.

Barford Road Roundabout

NH reported results from junction model sensitivity tests, including Barford Road junction in their document “9.68 Junction Model Sensitivity Test Results” [REP5-018]. Forecast year traffic flows used in this analysis were developed using a method similar to that suggested by CCC and as a result CCC broadly accept the flows used as well as the results and conclusions from this modelling.

Junction results for Barford Road junction in the 2040 design year without and with the proposed A428 Black Cat to Caxton Gibbet scheme, the Do Minimum (DM) and Do Something (DS) scenarios respectively are shown below. The results shown below differ slightly from those presented by NH in REP5-018 because CCC re-ran the models using Junctions 10 software rather than Junctions 9 that was used by NH. Note however that the differences are minimal and do not change any conclusions.

Table 4 – Barford Road junction NH Sensitivity test results

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
[Lane Simulation] – 2040 DM										
Barford Road (N)	D7	10	38	0.95	E	D8	8	36	0.86	E
A428 (E)		345	1227	1.00	F		277	867	1.00	F
Barford Road (S)		2	13	0.55	B		252	939	0.96	F
A428 (W)		71	142	0.98	F		309	757	0.98	F
[Lane Simulation] – 2040 DS										
Barford Road (N)	D9	6	21	0.85	C	D10	14	58	0.96	F
A428 (E)		4	17	0.68	C		5	17	0.78	C
Barford Road (S)		0	9	0.20	A		86	311	0.96	F
A428 (W)		5	11	0.74	B		63	114	0.96	F

[Junction Models\2021.11.24 Sensitivity Test Junction Models\5. Barford Road\Models\ST Barford Road Roundabout_051121-NH.i10](#)

Notes:

1. RFC = Ratio of Flow to Capacity. Values greater than 0.85 indicate the junction operates over its operational capacity with little reserve capacity and will be unable to cope effectively with daily fluctuations in traffic flows. Values greater than 1.00 indicate the junction operates over practical capacity and significant queuing and delays will be experienced by users.
2. LOS = Level of service. A = free flow, B = reasonably free flow, C = stable flow, D = approaching unstable flow, E = unstable flow, F = breakdown flow.

Results from the table above show:

- Introduction of the scheme provides most benefit during the morning peak hour with all approach arms operating within reserve capacity

- The junction performs particularly badly during the evening peak hour in the DS scenario, with three approach arms operating in excess of the operational capacity and close to absolute capacity

CCC conclude based on these results that mitigation is required at the junction.

National Highways Options Investigation for the Barford Road Roundabout

NH examined options for improving capacity at the junction and presented their findings in Chapter 6 of “9.105 Applicants Response to issues raised at Issue Specific Hearing 5 on 1 December 2021” [REP8-022].

This document reported a desktop exercise in examining options at the junction, with NH’s decision not to use the junction model to test any options being questionable as it would have been a relatively quick and easy task.

Furthermore, NH’s opening statement that mitigation would not include carrying out physical construction work on the local road network is disputed by CCC as capacity issues at the junction are a direct result of building the proposed scheme.

Options identified for the Barford Road roundabout focussed on improving capacity for right turning traffic from the Barford Road north approach, with the following options suggested:

- Retain the existing layout: re-model the junction in ARCADY to reflect the allocation of straight ahead traffic to the nearside lane only
- Increase the capacity of the roundabout approach;
- Reduce the capacity of one of the other arms to provide more gaps in the circulatory flow at the Barford Road (N) arm.
- Signalisation of the junction

With respect to the first bullet point above, CCC note the Barford Road north approach was modelled incorrectly by NH for the sensitivity test, which permitted ahead traffic to use both lanes. This is incorrect because there is only a single lane exit on Barford Road south, hence the ahead movement should be restricted to a single approach lane. CCC corrected this in their subsequent modelling of the junction.

NH’s conclusions for the junctions assessed in **REP8-022** were:

- that by solely adjusting the lane markings, the benefits in traffic operations would be negligible or marginal
- that more substantive widening or improvements could bring in some potential benefits but they are beyond the proper scope of the Scheme
- that NH does not propose to undertake any further sensitivity tests of any alternative schemes for these junctions, which are unaltered from their current forms in the assessment of this scheme

CCC disagree that more substantive widening or improvements are beyond the scope of the A428 scheme and as a result undertook testing at the junction to ascertain what mitigation might be needed.

CCC Options Investigation for the Barford Road Roundabout

Solving capacity problems caused by the A428 scheme at the Barford Road junction appears more difficult due to the number of approach arms that are over capacity in

NH's sensitivity test modelling and the extremely high levels of delay forecast by the model.

As outlined above CCC noted an error in NH's sensitivity test modelling that allowed traffic from Barford Road north to use both lanes to travel straight ahead to Barford Road south. Since Barford Road south only has a single exit lane, this is incorrect and not how the junction currently operates. The table below shows junction results with this error corrected.

Table 5 – Barford Road junction NH Sensitivity test results – corrected Barford Rd north approach arm

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
[Lane Simulation] – 2040 DM										
Barford Road (N)	D7	11	37	0.92	E	D8	8	34	0.87	D
A428 (E)		343	1211	1.01	F		271	851	1.00	F
Barford Road (S)		2	13	0.57	B		255	953	0.98	F
A428 (W)		67	138	1.00	F		310	757	1.00	F
[Lane Simulation] – 2040 DS										
Barford Road (N)	D9	7	25	0.85	D	D10	14	57	0.95	F
A428 (E)		4	19	0.69	C		5	17	0.78	C
Barford Road (S)		1	8	0.21	A		81	297	0.97	F
A428 (W)		4	10	0.73	A		58	107	0.95	F

ST Barford Road Roundabout 051121-NH-correction-v1

Notes:

1. RFC = Ratio of Flow to Capacity. Values greater than 0.85 indicate the junction operates over its operational capacity with little reserve capacity and will be unable to cope effectively with daily fluctuations in traffic flows. Values greater than 1.00 indicate the junction operates over practical capacity and significant queuing and delays will be experienced by users.
2. LOS = Level of service. A = free flow, B = reasonably free flow, C = stable flow, D = approaching unstable flow, E = unstable flow, F = breakdown flow.

Correcting this error improved junction performance slightly but it is still clearly over capacity in the DS evening peak hour scenario.

As for the Wyboston junction, we note that NH used the strategic model to calculate growth factors between the base and forecast year Do Minimum (DM) scenario, and then applied differences between the Do Something (DS) and DM scenarios to obtain the forecast year DS sensitivity test demand. CCC's method recommended using differences between the DM / DS scenarios and base year to generate demand for the respective future year scenarios. As noted previously, both methods are equally valid but in this case NH's method produced much higher forecast year flows as shown in the table below.

Table 6 – Differences between NH and CCC forecast flows for Barford Road junction (total arrive flow)

Scenario	Peak Hour	NH Forecast	CCC Forecast	Difference (NH – CCC)
2040 DM	AM	3,866	3,798	+73
	PM	4,820	4,148	+672
2040 DS	AM	2,998	2,863	+145

	PM	4,076	3,356	+720
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The differences between the two alternative forecasts are largest in the evening peak hour which is when the junction is most congested. For completeness CCC re-ran the junction sensitivity test using CCC forecast demand. Results are summarised in the table below.

Table 7 – Barford Road junction NH Sensitivity test results – corrected Barford Rd north approach arm using CCC forecast flows

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
[Lane Simulation] – 2040 DM										
Barford Road (N)	D7	13	45	0.94	E	D8	6	25	0.82	D
A428 (E)		381	1439	0.99	F		213	757	0.99	F
Barford Road (S)		2	12	0.55	B		13	50	0.86	E
A428 (W)		67	138	1.00	F		92	174	1.00	F
[Lane Simulation] – 2040 DS										
Barford Road (N)	D9	6	19	0.83	C	D10	4	17	0.77	C
A428 (E)		5	27	0.80	D		4	16	0.75	C
Barford Road (S)		0	8	0.17	A		2	17	0.58	C
A428 (W)		3	8	0.65	A		7	14	0.74	B

[ST Barford Road Roundabout_051121-NH-correction-v1](#)

Notes:

1. RFC = Ratio of Flow to Capacity. Values greater than 0.85 indicate the junction operates over its operational capacity with little reserve capacity and will be unable to cope effectively with daily fluctuations in traffic flows. Values greater than 1.00 indicate the junction operates over practical capacity and significant queuing and delays will be experienced by users.
2. LOS = Level of service. A = free flow, B = reasonably free flow, C = stable flow, D = approaching unstable flow, E = unstable flow, F = breakdown flow.

The table above shows that using CCC forecasts the junction is forecast to be within capacity in the DS scenario. In reality the future year flows may lie somewhere between the NH and CCC forecasts. CCC therefore suggest NH monitor queuing on the Barford Road north arm and provide mitigation if it blocks the upstream junction at Barford Road/Chapman Way.

In this case the mitigation would be to provide a short two lane section for exiting traffic on the A428 west exit. This would allow right turning traffic from Barford Road north to use two lanes, as well as permitting ahead traffic from A428 east to use two lanes. Results of this test are shown in the table below, which for obvious reasons uses only the NH forecast flows.

Table 8 – Barford Road junction including mitigation – NH forecast flows

	AM					PM				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
[Lane Simulation] – 2040 DS										
Barford Road (N)	D9	3	9	0.68	A	D10	2	10	0.66	B
A428 (E)		3	10	0.53	B		2	8	0.58	A
Barford Road (S)		0	8	0.19	A		88	306	0.95	F
A428 (W)		5	10	0.74	B		63	116	0.95	F

[Junction Models\2021.11.24 Sensitivity Test Junction Models\5. Barford Road\Models\ST Barford Road Roundabout_051121-NH-cap-changes-v2.i10](#)

Notes:

1. RFC = Ratio of Flow to Capacity. Values greater than 0.85 indicate the junction operates over its operational capacity with little reserve capacity and will be unable to cope effectively with daily fluctuations in traffic flows. Values greater than 1.00 indicate the junction operates over practical capacity and significant queuing and delays will be experienced by users.
2. LOS = Level of service. A = free flow, B = reasonably free flow, C = stable flow, D = approaching unstable flow, E = unstable flow, F = breakdown flow.

Results from the table above show:

- Queues and delays on Barford Road north arm will be reduced to negligible levels if right turning traffic is permitted to use both approach lanes
- Queues and delays on the A428 east approach arm will also be reduced to negligible levels if the straight ahead traffic is permitted to use two lanes for that movement
- Barford Road south arm would remain over capacity.
- A428 west approach would remain close to capacity but due to reasonably well balanced flows in each approach lane, providing additional lanes offers limited benefit.

Overall, providing a two lane exit flare on the A428 west exit arm would mitigate unacceptable delays on the Barford Road north arm while offering benefits to the A428 east arm.

Provision of the exit flare west of the roundabout would require some pavement widening into the southern verge. This would require some earthworks and drainage works as the road is on low embankment, but no other serious constraints are apparent.

Summary and Conclusions

The NH sensitivity test modelling for the Wyboston and Barford Rd roundabouts has been broadly accepted by CCC. This work showed that both Wyboston and Barford Road roundabouts would be over capacity in 2040 with the introduction of the proposed A428 Black Cat to Caxton Gibbet scheme.

CCC note NH's forecasting method differed slightly from CCC's suggested method. Differences in forecast year demand produced by the two methods were small at the Wyboston junction but much larger at the Barford Road junction. Using CCC derived forecast year flows the Wyboston junction remained over capacity with the introduction of the scheme, reinforcing the need for mitigation. The Barford Road junction on the other hand operated within capacity using CCC demand flows.

NH performed a desktop exercise looking at options to mitigate the issues at these two junctions but concluded that by solely adjusting lane markings, the benefits in traffic operations would be negligible or marginal. NH further concluded that more substantive widening or improvements could bring some potential benefits but were in their opinion beyond the proper scope of the proposed scheme.

CCC disagree with this conclusion as the capacity problems are a direct result of the proposed scheme. CCC therefore recommend the following:

- Wyboston junction - provision of a free flow left turn slip lane from the Great North Road north approach arm on to A428 eastbound. This was needed using either NH or CCC forecasts.

- Barford Road junction - monitor levels of queuing on the Barford Road north approach arm. If/when queues extend to Barford Road/Chapman Way, provide a localised two-lane flared exit on the A428 east approach arm. This is proposed due to the discrepancy between the NH and CCC forecast year flows and their impact on junction performance.

While it is acknowledged there are physical constraints associated with both these recommendations, none of those constraints is of such technical difficulty so as to preclude them.

DRAFT

Appendix 1

A428 Black Cat to Caxton Gibbet – CCC Preferred Method for Deriving Junction Model Flows

Prepared by: Cambridgeshire County Council

Authors: Lou Mason-Walsh/Steve Newby

Date: 27 September 2021

Introduction

CCC officers have concerns about the traffic flows that have been used in the detailed operational junction modelling that has been used to underpin the proposed A428 Black Cat to Caxton Gibbet highway scheme.

These concerns have been raised with National Highways (NH) on a number of occasions via the joint Issues Log, in meetings, in the Public Inquiry Written Representations and Local Impact Report as well as at the recent Issue Specific Hearing (ISH) that covered Highway matters. Following the ISH, CCC again sought to resolve these concerns by seeking meetings to discuss in advance of Deadline 2 but it was not possible to agree a position statement, so this note is being shared with NH.

NH approach to the junction modelling means that CCC consider the current junction assessments to be unreliable, which has a direct impact on assessment of required mitigation for the scheme, highway design for new junctions and may lead to changes with the scheme design itself. CCC are also keen not to adopt more assets than necessary due to the ongoing maintenance burden. For these reasons getting the junction modelling as reliable as possible is a key requirement for CCC.

In an attempt to move this forward this technical note outlines two options for NH to consider that CCC would find acceptable. CCC note that NH stated their intention to carry out sensitivity testing during the ISH. Without knowing the nature or coverage of this sensitivity testing CCC are unable to confirm that it would meet their requirements, so urge NH to proceed using one of the two options outlined in this note.

National Highways Methodology

In deriving turning movements for use in the local junction models, NH have adopted one of three approaches depending on their assessment of which of the following categories the junction should fall in to:

1. Junctions which do not exist in the base year, or where there are fundamental changes in layout – ***'scheme junctions'***. Demand for these junctions was taken directly from the strategic model in future years, with no base year model developed.
2. Junctions which do exist in the base year and are not significantly changed by the Scheme, but where no base models were developed: referred to as ***'existing junctions with no calibrated/ validated base models'***.

Demand for these junctions was taken directly from the strategic model in future years

- Junctions which do exist in the base year and are not significantly changed by the Scheme, but where observed data was available and base models were developed: referred to as '**existing junctions with calibrated/ validated base models**'.

Demand for these models was taken in some cases from observed counts in the base year and in others it was taken directly from the strategic model.

Demand was taken directly from the strategic model in future years.

CCC fundamentally disagree with use of unmodified strategic model flows in the local junction models. This is primarily because the strategic model is not validated to turning movements at individual junctions, as evidenced by CCC comparison of modelled and observed flows at a number of junctions.

NH have undertaken a comparison of the available observed count data and the base year strategic model and have concluded that the strategic model flows are sufficiently close to the observed data. The table below shows an example of the comparison undertaken by NH.

From/To	SATURN Flows (2015)					Survey Flows (2016)					Difference (SATURN - Survey)				
	A1198 Ermine Street (North)	A428 (East)	A1198 (South)	A428 Cambridge Road (West)	Total	A1198 Ermine Street (North)	A428 (East)	A1198 (South)	A428 Cambridge Road (West)	Total	A1198 Ermine Street (North)	A428 (East)	A1198 (South)	A428 Cambridge Road (West)	Total
A1198 Ermine Street (North)	0	416	227	0	642	0	422	172	38	632	0	-6	55	-38	10
A428 (East)	271	0	1	892	1164	430	1	99	812	1342	-159	-1	-98	80	-178
A1198 (South)	280	29	0	61	369	211	274	0	106	591	69	-245	0	-45	-222
A428 Cambridge Road (West)	0	1075	21	0	1096	6	914	113	0	1033	-6	161	-92	0	63
Total	551	1520	249	952	3273	647	1611	384	956	3598	-96	-91	-135	-4	-325 (-9%)

Source: A428_MCTC_Analysis_SATURN Flows_Scheme Vissim Junctions

NH have reviewed this and concluded that the model flows are representative of the observed traffic data and it is acknowledged that the flows on each arm of the junction in the strategic model would appear to be reasonably comparable with the observed data meaning that the link flow validation is acceptable at this location. However, the important measure for deciding if the use of flows from the strategic model in the assessment of individual junction models is appropriate should be based on the representation of the turning proportions in the model.

The table below was prepared by CCC using the data above to compare the turn proportions at this junction in the base year model.

From/To	SATURN Flows (2015)					Survey Flows (2016)					Difference (SATURN - Survey)				
	A1198 Ermine Street (North)	A428 (East)	A1198 (South)	A428 Cambridge Road (West)	Total	A1198 Ermine Street (North)	A428 (East)	A1198 (South)	A428 Cambridge Road (West)	Total	A1198 Ermine Street (North)	A428 (East)	A1198 (South)	A428 Cambridge Road (West)	Total
A1198 Ermine Street (North)	0.0%	64.7%	35.3%	0.0%	100%	0.0%	66.8%	27.2%	6.0%	100%	0%	-2%	8%	-6%	0%
A428 (East)	23.3%	0.0%	0.1%	76.6%	100%	32.0%	0.1%	7.4%	60.5%	100%	-9%	0%	-7%	16%	0%
A1198 (South)	75.8%	7.8%	0.0%	16.4%	100%	35.7%	46.4%	0.0%	17.9%	100%	40%	-39%	0%	-1%	0%
A428 Cambridge Road (West)	0.0%	98.1%	1.9%	0.0%	100%	0.6%	88.5%	10.9%	0.0%	100%	-1%	10%	-9%	0%	0%
Total	16.8%	46.4%	7.6%	29.1%	100%	18.0%	44.8%	10.7%	26.6%	100%	31%	-31%	-8%	9%	

From this it is possible to see that the turning proportions vary significantly. For example, the strategic model indicates that 75.8% of traffic on the A1198 (south) continues on the A1198 (north) when in the count only 35.7% of traffic makes this movement. From this it is possible to confirm that the turning proportions at the

junctions examined do not compare well, from which CCC conclude that all of the junction models should be based on observed turning counts in the base year.

CCC would like to see base year models developed for all of the junction models produced by NH. This is because all of the junctions assessed currently exist in some form, for which base models could be built to calibrate demand. Demand for totally new movements in future years could be taken directly from the strategic model, which would be an acceptable use for these flows.

Furthermore, direct use of strategic model flows in future year scenarios is not agreed because of the discrepancies between modelled and observed flows in the base year. CCC maintain that future year flows should be produced by using strategic model flows to modify observed base year counts.

While CCC would like to see base year models produced in each case, we have set out two options below for discussion.

Option 1

Base year models should be built for all junctions so that base year demand and junction operation can be calibrated to existing conditions.

In the case of VISSIM models this would include calibrating observed demand to ensure that base year queues are representative of observed conditions. CCC are not suggesting collecting new queue length data but simply using information that already exists, for example, historic WebTRIS or Trafficmaster data.

Future year demand should be estimated using strategic modelled turning flows that have been converted to vehicles and adjusted to convert peak period to peak hour flows. Differences between base and forecast year can be calculated and applied to observed base year turning flows to produce respective forecast year demands per scenario. These should then be used in the junction models. The process is outlined in Appendix A using a Do Minimum scenario as an example but the method applies equally to Do Something scenarios.

Option 2

Despite CCC repeatedly asking for validated base year models for all of the junctions assessed, NH have to date resisted this saying that the approach taken is appropriate and proportionate. Therefore, in an attempt to move this forward CCC propose the following compromise position.

CCC note the base year models that NH have already built and will not request NH build any additional ones.

However, for those junctions that have a base year observed count, CCC request that NH assume that the count data would have been used instead of base year flows from the strategic model had a base year model been produced.

CCC then request that the future year matrices should be built using the methodology set out in Option 1 above (see Appendix A), that is, using strategic modelled turning flows that have been converted to vehicles and adjusted to convert peak period to peak hour flows. Calculate differences between base and forecast year and apply those to observed base year turning flows to produce respective forecast year demands per scenario. These should then be used in the future year junction models.

Summary

CCC consider Option 1 to be the preferred option as this follows industry standard best practice. However, CCC put forward Option 2 as an alternative that would be acceptable as it would provide a much better estimate of future year junction performance than the method used by NH to date. CCC request that the methodology going forward be discussed and agreed BEFORE the work is undertaken so that the risk of further disagreement is minimised. The junctions affected are summarised in Appendix B.

Additional Junctions models requested by CCC

CCC note they have asked NH to assess additional junctions on Great North Road and Cambridge Road in St Neots as the strategic modelling undertaken by NH indicates that both these roads see a significant increase in traffic as a direct result of the scheme. CCC need to be confident that the adjacent junctions on these roads can accommodate the suggested increase in trips (circa 200 PCU/hour in the AM and PM Peak periods). These junctions are listed in Appendix C and their assessments should be carried out using Option 1 above.

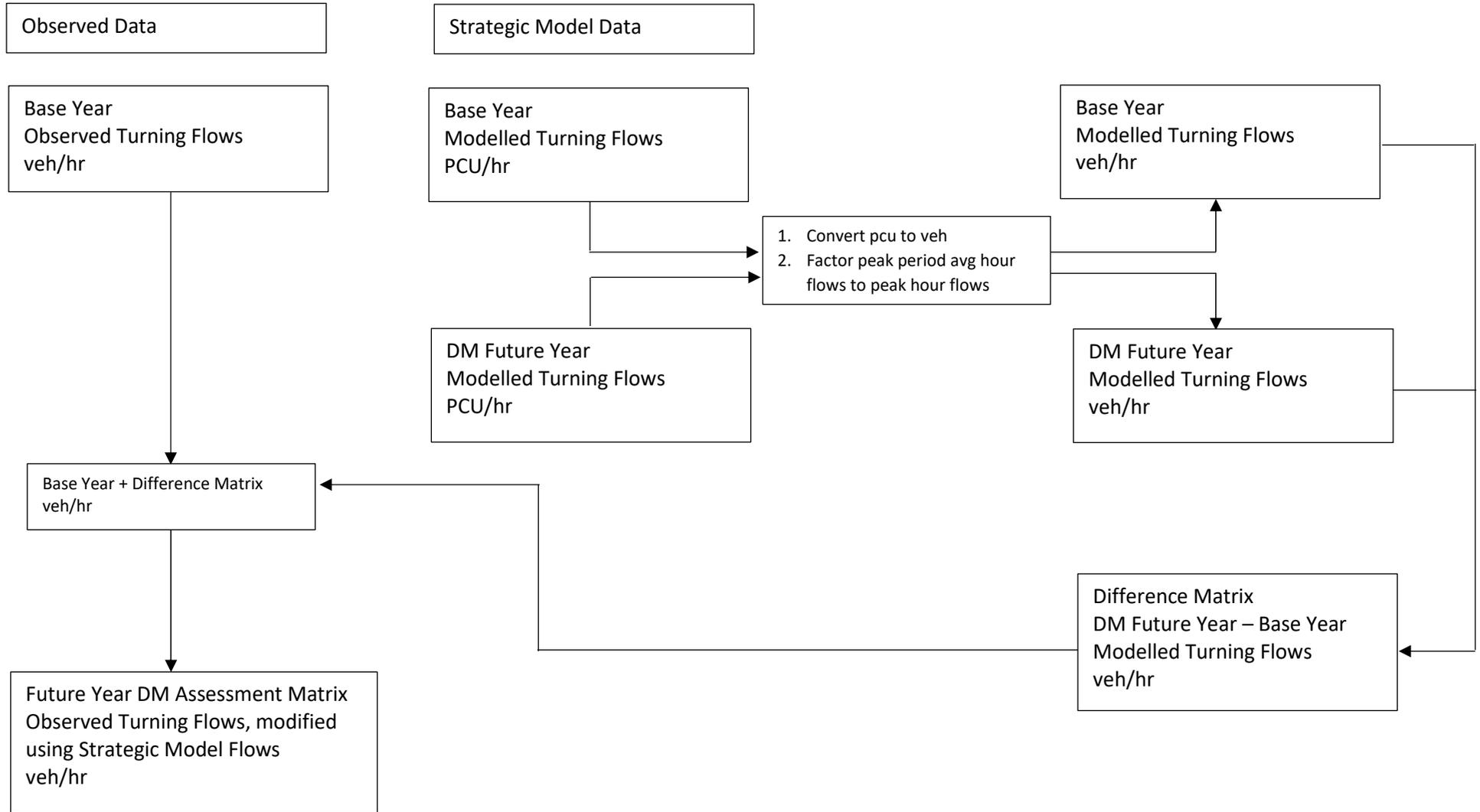
Summary and Conclusions

CCC are concerned about the use of unmodified strategic model flows in local junction model assessments supporting the proposed A428 Black Cat to Caxton Gibbet scheme.

These concerns arise because of the poor comparison between modelled and observed turning flows in the base year at a number of the junctions assessed, undermining confidence in the ability of the strategic model to model turning movements accurately. Since turning movements are at the heart of any junction assessment this is a major concern.

Two options for producing more accurate future year flows for use in the junction assessments are suggested above, which would provide a sounder basis to determine mitigation measures for the proposed scheme.

Appendix A – Method for producing forecast year matrices – Do Minimum (DM) scenario used for illustrative purposes



Appendix B – Junctions requiring further assessment

HE Ref No	Junction Name
1	A1 Buckden roundabout
2	Yelling & Toseland crossroads
5	Cambourne North Roundabout - 2025 only
6	Cambourne South Roundabout - 2025 only
7	Cambourne junction -2040 only
8	Scotland Road, Hardwick, Junction
9	Madingley Mulch junction
10	M11 Junction 13
12	Wyboston roundabout
13	Barford Road roundabout
24	Black Cat
25	Cambridge Road
26	Caxton Gibbet
29	B1046/ Potton Road junction
30	A428/ Toseland Road/ Abbotsley Road junction
31	Eltisley link

Appendix C – New Junctions requiring assessment

HE Ref No	Junction Name
-	Great North Road/Alpha Drive/Marlborough Road
-	Great North Road/Howard Road
-	Great North Road/Little End Road
-	Great North Road/Nelson Road
-	Cambridge Street/Cromwell Road/Station Road/Cambridge Road
-	Cambridge Road/Dramsell Rise
-	Cambridge Road/Stone Hill/Wintringham park access